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Date: 23<sup>rd</sup> August 2023

Client: R. Huxter



# Ecology Report



Welland Down Farm

## Disclosure

The information, opinion, and advice which I have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct and the British Standard for Biodiversity –Code of Practice for Planning and Development (2013). I confirm that the opinions expressed are my true and professional bona fide opinions.

SWE



## CONTENTS

1.0	INTRODUCTION .....	4
1.1	Background .....	4
1.2	Report Purpose .....	4
1.3	Report Lifespan .....	5
1.4	Author .....	5
2.0	RELEVANT LEGISLATION AND NATIONAL PLANNING POLICY .....	6
2.1	Legislation .....	6
2.2	National Planning Policy Framework (NPPF) .....	7
2.3	Government Circular 06/20059 .....	9
2.4	Species and Habitats of Principal Importance .....	9
3.0	METHODOLOGY .....	10
3.1	PRA .....	10
3.2	RCA .....	11
3.3	Limitations .....	12
4.0	RESULTS .....	13
4.1	PRA Results .....	13
4.2	RCA Results (Barns A and B) .....	18
5.0	ASSESSMENT .....	20
5.1	Roosting Bats .....	20
5.2	Nesting Birds .....	24
6.0	CLOSURE .....	25

## 1.0 INTRODUCTION

### 1.1 Background

SWE Limited was commissioned to undertake a protected species survey of three barns within the property of Welland Down Farm, Sandford, Devon, EX17 4EN (Ordnance Survey grid reference SS811063). The survey was required to assess the impacts of the proposed conversion of the barns to residential. The location of the barns is shown in Figure 1.

Figure 1. Location of the barns.



### 1.2 Report Purpose

The purpose of this report is to:

- provide an ecological assessment through consideration of a Preliminary Roost Assessment (PRA) and where required Roost Characterisation Assessment (RCA) of the buildings; and
- identify the ecological constraints in relation to the proposed development;

- identify the mitigation measures which are required, where necessary, to ensure compliance with nature conservation; and
- identify appropriate enhancement and compensation measures which could be incorporated into the conversion design, in line with local and national planning policy.

This report has been written in accordance with the guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM) 2017<sup>1</sup>.

### 1.3 Report Lifespan

In accordance with CIEEM guidance<sup>2</sup> this report, and the results of the ecological survey contained within, remains valid for 12 months.

### 1.4 Author

The author of this report, Dr S. Holloway, has over twenty-five years' professional experience of ecology, environmental management, and nature conservation in the private, public, and voluntary sectors. He has worked extensively throughout the UK on projects relating to bats, including wind farms, quarries, and residential/industrial development. Dr Holloway is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and is a Chartered Environmentalist (CEnv).

All work was undertaken in accordance with the CIEEM recommendations, the most up-to-date and relevant survey guidance available at the time (Bat Conservation Trust 2016), and in compliance with BS:42020:2013 Biodiversity. Code of Practice for Planning and Development.

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<sup>1</sup> CIEEM (2017) *Guidelines on Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management, Winchester.

<sup>2</sup> CIEEM. 2019. On the Lifespan of Ecological Reports and Surveys. Advice Note. April 2019.

## 2.0 RELEVANT LEGISLATION<sup>3</sup> AND NATIONAL PLANNING POLICY

### 2.1 Legislation<sup>4</sup>

#### *2.1.1 Conservation of Habitats and Species Regulations 2017*

The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations) transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb<sup>5</sup> wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time). Species include all bats.

The Habitats Regulations 2017 will continue to implement the Habitats Directive and certain elements of the Birds Directives in England. The Habitats Regulations 2010 have been amended ten times since they were last consolidated (in 2010).

#### *2.1.2 Wildlife & Countryside Act 1981*

The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act (CRoW) 2000 and the Natural Environment and Rural Communities Act (NERC) 2006, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

- Intentionally kill, injure or take *any* wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act e.g. all bat species;

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<sup>3</sup> Please note that the summary of relevant legislation provided here is intended for general guidance only. The original legislation should be consulted for definitive information.

<sup>4</sup> Please note that the summary of relevant legislation provided here is intended for general guidance only. The original legislation should be consulted for definitive information.

<sup>5</sup> Disturbance, as defined by the Conservation of Habitats and Species Regulations 2010, includes in particular any action which impairs the ability of animals to survive, breed, rear their young, hibernate or migrate (where relevant); or which affects significantly the local distribution or abundance of the species.

- Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act;
- Intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection;
- Pick or uproot any wild plant listed under Schedule 8 of the Act (not applicable for the Site as no species listed on the Schedule were found); or
- Plant or cause to grow in the wild any plant species listed under Schedule 9 of the Act (not applicable for the Site as no species listed on the Schedule occur).

### ***2.1.3 Natural Environment & Rural Communities (NERC) Act 2006***

The NERC Act 2006 places a duty on authorities to have due regard for biodiversity and nature conservation during the course of their operations.

Section 41 of the Act requires the publication of a list of habitats and species which are of principal importance for the purpose of conserving biodiversity. The Section 41 list is used to guide authorities in implementing their duty to have regard to the conservation of biodiversity.

The Section 41 list includes several bat species.

### ***2.1.4 Wild mammals Protection Act***

The Wild Mammals (Protection) Act 1996 makes it an offence for any person to mutilate, kick, beat, nail, or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering. A "wild mammal" means any mammal which is not a domestic or captive animal within the meaning of the Protection of Animals Act 1911.

## **2.2 National Planning Policy Framework (NPPF)**

The NPPF (2021) includes the Government's national planning policy guidance on the protection of biodiversity. The NPPF sets out the role that the planning system has to play in the protection of biodiversity in relation to the natural environment. The following section details the most relevant biodiversity guidance to the proposed Development.

Paragraph 174 states that “The planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, sites for biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services;
- minimising impacts on and providing net gains for biodiversity..;

Paragraph 180 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>63</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.



### **2.3 Government Circular 06/20059**

The Government Circular 06/20059 remains valid despite the cancellation of the former Planning Policy Statement 9 (PPS9) which it accompanied, and which was replaced by the NPPF. Of relevance to this site, the circular advises that potential effects of a development on priority habitats or species (i.e. Habitats and Species of Principal Importance –see below) are capable of being a material consideration in the preparation of regional spatial strategies and local development documents and the making of planning decisions.

### **2.4 Species and Habitats of Principal Importance**

Priority habitats and species are formally defined in the NPPF as species and habitats of principal importance included in the England Biodiversity List published by the Secretary of State under section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Planning authorities have a duty under Section 40 of the NERC Act to have regard to priority species and habitats in exercising their functions including development control and planning.

## 3.0 METHODOLOGY

### 3.1 PRA

The PRA of the barns was undertaken on the 13<sup>th</sup> October 2022, and was conducted in line with Bat Conservation Trust (BCT, 2016)<sup>6</sup> guidance. The PRA involved a detailed external and internal inspection to compile information on the potential and actual bat entry/exit points; potential and actual bat roost locations; and evidence of bats such as droppings. The weather at the time of the survey was sunny, 14<sup>o</sup>C, with F0 winds.

The exterior of the barns was visually assessed for potential bat access points and evidence of bat activity, using binoculars where necessary. Features, such as small gaps/ crevices beneath eaves, along the ridges or within the stonework; lifted or missing tiles; or gaps around doorways which had potential as bat access points into the building were sought. Evidence that these potential access points were actively used by bats typically would include staining within gaps and/ or bat droppings or urine staining under gaps and/ or on walls. These signs were recorded wherever they were present. The presence of cobwebs and general detritus within the features were also recorded as these indicate that potential access points were likely to be inactive.

The internal space of the barns was assessed for evidence of bat activity, or potential roost features. Evidence, including droppings and urine staining, was sought beneath features that bats may use for roosting and/ or as an access point. Features included gaps within mortise joints, above beams and lintels and gaps within walls. The presence of a bat roost is typically indicated by the presence of live/ dead bats; a concentration of, or scattered bat droppings; food remains, for example moth and butterfly wings; scratch marks; and fur, or urine stains.

The buildings were assessed for their potential to support roosting bats, with the buildings categorised according to the description shown in Table 1 below.

A search for historic evidence of nesting birds (e.g. active nests, feathers, old nesting material, eggs or pellets) was conducted during the PRA. The immediate surrounds of the building in the location of the extension were also assessed for evidence or potential for protected species.

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<sup>6</sup> Collins 2016. Bat Surveys for Professional Ecologists. Good Practice Guidance. 3<sup>rd</sup> Edition.

A Clulite red-filtered torch, a Pulsar Helion 2 XP50 Pro thermal camera, angled mirror, and close-focussing binoculars were used as required during the survey.

**Table 1. Description of the categories used to classify building bat roost potential and the survey effort required.**

Bat Roost Potential	Description	Survey effort required to determine the likely presence or absence of bat
<b>Negligible</b>	Negligible features likely to be used by roosting bats.	No further surveys required.
<b>Low</b>	A structure with one or more potential roost features that could be used by individual bats opportunistically. However, these potential sites do not provide enough space, shelter, protection and /or appropriate conditions to be used on a regular basis by larger numbers of bats.	One or two dusk emergence and/or pre-dawn surveys between May and September (but only if features will be affected by the proposals).
<b>Moderate</b>	A structure with one or more potential roost features that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status.	Two of three dusk emergence and/or pre-dawn surveys between May and September (but only if features will be affected by the proposals).
<b>High</b>	A structure with one or more potential roost features 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, and surrounding habitat.	Three dusk emergence and/or pre-dawn surveys. Optimum period –May –August. Two surveys within the optimum period. At least one surveys should be a pre-dawn survey.
<b>Confirmed</b>	Contains features confirmed to be used by roosting bats either by historic records or evidence recorded during the survey.	Surveys required to establish the status of the roost. Generally, three dusk emergence and/or pre-dawn surveys. Optimum period –May – August. Two surveys within the optimum period. At least one surveys should be a pre-dawn survey.

### 3.2 RCA

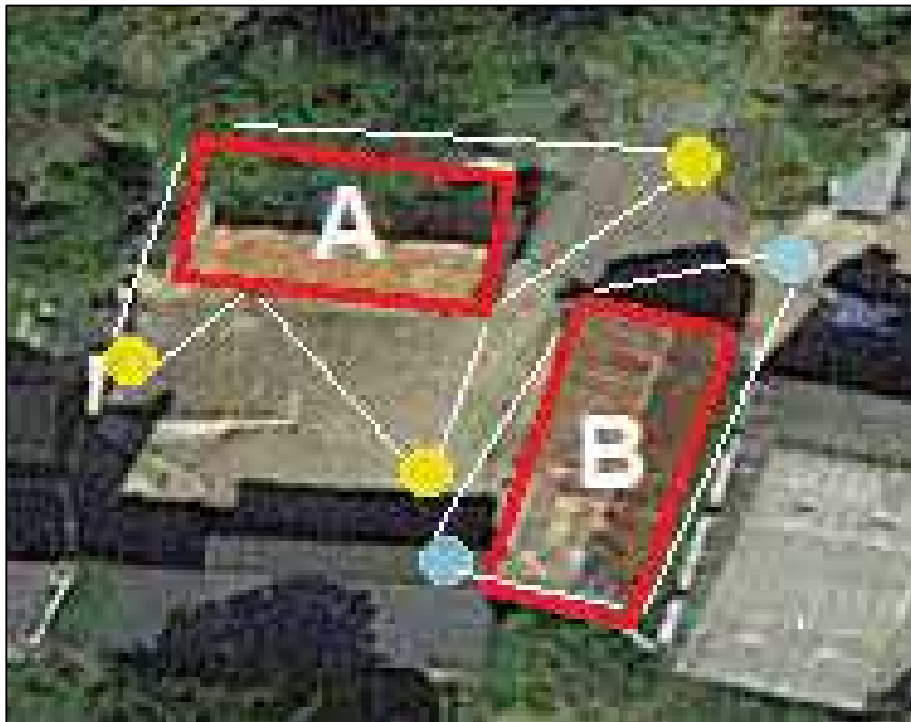
Subsequent to the findings of the PRA and eDNA analysis, which concluded that Barns A and B had been used as a roost by brown long-eared bats, emergence surveys of the two barns were conducted as per the Bat Conservation Trust (2016) guidance. Two to three experienced surveyors using thermal / infra-red equipment observed the buildings from c. 15 minutes prior to sunset and for up to 1.5 hrs after sunset (Figure 2 shows surveyor locations). The surveyors used Echo Meter Touch 2 detectors attached to Samsung tablets, Pulsar Helion 2 XP50 Pro thermal cameras and Nightfox Corsac infra-red camera.

The details of the surveys are shown in Table 2.

**Table 2. Details of the emergence surveys.**

Date	Barn	Sunset time	Weather at start	Weather at end
05.06.23	B	21:22	17°C, 0% cloud, F0 winds	13°C, 0% cloud, F0/1 winds
15.06.23	A + B	21:30	27°C, 0% cloud, F0 winds	22°C, 0% cloud, F0/1 winds
29.06.23	A	21:32	16°C, 5% cloud, F0 winds	11°C, 0% cloud, F0 winds
04.07.23	A	21:28	20°C, 0% cloud, F1 winds	17°C, 0% cloud, F0 winds
28.07.23	B	21:06	18°C, 10% cloud, F0 winds	16°C, 30% cloud, F0 winds

**Figure 2. Location of surveyors.**



### 3.3 Limitations

This report is based on the evidence recorded at the site at the time of the survey.

Barn A could not be fully viewed during the emergence surveys due to overgrowing vegetation to the northwest corner.

Bats and birds are highly mobile species groups and therefore the findings and assessments provided should be regarded as a 'snapshot' of activity during part of the season.

## 4.0 RESULTS

### 4.1 PRA Results

The barns are located within a rural area with a farmhouse to the west and large modern open barns to the east. The local landscape comprises grassland fields bounded by hedgerows, some of which have trees. There are large mixed plantation woodlands to the north, south, and east. The landscape has high potential value for commuting/foraging bats. The details of the PRA are provided in Table 2 with the location of bat droppings in Figure 3.




Table 2. Building description and protected species evidence	
Barn A Photos	Description
<p><b>South elevation</b></p> 	<p>A cobb and stone-built barn with a small extension to the east elevation. The barn has been recently re-pointed to the outside. There are several timber framed doors to the south elevation including 2 hayloft doors to the first floor one of which is left partially open. A further first-floor hayloft door is to the north elevation. The ground floor windows to the south elevation are glazed. The timber frame roof is overlaid with single skin metal corrugated sheeting. There are numerous gaps between the roof sheeting, walls, and roof support timbers which could be used by bats.</p> <p>There is dense shrub growth over part of the north elevation.</p> <p>Several features of potential bat roost interest comprising cracks and crevices in walls, between ceiling and roof timbers. A cluster of <i>c.</i> 50 fresh bat droppings noted beneath a ceiling timber to the ground floor. <i>c.</i> 20 bat droppings noted within the small extension to the east elevation –droppings found on the floor next to the doorway and stuck to the west wall. A scattering of bat droppings was noted to the first floor (<i>c.</i> 20 in total with a small cluster to the western end underneath the ridge).</p> <p><b>Confirmed bat roost.</b></p>
<p><b>North and east elevations</b></p> 	
<p><b>Internal view of ground floor</b></p> 	





Table 2. Building description and protected species evidence	
<p><b>Internal view of first floor</b></p> 	<p>Several old swallow nests which have been reused by other bird species, probably robin, were noted to the ground floor timbers. Recent swallow nests noted on roof timbers to first floor.</p>
<b>Barn B Photos</b>	
<p><b>West elevation</b></p>  <p><b>Internal view –north section</b></p>  <p><b>Internal view –south section</b></p> 	<p>A stone-built barn, single-storey, that is in a very poor condition. The stone walls contained several cracks and crevices suitable for bat ingress/roosting. There was a hayloft door to the north elevation which had deteriorated. The two timber doors to the west elevation were in a similar state of disrepair and would allow bat or bird ingress into the barn. There was a large open section to the southern section of the barn (west elevation) and a section of wall had collapsed to the east elevation. The timber framed, pitched roof was overlaid with single skin metal corrugated sheeting. There were numerous gaps between the roof sheeting, walls, and support timbers.</p> <p>A small number of bat droppings was noted within the barn, and it is likely some will have been missed due to the heavy build-up of detritus.</p> <p>Apart from cracks in the walls there were few opportunities for day roosting bats as the barn is open, well-lit, and draughty. It is likely that the barn is used as a night roost/feeding perch for long-eared bats, but may also contain crevice dwelling species.</p> <p><b>Confirmed bat roost.</b></p>




Table 2. Building description and protected species evidence	
	<p>Several swallow nests were noted to the roof timbers. Occasional nests from other bird species also noted.</p>
Barn C Photos	
<p><b>North and west elevations</b></p> 	<p>A cobb and stone-built stock shed that was fully open to the north elevation. The walls were low in height with several deep cracks. There was dense growth of ivy to the east and south elevations.</p> <p>The pitched timber framed roof was overlaid with metal corrugated sheeting.</p> <p>There was an extension to the west elevation which consisted of a steel girder framed structure overlaid with a corrugated sheet roof.</p>
<p><b>North elevation</b></p> 	<p>No evidence of bats found within the barn. The barn was unsuitable for roosting bats.</p> <p><b>Negligible bat roost potential.</b></p>
<p><b>Internal view</b></p> 	<p>No evidence of nesting birds was found; however, birds may nest within the dense ivy to the east and south elevations.</p>

Figure 3. Location of bat droppings within Barn A and Barn B.



Analysis of the bat droppings from Barn A and Barn B showed that they were made by brown long-eared *Plecotus auritus* bats.





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## TECHNICAL REPORT

### ANALYSIS OF BAT DROPPINGS FOR SPECIES OF ORIGIN IDENTIFICATION

#### SUMMARY

The droppings of bats contain small amounts of DNA belonging to the organism from which they originated. By analysing droppings collected from a bat roost or colony for the presence of DNA, a robust identification of the species present can be made. Recent advancements in molecular methods including PCR (polymerase chain reaction) and DNA sequencing mean that 92% of bat species worldwide can be identified including all 17 UK resident bat species.

#### RESULTS

**Date sample received at Laboratory:** 18/10/2022  
**Date Reported:** 25/10/2022  
**Matters Affecting Results:** None

Lab Sample ID.	Site Name	O/S Reference	Genetic Sequence	Common Name	Result	Sequence Simliarity
B1471	Welland Down Farm Well 1	SS 811 063	CTAATAATTGGAGCCCTGA TATAGCTTTTCGCCGAATAA ATAACATAAGCTTCTGACTG CTTCCCCATCTTTTACTA CTTTAGCTTCTGTCGAGT AGAGGCTGGAGCAGGTACC GGTTGAACAGTCTATCTCC TTTAGCGGAAA	Brown long-eared bat	<i>Plecotus auritus</i>	99.31%
B1472	Welland Down Farm Well 3	SS 811 063	CACTAATAATTGGAGCCCT GATATAGCTTTTCGCCGAAT AAATAACATAAGCTTCTGAC TGCTTCCCCATCTTTTCTA CTACTTTAGCTTCTGTCG AGTAGAGCTGACAGGTA CCGGTTGAACAGTCTATCT CCTTAGCGGAAA	Brown long-eared bat	<i>Plecotus auritus</i>	99.31%

If you have any questions regarding results, please contact us: [ForensicEcology@surescreen.com](mailto:ForensicEcology@surescreen.com)

**Reported by:** Chelsea Warner

**Approved by:** Gabriela Danickova



Forensic Scientists and Consultant Engineers  
SureScreen Scientifics Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE  
UK Tel: +44 (0)1332 292003 Email: [scientific@surescreen.com](mailto:scientific@surescreen.com)  
Company Registration No. 08950940

## 4.2 RCA Results (Barns A and B)

The results of the RCA survey are shown in Table 3 and Figures 4 and 5. Incidental recordings of bats foraging within the yard consisted of frequent common and soprano pipistrelles and occasional noctule, the latter to the south of the barn complex.

Table 3. RCA Results.		
Date	Barn	Activity recorded
05.06.23	B	21:44 –one common pipistrelle emerged from the north elevation doorway. 21:59 –brown long-eared bat observed flying inside the barn, light sampling to entrances to the west elevation. Not seen emerging.
15.06.23	A + B	21:51 –single common pipistrelle emerged from southwest corner eave of Barn A. 21:52 –single common pipistrelle emerged from under the eaves to the south elevation of Barn A.  21:51 –pipistrelle bat observed flying from the north and into the open doorway of the north elevation of Barn B. 21:54 –2 common pipistrelles emerged from open side to the west elevation of Barn B. Bats were observed circling within the barn before emerging. Assumed to be foraging within the barn and not roosting. 21:57 –common pipistrelle observed flying out of the open door to the north elevation of Barn B.
29.06.23	A	21:52 –one silent bat, possibly long-eared emerged from the lean-to from the southeast corner eave. 21:52 –one common pipistrelle emerged from the north elevation eave.
04.07.23	A	21:33 –one common pipistrelle emerged from the south elevation eave.
28.07.23	B	21:22 –one common pipistrelle emerged from the north gable end above the open doorway. 21:47 –brown long-eared bat emerged from the southwest corner open fronted section.

Figure 4. Bat emergence locations Barn A.

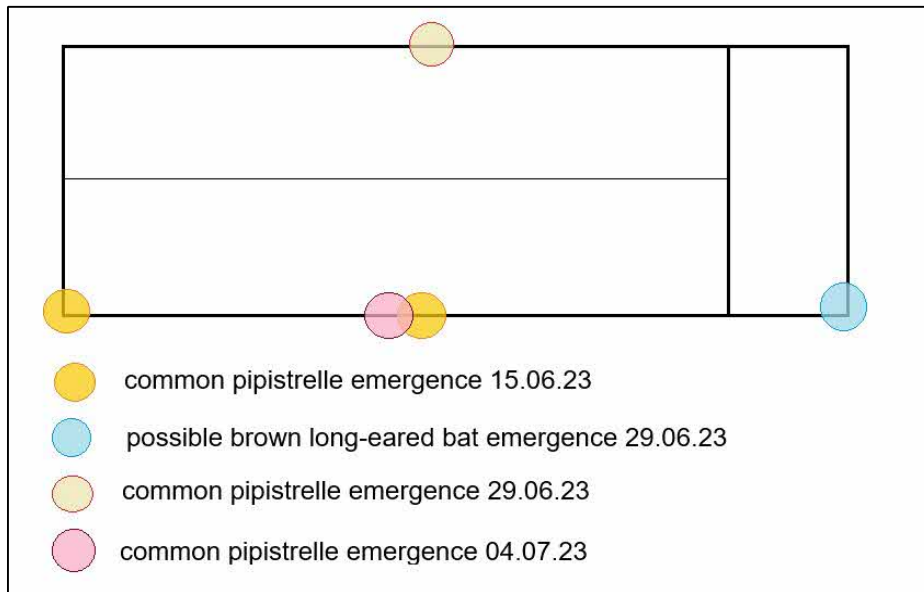
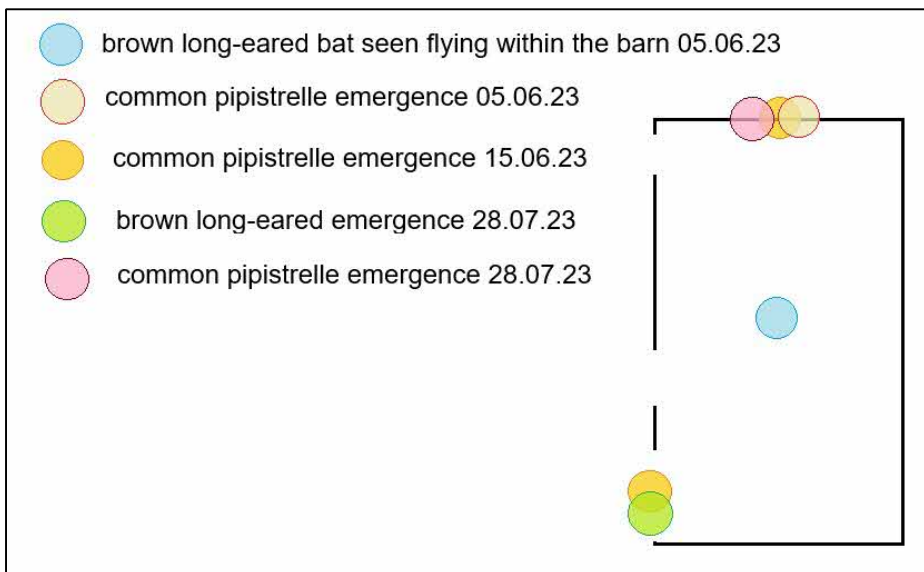


Figure 5. Bat emergence locations Barn B.



## 5.0 ASSESSMENT

The results of the survey were assessed in accordance with current legislation and policy. It is proposed to convert the barns into residential dwellings.

### 5.1 Roosting Bats

The results of the PRA, eDNA analysis, and RCA emergence surveys has shown that the barns are/have been used as a roost for brown long-eared and common pipistrelle bats. Given the evidence found it is concluded that the following roosts are present:

- Barn A and B - Brown long-eared –small day roost for a small number of bats (1 –2 bats)
- Barn A and B - Common pipistrelle –small day roost for a small number of bats (1 –3 bats).

The roosts (total of 4 roosts) are of low conservation significance. The scale of impact of the proposed barn conversions on the brown long-eared and common pipistrelle roosts would be high would be low.

The proposed barn conversion works would cause destruction, partial destruction/ modification, and/or disturbance of bat roosts.

In this instance a European Protected Species Licence (EPSL) licence from Natural England will be required prior to the conversion works commencing. The EPSL will include the following measures (this list is not exhaustive) and these should be made a condition of any planning permission).

The following must apply for this project where planning permission is granted:

- The roofing works to be preferably conducted between 1<sup>st</sup> September and 1<sup>st</sup> May to avoid disturbing bats (note: avoidance of nesting birds will also need to be considered);
- Contractors must be advised in writing that there is potential presence of bats in the barns;
- Prior to works starting 1 no. bat box suitable for long-eared bats and 1 no. bat box suitable for pipistrelles should be erected on the wall of the nearby house or other suitable building where it will not be disturbed by the works. A suitable box for brown

long-eared would be the Cavity Nest Box that can be sourced from the Nestbox Company ([nestbox.co.uk](http://nestbox.co.uk)). A suitable box for pipistrelles would be the Elisa Bat Box which can be sourced from [nhbs.com](http://nhbs.com). The boxes should be located as high as possible to an east or south elevation and be away from artificial light sources.

- On the morning that works to the roofs are due to commence, a suitably qualified ecologist should attend site to (a) carry out a pre-works survey to confirm there are no bats present; and (b) give a tool-box talk briefing the contractors covering brief details of bat ecology and roosting behaviour, legislation covering bats and bat roosts, and what to do if a bat is encountered during works;
- If a bat is encountered at any time during the proposed works when the ecologist is not on site, work should cease immediately in the vicinity of the bat, and advice should be sought immediately from the ecologist. Bats should never be handled by those inexperienced of bats and must never be handled without wearing suitable protective gloves.
- A roof space suitable for long-eared bats (c. 4 m x 4 m x 2.5 m high) in either Barn A or Barn B must remain accessible and usable for roosting long-eared bats subsequent to completion of the proposed works. This will require suitable access into the roof space through the roof eaves (via 2 x holes through a soffit or barge board, next to the wall, on the north or east elevation –size c. 20 x 30 mm). Access via the entrance must provide bats a means to enter the roof void. See Figure 6 for an example of an access point.
- At approximately 2 m intervals along the ridge beam, the roof felt should have 30 x 100 mm slots cut out beside the ridge boards, so that bats can access the underside of the ridge tiles, where they like to roost. A few small holes through the felt can be created at several levels from the apex of the roof to halfway down the roof slope. This will allow bats into the space between the tiles and the felt.
- The roof of the bat roost must include a traditional bitumen 1F felt that is of a non-woven, short-fibred construction as many BRMs are not safe for bats due to the loose fibres.
- Two years monitoring of the bat provision by a licenced bat ecologist as per best practice.

In addition to the above the slate roofs of the proposed conversions should contain features for crevice dwelling species such as pipistrelles. These can be created in the roofs of the converted barns through using 4 no. lifted slates (2 per barn) or lead access slates (the latter available from Habibat). The concept is to create a space between the slates and the underfelt

that can be accessed via an appropriate cowling (a bat access cowl or lifted slate). To create the bat roost, the location where the bat access is to be installed is determined as the approximate centre of the roost. This will need to be around four to five rows of slates down from the ridge and *c.* 3 m in from the gable end. The concept is shown in Figure 7.

The batons to the top left and the bottom right of the access point are to have gaps cut in them, 60 mm long. These gaps give bats access to the space between the slates and the felt above and below the point at which they gain access, increasing the area they can occupy and creating a series of different microclimates within the roof. Vertical batons are to be installed, 2 m either side of the bat access point, creating the roost within the roof pitch. The idea is that bats will land on the roof slates and crawl through the access point into the space between the slates and the felt beneath and can then crawl into the spaces above and below the batons. The concept is shown in Figures 8 and 9.

Figure 6. Example of an access point into the roof. Natural England.

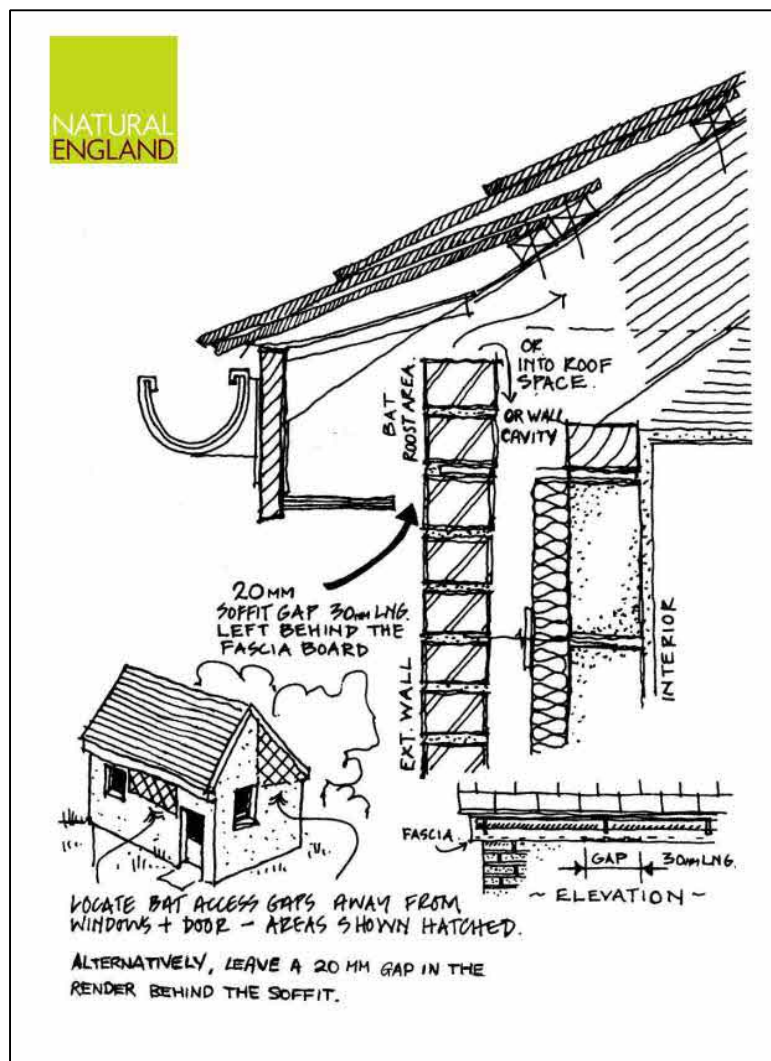


Figure 7. Bat roost concept.

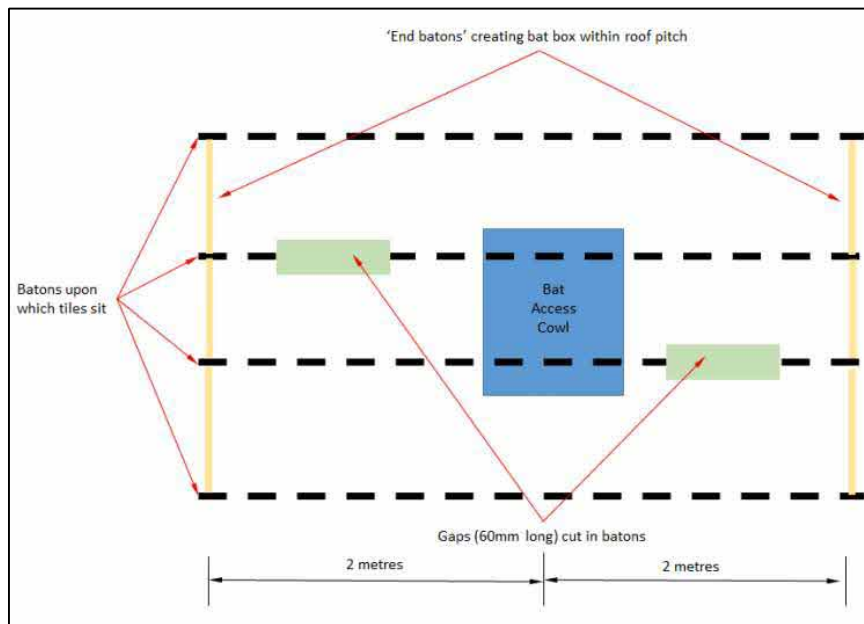
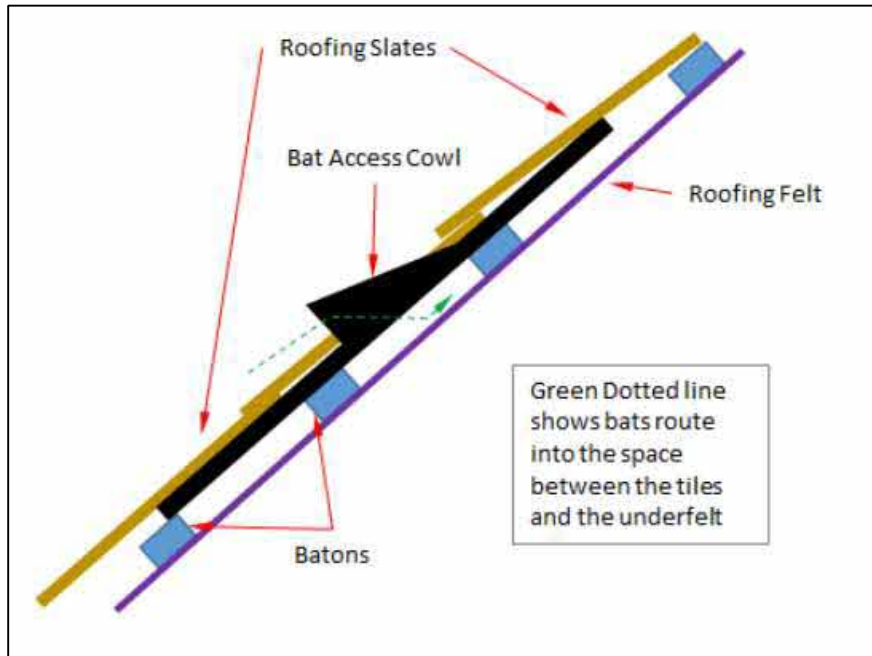
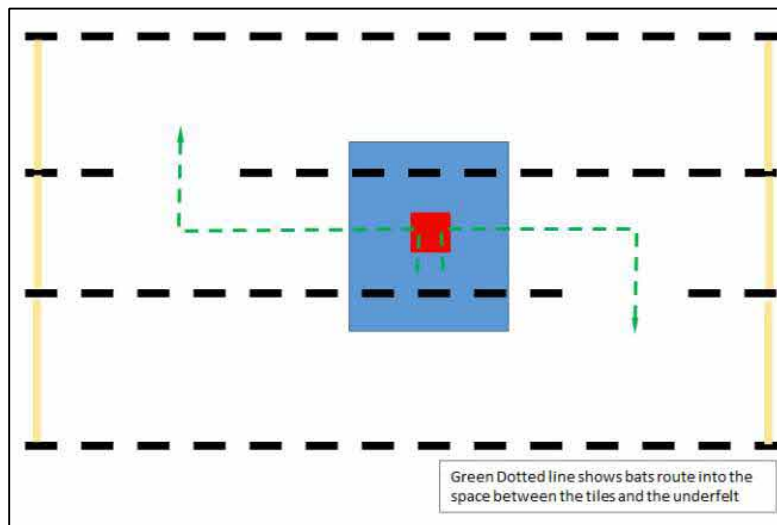


Figure 8. Concept of bat access point using a lead bat access cowl. Lifted slates could also be used.



**Figure 9. Illustrating access for roosting bats within the feature.**



## 5.2 Nesting Birds

Barn A and Barn B had evidence of nesting by birds with potential for nesting in the ivy growing over Barn C. As a precautionary measure the initial conversion works to the barns should not take place between 1st March and 31st August inclusive, unless a competent ecologist has undertaken a careful, detailed check for active birds' nests immediately before works commence. Any birds nesting will be left to complete breeding (i.e. until all dependant juveniles have fledged).

Opportunities for nesting birds should be included within the conversion of all three barns. 4 no. bird boxes should be located to the northeast or north elevations for each barn. A suitable box would be the Vivara Pro Woodstone House Sparrow Nest Box or equivalent. In addition, provision should be included to provide nesting opportunities for swallows. This should consist of swallow nest cups within an open structure such as a car port or within other outbuildings not to be impacted by the proposal. It is recommended that 8 no. nest cups are placed in suitable locations under guidance of a qualified ecologist.



## 6.0 CLOSURE

This report has been prepared by SWE Limited with all reasonable skill, care, and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

The information presented in this report provides guidance to reduce the risk of offences under UK law. However, SWE is not a legal practice and disclaims any responsibility to the client and others for actions that lead to offences being caused, whether or not the guidance contained in this report is followed. Interpretation of UK legislation is presented in good faith; however, for the avoidance of doubt, we recommend that specialist legal advice is sought.

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