



WOLD ECOLOGY LTD

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Thirley Cotes Farm, Harwood Dale

Bat Scoping Survey, March 2018.

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1.0

EXECUTIVE SUMMARY

- 1.1 No signs of roosting bats were discovered during the scoping survey and daytime inspection. However, there is a risk of bats being present in the studied buildings at other times of year, especially during the summer months. **It is recommended that a further emergence (dusk) and return (dawn) surveys are undertaken on the studied buildings between May – late August.** This is to ensure bats are not roosting in the buildings prior to conversion works.
- 1.2 **Bat roosts are protected throughout the year, whether bats are present or not.**
- 1.3 All bats and their roosts are fully protected under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) and are further protected under the Conservation of Habitats and Species Regulations 2017. Should any bats or evidence of bats be found prior to or during development, work must stop immediately, and Natural England contacted for further advice. This is a legal requirement under the aforementioned acts and applies to whoever carries out the work. Planning consent for a development does not provide a defence against prosecution under these acts.
- 1.4 Planning consent for a development does not provide a defence against prosecution under this act.
- 1.5 Habitat enhancement for bats should be implemented as outlined in section 7.0, in order to improve foraging opportunities to bats in the local area.
- 1.6 The data collected to support the output of this report is valid for one year. This report is valid until **March 2019**. After this time, additional surveys need to be undertaken to confirm that the status of the building, as a bat roost, has not changed.
- 1.7 Species list within this report will be forwarded to the local biodiversity records centre to be included on their national database. No personal information will be sent. Please contact Wold Ecology if you do not wish the species accounts and 10 figure grid references to be shared.
- 1.8 **Birds**
- Whilst the survey provided detailed information on bats, bird's nests were observed in the buildings.
 - Birds are afforded various levels of protection and levels of conservation status on a species by species basis. The most significant general legislation for British birds lies within Part 1 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation, it is an offence to, kill, injure, or take any wild bird, take, damage, or destroy the nest of any wild bird while that nest is in use or being built, take, or destroy an egg of any wild bird. All nests should remain undisturbed and intact until after the breeding bird season – 1st March to 31st August.
 - Planning consent for a development does not provide a defence against prosecution under this act.
 - There was evidence of a roosting barn owls *Tyto alba* roosting in the southern compartment of building 1 and a barn owl nest box located on the external south gable. Barn use on site will be monitored during summer 2018.

2.0 INTRODUCTION

2.1 Background Information

2.1.1 In March 2018, Wold Ecology was commissioned by P & G Durbin Properties to undertake a bat scoping survey at Thirley Cotes Farm, Harwood Dale. The site is located at approximate National Grid Reference in East North Yorkshire (see section 5.0).

2.1.2 The Application Site comprises the following:

- Barn 1
- Bar 2

2.1.3 The proposed development includes the conversion of the barns into holiday lets including new glazing, re roofing and internal conversion works.

2.2 Survey Objectives

2.2.1 The site was visited and assessed on 24th March 2018; this was to determine whether the studied barns contained bat roosts. The work involved the following elements:

Survey objective	Yes/No	Comments
Determine presence/absence of roosting bats	Yes	A daytime, visual inspection for bat roosts and roosting bats. Internal inspection of all roof voids. An assessment of the on-site suitability for bats and the likelihood of their presence. Desktop study.
Determine bat usage e.g.s maternity roost, summer roosts	Yes	An assessment of whether bats are a constraint to the development. Hibernation survey. Endoscope survey (where accessible) A bat activity survey has not been undertaken.
Identify swarming, commuting, or mating sites	No	N/A
Other	Yes	The production of a non-technical summary of the legal implications behind bat presence. Report the findings of the field survey work and identify recommendations for a potential mitigation strategy.

3.0 BACKGROUND TO SPECIES

3.1 Ecological overview

3.1.1 There are seventeen species of bat that currently breed in the UK. There is a wide variety of roost type and ecological characteristics between species and for this reason it is necessary to determine the species of bat and the type of roost resident in a structure prior to development. Roosts are utilised by different species of bat, at different times of year for different purposes i.e. summer, breeding, hibernating, and mating etc. (for more detailed information see section 9.0).

3.1.2 Bat populations have undergone a significant decline in the latter part of the 20th century; the main factors cited for causing loss and decline include:

- A reduction in insect prey abundance, due to high intensity farming practice and inappropriate riparian management.
- Loss of insect-rich feeding habitats and flyways, due to loss of wetlands, hedgerows, and other suitable prey habitats.
- Loss of winter roosting sites in buildings and old trees.
- Disturbance and destruction of roosts, including the loss of maternity roosts due to the use of toxic timber treatment chemicals.

3.2 Legal Framework

3.2.1 A bat survey is required prior to planning permission being granted for a development, in order to prevent the potential disturbance, injury and /or death of bats and the disturbance, obstruction and/or destruction of their roosting places. This is in compliance with the Conservation of Habitats and Species Regulations 2017, provision 41 states an offence is committed if a person:

- (a) Deliberately captures, injures, or kills any wild animal of a European protected species (i.e. bats),
- (b) Deliberately disturbs wild animals of any such species,
- (c) Deliberately takes or destroys the eggs of such an animal, or
- (d) Damages or destroys a breeding site or resting place of such an animal.

3.2.2 Section 9 of the Wildlife and Countryside Act (1981) states:

- It is an offence for anyone without a licence to kill, injure, disturb, catch, handle, possess or exchange a bat intentionally. It is also illegal for anyone without a licence to intentionally damage or obstruct access to any place that a bat uses for shelter or protection.

3.2.3 Bat roosts are protected throughout the year, whether or not bats are occupying a roost site.

3.3 Planning Policy Guidance

3.3.1 A bat survey is a requirement of the local authority planning department, as part of the planning application process. This is specified in the following legislation:

- National Planning Policy Framework (NPPF): Biodiversity and Geological Conservation – national planning policy relation to biodiversity. NPPF Biodiversity and Geological Conservation gives further direction with respect to biodiversity conservation and land use change/development. NPPF states that not only should existing biodiversity be conserved, but importantly that habitats supporting such species should be enhanced or restored where

possible. The policies contained within NPPF may be material to decisions on individual planning applications.

- 3.3.2 Planning authorities must determine whether the proposed development meets the requirements of Article 16 of the EC Habitats Directive before planning permission is granted (where there is a reasonable likelihood of European Protected Species being present). Therefore, during its consideration of a planning application, where the presence of a European protected species is a material consideration, the planning authority must satisfy itself that the proposed development meets three tests as set out in the Directive.
- 3.3.3 The LPA has to assess whether the development proposal would breach Article 12(1) of the Habitats Directive. If Article 12(1) would be breached, the LPA would have to consider whether Natural England was likely to grant a European protected species licence for the development; and in so doing the LPA would have to consider the three derogation tests:
- a) 'Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'
- In addition, the LPA must be satisfied that:
- (b) 'That there is no satisfactory alternative'
 - (c) 'That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.
- 3.3.4 Relevant Case Law
- Woolley v Cheshire East Borough (2009).
 - R.(Morge) v Hampshire County Council (2011).
 - Prideaux v. Buckinghamshire County Council and Fcc Environmental UK Limited (2013).
- 3.3.5 The rulings summarise that if it is clear or perhaps very likely that the requirements of the Directive cannot be met because there is a satisfactory alternative or because there are no conceivable 'other imperative reasons of over-riding public interest' then the authority should act on that and refuse permission.'
- 3.3.6 The conclusion of the judgement is that LPAs must ensure that the option/alternative that best takes into account all the relevant considerations (not just EPS) should be the preferred option assuming that the other two tests specified in Article 16 (1) are also met.
- 3.3.7 The judgements also clarified that it was not sufficient for planning authorities to claim that they had discharged their duties by imposing a condition on a consent that requires the developer to obtain a licence from Natural England. Natural England considers it essential that appropriate survey information supports a planning application prior to the determination. Natural England does not regard the conditioning of surveys to a planning consent as an appropriate use of conditions.

4.1 Status of species present in Yorkshire

Bat Specie	UK Status	UK Distribution	Yorkshire Distribution
Common Pipistrelle	Not threatened	Common & widespread	Common & widespread.
Soprano pipistrelle	Not threatened	Common & widespread	Less common than common pipistrelle but fairly widespread.
Nathusius's pipistrelle	Rare	Restricted. Throughout British Isles.	Scarce, bat detector records only.
Brown long-eared	Not threatened	Widespread	Widespread.
Daubenton's	Not threatened	Widespread	Widespread.
Natterer's	Not threatened	Widespread (except N & W Scotland)	Present
Brandt's	Endangered	England and Wales	Few confirmed records.
Whiskered	Endangered	England, Wales, Ireland & S Scotland.	Present.
Noctule	Vulnerable	England, Wales, S Scotland.	Widespread
Leisler	Vulnerable	Widespread throughout the British Isles, except N Scotland.	Rare (locally common in West Yorkshire).
Barbastelle	Rare	England.	No records since 1950's.

Source - <http://www.nyorkbats.freeserve.co.uk/bats.htm>

4.2 Data Review and Desk Study

- 4.2.1 Wold Ecology have previously undertaken bat surveys at Thirley Cotes Farm and have recorded roosting brown long-eared *Plecotus auritus*, Natterer's bat *Myotis nattereri*, common pipistrelle *Pipistrellus pipistrellus* and commuting/foraging noctule *Nyctalus noctule*. This included a common pipistrelle maternity roost within the farmhouse. The activity surveys were undertaken between 2010 – 2013.
- 4.2.2 Wold Ecology employees, field surveyors and network of associate ecologists have recorded brown long-eared *Plecotus auritus*, noctule *Nyctalus noctula*, Natterer's *Myotis nattereri*, soprano pipistrelle *Pipistrellus pygmaeus* and common pipistrelle *Pipistrellus pipistrellus* within 5km of the Application Site. Wold Ecology bat records date from 2006 and include over 1000 bat activity surveys.

4.2.3 The following Natural England development licenses are located within 2km of the Application Site (source - magic.gov.uk):

Specie	Distance from site	Destruction of a breeding site	Destruction of a resting site
Common pipistrelle Whiskered	1.5km: S	N	Y
Common pipistrelle Brown long-eared Natterer's	On site	Y	Y
Common pipistrelle	550m: NE	N	Y

4.2.4 Wold Ecology bat activity surveys within 2km of the Application Site have recorded the following roosts:

Date	Taxon Name	Common Name	Location	County	Grid reference	Record Type	Abundance
06/05/16	Pipistrellus pipistrellus	Common Pipistrelle	Roadside Farm	E. Yorkshire	SE 98054 95368	Day	1

4.2.5 Consultation with the North Yorkshire Bat Group identified the following bat records within 2km of Thirley Cotes Farm.

Species	Site	Grid ref.	Date	Comment
Unknown	Brooklands Farm, Harwood Dale	SE 966 963	17 Feb 2004	Bat flying in loft. Droppings.

4.3 Daytime and Visual Inspection

4.3.1 The daytime assessment identified whether the area had any signs of occupancy and/or bat usage. This took the form of a methodical search, both internally and externally, for actual roosting bats and their signs. Specifically, the visual survey involved:

- Assessment for droppings on walls, windowsills and in roof spaces
- Endoscope survey.
- Scratch marks and staining on beams, other internal structures and potential entrance and exit holes
- Wing fragments of butterfly and moth species underneath beams and other internal structures
- The presence of dense spider webs at a potential roost can often indicate absence of bats
- Assessment of crevices and cracks in the buildings to assess their importance for roosting bats
- The duration of the daytime, visual inspection was 45 minutes

4.3.2 Summary of daytime inspection and visual survey

Date of each survey visit	Structure reference/location	Equipment used/available	Weather
24/03/18	Bar 1 Barn 2	Binoculars, 1million candle power clu-lite torch, micro Dart endoscope, Dewalt DW03050 Laser Measure. 3.9m telescopic ladders Phantom 4 Drone	10°C, 70% cloud. Beaufort 0. No recent rain.
Comments (to include # of surveyors used for each visit): 1 surveyor undertook the visual inspection.			
Personnel: Chris Toohie (Class 2 bat license - 2015-12688-CLS-CLS and RC027) – 24 th March 2018			

4.3.3 Personnel

Personnel	Experience	Licence No.
Chris Toohie MCIEEM	Project Manager of Wold Ecology with over 11 years' experience surveying bat roosts for development licences. Chris has conducted over 800 bat surveys, held over 60 development licenses and is one of only 139 (September 2017) Natural England Registered Consultants who is able to make use of the new Bat Low Impact Class Licence.	RC027 and 2015-12688- CLS-CLS

5.0 RESULTS

5.1 Habitat description

5.1.1 The Application Site is located 1.5 km south east of Harwood Dale village; in a rural location. The Application Site and complex of buildings are less than 2 hectares, the studied barns are immediately surrounded by holiday cottages and private gardens. The adjacent buildings also have bat roosting potential and comprise a similar structure to the studied barns.

5.1.2 Adjacent Landscapes

5.1.2.1 Thirley Cotes Farm is immediately surrounded by a broadleaf woodland shelterbelt and agricultural land dominated by arable with grazed pastures; it is located within the North York Moors National Park and habitats within 2km include grazed pastures, arable and a mosaic of woodland, forest and open countryside including moorland. Woodland cover within 2km is good and occurs as shelterbelts adjacent to farms and small holdings, semi natural woodland and plantations. Habitat connectivity and foraging opportunities is excellent and provided by woodland, shelterbelts, hedgerows and a mosaic of interconnecting habitats.

5.1.2.2 Wold Ecology concludes that the adjacent and continuous high-quality habitats that include woodland, tree lines, hedgerows, scrub, and watercourses connect the Application Site to the wider countryside. These habitats are likely to be used regularly by foraging and commuting bats. Consequently, the Application Site and adjacent habitats are considered to be integral to the favourable population status of local bat populations.

5.1.3 Habitat Summary

5.1.3.1 A summary of the surrounding habitat is (radius of < 2km from the site):

- Buildings – farm buildings and residential properties.
- Hedgerow – fragmented.
- Mature trees and woodland.
- Cloughton Woods.
- Harwood Dale Forest.
- Broxa Forest.
- Tongue Field Plantation
- Hodson Moor Plantation
- Cockerill Plantation
- Standingstones Rigg
- Pits Wood.
- Arable.
- Brown Beck
- East Syme
- Thirley Beck
- Keas Beck
- Harwood Dale Beck and tributaries.
- Grazed pasture.

5.2 Building descriptions

5.2.1 The bat survey and assessment targeted the following (see section 5.5):

- a. **Barn 1** – is single storey and comprises local stone walls and a pitched roof covered with pan tiles and corrugated cement fibre boards. The roof is supported by smooth sawn timbers and the pan tile section is underdrawn. The building is used for storage.
- b. **Barn 1** – is single storey and comprises local stone walls and a pitched roof covered with pan tiles. The roof is supported by smooth sawn timbers and is underdrawn. The building is used for storage.

5.2.2 **Barn 1** (see 5.5 plates 1 - 4) - the following roosting opportunities were present within the fabric of the barn:

- Gaps beneath the ridge tiles where mortar has been displaced.
- There are no missing ridge tiles.
- Loose fitting pan tiles with gaps beneath.
- Missing/slipped pan tiles.
- Gaps in missing mortar below gable tiles.
- Gaps above the eaves.
- Missing mortar in the stone work.
- Gaps adjacent to timber doors and timber windows.
- Gaps above the internal wall plates.
- Gaps above the ridge beam.
- Gaps between timber slats and pan tiles above.
- Gaps in the internal stone work.
- Gaps in the roof structure and mortice joints.
- Access into the building is provided by broken tiles.
- There was no open doors/window access into the building.
- The corrugated cement fibre boards were tightfitting.
- No evidence of bats was observed.
- The building has been assessed as having a MODERATE SUITABILITY to support bats.

5.2.3 **Barn 2** (see 5.5 plates 5 - 7) - the following roosting opportunities were present within the fabric of the barn:

- Gaps beneath the ridge tiles where mortar has been displaced.
- There are no missing ridge tiles.
- Loose fitting pan tiles with gaps beneath.
- Missing/slipped pan tiles.
- Gaps in missing mortar below gable tiles.
- Gaps above the eaves.
- Missing mortar in the stone work.
- Subsidence cracks.
- Gaps adjacent to timber doors and timber windows.
- Gaps above the internal wall plates.
- Gaps above the ridge beam.
- Gaps between timber slats and pan tiles above.
- Gaps in the internal stone work.
- Gaps in the roof structure and mortice joints.

- Access into the building is provided by broken tiles.
- There was no open doors/window access into the building.
- The corrugated cement fibre boards were tightfitting.
- No evidence of bats was observed.
- The building has been assessed as having a MODERATE SUITABILITY to support bats.

5.3 Based on the field survey and the criteria in table 4.1 (Bat Surveys for Professional Ecologists – 3rd Edition, p35. Bat Conservation Trust, 2016), the Application Site and studied buildings have the following suitability for bats:

	Negligible	Low	Moderate	High
Application Site habitats (<2km)				X
Barn 1			X	
Barn 2			X	

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.

Source - Bat Surveys for Professional Ecologists – 3rd Edition, p35. Bat Conservation Trust, 2016.

5.4 Results of Activity Surveys

5.4.1 There is no current (with the previous 2 years) bat activity survey data available for this site.

NORTH 

Scale: 1:25,000

Drawing title:
Location Map

KEY

 Application Site


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NORTH 

Scale: 1:25,000

Drawing title:
Aerial Photograph

KEY

 Application Site

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5.5 Photographs of key features – 23rd March 2018

Plate 1 – Barn 1, east elevation.



Plate 2 – Barn 1, east elevation and north gable.



Plate 3 – Barn 1, west elevation and south gable.



Plate 4 – Barn 1, internal roof structure.



Plate 5 – Barn 2, east gable and north elevation.

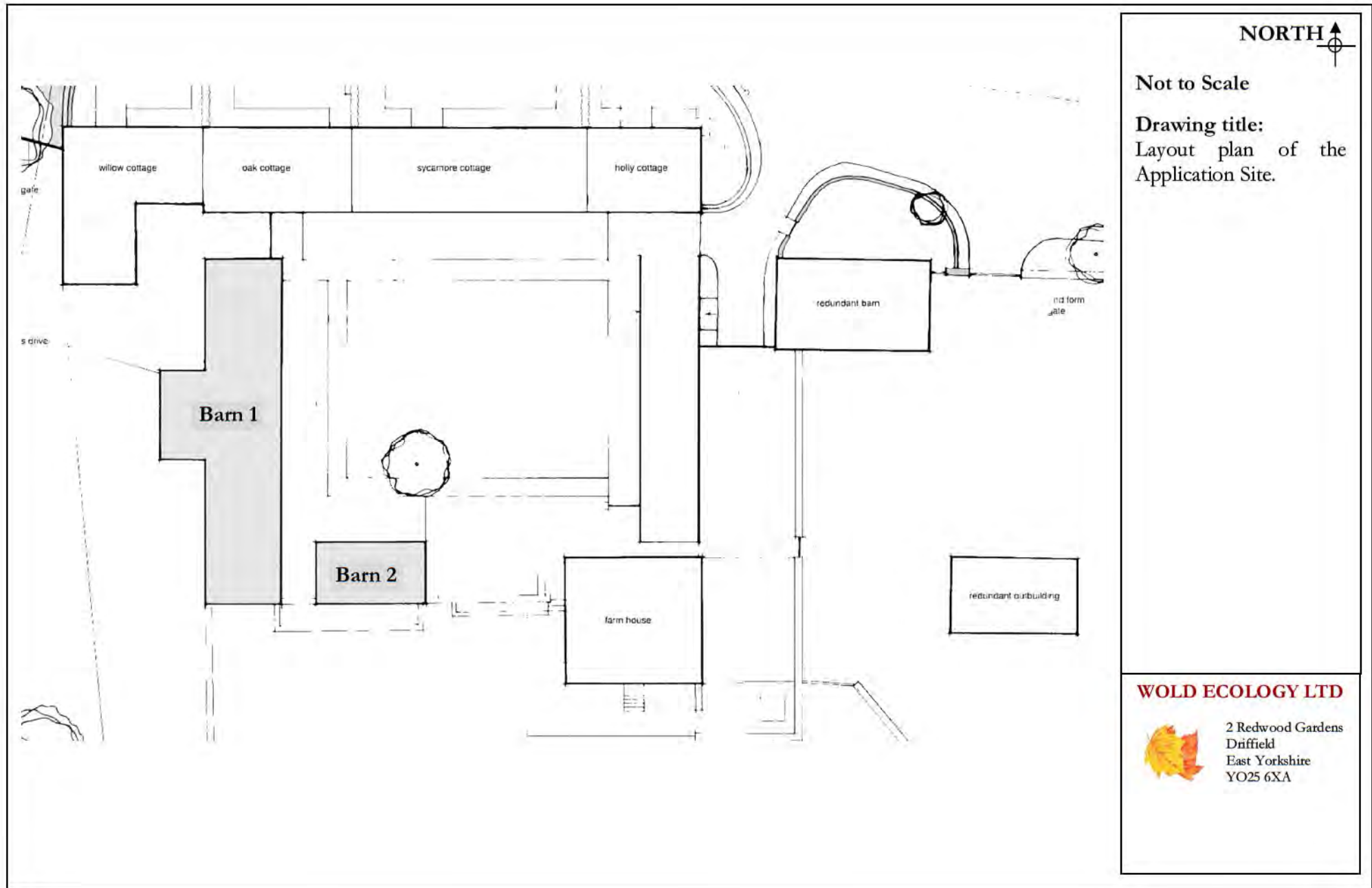


Plate 6 – Barn 2, south elevation.



Plate 7 – Barn 2, internal roof structure





NORTH ↑

Not to Scale

Drawing title:
Layout plan of the
Application Site.

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5.6 Summary of field surveys conducted in 2018

Date	Type of survey	Results	Building Dimensions (m)		
			L	W	H*
23/03/2018	Habitat assessment	World Ecology concludes that the adjacent and continuous high-quality habitats that include woodland, tree lines, hedgerows, scrub, and watercourses connect the Application Site to the wider countryside. These habitats are likely to be used regularly by foraging and commuting bats. Consequently, the Application Site and adjacent habitats are considered to be integral to the favourable population status of local bat populations.			
	Visual inspection.	<p><i>Barn 1</i></p> <p>There were no signs of roosting bats or bat activity inside the building, but due to the presence of features with potential to provide roosting opportunities for bats, the building has been assessed as having a MODERATE SUITABILITY to support bats (see 5.3 plates 1 - 4). No hibernating bats were observed during the endoscope survey.</p>	26.5	5.0	4.3
		<p><i>Barn 2</i></p> <p>There were no signs of roosting bats or bat activity inside the building, but due to the presence of features with potential to provide roosting opportunities for bats, the building has been assessed as having a MODERATE SUITABILITY to support bats (see 5.3 plates 5 - 7). No hibernating bats were observed during the endoscope survey.</p>	7.5	3.75	4.0

* Height from ground floor to ridge

5.7 Interpretation and Evaluation of Survey Results

5.7.1 Presence/absence

5.7.1.1 The information collected to date is based on the findings of one visit to the site in March 2018. No bats or signs of bat activity were observed during the field survey.

5.7.1.2 From the current results, it is not possible to fully determine whether bats are using the barns as a roost. Whilst there were no signs of bat activity i.e. droppings, moth wing fragments, staining's, grease marks etc., age and composition of the barns suggests that there is potential for bats to be present. These features include:

- Gaps beneath pan tiles and missing tiles
- Missing mortar beneath ridge tiles
- Missing mortar in the stone work
- Subsidence cracks
- Gaps above the eaves and internal wall plates
- Gaps adjacent to timber window/door frames
- Gaps and crevices in the roof structure
- Gaps between roof tiles and timber slats

- 5.7.1.3 In addition, the local surrounding habitat composition and historical information of bat roosts at the site suggests that there is an increased potential for bats to be present at some point during spring, summer, or autumn months.

5.7.2 Site Status Assessment

- 5.7.2.1 The assessment is based on one daytime survey conducted in March. During this time of year bats are usually in hibernation or transitional roosts, therefore, bats are inconsistently active. Natural England and the Bat Conservation Trust state that the optimum bat activity survey season is early May to late August although bat activity surveys during late April, September and early October may also provide useful survey data in addition to optimum season bat activity surveys. Consequently, it is not possible to fully determine whether bats are actually roosting in barns 1 and 2. Due to the presence of features likely to support bats, barns 1 and 2 at Thirley Cotes Farm have been assessed as having a MODERATE SUITABILITY for bats.

- 5.7.2.2 Although October is a sub-optimum time of year to conduct hibernation bat surveys, it is extremely difficult to detect bats as they are usually tucked away deep in wall cavities and crevices where winter temperatures are more stable or located at heights unsafe for the field surveyor to access. The conditions needed by bats for hibernation require the maintenance of a relatively stable, low temperature (2 – 6°C). Suitable sites include; old trees, caves, cellars, tunnels, and icehouses, however species such as pipistrelle bats are likely to be detected in deep crevices on the sheltered external walls of buildings at higher winter temperatures.

- 5.7.2.3 Based on the evidence collected to date, it is possible that the studied barns could support individual or significant numbers of bats. These roosts could be:

- Day.
- Night.
- Transition.
- Lekking (mating).

- 5.7.2.4 Wold Ecology considers that the site is unlikely to support hibernating bats for the following reasons:

- The studied barns are currently unused and are not heated.
- The body temperature of hibernating bats is near the ambient temperature. The composition of barns 1 and 2 will not ensure that consistent temperatures of between 0°C and 5°C will be maintained.
- The pan tile/cement fibre board structure of barns 1 and 2 ensure that fluctuating temperatures occur; this can result in shorter bouts of hibernation or temperatures too cold for bats survive. Arousals represent 80–90% of the total cost of hibernation, because bats must raise their body temperature to euthermic levels (Thomas et al. 1990).
- Natterer's and brown long-eared bats typically hibernate within caves, tunnels, icehouses, cellars, and trees (Horacek, 1975).

5.7.3 Constraints

- 5.7.3.1 Evidence of bats may have been removed by winter autumn weather conditions. Late winter is difficult time to observe evidence of bat usage as snow, ice, wind, and rain usually remove them.

- 5.7.3.2 An emergence survey between the months of May and August has not been undertaken.

6.0 IMPACT ASSESSMENT – in the absence of mitigation

6.1 It is not always possible to predict the full pre-, mid-development and long-term impacts on bat populations based on a single daytime survey conducted in March. Barns 1 and 2 at Thirley Cotes Farm has been assessed as having a moderate suitability of bat interest (see 9.2.4). This has been determined by the absence of signs of bat activity and usage on site but the presence of features likely to support a number of roosting bats (see section 5.2). These features include:

- Gaps beneath pan tiles and missing tiles
- Missing mortar beneath ridge tiles
- Missing mortar in the stone work
- Subsidence cracks
- Gaps above the eaves and internal wall plates
- Gaps adjacent to timber window/door frames
- Gaps and crevices in the roof structure
- Gaps between roof tiles and timber slats

6.2 **Initial impacts: disturbance** (human presence, noise, vibration, dust, lighting, access obstruction due to scaffolding and plastic sheeting etc.)

- The construction of scaffolding against the roof of the barns which will cause an obstruction to the access points = minor negative at a site level.
- Re-roofing could kill/injure bats if they are resting between tiles/roof coverings and the contractor steps on the tiles to gain higher access = major negative at a site level.
- Lighting during night working could lead to disturbance of emerging and foraging bats, potentially leading to roost abandonment in the short term = moderate negative impact at site level.
- Vibration, noise, and dust from the demolition may impact on roosting bats that may be present = major negative at a site level.
- Timing of the building works during the summer period could disturb a roost within the barn or in an adjacent building and this may lead to roost abandonment = major negative at a site level.

6.3 **Long-term impacts: roost modification**

6.3.1 No modification of roosts will occur.

6.4 **Long-term impacts: roost loss**

6.4.1 The long-term impacts of potential roost losses are unknown until further activity surveys are completed.

6.5 **Long term impacts: fragmentation and isolation of roost**

6.5.1 There are no plans to alter the habitat on site and consequently, there will be no fragmentation and isolation during the development as the surrounding, supporting habitat will not be affected.

6.6 Post development: interference impacts

6.6.1 The interference impacts are unknown until further activity surveys are completed.

6.7 Predicted scale of impacts

6.7.1 The current information obtained is based on a desk top study, visual inspection and a daytime assessment survey conducted in March.

6.7.2 In order to prevent any potential impacts occurring to bats present, it is recommended a further emergence (dusk) and return (dawn) survey is completed in spring/summer (May to August). This will provide further information on bats at the site and should target all elevations of barns 1 and 2.

7.0 MITIGATION & COMPENSATION

7.1 Legal Protection

- 7.1.1 Legal obligations towards bats are generally concerned with roost protection. All developments, known to contain bat roosts, require a licence from Natural England. Under Section 9 of the Wildlife and Countryside Act (1981) (as amended by the Countryside and Rights of Way Act 2000) and Conservation of Habitats and Species Regulations 2017, provision 41, it is an offence for anyone without a licence to kill, injure, disturb, catch, handle, possess or exchange a bat intentionally. It is also illegal for anyone without a licence intentionally to damage or obstruct access to any place that a bat uses for shelter or protection. **Additional bat activity survey work between May and August will be required to determine the impact on bat populations. This will result in one of the following ways forward with the proposed development. The bat activity surveys should target barns 1 and 2.**
- 7.1.2 Planning consent for a development does not provide a defence against prosecution under these acts.
- 7.1.3 **Bat roosts are protected throughout the year, whether bats are present or not.**
- 7.1.4 If a bat roost is identified and the proposed development activity will result in roost destruction or disturbance to the roost, it will be necessary to obtain a Natural England development licence prior to site works. The licence application process currently requires the input of a qualified bat ecologist/consultant and includes:
- Three bat activity surveys between May and September to support the license application. The submission of a licence to capture, disturb and/or destroy the roosts or resting places of bats.
 - A walk over survey/check must be undertaken within 3 months prior to the Natural England application submission to ensure that conditions have not changed since the most recent bat survey was undertaken. Details of any changes to conditions and habitats and/or structures on site will be documented.
 - The production of a detailed Method Statement to support the application. **This will** include a proposed work programme. One copy will be sent to a Natural England wildlife adviser for assessment. It should be noted that the Method Statement will be appended to any licence granted. The Method Statement will include the necessary mitigation required of the development. This will include:
 - A work timetable which must be followed. This will include completing works when bats are not present in their roost (winter) or when bats are less vulnerable to disturbance (spring/autumn).
 - A suitable mitigation plan allowing bats to be able to roost in a like for like replacement for any closed roost (this can be allowing bats back into the roof void).
 - Additional bat boxes placed as habitat improvement.
 - Bats must not be left without a roost during the active season (April to September inclusive).
 - The production of a Reasoned Statement of Application to support the application. This will provide a rational and reasoned justification as to why the proposed activity meets the requirements of the Conservation of Habitats and Species Regulations 2017, Regulations 53(2) (e-g) and 53(9) (a-b).

- The usual timescale expected for the process of an application is approximately 30 working days from the date of acknowledgement of receipt. Natural England wildlife advisers are given 20 working days to fulfil requests for information. This timescale will also apply to requests for licence amendments.
- Additional on-site surveys, watching brief and implementation of license by a bat ecologist.
- For additional information on licences please refer to Natural England Guidance Leaflet WML-G12 (see www.naturalengland.org).

7.1.5 The Local Authority must be satisfied that the proposed development must meet a purpose of the three tests detailed in section 3.3.3.

7.1.6 Mitigation is required to avoid or reduce the impact of a development on roosting and feeding bats present on site. Mitigation is designed to meet the requirements of the bat species present in the roost. The Bat Mitigation Guidelines (2004) defines the key principles which will be required in mitigation proposals. These are:

- Modifying the scheme design to incorporate a bat loft and to incorporate permanent roosting opportunities (bat tiles, bat boxes, eave designs etc.)
- Altering the timing of the works
- The creation of replacement roosts and/or habitats.

7.2 Mitigation Strategy

7.2.1 Natural England requires mitigation and compensation to be proportionate to the size of the impact and the importance of the population affected and as a principle:

- There should be no net loss of roost sites and that compensation should provide an enhanced resource since the adoption of new roost sites by bats is not guaranteed.
- The scheme should aim to replace 'like with like' in terms of the status of the site i.e. maternity roost, hibernation roost etc. Maternity roosts of common and widespread specie require 'more or less like for like' replacement with constraints on timing (Bat Mitigation Guidelines, 2004). Bat boxes are inappropriate substitutes for significant roosts in buildings and do not constitute 'like for like' replacement.
- Compensation should ensure that the affected bat population can continue to function as before, so attention may need to be given to surrounding habitats.
- The strategy should be considered to ensure that the bat populations at the site are maintained at a favourable conservation status.

7.3 If no bat roosts are detected during the emergence/return surveys, building work can commence with adherence to the following provisional method statement (see 7.4 below). Section 7.4 identifies provisional working practices and precautions necessary to avoid injury or death to any bats that may be present in the buildings.

- 7.4 **Provisional Method Statement – subject to summer bat activity surveys**
- 7.4.1 **This statement should be copied to contractors and all those involved with tile removal, timber treatment, roofing and building works, whose work may affect bats and their roosts on site. These are the provisional recommendations and are subject to amendments following further field surveys during summer months. Even if bats are not found, building works should occur as though bats could be present.**
- 7.4.2 **Timing**
- 7.4.2.1 There will be no mandatory timing constraints if roosting bats are not found during the activity surveys or if the site supports summer roosts with low numbers of bats present.
- 7.4.2.2 If a maternity roost is present on site, the optimum period for carrying out works is 1st October until 1st May. This time period would relate to the construction of appropriate mitigation and disturbance of roost site. A late discovery plan will need to be included in the final method statement to outline measures to be implemented in the event that bats are discovered during the development.
- 7.4.3 **Locating Bats**
- 7.4.3.1 Bats are by nature highly secretive, mobile mammals, therefore bats and their roosts can be very difficult to detect. A pipistrelle bat is capable of roosting in a crack measuring 20mm. In order to reduce any unnecessary disturbance, injury, or death of any late discoveries of individual bats roosting in the buildings the following procedures should be implemented. Common roosts locations must be checked. These include:
- Underneath tiles and roof coverings
 - Underneath ridge tiles
 - Crevices in stone work and gaps in mortar
 - Mortise joints in roof timbers
 - Above the eaves and internal wall plates
 - Around window/door frames
 - Roof timbers including ridge beams and rafters
- 7.4.4 **Working Approach**
- 7.4.4.1 Careful removal by hand of all fittings and fixtures as describe in 7.4.3. Wall cavities should be checked prior to demolition (if applicable) and pointing.
- 7.4.4.2 Remove roof coverings by hand. Only half of the roof should be removed on the first day and the second half 24 hours later. This will create unfavourable conditions for any bats still roosting within the roof structure and encourage the bats to leave on their own accord.
- 7.4.4.3 It is good practice, where bats may come into contact with roof timbers, to carry out timber treatment using Permethryn type chemicals on the Natural England list of approved safe chemicals. New pre-treated timbers i.e. tanalised timber will be allowed to dry thoroughly before use, if applicable. A list of Natural England approved paints and timber treatments is available at

http://www.naturalengland.org.uk/Images/Bat%20roost%20timber%20treatment_tcm6-10167.pdf.

- 7.4.4.4 In the unlikely event that bats are discovered:
- Immediately stop the work that you are undertaking
 - Contact Wold Ecology on 01377 200242/07795 071504 for advice.
 - Advise colleagues in the vicinity of your work why you have stopped and advise them to be aware of the potential for bats being disturbed, injured, or killed
 - Immediately report the matter to your site manager/line manager who will inform relevant people.
 - Grounded bats should be covered with a box (not airtight) and all works within 5m should cease until a bat ecologist arrives to move the bat.
- 7.4.4.5 Bats will only be handled by a licensed bat ecologist, wearing gloves, who has received a rabies vaccination. The bat will be placed either into a holding box, with water provided, and re-released close to the farm at dusk, or placed into a bat box located on site.
- 7.4.4.6 Injured bats will be taken into care (as directed by the Bat Workers Manual, section 7.3, pages 64 – 66: 3rd edition 2004) and fed and cared for until such time when conditions are suitable (night time temperature are $>6^{\circ}\text{C}$) for them to be released at dusk in the mitigation area.

7.5 Mitigation

- 7.5.1 The mitigation strategy will ensure that the bat populations on site are maintained at a favourable conservation status by the retention of the original roost sites where possible. In addition, new roosting opportunities will be created through the provision of roosting opportunities. There should be a net gain in roosting opportunities post development.

7.6 Bat Loft

- 7.6.1 A bat loft has currently not been recommended for this site.

7.7 Bat boxes

- 7.7.1 Specially designed bat boxes can be located on site and are available from Wold Ecology or www.jacobijayne.co.uk. Schwegler Bat Boxes are recommended and well tested boxes and provide additional roost habitats:
- Bat Tube (**1FR** and **2FR**) system. The tube is designed to meet behavioural requirements of the types of bats that roost in buildings i.e. pipistrelle spp. This design can be installed flush to external walls and beneath a rendered surface.
- 7.7.2 The majority of these boxes are self-cleaning as they are designed so that the droppings fall out of the entrance. This reduces the possibility of smell during the summer months. For more information on designs and installation of bat boxes see: www.schwegler-natur.de and www.bct.org.uk.

7.7.3 Wold Ecology recommends that at 2 1FR bat boxes are located on buildings on site. Bat boxes should be erected on south, east or west elevations; 3-5 metres above ground level or close to roof lines.

7.7.4 The 1FR bat tubes will be sited within the external walls of the barn. The bat tubes will be erected behind the outer stone and a 30mm x 30mm gap in the mortar will remain open to allow bat access into the bat tube. The bat tube will not be visible and therefore satisfies the requirements of the planning department. John Drewett (North Yorkshire Bat Group) stated that this has worked on previous schemes and ensures that the bats are contained within a designated location within the barn structure.

7.8 Habitat enhancements

7.8.1 Freshwater, woodland, grassland, urban gardens, trees, and amenity green space are suitable foraging habitats for bats whilst linear habitats such as hedgerows and streams are particularly important commuting routes between roosts and foraging ground. It is recommended that the natural landscape remains largely unchanged and as many mature trees are retained on the site to continue to provide cover and feeding grounds. Landscaped areas can provide good foraging grounds for bats. Areas can be improved by growing night-scented flowers and other flowers favoured by insects. More information on suitable planting to encourage bats obtained from The Bat Conservation Trust (www.bats.org).

Suitable species include:

- Foxglove *Digitalis purpurea*
- Cowslip *Primula veris*
- Red campion *Silene dioica*
- Marjoram *Origanum vulgare*
- Ox-eye daisy *Leucanthemum vulgare*
- Red clover *Trifolium pratense*
- Evening primrose *Oenothera biennis*.
- Honeysuckle *Lonicera periclymenum*.
- Wild Clematis *Clematis virginiana*

7.9 Lighting

7.9.1 Lighting has a detrimental effect on bat activity; many bats will actually avoid areas that are well lit. Lighting can cause habitat fragmentation by preventing bats from commuting between roosts and foraging grounds (A.J Mitchell-Jones 2004).

7.9.2 The impact on bats can be minimised by the use of low pressure sodium lamps or high-pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics.

7.9.3 Luminaire and light spill accessories - Lighting should be directed to where it is needed, and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres, and shields to direct the light to the intended area only.

7.9.4 If applicable, the height of lighting columns in general should be as short as is possible as light at a low level reduces the ecological impact. However, there are cases where a taller column will enable light to be directed downwards at a more

acute angle and thereby reduce horizontal spill. For pedestrian lighting this can take the form of low level lighting that is as directional as possible and below 3 lux at ground level. Aim for lighting column of 5m or less, hooded and cowled to prevent light spill, for main lighting columns

- 7.9.5 Security lighting power, it is rarely necessary to use a lamp of greater than 2000 lumens (150 W) in security lights. The use of a higher power is not as effective for the intended function and will be more disturbing for bats. Many security lights are fitted with movement sensors which, if well installed and aimed, will reduce the amount of time a light is on each night. This is more easily achieved in a system where the light unit and the movement sensor are able to be separately aimed. If the light is fitted with a timer this should be adjusted to the minimum to reduce the amount of 'lit time'. The light should be aimed to illuminate only the immediate area required by using as sharp a downward angle as possible. This lit area must avoid being directed at, or close to, any bats' roost access points or flight paths from the roost. A shield or hood can be used to control or restrict the area to be lit. Avoid illuminating at a wider angle as this will be more disturbing to foraging and commuting bats as well as people and other wildlife.
- 7.9.6 At this site, lights will **not** be mounted where they will shine directly on to bat boxes/bat loft/roost locations within other buildings on site or the surrounding woodland/hedgerow habitat used by foraging and commuting bats.

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9.0 APPENDICES

9.1 Background to Bats - Bat Biology.

- 9.1.1 Bats roost in a variety of places such as caves, mines, trees, and buildings. Woodlands, pasture, ponds and slow flowing rivers or canals provide suitable feeding areas for bats as they support an abundance of suitable insect forage. Bats tend to feed during the first two to three hours after sunset and again before dawn, when insect activity is at its most intense (JNCC 2004).
- 9.1.2 Bat activity over the course of a year reflects the seasonal climate and the availability of food as follows (The Bat Conservation Trust, undated):
January - March - insect prey is scarce, and bats will hibernate alone or in small groups.
April - May - insects are more plentiful and bats will become active. They may become torpid (cool and inactive) in bad weather. Females will start to form groups and will roost in several sites.
June - July - females gather in maternity roosts and give birth to young, which are suckled for several weeks. Males roost alone nearby.
August - September – mothers leave the roost before the young. Bats mate and build up fat for the winter.
October - December – Bats search for potential hibernacula. They become torpid for longer periods and then hibernate.
- 9.1.3 Bats do not stay in the same roost throughout the year. They have different requirements of roosts at different times of the year. During late April/May the bats leave their winter roosts and the females come together to form ‘nursery roosts’, these usually consist of pregnant females along with a few non-breeding and immature females. At this time the males roost either singly or in small numbers. The single offspring is born during late June early July and can fly within 3-5 weeks.
- 9.1.4 Typical roost sites are cracks and crevices in buildings and other structures but more typically under hanging tiles, slates, soffits and cavity walls of fairly modern buildings or holes and splits in trees.
- 9.1.5 The conditions needed by bats for hibernation require the maintenance of a relatively stable low temperature (2 – 6°). Suitable sites include; old trees, caves, cellars, tunnels, and icehouses.
- 9.1.6 Whilst the summer roosts consist of single species (although 2 – 3 species can be found within one large structure but occupying separate roost sites), winter sites often consist of 4 – 6 different species of bat, although there is often niche separation.
- 9.1.7 Bats have a complex social structure based on ‘meta populations’ and also utilise other transitional or intermediate roost sites. The several different types of roost, which bats occupy throughout the year, are as follows:
- **Day roost:** a place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
 - **Night roost:** a place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony.

- **Feeding roost:** a place where individual bats or a few individuals rest or feed during the night but are rarely present by day.
- **Transitional/occasional roost:** used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
- **Swarming site:** where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites
- **Mating sites:** sites where mating takes place from later summer and can continue through winter.
- **Maternity roost:** where female bats give birth and raise their young to independence.
- **Hibernation roost:** where bats may be found individually or together during winter. They have a constant cool temperature and high humidity. These have to be cold and free from any temperature fluctuation with high humidity. The coldness enables bats to lower their body temperature and become torpid. This saves a lot of energy, enabling them to survive on the fat stores within their bodies that they have built up throughout the summer.
- **Satellite roost:** an alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

9.1.8 The main threats to bats include:

- Habitat loss (e.g. deforestation)
- Loss of feeding areas as a result of modern forestry and farming practices.
- Use of toxic agrochemicals and remedial timber treatment chemicals.
- Disturbance and damage to bat roosts.

9.1.9 Bats have been in decline both nationally and internationally during the latter part of the 20th Century. Bats require a variety of specific habitats in order to meet the basic needs of feeding, breeding, and hibernating and are therefore extremely vulnerable to change such as the loss of flight lines through the removal of hedgerows. It is thought that even the two most common and widespread bats, the common pipistrelle and the soprano pipistrelle, have declined by an estimated 70% (1978-1993 figures). There are a number of bat species, which are now considered seriously threatened with one species, the greater mouse-eared bat being classed as extinct as it is no longer breeding in the U.K.

9.1.10 All European bats are listed in Annex IV of the EC Directive 92/94/EEC ‘The Conservation of Natural Habitats and of Wild Fauna and Flora’ as needing “strict protection”. This is translated into British Law under the Habitats and Species Regulations 2017. British bats are included under Schedule 5 of the Wildlife & Countryside Act 1981. They can therefore be described as a ‘fully protected’ or ‘protected’ species.

9.1.11 A summary of the legal protection afforded to bats under both European and British law is provided by the Bat Conservation Trust (BCT, 2010):
 ‘All European bat species and their roosts are listed in Annex IV of the EC Directive 92/94/EEC ‘The Conservation of Natural Habitats and of Wild Fauna and Flora’ as needing “strict protection”. This is implemented in Britain under the Conservation of Habitats and Species Regulations 2017 which has updated the Conservation (Natural Habitats &c.) Regulations (as amended). In summary, in the UK, it is an offence to:

- Deliberately capture, injure, or kill a bat;
- Deliberately disturb a bat in a way that would affect its ability to survive, breed or rear young, hibernate or migrate or significantly affect the local distribution or abundance of the species;
- Damage or destroy a roost (this is an absolute offence); and
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat.’

9.1.12 The species is also listed in Appendix II of the Bonn Convention (and its Agreement on the Conservation of Bats in Europe) and Appendix II of the Bern Convention (and Recommendation 36 on the Conservation of Underground Habitats). Although these are recommendations and not statutory instruments.

9.1.13 Natural England is the Government body responsible for nature conservation. Local planning authorities must consult them before granting planning permission for any work that would be likely to result in harm to the species or its habitat. Natural England issue “survey” licenses for survey work that requires the disturbance or capture of a species for scientific purposes. They also issue “conservation” licenses that are required for actions that are intended to improve the natural habitat of a European protected species or to halt the natural degradation of its habitat.

9.1.14 ‘Development’ licences are issued by Natural England for any actions that may compromise the protection of a European protected species, including bats, under the Conservation of Habitats and Species Regulations 2017. This includes all developments and engineering schemes, regardless of whether or not they require planning permission.

9.1.15 The UK Biodiversity Action Plan states that although the pipistrelle is one of the most abundant and widespread bat species in the UK, it is still thought to have undergone a significant decline in the latter part of this century. The main factors cited for causing loss and decline include:

- A reduction in insect prey abundance, due to high intensity farming practice and inappropriate riparian management.
- Loss of insect-rich feeding habitats and flyways, due to loss of wetlands, hedgerows, and other suitable prey habitats.
- Loss of winter roosting sites in buildings and old trees.
- Disturbance and destruction of roosts, including the loss of maternity roosts due to the use of toxic timber treatment chemicals.

9.2 Significance of bat roosts, appraising the nature conservation value;

9.2.1 The significance of bat roosts should be appraised against the following table. Where the extent of the bat roost is unclear a precautionary approach should be taken in evaluating the significance of the roost and the highest potential category should be selected.

Table 9.2.1 Appraisal of significance of bat roosts.

Scale	Summary	Examples
International	Any significant roosting sites for European Annex 2 species	Barbastelle bat roosts are only known applicable feature in East Anglia.

National	Any roosts qualifying as SSSI under the EN criteria.	Details of criteria are given in 9.1.2 Site Selection Guidelines for Biological SSSI's.
Regional	Any significant bat roosts and features, equivalent in interest to qualifying a site as a Country Wildlife Site.	Breeding and hibernation roosts of most species.
Local	All other sites supporting feeding bats as Wildlife and Countryside Act protected species.	Bats foraging within a structure, night roosts and minor transition roosts.

9.2.2 Site Selection Guidelines for Biological SSSIs

- 9.2.2.1 The following statements are made in respect of selecting SSSIs for bats in JNCC (1989) and JNCC (1998) in Section 13;

Sub-section 1.9 Reason for notification

“The bats have become a major focus of conservation concern in Britain, and all 15 species are protected through Schedule 5 of the 1981 Act.

The mouse-eared bat is now virtually extinct in Britain and other species, most notably the two horseshoe bats, are threatened.

Some species, for example the barbastelle, are so rare that little is known about their conservation status, but other species appear to be declining in numbers.

All bats are vulnerable, through their use of a relatively small number of sites for communal roosting and breeding, often in buildings; so, legal protection against disturbance and taking has been an effective conservation measure.

Enhancing the protection of key sites through the SSSI mechanism can be helpful, but the notification of sites in buildings, particularly domestic dwellings, needs to be considered carefully if it is to have the desired effect.”

Sub-section 3.3 basis of selection

“The selection of bat roosts is on a national basis except for certain mixed hibernacula in AOSs where large roosts are unknown.”

Sub-section 3.3.4 Barbastelle, Bechstein's and grey long-eared bats

“All of these are rare species with no or very few breeding roosts known. Any traditional breeding roosts should be considered for selection if found.”

Sub-section 3.3.5 Natterer's, Daubenton's, Whiskered, Brandt's, Serotine, Noctule and Leisler's bats

“These species are reasonably widespread, and it would be difficult to justify the notification of breeding roosts except in the most exceptional circumstances. These might include exceptionally large colonies with a long history of usage of a particular site. In general, protection of roosts of these species should come under section 9 of the 1981 Act.”

Sub-section 3.3.6 Pipistrelle and brown long-eared bat

“These two species are widespread and more common than the above. Protection should rely on section 9 of the 1981 Act.”

Sub-section 3.3.7 All bat species – mixed assemblages

“Large hibernacula of mixed species are very important and sometimes spectacular, but perhaps number only 20 sites in total. On a national basis, all hibernacula containing (a) four or more species and 50 or more individuals, (b) three species and 100 or more individuals or (c) two species and 150 or more individuals should be selected. In some parts of Britain such large sites are unknown, so alternatively in these areas one hibernaculum site per AOS containing 30 or more bats of two or more species may be considered for selection.”

“Because of the complications associated with the notification of sites in buildings, the appropriate CSD mammal’s specialist should be consulted over the selection of all such sites.”

9.3 Summary of conservation significance of roost types (Bat Mitigation Guidelines, 2004).

Roost type	Development effect	Scale of impact		
		Low	Medium	High
Maternity	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside breeding season	✓		
	Post-development interference			✓
Major hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference			✓
Minor hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction, modification		✓	
	Modified management		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference		✓	
	Temporary destruction, then reinstatement	✓		
Mating	Destruction		✓	
	Isolation caused by fragmentation		✓	
	Partial destruction	✓		
	Modified management	✓		
	Temporary disturbance	✓		
	Post-development interference	✓		
	Temporary destruction, then reinstatement	✓		
Night roost	Destruction	✓		
	Isolation caused by fragmentation	✓		
	Partial destruction	✓		
	Modified management	✓		
	Temporary disturbance	✓		
	Post-development interference	✓		
	Temporary destruction, then reinstatement	✓		

NB This is a general guide only and does not take into account species differences. Medium impacts, in particular, depend on the care with which any mitigation is designed and implemented and could range between high and low.