WOLD ECOLOGY LTD

Chris Toohie
2 Redwood Gardens, Driffield,
East Riding of Yorkshire. YO25 6XA
01377 200242

Richard Baines
5 Coastguard Cottages, Flamborough,
East Riding of Yorkshire. YO15 1AW
01262 850937

www.woldecology.co.uk

Riley House, Kirkburton

Bat Survey, February 2013.

	Staff Member	Position
Surveyor.	Chris Toohie M Sc., MIEEM	Ecologist.
Report prepared by.	Chris Toohie M Sc., MIEEM	Ecologist.
Authorised by.	Chris Toohie M Sc., MIEEM	Project Manager.
Notes.	**This report contains sensitive information concerning protected species and caution should be exercised when copying and distributing to third parties.**	

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1.0 INTRODUCTION

1.1 Background Information

1.1.1 In February 2013, Wold Ecology Ltd was commissioned by James Taylor to undertake a bat survey at Riley House, Kirkburton. The site is located at approximate National Grid Reference SE 19250 12732, in West Yorkshire (see 4.4).

1.1.2 The survey area composed of the following building:

- Residential house
- Garden shed

1.1.3 The proposed development includes the extension of the house on the west elevation including the demolition of the boiler house and removal of the garden shed.

1.2 Survey Objectives

1.2.1 The site was visited and assessed on 19th February 2013. This was to determine whether the buildings on site contained bat roosts. The work involved the following elements:

- A daytime, visual inspection for bat roosts and roosting bats.
- Internal inspection of all roof voids.
- An assessment of the on-site potential for bats and the likelihood of their presence.
- An assessment of whether bats are a constraint to the development.
- 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.

2.0 BACKGROUND TO SPECIES

2.1 Ecological overview

2.1.1 There are eighteen species of bat that currently breed in the UK, seventeen of which are known to be breeding here. 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 building 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.

2.2 Legal Framework

2.2.1 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 2010, 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.

2.2.2 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.

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

2.2.4 In addition, the local authority has a duty to have regard to the purpose of conserving biodiversity in the exercise of their functions (Natural Environment and Rural Communities (NERC) Act 2006).

2.3 Planning Policy Guidance

2.3.1 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:

- Department for Communities & Local Government Circular 06/2005 Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.
- 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.

3.0 ASSESSMENT METHODOLOGY

3.1 Survey effort

3.1.1 The assessment of the buildings involved a desktop study and daytime inspection.

3.2 Data Review and Desk Study

3.2.1 Currently there is no pre-existing information on bats at the site. Data for the 10km grid square SE11 and SE21 shows records of brown long-eared *Plecotus auritus*, lesser noctule *Nyctalus leisleri*, Noctule *Nyctalus noctula* and common pipistrelle *Pipistrellus pipistrellus* (NBN Gateway 2013).

3.2.2 Consultation with West Yorkshire Ecology identified the following bat records within 2km of Riley House.

Grid Ref	Common Name	Latin Name	Date	Record Type	Abundance	Designation
SE191132	Common Pipistrelle	*Pipistrellus pipistrellus*	04/08/2008	aural bat detector		Sch5; WYBAP; Kirklees BAP
SE1930813316	Pipistrelle Bat species	*Pipistrellus sp.*	06/02/2007	Roost (hibernacula)	2 Count of Adult	Sch5
SE2021613838	Brown Long-Eared Bat	*Plecotus auritus*	2009	Roost (hibernacula)		Sch5; UKBAP; WYBAP; Kirklees BAP
SE180127	Vesper Bat species	*Vespertilionidae*	05/04/2006	field record		Sch5
SE1906312880	Vesper Bat species	*Vespertilionidae*	21/06/2005	Roost		Sch5
SE1926313274	Bats	*Vespertilionidae*	2007	in building		Sch5
SE1981712976	Vesper Bat species	*Vespertilionidae*	05/01/2006	in building	1 Count of Adult	Sch5
SE1989310967	Vesper Bat species	*Vespertilionidae*	12/06/2003	Roost	180 Count of Adult	Sch5
SE201110	Bats	*Vespertilionidae*	May 2010 - October 2010	field record		Sch5

3.2.3 Consultation with the West Yorkshire Bat Group identified the following bat records within 2km of Riley House.

Grid Reference	Location Name	Date	Scientific Name	Abundance	Record Type
SE177126	Storthes Hall Lane	18/08/1997	*Nyctalus leisleri*	02/05/2009 Count of Adult	Roost (possible)
SE197109	Penistone Road, Shelley	25/06/1995	*Pipistrellus* sp.	51-100 Count of Adult	Roost (maternity)
SE177126	Storthes Hall Lane	18/08/1997	*Pipistrellus* sp.		Roost
SE202122	Fair Field Rise	26/05/1999	*Pipistrellus pipistrellus*	1 Count of Adult	Roost (possible)
SE1868814020		06/07/1999	*Pipistrellus pipistrellus*	21-50 Count of Adult	Roost
SE203122		17/02/2000	*Pipistrellus pipistrellus*	1 Count of Adult	Roost (possible)
SE177126	Storthes Hall Road, Kirkburton	17/12/2001	*Pipistrellus pipistrellus*	1 Count of Adult	Roost (possible)
SE1930813316	Mead Way, High Burton, Huddersfield	06/02/2007	*Pipistrellus* sp.	2 Count of Adult	Roost (hibernacula)
SE203112	Far Bank, Honley, Huddersfield	09/08/1996	Vespertilionidae		Roost
SE1989310967	Cleveland Way, Shelley	12/06/2003	Vespertilionidae	180 Count of Adult	Roost (maternity)
SE1906312880	Penistone Road, Kirkburton, Huddersfield	21/06/2005	Vespertilionidae		Roost
SE1981712976	Hallas Road, Kirkburton, Huddersfield	05/01/2006	Vespertilionidae	1 Count of Adult	In building
SE180127	Storthes Hall Lane, Kirkburton	05/04/2006	Vespertilionidae		Field record

3.2.4 There are no known roosts at Riley House.

3.2.5 Status of species present in Yorkshire

Bats	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
Brandts	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

3.3 Daytime, Visual Inspection

3.3.1 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
- Scratch marks and staining on beams, other internal structures and potential entrance and exit holes
- Inspection of cavities with an endoscope
- 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

3.4 General Survey Information

3.4.1 Timing

Survey	Date	Time		Wind Speed	Wind Direction	Temperature		Rainfall	Cloud Cover
		Start	Finish			Start	Finish		
Visual	19/02/ 2013	1045	1145	Still	N/A	5°C	5°C	None	0%

3.4.2 Personnel

Personnel	Experience	Licence No.
Chris Toohie	Project Manager of Wold Ecology with over 6 years experience surveying bat roosts for development licences. Chris conducted the daytime inspection survey.	20121234

3.4.3 Equipment

The following equipment was used or at hand during the field survey work:

- 8m extendable ladders
- Binoculars
- Cluson CB2 1 million candle power lamps
- Dart Rigid Seesnake Endoscope with 1m extension
- Digital thermometer

4.0 RESULTS

4.1 Site description

4.1.1 *Buildings*

4.1.1.1 The survey area targeted (see section 4.4.3 and 4.5):

a. ***Riley House*** – is currently occupied and comprises rendered walls and a multi pitched roof. The roof is covered with stone tiles.

b. ***Garden shed*** - is currently used for storage and comprises a timber frame with a pitched roof covered in felt.

4.1.2 *Landscape*

4.1.2.1 Riley House is located 500m west of Kirkburton village, in a rural location. The house is approximately 150m above sea level and overlooks a 50m deep valley; consequently the house is in an exposed location. It is immediately surrounded by mature private gardens including mature trees/woodland that offer some shelter from prevailing winds. Grazed pasture and woodland are primary habitats within 2km of Riley House; the latter is connected to Riley House by hedgerows, hedgerows with trees and shelterbelts. Significant areas of woodland are present on escarpments that are too steep for agriculture and include Myers Wood and Saville Wood; both are located within 550m of the studied buildings. In addition to woodland cover, optimal bat foraging habitat occurs along watercourses that drain the surrounding landscape.

4.1.3 *Habitat Summary*

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

- Buildings – farm buildings and residential properties
- Hedgerow
- Mature trees and woodland
- Saville Wood
- Myers Wood
- Shelley Wood

- Laycock Wood
- Boothroyd Wood
- Jenkinson Wood
- Lepton Great Wood
- Carr Wood
- Smith Wood
- High Wood
- Radcliffe Wood
- Arable
- Mature private gardens
- Ponds and watercourses
- Thunder Bridge Dike
- Shepley Dike
- Beldon Brook
- Grazed pasture

4.2 Daytime, Visual Inspection

4.2.1 Following the visual inspection of the buildings, an assessment was made of the buildings potential to support roosting bats. The assessment criteria are contained in section 9.2.4.

4.2.2 Riley House - Only the west elevation will be disturbed as a result of the proposed development and the surveyor concentrated on this location. Riley House is currently occupied and comprises rendered stone walls and a multipitched roof covered in local stone slabs. The building is in good condition; there are no roof slabs missing and the ridge tiles are intact. There are gaps beneath the stone slabs; the western gable slabs were inspected (via an 8m tall ladder) with an endoscope and no roosting or evidence of roosting bats was observed. There are no gaps in the chimney brickwork or rendered walls and the new timber (less than 3 years old) windows are all tight fitting. Lead flashing adjacent to the chimney stacks had no gaps suitable for roosting bats. The adjoining boiler house is single storey and comprises re enforced concrete panels and a flat roof covered in a bitumen based felt product; there are no gaps or crevices suitable for roosting bats in the boiler house. Internally, the roof is heavily insulated and cold conditions prevail. The roof is supported by smooth sawn timbers, the roof is lined with a plastic membrane and a bitumen based product. There are no tears in the felt/membrane and no obvious access points into the roof void were observed. Windows ensure that the western part of the roof void was well lit. There are no gaps in the roof structure including the ridge beam; the walls and timbers are also covered in cobwebs. There were no signs of roosting bats or bat activity inside the building and although gaps underneath the roof slabs are present, the west gable of the house has been assessed as having a LOW POTENTIAL to support roosting bats (see 4.5 figures 1-3).

4.2.3 The garden shed is currently used for storage and comprises a timber frame with a pitched roof. The walls are covered with tight fitting timber cladding and the roof is covered with a bitumen based felt product. There were no signs of roosting bats or bat activity and the shed has no features to support roosting bats. Consequently, the shed has a LOW POTENTIAL of bat interest (see 4.5 figure 4).

Table 4.2: Summary of Surveys conducted in 2013

Date	Type of survey	Results
19th February 2013	Visual	*Riley House* Gaps underneath roof slabs. No signs of bat activity were detected during the endoscope survey.
		Garden Shed No features to support roosting bats. No signs of bat activity were detected.

4.3 Interpretation and Evaluation of Survey Results

4.3.1 Presence/absence

4.3.1.1 The information collected to date is based on the findings of one visit to the site in February 2013. No bats or signs of bat activity were observed during the survey.

4.3.1.2 Currently, from the data collected during one visit, the likelihood that bats are present within the west gable of Riley House (section to be disturbed) and garden shed is negligible. This is supported by the fact that the buildings are in good condition and the daytime endoscope assessment detected no signs of bat usage or activity and consequently, the impact to bats from the demolition of the shed and minor disturbance to the west gable is considered to be **negligible.**

4.3.2 Site Status Assessment

4.3.2.1 The survey is based on one daytime survey conducted in February. During this time of year bats are usually in hibernation, therefore, bats are inactive. Consequently, it is not always possible to fully determine whether bats are actually roosting in the west gable of Riley House. However, due to the absence of suitable features likely to support bats and a comprehensive endoscope survey of all external and internal components, the buildings studied have been assessed as having a LOW probability of bat interest (see Section 9.2.4).

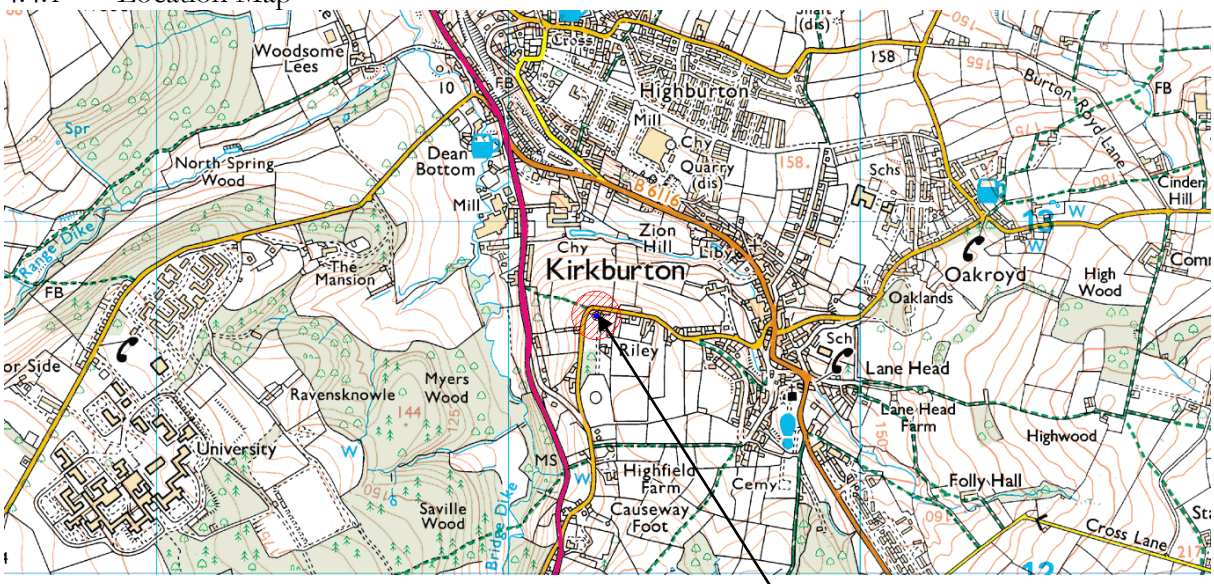
4.3.3 Constraints

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

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

4.4 Maps of the survey area

4.4.1 Location Map



Riley House

4.4.2 Aerial Photograph

Woodland

4.5 Photographs of key features

Figure 1 – Riley House west gable.

Figure 2 – Riley House west gable.

Figure 3 – Riley House internal roof void.

Figure 4 – Boiler house and shed

5.0 IMPACT ASSESSMENT

5.1 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 February. Based on the current information, the west elevation of the house and shed do not support a bat roost. However, bats are by nature highly mobile and secretive mammals and there is always a possibility that bats may turn up at a site at any time. Therefore, taking into consideration all the information collected to date, it has been determined that the proposed development would pose none/negligible impacts to local bat populations.

6.0 MITIGATION & COMPENSATION

6.1 Legal Protection

6.1.1 **Bat roosts are protected throughout the year, whether bats are present or not.**

6.1.2 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 2010, 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 to intentionally damage or obstruct access to any place that a bat uses for shelter or protection.

6.1.3 As no bat roosts or signs of bat activity were detected during the daytime inspection/endoscope survey and the section of the house and shed that will be impacted upon as a result of the proposed development have low potential to support roosting bats, building work can commence with adherence to the following Method Statement (see 6.4 below).

6.4 Method Statement

6.4.1 This statement should be copied to contractors and all those involved with demolition of the garden shed and boiler room, timber treatment, roofing and building works, whose work may affect bats and their roosts on site. Even though bats have not been found, building works should occur as though bats could be present.

6.4.2 Timing

6.4.2.1 There are no mandatory timing constraints if roosting bats are not found during the activity surveys.

6.4.3 Locating Bats

6.4.3.1 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 roof slabs

6.4.4 Working Approach

6.4.4.1 Careful removal by hand of roof slabs above the western gable.

6.4.4.2 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.

6.4.4.3 In the unlikely event that bats are discovered in any buildings, the work on the site will stop immediately and Natural England's Regional West Yorkshire Team should be contacted on 0113 230 3750. Alternatively, the Bat Conservation Trust National Bat Helpline number is 0845 1300 228.

6.4.4.4 If it is absolutely 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.

6.5 Habitat enhancements

6.5.1 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*

6.5.2 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).
The principles are:

- Reduce or remove the UV component of light emitted. To achieve this, a lamp that does not emit UV or a filtration product is recommended
- External lighting requirements will be carefully designed to avoid light spillage affecting foraging bats and bat box entrances. Thus creating a dark and green infrastructure and can be achieved by using hoods, cowls, shields and louvers. Planting or manmade barriers can also protect against light spillage.
- Security lighting will be on a short timer and motion sensitive to large objects only.

- Use of timers to reduce the hours lit and tailor this specifically to wildlife affected.
- Lights will not be mounted where they will shine directly on to the surrounding habitat used by foraging bats.

6.5.3 Bat boxes

6.5.3.1 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:

- 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.

6.5.3.2 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.

6.5.3.3 Wold Ecology recommends that at least 2 bat boxes are sited on trees within the grounds of Riley House. Bat boxes should be erected on south, east or west elevations; 3-5 metres above ground level.

7.0 SUMMARY

7.1 There was no evidence to suggest the presence of bats and in its current condition; it is extremely unlikely that the west gable of Riley House and the shed supports a bat roost. It is considered that the proposed development will have none/negligible impacts on bat species. The method statement outlined in section 6.0, details the best working practice and precautions to be taken to avoid breaking the law and must be followed and provided to all contractors involved with building works.

7.2 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 2010. 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. All contractors on site should be made aware of this requirement and given Natural England's contact details.

7.3 Habitat enhancement for bats should be implemented as outlined in section 6.0, in order to improve foraging opportunities to bats in the local area.

7.4 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 references to be shared.

7.5 Whilst the survey provided detailed information on bats, no bird's nests were observed in the building. All nests should remain undisturbed and intact until after the breeding bird season – 1st March to 31st August. There was no evidence of barn owls *Tyto alba* roosting in the building.

8.0 REFERENCES

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9.0 APPENDICES

9.1 Background to Bats - Bat Biology.

9.1.1 There are currently 17 species of bat native to the United Kingdom. Bats roost in a variety 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 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.

9.1.4 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.

9.1.5 The conditions needed by bats for hibernation require the maintenance of a relatively stable low temperature ($2 – 6^0$). 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:

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.

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 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.

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). This reads:

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 being in need of "strict protection". This is implemented in Britain under the Conservation of Habitats and Species Regulations 2010 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 2010. 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.

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.

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."

9.2.3 Current status of bats in the UK.

9.2.3.1 The current known status of bats as given by the Bat Conservation Trust is shown below.

Table 9.2.3 Status of bats.

Species	Status of Population Nationally
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

9.2.4 Definitions of probabilities of bat interest.

9.2.4.1 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.**

9.2.4.2 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.

9.2.4.3 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.