

# WOLD ECOLOGY

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## Humbleton Hall

Winter Bat Survey, March 2009.

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<b>Notes.</b>	<b>This report contains sensitive information concerning protected species and caution should be exercised when copying and distributing to third parties.</b>	

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## **1.0 INTRODUCTION**

### **1.1 Background Information**

- 1.1.1 In March 2009, Wold Ecology was commissioned by Mick Woods to undertake a bat survey at two barns with the farm complex at Humbleton Hall (approximate National Grid Reference TA 233 344) in East Yorkshire (see 2.9.1: Site Location Plan and 2.10).
- 1.1.2 The survey focused on two adjoining barns. The proposed work will involve the development of the barns into a residential dwelling. A bat survey is required as part of the planning application process (ODPM Circular 06/2005 Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System).
- 1.1.3 The survey involved :
- Daytime assessment.

## 2.0 SURVEY AND SITE ASSESSMENT

### 2.1 Pre-existing information on bats at the survey site.

2.1.1 Currently there is no pre-existing information on bats at the site. Data for the 10km grid square TA23 shows records of Pipistrelle *Pipistrellus spp.* (NBN Gateway 2009).

### 2.2 Status of species present in Yorkshire

Table 2.2 highlights the regional and national status of bat species present in Yorkshire.

**Table 2.2 Status of Bat species in Yorkshire**

Bats	UK Distribution	Yorkshire Distribution
Common Pipistrelle	Common & widespread	Common & widespread.
Soprano pipistrelle	Common & widespread	Less common than common pipistrelle but fairly widespread.
Brown long-eared	Widespread	Widespread.
Noctule	Widespread (except in Ireland)	Widespread.
Daubenton's	Widespread	Widespread.
Natterer's	Widespread (except N & W Scotland)	Present
Brandts	England and Wales	Few confirmed records.
Whiskered	England, Wales, Ireland & S Scotland.	Present.
Leisler	Widespread throughout the British Isles, except N Scotland.	Rare (locally common in West Yorkshire).
Barbastelle	England, rare.	No records since 1950's.

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

### **2.3 Objective of survey**

In order to fulfil the brief, the site was visited and assessed on 26<sup>th</sup> March 2009. This was to determine whether the buildings on site were occupied by bats. The work involved the following elements:

- An on site daytime inspection survey for actual and potential bat roosts.
- An assessment of the on-site potential for bats and the likelihood of their presence.
- Produce 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.

### **2.4 Survey area**

2.4.1 The survey area targeted two adjoining barns to the north of the main house (see 2.9).

### **2.5 Habitat description**

2.5.1 Humbleton Hall is a residential property with a number of modern and traditionally built agricultural buildings. The house was built in the early 19<sup>th</sup> century. The hall is located to the east of Humbleton village, in a rural location. The farm is immediately surrounded by trees and woodland, the wider landscape is dominated by flat, arable land. The large fields are bounded by hedgerows and woodland cover in Holderness is poor.

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

- Buildings – old farm buildings (circa early 1800's) and residential properties.
- Modern farm buildings.
- Hedgerow – fragmented.
- Mature trees and woodland.
- Large arable fields.

### **2.6 Field survey**

#### **2.6.1 Daytime Survey**

2.6.1.1 The daytime assessment identified whether the area had any signs of residency 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;
- 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 their absence and;
- Assessment of crevices and cracks in the buildings to assess their importance for roosting bats.

Equipment used and at hand included:

- Binoculars;
- Cluson 1 million candle power lamp and;
- Dart Endoscope.

#### 2.6.1.2 Timing

The daytime assessment survey was conducted at 1000. The duration of the survey was 1 hour.

#### 2.6.1.3 Personnel

The daytime survey was conducted by Chris Toohie, Project Manager of Wold Ecology with 3 years field experience of surveying bats.

#### 2.6.1.4 Weather conditions

Table 2.6.1 Weather Conditions

Climate	Survey Duration	
	Start	Finish
Time	1000	1100
Wind speed	24 mph	No change
Wind direction	W	No change
Rainfall	None	None
Cloud cover	50 %	No change
Temperature	9°C	9°C

- 2.6.1.5 An emergence survey was not deemed appropriate as this would not provide sufficient information on whether the building is being used during the summer months (May – August) as a potential maternity roost or summer roost for individual bats. Average temperatures for February and March did not exceed 14°C, with average night time temperatures below 10°C, therefore bats are inconsistently active.

## 2.7 Results

### 2.7.1 Daytime Survey, Barns 1 and 2.

- 2.7.1.1 Both barns are adjoining and comprise red brick walls and red pan tiles. There are gaps in the brickwork, under the pan tiles, beneath lead flashing and under the ridge tiles. The ridge tiles are complete and no tiles have slipped or are missing. Internally, the walls have some cracks present but are dusty. The roof comprises timber slats, some of which are missing and the smooth timber roof joists are free of cracks and thick with dust. The roof apex was also thick with dust and debris. Access throughout the first floor of both buildings is provided by internal doors plus open external doors/windows allow free access throughout the two barns. There are gaps around the wooden window and door frames of both barns.

### 2.7.1.2 Barn 1.

Barn 1 is a two storey building that has previously been used to house pigs and runs north to south. The first floor of the building was inspected and numerous yellow underwing moth and peacock butterfly wings were observed beneath a roof joist. There were approximately 15 wings in a square metre. A brown long eared bat dropping was also found on a roof beam above the wing fragments (see 2.10 figure 3). Part of the internal roof had been lined with plastic sheeting. The presence of wing fragments and a brown long-eared dropping has resulted in the barn being assessed as having a **HIGH PROBABILITY OF BAT INTEREST** (see 2.10 figures 1 to 3).

### 2.7.1.3 Barn 2.

Barn 2 runs east to west and has been used for storage; pigeons are roosting in the western end of the barn. A lean too has been built on the south elevation of the barn, it comprises red pan tiles and is supported by metal struts and timber roof joists. The lean too is open fronted and consequently, it is cool and draughty and subject to fluctuations in temperature and climate. Although there were no signs of roosting bats or bat activity, the barn has been assessed as having a **MEDIUM PROBABILITY OF BAT INTEREST** due to the gaps underneath the pan tiles/ridge tiles and in the brickwork. These all have potential to provide roosting opportunities for bats (see 2.10 figures 4 to 7).

Table 2.7.1 Summary of Daytime Search for Bats

<b>Building.</b>	<b>Details of search results.</b>	<b>Current assessment of probability of bat roost present.</b>
Barn 1	Gaps under pan tiles, ridge tiles lead flashing and in the brickwork. Gaps around wooden window and door frames.  Brown long-eared dropping and scattered fragments of butterfly wings.	HIGH
Barn 2	Gaps under pan tiles, ridge tiles, leads flashing and in the brickwork. Gaps around wooden window and door frames.  No signs of bat activity were detected.	MEDIUM

## 2.8 Interpretation and evaluation

### 2.8.1 Presence/absence

2.8.1.1 A brown long-eared bat dropping and scattered moth/butterfly wing fragments were recorded on the first floor of barn 1 (see 2.10 figure 3).

2.8.1.2 The survey is based on one visit to the property. From the results, it is not possible to fully determine whether bats are currently using the building, as a roost. There were no external signs of bat activity i.e. droppings. However, the composition of the roof i.e. the presence of gaps under the tiles, gaps under the ridge tiles, gaps in the brickwork, gaps under lead flashing, gaps around the timber door/window frames and the local habitat composition suggest that there is potential for bats to be present. The wing fragments and droppings were in good

condition and were probably less than a year old.

## **2.8.2 Site Status Assessment**

2.8.2.1 The survey 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 at this time of year. Consequently, it is not possible to fully determine whether bats are currently roosting in the two barns. Due to the presence of brown long-eared bat droppings and features likely to support bats, barn 1 has been assessed as having a high probability of bat interest and barn 2 has been assessed as having a medium probability of bat interest (see Section 7.2.4.2).

2.8.2.2 Although March 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. The conditions needed by bats for hibernation require the maintenance of a relatively stable, low temperature (2 – 6<sup>o</sup>). 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.

2.8.2.3 It is possible that barn 1 and barn 2 could support individual bats of common and widespread species (see section 7.1.7).

2.8.2.4 These roosts could be:

- Summer.
- Night.
- Maternity.
- Transition.
- Lekking (mating).

## **2.8.3 Constraints**

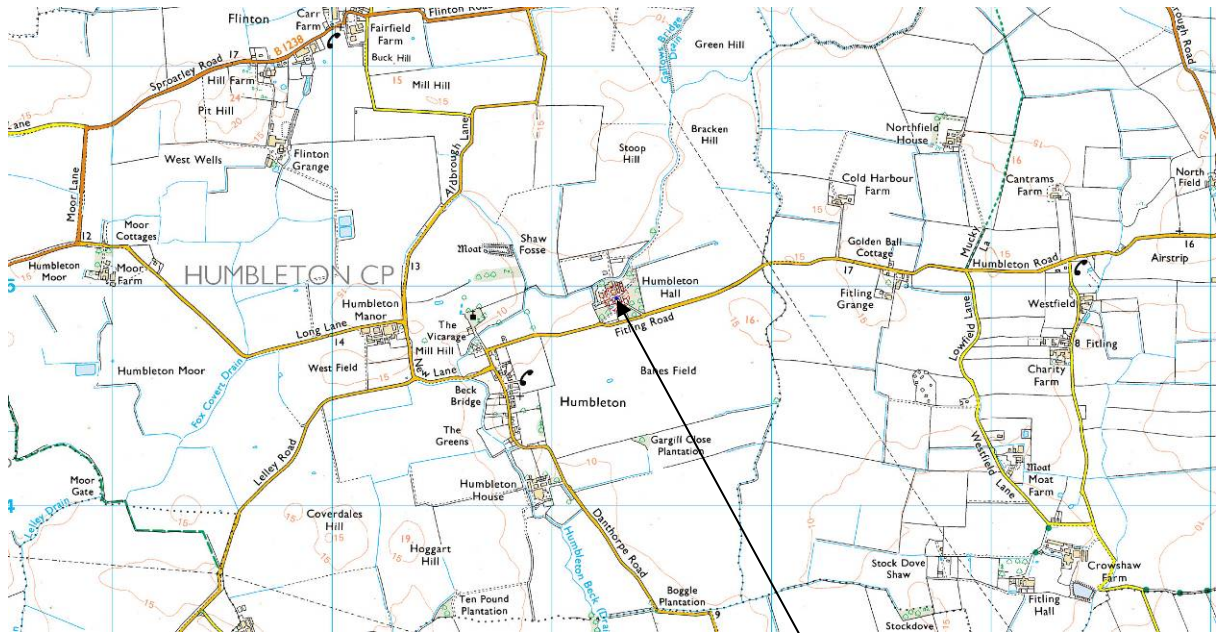
2.8.3.1 Evidence of bats may have been removed by winter weather conditions.

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



## 2.9 Maps of the survey area

### 2.9.1 Location Map



### 2.9.2 Aerial Photograph



Humbleton Hall

## 2.10 Photographs of key features

Figure 1 – Barn 1, south elevation.



Figure 2 – Barn 1, west elevation.



Figure 3 – Barn 1.

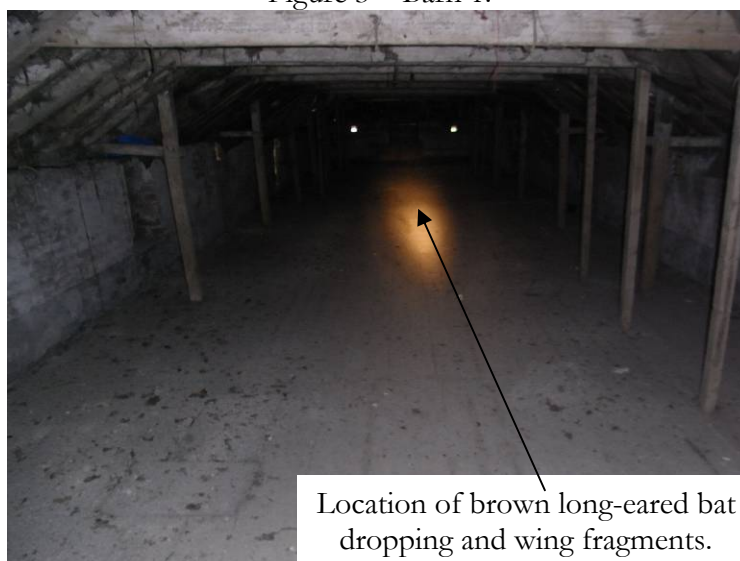


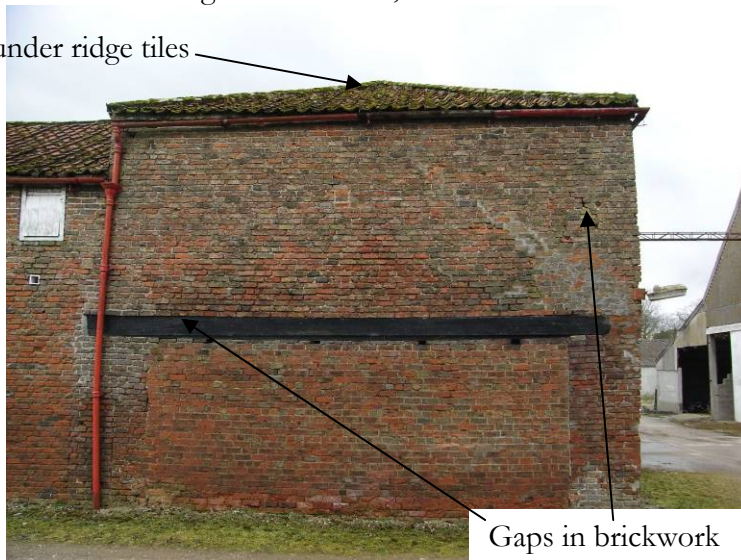


Figure 4 – Barn 2, north elevation.



Figure 5 – Barn 2, east elevation.

Gaps under ridge tiles



Gaps in brickwork

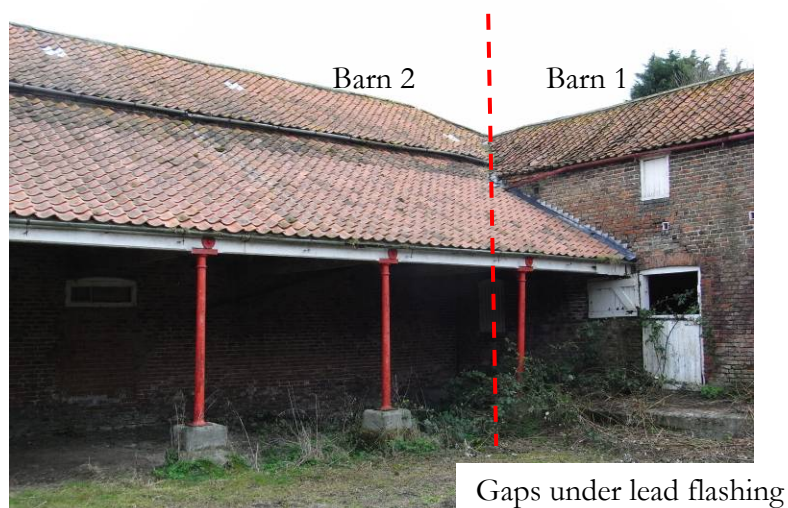
Figure 6 – Barn 2 and lean too, south elevation

Gaps under ridge tiles

Gaps under tiles



Figure 7 – Barn 1 and Barn 2.



### 3.0 IMPACT ASSESSMENT

3.1 Barn 1 has been assessed as having a high probability of bat interest (see 7.2.4.2). This has been determined by the presence of a brown long-eared bat dropping and scattered wing fragments. Barn 2 has been assessed as having a high probability of bat interest (see 7.2.4.2) due to the presence of some features likely to support a number of roosting bats in both hibernacula and summer roosts (see section 2.8). These features include:

- Red pan tile roof covering with gaps and sheltered areas.
- Gaps under lead flashing.
- Gaps beneath ridge tiles.
- Gaps around door/window frames.

3.2 It is not possible to predict the full pre-, mid-development and long term impacts on bat populations based on a single daytime survey conducted in March. In order to prevent any potential impacts occurring to bats present, it is recommended a further dusk (emergent) and dawn (swarming) survey be completed in spring/summer 2009. This will provide further information on bats at the site.

## 4.0 MITIGATION & COMPENSATION

### 4.1 Legal Protection

4.1.1 Legal obligations towards bats are generally concerned with roost protection. All developments, known to contain bat roosts, require a licence from Natural England (see 7.1.10 – 7.1.15). Under Section 9 of the Wildlife and Countryside Act (1981), 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. Additional survey work will be required to determine the impact on bat populations. This will result in one of the following ways forward with the proposed development.

4.1.2 If a bat roost is identified and the proposed development activity will result in disturbance to the roost, it will be necessary to consult with Natural England and a Natural England derogation licence will be required.

4.1.3 Survey information will be required to inform the detail required for the Natural England licence application. The application process currently requires the input of a qualified bat ecologist/consultant and includes:

- The submission of a licence to capture, disturb and/or destroy the roosts or resting places of bats.
- 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.
- 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 (Natural Habitats & c.) Regulations 1994, namely Regulations 44(2) (e), (f) or (g), and 44(3) (a). One copy will be sent to the Local Planning Authority as part of the consultation process.
- 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 and the Local Planning Authority are given 20 working days to fulfil requests for information. This timescale will also apply to requests for licence amendments.
- For additional information on licences please refer to Natural England Guidance Leaflet WML-G12 ([www.naturalengland.org](http://www.naturalengland.org)).

4.1.4 If no bat roosts are detected during the emergence/return surveys, the work can commence with adherence to the following provisional method statement (see 4.2 below). Section 4.2 identifies provisional working practices and precautions necessary to avoid injury or death to any bats that may be present in the buildings.

## 4.2 Method Statement

4.2.1 **This statement should be copied to contractors and all those involved with conversion, timber treatment, roofing and building works, whose work may affect bats and their roosts on site. These are the provisional recommendations for the proposed development and are subject to amendments following further field surveys during summer 2009.**

### 4.2.2 Locating Bats

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 slates and tiles;
- Crevices in brickwork and gaps in mortar;
- Mortice joints;
- Around window frames;
- Roof timbers including ridge beams and rafters.

### 4.2.3 Working Approach

Careful removal by hand of all fittings and fixtures as describe in 4.2.2. Wall cavities should be checked prior to demolition.

4.2.4 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.

4.2.5 As the status of the building as a potential hibernation roost is not known the initial start of the work should avoid late October – early April. This will ensure that bats are not disturbed at a vulnerable time of year.

### 4.2.6 Late discoveries

In the event that bats are discovered in any buildings, Natural England's Regional North and East Yorkshire Team should be contacted on 01904 435500. Alternatively, the Bat Conservation Trust National Bat Helpline number is 0845 1300 228.

4.2.6.1 If it is necessary to remove a bat from the premises to avoid it being harmed, ensure that gloves are worn. It should be placed carefully in a cardboard box and placed in a dark quiet place until it can be released at dusk near to where it was found. Alternatively, it can be moved to an undisturbed part of the building with access to the outside. It is important to ensure that the bat is kept safe from predators. Bats should only be removed as a last option and if the bat is in immediate danger.

4.2.7 The data collected to support the output of this report is valid for one year. This report is valid until **March 2010**. After this time, additional surveys need to be undertaken to confirm that the status of the building, as a bat roost, has not changed.

#### 4.2.8 Habitat Enhancements

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).

4.2.8.1 Gardens and recreation areas can provide good foraging grounds for bats. Green areas can be improved by growing night-scented flowers and other flowers favoured by insects. Suitable species include:

- Tobacco plant, *Nicotiana glauca*.
- Cherry pie, *Heliotropium arborescens*.
- Evening primrose, *Oenothera biennis*.
- Night-scented catchfly, *Silene noctiflora*.
- White jasmine, *Jasminum officinale*.
- Honeysuckle, *Lonicera periclymenum*.
- Sweet rocket *Hesperis matronalis*.
- Soapwort *Spanoria officinalis*.

More information on suitable planting to encourage bats obtained from The Bat Conservation Trust ([www.bats.org](http://www.bats.org)).

4.2.8.2 Leaving areas of uncut grass and providing open water will attract insects. Trees and shrubs in gardens will provide cover and additional feeding grounds

4.2.8.3 Specially designed bat boxes can be located on site. Schwegler Bat Boxes are recommended and well tested boxes:

4.2.8.4 The following bat boxes provide additional roost habitats and are available from Wold Ecology:

- The **2F** is the most popular general purpose box, particularly attractive to the smaller British bats such as Pipistrelle. It comprises a simple design with a narrow entrance slit on the front and is ideal for trees.
- The **1FD** is a larger version of the 2F. A general purpose bat box with two internal rough wood panels which simulate crevices.
- The **2FN** is a larger box with both a wide access slit at the base and an access hole on the underside. Particularly successful in attracting Noctule and Bechstein's bats. It is ideally suited for trees.
- The rectangular shape makes the **1FF** ideal for attaching to the sides of buildings and trees or in sites such as bridges. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats.
- The **1FS** is a larger capacity general purpose bat box with more insulation than most boxes for a more stable temperature in the winter.
- The **1FW** is a hibernation box that is designed to provide a protected environment, particularly through the cold winter months when bats hibernate. It has three internal wooden panels, imitating crevices.

- The **1FQ** is an attractive box designed specifically to be fitted on the external wall of a house, barn or other building. Equally appealing to bats as a roost or a nursery, it features a special porous coating to help maintain the ideal temperature inside along with a rough sawn front panel to enable the bats to land securely.
- 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.
- Brick Box. This design has been used for over 40 years to encourage bats to roost around buildings and bridges. It can be installed flush with the out side wall and rendered over so that only the entrance hole is visible.

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.

- 4.2.8.5 For more information on designs and installation of bat boxes see: [www.schwegler-natur.de](http://www.schwegler-natur.de) and [www.bct.org.uk](http://www.bct.org.uk).
- 4.2.8.6 Wold ecology recommends that 4 boxes are sited within the farm complex.
- 4.2.8.7 A bat loft should be considered to allow continuous access into barn 1 for brown long-eared bats. The loft must have a minimum drop of 2 metres. Access will be provided by lead saddles and gaps in the brickwork.



## 5.0

### SUMMARY

- 5.1 Signs of bat use were discovered during the survey. Consequently, there is a risk of bats being present in the buildings at other times of year, especially during the summer months. **Bat roosts are protected throughout the year, whether bats are present or not.** It is recommended a further dusk and dawn survey be carried out on both Barn 1 and Barn 2 between May – late August 2009, this is to ensure bats are not roosting in the building prior to its conversion.
- 5.2 If a bat roost or roosts are identified on site, a Natural England licence will be required to proceed with any part of the development likely to disturb, damage or destroy the roost. If no bat roosts are identified the work should proceed with adherence to the Method Statement outlined in section 4.2. This may be modified subject to the results of the further survey work.
- 5.3 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 Regulation 39(1) of the Conservation (Natural Habitats &c.) Regulations 1994. 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 Wildlife and Countryside Act 1981 (as amended) and applies to whoever carries out the work. All contractors on site should be made aware of this requirement and given Natural England's contact details.
- 5.4 If conversion of the barns should be delayed until winter 2009, the **initial start of the work** should avoid late October – early April. This will ensure that bats are not disturbed at a vulnerable time of year (see 7.1.7). A hibernation survey must be conducted if the planned start date of the development falls into this period.
- 5.5 Habitat enhancement for bats should be implemented as outlined in section 4.2.8, in order to improve foraging opportunities to bats in the local area.
- 5.6 Species list within this report may 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 six figure grid reference to be shared.
- 5.7 Whilst the survey provided detailed information on bats, bird's nests were observed in the barns. All nests should remain undisturbed and intact until after the breeding bird season – 1<sup>st</sup> March to 31<sup>st</sup> August. There was no evidence of barn owls *Tyto alba* roosting in the building.

Bat Conservation Trust. 'Bats in Churches' leaflet.

Mitchell-Jones A.J. (2004). 'Bat Mitigation Guidelines'. English Nature, Peterborough.

English Nature (2003). 'Focus on Bats'.

English Nature (1993) 'Bats in Roofs; A Guide for Surveyors'.

English Nature Northumbria Team (2004) 'Bat surveys for development proposals in North-East England'. English Nature.

Mitchell-Jones, A.J. & McLeish, A.P. (1999) 'The bat workers' manual' 2<sup>nd</sup> edition. Joint Nature Conservation Committee.

Mitchell-Jones, A.J. (2004) 'Bat mitigation guidelines'. English Nature, Peterborough.

The Bat Conservation Trust (electronic 2002) [www.bats.org.uk](http://www.bats.org.uk) Much additional information is available on bats at this website.

Habitat Management for Bats. (2001). A guide for land managers, land owners and their advisors. JNCC.

## 7.0 APPENDICES

### 7.1 Background to Bats - Bat Biology.

7.1.1 There are currently 17 species of bat native to the United Kingdom. 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).

7.1.2 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.

7.1.3 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.

7.1.4 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.

7.1.5 The conditions needed by bats for hibernation require the maintenance of a relatively stable low temperature (2 – 6<sup>o</sup>). Suitable sites include; old trees, caves, cellars, tunnels, and icehouses.

7.1.6 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.

- 7.1.7 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:

**Daytime summer roosts** are usually cool and secluded and are where bats wait for their next feeding opportunity.

**Nursery/maternity roosts** where young are born and are usually quite warm. Young spend their first few weeks here before they become independent.

**Temporary night roosts** are used for shelter nearer to feeding areas if the weather is bad. They are also used for short periods between dusk and dawn to save returning to the main roost.

**Mating roosts** are set up by the males, where they attempt to attract females for mating.

**Hibernacula** are those roosts in which bats hibernate over winter. These have to be cold and free from any temperature fluctuation. 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.

- 7.1.8 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.

- 7.1.9 Bats have been in decline both nationally and internationally during the latter part of the 20<sup>th</sup> 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.

- 7.1.10 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 being in need of “strict protection”. This is translated into British Law under Statutory Instrument No. 2716 Conservation (Natural Habitats & c.) Regulations 1994. 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.

- 7.1.11 Under Section 9 of the Wildlife and Countryside Act (1981) 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 (i.e. a roost). This holds true even for sites that are not currently occupied, as bats can return to roosts year after year. The Bat Conservation Trust recognises bat roosts for up to 5 years after being vacant (Anon 2004).

7.1.12 Under the Regulations it is an offence to:

- Deliberately capture or kill any wild animal of a European Protected species.
- Deliberately disturb any such animal.
- Damage or destroy a breeding site or resting place of such a wild animal.
- Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal (or plant) of a European protected species, or any part of, or anything derived from such a wild animal.

7.1.13 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.

7.1.14 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.

7.1.15 “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 (Natural Habitats, &c.) Regulations 1994. This includes all developments and engineering schemes, regardless of whether or not they require planning permission.

7.1.16 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.

The main action plan aims and objectives include;

- Maintain the existing population size of *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*

- Maintain the existing geographical range of *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*  
Restore population size of *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus* to pre-1970 numbers.

## 7.2 Significance of bat roosts, appraising the nature conservation value;

7.2.1 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 7.2.1 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.

### 7.2.2 Site Selection Guidelines for Biological SSSIs

7.2.2.1 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.”

## **7.2.3 Current status of bats in the UK.**

7.2.3.1 The current known status of bats as given by the Bat Conservation Trust is shown in Table 6.

Table 7.2.3 Status of bats.

<b>Species</b>	<b>Status of Population Nationally</b>
Whiskered/Brandt’s	Endangered
Natterer’s	Not Threatened
Daubenton’s	Not Threatened
Noctule	Not Threatened
Serotine	Vulnerable
Pipistrelle 45	Not Threatened
Pipistrelle 55	Not Threatened

## **7.2.4 Definitions of probabilities of bat interest.**

7.2.4.1 Low probability of bat interest.

Buildings in this category fall into two main types:

- Generally well maintained without cracks and crevices, no gaps between bargeboard or soffit and wall or without an attic space.

- Contain some or all of the above features but are both draughty and thick in cobwebs or contain strong odours such as solvents, diesel, etc.

It must be borne in mind that a building from this latter group can become suitable for bats due to refurbishment. This often happens to houses once the attic space has been cleaned and under felted prior to timber treatment.

In a non-residential property no licence is required for development to a building classified as **Low probability of bat interest**.

#### 7.2.4.2 Medium probability of bat interest

- The buildings here contain many sites suitable for roosting bats although no obvious signs were recorded during the survey. In exposed conditions on large buildings the signs of bat usage such as droppings and urine marks can be obliterated by heavy rain.
- Occasionally a light scattering of droppings will be recorded in an attic or a semi-derelict building, which is considered by the surveyor unsuitable for use as a bat roost or may be used occasionally as a night perch or feeding post. The medium probability of bat interest can be used based on the surveyor's experience
- Whilst no licence is required for development to a non-residential building classified as **Medium probability of bat interest**, it is often best practice to conduct sensitive roof stripping or architectural salvaging to minimise any possible disturbance and to employ mitigation techniques.

#### 7.2.4.3 High probability of bat interest

- This group includes buildings with known roosts or signs of bat occupancy such as droppings and staining at a roost entrance. The description of high probability buildings will also contain an indication as to the time of the year when it will be occupied by bats i.e. summer – nursery roost. Winter – hibernation.
- If the building/buildings fall into the high probability group then the area of bat interest should be identified on site with the contractors to ensure that work does not affect the bats roost.
- If it is thought the work will have a direct effect on the bat roost and is unavoidable then advice must be sought from the Species Office for Natural England and derogation licence obtained prior to any of the work proceeding.

### 7.2.5 Further information on Bats

#### 7.2.5.1 Review of Bat Legislation

Bats are fully protected under the Wildlife and Countryside Act 1981 and the Conservation (Natural Habitats &c) Regulations 1994. The Act and Regulations include provisions making it illegal to intentionally or deliberately kill, injure or



capture (take) bats or deliberately or recklessly disturb bats (whether in a roost or not) or damage, destroy or obstruct access to bat roosts.

#### 7.2.5.2 Review of Bat Ecology

All British bats have two main types of roost (a) A summer or nursery roost and (b) A winter or hibernation roost.

a. Summer Nursery or Breeding Roost.

During late April/May the bats leave their winter roosts and the females come together to form 'nursery roosts', these usually consists 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.

Typical roost site 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.

b. Winter or Hibernation Roost

The conditions required by bats for hibernation are the opposite of the warm dry summer roost, often being cold and wet, and where a relatively stable low temperature (2 – 6<sup>o</sup>) can be maintained. Suitable sites include; old trees, caves, cellars, tunnels, and ice houses.

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 again there is often niche separation.

c. Bats have a complex social structure based on 'meta populations' and also utilise other transitional or intermediate roost sites.