absolute ecology wildlife surveys

Activity Survey for Bats

Location: Wragg Hall Farm, Biddulph Park Road, Biddulph, ST8 7SJ

Author: Helen Staton

September 2021

Notice to Readers

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Executive Summary

Absolute Ecology was commissioned to undertake a bat survey for the bat roost potential at a site known as Wragg Hall Farm, Biddulph, Park Road, Biddulph, Stoke-on-Trent, ST8 7SJ. Ordnance survey grid reference; SJ90336046. 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.

Onsite are a number of buildings including an occupied farmhouse and five derelict barns, of which one was subject to survey (B1). Proposals have been made to convert B1 into residential accommodation.

A building inspection was undertaken 28th July 2021 followed by three activity surveys as summarised below;

- Survey 1 – dusk emergence 28/07/2021
- Survey 2 – dusk emergence 10/08/2021
- Survey 3 –dawn re-entry 01/09/2021

Bats were confirmed roosting within B1, comprising of two species of bat;

- Brown long-eared – peak count of one bat recorded roosting internally (exact location unknown).
- Common pipistrelle – peak count of one bat recorded roosting externally, in two locations

The results of the three bat activity surveys, which were conducted during the optimum survey period, has confirmed the presence of bats within B1. Therefore, it is considered that all effort has been made to establish what negative impacts will occur to roosting bats, and these have been identified in section 4.

Application for an EPS licence from Natural England shall be required for the proposed renovation of the building into residential use, which should provide a comprehensive mitigation strategy for potential loss summer day roosts for; common pipistrelle and brown long-eared bats. Some consideration of appropriate measures within such a mitigation strategy are provided in section 5.

No active bird nests were recorded within B1 throughout the survey period.

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1. Introduction

Site Description

Absolute Ecology was commissioned to undertake a bat survey for the bat roost potential at a site known as; Wragg Hall Farm, Biddulph, Park Road, Biddulph, Stoke-on-Trent, ST8 7SJ. Ordnance survey grid reference; SJ90336046.

Figure 1: Site location indicated in red.



Proposed Works

Proposals have been made to convert B1 into residential accommodation.

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.

Aims of the Survey

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.

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.

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.

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

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.

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:

- 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, 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.

Surveyor Information

Surveyor 1 (present on all surveys)
Helen Staton – BSc (Hons) ACIEEM, Natural England Bat Survey Class Licence Registration Number: 2015-14490-CLS-CLS. Helen has been working for ecological consultancies for over ten years and has held a Level 1 bat licence for 8 years. Helen 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.

Surveyor 2 (present on all surveys)
Carrie Alcock – BSc (Hons). Carrie has been working as an Assistant Ecologist for Absolute Ecology since June 2017. Carrie is competent with activity surveys, dawn and dusk bat roost assessments, daytime surveys for bat field signs, assessments of trees as potential bat roosts.

Surveyor 3 (present on survey 1 and 2)
Tiffany Jenkinson - Natural England Bat Survey Class Licence Registration Number: 2020-47321-CLS-CLS. Tiffany has been working as an Assistant Ecologist for over four years and has been carrying out bat surveys during that time. She has held her Level 1 licence for 1 year.

Surveyor 4 (present on survey 3)
Matthew Haydock – HND, ND, MIEEM, Natural England Bat Survey Class Licence CL18, Registration Number CLS01637. Matthew is an ecologist with 16 years' experience of environmental consultancy work. 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.

Field Surveys

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 28/07/2021 and an updated on each survey visit. 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.

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 Touch). Real-time recordings were subsequently analysed using Bat Explorer software.

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

Table 6. Abiotic variables during survey 1: Dusk Emergence			
Date: 28/07/2021 **Sunset: 21:11**			
Temp Start	11 °C	**Cloud Cover Start**	100%
Temp Finish	10°C	**Cloud Cover Finish**	100%
Wind Speed Average	<8mph	**Precipitation**	Nil
Table 7: Abiotic variables during survey 2: Dusk Emergence			
Date: 10/08/2021 **Sunset: 20:47**			
Temp Start	17 °C	**Cloud Cover Start**	70%
Temp Finish	15 °C	**Cloud Cover Finish**	100%
Wind Speed Average	<5 mph	**Precipitation**	Nil
Table 8. Abiotic variables during survey 3: Dawn re-entry			
Date: 01/09/2021 **Sunrise: 06:17**			
Temp Start	10 °C	**Cloud Cover Start**	100%
Temp Finish	9 °C	**Cloud Cover Finish**	100%
Wind Speed Average	<7 mph	**Precipitation**	Nil

3. Results

Field Surveys

Habitat Survey

The site is located within a predominantly rural setting, approx. 2km northeast of the town of Biddulph. The site is immediately bounded by agricultural land with scattered residential properties/farms in the area. Within the wider landscape are features beneficial for foraging/commuting bats including water bodies, water courses, an orchard, mature hedgerows and woodland.

Roost Surveys

Figure 2: Surveyed building



Building Inspection

External

B1 is a large, L shaped barn with pitched tiled and corrugated roofs. The original part of the barn is stone built, two storeys, with a tiled roof. A single storey (brick and stone) extension has been added onto the north-western elevation (forming a garage/storage) which has a corrugated metal roof. On the eastern elevation is a large two-storey stone/breeze block extension with a corrugated asbestos roof.

The building is largely in a state of disrepair (with the exception of the garage extension) with the stone walls presenting a large number of cracks/crevices, all offering suitable bat roosting features. Ventilation gaps are present on gable ends alongside missing blocks. Doorways and windows are present although many are damaged/broken presenting an ease of access into the building for bats and birds.

The tiled roof is in a good condition with only occasional slipped/missing tile. The asbestos roof varies in condition, while the sheeting is intact, gaps between layers are present. Potential roosting features also noted where the roof joins the external walls (eaves areas/atop of wall plate).

Internal

Internally B1 is divided into a number of rooms/floors. The northwestern end garage is open plan and single storey. Access internally for bats can be obtained via cracks crevices within the walls although roosting features once inside are few.

The central section (pitched tiled roof) is over two floors with the ground floor rooms separated although open doorways are present. The ground floor is damp and subject to water damage. The first floor was only partially accessed due to health and safety concerns (floor appeared rotten in a number of places). The tiled roof is lined, partly with a white breathable membrane. Roof timbers are in a good condition.

The easterly section of the building (corrugated asbestos roof) is divided over two floors and again ground floor rooms are damp with water ingress. The first floor is severely rotted/damaged with no surveyor access obtained. The roof is not lined.

Across the first-floor sections (where access was possible) scattered bat droppings were noted, approx. 6 in total all similar in shape and size of either a *Myotis* sp. or brown long-eared. The first floors are covered in large amounts of debris resulting in difficulty in finding evidence. Nevertheless due to the presence of scattered droppings and the large number of potential roosting features noted, the building was assessed to be of **high bat roosting potential**.

Activity Surveys

Figure 3: Surveyor locations indicated by the yellow stars.



Table 10: Dusk activity survey – 28/07/2021

Time	Species (common name)	Species (*Scientific name*)	Observed behaviour
21:22	Noctule	*Nyctalu noctula*	Commuting over site
21:35	Noctule	*Nyctalus noctula*	Commuting over site
21:36	Common pipistrelle	*Pipistrellus pipistrellus*	Flew onsite from a south westerly direction and foraged briefly
21:40	Common pipistrelle	*Pipistrellus pipistrellus*	**Emerged** from a gap within the woodwork, beneath corrugated metal sheeting (northwest elevation of southern section)
21:41	Common pipistrelle	*Pipistrellus pipistrellus*	Foraging, flew onsite from a southerly direction
21:48	Common pipistrelle	*Pipistrellus pipistrellus*	Foraging around the southern side of the building
Internal Throughout the survey, regular checks were made internally at 21:20, 21:45 and 22:15 and no bats were seen			
Survey 1 summary			

1 x common pipistrelle bats emerged

Table 11: Dusk emergence – 10/08/2021 – sunset 20:47

Time	Species (common name)	Species (*Scientific name*)	Observed behaviour
21:07	Common pipistrelle	*Pipistrellus pipistrellus*	Foraging south side of building
21:12	Noctule	*Nyctalus noctula*	Heard not seen
21:18	Noctule	*Nyctalus noctula*	Heard not seen
21:22	Noctule	*Nyctalus noctula*	Commuting over cite
21:23	Common pipistrelle	*Pipistrellus pipistrellus*	X 2 bats foraging south and east side of barn
21:25	Noctule	*Nyctalus noctula*	Foraging over site until 21:27
21:26	Common pipistrelle	*Pipistrellus pipistrellus*	**Emerged** from a gap within the woodwork, beneath corrugated metal sheeting (northwest elevation of southern section)
21:28	Common pipistrelle	*Pipistrellus pipistrellus*	Foraging x 2 bats around south west side of building
21:30	Brown long-eared	*Plecotus auritus*	Inside building – flying within first floor of corrugated section -pre-emergent flight.
21:33	Brown long-eared	*Plecotus auritus*	**Emerged** from building via gap in roof south east side
21:35	Common pipistrelle	*Pipistrellus pipistrellus*	Foraging south side of building
21:36	Noctule	*Nyctalus noctule*	Heard not seen
21:38	Common pipistrelle	*Pipistrellus pipistrellus*	Brief pass – commuting
21:39	Soprano Pipistrelle	*Pipistrellus pygmeaus*	Heard not seen
21:41	Common pipistrelle	*Pipistrellus pipistrellus*	Heard not seen
21: 41	Myotis sp.	*Myotis*	Heard not seen – faint pass
21:43	Brown long-eared	*Plecotus auritus*	Foraging south east side of barn
21:45	Brown long-eared	*Plecotus auritus*	Flying inside of barn – re-entry?
21:46	Myotis sp.	*Myotis*	Foraging south east side of barn and under dutch barn until 21:53 -whiskered?
21:47	Common pipistrelle	*Pipistrellus pipistrellus*	Commuting over barn
22:00	Common pipistrelle	*Pipistrellus pipistrellus*	Heard not seen
22:05	Noctule	*Nyctalus noctula*	Heard not seen
22:06	Common pipistrelle	*Pipistrellus pipistrellus*	X 2 bats foraging south west side of barn

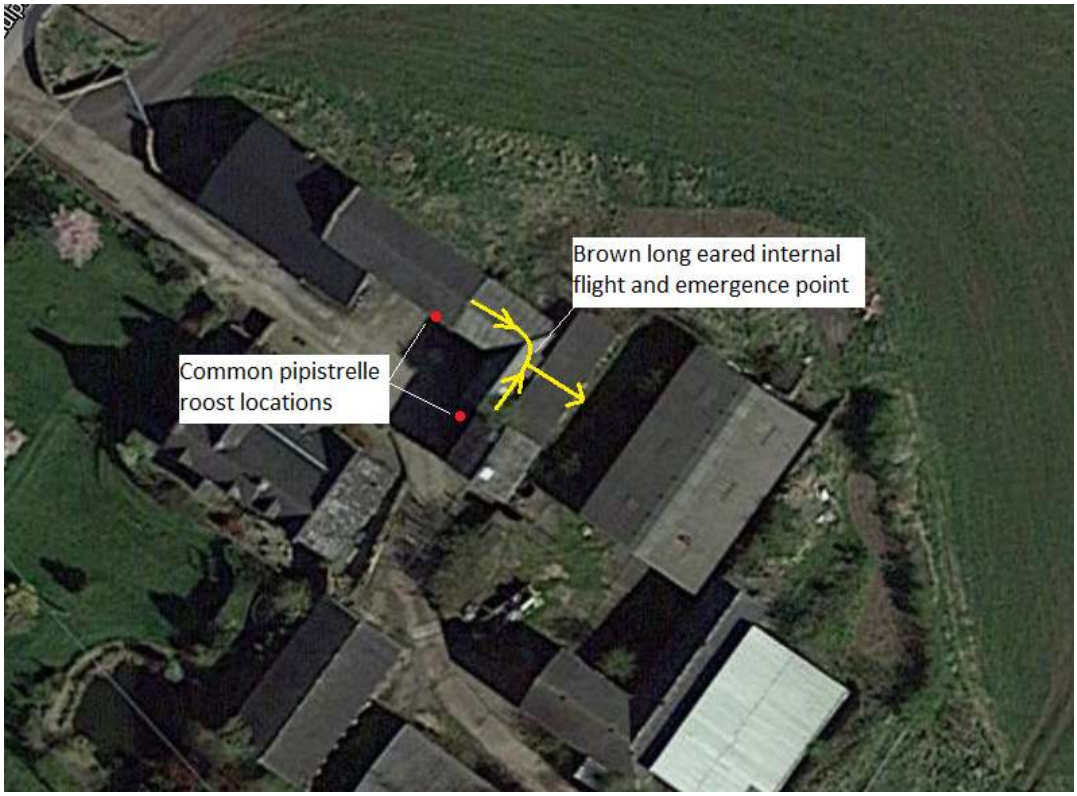
Internal

Throughout the survey, regular checks were made internally at 21:20, 21:30, 21:45 and 22:10. Peak count of one brown long-eared bat seen internally.
Survey 2 summary X 1 brown long-eared bat emerged X 1 common pipistrelle bat emerged

Table 12: Dawn re-entry - 01/09/2021 – sunrise 06:17

Time	Species (common name)	Species (*Scientific name*)	Observed behaviour
05:35	Soprano pipistrelle	*Pipistrellus pygmeaus*	Heard not seen
05:42	Brown long-eared	*Plecotus auritus*	Foraged briefly onsite and then re-entered a barn to the south west
05:52	Common pipistrelle	*Pipistrellus pipistrellus*	Flew onto site form a easterly direction, foraged briefly before fling away from the building in a westerly direction
05:53	Common pipistrelle	*Pipistrellus pipistrellus*	**Re-entry** under a brick on the south west elevation of the building
Internal Throughout the survey, regular checks were made internally at 05:00, 05:30, 05:45 and 06:00 and no bats were seen.			
Survey 3 summary X 1 common pipistrelle bat re-entered			

Figure 4: Summary of the results showing roost points/entry/exit points



Photograph 1 – South elevation and common pipistrelle roost (peak count x 1 bat)



Photograph 2 –Northwest elevation and common pipistrelle roost (peak count x 1 bat)



4. Assessment

Constraints on Survey Information

All activity surveys were carried out during July – September 2021. This period is considered as being an optimal survey period in order to evaluate the presence or absence of bats.

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).

Potential Impacts of Development

Roosts

Low numbers of common pipistrelle and brown long-eared bats were recorded emerging and re-entering during the activity surveys. It is considered that all effort has been made to establish what negative impacts will occur to roosting bats, and these have been identified below.

Short-term impacts: Disturbance Annexe [High Negative]
Without mitigation including sensitive timing of works, the short-term impact to bats would be the potential for individuals / group(s) of bats to be disturbed, killed or injured during construction work throughout the year.

Long-term impacts: Roost modification [High Negative]
Potential long term loss of a summer roosts for; common pipistrelle and brown long-eared.

Long-term impacts: Roost loss [High Negative]
The long-term impact of loss of roosts upon bat populations is poorly understood and difficult to study. There is variation of impact depending on species of bat, whereby some species are more sensitive to disturbance than other species. Thus the impact of roost loss for the local populations of common pipistrelle and brown long-eared bats is deemed more severe should the development continue without mitigation. All onsite species are considered common and widespread, although have declined in Britain due to changing land use, including the conversion of barns and other buildings, which have resulted in the loss of suitable feeding and roosting habitats.

Long-term impacts: Fragmentation and isolation annexe [Low potential]

No impacts on adjacent habitats. All trees/hedgerows onsite are to be retained, maintaining linear features used by commuting and foraging bats.

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

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.

Mitigation Measures

Application for an EPS licence from Natural England shall be required, which should provide a comprehensive mitigation strategy for potential loss of;

- Common pipistrelle summer day roost x 2 (external roost locations – peak count one bat)
- Brown long-eared summer day roost (x 1 bat roosting internally – exact location unknown)

Proposals and licensable works

The building will be converted into residential accommodation. A Natural England European Protected Species Licence will be required which will pertain to the loss of summer day roosts for two species of bat.

Mitigation

A mitigation strategy will need to be devised to maintain the population status of all species onsite and likely mitigation will include the following:

Time avoidance measures – re-roofing and internal works will need to be carried out under the supervision of a qualified bat ecologist. This should be carried out between October-March when the bats are least likely to be present. Should any bats be inadvertently discovered during this, or any other works then all work must cease immediately until further consultation is made. If necessary, the use of standard capture and exclusion methods may be deployed to prevent harm to any bats found, which may then be relocated to a suitable safe area should natural dispersal not occur. Thus the EPS licence application should detail a suitable receptor site, in the event that bats may be discovered.

Retention of roosts – it may be possible to retain the common pipistrelle roost located on the southern elevation (Photographic plate 1). Architect to confirm.

Replacement of roosts

The common pipistrelle roost on the northwest elevation and the brown long-eared internal roost will both be lost through the conversion of the building into residential accommodation. Mitigation should include;

- Raised or vented ridge tiles should be installed across the roofs to act as replacement roosting features. The roof should be lined with a bitumen type felt, not a modern white breathable (which creates an entanglement risk for bats);

- External bat boxes should be fitted on the gable ends. A Vincent Pro bat box on the southern gable end (suitable for brown long-eared in addition to other bat species) and a 1WQ Schwegler on the northwest gable end.

- A hibernation bat box should be fitted on a nearby tree/building (which will also act as a receptor site during the supervision works).

Site enhancements - It is encouraged that any landscaping relating to the proposed development should encompass native tree and shrub species to encourage foraging potential for species. No plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 should be planted during any landscaping within this development. For further details of Schedule 9 plants visit the Defra website: www.defra.gov.uk/wildlife-pets/non-native
To further enhance the value of the site for roosting bats, bat boxes should be installed around the site, externally on buildings and trees where appropriate.

Lighting design - Any lighting design installed during pre and post 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). Where possible, any security lighting should be on a timer setting and faced down to prevent spillage onto nearby habitats. Height of any lighting columns around the development should not exceed eight metres to further reduce any ecological impact of light pollution. Low-pressure sodium lamps (SOX) fitted with hoods are recommended to direct l light below the horizontal plane to minimize upward light spill.

6. Summary

Evidence of bats was found during the internal inspection. A small number of; common pipistrelle and brown long-eared bats were detected emerging/re-entering during the activity surveys. Therefore, it is considered that all effort has been made to establish what negative impacts will occur to roosting bats, and these have been identified in section 4.

Application for an EPS licence from Natural England shall be required for any works affecting the building, which should provide a comprehensive mitigation strategy for the loss of a summer day roosts for two species of bat. Some consideration of appropriate measures within such a mitigation strategy are provided in section 5.

No active bird nests were recorded throughout the survey period (in either building) and no evidence of owl utilisation.

7. References

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8. Figures

9. Photographic plates continued

Plate 3: Looking southwest along southern elevation



Plate 4: western elevation looking south



Plate 5: View looking northeast towards southern elevation



Plate 6: north elevation



Plate 7: Internal view – pitched tiled section, first floor



Plate 8: Collapsed floor – corrugated section, first floor



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.



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).**