Activity Survey for Bats

Lightoaks, Cheadle Road, Oakamoor

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Notice to Readers

This report has been prepared by Absolute Ecology with all reasonable skill, care and diligence, within the terms of the contract with the client. The actions of the surveyor on site and during the production of the report were undertaken in accordance with the Code of Professional Conduct for the chartered Institute of Ecology and Environmental Management (www.cieem.org.uk).

Executive Summary

Absolute Ecology was commissioned to undertake a bat activity survey for the bat roost potential at a site known as Lightoaks, Cheadle Road, Oakamoor, ST10 3AN.

Two dusk surveys and one dawn re-entry was conducted on building B. Minor bat activity was recorded throughout each survey period, although no bats were seen entering or exiting the building. Three confirmed species of bat were recorded foraging and commuting across the site: noctule, brown long-eared bat and common pipistrelle. Peak activity of *Pipistrellus* species tended to occur more frequently one hour after sunset, inferring that these bats had commuted on site from the surrounding areas to forage. Pipistrelle bats are the most common species of bat in the UK, with a widespread distribution, and are most commonly found in England and Wales.

During the activity survey, brown long-eared bats were recorded commuting and foraging through the site. The brown long-eared bat is a common species of bat in the UK, with a widespread distribution, and is most commonly found in England and Wales.

The buildings have a number of entry points, with raised tiles and a portal hole allowing direct access into all sections of the building.

The internal inspection revealed a sparse scattering of old and new bat droppings (<15 total), which were identified as being that of Pipstrelle species & Brown Long-eared bat and a scattering of moth wings. Whilst the initial assessment of Building B and surrounding features would strongly support the potential of bats onsite, no bats were seen emerging or re-entering the building during the three activity survey periods. Minor foraging and commuting over the site was recorded close to the boundaries of the existing house adjacent. No bats were seen emerging or re-entering the building during the survey periods.

During the inspection of the building, three active swallows' nests were identified. There was no evidence of barn owls nesting within or using the building for shelter. It is considered that the development will have an impact on the swallow species.

No substantial evidence was recorded to indicate that a notable bat roost was currently in-situ during the survey period. It is considered that the building serves only as a temporal refugia for a low number of pipistrelle and Brown long-eared bats, and the adjacent, tree line boundary is actively utilized by bats for commuting and foraging along. Thus, the proposed activity is unlikely to result in an offence under Regulation 41 or 4, and no recommendations are made regarding an EPSL application. However, based on evidence that a low number of bats have utilized the building during periods over time, removal of existing roof under supervision by a

suitably qualified bat ecologist is recommended. As the current planning proposal intends to redevelop the existing building, it is important that the development compensate for any potential long-term loss of habitat for bats and birds, and provide future sustainability for local biodiversity. As such, integration of a number of bat tubes into selected residential units plus external bat/bird boxes within the application area are also recommended. No evidence of Barn Owls was recorded.

Contents

Notice to Readers 2

Executive Summary 3

Contents 4

1 Introduction 6

1.1 Site Description

1.2 Proposed Works

1.3 Aims of the Survey

2 Methods

2.1 Summary of Survey Methods

2.2 Pre-Survey Data Search

2.3 Surveyor Information

2.4 Field Surveys

2.4.1 Habitat Survey

2.4.2 Roost Surveys

2.4.3 Activity Surveys

3 Results

3.1 Pre-Survey Data Search

3.1.1 Designated Sites

3.1.2 Protected Species

3.2 Field Surveys

3.2.1 Habitat Description

3.2.2 Roost Surveys

3.2.3 Activity Surveys

4 Assessment

4.1 Constraints on Survey Information

4.2 Constraints on Equipment Used

4.3 Potential Impacts of Development

4.3.1 Designated Sites

4.3.2 Roosts

4.3.3 Foraging and Commuting Habitat

4.4 Legislation and Policy Guidance

5 Recommendations and Mitigation

5.1 Further Surveys

5.2 Mitigation Measures

5.2.1 Proposed Mitigation for Roost Sites

5.3 Mitigation Licences

6 Summary

7 References

8 Definition of Terms

Appendix 1 Pre-Survey Data Search

Appendix 2 Photographs

1. Introduction

1.1. Site Description

Absolute Ecology was commissioned to undertake a daytime inspection and bat activity survey for the bat roost potential at a site known as Lightoaks, Cheadle Road, Oakamoor, ST10 3AN.

1.2. Proposed Works

It is proposed that the building will be redeveloped into residential dwelling.

1.3. 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 2012.

1.4. 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 2. 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 3. 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 4. 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, 2007 2nd edition 2012). 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 (2007 2nd edition 2012) 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.

The activity survey was performed in accordance with the guidelines published by the BCT (2007 2nd edition 2012) for carrying out dusk and dawn activity surveys:

- 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.

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, 2007 2nd edition 2012):

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

Ecological data searches supplied by Staffordshire Ecological Record Centre (SERC) were acquired 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 on-line 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, Google Earth and www.ordinancesurvey.co.uk.

2.3. Surveyor Information

Surveyor 1

Matthew Haydock – HND, ND, MIEEM, Natural England Bat Survey Class Licence CL18, Registration Number CLS01637. 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

Matt Hodgkinson – Natural England Licence Number 20122570. Matt has assisted with various ecological consultancy work and Staffordshire & Derbyshire bat group as a volunteer bat surveyor. He 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.

Surveyor 3

Lucy Ashley has been assisting Absolute Ecology for nearly two 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

13th March 2014 a Preliminary Bat Roost Appraisal was conducted on site.

2.4.2. Roost Surveys

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

An updated preliminary bat and bird roost assessment of the buildings and structures was undertaken on 13th May 2014. 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 tree which is to be removed under the current planning application, with additional effort being given to the rear elevations of the main residential dwelling, within the zone of influence. Trees on site were assessed during a less than optimal survey period, although all trees are intended to be retained within the application area. 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/splits, rot holes.
- 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

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.

All surveys were carried out during optimal weather conditions and period for bat activity.

Table 6. Abiotic variables during survey 1: Dusk emergence Building B			
Date: 15/05.2014			
Temp Start	14.4 °C	**Cloud Cover Start**	80%
Temp Finish	12.1 °C	**Cloud Cover Finish**	80%
Humidity Start	84.1%	**Wind Speed Average**	<4 mph
Humidity Finish	83.3%	**Precipitation**	Nil

Table 7. Abiotic variables during survey 2: Dawn Re-entry Building B			
Date: 26.05.2014			
Temp Start	10.1 °C	**Cloud Cover Start**	60%
Temp Finish	11.2 °C	**Cloud Cover Finish**	60%
Humidity Start	69.2%	**Wind Speed Average**	Nil <1 mph
Humidity Finish	69.3%	**Precipitation**	Nil

Table 6. Abiotic variables during survey 3: Dusk emergence Building B			
Date: 03/06.2014			
Temp Start	14.4 °C	**Cloud Cover Start**	80%
Temp Finish	12.1 °C	**Cloud Cover Finish**	80%
Humidity Start	84.1%	**Wind Speed Average**	<4 mph
Humidity Finish	83.3%	**Precipitation**	Nil

3. Results

3.1. Pre-Survey Data Search

3.1.1. Designated Sites

Desk-top study of the area revealed that there are no protected sites within the immediate vicinity but that there are three Sites of Special Scientific Interest (SSSI) within 2km; Dimmingsdale & The Ranger SSSI approx. 900m to the south, Whiston Eaves SSSI approx. 1.7km to the northeast, and Bath Pasture SSSI approx. 2km to the northwest.

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 two UK BAP species being recorded within 2km of the proposed application area.

UKBAP	Common name	Species	Recorded within 2km
☑	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 five/six bat species that are not currently given UK BAP consideration are also recorded within 2km of the proposed application area.

UKBAP	Common name	Species	Recorded within 2km
☒	Natterer's bat	*Myotis Nattereri*	☑
☒	Daubenton's bat	*Myotis daubentonii*	☑
☒	Whiskered/ brandt bat	*Myotis mystacinus/brandtii*	☑
☒	Serotine (Lesser Noctule)	*Nyctalus leisleri*	☑
☒	Common pipistrelle	*Pipistrellus pipistrellus*	☑

Non UKBAP Bat species recorded within Staffordshire.

Staffordshire Ecological Record shows records of Barn Owl within a 2km radius of the application area. These records are from Dimmingsdale (approx. 900m south), Alton (approx. 2km southeast), Moneystone Quarry (approx. 1km north), and Counslow (approx. 2km southeast).

3.2. Field Surveys

3.2.1. Habitat Description

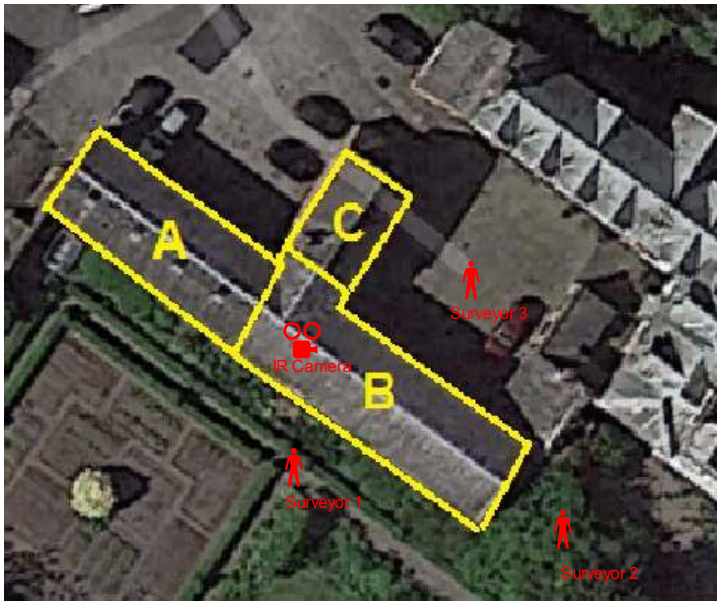
The site is part of a collection of buildings within a largely agricultural landscape. The immediate surroundings contain extensive gardens, tree lined roads and areas of trees; and there are nearby woods in all directions. There are watercourses roughly 300m west, 500m north and 600m east of the site, with a pond 350m to the northeast.

3.2.2. Roost Surveys

2. The site comprises of three buildings shown below:

Building B is a disused outbuilding, not currently used for any purpose. It is a two-storey brick structure, with timber-framed roof, slate tiles and no inner lining. The exterior walls contain ventilation bricks and grills, which provide potential access points for bats. There is an open stairway on the north side of the building, which leads into the building and provides potential access for both bats and birds. The roof is in good condition (having been repaired 6 years ago), with limited opportunity for entrance by bats or birds. The windows are not glazed, with shuttering which leaves potential access spaces for bats. The interior of the main first floor space is open to the roof void, with exposed ridge beam, perlins and rafters providing multiple spaces suitable for roosting bats and/or birds. A small number of scattered bat droppings were found in this area, although it is unclear whether these are the result of bats roosting in the building, or foraging within the building during summer months. Two active swallow's nest were also found inside this area. The western end of Building B has a small room on the first floor, which has been plastered. The roof space above this room is accessible to bats and birds from the open stairway adjacent, but it was not possible to fully inspect all parts of this space.

3.2.3. Activity Surveys



Surveyor location and Infared digital camera.

All surveys were conducted 1 hour before dawn/dusk and 1.5+ hours after.

1st Survey: 1st dusk activity survey – 15/05/2014 Building B

- The survey team was positioned to cover all sides of the building at dusk.
- No bats were seen emerging from any part of the building during this time, although five common pipistrelle bats were recorded commuting at 21:30 and 22:22.
- One Noctule bat recorded at 21.5 KHz commuting
- Two brown long-eared bats were recorded commuting through the site at 21:32 and 21:46.
- Bats were recorded in these areas, but given the flight behaviour and height of the bats, it is considered unlikely that they emerged from any of the buildings.

2nd Survey: 1st dawn activity survey – 26/05/2014 Building B

- The second dawn re-entry survey was conducted on 26th May 2014. The survey was conducted half an hour before sunrise until full daylight. The survey conditions were optimal for bat activity. Three calls were recorded, peaking at 48.6 KHz. Sound analysis confirmed that the calls were made by common pipistrelle bats.
- Peak activity occurred between 04.30 and 05.00. No bats were seen entering the building.
- Figure 2: Recording of common pipistrelle commuting through site – peak frequency 46.3 KHz.

2nd Survey: 2nd dusk emergence activity survey – 03/06/2014 Building B

- The survey team was positioned to cover all sides of the site at dusk.
- No bats were seen emerging from the buildings, although both common and soprano pipistrelle bats were recorded commuting, with a brief feeding buzz between 21:55 and 22:40.

- One brown long-eared bats was recorded adjacent to the site at 22:45.

4. Assessment

4.1. Constraints on Survey Information

All surveys were carried out during May and June 2014. 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

There are three Sites of Special Scientific Interest (SSSI) within 2km; Dimmingsdale & The Ranger SSSI approx. 900m to the south, Whiston Eaves SSSI approx. 1.7km to the northeast, and Bath Pasture SSSI approx. 2km to the northwest. Given the physical distance and the size of the development it is considered that the works to be carried out will not have any negative impact towards the SSSI.

4.3.2. Roosts

It is considered that the building is currently unoccupied by a summer colony of bats, and no substantial evidence was recorded to indicate that a notable roost (i.e. a female maternity, or male bachelor roost) was *in-situ* during the optimal survey period. However, based upon minor evidence of bat presence, accompanied by spatial and temporal variation of species, a number of precautionary recommendations are made to limit the potential impact of the proposed planning application.

Any mitigation should be proportionate and justifiable, and avoid or minimize any harm to species found during works. Where necessary, timing of the works or changing the design or layout of the scheme to remove the impacts (e.g. re-roofing of a summer nursery roost in the autumn/winter months when the bats will not be using the building) *(*BCT 2012). The second is to ensure that the project does not result in any long term detrimental effect on any local population. Thus new habitat should be created to compensate for any loss of existing habitat.

4.3.2. Nesting Birds

The barn provided 3 active swallows nests therefore development could have a negative impact on the nesting swallows if works were to be carried out between March to September also the nesting swallows will lose an existing nesting site.

4.4. Legislation and Policy Guidance

As no active bat roost was recorded utilizing the building, the proposed activity is unlikely to result in an offence under Regulation 41 or 4. Thus, no recommendations are made regarding an EPSL application and subsequent mitigation. However, due to some anecdotal evidence of bats within the application area, it is recommended that a suitably qualified bat ecologist is present onsite to supervise soft-demolition works of the roof section.

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 Mitigation for Roost Sites

Any landscaping relating to the proposed development should also take into consideration bats and other wildlife and it is recommended that creation or enhancing existing hedgerows by only the use of native tree and shrub species are planted. In particular, no plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 should be planted during the landscaping of this development. For further details of Schedule 9 plants, visit the Defra website: www.defra.gov.uk/wildlife-pets/non-native.

Any new planting should contain native species of trees.

Table 3: List of native tree species

	Species	**Planting Time**
Native Tree Species	Ash (*Fraxinus excelsior)*	January/February
	Aspen (*Populus tremula)*	January/February
	Field maple (*Acer campestre*)	January/February
	Bird Cherry (*Prunus padus*)	January/February
	English Elm(*Ulmus minor* var *vulgaris*)	January/February
	Oak (*Quercus robur*)	January/February

Smaller scale plantings that will be included within the landscape planting design should endeavour to resemble niche habitats. For example, native ferns and other plants that thrive in low light (e.g. Ivy, Holly, and a variety of grasses and mosses) can be used. Species should be chosen according to moisture and sunlight availability, but also with regard to their wildlife value. Many grasses will offer cover and breeding places for invertebrates as well as food for some birds. More open but sheltered areas around the proposed development or within gardensof the proposed housing are particularly suitable for colourful plants that thrive in full sun. These can function as bee and butterfly gardens, supplying a rich source of nectar from

spring to autumn. Shrubs such as Buddleia, Broom *Cytisus scoparius*, Lavender *Lavendula* sp. and Gorse *Ulex europaeus*, and herbs such as Willowherb *Epiloobium* sp., Michaelmas Daisy *Aster* sp., Soapwort, Mullein *Verbascum* sp. and Thyme *Thymus vulgaris* all enjoy a sunny position and provide significant nectaring resources for invertebrates.

The use of climbing plants to enhance the design and aesthetic elements is generally an accepted practice. The process of allowing and encouraging plants to grow on and up walls allows the natural environment to be extended within the site. From an ecological perspective, green walls will provide resting and feeding places for birds, invertebrates and small mammals. Climbers provide nesting habitats for birds such as Wrens, Blackbirds, Song Thrushes and House Sparrows. Species such as Cotoneaster, Ivy, Climbing Roses and Honeysuckles are all important fruit resources for birds. Equally, climbing plants such as Virginia Creeper and Ivy form important habitats for invertebrates. Although native species are more likely to attract wildlife, some exotic species are also effective in this respect. Within the site grounds it may be more productive to use a combination of native and exotic species to maximise the range of annual and perennial, deciduous and evergreen foliage, and flowering, climbing and creeping species. This latter plant type provides a selection of plants suitable for green walls. The aspect of a climbing plant on a wall can have significant ancillary effects, such as insulation and moisture retention. For example, north-facing walls are more suitable for supporting native herbs and a wider range of plants. This is due to the higher moisture regime. Further structural benefits of the

Bat Boxes

The development will incorporate a total of eight 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 1WQ, are installed onto a selection of housing in a south facing position, with two Schwegler 2F boxes attached to existing trees within adjacent woodland to the west (see bat box location plan). The installed bat boxes will be sited at least 7–8 metres above the ground.

- Two Schwegler 1WQ bat boxes will be installed to provide summer and hibernation opportunities, and s2Schwegler 2F 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.

- It is envisaged that bat box monitoring should be undertaken by the site owners who will require a licensed bat worker to inspect the boxes in order to conform with current guidance and legislation.

Table 1: Bat box to be incorporated into the existing building

Bat boxes	Type and Quantity	Location
	**2 x 1FQ Bat Box**	The 1 FQ Bat Roost is ideal for all types of bats that inhabit buildings. Its shape and design make it equally attractive to bats as a roost or nursery, and it is also very attractive to the human eye, which is an important consideration.
	**2 x 2F Bat Box**	This can be hung from a tree branch near the trunk, or fixed to a trunk. The 2F is the most popular general purpose box, and is particularly attractive to the smaller British bats. It has a simple design with a narrow entrance slit on the front.

Recommendations are given to enhance the site for nesting birds in future, including the provision of bird boxes.

Further details regarding birds can be found at the following websites:

http://www.rspb.org.uk/wildlife/birdguide/name/s/swallow/encouraging.aspx

http://www.rspb.org.uk/advice/helpingbirds/roofs/internal_boxes.aspx

House sparrow nest

Swallows' nest

Any lighting design around the new development should be considered at an early stage. Light spill can affect the foraging and commuting strategy of many species and should be avoided onto nearby trees and hedges/shrubs, and should not exceed 200 lumens (150 watts). Any security lighting should be on a timer setting and faced down to prevent spillage onto nearby habitats. The height of any lighting columns around the development should not exceed eight metres to reduce further any ecological impact of light pollution. Low-pressure sodium lamps (SOX) fitted with hoods are recommended to direct light below the horizontal plane to minimize upward light spill.

5.3. Mitigation Licences

No Natural England licence is considered necessary, as no roosting bats were identified during the surveys.

6. Summary

The site comprises redundant building, with areas of hard standing. It is proposed that the buildings be redeveloped to make way for a residential development.

During the surveys, low levels of common pipistrelle, Noctule, brown long-eared and activity was recorded on site, but no evidence that any of the buildings are used by roosting bats was found. Therefore, it is has been concluded that the buildings can be redeveloped without the need for a European Protected Species (EPS) licence.

Three active swallows nests were identified within the building.

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 (2012). *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.

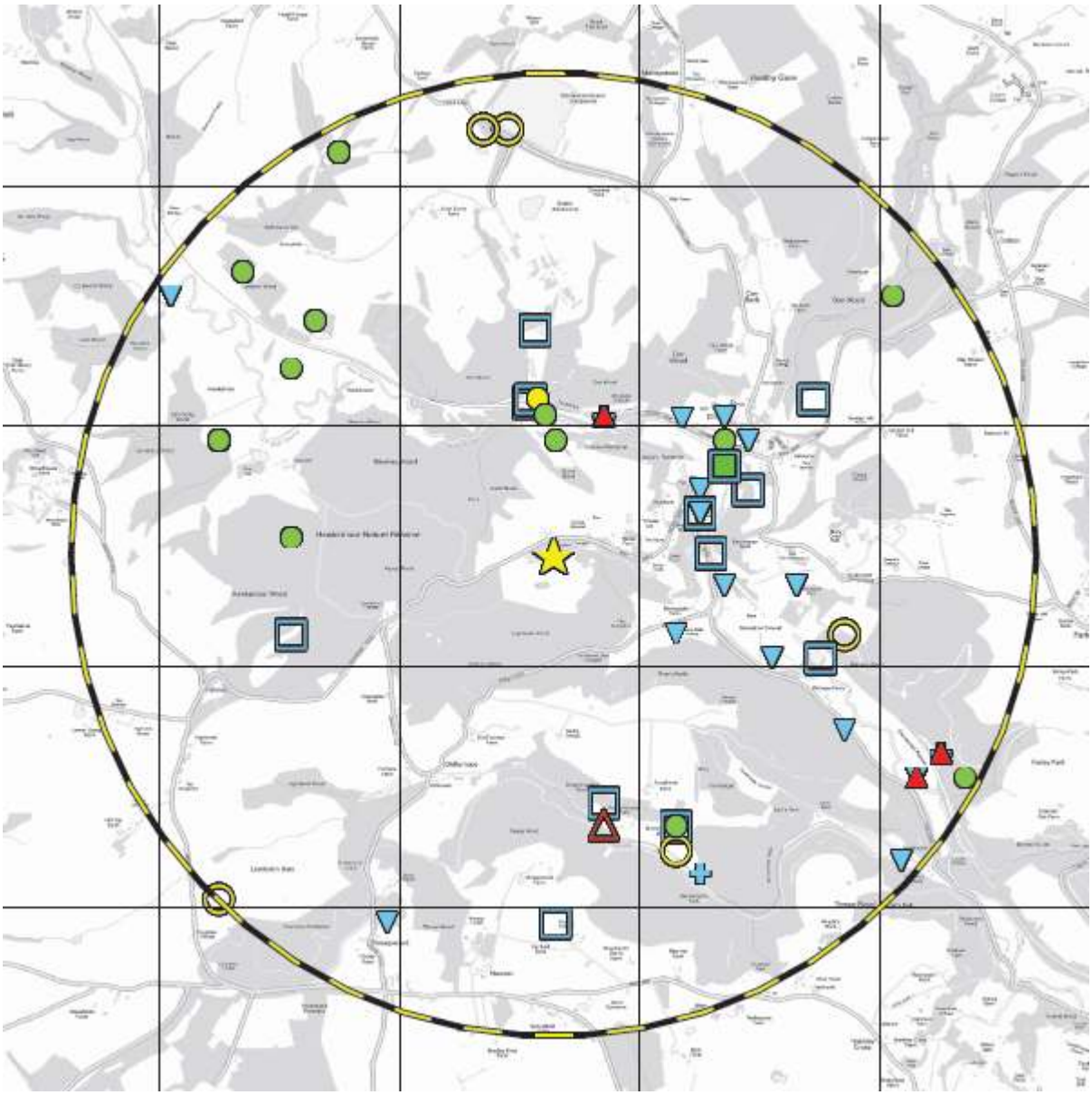
Office of the Deputy Prime Minister (2005) *Planning Policy Statement 9: Biodiversity and Geological Conservation*. The Stationery Office, Norwich.

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 Pre-Survey Data Search



Staffordshire Ecological Record
The Wolseley Centre, Wolseley Bridge,
Stafford. ST17 0WT
Tel: 01889 880100 Fax: 01889 880101
Email: info@staffs-ecology.org.uk

A legend to the map showing Nature Conservation Sites and Species

Introduction

These colours are used on the site alert mapping within the SWT GIS, but SER cannot guarantee the same colours are used in any other mapping system, particularly those based on ArcView.

Statutory Designations from Natural England's web-site

- National Nature Reserves — NNR (boundary not available owing to OS restrictions)
- Sites of Special Scientific Interest — SSSI (boundary not available owing to OS restrictions)
- Local Nature Reserves — LNR (boundary not available owing to OS restrictions)

Non-statutory Designations from the Staffordshire Grading System (1995 onwards)

- Site of Biological Importance (ex Grade 1 SBI) equivalent to "Local Wildlife Site"
- Biodiversity Alert Site (ex Grade 2 SBI)
- Proposed/potential Site of Biological Importance

Geological Sites

- Regionally Important Geological/geomorphological Site (= Local Geological Site)

Staffordshire Wildlife Trust Sites

- SWT Nature Reserves

Other Nature Reserves

- Royal Society for the Protection of Birds

Ancient Woodland Inventory

- Ancient & Semi-natural Woodland
- Ancient Replanted Woodland

Species Information

- Mammals excluding those listed below
- Otter (Lutra lutra)
- Badger (Meles meles) - not normally supplied
- Water Vole (Arvicola terrestris)
- All bat species
- All bird species
- Any other protected species (precise to 100m)
- All Protected Species Records (precise to 1km)
- Amphibians and reptiles excluding those below
- Great Crested Newt (Triturus cristatus)
- Native Crayfish (Austropotamobius pallipes)
- Flowering plants except those below
- Bluebell (Hyacinthoides non-scripta)
- Butterflies and Moths
- BAP Species Records (precise to 100m)
- BAP Species Records (precise to 1km)

Notes:

The Local Nature Reserve and other nature reserve boundaries can overlay the current grading when both layers are actively visible

Where there are multiple species records for the same grid reference the dot for one species may obscure the dots for other species - all species records will be displayed in the accompanying spreadsheet

Not all the above categories may be present on the accompanying map

Version 2.0 July 2011

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Appendix 3 Photographs

Plate 1: Showing building B that was surveyed.

Plate 2: Showing location IR Camera positioned adjacent open windows.

Plate 3: Potential roosting opportunity for bats.