

# PURE ECOLOGY

## Green Hill Farm

Dymock  
Gloucestershire  
GL18 2AD

## Bat Roost Assessment



October 2021

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<b>Client</b>	Mr Mohammed Hanif Jaffer
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	<b>Signed</b>	<b>Name</b>	<b>Position</b>	<b>Date</b>
<b>Prepared by</b>		Dominic Hill StuCIEEM	Ecologist	29/10/2021
<b>Reviewed by</b>		Anton Kattan MCIEEM	Director	31/10/2021

## **Pure Ecology**

Studio 1  
Old Cottage Hospital Studio  
The Homend  
Ledbury  
Herefordshire  
HR8 1ED

info@pureecology.co.uk  
www.pureecology.co.uk  
07870 668 974

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## 1 Planning Application Background

Mr. M. Jaffer obtained planning permission in 2017 for the demolition of an existing poultry shed for replacement with new abattoir facilities (ref. APP/ P1615/ W/ 19/ 3238865). This relates to Shed 5, shown on Figure 1. This previous planning application was supported by the following ecology assessments:

A Preliminary Ecological Appraisal (PEA) produced by Wren Ecology in October 2016 and revised in January 2017;

Phase 2 Bat Roost Assessment produced by Pure Ecology Ltd. in February 2017 (ref. 428 Rep 22-02-17).

Barn 5 was evaluated as having low bat roost potential and a Phase 2 bat roost survey of the building confirmed likely absence of bats.

### 1.1 Site Description

Green Hill Farm is situated on the outskirts of Dymock and is located at National Grid Reference (NGR) SO 705,308. The land holding includes two arable fields and a large farmyard with seven poultry sheds, a livestock barn and associated buildings such as sheds and static caravans for business facilities. There is an access track from the B4215 Newent Road and the farmyard is predominantly hard standing ground with a concrete access track between the buildings.

The specific project area for this report is the livestock barn outlined in red on Figure 1 (hereafter referred to as 'the barn').

Figure 1. Green Hill Farm land holding defined by the green boundary and showing the array of poultry sheds and other agricultural buildings at the site.



Adapted from drawing 160164/ PL/ 001 produced by Extend Architecture.

## 1.2 Proposed Scheme

A Class Q application to convert the barn (shown on Figure 1) to a four-bedroom dwellings is being submitted to the Forest of Dean District Council. A copy of drawing no. 2000-B by Apex Architecture (dated September 2021) showing the proposed elevations and floor plans is provided in Appendix 1.

## 1.3 Scope of the Study

This Bat Roost Assessment has been prepared as supporting information for the Class Q application to convert an agricultural building at Green Hill HFarm to a dwelling house. The specific aim of this study is to survey the barn for bats and/ or evidence of bats and evaluate the conservation significance of the building for roosting bats. The report discusses the predicted impacts of the scheme proposal on bats and makes recommendations for appropriate mitigation, compensation and enhancement measures required for a planning application where required. Advice is given on the legal protection for bats, and licensing requirements under The Conservation of Habitats and Species Regulations 2017.

As the proposed work will affect only the livestock barn, bats are the focus of this study. However, consideration has also been given to the potential presence of other protected species, specifically birds that use buildings for nesting such as barn owl and swallows.

## 2 Methodology

### 2.1 Desk Study

The Multi-Agency Geographic Information for the Countryside (MAGiC) ([www.magic.gov.uk](http://www.magic.gov.uk)) and Natural Resources England websites were used to obtain information regarding statutory designated sites. Online mapping and aerial photograph resources such as GoogleEarth and Bing Maps ([www.bingmaps.com](http://www.bingmaps.com)) were also consulted for contextual information.

A data search with Gloucestershire Centre for Environmental Records (GCER) was undertaken for the PEA by Wren Ecology dated January 2017 for the previous planning application (ref. APP/ P1615/ W/ 19/ 3238865), discussed in Section 1. This information was reviewed for the current application.

### 2.2 Building Inspection

The barn was surveyed on the 15<sup>th</sup> July and 7<sup>th</sup> October 2021. A detailed inspection of was undertaken on both visits to look for evidence of bats and to assess the potential of the building to provide shelter for bats. The inspection was carried out according to best practice guidelines published by the Bat Conservation Trust (Collins, 2016). This involves a systematic internal and external inspection to investigate:

The presence of roosting bats or evidence of use, including bat droppings, feeding remains, scratch marks, urine staining or the remains of dead bats;

Building features bats could potentially use for roosting such as roof spaces, gaps between rafters, cracks and crevices in walls and gaps behind weather boarding or around windows and door frames.

A powerful Clulite torch with a 500m spot beam and close-focusing binoculars were used to examine the exterior and interior of the building. A ladder provided access to the roof and an endoscope was used to closely examine potential crevice roosts within the fabric of the building.

### **2.3 Personnel**

The bat surveys were undertaken by Anton Kattan MCIEEM (July 2021), and Dominic Hill StuCIEEM and Andrew Freeman-Hall Qual CIEEM (October 2021). The team of professional ecologists have 21 years', four years' seven years' consultancy experience respectively. Mr. Kattan holds a Natural England Level 2 bat survey class licence (CL28), ref.2015-12201-CLS-CLS

## **3 Results**

### **3.1 Desk Study**

There are no statutory designated site for bats within 2km of Green Hill Farm.

The 2017 GCER data search provided three bat records for species in the local area identifying a brown long-eared bat (*Plecotus auritus*) and other records simply classified as Chiroptera. Only notable roost record was in 2005 at 'High House' in Dymock where a bat roost visit report identified droppings. This record is located 0.7 km north-west of Green Hill Farm.

### **3.2 Evidence of Bats**

No bats or evidence of bats was found in the barn during the building inspections in July and October. All potential roost locations in the barn were accessible and could be inspected for field signs and evidence of bats.

#### *3.2.1 Assessment of Bat Roost Potential in the livestock barn*

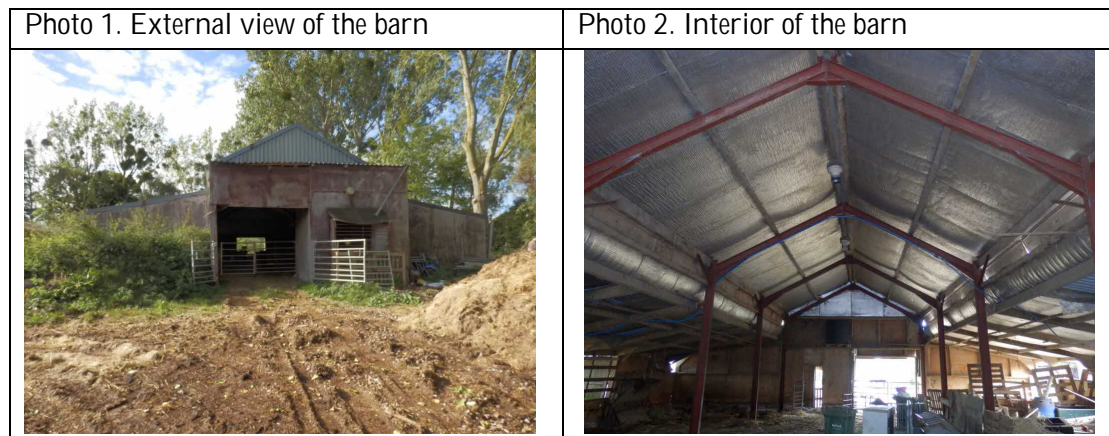
The design and construction of the barn has fundamental limitations for roosting bats because it has a simple metal and timber construction with very few gaps and crevices. The barn forms part of the poultry farm complex of agricultural buildings within the farmyard and is situated at the northern boundary of the site, just north of poultry Barn 3 (shown on Figure 1).

The barn is a medium sized livestock barn, and the interior is a single open space supported by a wooden and metal girder frame. There are large doorway openings on three elevations that are permanently open creating a draughty and light interior. The barn sits on a concrete foundation and the walls are composed of wooden

plyboard sheeting with breeze block bases that are a single skin, leaving no inner space for cavities and therefore no significant features for bats to shelter.

The roof is corrugated metal sheet with a thin foil membrane fixed tightly to the underside, leaving no cavity in-between. On the north and south barn elevations there are lean-to structures with mono-pitched corrugated metal sheet roof covers and the same foil membrane attached to the underside.

The construction design of the livestock barn does not offer any architectural features on the exterior of the building that bats could exploit for shelter. Crevices present are created by multiple sheets of metal pressed together, but these are small and unsuitable features for roosting bats. The open doors mean that bats can gain access to the interior, but there are no enclosed voids within that would provide sheltered environmental roost conditions or protection from predators during the day. The absence of droppings or feeding remains suggests there is no significant or meaningful use of the building as a night roost.



The barn is in a reasonable state of repair and appears to have been modified for different agricultural uses over time, and whilst there are no architectural features for roosting bats there has been some minor deterioration to the fabric of the building, as described below.



Most cavities present are created by multiple sheets of metal pressed together which is unsuitable for roosting bats, as shown on Photo 3.



Photo 3. Gap under roof overlap

The cavities are created by the indents in the corrugated metal against the flat metal roof overlap at the apex of the roof. Close inspection with a torch and ladder revealed that the suitability for bats to shelter is considered poor because environmental conditions are draughty, light and there is likely to be significant temperature variation because of the poor thermal qualities of the roofing material.



At the rear of the buildings (west gable) there is a gap created where the corrugated metal is pressed against plyboard walls. These cavities were able to be closely inspected and were found to be heavily cobwebbed with no signs of bats present. (Photo 4).

Photo 4. Gap between metal and plyboard

Cavities in this area are considered unsuitable for bats to shelter because of the poor environmental roost conditions and unsuitable materials.

The eaves of the metal roof is overhanging on the northern and southern elevations, as shown on Photo 5.



Photo 5. Overhanging eaves

Close inspection revealed that there is no suitable gaps or crevices that may be utilized by bats, furthermore, the inner side of the wall is lit with natural light and a single skin of wooden boarding offers no shelter. This feature can therefore be discounted as a potential bat roost.





Photo 6. Weather boarding on north gable

A number of small crevice features at the top of the walls were discounted as having meaningful bat roost potential once they had been closely examined (on two visits).

The gap behind the metal weather board at the western gable is less than 1cm. The gap is probably too narrow for bats to use and furthermore, the crevice was covered with heavy cobwebs.

The roof beams are closely pressed against wall, leaving no space behind and the gaps between ridge beams is open and light and could be closely inspected for roosting bats. It does not provide any meaningful roosting opportunities.



Photo 7. Under side of roof and inner side of western elevation.



Photo 8. Inner side of north elevation.

The simple metal girder supports and thin single skin fabric of the building offer very few opportunities for roosting bats within the structure of the building. High levels of natural light within the building, open doors and construction materials that create unsuitable environmental roost conditions for bats to shelter combine to provide no meaningful roosting opportunities of significance to the conservation of local bat populations, particularly for day roosting bats.

### **3.3 Other Protected Species**

One old bird nest was found within the barn. The nest appears to be from a passerine bird. There are no signs of nesting or roosting barn owls.

## **4 Assessment**

### **4.1 Study Limitations**

The simple layout and construction of the barn is suited to detailed inspection for bats and for evidence of previous roosting by bats. Close inspection of potential bat roost features provides an appropriate level of survey to determine the presence or likely absence of bats within the barn and establishes baseline information for a mitigation strategy, including requirements for further survey to evaluate the conservation status of bat roosts.

There were no constraints to the study. The survey was carried out at an optimal time of year and access to all parts of the building was possible. The level of survey (following two site visits) and assessment provides sufficient information for the planning application.

### **4.2 Legislation and Policy Context**

#### *4.2.1 Legal Protection Afforded to Bats*

As natural roost sites have become scarce in the UK bats have become more reliant on manmade structures such as buildings. Bats are sensitive to activities associated with development and the restoration of buildings. The availability of suitable roost sites is considered to be a key factor in the conservation of bats and as a consequence all species of bat and their roost sites are protected in the UK. The key pieces of legislation are the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) and The Conservation of Habitats and Species Regulations 2010 (as amended).

Bats are legally protected from harm and it is an offence to deliberately or intentionally kill or injure a bat. It is also prohibited to incidentally or deliberately capture, kill, disturb or take bats, or damage or destroy a breeding site or resting place - irrespective of whether it (the roost) is occupied.

Although the law provides strict protection to bats, it also allows this protection to be set aside (derogation) under Regulation 41 of The Conservation of Habitats and Species Regulations 2010 through the issuing of licences. Strict requirements need to be fulfilled to obtain a licence from the Natural England and a mitigation strategy needs to be developed for maintaining the 'favorable conservation status' of the bats.

#### 4.2.2 *Legal Protection for Birds*

All breeding birds are protected in the UK under the Wildlife and Countryside Act 1981 (as amended) whilst they are actively nesting

#### 4.2.3 *National and Local Planning Policy*

The National Planning Policy Framework (NPPF) is intended to help deliver sustainable development, with environmental issues being one of the three dimensions within this. It includes a range of statements and policies relating to biodiversity and nature conservation, with the aim of 'moving from a net loss of biodiversity to achieving net gains for nature' (Paragraph 9). Key sections of the NPPF are highlighted below:

- Paragraph 109 The planning system should contribute to and enhance the natural and local environment by --- minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity.
- Paragraph 118 Local planning authorities should aim to conserve and enhance biodiversity when determining planning applications by ensuring that: significant harm is avoided, mitigated or compensated (especially for irreplaceable habitats); impacts on designated sites are prevented and; biodiversity is incorporated in and around developments.
- Paragraph 165 To allow the appropriate consideration of ecological issues within applications, planning decisions, 'should be based on up-to-date information about the natural environment – this should include an assessment of existing and potential components of ecological networks.

NPPF places an emphasis on local planning and the protection of the ecology and wildlife through Local Plans. The Forest of Dean District Council Core Strategy (Adopted February 2012) provides a positive and flexible overarching planning policy framework for the district. Of particular relevance to this study is:

#### POLICY CSP.1 - DESIGN AND ENVIRONMENTAL PROTECTION:

The design and construction of new development must take into account important characteristics of the environment and conserve, preserve or otherwise respect them in a manner that maintains or enhances their contribution to the environment, including their wider context. New development should demonstrate an efficient use of resources. It should respect wider natural corridors and other natural areas, providing green infrastructure where necessary.

## AP 7 - BIODIVERSITY: FOREST OF DEAN DISTRICT COUNCIL - ALLOCATIONS PLAN (AUGUST, 2015)

Development proposals where protected and priority species or habitats as described by Section 41 of the Natural Environment and Rural Communities Act and those covered by local biodiversity plans are concerned should provide for net biodiversity gains for these species and habitats unless it can be demonstrated that no enhancement options exist or that they are likely to be ineffectual. Developments should safeguard features which form parts of ecological networks and where appropriate provide 'missing' connections'.

### 4.3 Interpretation and Evaluation of Results

#### 4.3.1 Designated Sites

There are no designated sites within 2km of Green Hill Farm and therefore no predicted impacts from the development given the nature and small scale of the proposals to convert the barn to a single dwelling.

#### 4.3.2 The Livestock Barn

This study concludes with reasonable certainty that bats are not roosting in the barn. There are a limited number of opportunities for bats to roost because the building has a simple construction and many of the building materials have poor thermal qualities that provide unsuitable environmental conditions for bats to shelter. The absence of field signs from roosting bats within the barn is a clear indication that bats have not previously sheltered in the building. The small array of external cavities that bats could feasibly exploit for shelter were closely examined, confirming the absence of bats.

The building inspection examined all potential roost locations in the barn and the detailed survey provides confidence in the conclusion that bats are likely to be absent.

On this basis, it can be concluded the proposed conversion of the barn is not predicted to result in any significant impacts on bats or the places that they use for breeding, shelter and/ or protection (roosts) and no specific mitigation is required.

In summary, it can be concluded with a high degree of confidence that bats are absent from the barn and the building has no intrinsic value for bats. The building is evaluated as being of negligible interest for roosting bats.

Given the findings, it can be concluded that there are no significant predicted impacts on bats under The Conservation of Habitats and Species Regulations 2017 and therefore a European Protected Species (bat) licence will not be required for the proposed development.

#### 4.3.3 *Nesting Birds*

The simple construction and regular use of the building provides limited opportunities for breeding birds and only a single disused nest was found within the building. No significant impacts on breeding birds are anticipated as a result of the conversion.

## 5 Recommendations

### 5.1 Further Survey

No further ecological survey is required to support the proposed planning application. The daytime inspection is considered adequate to provide a suitable level of confidence that bats are absent from the barn. This advice is consistent with nationally published good practice guidelines (Collins 2016), which advocates a level of survey that is proportionate to the likelihood of bats being present.

### 5.2 Bat Mitigation and Enhancement

The proposed new dwelling provides an opportunity to install artificial bat roosts within the barn conversion. It is recommended that two bat boxes are installed on building with a bat box on the southern and western building elevations. It is likely that the bat box will need to attach to the exterior (rather than be integrated into the wall) and there are several makes and models of bat boxes that can be used. A suitable bat box would be a Schwegler 1FQ, or similar. It is recommended that the bat boxes are installed as high as possible on the exterior walls, close to the roof eaves. Bats use dark tree lines or hedgerows for navigation, so placing boxes on elevations against boundary features will mean that the new roost resources are in a locations with bat activity.

In summary, locate boxes:

- Where bats are known to feed and navigate (close to hedges and tree lines);
- Ideally at least 4m above the ground (where safe installation is possible);
- Away from artificial light sources; and
- Sheltered from strong winds and exposed to the sun for part of the day (usually south, south-east or south-west).

To avoid adverse impacts on the treeline to the north of the barn any external lighting on the northern elevation of the building should be controlled. If there are imperative requirements for operational facilities or security reasons the following environmental considerations should be given:

- Light installations should be at a low level and lamps should have hoods to direct the lighting downward towards roads or paths where it is needed.

Bollard lighting or recess lights in paths can be used in preference to lamps at height on columns.

If external lighting for doors on any elevation is required, they should be directly over the opening.

Lamps should have low output to control illumination on the east boundary by using low wattage bulbs with less than 75w output, or LED with 'warm colours' (i.e. not brilliant white).

### 5.3 Bird Boxes

It is recommended that a bird box is provided for house sparrows *Passer domesticus*. These communal-nesting birds are under threat nationally, and the new development provides the opportunity to provide some bespoke nesting habitat for the species. A 'sparrow terrace' could be erected on the wall of building facing towards the open ground to the west or on a southern aspect would benefit from the warming sun. A suitable box, which can be either wall-mounted or integrated into the fabric of the building is the Schwegler 1SP sparrow terrace, as shown in Figure 2 below. The box should be installed at least 2m above the ground.

Figure 2: Example Sparrow Terrace:  
Schwegler 1SP





## **6 References**

Collins J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines. (3rd Ed)  
Bat Conservation Trust. London.