

The Mount, Terwick Lane, Dumpford, W.Sussex. GU31 5JN.



Phase 2 Bat Emergence Survey

S.G. Dodd MSc MCIEEM MRES

[Class Licence Registration Number 2020-48628-CLS-CLS]

September 2021

Written by: S.G.Dodd, 11 Knowles Meadow, Hill Brow, Liss, Hampshire. GU33 7QW.

Tel: 01730 895 341. Email: jaapiella@yahoo.co.uk

Prepared for: Lady Haddon-Cave, The Mount, Terwick Lane, Dumpford, W.Sussex, GU31 5JN

Quality Control

The information and data which has been prepared and provided is true and has been prepared and provided in accordance with the *Code of Professional Conduct issued by the Chartered Institute of Ecology and Environmental Management (CIEEM)*. We confirm that the opinions expressed are our true and professional bona fide opinions.

		Date
Survey Ecologist/s	Scotty Dodd MSc MCIEEM Mem.RES [Level 2 Class Licence - 2020-48628 CLS CLS] Mike Marriott	Survey date/s: 11 th , 30 th August & 11 th September 2021
Report Author	Scotty Dodd MSc MCIEEM Mem.RES [Level 2 Class Licence - 2020-48628 CLS CLS]	Submission date: 21 st September 2021

The contents of this report were correct at the time of the site visit. The report is provided for the sole use of the named client and is confidential.

All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or stored in any retrieval system of any nature, without our written permission. Its content and format are for the exclusive use of the addressee in dealing with this. It may not be sold, lent, hired out or divulged to any third party not directly involved in this situation without written consent.

Summary

Consultant Ecologist S.G.Dodd MSc MCIEEM MRES [Class Licence Registration Number 2020-48628-CLS-CLS] was commissioned by the Client to undertake a Phase 2 dusk emergence / dawn return bat survey of The Mount, Terwick Lane, Dumpford, W.Sussex, GU31 5JN. This is required to support a planning application seeking to:

1. Two storey extension to eastern elevation keying into existing roof void at gable end.
2. Two storey extension to western corner of southern elevation of main house, emerging from existing catslide roof and keying in to ridge of south-facing roof pitch.
3. Single storey infill extension between western elevation of main house and southern elevation of north-west wing.
4. Single storey extension to southern elevation existing porch and sun room.

Plans were available at the time of survey.

A daytime Bat Assessment / Phase 1 Bat Survey was undertaken by S.G.Dodd on the 5th August 2021 in accordance with the Bat Conservation Trust Guidelines (Collins, 2016). This preliminary survey found that The Mount had a **confirmed roost** of Brown Long-eared bats *Plecotus auritus* in the roof void of the main house, with a social cluster of approximately ten bats observed, indicating a small **maternity roost**. Externally, the building was found to have **high suitability** for roosting bats with external features such as tile gaps present, particularly in association with the central, older parts of the building. The outbuilding was deemed to have negligible potential to support roosting bats. Therefore, a sequence of Phase 2 dusk emergence / dawn return surveys was required to inform a European Protected Species Licence to undertake the proposed works.

Three survey visits were undertaken on 11th, 30th August & 11th September 2021 with two surveyors using Canon XA20 infra-red cameras and illuminators and Echo Meter Touch 2 full spectrum bat detectors.

Four bat species (Brown Long-eared, Common Pipistrelle, Soprano Pipistrelle and a *Myotis* species of bat) were observed to emerge from external features at multiple locations, particularly from the southern and northern elevations. The majority of the roosts, to include multiple day roosts for Common and Soprano Pipistrelle and one day roost for a *Myotis* species of bat, are of low conservation significance. However, the maternity roost of fifteen Brown Long-eared bats in the main roof void is of at least moderate conservation significance locally. A maternity roost of c.120 Soprano Pipistrelle bats was detected within a soffit box at the north-east corner. However, this important roost will not be affected by the

proposed works. The *Myotis* sp. day roost and Soprano Pipistrelle day roosts detected on the northern elevations will not be affected by the proposed works.

The Phase 2 bat emergence / return survey made the following observations:

- A **Maternity Roost** for fifteen Brown Long-eared bats. **Moderate conservation significance****
- A **Maternity Roost** for c.120 Soprano Pipistrelle bats. **Moderate conservation significance***.
- Seven **Day Roosts** for Common and Soprano Pipistrelle bats. **Low conservation significance*****.
- A **Day Roost** for a single *Myotis* species of bat. **Low conservation significance***.

* Roost will not be affected by the proposed works and is not considered further here.

** Roost will temporarily be disturbed, and primary access point lost during the proposed works and some mitigation / compensation will be required to ensure compliance with legislation.

*** A proportion of these roosts will be lost during the proposed works and must be compensated for.

All bat species, their breeding sites and resting places are fully protected by law. **Therefore, a European Protected Species (EPS) licence is required from Natural England (NE) before the proposed works can commence.** Due to the high number of identified roosts of four common species of bat, and the presence of two separate maternity roosts, The Mount will not qualify for the low impact scheme and a full European Protected Species Licence will be required.

A mitigation / compensation strategy is provided along with enhancements. Specified works will require ecological supervision by an appropriately licensed ecologist. Some post-works monitoring for continued functionality will be required in 2023 & 2025.

Recommendations

Any roof liner incorporated into the roof voids of the proposed new extensions will be traditional 1F bitumen felt. This must be used in place of a breathable roofing membrane (BRM) made of woven fibres, such as Tyvek, as bats are known to become entangled in woven fibre BRMs, leading to death.

Any lighting scheme for the proposed development will need to take into consideration the presence of bats in the local area and the scheme should minimise potential impacts to any bats using nearby trees, hedgerows and buildings by avoiding unnecessary interior / exterior artificial light spill through the use of directional light sources and shielding. It is assumed that a sensitive lighting strategy will be conditioned as part of the planning permission. Bat Conservation Trust (BCT) and Institution of Lighting Professionals (ILP) guidance notes can be downloaded here (BCT & ILP, 2018): <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

1.0 INTRODUCTION

Background & Site Proposals

- 1.1 Planning permission is being sought to make a number of proposed alterations to the property:
1. Two storey extension to eastern elevation keying into existing roof void at gable end.
 2. Two storey extension to western corner of southern elevation of main house, emerging from existing catslide roof and keying in to ridge of south-facing roof pitch.
 3. Single storey infill extension between western elevation of main house and southern elevation of north-west wing.
 4. Single storey extension to southern elevation existing porch and sun room.

Plans were available at the time of survey.

- 1.2 To facilitate the local planning authority in being able to exercise its duty to ensure that the proposed works would not contravene the laws protecting bats, a Phase 1 Daytime Bat Assessment survey of the building was initially undertaken to identify whether and how bat roosts might be affected by the proposals. This survey was required to support the planning application.
- 1.3 A daytime Bat Assessment / Phase 1 Bat Survey was undertaken by S.G.Dodd MSc MCIEEM MRES [Class Licence Registration Number 2020-48628-CLS-CLS] on the 5th August 2021 in accordance with the Bat Conservation Trust Guidelines (Collins, 2016).
- 1.4 This preliminary survey found that The Mount had a **confirmed roost** of Brown Long-eared bats *Plecotus auritus* in the roof void of the main house, with a social cluster of approximately ten bats observed, indicating a small **maternity roost**. Externally, the building was found to have **high suitability** for roosting bats with external features such as tile gaps present, particularly in association with the central, older parts of the building. The outbuilding was deemed to have negligible potential to support roosting bats.
- 1.5 I was contracted by the Client to undertake the Phase 2 Bat Emergence / Return Survey. This report presents the findings of the survey.

Site Setting and Description

- 1.6 The Mount is a detached two storey dwelling situated along a private track spurring off of Terwick Lane, Dumpford in a rural location to the west of Midhurst and within the boundary of the South Downs National Park.
- 1.7 The wider area is rural with arable and pasture. There is high suitability for bats with foraging opportunities in gardens and nearby heathland and woodland, also along hedgerows, lines of trees and river corridor. The River Rother lies approximately 250m to the north.
- 1.8 The property is situated at OSGR SU 8263 2210.



Figure 1: Site location within 1km search area (central red outline). Image produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0)

Purpose of this Report

- 1.9 This report details the results of the Phase 2 bat emergence / return survey of the building/s, as detailed above. Any potential for the proposed works to contravene the legislation protecting bats (or any other protected species) is noted. This report also outlines mitigation strategy and recommendations for any licensing that may be

required to prevent harm to bats, if found to be present, and to avoid contravention of the legislation affecting bats and other protected species.

Legislation

- 1.10 Bats are fully protected under the Wildlife and Countryside Act, 1981(as amended); the Countryside and Rights of Way (CROW) Act, 2000; and also receive additional protection via The Conservation of Species and Habitats Regulations (2010) from intentional killing and injury and from intentional damage, destruction or obstruction of access to a place of shelter. It is an offence to kill or injure a bat or interfere with any roosting or resting site. A bat roost is interpreted as "any structure or place used for shelter or protection" whether or not bats are present at the time or not. Barbastelle Bats, Bechstein's Bat, Noctule, Soprano Pipistrelle, Brown Long-eared Bat, Greater Horseshoe Bat and Lesser Horseshoe Bat are also UK BAP Priority Species and Species of Principle Importance under Section 41 of the Natural environment and Rural Communities (NERC) Act, 2006.

2.0 METHODS

Introduction

- 2.1 A programme of Phase 2 dusk emergence and/or dawn return surveys (three surveys with a minimum of two week intervals between surveys; unless there is a robust scientific reason to do otherwise) is required to confirm whether bats are currently utilising external features on the house identified during the Phase 1 survey, and to ascertain where and how the small colony of Brown Long-eared bats are accessing the roof void. This entails the structure being surrounded by surveyors so that all potential entrance/exit points are covered. The structure is then watched from either 15 minutes before sunset and up to 90 minutes after; or 90 minutes before dawn to sunrise.
- 2.2 Due to the lifecycle of bats the following guidelines apply to these surveys:
- To be undertaken in the period 1st May to 30th September.
 - For **Confirmed Roosts** and **High Potential** buildings at least two of these surveys must be undertaken between May and August.
 - Weather conditions must be mild with a low point temperature of at least seven degrees Celsius during the survey effort.

- 2.3 All emerging or re-entering bats are recorded along with their flight path, their species, quantity and the time of flight.
- 2.4 An emergence survey identifies:
- Whether bats are present in a structure, the species and number involved
 - Entrance and exit points for the roost
 - The type of roost
 - Actions needed to be taken to ensure legal compliance
- 2.5 The following sections details the methods used during the Phase 2 Bat Emergence Survey.

Phase 2 Bat Emergence / Return - Survey Methods & Surveyor Locations

- 2.6 The Phase 2 Bat Emergence/ Return Surveys were undertaken in accordance with the Bat Conservation Trust Guidelines (Collins, 2016) with some deviations. A dawn return survey was not deemed necessary due to the use of infra-red night vision cameras which enabled surveyors to ascertain key roost entrances on the first eve of survey. The final survey in early September was brought forward by a few days due to poor weather forecast later in the week and rapidly declining roosting bat numbers predicted.
- 2.7 Three survey visits were undertaken on 11th, 30th August 2021 and 11th September 2021 with two surveyors, each using Canon XA20 infra-red night vision cameras with infra-red illuminators. An additional infra-red camera was deployed at Station 1 to closely monitor the Brown Long-eared roost entrance whilst the other camera took a broad overview of the building.
- 2.8 All surveyors were equipped with an Echo Meter Touch (EMT) 2 Pro full spectrum bat detector. Subsequent sound analysis was undertaken using Sonobat software.

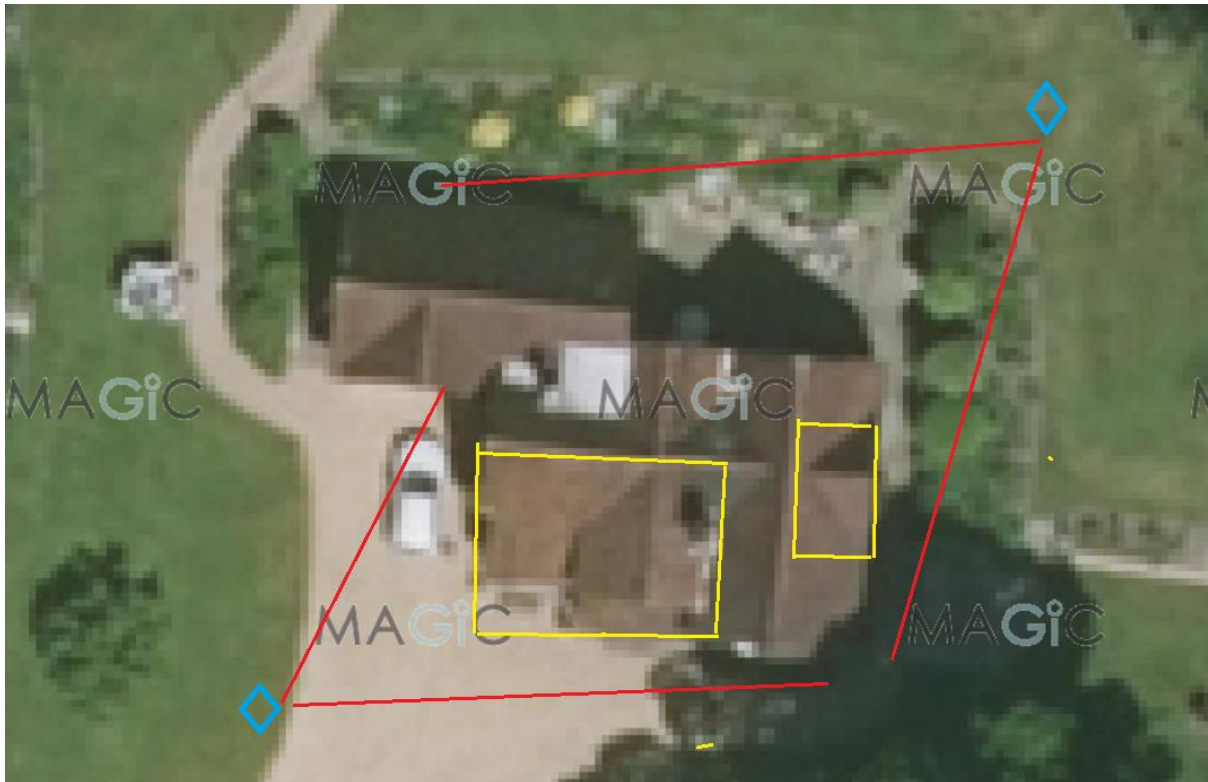


Figure 2. Surveyor locations (blue diamonds) and approximate fields of view (red lines). Approximate areas to be disturbed during works (yellow lines) Image produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0)

2.9 Survey Equipment

- 2x Echo Meter Touch (EMT) 2 Pro full spectrum bat detectors.
- 3x Canon XA20 infra-red cameras + IR illuminators.
- Extech SD500 temperature & humidity datalogger.
- Survey form / notebook / site plan & pencil.

2.10 Timing and Weather Conditions

Date	Survey Type	Temperature (°C)	Cloud (%)	Wind (Beaufort)
11/08/2021	Eve Emergence Sunset: 2032hrs	16.8-13.8	25	0
30/08/2021	Eve Emergence Sunset: 1954hrs	17-14.5	100	0
11/09/2021	Eve Emergence Sunset: 1927hrs	19.2-13.8	95	1-2

2.11 Temperatures and prevailing weather conditions were overall optimal for recording bat activity.

Limitations

2.12 Brown Long-eared bats are notoriously quiet, sometimes called the whispering bat, and may not always echolocate when leaving the roost.

2.13 *Myotis* group bats use very similar echolocation calls that cannot always be differentiated, especially when only brief recordings are made adjacent to reflective surfaces such as buildings or cluttered environments, such as woodland.

3.0 RESULTS

3.1 Four bat species (Brown Long-eared, Common Pipistrelle, Soprano Pipistrelle and a *Myotis* species of bat) were observed to emerge from external features at multiple locations, particularly from the southern and northern elevations. The majority of the roosts, to include multiple day roosts for Common and Soprano Pipistrelle and one day roost for a *Myotis* species of bat, are of low conservation significance. However, the maternity roost of fifteen Brown Long-eared bats in the main roof void is of at least moderate conservation significance locally. A maternity roost of c.120 Soprano Pipistrelle bats was detected within a soffit box at the north-east corner. However, this important roost will not be affected by the proposed works. The *Myotis* sp. day roost and Soprano Pipistrelle day roosts detected on the northern elevations will not be affected by the proposed works. Tables containing raw data for each survey are given in Appendix 1.

Phase 2 Bat Survey Results – Summary Data:

Eve Emergence – Survey 1 (11/08/2021 – Sunset 2032hrs).

Approximately 120 Soprano Pipistrelle bats emerged from a soffit box at the gable apex of the northern elevation at the north-east corner. Emergence began at 2010 (official survey start time 2017) whilst surveyors were setting up and a small number of earlier emerging bats may have been missed. All emerging bats flew east into the adjacent woodland. Additionally, individuals or small numbers of Soprano Pipistrelle bats were observed to emerge from tile gap features at other locations on the northern elevation, along with a late emerging *Myotis* species of bat. No works are proposed for the northern elevations. No bats emerged from the eastern elevation where a two-storey extension is proposed.

At the southern elevation, 15 Brown Long-eared bats emerged from a common roost entrance and flew south into adjacent woodland cover. Additionally, 9 Common Pipistrelle bats emerged from tile gap features on the main roof, cat-slide roof, porch and gable end. All observed emergences were in association with the older parts of the building with traditional clay tiles. No bats were observed to emerge from the modern extensions with tightly fitted factory-made roof tiles.

Eve Emergence - Survey 2 (30/08/2021 – Sunset 1954hrs).

Surveyors arrived early and well before the first emergences. 83 Soprano Pipistrelle bats were observed to emerge from the soffit feature, with 3 bats returning towards the end of the survey.

11 Brown Long-eared bats emerged from the same common entrance as previously. A total of 8 Common Pipistrelle bats were observed to emerge from tile gaps as previously.

Eve Emergence - Survey 3 (11/09/2021 – Sunset 1927hrs).

Again, surveyors arrived early. No bats emerged from the soffit feature. However, 13 Soprano Pipistrelle bats emerged from a tile gap feature to the west of the maternity roost location, on south-facing pitch of the west facing gable of the north-west extension.

Only 7 Brown Long-eared bats emerged from the usual location. No Common Pipistrelle bats were observed to emerge from the southern elevation, but 3 Soprano Pipistrelle bats emerged from tile gaps features previously used by their sibling species.

3.2 Photographs of observed roost locations & emergence / return points



Figure 3. Emergence locations, general lay. Red stars denote maternity roost entrances with Soprano Pipistrelles to north-east and Brown Long-eared southern elevation central. Red lines indicate flight path to

adjacent woodland cover. Yellow stars are indicative of general areas used as day roosts by both Common and Soprano Pipistrelles and a single *Myotis* species of bat. The roost locations on the northern elevation will not be affected by the proposed works.



Figure 4. Showing Brown Long-eared bat emergence point at southern elevation. The roost entrance is a small mortar gap at the junction between the main roof valley at a point where it meets the cat-slide roof and abutting the original stone walls, under the soffit and gutter. In the close up, a Brown Long-eared bat can be seen in the roost entrance at point of emergence.



Figure 5. Showing emergence locations of Common Pipistrelles (red stars), and later several Soprano Pipistrelles in relation to Brown Long-eared roost entrance (red circle). Also, inset showing multiple tile gaps in this area.



Figure 6. Showing roost entrance of Soprano Pipistrelle (red circle) maternity roost in soffit box apex on northern elevation. Red stars denote additional emergence locations of Soprano Pipistrelle and a single *Myotis* species of bat. These roost locations will not be affected by the proposed works.

4.0 BAT SURVEY RESULTS DISCUSSION: EVALUATION, IMPACTS AND RECOMMENDATIONS

Current Proposals

4.1 The proposals for the site are as follows:

1. Two storey extension to eastern elevation keying into existing roof void at gable end.
2. Two storey extension to western corner of southern elevation of main house, emerging from existing catslide roof and keying in to ridge of south-facing roof pitch.
3. Single storey infill extension between western elevation of main house and southern elevation of north-west wing.
4. Single storey extension to southern elevation existing porch and sun room.

4.2 Plans were available at the time of survey.

Bat Survey Results

4.3 A daytime Bat Assessment / Phase 1 Bat Survey was undertaken by S.G.Dodd on the 5th August 2021 in accordance with the Bat Conservation Trust Guidelines (Collins, 2016).

4.4 This preliminary survey found that The Mount had a **confirmed roost** of Brown Long-eared bats *Plecotus auritus* in the roof void of the main house, with a social cluster of approximately ten bats observed, indicating a small **maternity roost**. Externally, the building was found to have **high suitability** for roosting bats with external features such as tile gaps present, particularly in association with the central, older parts of the building. The outbuilding was deemed to have negligible potential to support roosting bats.

4.5 The Phase 2 survey recorded high levels of bat activity in general with a number of individual Common Pipistrelle (and later Soprano Pipistrelle) summer day roosts sited in an area on the southern elevation that will be affected by the proposed works. The primary roost entrance for a maternity colony of 15 Brown Long-eared bats is also situated in the same area. A maternity colony of c.120 Soprano Pipistrelle bats, along with several summer day roosts for this species, and a single Myotis species of bat, were detected on the northern elevations, but these features will not be altered or disturbed by the proposed works.

4.6 As such the house is considered to support the following types of bat roosts:

- A **Maternity Roost** for fifteen Brown Long-eared bats. **Moderate conservation significance****
- A **Maternity Roost** for c.120 Soprano Pipistrelle bats. **Moderate conservation significance***.
- Seven **Day Roosts** for Common and Soprano Pipistrelle bats. **Low conservation significance*****.
- A **Day Roost** for a single *Myotis* species of bat. **Low conservation significance***.

* Roost will not be affected by the proposed works and is not considered further here.

** Roost will temporarily be disturbed and primary access point lost during the proposed works and some mitigation / compensation will be required to ensure compliance with legislation.

*** A proportion of these roosts will be lost during the proposed works and must be compensated for.

4.7 All bat species, their breeding sites and resting places are fully protected by law. **Therefore, a European Protected Species (EPS) licence is required from Natural England (NE) before the proposed works can commence.** Due to the high number of identified roosts of four common species of bat, and the presence of two separate maternity roosts, The Mount will not qualify for the low impact scheme and a full European Protected Species Licence will be required.

Implications for the Development

4.8 The proposed works to The Mount must be undertaken under a Natural England bat licence. Due to the high number of identified roosts of four common species of bat, and the presence of two separate maternity roosts, The Mount will not qualify for the low impact scheme. The licence can only be applied for once planning permission has been granted. To fulfil the obligations of the Habitats Directive, and in order to secure a licence for the proposed works, a suitable mitigation strategy would need to be developed in order to ensure that the favourable conservation status (FCS) of bats in the local area will not be impacted upon by the development.

4.9 There are numerous external crevice day roosting opportunities associated with the building currently being used by three common species of bats. The building is also

used as a maternity roost for 15 Brown Long-eared bats in the roof void and c.120 Soprano Pipistrelle bats in a soffit box on the unaffected northern elevation. The building is therefore considered to be of moderate conservation value in terms of bats.

- 4.10 The development will result in the alteration and temporary disturbance of the roof void used by a Brown Long-eared bat maternity colony and this must be mitigated for. The primary access point to the roof void used by the Brown Long-eared bats will be lost to the development and must be compensated for. The proposals will also cause the loss of three day roosting areas for two common species of bat (Common & Soprano Pipistrelle), namely the cat-slide roof, the south-facing pitch of the main roof above it and the clay-tiled porch, for which adequate mitigation / compensation will be required. The house also supports a large maternity roost of Soprano Pipistrelle bats in a soffit box on the northern elevation (north-east corner) and several additional day roosting areas for individual, or small groups of, Soprano Pipistrelle bats and a single *Myotis* species of bat. However, under the current proposals these areas will not be directly or indirectly affected provided that any recommendations pertaining to these roosting areas are followed.

Bat Boxes and Alternative Roosting Provisions

- 4.11 In the first instance, prior to any works commencing, appropriate bat boxes must be established on site for the species which have been recorded utilising the building. This is a precautionary measure to ensure that there is a safe haven in the event that any bats are encountered. These boxes provide alternative roosting on site during the development works and prior to the installation of any integral roosting features to the building. Post works the bat boxes will be retained *in situ*.
- 4.12 A Schwegler 1FD Bat Box* (developed specifically for smaller bats such as pipistrelle species, but can also accommodate Brown Long-eared bats) is required to accommodate any bats discovered during the works. This will be established on a mature tree or similar away from light spill and preferentially on an existing flight line. This model is recommended for its insulation and long-term durability (<https://www.nhbs.com/1fd-schwegler-bat-box> (*If the make and model of bat box recommended is not available retailers such as NHBS will have the in-house expertise to advise upon a suitable alternative. NHBS have previously advised that the CJ Wildlife Large Multi-chamber Woodstone Bat Box is a suitable alternative that is currently in stock.)

- 4.13 The house has a separate roof void that has previously been used by Brown Long-eared bats and is not connected to the main roof void. This will provide an adequate alternative roosting resource should any Brown Long-eared bats be discovered during the works.
- 4.14 The siting of bat boxes is important. Bat boxes are best located, and have the best rate of occupancy, when they are situated within or adjacent to bat-friendly features, such as hedgerows, tree-lines or woodland, providing connectivity to the wider landscape. The bat boxes should be situated where they are sheltered from strong winds, and should be exposed to the sun for most of the day, therefore southern aspects are favourable. Bat boxes should be hung as high as possible, preferably around 5m high.



Figures 7 & 8. The Schwegler 1FD Bat Box (L) or alternative CJ Wildlife Large Multi-chamber Woodstone Bat Box (R) to be established on site.

Integral Features

- 4.15 The proposed project will re-use the existing traditional clay tiles salvaged from the porch, cat-slide and main roof during the works, or appropriate heritage replacement tiles. These will be used on the roof of the new two-storey front extension and porch on the southern elevation. **The use of traditional hand-made clay tiles with their characteristic convex ‘eyebrow’ profile will ensure that external crevice roosting bats, such as Common and Soprano Pipistrelle, will have adequate roosting provisions to replace those lost to the development.**
- 4.16 **Any roof liner incorporated into the roof voids of the proposed new extensions will be traditional 1F bitumen felt.** This must be used in place of a breathable

roofing membrane (BRM) made of woven fibres, such as Tyvek, as bats are known to become entangled in woven fibre BRMs, leading to death.

- 4.17 The proposed new two-storey front extension will be a new gable end to mirror the adjacent, existing gable end to the immediate east. This will emerge from the existing cat-slide roof and the new ridge will key into the roof covering (and void) of the main house. **This will result in the loss of the existing Brown Long-eared roost entrance. As compensation, a new roost entrance will be provided as close to the position of the original entrance as is practicable.** It is recommended that as compensation a lead saddle access point will be fitted as indicated on the below plan. A weather-tight lead saddle access point into the roof void will be formed near the base of the valley where the roof junctions meet. Additionally, a clay bat access tile will be fitted in to the roof covering up to one meter above this to increase the likelihood of bats finding the entrance/s on their return. Any felt liner will be cut away, folded back and secured to ensure unobstructed access. As a further enhancement, and to increase the chances of continued use of the roost, a further bat access tile or lead saddle will be incorporated into the south facing pitch of the proposed new extension that will tie in to the existing roof void. Continued use will be monitored for in 2023 and 2025.

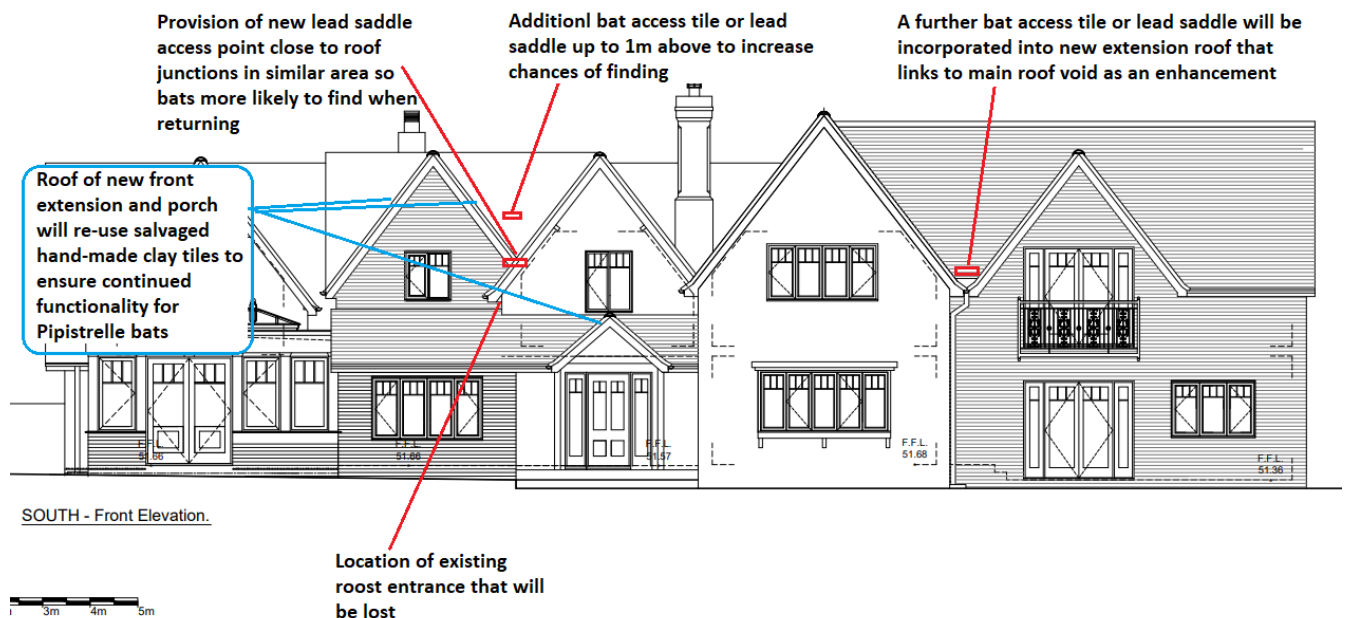


Figure 9. Proposed mitigation / compensation. All recommended roost access locations are approximated pending further discussions with the architect.

- 4.18 Prior to any works starting on site, the recommended bat boxes (or suitable alternatives) will be established on mature trees or other suitable locations on-site. These must be *in situ* prior to any work commencing to ensure that alternative roosting provision has been made should a bat be found during the works.
- 4.19 The proposed works will need to be timed and phased accordingly to avoid disturbance to the bats at critical times of year. The 2021 survey detected a summer maternity roost of Brown Long-eared bats in the main roof void that will be temporarily disturbed during the proposed works, namely the erection of a two storey front extension and a two storey side extension, both of which will key into the existing roof void. Brown Long-eared bats can remain roost faithful all-year-round and there is some potential for a small number of bats to remain at the roost during the winter hibernation period. **Timing for the commencement of works to the maternity roost roof void must be either early September to mid-October (pre-hibernation) or mid-March to late April (pre-maternity)**, subject to weather conditions and temperatures at those times. The tile strip of the main roof of the southern elevation will be supervised by a licensed ecologist. Any scaffolding used during the project will be erected in such a way that bat access to and from the roost area is not obstructed.
- 4.20 Common Pipistrelle roosts were detected under traditional clay roof tiles of the southern elevation main roof section, cat-slide roof below and porch. As these areas will be stripped to facilitate the proposed new front extensions and altered porch these roost areas will be lost, albeit temporarily, as salvaged tiles, or traditional heritage replacements will be re-instated on the roof of the proposed new extension and porch. It is important that tiles that will allow bat access, such as traditional clay tiles with an 'eyebrow' convex profile are used.
- 4.21 As pipistrelle bats can be roost faithful year-round, disturbance in the winter hibernation period must be avoided. Disturbing hibernating bats may cause them to awaken and waste essential energy reserves, thus reducing their chance of surviving the winter. Therefore, supervised tile stripping of the specified roof sections must be undertaken between mid-March and mid-September, depending upon weather and temperatures. Where possible, works will be phased to ensure that potential roost features are re-instated on completed parts of the building, e.g. the new porch. All specified works will be supervised by an ecologist holding an appropriate licence.
- 4.22 The method statement of works would include the following:

- Ensure NE licence is in place.
- Establish recommended bat boxes on site, on mature trees prior to any works commencing.
- An ecologist holding the appropriate licence will undertake an internal search of the roof void immediately prior to any works in this area commencing.
- Once any scaffolding is established, and the ecologist is satisfied that any specified roost entrances are not obstructed by the scaffolding, the supervising ecologist will provide a tool box talk (TBT) to all personnel on site, with regards to the legal protection of bats, what to do if a bat is found and method of works;
- Proceed with the hand removal of any specified areas of roofing tiles, boarding and lead flashing under ecological supervision and within any specified time-frame. These features are required to be taken down with extreme care and visually inspected by the bat ecologist. Tiles will be carefully lifted, as opposed to a sliding motion or use of impact tools. Each tile will be checked on the underside prior to stacking to ensure that no bats are clinging to it. This will ensure that these potential features have been fully inspected to ensure that bats are unharmed prior to proceeding with the proposed building works.
- Any internal membrane / felt also to be removed under ecological supervision.
- Once all tiles are removed, and all features which can be utilised by bats have been cleared and the licence holder is happy, building works can commence without further involvement of the licenced ecologist.
- Once the building works are completed, the licenced ecologist will return to check that agreed mitigation / compensation measures and enhancements are in place and correctly fitted.
- Post-works monitoring for continued functionality of the roost will be undertaken in 2023, and again in 2025 if deemed necessary by the ecologist.
- Finally, the ecologist will be able to submit a licence return form, that all mitigation measures are completed within the appropriate time scale and in the correct locations.

4.23 The final timings of works will be detailed in the Natural England licence works schedule.

- 4.24 The supervising ecologist will also check that any further enhancements conditioned are in place and correctly fitted.

Lighting

- 4.25 Any lighting scheme for the proposed development will need to take into consideration the presence of bats in the local area and the scheme should minimise potential impacts to any bats using nearby trees, hedgerows and buildings by avoiding unnecessary interior / exterior artificial light spill through the use of directional light sources and shielding. It is assumed that a sensitive lighting strategy will be conditioned as part of the planning permission. Bat Conservation Trust (BCT) and Institution of Lighting Professionals (ILP) guidance notes can be downloaded here (BCT & ILP, 2018): <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

Licence Application

- 4.26 The timing of the works with regards to the licence requirements is as follows:
- Once full planning is secured, or outline planning with relevant conditions has been discharged, then the licence will be applied for.
 - An update survey (walkover or internal survey) must occur in the last 3 months prior to works as a requirement of the licence. If there is a significant lapse in time between planning permission being granted / and or start on site, an update survey may well be required.
 - The recommended bat boxes should be established on trees around the site.
 - Once the licence is issued all licensable works can commence (if weather conditions are appropriate). All licensable works must be undertaken under ecological supervision.
 - Only once the licensable works are complete and the ecologist is satisfied that the structures are free of bats or features that can be exploited by bats, then the building works can commence.
 - Any enhancements as part of the mitigation scheme will be checked by the ecologist to ensure they are correctly fitted during the works.

References & Bibliography

- Bat Conservation Trust (2018) *Bats and artificial Lighting in the UK*.
- Bat Tree Habitat Key (2018). *Bat Roosts in Trees*. Pelagic Publishing.
- CIEEM (2011) *Competencies for species survey guidance documents*.
- CIEEM (2011) *Professional Guidance Series 10: Guidance on metadata Standards: Reporting, sharing and archiving ecological data*.
- CIEEM (2011) *Professional Guidance Series No 9: Guidance for Ecological Report writing*.
- Communities and Local Government (2012) *Technical Guidance to the National Planning Policy Framework*. Department of Communities and Local Government, London.
- Collins, J. (ed.). (2016) *Bat Surveys: Good Practice Guidelines* (3rd edition). Bat Conservation Trust.
- English Nature (2006) *Wildlife and development*. English Nature, Peterborough.
- Hill D., Fasham M., Tucker G., Shewry M. & Shaw P (2007) *Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring*. Cambridge
- Institute of Environmental Assessment (1995). *Guidelines for Baseline Ecological Assessment*. Institute of Environmental Assessment, London.
- JNCC (2004) *Bat workers manual* (3rd edition). JNCC, Peterborough.
- Mitchell-Jones A.J. (2004) *Bat mitigation guidelines*. English Nature.
- ODPM (2005) *Government circular: biodiversity and geological conservation – statutory obligations and their impact within the planning system*. The Stationary Office.

Appendix 1.

Phase 2 Bat Survey Results – raw data:

Eve Emergence - Survey 1 (11/08/2021 – Sunset 2032hrs).

Station	Time	Species	Passes	No.	Notes
2	2010-2014	Soprano Pipistrelle	4	4	Emerged N elevation gable apex from soffit whilst setting up. All flew E to woodland.
2	2017-2040	Soprano Pipistrelle	c.110	c.110	Emerged N elevation gable apex from soffit. All flew E to woodland.
1	2034-2036	Common Pipistrelle	3	3	Emerged from same tile gap on S elevation porch roof, flew S to woodland.
2	2035-2040	Soprano Pipistrelle	5	5	Emerged N elevation to W of maternity roost from tile gap on S pitch of W facing gable of NW extension. All flew E to woodland.
2	2035-2040	Soprano Pipistrelle	2	2	Emerged from tile gaps on both pitches of adjacent gable to W. All flew E to woodland.
1	2036	Common Pipistrelle	1	1	Emerged from valley between old and new gables on S elevation. Flew S
1	2037	Common Pipistrelle	1	1	Emerged from tile gap on main roof S pitch just above meeting point with cat slide, flew S
1	2038	Common Pipistrelle	1	1	Emerged from tile gap on main roof S pitch just above meeting point with cat slide, flew S
1	2042	Common Pipistrelle	1	1	Emerged from tile gap on cat slide roof near BLE entrance, flew S to woodland.
1 & 2	2044	Common Pipistrelle	1	1	Emerged ridge central southern elevation, flew N over ridge

Station	Time	Species	Passes	No.	Notes
1	2047	Common Pipistrelle	1	1	Emerged from tile gap on main roof S pitch just above meeting point with cat slide, flew S
1	2048	Common Pipistrelle	1	1	Emerged ridge central southern elevation, flew S to woodland
1	2057	Common Pipistrelle	1	1	Emerged from W facing pitch of gable end, tile gap nr valley. Flew S
1	2102-2114	Brown Long-eared	15	15	Emerged from hole in mortar beneath gutter of S elevation gable's W facing pitch where it meets S facing pitch of main roof at junction with catslide roof. All flew S to woodland.
2	2106	Serotine	1	1	HNS, foraging
2	2109	Myotis sp.	1	1	Emerged from unviewable valley to W
1 & 2	2111	Serotine	1	1	HNS, foraging
2	2119	Soprano Pipistrelle	1	1	Re-entry to soffit
1 & 2	2120-2202	Common Pipistrelle & Soprano Pipistrelle	Multi	2+	Constant background foraging and social calls throughout survey.
2	2128	Soprano Pipistrelle	2	2	Re-entry to soffit
2	2132	Soprano Pipistrelle	6	6	Re-entry to soffit
2	2139	Soprano Pipistrelle	4	4	Re-entry to soffit

Eve Emergence - Survey 2 (30/08/2021 – Sunset 1954hrs).

Station	Time	Species	Passes	No.	Notes
2	1930-1953	Soprano Pipistrelle	83	83	Emerged N elevation gable apex from soffit. All flew E to woodland.
1	1942	Common Pipistrelle	1	1	Emerged from tile gap on cat slide roof near BLE entrance, flew S to woodland.
1	1947	Common Pipistrelle	1	1	Emerged from tile gap on main roof just above meeting point with cat slide, flew S
1	1948	Common Pipistrelle	1	1	Emerged from W facing pitch of gable end, edge tile 1m below apex. Flew S

Station	Time	Species	Passes	No.	Notes
1	1953	Common Pipistrelle	1	1	Emerged from tile gap centrally on W facing pitch of gable end 14 row above guttering, flew S
1	1956	Common Pipistrelle	1	1	Emerged from W facing pitch of gable end, edge tile 1m below apex. Flew S
1	1958	Common Pipistrelle	1	1	Emerged from W facing pitch of gable end, edge tile 1m below apex. Flew S
1	1959	Common Pipistrelle	1	1	Emerged from W facing pitch of gable end, tile gap nr valley. Flew S
1	2000	Common Pipistrelle	1	1	Emerged from W facing pitch of gable end, tile gap nr valley. Flew S
1	2007	Common Pipistrelle	1	1	Heard not seen (HNS), faint
1	2012	Common Pipistrelle	1	1	Commuting W over drive
1	2014-2036	Brown Long-eared	11	11	Emerged from hole in mortar beneath gutter of S elevation gable's W facing pitch where it meets S facing pitch of main roof at junction with catslide roof. All flew S to woodland.
1 & 2	2038	Soprano Pipistrelle	1	1	HNS, faint
1 & 2	2042	Soprano Pipistrelle	1	1	HNS, faint
1 & 2	2046	Common Pipistrelle	1	1	HNS, faint, social calls
1 & 2	2048	Serotine	2	1	HNS, foraging
2	2050-2053	Soprano Pipistrelle	3	3	Re-enters soffit roost
1	2050	Serotine	1	1	HNS, foraging
1 & 2	2052-2124	Common Pipistrelle	Multi	1+	Constant faint foraging and social calls
1	2053	Serotine	1	1	HNS, foraging

Eve Emergence - Survey 3 (11/09/2021 – Sunset 1927hrs).

Station	Time	Species	Passes	No.	Notes
2	1924-1935	Soprano Pipistrelle	13	13	Emerged N elevation to W of maternity roost from tile gap on S pitch of W facing gable of NW extension. All flew E to woodland.
1	1930	Soprano Pipistrelle	1	1	Emerged from tile gap central main roof of S elevation
1	1932	Soprano Pipistrelle	2	2	Emerged 1x main roof ridge nr gable & 1x under tile on cat slide roof, S elevation
1	1934	Common Pipistrelle	1	1	HNS, social calls
1	1937	Common Pipistrelle	4	2	Two bats chasing over drive, social calls
2	1937	Serotine	2	1	Foraging nearby. Heard not seen (HNS).
1	1954-1957	Common Pipistrelle	6	1?	HNS, faint foraging
1 & 2	1955-1959	Serotine	5	1	Foraging overhead, rear garden and wood edge
1	1959-2057	Common Pipistrelle & Soprano Pipistrelle	Multi	2+	Constant background foraging and social calls throughout survey.
1	1959-2023	Brown Long-eared	7	7	Emerged from hole in mortar beneath gutter of S elevation gable's W facing pitch where it meets S facing pitch of main roof at junction with catslide roof. All flew S to woodland.
1 & 2	2029	Serotine	1	1	HNS, loud calls
2	2050	Soprano Pipistrelle	1	1	Re-enters as previous.