EVOLUTION ECOLOGY LTD

"Providing Common Sense Solutions for Sustainable Development"

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Red House Farm

Bat and Bird Presence/Absence Survey Report

July to August 2020



Bat and Bird Presence/Absence Survey

At

Red House Farm,
Rue Hill, Cauldon Low,
Staffordshire
ST10 3HD

For

Mr. Stephen Dewhirst - Estate Manager

Bamford Property Ltd
Wootton Estate
Cote Farm, Farley
Oakamoor, Staffordshire
ST10 3BQ

0. Executive Summary

0.1 Report rationale

This report has been prepared at the request of Mr. Stephen Dewhirst (Estates Manager, Wootton Estate, Bamford Property Limited). This is in relation to the identification and location of protected bat and bird species at Red House Farm, Rue Hill, Cauldon Low, Staffordshire, ST10 3HD (OS Grid Reference SK 08552 47754).

A roost/scoping (daytime survey) and dusk/dawn bat activity surveys were undertaken on the 31st July 2020 and 13th August 2020 by Evolution Ecology Ltd.

0.2 Background

Under the current proposals, the buildings are to be demolished.

Bat presence/absence

Bats – A common pipistrelle (*Pipistrellus pipistrellus)* bat roost was located within the rendered farmhouse. Three common pipistrelles were found to be roosting within a crack on the south-facing elevation. For more information and the location, please see ‘Figure 2’.

Birds – Five active swallow nests with young chicks were found within the adjoining barn to the east of the dwelling.

A further two active swallow nests were found within the outbuilding (stables).

0.4 Ecological Provisions

Please see ‘Section 5 – Ecological Provisions’ for an outline of the proposed ecological provisions for the works at the ‘Red House Farm, Cauldon Low.’

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1 INTRODUCTION

This report has been prepared at the request of Mr. Stephen Dewhirst (Estates Manager, JCB). This is in relation to the identification and location of protected bat and bird species at Red House Farm, Rue Hill, Cauldon Low, ST10 3HD (OS Grid Reference SK 08552 47754).

A roost/scoping (daytime survey) and dusk/dawn bat activity surveys were undertaken on the 31st July 2020 and 13th August 2020 by Evolution Ecology Ltd.

1.1 Site Description

The buildings of interest are situated on the outskirts of Cauldon Low, Staffordshire. The buildings are surrounded by agricultural land, and scattered trees, and within the wider landscape agricultural land is the dominant habitat, with some scattered trees and hedgerows, along with residential and commercial units and their associated gardens and yards.

Cauldon Low Quarry's can also be found within the surrounding landscape. Therefore, the site itself contains potential roosting, commuting, and foraging features to the local bat and bird populations.

Figure 1: An aerial map showing the location of the 'Red House Farm' (inside the red outline) and the outbuildings (within the blue outline) in relation to some of the local landscape. The aerial map within the yellow outline shows the site (red dot) and surrounding quarry's



1.2 **Proposed works**

Under the current proposals, the buildings are to be demolished.

Aims of the survey

The actions of the surveyors on the site and during the production of the report were conducted in accordance with Bat Conservation Trust (BCT) guidelines (3rd edition). The aim of the survey was to undertake an appraisal of the building/s and the surrounding area to establish the following:

1.2.1 Survey protocol considered any protected bat species onsite

Bats

- To establish the probability of bats and their roost sites being present at the proposed redevelopment site.
- To assess the roost status.
- To assess suitable food resources and habitat requirements.
- If a roost site is found, to provide an impact assessment.

1.3.2 Survey protocol also considered any protected bird species on-site:

Barn Owls

- To establish if barn owls were using the site.
- To locate nest sites, if present.
- To assess what types of activities were shown within the site of interest.
- To assess suitable food resources and habitat requirements.
- To provide an impact assessment, if barn owls are present.

Birds

- To establish if birds were using the site.
- To locate nest sites, if present.
- To assess what types of activities were shown within the site of interest.
- To assess suitable food resources and habitat requirements.
- To provide an impact assessment, if nests are found.

1.3.3 The information was subsequently used in conjunction with the knowledge of the proposed works at the site to determine:

- What impacts the works are likely to have on any protected species found at the site.
- The need for any Natural England development licence application to be made in respect of activities concerning protected species.
- Recommendations for any mitigation measures that would be required.

2 SURVEY METHODOLOGY

2.1 Summary of survey methods

The objective of this report is to provide an ecological evaluation of the site in relation to its suitability for bat and bird utilisation. The survey considered the potential for roosting bats and gathered any anecdotal evidence (i.e., bats, bat droppings, feeding remains, urine stains and grease marks) that may support their presence within the building unit(s).

2.1.1 Walkover survey

A walkover survey of the site and a visual inspection of the building/s and any trees were undertaken, to determine the availability of the required resources for the protected species in the immediate area. This would allow us to determine:

- Presence or absence of bats on-site (i.e., roosting).
- Evidence and/or potential of bat roosts on-site (i.e., summer roosts).
- Whether additional surveys are required.

2.1.2 External Inspection of the Building/s Elevations

The building/s on-site were inspected both externally and internally for signs of bat activity. Notes were made on the following in accordance with the guidelines published by the BCT for the scoping and surveying of building/s and built structures:

The objective of this survey was to locate suitable ingress, and egress points that protected species (bats) could use to fly into the building/s and also to identify any areas within the building/s in which these species may be able to roost and/or nest. The survey method used to inspect the external walls and roof of the buildings was a visual assessment with the use of binoculars, torch, endoscope, and ladders in full daylight.

This allowed us to determine the following information:

- Type and age of building/s.
- Type of construction.
- Presence of potential roost features (e.g., missing roof tiles, raised tiles, roof voids).
- Presence of suitable entry and exit points (e.g., broken windows, missing windows and doors/ridges and the apex of the buildings).
- Amount and location of evidence of bats such as the presence of live or dead bats, droppings, grease marks, urine stains and/or characteristic smell of bats.

2.1.3 Internal Inspection of the Building/s Elevations and Rooms

The object of this survey was to locate and focus on areas which provide appropriate environmental conditions for bats. To do this, we must:

- Look for warm dark areas, joints, crevices, beams and cavities for possible bat roost sites and nest sites.
- Locate roost sites.
- Listen for bats.
- Examine floors, walls and structural elements for droppings, corpses, skeletons and dead insects.

2.1.4 Building/s Rating

In the absence of any evidence, structures have been assigned a rating of suitability from negligible to high potential for supporting bats. The rating is based on the location of the structure in the surrounding landscape, the number, and type of features suitable for use by bats and the surveyor's experience. For example; a structure with a high level of regular disturbance with few opportunities for access by bats, that is in a highly urbanised area with few or no mature trees, parkland, woodland or wetland would generally equate to having negligible potential. Conversely, a pre 20th-century or early 20th-century building with many features suitable for use by bats close to good foraging habitat would have high potential.

2.1.5 Roost Categories

Any structures with evidence of bats will be further evaluated to assess which of the following roost categories may be present on the site (if any):

- **Maternity or Nursery Roost** – used by breeding bats, where pups are born and raised to independence (anecdotal evidence may support this prospect).
- **Hibernation Site** – where bats may be found during the winter (this is assessed within the context of this report).
- **Daytime Summer Roost** – used by males and/or non-breeding females.
- **Night Roost** – where bats rest between feeding bouts during the night but are rarely present during the day.
- **Feeding Roost** – where bats temporarily hang up to eat an item of prey.

- **Transitional (or Swarming) Site** – where bats may be present during the spring or autumn (this cannot be assessed within the context of this report).

2.1.6 Bat Detector Survey (Dusk/Dawn surveys)

If required, the object of this survey is to detect active bats leaving possible roost sites identified in the external and internal surveys. This is achieved by:

- Being at the site 30 minutes before sunset and 90 minutes before sunrise.
- Listening for social calls at potential roost sites.
- Standing at different transect points around the buildings, using the bat detector to hear the bats plus trying to see the first bats emerge.
- Standing at different transect points at foraging areas.
- Carrying out this survey up to two hours after the first bats emerge and 15 minutes after sunrise. This will cover the emergence and returning period to the roost site, for some bat species.

2.1.7 Evidence will be used to determine whether a European Protected Species (EPS) licence will be required to ensure legal compliance during development. This will also include identifying which mitigation measures [if any] would be most appropriate.

2.2 Pre-survey data search

A ‘Local Records Centre’ (LRC) data search was not undertaken due to the small size and nature of the works. The overall impact on biodiversity is likely to be localised and of low significance. It is considered very unlikely that the restoration works will have any impact outside the footprint of the works. The data search results are considered unlikely to impact on the decision-making process, and therefore, an LRC search has not been undertaken.

This approach is consistent with CIEEMs Guideline for Accessing and Using Biodiversity Data (2016), which states that a ‘low impact or small-scale development (e.g. by size, extent, duration of works, magnitude or locality)’ may not require a LRC search where: there is no requirement for any other preliminary survey (e.g. for habitats or other protected species) other than nesting birds or barn owls; and no trees likely to use by roosting bats are to be affected (e.g. felling, pollarding, crown reduction, limp removal).

2.3 Surveyors Information

2.3.1 The survey was undertaken by licensed bat ecologist/s and members of the Institute of Ecology & Environmental Management (CIEEM):

- **Mr. Paul Keeling** BSc (Hons), MCIEEM, Principal Ecologist, Natural England Bat Survey Licence Number: 2015-11546-CLS-CLS Bat Survey Level 2.

- **Mr. Ian Milward** Natural England Bat Survey Licence Number: 2018-37758-CLs-CLs Bat Survey Level 1.

- **Mr Ashley Keeling** Assistant Ecologist.

2.4 Field surveys

2.4.1 Habitat Surveys

Evolution Ecology Ltd has no previous information about the site.

2.4.2 Roost Surveys - weather conditions and timing

The building on the site was externally and internally inspected for the presence of bats and birds with the use of binoculars, torches, an endoscope and ladders in full daylight.

Table 1: Scoping and dusk survey, Environmental Variables

Environmental variables	Scoping and First Dusk Activity Survey of the Buildings – 31st July 2020
Temp Start	22°C
Temp Finish	20°C
Humidity Start	50%
Humidity Finish	54%
Cloud Cover Start	20%
Cloud Cover Finish	50%
Wind Speed Average	moderate
Precipitation	None.

Table 2: Dawn Activity Survey, Environmental Variables

Environmental variables	Dawn Activity Survey of the Buildings – 13th August 2020
Temp Start	16°C
Temp Finish	17°C
Humidity Start	91%
Humidity Finish	92%
Cloud Cover Start	0%
Cloud Cover Finish	0%
Wind Speed Average	Light
Precipitation	None

2.4.3 Roost and Activity Surveys

During the roost/scoping survey, the types of equipment used included an endoscope, ladders and torches. The type of equipment used during the dusk and dawn bat activity surveys were the Batbox Duet, SSF Bat2 heterodyne and frequency division bat detectors along with the Echo Meter Touch 2 (EMT) bat detector.

Echo Meter Touch 2

The EMT bat detector is a data recorder that distinguishes bat calls from other sound sources in real-time (online signal analysis). Calls are recorded digitally as call sequences. The batcorder is used alongside Batbox Duet and SSF Bat2 heterodyne and Frequency Division bat detectors and provides an unbiased statistical analysis of bat species recorded during a survey on site. All statistical analysis software is included in the EMT, giving us real-time results quickly and efficiently.

3 RESULTS

3.1 Field surveys

3.1.1 Habitat description

The buildings of interest are situated on the outskirts of Cauldon Low, Staffordshire. The buildings sit on the A52, being surrounded by agricultural land, and scattered trees.

Within the wider landscape agricultural land is the dominant habitat, with some scattered trees and hedgerows, residential and commercial units with their associated gardens and yards.

Cauldon Low Quarry's can also be found within the surrounding landscape. Therefore, the site itself contains potential roosting, commuting, and foraging features to the local bat and bird populations.

3.1.2 Bat roost and birds nest (including barn owl) survey

Table 3: Access/roosting/nesting features for bats and birds to gain entry and roost/nest - identified externally during the scoping survey.

Farmhouse and Barn.

External Features	Yes	No
Staffordshire Blue Tiles	☑	
Clay Tiles		☑
Corrugated Steel roof		☑
Shed roof		☑
Pitch roof	☑	
Skylights		☑
Flat roof		☑
Stone walls	☑	
Brick walls	☑	
Missing/open doors	☑	
Gaps in the windows	☑	
Cracks/crevices on walls	☑	
Slipped/missing/dislodged tiles	☑	
Gaps around fascia/soffit	☑	
Air/ridge vents		☑
Birds' nests		☑

Notes: The building is made up of two sections, a traditional stone barn and a brick-walled rendered farmhouse. The traditional stone barn is a mixture of single and two-storey. Cracks and crevices within the stone walls are present. Part of the roof is collapsed with some other missing tiles.

The rendered farmhouse is made up of rendered brick walls that contains some cracks and crevices within them. The pitched roof is made up of Staffordshire blue tiles, with some have become dislodged/missing.

Table 4: Features identified internally during the scoping survey.

Internal Features	Yes	No
Shed Roof		☑
Timber beams	☑	
Steel beams		☑
Commercial rooms		☑
Educational rooms		☑
Storage rooms		☑
Chapel/meeting rooms		☑
Warehouse		☑
Agricultural (Inc. domestic livestock)		☑
Derelict building	☑	
Moth/Butterfly remains		☑
Mouse droppings		☑
Cobwebs	☑	
Bat droppings		☑
Birds' nests	☑	

Notes: An internal inspection of the farmhouse could not be undertaken due to limited access.

The traditional stone barn is currently derelict; however, it once would have been used for agricultural purposes. The barn is internally made up of timber beams, with five active swallow nests with chicks were located on the various timber beams.

Table 5: Access/roosting/nesting features for bats and birds to gain entry and roost/nest - identified externally during the scoping survey.

Outbuildings (stables/storage rooms)

External Features	Yes	No
Staffordshire Blue Tiles	☑	
Clay Tiles		☑
Corrugated Steel roof	☑	
Shed roof		☑
Pitch roof	☑	
Skylights		☑
Flat roof		☑
Stone Brick walls	☑	
Solid Brick walls		☑
Missing/open doors	☑	
Gaps in the windows	☑	
Cracks/crevices on walls	☑	
Slipped/missing/dislodged tiles	☑	
Gaps around fascia/soffit	☑	
Air/ridge vents		☑
Birds' nests		☑

Notes: The outbuildings are made up of two sections, one section is made up of solid brick walls, and a pitched Staffordshire Blue tiled roof. The lean-to section is again made up of solid brick walls but has a corrugated steel roof.

Table 6: Features identified internally during the scoping survey.

Internal Features	Yes	No
Shed Roof		☑
Timber beams	☑	
Steel beams		☑
Commercial rooms		☑
Educational rooms		☑
Storage rooms	☑	
Chapel/meeting rooms		☑
Warehouse		☑
Agricultural (Inc. domestic livestock)		☑
Derelict building		☑
Moth/Butterfly remains		☑
Mouse droppings		☑
Cobwebs	☑	
Bat droppings		☑
Birds' nests	☑	

Notes: The outbuildings, two stables and a storage room are currently derelict. No evidence of roosting bats was found within the outbuildings. Two active swallow nests were found within the stables.

3.1.3 Summary from the external and internal inspections

Due to the potential ingress/egress points and suitable roosting features, the buildings are deemed as having 'moderate' potential.

Therefore, two bat activity surveys are required during the bat activity season. This is in line with the survey guidelines.

Table 7: Features of buildings and built structure classification, which may indicate the potential for bats. The full guidance can be found in the Bat Conservation Trust Good Practice Survey Guidelines.

Table 4.1 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation[b]). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.[c]	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

Table 8: Low/Moderate/High potential building(s) survey recommendations. The full guidance can be found in the Bat Conservation Trust Good Practice Survey Guidelines. These guidelines are what all local authorities abide by.

Bat Conservation Trust

Table 7.3 Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey[a] (structures). No further surveys required (trees).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey.[b]	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn.[b]

[a] Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see Section 5.2.9). If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

[b] Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

3.1.4 Activity surveys

31st July 2020 - During the dusk bat activity survey, three common pipistrelles bats (*Pipistrellus pipistrellus)* were seen flying very close to the south elevation of the farmhouse; it was unknown if they had emerged from the farmhouse.

Foraging common pipistrelle bats were also recorded within the surrounding area.

13th August 2020 - A dawn bat activity survey was undertaken, and two common pipistrelle bats (*Pipistrellus pipistrellus)* were seen to return to a roost within a crack on the south-facing elevation of the rendered farmhouse (please see ‘Figure 2‘ for the location of the roost).

In summary, the rendered farmhouse at ‘Red House Farm’ contains a common pipistrelle (*Pipistrellus pipistrellus)* bat male daytime roost (peak count 3 bats).

Figure 2: The location of the Common Pipistrelle bat roost (highlighted by the red circle) within the rendered farmhouse.



4 IMPACT ASSESSMENT

4.1 Constraints on survey information

There were no constraints with regards to obtaining any further survey information and Evolution Ecology Ltd, therefore, feels confident that this survey report produces an accurate representation of the building's potential on-site for bats.

4.2 Constraints on equipment used

No constraints were present with regards to the equipment used during the survey (i.e., endoscope, bat detectors, ladders, and high-powered binoculars).

4.3 Potential impacts of the re-development

Based on the current planning proposal, whereby:

Under the current proposals, the buildings are to be demolished.

- The potential impacts have been identified as follows:

4.3.1 *Designated sites*

The presence of any designated sites nearby is not applicable to the proposed project, as works to the buildings are only taking place. This, therefore, means that any building works would be of no detriment to the surrounding landscape.

4.3.2 *Roosts*

Short-term impacts: Disturbance [Negligible]

Due to the presence of a bat roost within the structures, there will be 'high' short-term impacts for disturbance, with no species-specific mitigation measures required

Long-term impacts: Roost modification [Negligible]

Same as 'Short-term impacts: Disturbance.'

Long-term impacts: Roost loss [Negligible]

Same as 'Short-term impacts: Disturbance.'

4.3.3 Foraging and commuting habitat

It is considered that the works to the building would have a negligible effect on potential foraging and commuting habitat. The site offers little foraging habitat, as it consists of a building. The surrounding habitats provide all of the necessary foraging value that bats require and during the redevelopment works, this will remain the status quo.

4.4 Legislation and Policy Guidance

Biodiversity 2020: sets out to halt overall biodiversity loss, support healthy well-functioning ecosystems, and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people. The government's policy is aimed at individuals, communities, local authorities, charities, business, and government, which all have a role to play in delivering Biodiversity 2020.

National Planning Policy Framework, Section 11: The recently published framework in 2012, replaces the previous Planning Policy Statement 9. Section 11: Conserving and enhancing the natural environment, reaffirms the government's commitment to maintaining green belt protections and preventing urban sprawl, retains the protection of designated sites and preserves wildlife, aims to improve the quality of the natural environment and halt declines in species and habitats, protects and enhances biodiversity and promotes wildlife corridors.

Article 10 of the EC Habitats Directive: The published article requires government to develop features such as 'stepping stones' on the landscape, such as clusters of ponds, tracts of rough grassland or scrubland and vegetated railway line embankments.

Wildlife and Countryside Act 1981: All species of bat are fully protected under the Wildlife and Countryside Act 1981, the European Conservation (Natural Habitats, etc.) Regulations 1994, and the Countryside and Rights of Way Act 2000. This legislation makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.

Most resident nesting birds are protected under the Wildlife and Countryside Act 1981, which protects birds, nests, eggs, and nestlings. Some rarer species, such as barn owls are afforded extra protection.

Please note that if bat species are present at the site, the purpose of this report will only summarise the potential requirements for a bat mitigation package or project. A separate mitigation report or project will be required, which will include the necessary compensation measures to maintain the conservation status of a European Protected Species (EPS).

5 ECOLOGICAL PROVISIONS

From the information obtained during the scoping and the bat activity surveys, it can be established that one common pipistrelle (*Pipistrellus pipistrellus)* bat male daytime roost is present within the rendered farmhouse at 'Red house Farm' (peak count of 3 bats).

Five active swallow bird nests were found with the adjoining barn to the east of the farmhouse, with two active swallow nests located within the stable section of the outbuildings.

Please see below for mitigation and compensation measures to ensure both bats and birds are safeguarded during the redevelopment work.

Bats -

5.1 Natural England Licence

Once planning permission is granted, a Natural England Development licence will be required to carry out the mitigation/compensation measure to legally disturb bats and their roosts (Wildlife and Countryside Act 1981). The Natural England licences take approximately 40 working days to be processed, once the paperwork has been completed and submitted by the licenced ecologist (Mr. Paul Keeling- Licenced Ecologist - Natural England Bat Survey Licence Number: WMLCL18 Bat Survey Level 2 - CLS00440).

Since 2019, Natural England now charges a service fee of between £500 to £2000 per application. For more information, please go to; https://www.gov.uk/government/collections/bat-licences

Ecological Provisions -

The following ecological provisions should be carried out between the months of October/November and March to prevent injury/killing bats, and the reinstatement of a bat roost should also be carried out within this period.

5.1.1 Bat pole boxes

A 6m two box bat pole ('Pole Mounted Large Colony Bat Box') should be erected within the surrounding area of the farmhouse (please see 'Figure 3' below for the approximate location). This bat box pole will provide roosting features for bats during the ongoing demolition of the buildings. The bat pole box can be installed any time of the year and doesn't require

a Natural England Licence. Please see below for more information on the bat pole box and its location.

5.1.2 Time avoidance

Time avoidance measures will need to be considered as bat roosts cannot be disturbed during the bat activity season May to August/September.

5.1.3 Toolbox Talk

A toolbox talk will be undertaken by a licenced ecologist and given to all contractors who are to work onsite. This is a requirement as there is a bat roost within the building. The toolbox talk will provide any contractors with the appropriate information in regard to any procedures that need to be followed should any bats be discovered. However, an ecologist should be on-site where works are to impact the known bat roost to monitor the works being undertaken and reposition any hibernating bats to a safe location within the original roost.

All companies and individual workers are liable should any bats be disturbed, so it is imperative that this is followed diligently.

5.1.4 Soft Demolition

Soft demolition will need to be carried out on the rendered farmhouse to ensure no hibernating bats are still within the roost during the winter period.

Birds

5.2 **Time avoidance measures** will need to be followed as birds, and their nests are protected under the 'Wildlife and Countryside Act 1981', making it illegal to kill, injure or destroy a bird, its chicks or nest. Therefore, any works to the barn that will impact on nesting birds will need to be carried out, outside the bird breeding season. (Bird Breeding season is from March to August).

With the surrounding area being a rural farming landscape, barns and other agricultural buildings are located nearby that provide nesting opportunities. Therefore, if time avoidance measures are followed, the birds will be able to find other nest sites before the next breeding season.

Figure 3: The blue dots represent two locations where the 'Pole Mounted Large Colony Bat Box' could be erected to replace the current bat roost (red dot). The yellow dots indicate the area of the swallow nests.



Pole Mounted Large Colony Bat Box – One 6m, two bat box bat pole will need to be erected to replace the bat roost.





About this product

A pole-mounted box is ideal for siting in locations where there are no suitable trees and walls to attach a roost to. They also allow you to position your box or boxes where they can get the maximum amount of sunlight.

This large colony bat box has been specially designed to attract maternity colonies of crevice dwelling bats such as common and soprano pipistrelles. It provides a bigger roost space than the pole-mounted maternity bat box. Treated externally with a black non-toxic preservative, the box will absorb and retain heat from the sun which is further retained by the three internal ceramic panels. These panels also divide the internal chamber into three crevices, which provide bats such as pipistrelles with the roosting environment that they prefer.

The pole-mounted large colony box includes either one or two large colony bat boxes along with either a 4m, 5m or 6m pole. The 4-metre pole is manufactured in aluminium tube and powder coated in grey, whilst for greater strength, the 5 and 6 metre poles are made from structural steel tube, galvanised and powder coated in black. These large wooden boxes attach to the pole using fixing rails (fixings included). If using the two-box option, the boxes are attached back to back which provides bats with a choice of environments and thermal conditions. The pole should be sunk around 1m into the ground for stability. However, as ground conditions vary, it is advised that a builder or structural engineer is consulted before installing this box. Apart from erecting the pole, the only tool needed is a spanner (or a screwdriver for the metal band version) to fix the boxes onto the pole.

Cost: £538.00 (Inc VAT)

Supplier: https://www.nhbs.com/pole-mounted-large-colony-bat-box

6 SUMMARY

6.1 Bat presence/absence

Bats – A common pipistrelle (*Pipistrellus pipistrellus)* bat roost was located within the rendered farmhouse at 'Red house Farm'. Two common pipistrelles were found to be roosting within a crack location on the south-facing elevation (a peak count of three bats were seen flying around the farmhouse). For more information and the location, please see 'Figure 2'.

Birds – Five active swallow nests with young chicks were found within the adjoining barn to the east of the dwelling.

A further two active swallow nests were found within the outbuilding (stables).

6.2 Ecological Provisions

Please see 'Section 5 – Ecological Provisions' for an outline of the proposed ecological provisions for the works at the 'Red House Farm, Cauldon Low.'

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8 APPENDICES

Appendix A: Site Plans

Appendix B: Additional Photographic Records

Appendix C: Bats and Artificial Light

Appendix A: For site plans, please contact Mr Stephen Dewhirst (Estates Manager). Email Stephen.Dewhirst@jcb.com

Appendix B: Additional Photographic Records

Plate 1: A photograph of the north elevation. This photo shows the dwelling section (rendered) and the adjoining barn (stone brick and Staffordshire blue tiles).



Plate 2: Another image of the north elevation, here you can see the east gable end. The single-storey section of the barn has damage to the north pitch of the roof.

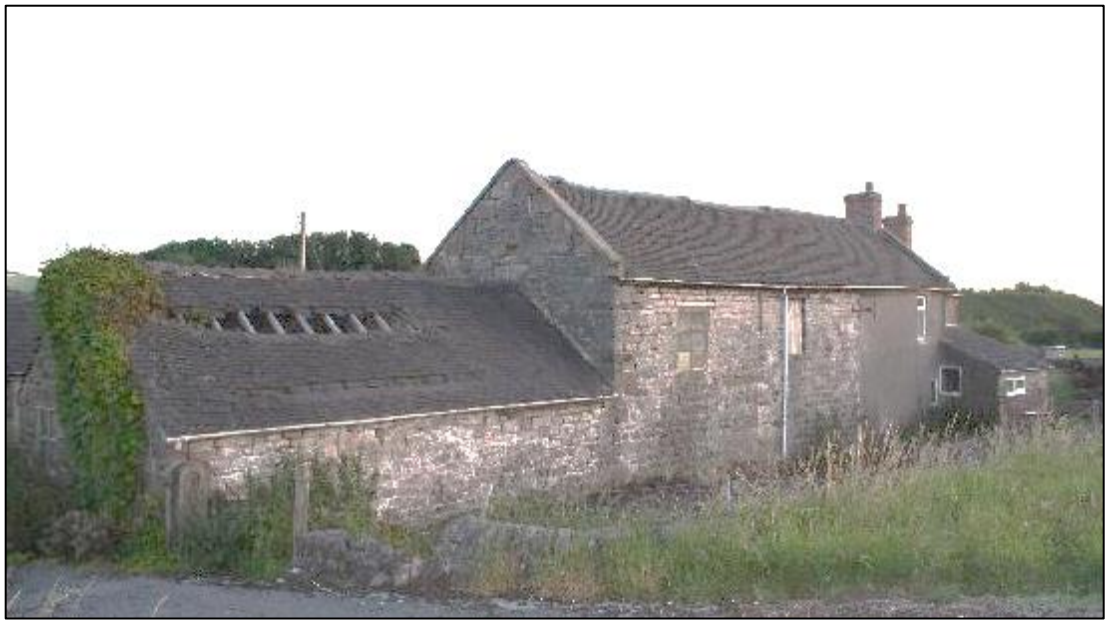


Plate 3: This image shows the west gable end of the rendered dwelling.



Plate 4: This photograph shows the outbuildings: the corrugated lean-too, and the pitched roof stables.



Appendix C: Bat and Artificial Lights

Artificial lighting is known to affect bat roosting and foraging behaviour with lighting shown to result in a range of impacts including roost desertion (BCT, 2009), delayed emergence of roosting bats (Downs et al., 2003), increased activity of some bat species and decreased activity by others (Stone et al., 2012).

An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux. In contrast, slow flying bats, including myotid bats (Myotis spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone et al., 2012). Current recommendations for all bat species specifies that no bat roost should be directly illuminated (BCT 2014).

Mitigation and lighting design Bat friendly lighting plans should firstly look to avoid lighting where possible and minimise lighting impacts by adopting the following measures:

- Lighting curfews or use of PIR sensors. Lighting curfews can be an effective way of avoiding impacts on bats. These curfews may involve either turning off lighting or dimming light units at specific times of the night, dimming units at key times of the year, providing the luminaire allows for this option via a control unit. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of the overall time.
- Consider no lighting solutions where possible. Options such as white lining, good signage, and LED cats eyes, should be considered as preferable, especially within Zones 1 and 2. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.
- Use only high pressure sodium, or warm white LED lamps where possible. High pressure sodium and warm white LED lamps emit lower proportions of insect attracting UV light than mercury, metal halide lamps, and white LED lighting. Generally, lamps should have a lower proportion of white or blue wavelengths, with a colour temperature <4200 kelvin recommended (BCT, 2014).
- Minimise the spread of light. The light spread should be kept at or near horizontal to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres, and shields should be used where necessary to reduce light spill.
- Consider the height of lighting column. While downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide uplighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce uplighting Column height should be carefully considered to balance task and mitigation measures.
- Avoid reflective surfaces below lights. The polarisation of light by shiny surfaces attracts insects increasing bat activity (BCT, 2012). Consequently, surface materials around lighting require consideration.

The Bat-Year



January Hibernating; using up fat reserves.



February Still hibernating; few fat reserves left.



March Some activity; occasional bat seen feeding.



April Awake and feeding at night.



May Females looking for nursery sites.



June Young born usually only one.



July Young still suckling.



August Young start catching insects; females leave nursery to find males.



September Mating season begins; start building fat reserves for hibernation.



October Search for suitable hibernation site.



November Hibernation begins although still some activity in warm weather.



December Hibernating.

9 LIMITING CONDITIONS/DISCLAIMERS (Unless stated otherwise)

9.1 The Service

9.2 Evolution Ecology agrees to supply ecological consulting services of a preliminary nature or a more thorough service as advised or as commissioned.

10 Fees

10.1 The client(s) will settle the agreed fee in full, within 30 days of receiving the invoice. Reports will remain the property of Evolution Ecology until full payment has been received. No liability is accepted for the contents of a report that is not paid in full. Any queries should be notified to Evolution Ecology within 7 days of the invoice date.

10.2 If the client(s) fails to pay within the time specified in 2.1 then Evolution Ecology shall charge the client(s) interest on the outstanding fee, both before and after any judgment, at the rate of 4% per annum above the HSBC Bank base rate, until payment is made in full (A part of a month being treated as a full month for the purposes of calculating interest).

10.3 In the event that it is necessary to recover any outstanding fees from the client(s), the client(s) will fully reimburse any costs and expenses incurred during the recovery period, including court costs. Evolution Ecology reserves the right to make a charge for every letter sent and telephone/fax call made, in connection with the recovery.

11 The Report

11.1 If any part of the report is lost, or altered without the written consent of Evolution Ecology, then the entire report becomes invalid.

11.2 The general format of reports is a certified product and cannot be shown, copied or distributed to third parties without the permission of Evolution Ecology. No liability is accepted for the contents of the report, other than to that of the client(s).

11.3 The report will purport not to express any opinion or comment as to the condition or structural integrity of any building and no reliance should be made on any such comments.

12.1 **Insurance Cover**

12.2 All work carried out by Evolution Ecology is covered by a £1,000,000 professional indemnity insurance.

13.1 **Quality of Craftsmanship**

13.2 When appointing an Ecologist, please use only suitably qualified and experienced companies (The Local Authority and the Institute of Ecology and Environmental Managers may be able to provide a select list of such companies)

13.3 Evolution Ecology will not accept liability for any works undertaken by any other companies, or contractors.