

**Hazelton Grange, Hazelton (Main House)**

**Preliminary Roost Assessment and Bat Emergence Surveys Report**

**On behalf of Tamara Wolcough and Nicholas Judge**

**Project Code: JM2023026ABv2**

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# 1 Introduction

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## 1.1 Scope

- 1.1.1 Wild Service was commissioned by Tamara Wolcough and Nicholas Judge to undertake a Preliminary Roost Assessment (PRA) and three bat emergence surveys of the existing house at Hazleton Grange, Hazleton, Cheltenham, GL54 4EB (hereafter referred to as 'the Site'). Proposed plans for the house include demolition of the existing conservatory and construction of a replacement two-storey extension at the north-west corner of the house. A single storey extension is also proposed on the north-east corner of the building. Further minor works are proposed including new/replacement windows on the north elevation roof and a new entrance door on the south elevation of the house. Proposed plans are provided in Appendix 4.
- 1.1.2 The PRA comprised a detailed internal and external building inspection and the report is supported by a desk study. The PRA informed the need for further surveys which comprised three dusk emergences (with the use of night vision aids).
- 1.1.3 This report presents the findings of the above surveys and identifies ecological constraints and opportunities. It also proposes a series of pragmatic and proportional mitigation and enhancement measures. The report has been completed following CIEEM (2017) Guidelines for Ecological Writing.

## 1.2 Site Description

- 1.2.1 The Site comprises the main house at Hazelton Grange, which is located in the small village of Hazelton, Gloucestershire. There are two other buildings at Hazelton Grange, comprising an L-shaped garage and a tower (see Figure 1 for Location Plan/building locations). There is a garden to the rear of the house, with an amenity lawn, ornamental planting, and scattered trees. The Site is bordered to the east and south by minor roads. Immediately to the north and west are grassland fields and scattered trees.
- 1.2.2 The surrounding landscape includes the houses and residential gardens within the small village of Hazelton. Beyond the village the landscape is rural, largely comprised of agricultural fields and boundary hedgerows. The nearest small woodland block is approximately 20m north-east of the Site.
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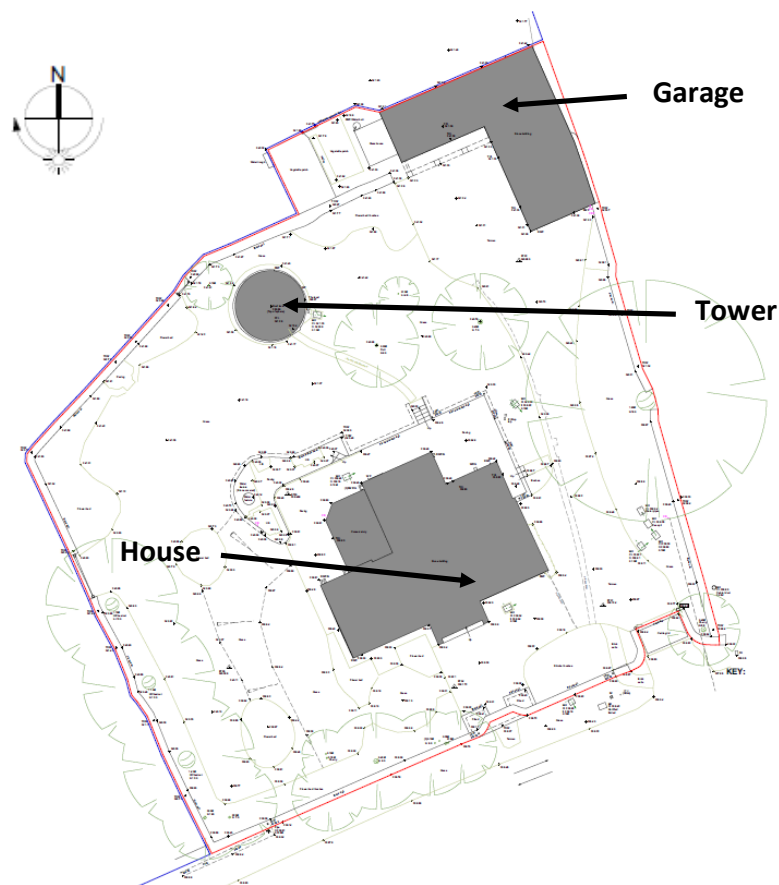
1.2.3 The central Ordnance Survey Grid Reference for the Site is SP 07880 18269.

### 1.3 Legislation

1.3.1 This report has been prepared in accordance with relevant legislation and policy. Further detail is provided in Appendix 1, however the following primary documents are of relevance:

- The Wildlife and Countryside Act 1981 (as amended) (WCA 1981);
- The Countryside and Rights of Way Act (CRoW Act), 2000 (as amended);
- The Natural Environment and Rural Communities Act (NERC Act), 2006; and
- The Conservation of Habitats and Species Regulations 2017 (as amended) (CHS 2017).

1.3.2 No part of this report should be considered as legal advice and when dealing with individual cases, the client is advised to consult the full texts of the relevant legislation and obtain further legal advice.



**Figure 1. Site Location Plan including Building Locations**  
(Plan provided by client/annotated by Wild Service)

## 2 Methods

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### 2.1 Desk Study

2.1.1 The objectives of the desk study are to review the existing available information to identify the following:

- Statutory and non-statutory nature conservation sites within 1km of the Site (including an extended search of 5km for Special Protection Areas (SPAs), Special Areas of Conservation (SACs), and Ramsar sites); and
- Records of bats within 2km of the Site.

2.1.2 Ecological data were provided by the Gloucestershire Centre for Environmental Records (GCER) and sourced from the Multi-Agency Geographic Information for the Countryside (MAGIC) website (2023).

### 2.2 Detailed Preliminary Roost Inspection

2.2.1 The main house was evaluated for bat roosting potential both internally and externally by Julia Morrison on 9<sup>th</sup> August 2023, as an accredited agent under Natural England Class Level 2 bat licence (Elizabeth Pimley NE Bat Survey Level 2: 2015-13418-CLS-CLS, WML CL18). The survey was undertaken in accordance with best practice guidelines (based on Collins, 2016).

2.2.2 The building exterior was observed from ground level using a high-powered torch, paying attention to potential roosting and access points for bats. Internal areas were also accessed. Areas of particular suitability include crevices in stonework, gaps beneath roof tiles and any dark loft spaces. Any suitable areas were searched thoroughly for evidence of use by bats. Signs of bats include live animals, corpses, droppings, urine staining, feeding remains (e.g. moth and butterfly wings) and scratches.

2.2.3 The criteria used to categorise the bat roost potential (BRP) of buildings and trees are summarised in Table 1 (based on Collins, 2016).

Table 1. Bat Roost Potential

Category	Description
Known or confirmed bat roost	<p>Bats or evidence of bats recorded, both of recent and/or historic activity.</p> <p><b>Works affecting a roost are licensable. Further survey effort (e.g. dusk emergence/dawn re-entry survey(s) in accordance with best practice) is required to determine the bat species present, nature of roost and level of use before mitigation can be determined. Seasonal constraints may apply.</b></p>
High to moderate BRP Buildings/trees with features capable of supporting a bat roost.	<p>Features include holes, cracks or crevices that extend or appear to extend back to cavities suitable for bats. In trees, examples include rot holes, woodpecker holes, splits and flaking or raised bark which could provide roosting opportunities. Any ivy cover is sufficiently well-established and matted so as to create potential crevices beneath. In buildings, features such as gaps beneath ridge and roof tiles, gaps beneath fascia and barge boards and access points into internal loft voids or cellars are all features of roosting potential for bats.</p> <p><b>Further survey effort is required to determine whether or not bats are present and if so, the bat species present, nature of roost and level of use. Appropriate mitigation and potentially licensing requirements may then be determined. Seasonal constraints may apply.</b></p>
Low BRP	<p>Buildings: The building may exhibit features that would have some limited bat roosting opportunities. <b>A further survey for emerging or re-entering bats is required to help confirm the building's low suitability, or to identify any roosting bats present.</b></p> <p>Trees: From the ground, the tree appears to have features (e.g. holes, cavities or cracks) that may extend back into a cavity. However, owing to the characteristics of the feature, they are deemed to be sub-optimal for roosting bats. Alternatively, if no features are visible but owing to the size and age and structure, hidden features, sub-optimal for roosting bats, may occur that only an elevated inspection may reveal.</p> <p><b>For trees, no further survey is required. Works may proceed using reasonable precautions (e.g. controlled working methods, usually the soft-felling of a tree under supervision of a bat worker. Seasonal constraints may apply).</b></p>
Negligible	<p>An inspected building or tree that is considered not to have potential for roosting bats. <b>No further survey or mitigation required.</b></p>

## **2.3 Dusk Emergence and Dawn Re-entry Surveys**

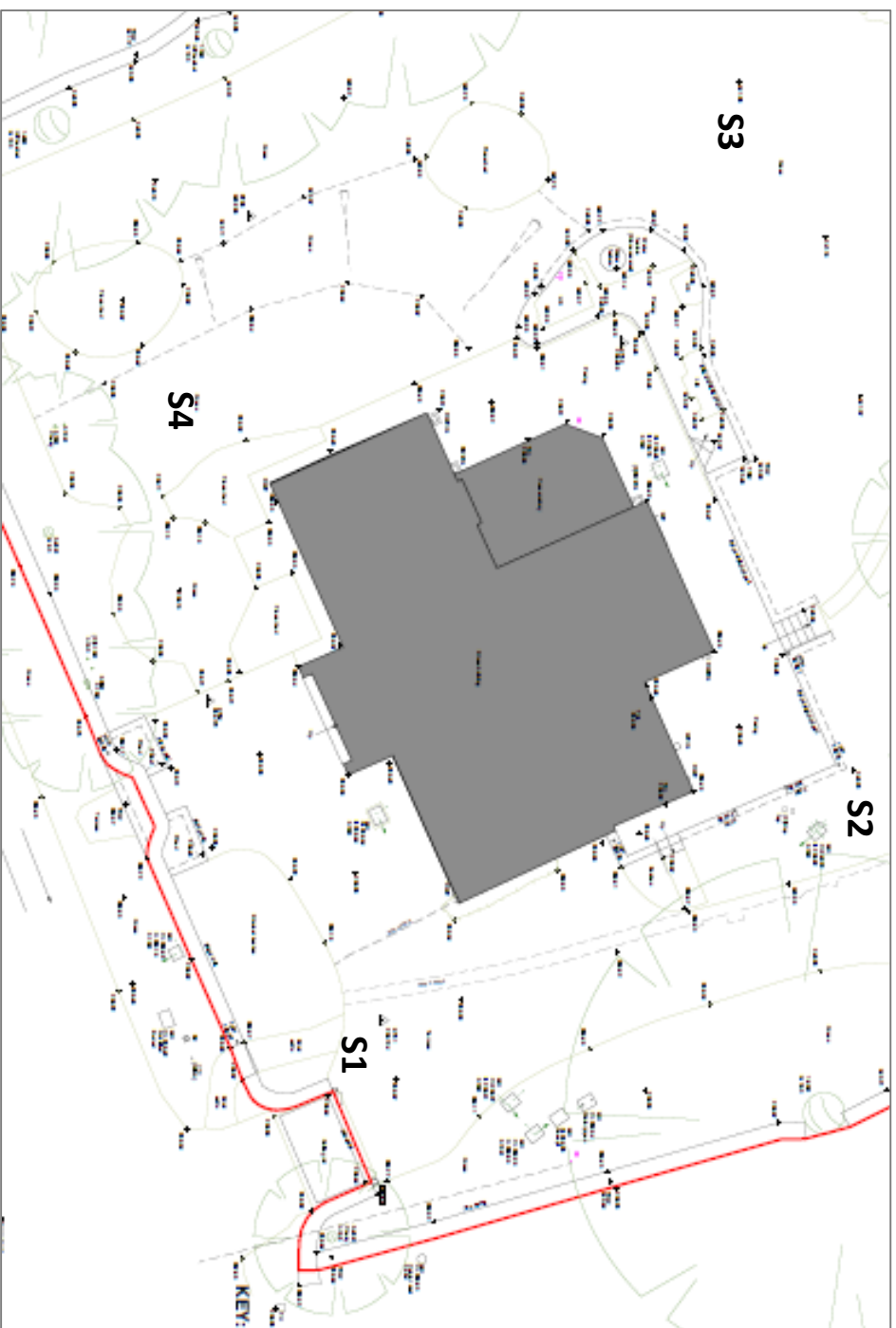
- 2.3.1 Surveyors were positioned around the house so that potential roosting features could be viewed (surveyor positions are provided in Figure 2). Each surveyor had a radio to facilitate communication between surveyors regarding bat roosting and foraging behaviour. The dusk emergence surveys began approximately 15 minutes prior to sunset and ended approximately 90 minutes after sunset.
- 2.3.2 The survey team comprised Elizabeth Pimley (Natural England licence number: 2015-13418-CLS-CLS, WML CL18 (Bat Survey Level 2), Julia Morrison (an Accredited Agent under Elizabeth Pimley's licence), Becca Brown (Natural England Class Level 1 bat Licence: 2020-45262-CLS-CLS), Ben Goodger, Joshua Evans, Harriet Robins and Ljiljana Vujakovic.
- 2.3.3 Bat detectors were used to record bat echolocation calls to identify the species present. Echometer Touch 2 Pro detectors, a Pettersson M500-384 USB and a Pettersson D240x (all set to time expansion mode) were used to carry out the survey.
- 2.3.4 Night vision aids (including Sony Handycam FDR-AX53 with infrared illuminator and Night Vision Infrared Binoculars) were used to assist viewing bat emergences at low light levels.
- 2.3.5 Each surveyor is trained and has prior experience in carrying out dusk emergence/dawn re-entry surveys and the use of bat detectors.

## **2.4 Limitations and Constraints**

- 2.4.1 While every attempt has been made to collect accurate baseline data, all ecological surveys represent a 'snapshot' of activity. Ecological features are dynamic and often transient, and it is not possible to confirm the absence of a species through survey. It may be necessary to update the ecological surveys if sufficient time elapses since the surveys and data collection presented in this report were carried out.
- 2.4.2 In addition, most species of bats in Britain roost in crevices. Bats usually have several roosts and move between them at intervals. Sometimes bats leave few or no signs (especially those that roost on the external features of buildings). Therefore, a lack of evidence of bat presence, or bats, does not necessarily show that a building is not used by bats.

2.4.3 All areas of the roof voids and roof spaces were visible from access doors on the second floor of the house. However, it was not possible to fully enter the roof space above the south gable entrance to the building, and as such this area could not be fully assessed for evidence of roosting bats (see Figure 3).





**Figure 2. Bat Surveyor Positions at Hazelton Grange (Main House)**  
*S1-S4 indicates surveyor number/location.*  
*(Plan provided by client and annotated by Wild Service)*



### 3 Results

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#### 3.1 Desk Study

##### *Statutory Nature Conservation Sites*

3.1.1 There are no statutory nature conservation sites within 1km of the Site.

##### *Non-Statutory Nature Conservation Sites*

3.1.2 There are two non-statutory nature conservation sites within 1km of the Site, both of which are designated as a Local Wildlife Site (LWS). The site name, reason for site selection and approximate distance from the proposed development Site are provided in the table below.

Site name	Reason for site selection	Approximate distance from Site (m)
Hazleton Grove LWS	Ancient semi-natural broad-leaved woodland site larger than 2 ha	280
Lumley Covert Banks LWS	Semi-natural grassland	645

##### *Extended Search for SPA, SAC and Ramsar Sites*

3.1.3 There are no Ramsar sites, SAC sites or SPA sites within 5km of the proposed development Site.

##### *Bat Records*

3.1.4 The biological data search yielded five records of bats within 2km of the proposed development Site, comprising of four different species: common pipistrelle *Pipistrellus pipistrellus*, brown long-eared bat *Plecotus auritus*, lesser horseshoe *Rhinolophus hipposideros*, and a *Myotis* species record (not identified to species level). All of these were records of roosts, and all were located within buildings on an estate more than 1.5km from the Site.

## 3.2 Preliminary Roost Assessment

- 3.2.1 Due to several external potential roost features on the main house, the building was assessed as having **high potential to support roosting bats**. Full results of the PRA, including a detailed building description, are outlined in Table 2 below. Reference should be made to the photographs in Appendix 2 and roof plan in Figure 3.

**Table 2. Preliminary Roost Assessment Results**

Description
<p><b>External</b></p> <p>The main house was a Grade II listed property of stone construction with two pitched, tiled roofs. The house had three storeys, except for a single-storey modern kitchen room on the north-east corner of the building which had a flat roof, and a single storey glass conservatory on the north-west corner. There were several external potential roost features, including gaps under the stone roof tiles on all elevations of the house (except the conservatory and small flat roof area to the north-east of the building), and holes in the gable walls on east, west and south elevations. There were also gaps under the roof tiles above the door on the south elevation, and around the dormer windows on the east and north elevations.</p> <p><b>Internal</b></p> <p>Internally, there were three loft spaces/roof voids, which were accessed and inspected as far as possible. All loft spaces were insulated. There was a large loft space on the north elevation of the house, which was possible to stand inside, and a slightly smaller loft space above the south elevation entrance (this area was not fully accessible - see Figure 3). In addition, small loft spaces (less than 1m in height) ran along the north and south elevations of the second floor. No direct evidence of roosting bats was recorded in any of these spaces (e.g. live bats, droppings, feeding remains etc.) and no obvious entry points were recorded in any of the loft spaces (e.g. visible daylight in the loft spaces) but it was considered possible that roosting bats could access loft spaces if any gaps were present between the external roof tiles and internal lofts. Of all the loft spaces, only the area above the south elevation porch was considered likely to support roosting bats (although the space was heavily cobwebbed at the time of the survey), as the loft above the north elevation had no obvious internal roost features (roof beams, cracks, crevices) and the small loft spaces running along the north and south elevations were very small and heavily cobwebbed, with no obvious access points.</p> <p>Due to several potential external roost features on all elevations of the building, the main house was considered to offer <b>high potential for roosting bats</b>.</p>

### 3.3 Dusk Emergence and Dawn Re-entry Surveys

3.3.1 Survey weather data is recorded in Table 3. Reference should be made to the photographs provided in Appendix 2.

3.3.2 The results of the dusk emergence surveys are provided in Table 4.1., 4.2., and 4.3. and bat emergence points are provided in Figure 4a and 4b. The results are also summarised below.

#### ***First Dusk Emergence Survey***

3.3.3 A total of **one common pipistrelle bat emerged** from the house, from under a roof tile on the south-east facing roof valley, near the building entrance (Table 4.1. and Figures 4a & 4b).

#### ***Second Dusk Emergence Survey***

3.3.4 A total of one ***Myotis species bat emerged*** from the house, from under a roof tile on the east facing roof above the building entrance, on the south elevation (Table 4.2. and Figures 4a & 4b).

#### ***Third Dusk Emergence Survey***

3.3.5 No bats were recorded emerging from or entering the house (Table 4.3.).

### 3.4 Nesting Birds

3.4.1 A barn owl *Tyto alba* was recorded during the second and third dusk emergence surveys, flying out of a hole in the external gable wall at the east elevation of the house (see Figure 4b for location).

3.4.2 Possible nesting materials (twigs) were seen in the hole in the external gable wall on the west elevation of the house, but no nesting bird activity was observed during any of the surveys undertaken on the house (see Figure 4c). A similar hole in the gable end wall on the south elevation of the house offered nesting opportunities for birds. In addition, gaps under the roof tiles on all elevations provided a potential nesting habitat for small birds.

### **3.5 Other Protected/Notable Species**

3.5.1 Hedgehogs *Erinaceus europaeus* were recorded in the rear garden at Hazelton Grange during all surveys, and a brown hare *Lepus europaeus* was recorded in the garden during the final emergence survey.

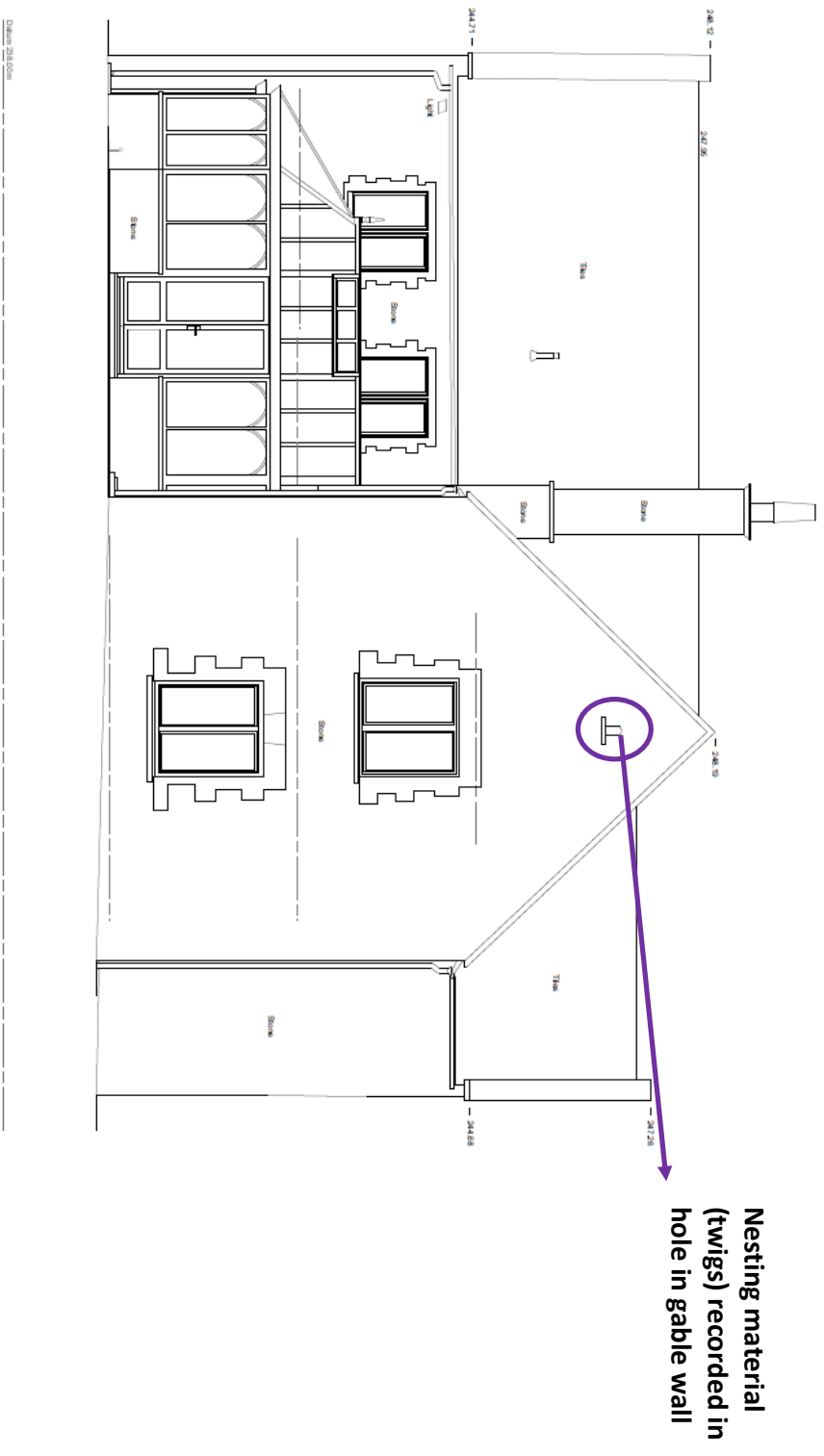


SOUTH ELEVATION AS EXISTING

**Figure 4a. Bat Emergence Points from South Elevation Roof of Main House**  
**CP = Common pipistrelle, MY = Myotis species**  
*(Plan provided by client/annotated by Wild Service)*







**Figure 4c. Location of Old Bird Nest on West Elevation Roof of Main House**  
*(Plan provided by client/annotated by Wild Service)*

Table 3. Survey Conditions

Survey date	Sunset time	Start/end of survey	Temperature °C	Wind (beaufort scale)	Rain
16/08/2023	20:29	Start 20:14	20.9	0	None
		End 21:59	18.8	1-2	None
30/08/2023	19:59	Start 19:44	15.0	2-3	None
		End 21:29	13.0	2-3	None
14/09/2023	19:25	Start 19:10	18.7	0	None
		End 20:55	17.5	0	None

Table 4.1. First Dusk Emergence Survey – 16th August 2023. Sunset: 20:29

Activity		Details			
Time	Details	Species	No. of bats	Surveyor No.	Location/Behaviour
20:25	Commuting	<i>Nyctalus noctula</i>	1	4	Flew west to east past south elevation of house.
20:45	Commuting	<i>P. pipistrellus</i>	1	1	Bat flew from west to east, past south elevation of house.
20:47	Commuting	<i>P. pipistrellus</i>	1	2	Bat flew from west to east, past south elevation of house.
20:49-20:50	Passes	<i>P. pipistrellus</i>	1	2	Faint echolocation calls detected. Bat not seen.
20:54	Commuting	<i>P. pipistrellus</i>	1	4	Flew west to east past south elevation of house.
20:54-20:59	Commuting/ foraging	<i>P. pipistrellus</i>	1	2	Flew south to north, past east elevation of house, then seen foraging in rear garden.
20:55	Commuting	<i>P. pipistrellus</i>	1	1	Bat flew from west to east, past south elevation of house.
<b>20:56</b>	<b>Emergence</b>	<b><i>P. pipistrellus</i></b>	<b>1</b>	<b>1</b>	<b>Bat emerged from a south-east facing roof valley (under roof tile), near entrance door on the south elevation.</b>

20:56	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
20:57	Pass	<i>P. pipistrellus</i>	1	1	Echolocation call detected. Bat not seen.
20:57	Commuting	<i>P. pipistrellus</i>	1	4	Flew west to south past the side elevation of the house.
20:59	Commuting	<i>P. auritus</i>	1	3	Flew west to east past house.
21:02	Foraging	<i>P. pipistrellus</i>	1	2	Faint echolocation calls detected. Bat not seen.
21:02	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
21:05	Commuting	<i>Myotis</i> sp.	1	2	Bat seen flying in loops around the south-east corner of the house.
21:07	Commuting	<i>P. pipistrellus</i>	1	1	Bat flew from east to west, past south elevation of house.
21:08	Pass	<i>P. pipistrellus</i>	1	1	Echolocation call detected. Bat not seen.
21:08	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
21:08-21:26	Foraging	<i>P. pipistrellus</i>	1	3	Bat seen foraging in trees along the west Site boundary.
21:09	Commuting	<i>P. pipistrellus</i>	1	2	Flew west to east over the roof of the house.
21:10	Pass/ foraging	<i>P. pipistrellus</i>	1	2	Faint echolocation calls detected nearby, likely to be foraging in rear garden. Bat not seen.
21:11	Pass	<i>P. pipistrellus</i>	2	4	Bats heard in the trees to the west of the Site.
21:16	Commuting	<i>P. auritus</i>	1	4	Flew south to north, past east elevation of house.
21:18	Commuting	<i>Myotis</i> sp.	1	1	Flew from north to south past house.
21:18	Pass/ foraging	<i>P. auritus</i>	1	3	Bat seen foraging in trees along the west Site boundary.
21:19	Commuting	<i>P. pipistrellus</i>	1	2	Flew south-east to north-west.
21:19	Pass	<i>Myotis</i> sp.	1	2	Echolocation call detected. Bat not seen.
21:20	Pass	<i>Myotis</i> sp.	1	2	Echolocation call detected. Bat not seen.
21:20	Pass	<i>Myotis</i> sp.	1	4	Echolocation call detected. Bat not seen.
21:21	Commuting	<i>P. pipistrellus</i>	1	1	Flew from north to south past house. No echolocation call detected.

21:21	Pass	<i>Myotis</i> sp.	1	4	Echolocation call detected. Bat not seen.
21:22	Pass	<i>Myotis</i> sp.	1	2	Echolocation call detected. Bat not seen.
21:22	Foraging	<i>P. pipistrellus</i>	1	1	Flew from north to south-west over the roof of the house.
21:22	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
21:23	Pass	<i>R. hipposideros</i>	1	2	Echolocation call detected. Bat not seen.
21:23	Pass	<i>P. pipistrellus</i>	1	2	Echolocation call detected. Bat not seen.
21:32	Pass	<i>Myotis</i> sp.	1	3	Echolocation call detected. Bat not seen.
21:35	Foraging	<i>P. auritus</i>	1	3	Echolocation call detected. Bat not seen. Likely foraging in trees to west of Site.
21:39	Foraging	<i>P. pipistrellus</i>	1	3	Echolocation call detected. Bat not seen. Likely foraging in rear garden.
21:43	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
21:44	Pass	<i>Pipistrellus pygmaeus</i>	1	3	Echolocation call detected. Bat not seen.
21:45	Pass	<i>P. pipistrellus</i>	1	2	Echolocation call detected. Bat not seen.
21:47	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
21:47	Pass	<i>Eptesicus serotinus</i>	1	4	Echolocation call detected. Bat not seen.
21:48	Pass	<i>P. pipistrellus</i>	1	1	Echolocation call detected. Bat not seen.
21:48	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
21:49	Pass	<i>N. noctula</i>	1	2	Echolocation call detected. Bat not seen.
21:49	Pass	<i>P. pygmaeus</i>	1	3	Echolocation call detected. Bat not seen.
21:50	Pass	<i>P. pipistrellus</i>	1	2	Echolocation call detected. Bat not seen.
21:59	Survey terminated.				

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**Table 4.2. Dusk Emergence Survey Results - 30<sup>th</sup> August 2023. Sunset 19:59**

Activity		Details			
Time	Details	Species	No. of bats	Surveyor No.	Location/Behaviour
20:15	Commuting	<i>Pipistrellus</i> sp.	1	3	Flew north to south past surveyor. No echolocation call detected.
20:16	Commuting	<i>P. pipistrellus</i>	1	1	Flew from north-east to south-west, high over house.
20:19	Commuting	<i>Pipistrellus</i> sp.	1	3	Flew east to west. No echolocation call detected.
20:20	Pass	<i>P. pipistrellus</i>	1	1	Echolocation call detected. Bat not seen.
20:22	Pass	<i>P. pipistrellus</i>	1	1	Flew in a loop at the south-east corner of the house.
20:22	Pass	<i>P. pipistrellus</i>	1	4	Flew west to east, past the south elevation of the house.
20:23-20:26	Pass/ foraging	<i>P. pipistrellus</i>	1	1	Continuous faint echolocation calls detected nearby, likely in the rear garden.
20:24-20:40	Foraging	<i>P. pipistrellus</i>	1	3	Foraging in the rear garden, flying back and forth from east to west.
20:26	Pass	<i>P. auritus</i>	1	3	Flew north to west.
20:28	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
20:29	Commuting	<i>P. pipistrellus</i>	1	1	Flew south to north, past the east elevation of the house.
20:30	Commuting	<i>P. pipistrellus</i>	1	1	Flew west to east, past the south elevation of the house.
20:30	Foraging	Unidentified	1	1	Flew around south-east corner of house. No echolocation call detected.
20:30	Foraging	<i>P. pipistrellus</i>	1	4	Bat seen foraging in garden to the west of the house.
20:31	Commuting	<i>E. serotinus</i>	1	1	Flew north to south, past the east elevation of the house.
20:31	Foraging	<i>E. serotinus</i>	1	4	Bat seen foraging in garden to the west of the house.
20:32	Commuting	<i>P. pipistrellus</i>	1	1	Flew south-east to north-west, close to the house.
20:32	Pass	<i>P. pipistrellus</i>	1	4	Flew west to east, over the roof of the house.
20:34	Commuting/ social	<i>P. pipistrellus</i>	1	1	Flew west to east, past the south elevation of the house. Social call detected.

20:35	Commuting	<i>E. serotinus</i>	1	1	Flew north to south and then back again, along the driveway.
20:35	Foraging	<i>E. serotinus</i>	1	4	Bat seen foraging in garden to the west of the house.
<b>20:38</b>	<b>Emergence</b>	<b><i>Tyto alba</i></b>	<b>1</b>	<b>1 &amp; 2</b>	<b>One barn owl flew out of the hole in the east elevation wall, then flew into a tree in the garden.</b>
20:39	Pass	<i>P. pipistrellus</i>	3	4	Three bats seen within one minute, flying from east to west past the south elevation of the house.
20:39-20:41	Social	<i>P. pipistrellus</i>	2	1	Two bats chasing each other and circling around the house.
20:41-20:49	Foraging	<i>P. pipistrellus</i>	1	1	One bat seen flying back and forth in front of the house.
20:44	Foraging	<i>P. pipistrellus</i>	1	3	Foraging in rear garden.
<b>20:46</b>	<b>Emergence</b>	<b><i>Myotis</i> sp.</b>	<b>1</b>	<b>1</b>	<b>Bat flew toward surveyor from the roof valley on the east facing elevation of the house.</b>
20:55	Foraging	<i>P. auritus</i>	1	3	Foraging in rear garden.
20:58	Pass	<i>E. serotinus</i>	1	4	Echolocation call detected. Bat not seen.
21:00	Passes	<i>P. pipistrellus</i>	1	3	Flew south to north.
21:00	Passes	<i>Myotis</i> sp.	1	3	Echolocation call detected. Bat not seen.
21:02-21:09	Pass/ foraging	<i>P. pipistrellus</i>	1	1	One bat seen flying back and forth in front of the house.
21:02	Pass	<i>E. serotinus</i>	1	1	Echolocation call detected. Bat not seen.
21:04	Pass	<i>Myotis</i> sp.	1	4	Echolocation call detected. Bat not seen.
21:12-End	Foraging	<i>P. pipistrellus</i>	1	1	Infrequent foraging sounds recorded, likely to be in the rear garden.
21:16	Pass	<i>Rhinolophus hipposideros</i>	1	3	Echolocation call detected. Bat not seen.
21:16	Pass	<i>P. pipistrellus</i>	1	3	Echolocation call detected. Bat not seen.
21:18	Pass	<i>Myotis</i> sp.	1	3	Echolocation call detected. Bat not seen.
21:22	Foraging	<i>P. pipistrellus</i>	1	3	In rear garden and around the house.
21:29	Survey terminated.				

Table 4.3. Dusk Emergence Survey Results – 14<sup>th</sup> September 2023. Sunset 19:25

Activity		Details			
Time	Details	Species	No. of bats	Surveyor No.	Location/Behaviour
19:38	Pass	<i>N. noctula</i>	1	3	Echolocation call detected. Bat not seen.
19:42	Pass	<i>Pipistrellus</i> sp.	1	1	Echolocation call detected. Bat not seen.
19:42	Pass	<i>P. pipistrellus</i>	1	2	Echolocation call detected. Bat not seen.
<b>19:43</b>	<b>Emergence</b>	<b><i>Tyto alba</i></b>	<b>1</b>	<b>2</b>	<b>One barn owl flew out of the hole in the east elevation wall, then flew into a tree in the garden.</b>
19:47	Pass	<i>Pipistrellus</i> sp.	1	1	Echolocation call detected. Bat not seen.
19:47-20:10	Pass/ foraging	<i>P. pipistrellus</i>	1	2	Faint, continuous foraging sounds recorded nearby, likely in the rear garden.
19:48	Pass	<i>P. pipistrellus</i>	1	1	Echolocation call detected. Bat not seen.
19:49	Pass	<i>P. auritus</i>	1	3	Echolocation call detected. Bat not seen.
19:50	Pass	<i>P. pipistrellus</i>	1	3	Echolocation call detected. Bat not seen.
19:51	Commuting	<i>P. pipistrellus</i>	1	1	Flew from north to south, around the south-east corner of the house and then west.
19:51	Commuting/ foraging	<i>P. pipistrellus</i>	1	4	Flew west to north, past the south-west corner of the house.
19:52	Pass	<i>Myotis</i> sp.	1	2	Echolocation call detected. Bat not seen.
19:54	Pass	<i>E. serotinus</i>	1	3	Echolocation call detected. Bat not seen.
19:54	Foraging	<i>E. serotinus</i>	1	4	Flew east to west, back and forth over the garden to the south-west of the house.
19:56	Passes	<i>P. pipistrellus</i> & <i>P. auritus</i>	1 of each	1	Echolocation call detected. Bat not seen.
19:56	Foraging	<i>P. pipistrellus</i>	1	4	Flew west to north, past the south-west corner of the house.
19:57	Commuting	<i>P. pipistrellus</i>	1	1	Flew from north to south, around the south-east corner of the house and then west.
19:57-20:02	Commuting	<i>P. pipistrellus</i>	1	2	Flew from west to east, past the south elevation of the house.

19:58	Pass	<i>P. pipistrellus</i>	1	3	Echolocation call detected. Bat not seen.
19:58	Pass	<i>R. hipposideros</i>	1	4	Echolocation call detected. Bat not seen.
19:58-20:00	Foraging	<i>P. pipistrellus</i>	1	4	Flew repeated from east to west past the south-west corner of the building, circling in the south-west corner of the garden.
19:59	Commuting	<i>Pipistrellus</i> sp.	1	1	Flew from north to south, past the west elevation of the house.
19:59	Pass	<i>P. pipistrellus</i>	1	3	Echolocation call detected. Bat not seen.
20:00	Pass	<i>N. noctula</i>	1	3	Echolocation call detected. Bat not seen.
20:02	Commuting	<i>P. pipistrellus</i>	1	1	Flew around the north-east corner of the house, then east.
20:03	Commuting	<i>P. pipistrellus</i>	1	1	Flew north to south, past the east elevation of the house.
20:03	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
20:05	Foraging	<i>P. auritus</i>	1	4	Flew south to north, over the garden to the west of the house.
20:05	Foraging	<i>P. pipistrellus</i>	1	4	Foraging around the house.
20:07	Foraging	<i>P. pipistrellus</i>	1	4	Foraging around the house.
20:09	Passes	<i>P. auritus</i> & <i>Myotis</i> sp.	1 of each	1	Echolocation call detected. Bat not seen.
20:09	Foraging	<i>P. pipistrellus</i>	1	4	Foraging around the house.
20:10	Passes	<i>P. auritus</i> & <i>Myotis</i> sp.	1 of each	1	Echolocation call detected. Bat not seen.
20:10	Pass	<i>Barbastella barbastellus</i>	1	4	Echolocation call detected. Bat not seen.
20:10	Pass	<i>P. auritus</i>	1	4	Echolocation call detected. Bat not seen.
20:11	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
20:17-20:18	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
20:18	Pass	<i>N. noctula</i>	1	1	Echolocation call detected. Bat not seen.
20:18	Pass	<i>N. noctula</i>	1	4	Echolocation call detected. Bat not seen.
20:18	Pass	<i>P. auritus</i>	1	4	Echolocation call detected. Bat not seen.
20:20	Pass	<i>P. pipistrellus</i>	1	1	Echolocation call detected. Bat not seen.



20:20	Pass	<i>Myotis</i> sp.	1	2	Echolocation call detected. Bat not seen.
20:21	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
20:22	Pass	<i>P. pipistrellus</i>	1	2	Echolocation call detected. Bat not seen.
20:22	Pass/social	<i>Pipistrellus</i> sp.	1	4	Echolocation call detected. Bat not seen. Social calls detected.
20:23	Pass	<i>R. hipposideros</i>	1	2	Echolocation call detected. Bat not seen.
20:25	Pass/social	<i>Pipistrellus</i> sp.	1	4	Echolocation call detected. Bat not seen. Social calls detected.
20:25-20:27	Passes/foraging	<i>P. pipistrellus</i>	1	2	Faint, occasional foraging sounds recorded nearby, likely in the rear garden.
20:26	Pass	<i>P. pipistrellus</i>	1	1	Echolocation call detected. Bat not seen.
20:27	Foraging/social	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen. Social calls detected.
20:27-20:28	Pass/social	<i>Pipistrellus</i> sp.	1	4	Echolocation call detected. Bat not seen. Social calls detected.
20:29-20:35	Foraging/social	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen. Social calls detected.
20:30	Pass	<i>P. pipistrellus</i>	1	1	Echolocation call detected. Bat not seen.
20:30	Pass	<i>P. auritus</i>	1	2	Echolocation call detected. Bat not seen.
20:31	Pass	<i>P. auritus</i>	1	2	Echolocation call detected. Bat not seen.
20:32-20:34	Foraging/social	<i>P. pipistrellus</i>	1	2	Continuous foraging sounds and social calls recorded nearby, likely in the rear garden.
20:35	Foraging/social	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen. Social calls detected.
20:36	Pass/social	<i>Pipistrellus</i> sp.	1	4	Echolocation call detected. Bat not seen. Social calls detected.
20:39	Pass	<i>P. pipistrellus</i>	1	4	Echolocation call detected. Bat not seen.
20:40	Pass/social	<i>Pipistrellus</i> sp.	1	4	Echolocation call detected. Bat not seen. Social calls detected.
20:40-End	Passes/foraging	<i>P. pipistrellus</i>	1	2	Faint, occasional foraging sounds recorded nearby, likely in the rear garden.
20:55	Survey terminated.				

## 4 Discussion and Recommendations

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### 4.1 Discussion

#### *Desk Study*

4.1.1 Two non-statutory nature conservation sites were identified within 1km of the Site, the closest being approximately 280m distant from the Site. Owing to the scale of proposed works (limited to renovations of the existing house) and the distance from these sites, it is considered highly unlikely that proposed works would directly impact these nature conservation sites.

4.1.2 The data search for bats within 2km of the Site returned five bat roost records, all of which were located more than 1.5km from the Site.

#### *Roosting Bats*

4.1.3 Bats and their resting places are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. The results of the dedicated PRA and emergence surveys confirmed the house supports a summer non-maternity day roost for one common pipistrelle bat, and a summer non-maternity day roost for a *Myotis* species.

#### *Commuting/Foraging Bats*

4.1.4 During all emergence surveys, frequent foraging activity was recorded around the house and in the garden to the north and west of the house. Various species were recorded commuting over the Site and foraging nearby including common pipistrelle, brown long-eared bat, serotine, noctule and lesser horseshoe. It should be noted that emergence surveys were also undertaken on the garage and tower buildings on site (see Figure 1 for building locations), and these buildings were found to support several roosts including small numbers of lesser horseshoe, brown long-eared bat, common pipistrelle and soprano pipistrelle bats. Owing to the close proximity of several bat roosts, including lesser horseshoe (a light sensitive species), external lighting should be avoided. Should external lighting be proposed to the main house, it will be necessary to avoid illuminating the garage and/or tower building, and/or the surrounding garden.

### *Nesting Birds*

- 4.1.5 Nesting material was observed in the hole on the west elevation wall, near the location of the proposed extension on the north-west corner of the house. No nesting activity was recorded during any of the surveys on site. However, it is considered possible that nesting birds may be present during the main nesting season (generally considered to be March to August inclusive).
- 4.1.6 A barn owl was recorded during the second and third dusk emergence surveys, flying out of a hole in the external gable wall at the east elevation of the house. It is unclear whether the hole in the wall leads to a cavity large enough to support a nest, though it is considered unlikely as there is no internal loft space directly behind the hole in the east elevation gable wall.

## **4.2 Recommendations**

### *Mitigation*

- 4.2.1 Two bats were recorded emerging from the south elevation roof of the house. The only proposed works close to the location of the bat emergences, are works to the entrance door on the ground floor of the south elevation of the house (see Appendix 4). It is our understanding that no works will directly impact the roof tiles on the south elevation of the roof, and as such, there is no direct risk of harm to roosting bats in this location. As such, a Natural England bat mitigation licence is not required under the current proposed plans. **Should works be altered to impact the south elevation roof, a bat mitigation licence will be required for works to proceed.**
- 4.2.2 As a building with bat roosting potential can be used by bats at any time of year, it is advised that construction works to the building are undertaken with a precautionary approach. Any roof tiles to be removed in the areas of proposed works (i.e. the north-east and north-west extensions) should be removed by hand and are to be lifted up instead of sliding sideways, to avoid risking injury to bats that may be present underneath.
- 4.2.3 In the unlikely event that roosting bats are found during proposed works to the house, all works should cease immediately, and the advice of a bat licenced ecologist should be sought.

4.2.4 It is our understanding that proposed works do not include external lighting. It is recommended that any proposed lighting (if required) should be designed sensitively to minimise light spill and potential impacts on bats in accordance with best practice. The following recommendations are based on Bats and Artificial Lighting at Night Lighting in the UK (Institution of Lighting Professionals, 2023):

- No lighting will be placed on to or directed onto boundary habitats;
- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used;
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component;
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats;
- Internal luminaires can be recessed (as opposed to using a pendant fitting) where installed in proximity to windows to reduce glare and light spill.
- Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges.
- Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards.
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered.
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate.

- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.

### **4.3 Nesting Birds**

- 4.3.1 All birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended). It is therefore generally unlawful to intentionally kill or injure a bird, damage, or destroy an occupied nest or take or destroy eggs other than in exceptional prescribed circumstances. Additional protection is given to species listed on Schedule 1 of the Act (such as barn owl) insofar as it is unlawful to disturb them during nest building, at the nest or when caring for dependent young. Therefore, development operations should take care to avoid the risk of harm to birds and their nests. Barn owls can nest at any time of year, but it is recommended that if works are undertaken between October and February the chance of disturbance to breeding birds is greatly reduced. If works are undertaken at any time during the main nesting bird season (i.e. March to September), further barn owl surveys would be required to establish whether the owls are breeding and to inform appropriate mitigation as although the proposals do not directly affect the cavity, birds could be disturbed by the works.
- 4.3.2 The cavity/hole on the east elevation wall should remain open and access should not be blocked by any scaffolding. This area of the building must not be illuminated.

#### 4.4 Hedgehogs

- 4.4.1 Hedgehogs were recorded foraging around the Site during the dusk emergence surveys. Hedgehogs are listed as a Species of Principal Importance under the NERC Act 2006. Due to the possibility that hedgehogs (or other small mammals) could commute across the Site, in the unlikely event that any trenches or pits need to be excavated, these should be fitted with a ramp to enable any animals to escape.

#### 4.5 Enhancements

- 4.5.1 In line with the requirements of planning policy for developments to provide biodiversity net gain where possible, it is recommended that proposed works include enhancements for wildlife such as installation of additional bat and bird boxes.
- 4.5.2 Roosting opportunities for local bats can be incorporated into renovated buildings through the installation of bat boxes under the eaves either on the exterior walls (e.g. Schwegler 1WQ/1FF bat box) or fitted into the walls (e.g. Habibat 001 bat box) and the creation of raised ridge tiles. Bat boxes (e.g. Schwegler 2FN) can also be installed on medium - large trees. Bat boxes should be installed at minimum heights of 3.5-4m facing away from external illumination and should ideally face in a south-east or south-west orientation.
- 4.5.3 To further improve the foraging resource on Site, planting for bats in garden areas is recommended, where possible. This is intended to increase the abundance of insect prey for bats by planting native and/or single flowering varieties of plants and ideally also night-scented species shown in Appendix 3. Any planting of shrubs and trees around the edge of the site will further enhance the Site's value for commuting and foraging bats.
- 4.5.4 Nesting opportunities for house sparrows *Passer domesticus* and swifts *Apus apus* can be provided in the form of swift bricks (that are fitted into the walls and are readily used by these and other species of small bird) or where it is not possible to fit into the wall, swift boxes can be fitted externally. Swift boxes should ideally be installed at a height of 4-5m to ensure usage. House martins *Delichon urbicum* can be provided with nesting provision in the form of house martin cups, which can be fitted on the exterior walls of a building. All these species have undergone a decline in recent years. These

nesting features should be installed under the eaves of a building at minimum heights of 2-2.5m and face in a north to south-east direction. In addition, hole-fronted and open-fronted bird boxes can be installed on medium-large trees at similar heights and directions to attract other species of birds. Examples are provided in the Ecological Enhancements Appendix below.

#### **4.6 Timeframe that Survey Remains Valid**

- 4.6.1 Please note that unless otherwise stated, the contents of this report will remain valid for a maximum period of 12 months from date of issue (CIEEM 2019). Beyond this updated survey work may be required to establish any changes in baseline conditions.

## 5 References

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## Appendix 1 – Policy & Legal Considerations

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Statutory nature conservation sites and protected species are a ‘material consideration’ in the UK planning process (DCLG, March 2012). Where planning permission is not required, for example on proposals for external repair to structures, consideration of protected species remains necessary given their protection under UK law.

The **Conservation of Habitats and Species Regulations 2017** transpose the requirements of European Directives such as the Habitats Directive and Birds Directive<sup>1</sup> into UK law, enabling the designation of protected sites and species at a European level.

The **Wildlife and Countryside Act 1981** (as amended) forms the key piece of UK legislation relating to the protection of habitats and species. The **Countryside and Rights of Way Act 2000** provides additional support to the 1981 Act, for example, increasing the protection of certain reptile species. Specific protection for badger is provided by the **Protection of Badger Act 1992**. The **Wild Mammals (Protection) Act 1996** sets out the welfare framework with respect to wild mammals prohibiting a range of activities which may cause unnecessary suffering.

The Government has a duty to ensure that parties take reasonable practicable steps to further the conservation of habitats and species of Principal Importance for Conservation in England listed under Section 41 of the **Natural Environment and Rural Communities Bill 2006**<sup>2</sup>. In addition, the 2006 Act places a Biodiversity Duty on public authorities who ‘must, in exercising [their] functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity’ (Section 40 (1)). Criteria for selection of priority habitats and species include, for example, international threat (such that species may be protected in their strong holds) and marked national decline.

The **National Planning Policy Framework 2021**<sup>3</sup> states that the planning system should minimise impacts on biodiversity, providing net gains in biodiversity, wherever possible. Section 15 states that when determining planning applications, local planning authorities should apply the following principles:

- a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons<sup>4</sup> and a suitable compensation strategy exists; and
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

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<sup>1</sup>Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, and Council Directive 79/409/EEC on the Conservation of Wild Birds, respectively.



<sup>2</sup>The **NERC Act** refers to “*species of principle importance for the conservation of biodiversity*”, which translates to BAP habitats and species occurring in England.

<sup>3</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1005759/NPPF\\_July\\_2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf)

<sup>4</sup> For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.

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## Appendix 2 – Photographs



No	Photo	Description
1		<p>A maximum of one <i>Myotis</i> species emerged from under a roof tile on the east facing part of the roof, above the entrance door on the south elevation of the house (indicated by blue arrow). A maximum of one common pipistrelle emerged under a roof tile near the roof valley (indicated by red arrow).</p>
2		<p>A barn owl flew out of the hole in the east elevation wall (circled in red) during the second and third emergence surveys of the house.</p> <p>Proposed works include a single storey extension to the flat roof area of the house pictured across.</p>

No	Photo	Description
3	 A photograph of a two-story stone house with a gabled roof. A red circle is drawn around a small hole in the upper part of the west gable end wall. The house has a chimney on the left side and a conservatory on the ground floor. The house is set on a green lawn under a clear blue sky.	<p>Possible nesting material (twigs) was observed in the hole in the west gable end wall (circled in red) but no nesting bird activity was recorded during any site visits/surveys.</p> <p>Proposed works include demolition of the conservatory pictured across, and construction of a replacement two-storey extension.</p>
4	 A close-up photograph of the south elevation entrance to the house. The entrance features a large, arched glass door with a dark frame. Above the door is a window with three panes. The stone wall is made of light-colored, rough-hewn stone. The sky is clear and blue.	<p>South elevation entrance to house. Proposed works include renovation of the existing door.</p>

No	Photo	Description
5		Second floor of main house.
6		Access door to one of several loft spaces on the second floor of the house.



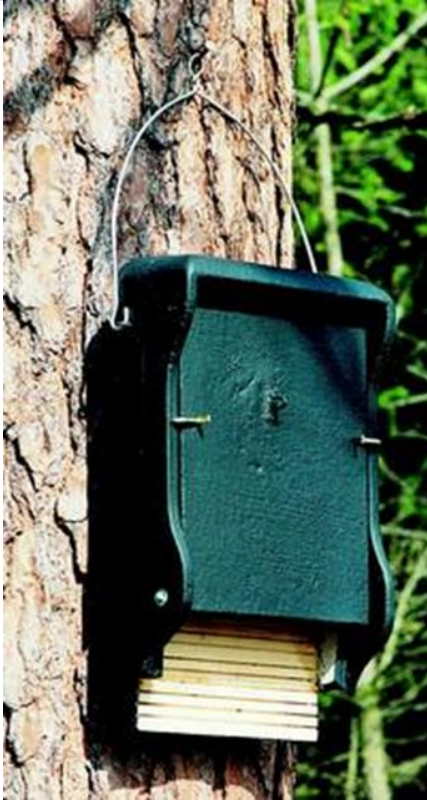
No	Photo	Description
7	 A photograph showing a small, cluttered internal loft space. The floor is covered with yellow insulation. Wooden joists and rafters are visible, along with some debris and a dark opening in the ceiling.	View of small internal loft space on the second floor (along the south elevation of the house).
8	 A photograph showing a loft space with a brick wall on the left. A large black plastic bag is hanging from a wooden beam. The floor is covered with yellow insulation. A white pipe is visible on the floor.	View of loft space above the north elevation of the house.

No	Photo	Description
9	 A photograph showing the interior of a loft space. The view is looking up at a wooden beam structure. The floor is covered with yellow insulation. A brick wall is visible in the background.	View of loft space above the south elevation of the house (above the entrance).
10	 A photograph showing a view of a rear garden from a driveway. The driveway is paved and leads to a garage. There is a large green lawn with several trees scattered around. A house is visible in the background.	View of rear garden (from driveway), with amenity lawn and scattered trees.

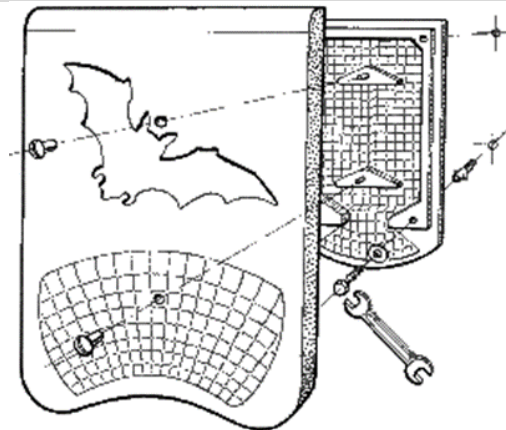
## Appendix 3 – Ecological Enhancements

### BAT ROOSTING FEATURES

Schwegler 1FF bat box

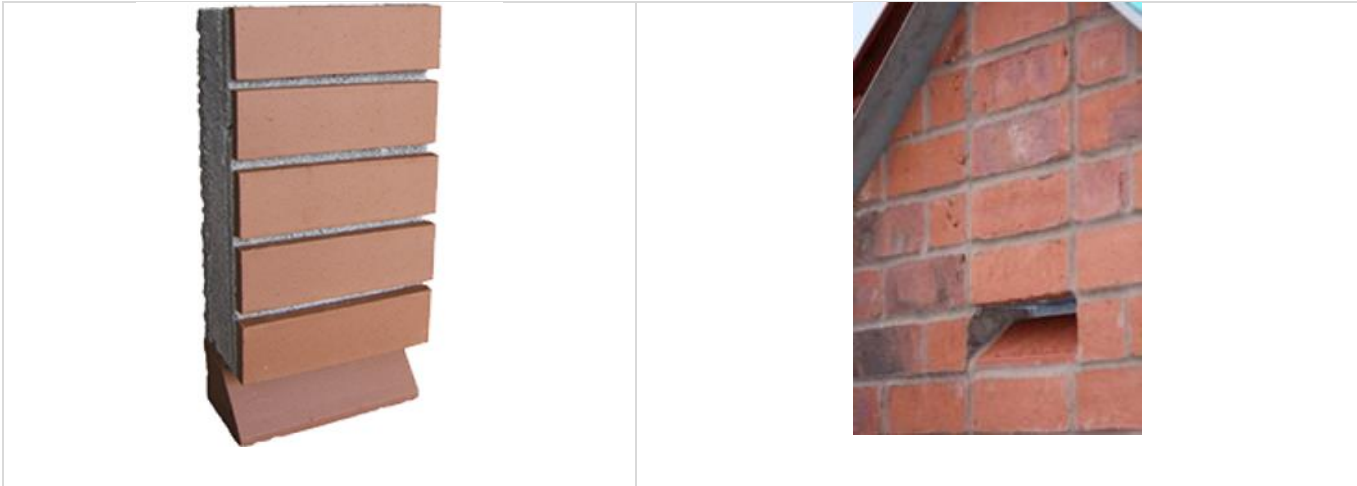


Schwegler 1WQ Summer & Winter bat



Habibat 001 Bat Box – integral bat box, fitted into wall





Schwegler 2FN bat box for installation in trees

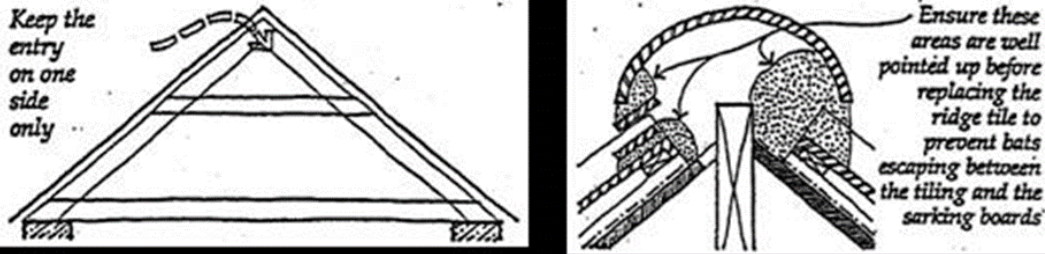


Bat access tiles





**Diagrammatic view of ridge tile and cross section through ridge tile** showing access point (taken from Scottish Natural Heritage 1996). Bitumastic lining must be used near/on the ridge beam to ensure bats can only have contact with this type of membrane to avoid any possible entanglement with a breathable membrane.



**BIRD BOXES**

**Various designs of swift boxes**



**Swift Brick**



**Swallow Cup**



**Hole-fronted bird box (for trees)**



**Open-fronted bird box (for trees)**



**House Martin Terrace Box**







Many wildlife species benefit greatly from considerate planting choices that still meet our practical and aesthetic needs. Plants and trees provide food for wildlife as well as places to nest and rest. Vegetation providing a variety of these functions creates an environment more beneficial for wildlife.

### Non native species

Native species provide the best habitat for UK wildlife but there are also many non-native species, which are single flowering and/or provide fruits/nuts/seeds that can be used as food sources for insects, birds and small mammals. When using these non-native species in planting schemes, care should be taken to avoid invasive species such as Cotoneaster and Rhododendron. This is especially important when sites are adjacent to open countryside particularly nature reserves.



Butterfly bush

### Uses of Wildlife Planting

Wildlife value can be easily incorporated into visually pleasing and useful green areas and amenity spaces, such as borders, grass verges and tree screens.

**Attractive Borders:** Well selected decorative borders can be valuable for many insects and birds. Native plants can be mixed with single flowering ornamental species to add aesthetic interest and increase the flowering period of a planting scheme.

**Shrubs and hedges:** Native spiky species like blackthorn and hawthorn are effective barriers when used in hedges. They also provide an attractive feature at all times of year especially when in blossom and fruit. Bushy areas of foliage provide useful nesting and feeding areas for birds and small mammals, as well as foraging/commuting corridors for bats.

**Grasses mixes and verges:** Leaving uncut areas of suitable grasses provides great wildlife value and is economical to manage. Diverse grassy areas and verges also create an attractive human environment with different flowers and colours. There are a range of native grass and flower mixes for various soil types available on the market.



Wild flower grass mix





## Selecting Suitable Species

There are wildlife friendly species suitable for all situations, from fields, verges, shady corners or small gardens. Listed below are native wildlife friendly plant species organised by type and suitability for different locations.

### Large Trees

Ash *Fraxinus excelsior*  
 Beech *Fagus sylvatica*  
 English Elm *Ulmus procera*  
 Oak *Quercus robur* or *Q. petraea*  
 Small-leaved lime *Tilia cordata*  
 White willow *Salix alba*  
 Wild cherry *Prunus avium*



White willow

### Medium/small trees

Alder *Alnus glutinosa*  
 Aspen *Populus tremula*  
 Crab apple *Malus sylvestris*  
 Field maple *Acer campestre*  
 Holly *Ilex aquifolium*  
 Rowan *Sorbus aucuparia*  
 Silver birch *Betula pendula*  
 Yew *Taxus baccata*



Tussocky grassland

### Native shrubs

Blackthorn *Prunus spinosa*  
 Dogwood *Cornus sanguinea*  
 Elder *Sambucus nigra*  
 Guelder rose *Viburnum opulus*  
 Hawthorn *Crataegus monogyna*  
 Hazel *Corylus avellana*



Blackthorn

### Plants for shady areas

Archangel *Lamium galeobdolon*  
 Betony *Stachys officinalis*  
 Bluebell *Hyacinthoides non-scriptus*  
 Bugle *Ajuga reptans*  
 Foxglove *Digitalis purpurea*  
 Ground ivy *Glechoma hederacea*  
 Lily of the valley *Convallaria majalis*  
 Lords-and ladies/cuckoopint *Arum maculatum*  
 Nettle-leaved bellflower *Campanula trachelium*  
 Primrose *Primula vulgaris*  
 Sweet violet *Viola odorata*  
 Wild daffodil *Narcissus pseudonarcissus*

### Plants for marshy areas & pond edges

Bugle *Ajuga reptans*  
 Hemp agrimony *Eupatorium cannabinum*  
 Marsh marigold *Caltha palustris*  
 Marsh woundwort *Stachys palustris*  
 Meadowsweet *Filipendula ulmaria*  
 Purple loosestrife *Lythrum salicaria*  
 Ragged robin *Lychnis flos-cuculi*  
 Water avens *Geum rivale*  
 Water forget-me-not *Myosotis scorpioides*  
 Water mint *Mentha aquatica*  
 Water violet *Hottonia palustris*  
 Yellow flag *Iris pseudacorus*



**Beneficial cultivated plants**  
(generally non-natives)

Grecian windflower *Anemone blanda*  
Angelica *Angelica archangelica*  
Aubretia *Aubretia deltoidea*  
California poppy *Eschscholtzia californica*  
Candytuft *Iberis sempervirens*  
Christmas rose *Helleborus niger*  
Cosmos *Cosmos bipinnatus*  
Evening primrose *Oenothera biennis*  
Fleabane *Erigeron spp.*  
Forget-me-not *Myosotis spp.*  
French marigold *Tagetes patula*  
Globe thistle *Echinops ritro*  
Grape hyacinth *Muscari botryodes*  
Hollyhock *Althaea rosea*  
Honesty *Lunaria rediviva*  
Ice plant *Sedum spectabile*  
Lenten rose *Helleborus orientalis*  
Tree mallow *Lavatera spp.*  
Michaelmas daisy *Aster nova-belgii*  
Mint *Mentha x rotundifolia*  
Perennial cornflower *Centaurea montana*  
Perennial sunflower *Helianthus decapetalus*  
Phlox *Phlox paniculata*  
Poached-egg plant *Limnanthes douglasii*  
Red valerian *Centranthus ruber*  
Snapdragon *Antirrhinum majus*  
Spring crocus *Crocus chrysanthus* and hybrids  
Sweet alyssum *Lobularia maritima*  
Sweet bergamot *Monarda didyma*  
Sweet William *Dianthus barbatus*  
Tobacco plant *Nicotiana affinis*  
Wallflower *Cheiranthus cheiri*  
Alpine rock-cress *Arabis alpina*  
Winter aconite *Eranthis hyemalis*  
Yellow alyssum *Alyssum saxatile*

**Native wildflowers for borders**

Agrimony *Agrimonia eupatoria*  
Betony *Stachys officinalis*  
Bluebell *Hyacinthoides non-scriptus*  
Chicory *Cichorium intybus*  
Chives *Allium schoenoprasum*  
Common poppy *Papaver rhoeas*  
Corncockle *Agrostemma githago*  
Cornflower *Centaurea cyanus*  
Corn marigold *Chrysanthemum segetum*  
Cowslip *Primula veris*  
Cuckooflower *Cardamine pratensis*  
Dame's-violet *Hesperis matronalis*  
Devil's-bit scabious *Succisa pratensis*  
Field scabious *Knautia arvensis*  
Foxglove *Digitalis purpurea*  
Goldenrod *Solidago virgaurea*  
Great mullein *Verbascum thapsus*  
Greater knapweed *Centaurea scabiosa*  
Harebell *Campanula rotundifolia*  
Herb-robert *Geranium robertianum*  
Lady's bedstraw *Galium verum*  
Marjoram *Origanum vulgare*  
Meadow cranesbill *Geranium pratense*  
Common mallow *Malva sylvestris*  
Oxeye daisy *Leucanthemum vulgare*  
Primrose *Primula vulgaris*  
Red campion *Silene dioica*  
Snowdrop *Galanthus nivalis*  
Spiked speedwell *Veronica spicata*  
Tansy *Tanacetum vulgare*  
Teasel *Dipsacus fullonum*  
Toadflax *Linaria vulgaris*  
White campion *Silene alba*  
Wild thyme *Thymus drucei*  
Yellow loosestrife *Lysimachia vulgaris*



Marjoram



Cornflower



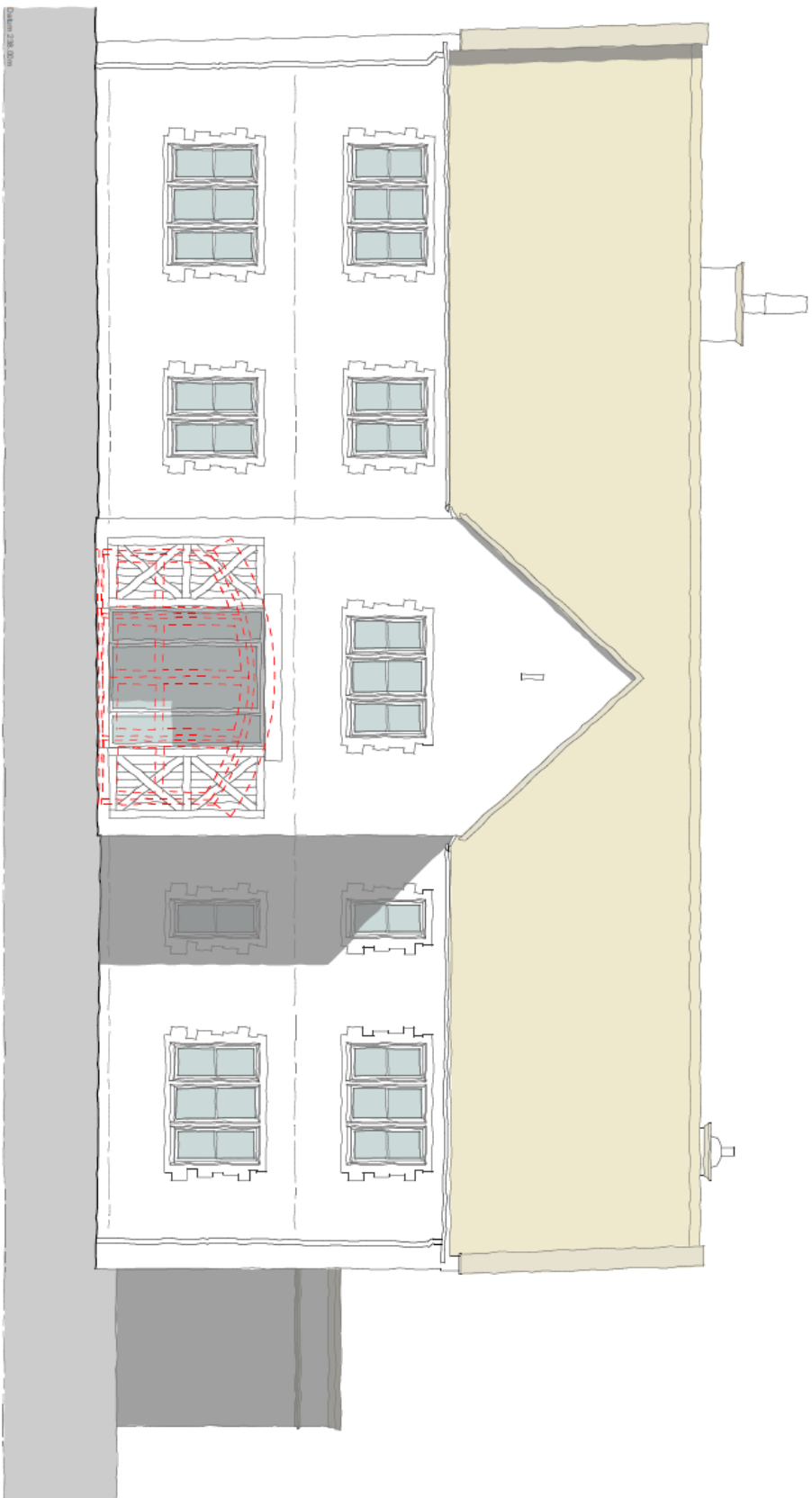
Perennial sunflower

**Appendix 4 – Proposed Plans (Provided by Client)**



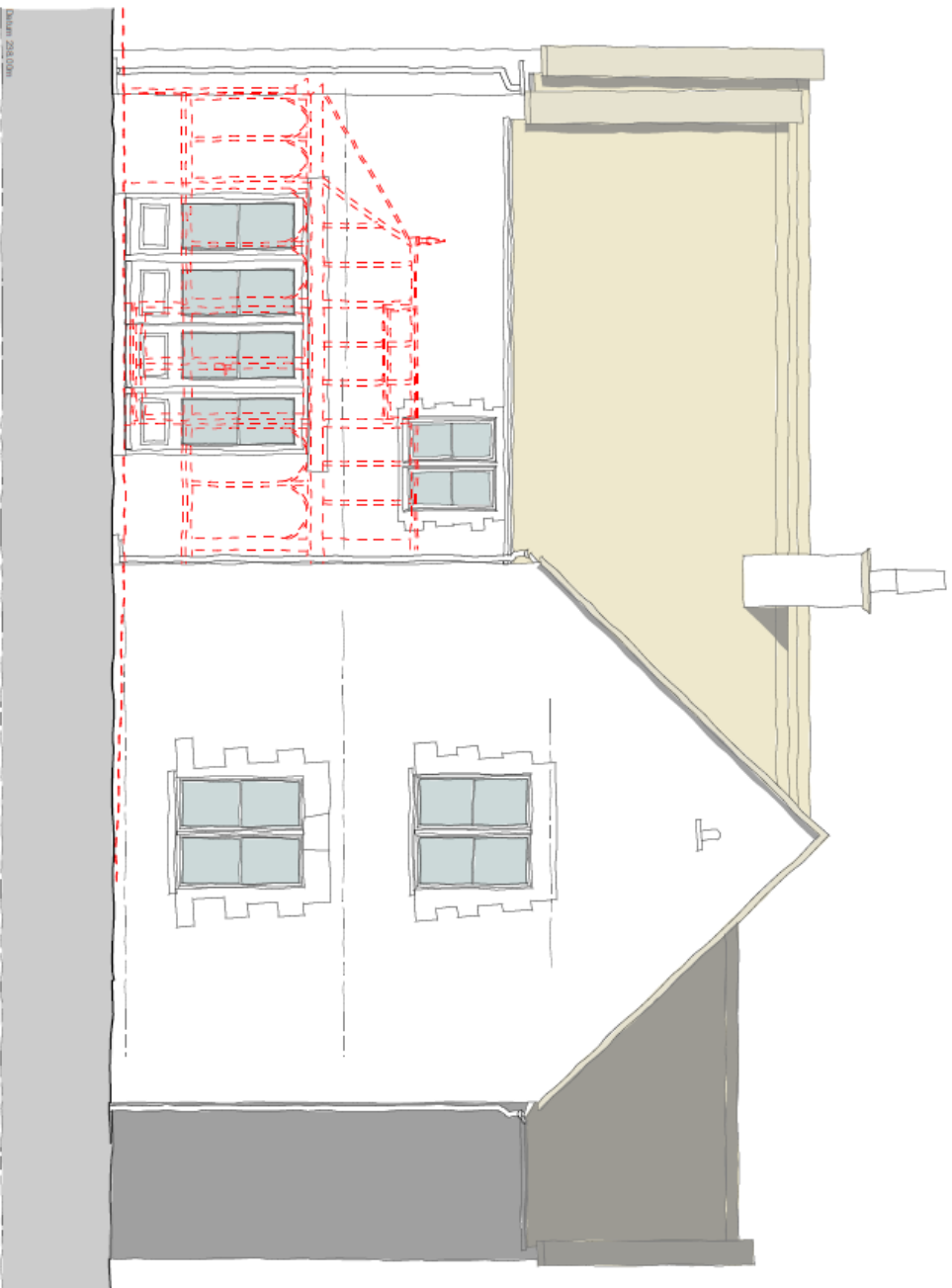
NORTH ELEVATION AS PROPOSED





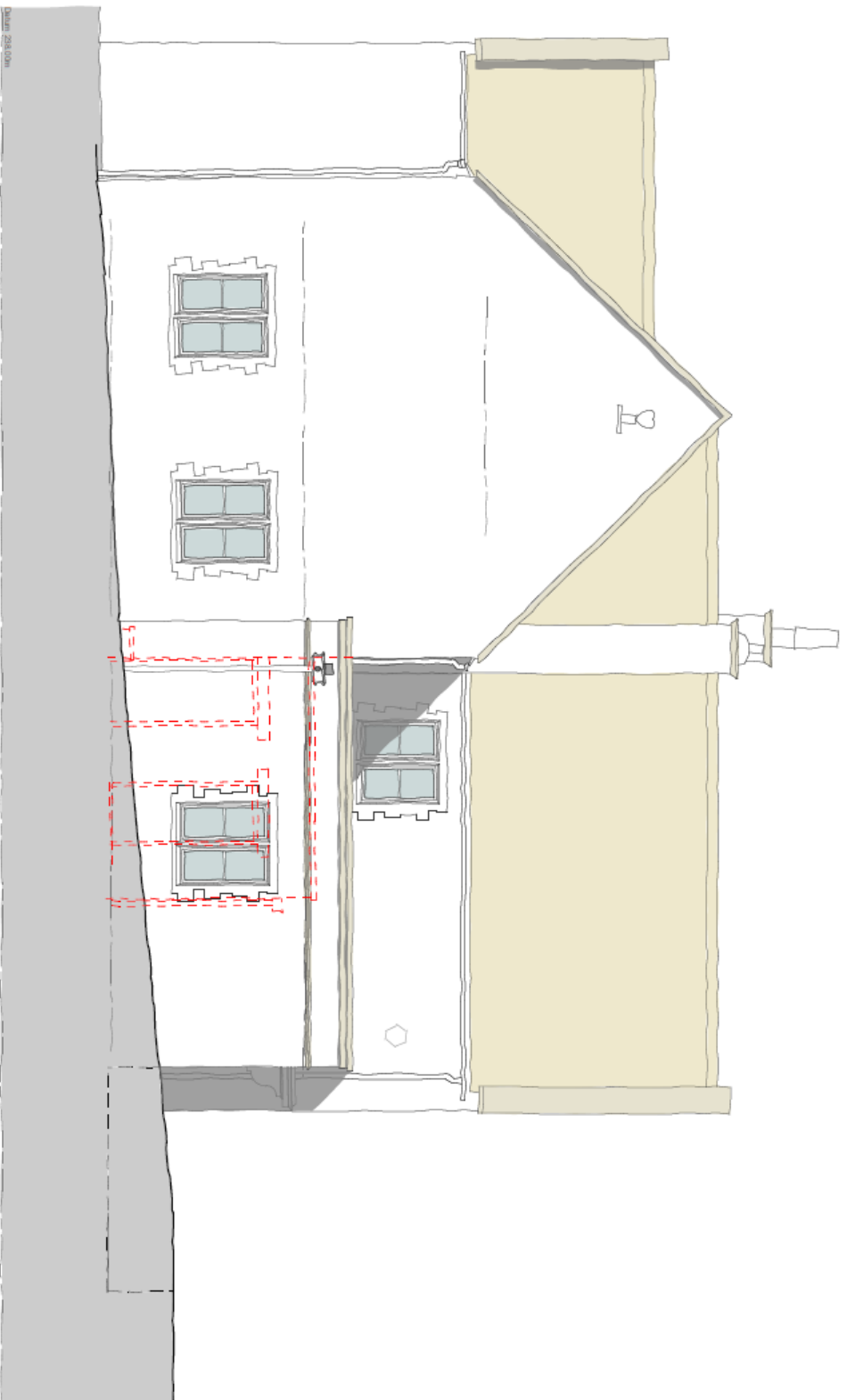
SOUTH ELEVATION AS PROPOSED

Overall 28.0m



WEST ELEVATION AS PROPOSED





EAST ELEVATION AS PROPOSED

## Appendix 5 – Ecological Experience

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**Julia Morrison:** Ecologist, BSc (Hons) MSc

Julia has worked with Wild Service for several years and has recently gained her MSc in Applied Ecology from the University of Gloucestershire. Julia's dissertation project involved large-scale data analysis of biometric bird ringing data to assess biometric changes in UK wintering waterbirds. Julia has a keen interest in bat ecology and in addition to undertaking professional bat surveys and assessments, she has also studied bats in Ghana, West Africa. She is experienced in a range of ecological surveys including Phase 1 habitat assessments, protected species surveys, reptile surveys and translocations, great crested newt and dormouse surveys. Julia's additional skills include advanced data analysis and GIS mapping using various software packages including QGIS and ArcGIS. In addition to project delivery, she also assists with the management of Wild Service projects. Julia has also spent time volunteering on conservation projects with the Gloucestershire Bat Group and the Gloucestershire Wildlife Trust. Julia is a Qualifying member of CIEEM and holds a CSCS card. She is currently working towards her Natural England bat and great crested newt licences.

**Elizabeth Pimley:** Head of Ecology & Principal Ecologist, BSc (Hons) PhD, CEnv MCIEEM

Elizabeth has worked in both the academic and consultancy ecology sectors since 2000 with a focus on mammalian ecology, particularly badgers, dormice, bats, water voles and otters. Elizabeth manages the Consultancy as well as being involved in project delivery. She has managed ecological projects, ranging in size and type, both in the UK and abroad. She regularly advises clients on the planning process in relation to Ecology. Elizabeth has expertise in a wide variety of ecological survey techniques including Preliminary Ecological Appraisals/Phase 1 habitat assessments and a variety of protected species surveys (e.g. the aforementioned mammal species as well as reptiles and great crested newts).

Elizabeth also devises ecological mitigation schemes, both as part of protected species mitigation licences (e.g. bats, great crested newts, badgers, dormice, water voles, otters) and for projects not requiring licensing (e.g. reptiles). She has produced a wide variety of preliminary

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ecological appraisals, BREEAM/CSH Ecology Assessments, mitigation licences for protected species (including Bat Mitigation Class Licences), Ecological Impact Assessments (EclA), Construction Ecological Management plans, Habitat Regulations Assessments, Biodiversity Net Gain assessments, Biodiversity Enhancement Schemes, Ecological Design Strategies as well as writing for scientific journals, books and magazines. As a Building with Nature Assessor, Elizabeth also has expertise in providing green infrastructure advice to projects.

Elizabeth offers a scientific approach to projects with additional skills in radiotracking, bat call analysis, statistical analysis, home range and compositional habitat analysis and Geographical Information Systems (GIS) mapping. Elizabeth holds Natural England and Natural Resources Wales licences for bats and dormice as well as Natural England licences for great crested newts and water voles. She is also a Registered Consultant of the Bat Low Impact Class (BLIC) Licence and holds a CSCS card.

**Becca Brown:** Senior Ecologist, BSc (Hons) ACIEEM

Becca has been working in ecological consultancy since 2016 and has been involved in a wide range of surveys including Extended Phase 1 Habitat surveys and a variety of protected species surveys including bats, badger *Meles meles*, barn owl *Tyto alba*, great crested newt *Triturus cristatus*, hazel dormouse *Muscardinus avellanarius*, reptiles, otter *Lutra lutra* and water vole *Arvicola amphibius*. She has experience in writing technical reports, including Preliminary Ecological Appraisals (PEAs), Ecological Impact Assessments (EclAs) and preparation of European Protected Species (EPS) licence applications. She also has experience undertaking Habitat Conditioned Assessments and Biodiversity Net Gain (BNG) calculations as well as being experienced and certified to carry out River Condition Assessments. Becca is experienced as an Ecological Clerk of Works (ECoW) for a variety of projects. Becca Holds Natural England Class Licences for bats (level 1), barn owl and great crested newt. She also holds a valid CSCS card, is a mental health first aider and is an Associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM).

Becca has a degree in Conservation Biology from the University of the West of England, Bristol and went on to complete a Certificate in Ecological Consultancy. Becca has been involved in

numerous conservation volunteer opportunities over the years, including undertaking dormouse surveys for the Somerset mammal group, undertaking radio tracking for Bechstein's bats and bat box checks for the Somerset bat group, and undertaking smooth snake surveys with the Amphibian and Reptile Conservation Trust. Becca is currently working towards her Natural England Level 2 bat licence and dormouse licence.

**Gemma Waters:** Associate Ecologist BSc (Hons) MCIEEM

Gemma has 15 years' experience in ecological consultancy with a focus on bat and bird ecology and surveying. She is also an experienced environmental educator. She has worked on a wide range of consultancy projects from residential developments, renewable energy projects and cultural heritage work. Gemma has undertaken many internal inspections of different man-made structures, trees, and other natural features to assess their potential to support roosting bats. She is also very experienced at planning and undertaking emergence and dawn re-entry surveys for bats alongside activity transects to determine bat use over the wider landscape.

She has also been a bat warden for Natural England since 2006, providing surveys and advice for householders with bats. Gemma is a Natural England licence holder for bats (Licence number: 2015- 1560-CLS-CLS, WML CL18: Bat Survey Level 2) and is also a volunteer bat roost visitor (2015-10271-CLS-CLS). Gemma is experienced in providing EPS mitigation on a variety of projects, including cultural heritage projects for the National Trust and the Wye Valley AONB and a wide range of development projects.

Gemma has undertaken voluntary research with Gloucestershire Bat Group (GBG) and Dr Roger Ransome, assisting in research of greater horseshoe, Bechstein's and barbastelle bats. With GBG, Gemma has also led bat walks and talks for the public. Gemma has over a decade of teaching experience; from primary students, up to University level.



**ECOLOGICAL SERVICES**

**MITIGATION**

**CONSERVATION**

- We provide ecological surveys and assessments, mitigation, advice and guidance regarding wildlife, plants and habitats for both development and conservation projects throughout the UK.
- Wild Service is the Ecological Consultancy for Gloucestershire Wildlife Trust. As such, the company reinvests its profits into local conservation work.
- We are also part of a wider network of Wildlife Trust Consultancies enabling us to offer national delivery with local expertise.

• We offer the following types of service to clients:

**Ecological Surveys**  
**Protected Species Licences**  
**Ecological Management Plans**  
**Biodiversity Net Gain**  
**Ecological Impact Assessments (EcIA)**  
**BREEAM Assessments**  
**Mitigation, Enhancement & Rewilding**  
**Green Infrastructure Planning (Building with Nature)**  
**Arboricultural Surveys**  
**Landscape Consultancy Services**

**Contact us at**  
**Wild Service,**  
**Conservation Centre**  
**Robinswood Hill Country Park**  
**Reservoir Road, Gloucester, GL4 6SX**  
**TEL: 01452 383 333; Email: [info@wildservice.net](mailto:info@wildservice.net)**  
**Website: <https://wildservice.net/>**

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