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The Kendray Public House.

Bat Survey, September 2014.

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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 EXECUTIVE SUMMARY

1.1 The field surveys during September 2014 revealed no evidence of roosting bats. As no bats or signs of bats were recorded in The Kendray Pub or outbuildings, a Natural England European Protected Species development license is not required. The method statement outlined in section 7.2, 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 the demolition of the buildings.

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 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.

1.4 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.

1.5 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.

1.6 Whilst the survey provided detailed information on bats, no bird's nests were observed in the Kendray Pub. 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.

1.7 The data collected to support the output of this report is valid for one year. This report is valid until **August 2015**. After this time, additional surveys need to be undertaken to confirm that the status of the building, as a bat roost, has not changed.

2.0 INTRODUCTION

2.1 Background Information

2.1.1 In September 2014, Wold Ecology was commissioned by Bridgeplan Ltd to undertake a bat survey at The Kendray, Birk Avenue, Barnsley. The site is located at approximate National Grid Reference SE 36587 05075 in South Yorkshire (see 5.5).

2.1.2 The Application Site comprises the following buildings:

- Public House
- Detached outbuildings x 2

2.1.3 The proposed development includes the demolition of the public house and outbuildings.

2.2 Survey Objectives

2.2.1 The site was visited and assessed on 15th September 2014; this was to determine whether the buildings on site 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. An assessment of the on-site potential for bats and the likelihood of their presence. Desktop study.
Determine bat usage e.gs maternity roost, summer roosts	Yes	An assessment of whether bats are a constraint to the development. Emergence survey.
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 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.

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 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.

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.

3.2.4 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).

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:

- 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.

3.3.2 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 in the course of 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 Local Authority must be satisfied that the proposed development must meet a purpose of:

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 authority 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'.

3.4 Case Law - Woolley v Cheshire East Borough, 5th June 2009.

3.4.1 The ruling states 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."

3.4.2 In addition, the judgement 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.

4.0 ASSESSMENT METHODOLOGY

4.1 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

4.2 Data Review and Desk Study

4.2.1 Currently, there is no pre-existing information on bats at the site.

4.2.2 Data for the 10km grid square SE30 shows records of brown long-eared *Plecotus auritus*, noctule *Nyctalus noctula*, Lesser noctule *Nyctalus leisleri*, Natterer's *Myotis nattereri*, Daubenton's *Myotis daubentonii*, whiskered/Brandts *Myotis mystacinus/brandtii*, soprano pipistrelle *Pipistrellus pygmaeus* and common pipistrelle *Pipistrellus pipistrellus* (NBN Gateway 2014).

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 external search for actual roosting bats and evidence of roosting bats. Specifically, the visual survey involved:

- Assessment for droppings on walls and windowsills
- Scratch marks, staining and potential entrance and exit holes
- 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 30 minutes

4.3.2 Summary of daytime inspection and visual survey

Date of each survey visit	Structure reference/location	Equipment used	Weather
15/09/14	Public House Outbuildings x 2	Binoculars, 1million candle power clu-lite torch, micro Dart endoscope.	14°C, 100% cloud. Beaufort 0. No recent rain.
Comments (to include # of surveyors used for each visit): 2 surveyors undertook the visual inspection.			

4.4 Activity Surveys

4.4.1 Emergence surveys are used to determine bat presence in a building and can also give a good estimate of the numbers present. Common pipistrelle bats can emerge up to 30 minutes before sunset and brown long-eared emerge from dark from approximately 1 hour after sunset. The survey times ensured that bats would have emerged from their roost sites and would be foraging (see section 9.4 and 9.5).

4.4.2 Summary of emergence survey(s)

Date of each survey visit	Start/end times and times of sunset	Structure reference/location	Equipment used	Weather
15/09/14	Sunset :1921 Start :1850 Finish :2125	Public House Outbuilding 1	Cluson CB2 1 million candle power lamps Digital thermometer Frequency Division Bat Box Duet detectors Heterodyne Stag Electronics Bat Box III detectors MP3 recorders and Batsound analysis EM3 Night vision scope	14°C - 13°C, 100% cloud. Beaufort 0. No recent rain.

Comments (to include # of surveyors used for each visit): 3 surveyors were positioned around the site so that all potential access points, identified in the daytime, visual inspection, could be observed.

4.5 General Survey Information

4.5.1 Personnel

Personnel	Experience	Licence No.
Richard Gibson	Richard has conducted over 200 bat roost and activity surveys including bat box monitoring with the East Yorkshire Bat Group. Richard conducted the daytime inspection and emergence survey.	CLS2812
Daniel Lombard MCIEEM	Daniel has assisted with over 200 bat surveys for Wold Ecology and is currently working towards his bat handling license. Daniel conducted the daytime inspection and emergence survey.	CLS1634
Mike Taylor	Experienced Wold Ecology Ltd associate with over 3 year of bat activity survey experience undertaken under the tuition of Wold Ecology licensed bat ecologists. Mike assisted with the emergence survey.	N/A

5.0 RESULTS

5.1 Site description

5.1.1 *Buildings*

5.1.1.1 The survey area targeted (see section 5.5):

a. ***Public House*** – is currently unoccupied and comprises red brick/block and concrete render walls and a hipped roof. The roof is covered with rosemary tiles.
b. ***Detached outbuilding 1*** – is a single storey, red brick building comprising a hipped roof with rosemary tiles.
c. ***Detached outbuilding 2*** – is a single storey red brick building comprising a flat roof covered in pressed steel.

5.1.2 *Landscape*

5.1.2.1 The Kendray pub is located within the suburbs of Barnsley, in an urban location. The pub is surrounded by compact residential properties with mature private gardens in a well lit location. Woodland cover within 1km is limited to amenity trees and private gardens with semi natural secondary woodland located adjacent to railway lines. Habitat connectivity within 2km occurs as woodland cover and as hedgerows that bound fields; the River Dearne provides habitat connectivity to the wider countryside. The Application Site is not located within any optimum bat foraging or commuting habitat.

5.1.3 *Habitat Summary*

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

- Residential properties
- Fragmented private gardens
- Dearne Valley Park
- Disused railway line
- Ponds and watercourses
- Dob Sike
- River Dearne

5.2 Visual inspection results

5.2.1 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.

5.2.2 **The Kendray Public House** is a two storey red brick/rendered and block building with a hipped roof, the roof is covered with rosemary tiles. A single storey extension on the north elevation has a flat roof. The ridge is incomplete and gaps are present beneath where mortar has been displaced; there are also a small number of tiles missing with gaps beneath. The boxed timber eaves are tight fitting with no crevices or gaps. The flat roof extension has concrete coping stones which are tight fitting with no missing mortar or gaps; gaps are present beneath lead work. The walls of the building comprise a concrete render and red brick, all of which are tight fitting with no gaps. The brick chimney stacks are also tight fitting with no missing mortar or gaps. There are sections of missing render

on the walls but no gaps were present behind. The timber windows and doors have been tightly boarded with ply wood leaving no gaps into the building. There were no signs of roosting bats or bat activity around the building, but due to the presence of features with potential to provide roosting opportunities for bats i.e. gaps underneath the tiles, gaps beneath the ridge tiles, and missing tiles the Kendray public house has been assessed as having a MEDIUM POTENTIAL to support bats (see 5.6 plates 1- 3).

5.2.3 **Outbuilding 1** is a single storey red brick structure with a hipped roof, the roof is covered in rosemary tiles. The roof has some ridge tiles missing with gaps underneath where mortar has been displaced. There are also tiles missing with gaps beneath; there are also gaps above the wall plate. The walls of the outbuilding are tight fitting with no missing mortar or gaps but gaps are present above the eaves. The timber door frame is tight fitting; there was no access into the building. There were no signs of roosting bats or bat activity around the building, but due to the presence of features with potential to provide roosting opportunities for bats i.e. gaps underneath the tiles, gaps beneath the ridge tiles, missing tiles and gaps above the eaves, the outbuilding has been assessed as having a MEDIUM POTENTIAL to support bats (see 5.6 plate 4).

5.2.4 **Detached outbuilding 2** is a single story red brick building with a flat, pressed steel roof. The flat roof is tight fitting with no gaps or crevices. The brickwork and timber framed door on the outbuilding is tight fitting with no missing mortar or gaps. There were no signs of roosting bats or bat activity and the building has no features to support roosting bats. Consequently, the outbuilding has a LOW POTENTIAL to support bats (see 5.6 plate 5).

5.3 Results of Activity Surveys

5.3.1 Emergence Survey

5.3.1.1 The first common pipistrelle bat was detected at 1948. This was close to the anticipated (< 30 minutes after sunset) emergence time and suggests that a roost is close by. Only common pipistrelles were observed commuting around the site.

5.3.1.2 No bats were observed emerging from the building.

5.3.1.3 For survey results see appendix 9.4 and 9.5.

Table 5.3: Summary of Surveys conducted in 2014

Date	Type of survey	Results
15th September 2014	Visual	*The Kendray Public house.* There were no signs of roosting bats or bat activity around the building, but due to the presence of features with potential to provide roosting opportunities for bats i.e. gaps underneath the tiles, gaps beneath the ridge tiles, and missing tiles the Kendray public house has been assessed as having a MEDIUM POTENTIAL to support bats (see 5.6 plates 1- 3).
		Outbuilding 1 There were no signs of roosting bats or bat activity around the building, but due to the presence of features with potential to provide roosting opportunities for bats i.e. gaps underneath the tiles, gaps beneath the ridge tiles, missing tiles and gaps above the eaves, the outbuilding has been assessed as having a MEDIUM POTENTIAL to support bats (see 5.6 plate 4).
		Outbuilding 2 There were no signs of roosting bats or bat activity and the building has no features to support roosting bats. Consequently, the outbuilding has a LOW POTENTIAL to support bats (see 5.6 plate 5).
15th September 2014	Emergence	No bats observed emerging from a roost site.

5.4 Interpretation and Evaluation of Survey Results

5.4.1 Presence/absence

5.4.1.1 The site is currently used by commuting common pipistrelle bats, a maximum of one bat was observed at any one time. No roosting bats or evidence of roosting bats were observed during the field surveys.

5.4.2 Site Status Assessment

5.4.2.1 Based on a building inspection and an emergence survey, it has been determined that the Kendray pub and outbuildings is unlikely to support a bat roost. The results are based on survey work conducted in mid September, but as the pub and outbuilding 1 contain features which have medium potential to support roosting bats, there remains the possibility that bats could use the aforementioned buildings at other times of the year.

5.4.2.2 The Kendray pub is located adjacent to fragmented, well lit and disturbed foraging habitat that is unlikely to play an important role in the ecology of the local bat population.

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

- The Kendray pub and outbuildings are currently unused and are not heated.

- The body temperature of hibernating bats is near the ambient temperature. The composition of the Kendray pub and the outbuildings will not ensure that consistent temperatures of between 0°C and 5°C will be maintained.
- The brickwork and rosemary tile structure of the buildings 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).

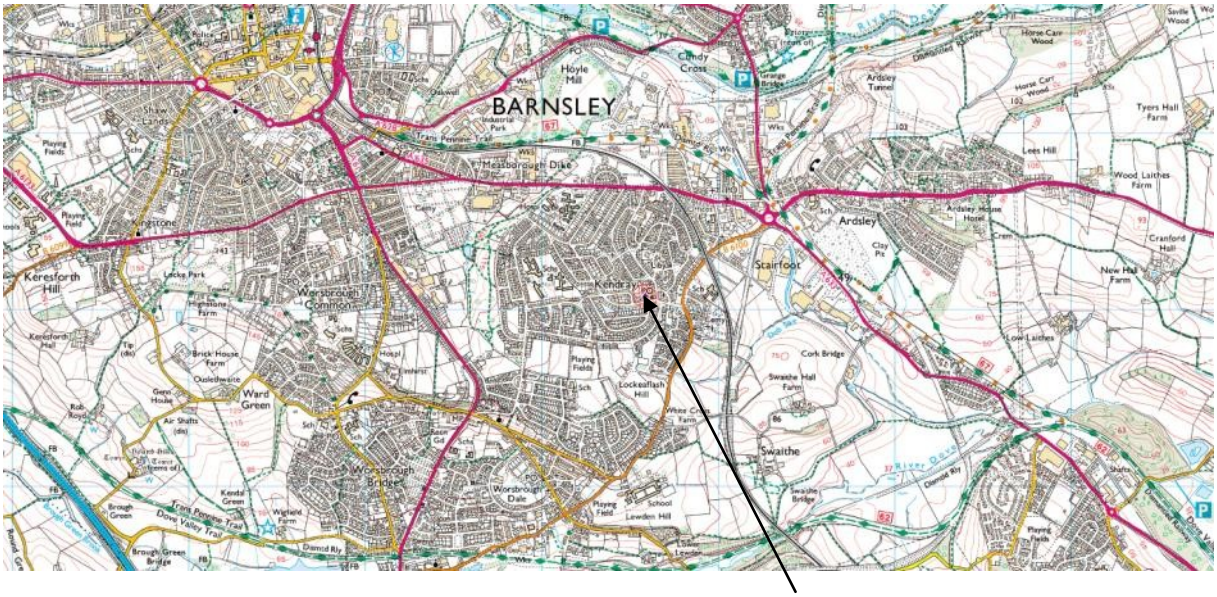
5.4.3 Constraints

5.4.3.1 A detailed internal inspection was not undertaken for health and safety reasons.

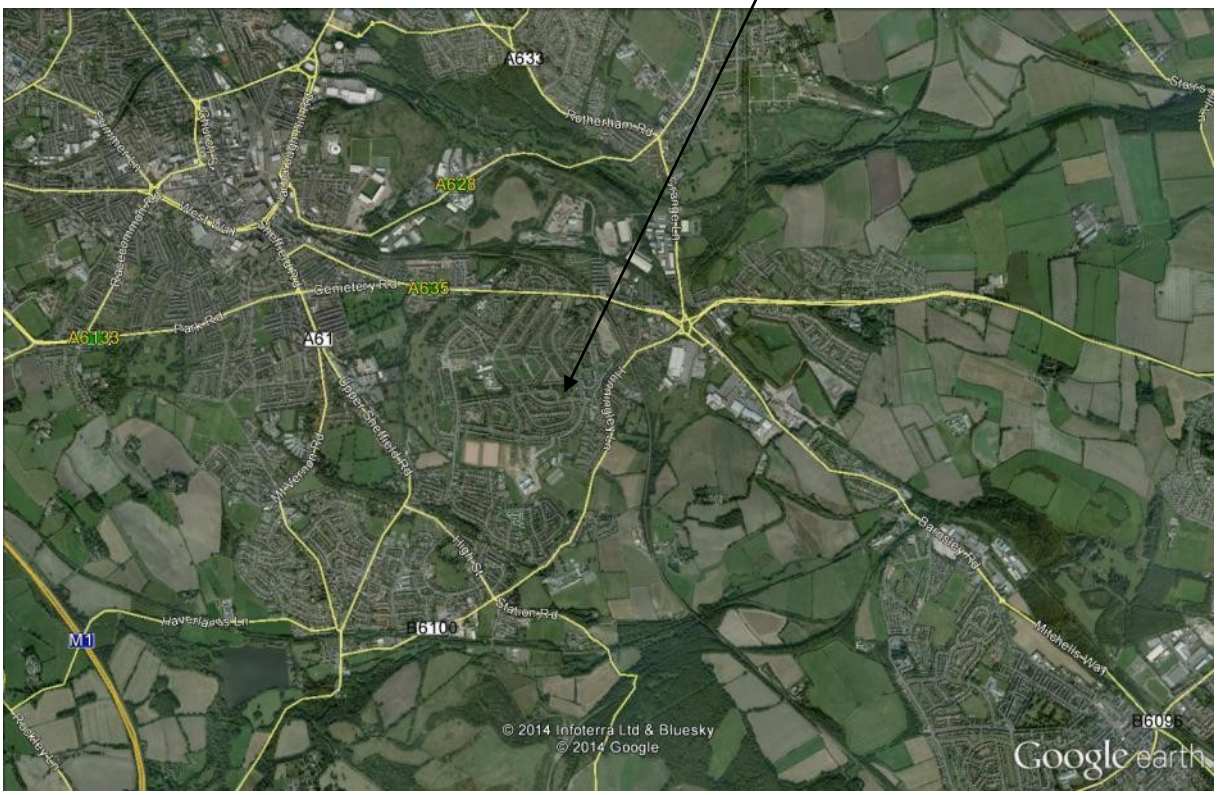
5.4.3.2 A bat activity survey has not been undertaken between May and August.

5.5 Maps of the survey area

5.5.1 Location Map



5.5.2 Aerial Photograph



5.6 Photographs of key features

Plate 1 – Kendray pub, south elevation



Plate 2 – Kendray pub, north elevation



Plate 3 – Kendray pub, single storey extension



Plate 4 – Outbuilding 1



Plate 5 – Outbuilding 2



6.0 IMPACT ASSESSMENT

6.1 Based on current information, the studied buildings at the Kendray pub do not support a bat roost. Consequently, the impact to bats from the demolition of the buildings is considered to be **negligible.**

6.2 The current information obtained is based on a desk top study, visual inspection and activity surveys conducted in mid September. Bat activity surrounding the buildings was also low, with a total of 1 bat specie observed foraging/commuting. Consequently, the impact to bat populations locally, nationally and regionally from the proposed development is considered to be **low.**

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) 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.

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

7.1.3 As no bat roosts were detected in the Kendray pub or outbuildings during the activity survey, demolition work to the aforementioned buildings would not require a Natural England development licence. However, the Kendray pub and outbuilding 1 have a medium potential of bat interest and therefore have features that could support roosting bats. It is possible that individual bats could turn up roosting in the building at any time during the year. The following procedures highlighted in Section 7.2 should be adopted during the building works. Section 7.2 identifies working practices or precautions necessary to avoid injury or death to any bats that may be present in the buildings.

7.2 Method Statement

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

7.2.2 Timing

7.2.2.1 There are no mandatory timing constraints when roosting bats have not been found.

7.2.3 Locating Bats

7.2.3.1 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
- Underneath ridge tiles
- Mortise joints
- Above the eaves
- Under lead work
- Roof timbers including ridge beams and rafters

7.2.4 Working Approach

7.2.4.1 Careful removal by hand of all fittings and fixtures as describe in 7.2.3. Wall cavities should be checked prior to demolition.

7.2.4.2 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.

7.2.4.3 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.

7.2.4.4 In the unlikely event that bats are discovered in any buildings, Natural England's Regional Team should be contacted on 0300 060 6000. Alternatively, the Bat Conservation Trust National Bat Helpline number is 0845 1300 228. Bats should not be handled by unlicensed people but if it is absolutely necessary to remove a bat from the premises for overriding health and safety reasons or to avoid it being, harmed gloves will be worn and it will be placed carefully in a cardboard box and placed in a dark, quiet place, safe from predators, until a licensed bat ecologist arrives.

7.2.5 Bat boxes

7.2.5.1 Specially designed bat boxes can be located on site. Schwegler Bat Boxes are recommended and well tested boxes. The following bat boxes provide additional roost habitats and are available from Wold Ecology:

- 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.

7.2.5.2 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.

7.2.5.3 Wold Ecology recommends that at least 2 bat boxes are sited on new 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.

7.2.6 Lighting

7.2.6.1 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). 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 will be used.
- External lighting requirements will avoid light spillage affecting the adjacent woodland habitats; creating a dark and green infrastructure and by using hoods, cowls, shields and louvers.
- Security lighting will be on a short timer and motion sensitive to large objects only.
- Use of timers to reduce the hours lit.
- In addition, LED lighting is more widely being used and it is now possible to in certain circumstances to have lighting that responds to need by detecting the pressure of pedestrians.
- Lights will not be mounted where they will shine directly on to the adjacent woodland habitat used by foraging bats.

7.2.7 Habitat enhancements

7.2.7.1 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*

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:

- **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 being in need of "strict protection". This is translated into British Law under the Habitats and Species Regulations 2010. 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.

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.

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 potential 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 potential of bat interest.**

9.2.4.2 Medium potential 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 potential 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 potential 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 potential 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 potential 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 potential 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.

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.

9.4 Bat records for activity surveys conducted in 2014

Date – 15th September 2014					
Loc.	**Time**	**Species**	**kHz**	**Direction**	**Comment**
1	1948	Pipistrelle	45	N	Commuting
1	1955	Pipistrelle	45	N	Commuting
1	1958	Pipistrelle	45	NE	Commuting
1	2004	Pipistrelle	45	NE	Commuting
3	2010	Pipistrelle	45	N	Commuting
1	2021	Pipistrelle	45	NE	Commuting

9.5 Survey Activity Plans

9.5.1 Plan of bat activity during emergence (dusk) survey on 15th September 2014

