Activity Survey for Bats

Location: The Old Builders Yard, Winterfield Lane, Weston Coyney, Staffordshire.

Grid Reference: SJ 93802 44890

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May 2019

Notice to Readers

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Executive Summary

Absolute Ecology was commissioned to undertake a bat activity survey for the bat roost potential at a site known as The Old Builders Yard, Winterfield Lane, Weston Coyney Grid reference: SJ 93802 44890. This report has been prepared with due consideration for various best-practice guidance and methodologies including those of the Chartered Institute of Ecology and Environmental Management (CIEEM (2012), BS 42020, and the Bat Conservation Trust Best Practice 3rd Edition 2016.

It is proposed that the buildings will be demolished to make way for a residential dwellings.

During the external roost assessment, two buildings (B1 and B2) are located onsite which were both assessed as being of low value for supporting roosting bats. Therefore it was recommended In order to confirm the presence/absence of roosting bats within the buildings, a single bat activity survey should be conducted (with additional surveys required should bats be confirmed roosting). Bat surveys can only be carried out during the optimum survey period which runs May – September inclusive. Located on the western boundary are a number of mature trees of which two were assessed to be of value for supporting roosting bats. Where tree retention is not possible, activity surveys will be required;

Based on the roost assessment the building was found to be of Low potential for supporting roosting bats. Following current guidelines, one bat activity surveys were conducted (1x Dusk) to reasonably identify if bats are present or absent from the building. During the activity surveys, a low amount of bat activity was identified during the survey period, species identified commuting consisted of a common pipistrelle (*Pipistrellus pipistrellus*) & Noctule *(Nyctalus noctula).* No bats were recorded emerging from the building.

As no bat roosts were identified during the surveys, it will not be necessary to apply for an EPS licence and no further survey actions are considered necessary. However, where surveys have demonstrated a likely absence of bats in the building, it should be noted that it is possible that bats could begin using the building at any time, and any work should be undertaken with care and vigilance for bats. Should bats be found during development, then all works must cease, and a qualified bat ecologist should be consulted. A number of recommendations to enhance the development area have been made in order to compensate for any loss of habitat and to benefit both bats and birds.

No nesting birds were observed however, it would be required that if works are conducted between March and September (Nesting season can vary year by year) a pre-site inspection would be required with supervision of building demolition.

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1. Introduction

1.1. Site Description

Absolute Ecology was commissioned to undertake a Bat activity survey for the bat roost potential at a site known as Building, Registry St, Stoke-on-Trent, ST4 1JP, Stoke on Trent. Ordnance Survey grid ref: SJ 87691 45594

Fig 1: Site location indicated by red pin.



Proposed Works

It is proposed that the existing building will be demolished to make way for a new dwelling.

1.2. Best Practice Guidance

The scope of this Survey has been determined in line with the proportional approach to ecological survey, assessment and subsequent recommendations for avoidance and mitigation of impacts, which is encouraged in the emerging 'BS 42020: Biodiversity – Code of practice for planning and development'. This report has been prepared with du consideration for various best-practice guidance and methodologies including those of the Chartered Institute of Ecology and Environmental Management (CIEEM (2012)1, the emerging BS 42020 and the Bat conservation Trust Best Practice 2016.

1.3. Aims of the Survey

1.3.1 The aims of the Preliminary Roost Assessment and presence/absence activity surveys is to provide an ecological evaluation of the following species within the proposed application area:

Bats
• **Probability of bats and their roost sites being present at the proposed redevelopment site.**
• **To assess the roost status.**
• **To assess suitable food resources and habitat requirements.**
• **If a roost site is found, to provide an impact assessment.**

Table 1. Aims of survey in relation to bats.

1.3.2 A bat roost is interpreted as 'any structure or place, which any wild bat uses for shelter or protection'. Bats tend to show a high fidelity to roosts. Subsequently, legal opinion regards a roost to be protected whether or not the bats are present at the time. There are many types of roost used by temperate bats during their annual cycle: Any structures found having evidence of bats will be further evaluated to assess which of the following roost categories may be present onsite (if any):

Status	Description
Maternity / Nursery Roost	***used by breeding bats, where pups are born and raised to independence (Anecdotal evidence may support this prospect despite sub-optimal survey period).***
Hibernation Site	***where bats may be found during the winter. (This is assessed within the context of this report).***
Daytime Summer Roost	***used by males and/or non-breeding females (Seasonal limitations prevent robust analysis of this).***
Night Roost	***where bats rest between feeding bouts during the night but are rarely present during the day.***
Feeding Roost	***where bats temporarily utilize feeding perches and stations to eat an item of prey.***
Transitional (or Swarming) Site	***where bats may be present during the spring or autumn (This can not be assessed within the context of this report).***

Table 3. Bat roost status definitions

Birds
• Establish if birds are using the site.
• Locate nest sites, if present.
• Assess what types of activities were shown within the redevelopment site.
• Assess suitable food resources and habitat requirements.
• Provide an impact assessment, if nests are found.

Table 4. Aims of survey in relation to birds.

Barn Owl (*Tyto alba)*
• Establish presence onsite.
• Establish potential nest sites (PNS).
• Locate any active roost sites (ARS).
• Locate any temporary roost sites (TRS)
• Assess potential feeding and dispersal habitats (PFH)
• Provide an impact assessment, should barn owl(s) be present

Table 5. Aims of survey in relation to Barn Owl.

1.3.2 Assessment also considers potential effects on valued ecological receptors (VERs) and zones of influence (ZoI) during pre and post development, both onsite and off- site. The term Zone of Influence is used to describe the geographic extent of potential impacts of a proposed development. Should a likely significance of negative impacts be identified, further surveys, mitigation and enhancement measures will then be determined accordingly; to prevent, offset or reduce the degree of impact that may occur should development commence.

1.3.3 Should bats be present onsite, then a European Protected Species (EPS) development license issued by Natural England (NE) may be required prior to any works taking place. If required, further presence/absence survey should be undertaken and a mitigation strategy be implemented with Natural England and the Local Planning Authority. Should no further surveying effort be considered, then the PEA report will include full justification and evaluation.

2. Methods

2.1. Summary of Survey Methods

All bat species resident in the UK have been recorded using trees, buildings and built structures, e.g. bridges, at some time during the year (Bat Conservation Trust,3rd edition 2016). The buildings were inspected externally and internally, where access was available, for signs of bat activity. These typically include bat presence, droppings, feeding remains, urine stains and grease marks. Notes were made on the following in accordance with the guidelines published by the BCT (3rd edition 2016) for the surveying of buildings and built structures:

- Type and age of building
- Type of construction
- Presence of potential roost features, e.g. hanging tiles, raised tiles, roof voids
- Information or evidence of work having been undertaken that could affect use of the structure by bats
- Amount and location of evidence of bats such as presence of live or dead bats, droppings, grease marks, urine stains, characteristic smell of bats.

In the absence of any evidence, trees and structures were assigned a rating of suitability from negligible to high potential for supporting bats. The rating is based on the number and type of features suitable for use by bats (such as rot holes, cavities and raised bark), location of the structure in the surrounding landscape and surveyor's experience.

Table 6. Roost habitat assessment (BCT, 2016)

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[2] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation[2]). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.[3]	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[2] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[2] and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts

Following the revised BCT guidelines (2016), the number of bat activity surveys are based on initial overall building rating and suitability to support roosting bats:

Low roost suitability	Moderate roost suitability	High roost suitability
May to August (structures) No further surveys required (trees)	May to September[a] with at least one of surveys between May and August[b]	May to September[a] with at least two of surveys between May and August[b]

[a] September surveys are both weather- and location-dependent. Conditions may become more unsuitable in these months, particularly in more northerly latitudes, which may reduce the length of the survey season.
[b] Multiple survey visits should be spread out to sample as much of the recommended survey period as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more, unless there are specific ecological reasons for the surveys to be closer together (for example, a more accurate count of a maternity colony is required but it is likely that the colony will soon disperse). If there is potential for a maternity colony then consideration should be given to detectability. A survey on 31 August followed by a mid-September survey is unlikely to pick up a maternity colony. An ecologist should use their professional judgement to design the most appropriate survey regime.

Table 7. Providing a table of roost suitability (BCT, 2016).

The activity survey was performed in accordance with the guidelines published by the BCT (3rd edition 2016) for carrying out dusk and dawn activity surveys:

- Begin the activity survey 1 hour before sunset.
- Determine the presence/absence of species, i.e. the species present in a given area
- Determine the intensity of bat activity both spatially and temporally
- Determine the type of activity, most usually foraging (by feeding buzzes); commuting (by high directional pass rates); mating (by mating social calls)
- Find roosts by tracking back bat flight paths or observing dawn flight activity at roosts.
- Carrying out survey up to 1.5 - 2 hours after sunset

Where feasible, given the amount of evidence collected, any structures with evidence of bats have been evaluated to assess which of the following categories they fall into, if any (BCT, 3rd edition 2016):

- Maternity or Nursery Roost – used by breeding bats, where babies are born and raised to independence
- Hibernation Site – where bats may be found during the winter
- Daytime Summer Roost – used by males and/or non-breeding females
- Night Roost – where bats rest between feeding bouts during the night but are rarely present during the day
- Feeding Roost – where bats temporarily hang up to eat an item of prey
- Transitional (or Swarming) Site – where bats may be present during the spring or autumn.

In the absence of any evidence, trees and structures have been assigned a rating of suitability from negligible to high potential for supporting bats. The rating is based on the location of the structure in the surrounding landscape, the number and type of features suitable for use by bats and the surveyor's experience. For example, a structure with a high level of regular disturbance and few opportunities for access by bats that is in a highly urbanised area with few or no mature trees, parkland, woodland or wetland would have negligible potential. Conversely, a pre-20th-century or early 20th-century building with many features suitable for use by bats close to good foraging habitat would have high potential.

Survey methodology also utilized a number of passive monitoring techniques including an infra-red night-vision camera (XLT Bushnell Trophy CamTM: USA) to qualitatively record any evidence of bat activity inside the building during surveying periods. Further equipment included a NVMT-12x24 night vision scope (Yukon: USA), a SeeSnake 2 video endoscope, a GPS eTrex Venture HC, a hand net and a CB2 Clubman Deluxe high-power lamp with filter.

2.2. Pre-Survey Data Search

3. Ecological data searches were conducted to establish whether any notable, protected bat or bird species have been recorded within a 2 km radius of the proposed development area. Furthermore, a desktop study of the area using online resources was undertaken independently to corroborate the current overview of the site and its importance in the landscape. A number of electronic sources were consulted, including www.magic.gov.uk, www.naturalengland.org.uk and Google Earth.

3.1. Surveyor Information

Surveyor 1

Matthew Haydock – HND, ND, MIEEM, Natural England Bat Survey Registration Number: 2015-12430-CLS-CLS. Matthew is an ecologist with four years' experience of environmental consultancy work. He holds a HND in Environmental Management with distinction. Matthew is an experienced bat surveyor with competency in activity surveys, dawn and dusk bat roost assessments, daytime surveys for bat field signs, assessments of trees as potential bat roosts and the production of reports providing advice on best practice, mitigation and compensation works relating to bats as may be required. Matthew holds a Natural England and Countryside Council for Wales licence, since 1997, to disturb bats for the purposes of science and education or conservation and has held Development Licences to permit development works affecting bats. Matthew has been an active bat group worker with the Staffordshire Bat Group since 1997, conducting various surveys throughout Staffordshire and Derbyshire. He also works alongside the Bat Conservation Trust with various projects such as the National Bat Monitoring Project, and is now a corporate member of the Bat Conservation Trust.

Surveyor 2

Carrie Allcock has been assisting Absolute Ecology for nearly four years as a bat surveyor. She has gained competency in activity surveys, dawn and dusk bat roost assessments, daytime surveys for bat field signs, assessments of trees as potential bat roosts and the production of reports providing advice on best practice, mitigation and compensation works relating to bats as may be required.

2.4 Field Surveys

2.4.1. Habitat Survey

The site itself proved building and hardstanding.

2.4.2. Roost Surveys

Equipment used to aid the survey included low and high-powered torches, ladders, binoculars and an endoscope.

A scoping survey was undertaken on 24/04/2019 such scoping exercises can be undertaken throughout the year. Other than when assessing trees, environmental factors such as the weather do not have an impact upon the overall assessment survey results (see Table 5).

Table 5. Annual survey optimality for bats.

Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Inspection of hibernation roosts – semi-optimal survey period			Limited activity – sub-optimal for surveys	Summer roost emergence & re-entry surveys – optimal survey period					Limited activity – sub-optimal survey period	Inspection of hibernation roosts – semi-optimal survey period	
Internal roost surveys are possible/trees are best surveyed during winter											

The survey focused predominantly on the buildings which is to be re/developed with additional effort being given to the rear elevations of the main residential dwelling, within the zone of influence. The external inspection incorporated visual assessment with the use of binoculars, torch, endoscope and ladders in full daylight to ascertain the following:

- Potential ingression points cracks, raised roof tiles
- Any anecdotal evidence of bats, i.e. droppings, grease marks, feeding remains.
- Any evidence of birds, i.e. nest material, droppings.

The external inspection incorporated visual assessment with the use of torch, endoscope and ladders to ascertain the following:

- To locate potential roost/nest sites.
- To listen for any bats and birds.
- To examine floors, walls and structural elements for anecdotal evidence, i.e. droppings, urine stains, corpses and feeding remains.

2.4.3. Activity Surveys

2. Bat ultrasound data was gathered using a number of heterodyne (Batbox Duet and SSF Bat2) and real-time recording devices (Wildlife Acoustics Echo Meter EM3, Elekon Batlogger) Real-time recordings were subsequently analysed using Bat Explorer software. Cannon night shot plus, with IR LED Illuminators to capture and record continues bat activity.
3. All surveys were carried out during optimal weather conditions and period for bat activity.

Table 6. **Abiotic variables during survey 1: Dusk (Emergence)**			
Date: 20.05.2019			
Temp Start	14.4 °C	**Cloud Cover Start**	60%
Temp Finish	12.5 °C	**Cloud Cover Finish**	60%
Humidity Start	61%	**Wind Speed Average**	<1 mph
Humidity Finish	75.1%	**Precipitation**	Nil

3. Results

3.1. Pre-Survey Data Search

3.1.2. Protected Species.

Seven British bat species are currently given UK BAP (2007) Priority Species Status: Eleven of the seventeen resident UK bat species occur in Staffordshire. Staffordshire Ecological Records show three UK BAP species being recorded within 2km of the proposed application area.

UKBAP	Common name	Species	
☑	Brown long-eared bat	*Plecotus auritus*	☑
☑	Barbastelle bat	*Barbastella barbastellus*	☒
☑	Bechstein's bat	*Myotis bechsteinii*	☒
☑	Noctule	*Nyctalus noctula*	☒
☑	Greater horseshoe bat	*Rhinolophus ferrumequinum*	☒
☑	Lesser horseshoe bat	*Rhinolophus hipposideros*	☒
☑	Soprano pipistrelle	*Pipistrellus pygmaeus*	☑

UKBAP Bat species recorded within Staffordshire.

A further four/five bat species that are not currently given UK BAP consideration are also recorded within the county.

UKBAP	Common name	Species	Recorded within the county
☒	Natterer's bat	*Myotis Nattereri*	☒
☒	Daubenton's bat	*Myotis daubentonii*	☒
☒	Whiskered/ brandt bat	*Myotis mystacinus/brandtii*	☒
☒	Common pipistrelle	*Pipistrellus pipistrellus*	☑

3.2. Field Surveys

3.2.1. Habitat Description

The application site is immediately bounded by roads, commercial properties. The site is mainly hardstanding with a variety of factory/shop buildings.

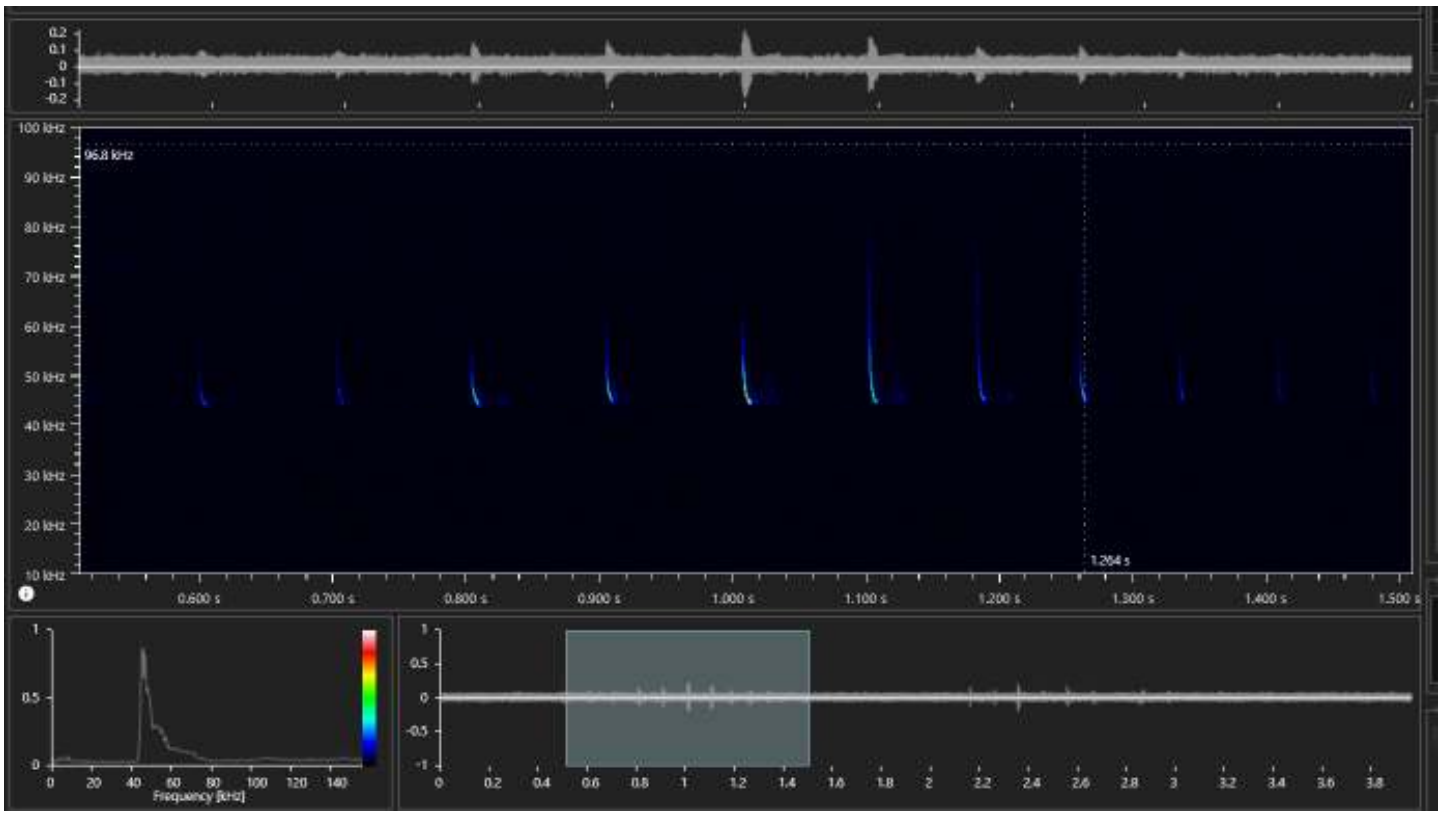
2nd Survey: 1st dusk activity survey – 20/05/2019 Sunset: 21:10

21:32	Common pipistrelle	Pipistrellus pipistrellus	Commuting foraging adjacent land
21:36	Common pipistrelle	Pipistrellus pipistrellus	Commuting foraging adjacent land
21:38	Noctule	Nyctalus noctula	Commuting
21:41	Noctule	Nyctalus noctula	Commuting
21:42	Noctule	Nyctalus noctula	Commuting
21:55	Common pipistrelle	Pipistrellus pipistrellus	Entered site, foraging for approx. 5 minutes
22:07	Noctule	Nyctalus noctula	Commuting
22:09	Common pipistrelle	Pipistrellus pipistrellus	Foraging along Winterfield lane for the duration of the survey

Fig 1: Bat activity plan – dusk survey 20/05/2019 – approximate flight and foraging lines.



Figure 3. Spectrogram and Oscillograme identifies foraging Common Pipistrelle bats (45.8 KHz) recorded during the Dusk survey on 20/05/2019



4. Assessment

4.1. Constraints on Survey Information

All surveys were carried out during May 2019. This period is considered as being an optimal survey period, albeit depreciating, in order to evaluate the presence or absence of bats.

4.2. Constraints on Equipment Used

No constraints were present with regards to the equipment used during the scoping effort (i.e. bat detectors, endoscope, ladders and high powered binoculars).

4.3. Potential Impacts of Development

4.3.1. Designated Sites

The development is within 2Km of designated sites. However, given the size of the development and the physical distances between them, and considering the geographical features that also separate those, including open farmland, built development and roads, it is very unlikely that the proposed development would affect any of these areas.

4.3.2. Roosts

No evidence of bats was found during the daytime inspection. No bats were detected emerging from or re-entering the building at any time during the activity surveys. Therefore, it is considered that all effort has been made to establish that no negative impact will occur to roosting bats.

4.3.3. Foraging and Commuting Habitat

The site provides limiting food resources for bats with the exception for the adjacent tree line.

4.4. Legislation and Policy Guidance

Unlike many smaller mammals, bats have low fecundity with a long and complex life cycle, which is played out over a large spatial landscape. Bats show a strong fidelity to different types of roosts throughout their annual cycle i.e. hibernacula, maternity, bachelor, satellite roosts and feeding perches. Linear features within the landscape such as hedgerows and tree lines are often used by bats for commuting, predator avoidance and foraging. Bats are highly social animals and loss of a single habitat alone can have a serious impact on populations. The status of many bat populations is tentative, being based on relatively few records and are highly susceptible to habitat loss and fragmentation. As such bats are given protected consideration within the following legislation and policy guidelines:

Policy guidelines

PAS 2010	**The published 'PAS 2010' 'Planning to halt the loss of biodiversity' which is the government's new policy aimed at all authorities and developers involved in the planning process in the UK to halt biodiversity decline by 2010 and deliver net biodiversity gains as part of the green infrastructure provisions.**
National Planning Policy Framework, Section 11:	The recently published framework in 2012, replaces the previous Planning Policy Statement 9. Section 11: Conserving and enhancing the natural environment, reaffirms the Governments commitment to maintaining green belt protections and preventing urban sprawl, retains the protection of designated sites and preserves wildlife, aims to improve the quality of the natural environment, and halt declines in species and habitats, protects and enhances biodiversity and promotes wildlife corridors.
Article 10 of the EC Habitats Directive:	The published Article requires government to develop features such as 'stepping stones' on the landscape, such as clusters of ponds, tracts of rough grassland or scrubland and vegetated railway line embankments.
Wildlife and Countryside Act 1981:	All species of bat are fully protected under the Wildlife and Countryside Act 1981, the European Conservation (Natural Habitats etc.) Regulations 1994, and the Countryside and Rights of Way Act 2000. This legislation makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.
Conservation of Habitats and Species Regulations (2010)	The Conservation of Habitats and Species Regulations 2010 consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994, in respect of England and Wales. It is an offence to possess, sell or offer, or transport for sale any European species of bat or any part derived from such a species. These Regulations also remove the 'incidental result defence'. In other words, it is no longer a defence to show that the killing, capture or disturbance of a species covered by the Regulations or the destruction or damage of their breeding sites or resting places was the incidental and unavoidable result of a lawful activity. Natural England can grant European Protected Species (EPS) licences in respect of development to permit activities that would otherwise be unlawful.

Natural Environment and Rural Communities Act (2006)	Under Section 40 of the Natural Environment and Rural Communities Act (2006), public bodies, including Local and Regional Planning Authorities, have a duty to 'have regard' to the conservation of biodiversity in England when carrying out their normal functions, which includes consideration of planning applications. In compliance with Section 41 of the Act, the Secretary of State has published a list of species considered to be of principal importance for conserving biodiversity in England. This is known as The England Biodiversity List, all of which make up the UK BAP Priority Species. Regional Planning Bodies and Local Planning Authorities will use it to identify the species that should be afforded priority to maintain, restore and enhance species and habitats.
Bird legislation	Most resident nesting birds are protected under the Wildlife and Countryside Act 1981, which protects birds, nests, eggs and nestling's. Some rarer species, such as barn owls, are afforded extra protection.

Please note: If bat species are present at the site, the purpose of this report will only summarize the potential requirements for a bat mitigation package or project. A separate mitigation report or project will include the necessary compensation measures to maintain the conservation status of a European Protected Species.

5. Recommendations and Mitigation

5.1. Further Surveys

It is considered that a reasonable amount of survey effort has been applied, thus no further surveys are required. However, further surveys would be considered necessary if no redevelopment has commenced within two years of this report.

5.2. Mitigation Measures

5.2.1. Proposed Site Enhancements

Bat Boxes

The development will incorporate a total of four bat boxes: where possible, developments should include small access points suitable for bat access and/or wall mounted bat boxes ('1FQ' style bat boxes), positioned onto the new housing. Further information about providing access for roosting bats can be found on the Bat Conservation Trust website at http://www.bats.org.uk/pages/new_build.html. It is recommended that bat boxes, such as the Schwegler 1FR, are installed onto a selection of housing in a south facing position, The installed bat boxes will be sited at least 7–8 metres above the ground.

- One Schwegler 1FR bat boxes will be installed for regular and mixed use.
- Boxes will not be placed in an overly exposed position on the new builds. Crucially, the box entrances should face south-west to south-east.
- Checks for droppings or observations at dusk during the summer for emerging bats will indicate if they are being used.
- If a box is not used after two years, it will be relocated to an alternative situation.
- Once discovered, a bat roost is protected by law and must not be disturbed.

Table 1: Bat box to be incorporated into the new development

Bat boxes	Type and Quantity	Location
	**1 x 1FR Schwegler Bat Tube**	The 1 FR Bat RoostThe 1FR Bat Tube is designed to be installed on the external walls of buildings, either flush or beneath a rendered surface.

Birds

Where possible, habitats suitable for nesting and foraging birds should be retained, enhanced or created within any new development. The tree habitats and buildings within the site are likely to be the most valuable to nesting birds and should be retained as far as possible.

Nesting birds were identified within the buildings bird breeding season March to September inclusive (seasonal variations to be considered), If re/development is planned during these months, a prior check for nesting birds should be undertaken by an ecologist. Any active nests that are found must not be moved until fledglings have dispersed.

It would be of conservation benefit to install a variety of nesting boxes for different bird species within the site in future (buildings and trees where suitable) to enhance the site for nesting birds and encourage bird diversity. Information on bird nesting boxes can be found at http://www.rspb.org.uk/advice/helpingbirds/nestboxes/. Enhancing existing hedgerows or planting new hedgerows and shrubs within any new development can benefit birds if a wide range of native species are used.

Similar to bats, bird habitats, including nesting and roosting sites, are diminishing or have disappeared altogether due to changes in the landscape, environment and building techniques. Consequently, the provision of boxes for birds will provide supplementary nesting sites that are relatively safe from predators, close to feeding areas, and give essential winter protection for roosting birds. A range of designs are available to suit most species, including garden species, birds of prey and colonial nesting species, for both trees and buildings. Colonial nesting species, such as House Sparrows, which are currently facing a dramatic decline, suffer from a lack of suitable buildings in which to nest. Moulded woodcrete boxes can be used to form a network of contiguous boxes favoured by the species. Additionally, nesting baskets can be used to encourage birds of prey to areas where they have not previously nested. Health risks from breeding birds generally relate to Feral Pigeons and Starlings, and require direct contact with nesting material, dried faeces etc., within confined spaces. Consequently, the public health risk relating to encouraging nesting birds on the new housing development is considered to be negligible.

- The Schwegler sparrow terrace nest box will be positioned on the existing Building
- All the bird boxes will be positioned at least 4 metres high, or more.

Table 1: Bird boxes to be incorporated into the new development

Bird Boxes	Type and Quantity	Information
	**1 x 1SP Schwegler Sparrow Terrace**	The Sparrow Terrace has been designed to help redress the balance of falling house sparrow numbers

5.3. Mitigation Licences

No Natural England license would be required and no roosting bats were evident.

6. Summary

During the surveys, low levels of common pipistrelle & noctule bat activity was recorded on/off site, but no evidence that any of the buildings are used by roosting bats was found. Therefore, it is having been concluded that the buildings can be re/developed without the need for a European Protected Species (EPS) licence.

Recommendations to minimize disturbance to bats which feed on the site and possible ways of enhancing the site for bats and birds have been suggested.

7. References

Bat Conservation Trust (2016). *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust: London.

BSBI (2008). *BSBI 2007 List.* [Online]. Available at: http://www.bsbi.org.uk/html/database.html [accessed on 20th October 2010].

The Conservation of Habitats and Species Regulations 2010. SI 2010/490.

The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007. SI 2007/1843, London: HMSO.

Countryside and Rights of Way Act 2000 (c.37). London: HMSO.

UK Biodiversity Action Plan (2007). *UK List of Priority Species.* Joint Nature Conservation Committee. [Online]. Available at: http://www.ukbap.org.uk/NewPriorityList.aspx [accessed on 20th October 2010].

Biodiversity Action Reporting System (2010). *Biodiversity Action in Staffordshire.* BARS. [Online]. Available at: http://ukbap-reporting.org.uk/plans/map_county.asp?X=%7BD7D87E4F%2D9520%2D48D6%2D93E0%2DD2698BA05B9D%7D&CTRY=%7B7C884413%2D1AC7%2D48B6%2DADCD%2D23CBA1482CD6%7D&WES= [accessed on 20th October 2010].

Wildlife and Countryside Act 1981 (and amendments) (c.69). London: HMSO.

Appendix 1 Annual cycle of a temperate bat

January **February** **March**



Jan: Bats spend most of the winter hibernating, a state of inactivity characterised by lower body temperature, slower breathing, and lower metabolic rate. **Feb:** Bats are still hibernating. They have little fat left to live off of now. They may leave the roost on warmer nights to find food and a drink of water. **March:** Bats may begin to emerge and signs of limited activity can be seen. There are small numbers feeding as it gets warmer. In bad weather, they may become torpid.

April **May** **June**



April: Bats have mainly come out of hibernation and are hungry and active, feeding on most nights. They may be moving between several roost sites. They may become torpid (cool and inactive) again when cold. **May:** Bats are fully active and feeding. Females start forming maternity colonies and looking for suitable nursery sites, such as buildings or trees. Males will roost on their own or in small groups. **June:** Female bats usually give birth to a single pup, which they feed on their milk. Young bats are very small (less than an inch) with thin, slightly grey fur. Adult bats will catch thousands of insects each in a night.

July **August** **September**



July: Mothers continue to suckle young. Some young are growing fast and almost full-size; others are still very small. At around three weeks old, young bats are sometimes found on the ground as they learn to fly. **Aug:** At six weeks old, the young bats begin to catch insects for themselves and no longer need their mothers' milk. The summer maternity colonies begin to disperse and bats may move to mating roosts. **Sept:** Mating season begins, with males of most species using special mating calls to attract females, which can include purrs, clicks, and buzzing. Bats are also concentrating on building up fat stores for the coming months.

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Oct: More mating is taking place, and building up fat reserves is becoming crucial to survive the winter season. Bats are seeking suitable hibernation sites, and beginning periods of torpor. **Nov:** Periods of torpor are lasting longer. Some begin hibernation, to save energy over the colder months, when insects are harder to find. They are using stored fat as fuel. **Dec:** Bats are hibernating. They may roost on their own or in small groups, often in cool, quiet places like disused buildings, old trees or caves, where they hopefully won't be disturbed. **(Source: Bat Conservation Trust).**