Activity Survey for Bats

Location:

Higher Brown Edge Farm
Newtown Road
Biddulph
Stoke-on-Trent
ST8 7S

Matthew James Haydock

May 2023

Notice to Readers

This report has been prepared by Absolute Ecology LLP 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).

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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 Higher Brown Edge Farm, Newtown Road, Biddulph, Stoke-on-Trent, ST8 7SW. Grid Reference: SJ 91443 60287. 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.

Proposals include alterations and extensions to a house and the conversion of a small barn to ancillary accommodation.

Two dusk survey was conducted on 15/05/2023 & 16/05/2023 one on the house and one on the barn and two dawn re-entry on 29/05/2023 & 30/05/2023 one on the dwelling and one on the barn. Minor bat activity was recorded throughout each survey period, although no bats were seen entering or exiting the building. confirmed species of bat have been recorded foraging and commuting across the site: 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.

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.

The proposed works do not involve the loss of any bat-foraging habitat; therefore, no habitat mitigation measures are required, although planting wildlife-attracting plants around the site would enhance the site for bats in future.

No bat species were visually recorded within the buildings at any time.

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.

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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 Higher Brown Edge Farm, Newtown Road, Biddulph, Stoke-on-Trent, ST8 7SW. Grid Reference: SJ 91443 60287

Figure 1: Aerial view showing site location (indicated by the red circle)



Figure 2: Aerial overview of the surveyed building



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.

1.2. 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 Protected Species (PS) development license issued by Natural England (NE) may be required prior to any works taking place. Further presence/absence survey should be undertaken and a mitigation strategy be implemented with Natural England and the Local Planning Authority if required. 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.

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.

Survey methodology also utilized a number of passive monitoring techniques including an Infrared camcorder such as the Canon XA11 to qualitatively record any evidence of bat activity external area of 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.

Infra-red cameras were used to supplement human surveyors by covering the darkest locations around the building. The camera models used were Canon XA11 and Sony Handycam NightShot, each with an additional infra-red torch.

Following the surveys, all infra-red footage was reviewed. The time and the nature of activity (e.g., emergence, re-entry, commuting/foraging) were noted and compared with recordings from the associated bat detectors.

Roost habitat assessment criteria (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[a] 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[b]). 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.[c]	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[a] 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[a] 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.

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

Lucy Ashley: has assisted with various ecological consultancy within Staffordshire & Derbyshire 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 practices, mitigation and compensation works relating to bats as may be required.

Surveyor 3

Carry Allcock: has worked for various ecological consultants to assist with various ecological surveys within Staffordshire & Derbyshire 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 and buildings as potential bat roosts and the production of reports providing advice on best practices, mitigation and compensation works relating to bats as may be required.

Infrared Camera

During the bat activity survey an Infrared camcorder such as the Canon XA11 was positioned on site where natural light was less prevalent to cover a wide angle of the building. The IR camera was recorded from the point of the start of the bat activity survey until the survey was completed, during the survey the camera was in view of the surveyor. All filming is analysed after each survey and all data is provided into the bat activity report. The use of IR cameras has followed the new Bat Conservation Trust interim guideline 2022/2023

IR Camera location throughout the activity surveys. Dwelling



Surveyor location throughout the activity surveys. Dwelling



IR Camera location throughout the activity surveys. Barn



Surveyor location throughout the activity surveys. Barn



2.4 Field Surveys

2.4.1. Habitat Survey

A Preliminary Roost Assessment (PRA) was undertaken on the 13th February 2023.

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 and an update on 15/05/2023 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 on 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

Bat ultrasound data was gathered using a number of heterodyne (Batbox Duet) and real-time recording devices (Wildlife Acoustics Echo Meter EM3, Elekon BatloggerReal-time recordings were subsequently analysed using Bat Explorer software. Canon XA11, with IR LED Illuminators to capture and record continues bat activity. Infra-red cameras were used to supplement human surveyors by covering the darkest locations around the building. The camera models used were Canon XA11 and Sony Handycam NightShot, each with an additional infra-red torch.

Following the surveys, all infra-red footage was reviewed. The time and the nature of activity (e.g., emergence, re-entry, commuting/foraging) were noted and compared with recordings from the associated bat detectors.

Table 6. Abiotic variables during survey 1: Dusk Emergence			
Date: 15.05.2023			
Temp Start	11.4 °C	**Cloud Cover Start**	30%
Temp Finish	10.5 °C	**Cloud Cover Finish**	30%
Humidity Start	64.1%	**Wind Speed Average**	<1 mph
Humidity Finish	72.1%	**Precipitation**	Nil

Table 7. Abiotic variables during survey 2: Dusk Emergence			
Date: 16.05.2023			
Temp Start	12.4 °C	**Cloud Cover Start**	50%
Temp Finish	13.2 °C	**Cloud Cover Finish**	50%
Humidity Start	92.3%	**Wind Speed Average**	Nil <1 mph
Humidity Finish	91.4%	**Precipitation**	Nil

Table 7. Abiotic variables during survey 2: Dawn Re-entry			
Date: 29.05.2023			
Temp Start	10.8 °C	**Cloud Cover Start**	50%
Temp Finish	13.2 °C	**Cloud Cover Finish**	50%
Humidity Start	92.3%	**Wind Speed Average**	Nil <1 mph
Humidity Finish	91.4%	**Precipitation**	Nil

Table 7. Abiotic variables during survey 2: Dawn Re-entry			
Date: 30.06.2023			
Temp Start	11.1 °C	**Cloud Cover Start**	50%
Temp Finish	13.2 °C	**Cloud Cover Finish**	50%
Humidity Start	92.3%	**Wind Speed Average**	Nil <1 mph
Humidity Finish	91.4%	**Precipitation**	Nil

3. Results

3.1.1. Designated Sites

No designates or non-designated sites located immediately adjacent or on site.

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. A single Brown long-eared bat was recorded near the site in 2015 but no further details were provided by the Ecological Record Centre a further desktop study via the planning portal also provided no further information. The current surveys of 2022 found no bats roosting within the building which concluded that the building is not currently used by bats. All survey conducted followed the BCT Guidelines 3rd Edition.

UKBAP	Common name	Species	2 Km
☑	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	Common name	Species	2 Km
☒	Natterer's bat	*Myotis Nattereri*	☑
☒	Daubenton's bat	*Myotis daubentonii*	☒
☒	Whiskered/ brandt bat	*Myotis mystacinus/brandtii*	☑
☒	Common pipistrelle	*Pipistrellus pipistrellus*	☑

3.1. Field Surveys

3.2.1. Habitat Description

The application site is located North of Congleton. The immediate surrounding landscape which consists of mixed grassland, woodland, water courses and linear features such as hedgerows with structures such as buildings and bridges. The overall habitat is optimal for roosting, commuting and foraging bats.

3.2.2. Roost Surveys

Building Number	Description/Potential Roost Features	Level of Potential
B1 (Dwelling)	The are detached single dwelling, with stone walls, with single pitched roofs which is tiled. The pitched roofs face east to west, building measured 9 meters by 10 meters approx. The tiled roof shows some areas, of potential access for bats in the form of ridge of the roofing. The external of the building was inspected for signs of bat activity to ascertain bat evidence within the crevices of the stone structure and roofing was inspected and the door were all inspected identifying no evidence of bat activity. The stone structure on the building was in good condition showing little potential access and roosting opportunities for bats. The internal of the buildings has had work done to it and opened up showing no roof voids present, in the current state the internal was of an open plan layout with stone walling being visible and showing various cracks and cervices, the roofing all showed potential for bats to utilize due the crevices were the rafters and purling's are located and wooden timber beams, the roofing was also covered in roofing underlay which prevented inspection and therefore cannot rule out evidence of bats if present.	Moderate
B2 Barn	The detached barn, with stone walls, with single pitched roof which is tiled. The pitched roofs face east to west, building measured 9 meters by 5 meters approx. Attached to the barn is a small brick building which connects to the dwelling, The tiled roof shows some areas, of potential access for bats in the form of ridge of the roofing. The external of the building was inspected for signs of bat activity to ascertain bat evidence within the crevices of the stone structure and roofing was inspected and the door were all inspected identifying no evidence of bat activity. Some windows were missing that could also provide potential access for bats & birds. The internal inspection of the barn identified as having a ground level and a redundant storage area. The inspection found that the barn was relatively dry and used for storage the inspection concentrated on the stonework which was in good condition	Moderate

	providing only individual crevices that were not deep and were confidently inspected. Two upper side windows were open allowing potential access for bats and birds. The roofing of the building is made of rafters and purling the roof had partial roofing membrane which constrain the inspection, all the floors and windows were inspected also showing no evidence of bats. The building linking up to the barn and dwelling was divided into small storage rooms with partially tiled and single metal sheeting the crevices and roofing was fully inspected showing no evidence of bats as this section was fully inspected.	
B5	Anderson style shed that faced north to south with a measurement of 9 meters in length and 6 meters width Approx. The asbestos roofing, during the external inspection found no access points were identified, the internal showed no potential roosting potential for bats given the lack of cracks or crevices.	Negligible

3.2.3. Activity Surveys

1st Survey: 1st dusk activity survey Dwelling– 15/05/2023 Sunset: 20:59

Time	Species (common name)	Species (*Scientific name*)	Observed behaviour
21:27	Common pipistrelle	Pipistrellus pipistrellus	Commuting
21:29	Noctule	Nyctalus noctula	Commuting
21:32	Common pipistrelle	Pipistrellus pipistrellus	Commuting and foraging adjacent field
21:37	Noctule	Nyctalus noctula	Foraging in adjacent field
21:44	Noctule	Nyctalus noctula	Commuting
21:51	Common pipistrelle	Pipistrellus pipistrellus	Commuting along the country lane
22:08	Noctule	Nyctalus noctula	Commuting
22:16	Brown Long eared	Plecotus auritus	Commuting
22:22	Common Pipistrelle	Pipistrellus pipistrellus	Foraging

1st Survey: 1st dusk activity survey Barn– 16/05/2023 Sunset: 21:00

Time	Species (common name)	Species (*Scientific name*)	Observed behaviour
21:20	Common pipistrelle	Pipistrellus pipistrellus	Commuting
21:29	Noctule	Nyctalus noctula	Commuting
21:32	Common pipistrelle	Pipistrellus pipistrellus	Commuting and foraging adjacent field
21:37	Noctule	Nyctalus noctula	Foraging in adjacent field
21:40	Noctule	Nyctalus noctula	Commuting
21:46	Natterer's	Myotis nattereri	Commuting
21:49	Common pipistrelle	Pipistrellus pipistrellus	Commuting
21:55	Common pipistrelle	Pipistrellus pipistrellus	Commuting along country lane
22:01	Noctule	Nyctalus noctula	Commuting
22:10	Brown Long eared	Plecotus auritus	Commuting
22:27	Common Pipistrelle	Pipistrellus pipistrellus	Foraging

2nd Survey: 1st Dawn re-entry survey Dwelling – 29/06/2022 Sunrise: 04:50

Time	Species (common name)	Species (*Scientific name*)	Observed behaviour
03:00	common pipistrelle	Pipistrellus pipistrellus	Commuting
03:12	Noctule	Nyctalus noctula	Commuting
03:27	Brown Long eared	Plecotus auritus	Commuting
03:39	Common pipistrelle	Pipistrellus pipistrellus	Commuting
04:07	Common pipistrelle	Pipistrellus pipistrellus	Commuting
04:29	Brown Long eared	Plecotus auritus	Commuting
04:34	Common pipistrelle	Pipistrellus pipistrellus	Commuting
04:47	Noctule	Nyctalus noctula	Commuting
05:01	Noctule	Nyctalus noctula	Commuting

2nd Survey: 1st Dawn re-entry survey Dwelling – 30/05/2022 Sunrise: 04:50

Time	Species (common name)	Species (*Scientific name*)	Observed behaviour
03:19	common pipistrelle	Pipistrellus pipistrellus	Commuting
03:36	Common pipistrelle	Pipistrellus pipistrellus	Commuting
04:07	Common pipistrelle	Pipistrellus pipistrellus	Commuting
04:22	Noctule	Nyctalus noctula	Commuting
04:37	Common pipistrelle	Pipistrellus pipistrellus	Commuting
05:04	Noctule	Nyctalus noctula	Commuting

Figure 1. Sonogram analysis showing commuting Common pipistrelle commuting recorded on 15/05/2023 with a peak frequency 44.5 KHz

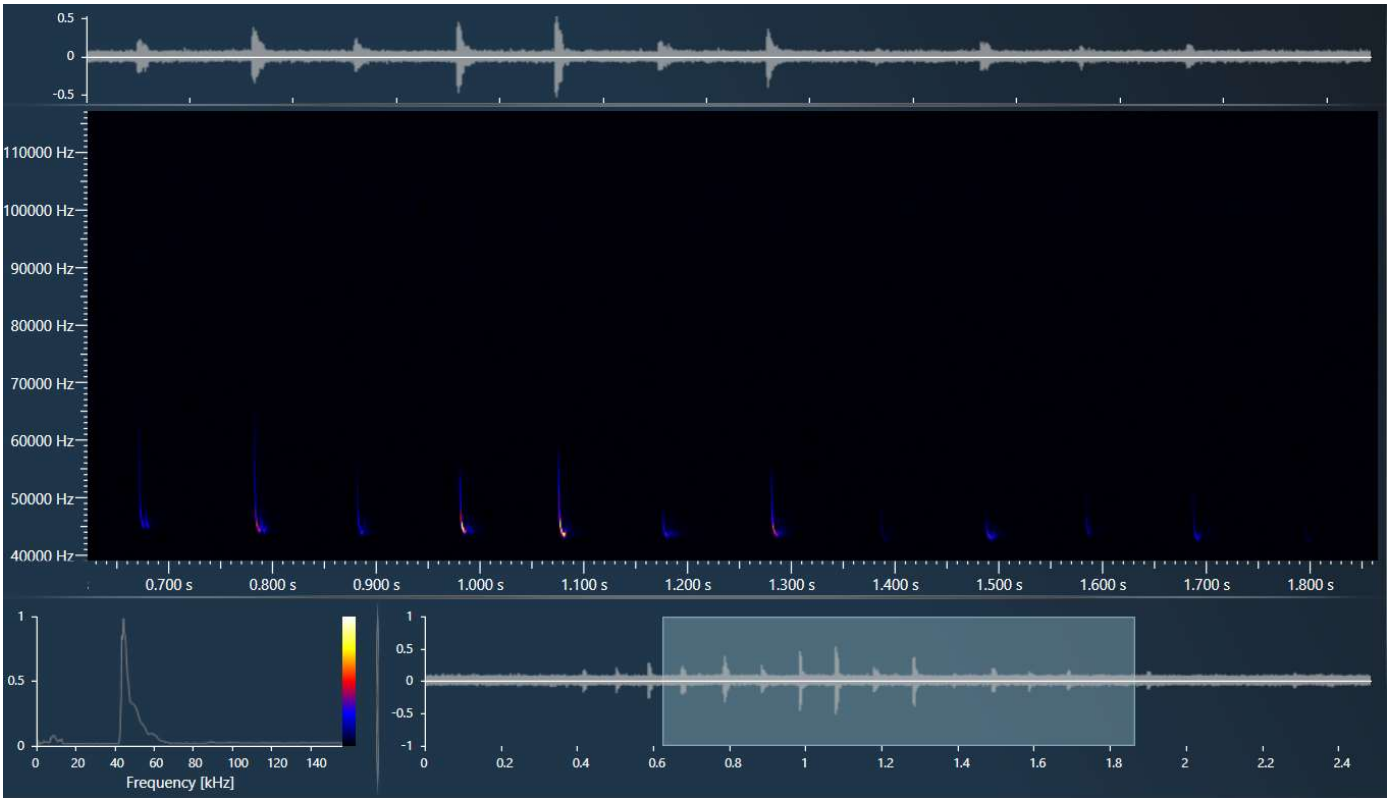


Figure 2. Spectrogram and Oscillograme identifies foraging Common Pipistrelle bats (44.1 KHz) recorded during the Dusk survey on 16/05/2023

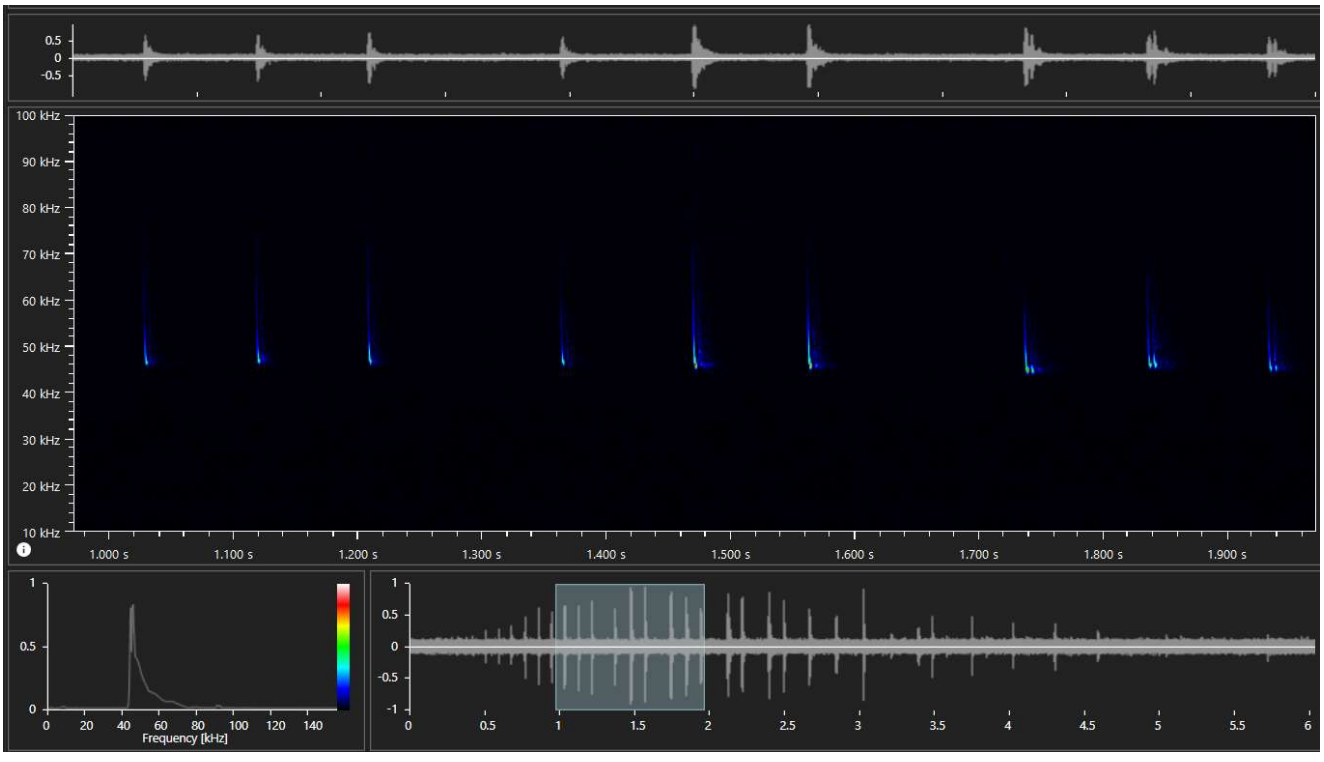


Figure 4. Spectrogram and Oscillograme identifies foraging Noctule bats (23.9 KHz) recorded during the Dawn survey on 29/05/2023

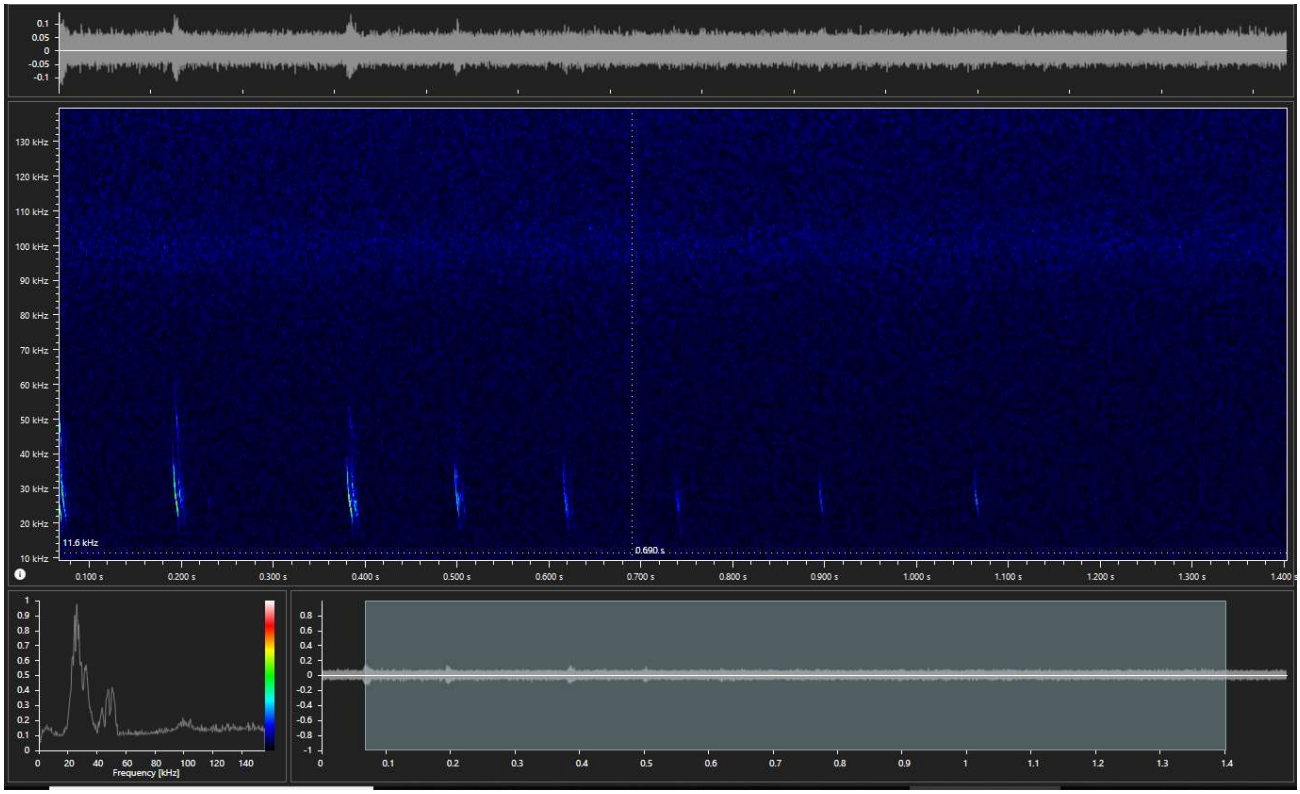
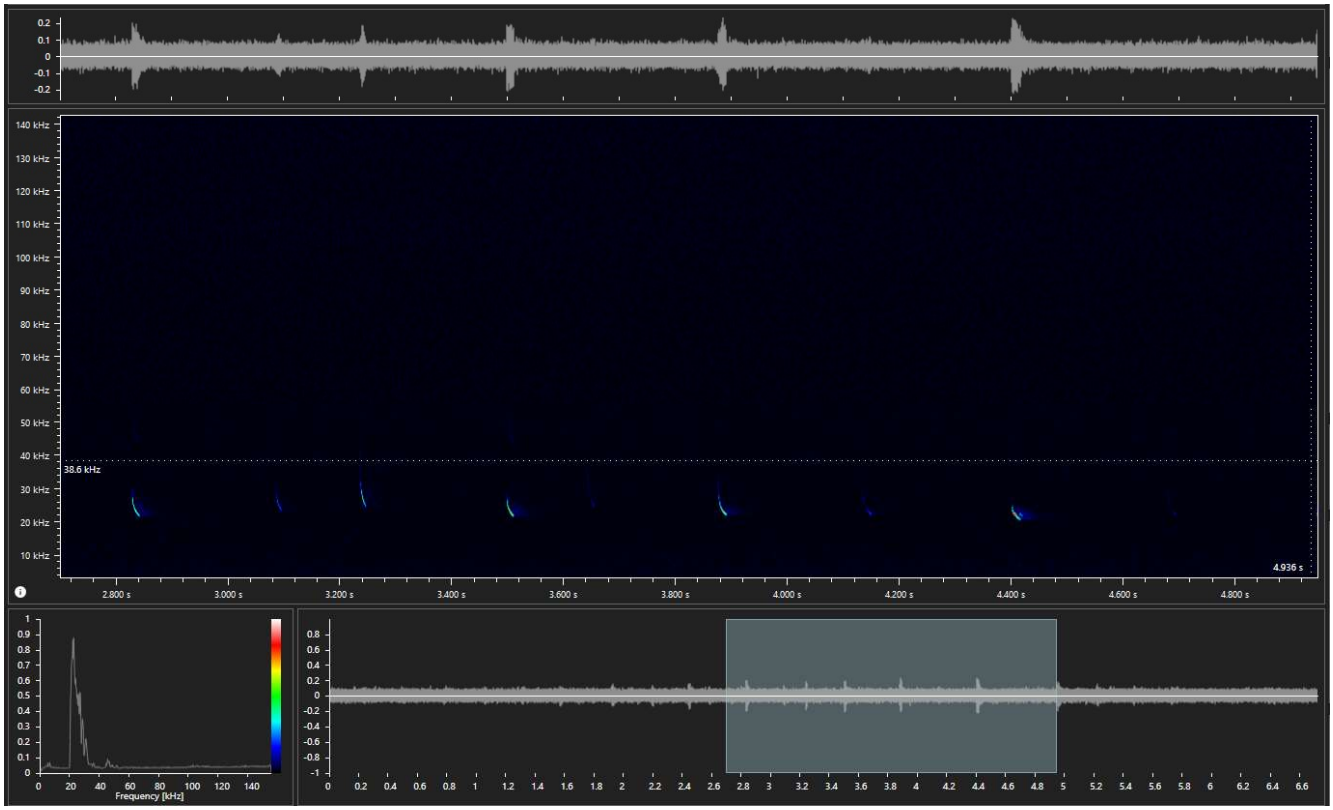


Figure 5. Spectrogram and Oscillograme identifies Brown Long-eared (28.2 KHz) recorded during the Dawn survey on 29/05/2023



4. Assessment

4.1. Constraints on Survey Information

All surveys were carried out during May 2023. 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 regard 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 Application site will not have any impact on Designated or non-designated sites.

4.3.2. Roosts

No evidence of bats was found during the daytime inspection. No bats were detected emerging or re-entering the buildings 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 some food for bats little activity was evident during the activity surveys. Although the buildings will be replaced, flowering and tree features will be created which will maintain foraging for bats.

The site in question is situated in a rural zone characterized by low district brightness. The activities of various species, such as bats and birds, can be influenced by light spill, impacting their foraging and commuting behaviours. To mitigate this, any new artificial exterior lighting should be installed in accordance with the guidelines detailed in the Institute for Lighting Engineers' document "Guidance for the Reduction of Obtrusive Lighting" (2005) [GN01:2011], and the Bat Conservation Trust's "Artificial Lighting and Wildlife Interim Guidance: Recommendations to Help Minimize the Impact of Artificial Lighting" (2014) [GN8/18].

Generally, it's advisable to avoid directing light towards trees, hedges, or shrubs nearby, and the lighting should not exceed 200 lumens (150 watts). For security lighting, where feasible, it should be set on a timer and oriented downwards to prevent unnecessary light spill into neighbouring habitats. The height of any light posts around the development should not surpass eight meters to further mitigate ecological damage from light pollution. To minimize upward light

spill, we recommend using low-pressure sodium lamps (SOX) equipped with hoods to guide light downwards, below the horizontal plane.

Zone	Description
E0	Intrinsically dark landscapes. National Parks, Areas of Outstanding Natural Beauty, etc.
E1	Low district brightness. Rural, small village, or relatively dark outer suburban locations.
E2	Average district brightness. Small town centres or suburban locations.
E3	High district brightness. Town/city centres with a high level of night-time activity.
E4	Special zones of high brightness. Areas of high night-time activity in major city centres.

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.
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) (Amendment) (EU Exit) Regulations 2019	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 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 two 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 1FQ, are installed onto a selection of housing or on the existing barning in a south facing position, with one Schwegler 2F boxes attached to existing buildings, the installed bat boxes will be sited at least 7–8 metres above the ground.

- One Schwegler 1FQ bat boxes will be installed to provide summer and hibernation opportunities, and Schwegler 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 to current guidance and legislation.

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

Bat boxes	Type and Quantity	Location
	**1 x SCHWEGLER 1FQ BAT BOX**	The 1 FQ Bat Roost Bat boxe is designed to be installed on the external walls of buildings
	**1 x 2F Bat Box**	This can be hung from a tree branch near the trunk, or fixed to a trunk or attached to existing building. 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.

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 wren nest boxes and the 10 Schwegler swallow nest boxes will be positioned on the existing building or within any new trees planted.
- 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
	**2 x 1ZA Wren Nest box**	The 1ZA will attract wrens, These should be incorporated onto any new tree planted or on the existing building within the proposed development or if possible to new development
	**4 x No. 10 Schwegler Swallow Nest**	The No. 10 Schwegler Swallow Nest will attract swallow species. These should be incorporated onto retained buildings within the proposed development.

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 license would be required and no roosting bats were evident.

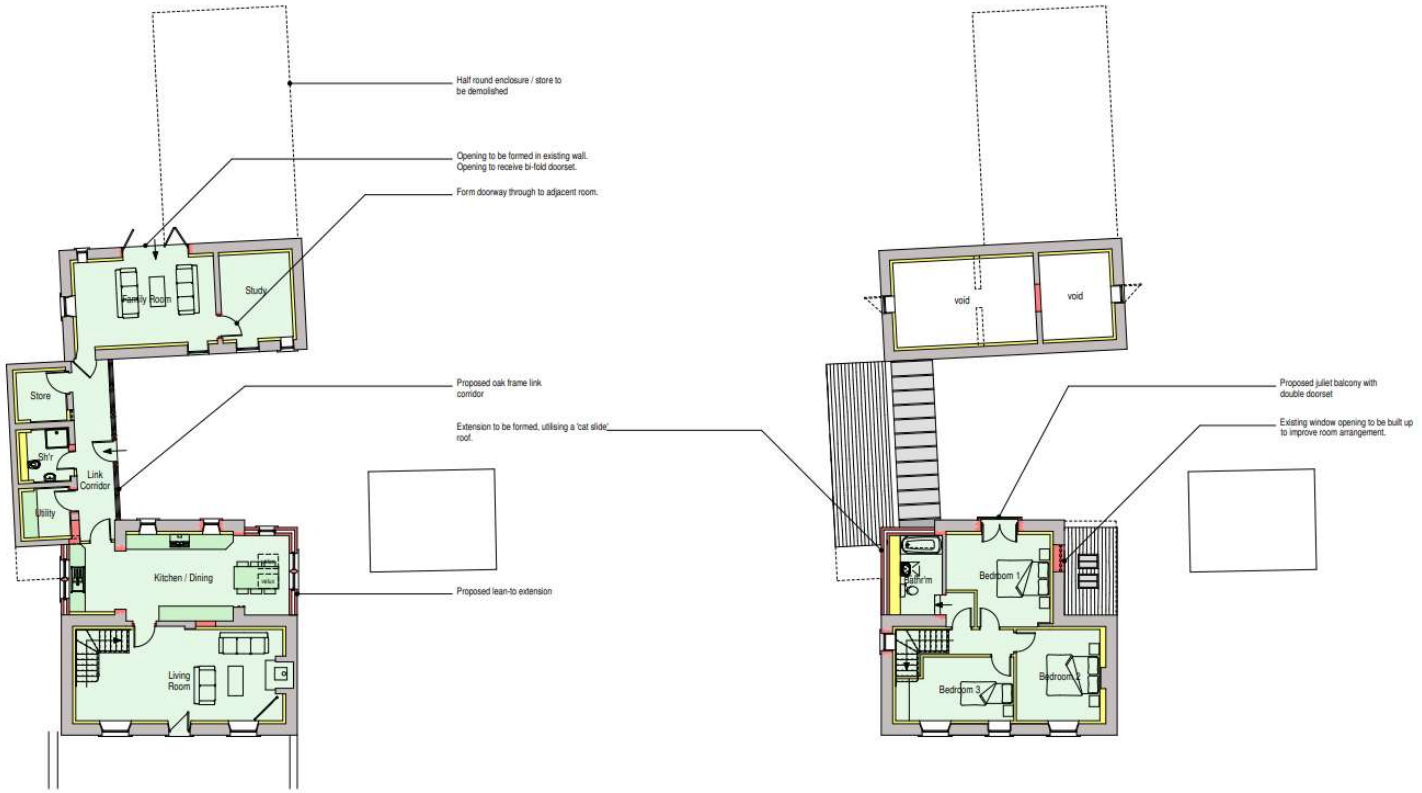
6. Summary

During the surveys, low levels of common pipistrelle, Noctule, Brown Long-eared activity was recorded on 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.

Plans

Proposed Re/development



Ground Floor Plan

First Floor Plan



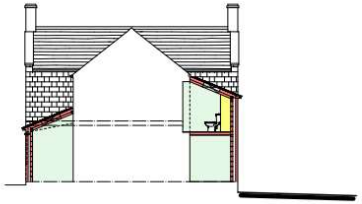
West Elevation



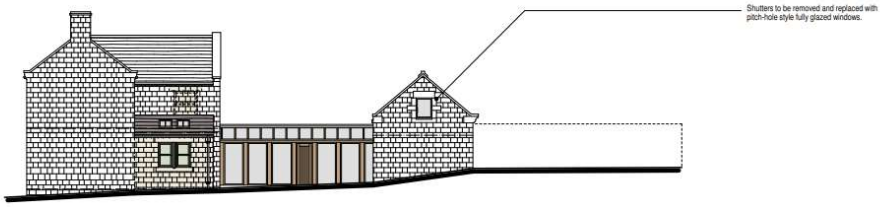
North Elevation (Courtyard)



North Elevation



Sectional Elevation (Courtyard)



7 References

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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**



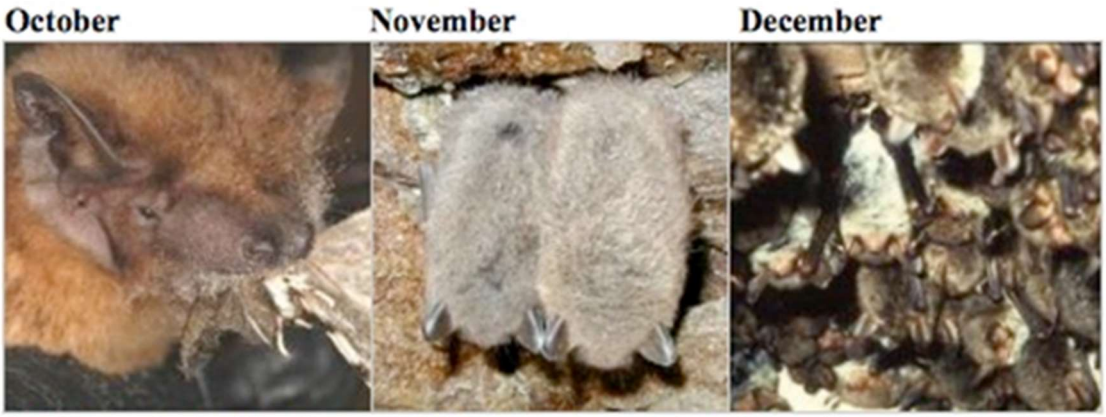
April: Bats have mainly come out of hibernation and are hungry and active, feeding on most nights. They may be moving between several roost sites. They may become torpid (cool and inactive) again when cold. **May:** Bats are fully active and feeding. Females start forming maternity colonies and looking 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.

Activity Survey for Bats



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).**