Elite Ecology

Passionate about Ecology

Hayes Gate Farm,

Oakamoor

Bat Activity Survey

November 2023

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0. Executive Summary

0.1 This report has been prepared at the request of Mr. M Mellor (client). It relates to the potential presence of bats and birds at the proposed re-development site located at Hayes Gate Farm, Star Bank, Oakamoor, Staffordshire, ST10 3BN (OS Grid Reference: SK 07182 46131). To fulfil this brief, Elite Ecology undertook both a desktop study and a field survey.

0.2 Under the current proposals, B1 is to be converted into an additional/ancillary living accommodation and parking space for a new dwelling. This will result in both the permanent and temporary loss and/or alteration of some of the habitats located on the proposed re-development site.

0.3 Due to the amount of potential ingress/egress points and suitable roosting features, the buildings were deemed to be of the following bat roosting potential:

- **B1 = high/confirmed**

Therefore, further bat activity surveys were required during the bat survey season (May to September, inclusive). These were subsequently undertaken in August and September 2023.

The building was not **confirmed** to support nesting birds.

0.4 **Summary**

Bat Presence/Absence

From the site survey, it has been established that the structure at Hayes Gate Farm, Oakamoor contains roosting bats. These are a day roost of common pipistrelle (*Pipistrellus pipistrellus*) bats, a day roost of soprano pipistrelle (*Pipistrellus pygmaeus*) bats and historic day roost of brown long-eared (*Plecotus auritus*) bats. In addition to this, foraging and commuting brown long-eared (*Plecotus auritus*), common pipistrelle, Natterer's (*Myotis nattereri*), noctule (*Nyctalus noctula*), and soprano pipistrelle bats were detected around the site.

Bird Presence/Absence

From the survey visit undertaken on the site, it can be concluded that the surveyed structure does not contain nesting birds. In addition, the surrounding landscape provides all of the necessary habitat elements that birds require.

Ecological Value of Building Units

The ecological value of the structure has been deemed as **high** to bats due to the presence of a day roost of common pipistrelle bats and a maternity roost of soprano pipistrelle bats.

The ecological value of the buildings to birds has been deemed **negligible** due to all of the structures supporting nests.

0.5 **Recommendations**

The recommendations for Hayes Gate Farm, Oakamoor can be summarised as follows (please refer to **Section 5 – Recommendations** for a more in-depth description):

- Apply for a Natural England Development Licence to legally carry out the works.
- No re-development works can proceed on the structure until October when the bats have gone to their hibernation roosts.
- At the start of works, site supervision by a licenced bat ecologist in accordance with the Natural England Development Licence will be required.
- Install bat compensatory features on the site in accordance with **Section 5 Recommendations**.
- Artificial lighting should be avoided around compensatory roosting features.
- No breathable roofing membrane is to be used on the structure.
- **Optional:** Install a variety of bird boxes around the site post development to enhance the site for the local bird populations. Some suitable examples are shown in **Section 5**.

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1. Introduction

1.1 Report Rationale

This report has been prepared at the request of Mr. M Mellor (client). It relates to the potential presence of bats and birds at the proposed re-development site located at Hayes Gate Farm, Star Bank, Oakamoor, Staffordshire, ST10 3BN (OS Grid Reference: SK 07182 46131). To fulfil this brief, Elite Ecology undertook both a desktop study and a field survey.

1.2 Site Description

The site itself is situated within a rural setting approximately 2km from the small Staffordshire village of Oakamoor. The habitats located on the survey site are amenity grassland, hard standing ground, hedgerows, and scattered trees, as well as the building of interest, which measures approximately 238m^2. Therefore, the site is considered to contain potential to support the local bat and bird populations by offering roosting/nesting, commuting, and foraging opportunities.

Figure 1: An aerial photograph of the surveyed site at Hayes Gate Farm, Oakamoor (as shown by the red outline).

1.3 Proposed Works

Under the current proposals, the barn is to be converted into additional ancillary living accommodation and parking space for a new dwelling.

1.4 Aims of Surveys

The aims of the surveys were to undertake an assessment of the building(s), vegetation and surrounding area to establish whether any bats may be present and, if so, in what way they are using the site. The actions of the surveyors on the site and during the production of this report were conducted in accordance with Bat Conservation Trust (BCT) guidelines (3rd edition).

1.4.1 This survey effort considered the potential for all **bat and bird species (including barn owls)** onsite:

- To establish the possibility of bat roosts and bird nests being present at the proposed development site.
- To assess any roost/nest status (i.e. what type and numbers of individuals).
- To assess suitable food, resources, and habitat requirements on site and in the local landscape.

1.4.2 The information will subsequently be used in conjunction with the knowledge of the proposed works at the site to determine the potential need for further survey effort, the impacts of the proposed scheme of works, to establish whether a Natural England Development Licence is required along with species-specific mitigation and compensation. This is done in order to keep any protected species at a favourable conservation status on site.

2. Survey Methodology

2.1 Desktop Survey Methodology

2.1.1 A variety of resources were independently consulted to assess the known local records within the nearby area and the importance of the site within the local landscape from an ecological perspective. The resources used were the Local Records Centre, www.naturalengland.org.uk, www.ordnancesurvey.co.uk, Google Maps, Google Earth, and Bing Maps. A search of other relevant nature conservation information was made through the use of the Multi-Agency Geographic Information for the Countryside (MAGIC) database.

2.1.2 The local records centre was contacted to provide data on all bat and bird species within 2km of the proposed development site. Staffordshire Ecological Record (SER) were the relevant local record centre for this project.

2.2 Field Survey Methodology

2.2.1 Initial Site Survey

This is done by assessing the site by visually inspecting all building/s/structures and any trees/vegetation to be impacted by the proposed works. This is done to assess the resource availability for protected species on site and in the immediate area. Particular reference is made to:

- The presence or absence of bats and birds onsite.
- Any evidence of potential bat roosts and bird nests onsite.
- Whether any additional survey effort will be required.

During the initial survey, an internal and external inspection of the building(s) is undertaken to look for signs of bat activity. This is done in accordance with BCT guidelines for the assessment of building(s) and built structures.

2.2.2 External Inspection

This survey method is used to locate potential ingress and egress points around the structures that both bats and birds could use to gain access into the building. It also aims to identify any areas where cracks and crevices are present to be used as roosting/nesting features. This visual inspection is carried out in full daylight using binoculars, endoscopes, torches, and ladders. This will allow for the determination of the following information:

- The type of building(s) surveyed.
- The approximate age of building(s) surveyed.
- The construction type and materials used.
- The presence of potential roost features (e.g. missing roof tiles, raised ridge tiles, air vents, cracks and crevices within the mortar).
- The presence of suitable ingress and egress points (e.g. missing windows and doors, missing mortar, lifted tiles).
- The location of any anecdotal evidence for the presence of protected species (e.g. nests, droppings or food remains).

2.2.3 Internal Inspection

This survey method aims to locate and examine areas which potentially provide suitable environmental conditions for bats. This visual inspection was undertaken by using binoculars, endoscopes, torches, ladders, and bat detectors to inspect internal features of the building(s).

This will allow for the determination of the following information:

- The presence of warm areas, dark areas, joints, crevices, beams, and cavities that could be used for roosting and nesting purposes by bats and birds.
- To locate possible bat roost and bird nest sites.
- To listen for social calling bats.
- To locate any evidence of bat and bird presence through the identification of live or dead specimens, grease marks, droppings, food remnants, urine stains, and/or the characteristic smell of bats.

2.2.4 Building/Vegetation Classification

A building/vegetation classification will be assigned to each surveyed feature that is proposed to be impacted by the scheme of works. This classification is based on the features potential to support roosting bats. The rating is also influenced by the location of the structure(s) in the local landscape, along with the number of suitable alternative roosting features, the type of features present in the landscape and the surveyor's experience. For example:

A structure that has a high level of anthropogenic disturbance with limited opportunities for access by bats, that is also situated within an urbanised area with few, or no mature trees, parkland, woodland, or wetland would generally equate to having **negligible/low** potential.

Conversely, an older structure (e.g. pre 20th century or early 20th century) with multiple features suitable for use by bats that is close to optimal foraging habitat would equate to having **high** potential.

The amount of additional survey effort required for each feature will depend on its rating:

- **Negligible** – No further survey effort is required.
- **Low** – One further activity survey is required (structures only).
- **Moderate** – Two further activity surveys are required.
- **High** – Three further activity surveys are required.

2.2.5 Roost Categories

Any structures with evidence of bats will be further evaluated to assess which of the following roost categories may be present onsite:

- **Day Roost:**

  A place where individual bats, or small groups of males, rest or shelter during the daytime. These bats are rarely found at night at these sites.

- **Feeding Roost:**

  A place where individual bats rest or feed during the night but are rarely present in the day.

- **Hibernation Roost:**

  A place where bats may be found either individually or together during the winter months. These roosts often have a constant cool temperature and high humidity.

- **Maternity Roost:**

  A place where female bats give birth and raise their young to independence.

- **Mating Roost:**

  A place where mating/copulation takes place between male and female bats. These can continue through the winter months.

- **Night Roost:**

  A place where bats rest and/or shelter during the night but will rarely be found here during the day. These can be used colonially or individually by the bats.

- **Satellite Roost:**

  These are alternative roosting sites that are found within close proximity to the main nursery colony within the maternity roost. These are used throughout the breeding season by individual or small groups of female bats.

- **Swarming Site:**

  A place where large numbers of bats come together during the latter summer months through until autumn. These sites are classed as being important mating areas.

- **Transitional/Occasional Roost:**

  A place that is used by individuals or small groups of bats for a small period of time. These are used by the bats prior to hibernation and/or shortly after hibernation.

2.2.6 **Bat Detector Survey (presence/absence survey)**

If required, the object for this survey method is to detect any bats leaving or returning to their roost sites within the surveyed features. This is achieved by undertaking dusk and dawn activity surveys under the following protocol:

- Commencing the survey fifteen minutes before sunset (dusk survey) and two hours before sunrise (dawn survey).
- Listening for any social calls at potential roost sites using bat detectors.
- Standing at different survey points around the building(s) and/or vegetation using bat detectors to hear the bat echolocation.
- The survey will attempt to witness the first bats emerging (dusk) and the bats returning (dawn) to their roosts.
- Standing at different transect points at foraging/commuting areas around the site.
- Carrying out this survey methodology for up to two hours after sunset (dusk) and up to fifteen minutes after sunrise (dawn). This will cover the emergence and re-entry of the bats at the potential roost site, for some bat species.

2.2.7 In order to comply with the required legislation, the results from the surveys will be collated to establish whether a European Protected Species (EPS) development licence will be required. If required, project appropriate species-specific compensation and mitigation measures will be devised to ensure the species remains at a favourable conservation status at the impacted site.

2.3 Surveyors Information

2.3.1 The survey was undertaken by licensed bat ecologist/s and members of the Chartered Institute of Ecology & Environmental Management (CIEEM) and Elite Ecology staff members:

Mr. Matthew Hodgson: Ecologist, Natural England Bat Survey Licence Number: 2023-11375-CL18-BAT

Ms. Amber Camm: MSc, Assistant Ecologist

Miss Racheal Nowakowski: BSc (Hons), Assistant Ecologist

Miss Michelle Anderson: BA (Hons), Assistant Ecologist

Mr. Jake Whitehead: Assistant Ecologist

Mr. Matthew Tume: BSc (Hons), Assistant Ecologist

Mr. Ezra Rynjah: MSc, Assistant Ecologist

Mr. Thomas Darlington: Assistant Ecologist

2.4 Field Surveys

2.4.1 Site Surveys

Penny Anderson Associates Ltd. undertook three bat activity surveys on the site in 2017. This revealed that the structure was in use at the time as a day roost for brown long-eared (*Plecotus auritus*) bats.

2.4.2 Roost Surveys

The buildings at Hayes Gate Farm, Oakamoor were externally inspected for the presence of bats with the use of various types of equipment (including binoculars, torches, endoscopes, and ladders) in full daylight. No Internal inspection occurred due to safety concerns Subsequent activity surveys use a variety of bat detectors that include Bat Box Duet, SSF Bat2, EchoMeter Touch and the EcoObs Batcorder. The following table outlines the environmental variables from the survey visits:

Environmental variables	Activity Survey of the Building – 7th of August 2023. Dawn	Activity Survey of the Buildings – 25th of August 2023. Dusk	Activity Survey of the Buildings – 8th of September 2023. Dusk	PRA Survey of the Buildings 27th of October 2023 Daytime.
Temp Start:	11°C	13°C	16°C	8°C
Temp Finish:	10°C	11°C	15°C	8°C
Humidity Start:	96%	87%	90%	100%
Humidity Finish:	98%	89%	95%	100%
Cloud Cover Start:	20%	100%	0%	100%
Cloud Cover Finish:	20%	80%	5%	100%
Wind Speed Average:	Moderate	Low	Low	8km/hr
Precipitation:	None	None	None	Light Rain

3. Results

3.1 Desktop Survey Results

The ecological data search provided by SER revealed multiple bat and bird species within the 2km search radius of the structure at Hayes Gate Farm, Oakamoor.

3.1.1 Bats

The ecological data search revealed several bat records within the 2km search radius identifying six different species.

The UK BAP species recorded in the search were brown long-eared (*Plecotus auritus)* and noctule (*Nyctalus noctula*) bats. The non-BAP species recorded in the search were common pipistrelle (*Pipistrellus pipistrellus*), Daubenton's (*Myotis daubentonii)* and Natterer's (*Myotis nattereri)* bats. In addition to this, some records of unidentified bat (*Chiroptera* sp.), unidentified nyctalus/eptesicus (*Nyctalus/Eptesicus* sp.), unidentified myotis (*Myotis* sp.) and unidentified pipistrelle (*Pipistrellus* sp.) specimens were revealed within the search.

The closest record to the site was of a brown long-eared bat, located within the barn in 2017.

3.1.2 Birds

The ecological data search provided by SER revealed seventy-four bird species within 2km of the survey site. The closest record to the site was of skylark (*Alauda arvensis*) located approximately 375m from the site. A table with the collated bird species can be found in **Appendix B**.

3.1.3 Designated Sites

As the current proposal remains within the site boundary, it was not necessary to obtain any further information regarding both Statutory and Non-Statutory Nature Conservation Designations. This is due to the proposed works not altering any of the landscape surrounding the site.

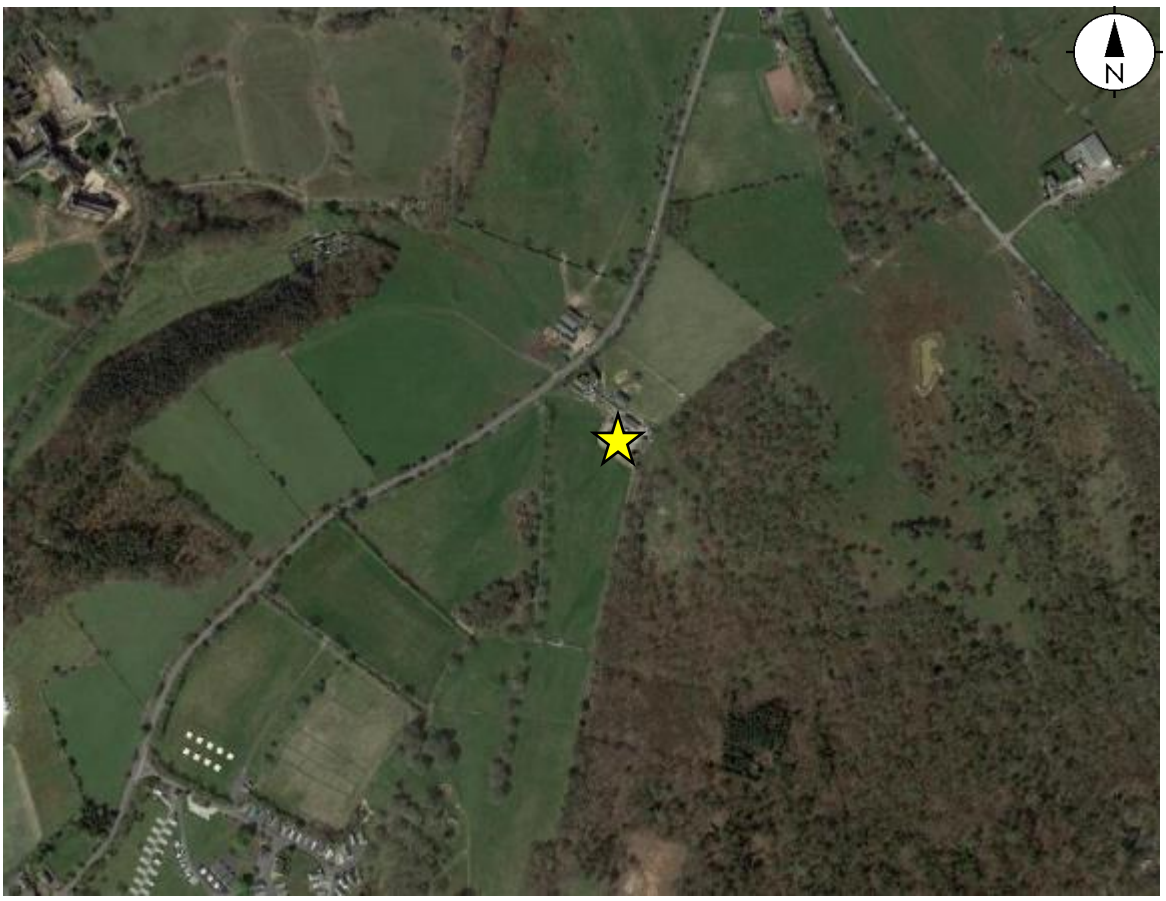
3.2 Field Surveys

3.2.1 Habitat Description

The site itself is situated within a rural setting approximately 2km from the small Staffordshire village of Oakamoor. The habitats located on the survey site are amenity grassland, hard standing ground, hedgerows, and scattered trees, as well as the building of interest, which measures approximately 238m^2.

The wider landscape features arable land with its associated hedgerows, buildings, ditches, scattered trees, standing water, and woodland. Therefore, the site is considered to contain potential to support the local bat and bird populations by offering roosting/nesting, commuting and foraging opportunities.

Figure 2: An aerial photograph of the surveyed site (yellow star) and some of the nearby habitats to Hayes Gate Farm, Oakamoor.



3.2.2 Building Survey

One building is located on the survey site, which is the barn.

Building 1 (B1) – Barn

External Inspection

The barn is a single storey barn, with a gabled roof constructed of corrugated metal and metal ridge tiles. The external walls are constructed of solid stone blocks. Spaces for windows set in wooden frames are present but have been boarded over. Several wooden doors are present on the building and are in good condition. Other external features noted on the building are metal bargeboards, guttering, and drainpipes. Artificial light was present on the external of the building. The stone walls have numerous gaps between the blocks, all of which represent potential ingress/egress points for protected species. No evidence of external nesting or roosting was identified on **B1**.

Internal Inspection

The roof void of the barn is supported by timber beams. The internal walls are constructed of breezeblocks and the floor is hard standing ground. No internal evidence of bat roosting or bird nesting was identified.

3.2.3 Summary of the Building Inspections

The buildings on site were given varying bat roosting potential based on the features they contain. The following table summarises the findings.

Table 1: The potentials of the buildings **B1** to **B2** to support roosting bats and nesting birds, at Hayes Gate Farm, Oakamoor.

Building	Nesting Bird Potential	Bat Roost Potential	Number of bat activity surveys required	Number of surveyors required for bat activity survey
B1	**High**	**Confirmed**	**3**	**3**

Table 1: Low/Moderate/High potential building(s) survey recommendations. The full guidance can be found in the Bat Conservation Trust Good Practice Survey Guidelines. These guidelines are what all local authorities abide by.

Bat Conservation Trust

Table 7.3 Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey[a] (structures). No further surveys required (trees).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey.[b]	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn.[b]

[a] Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see Section 5.2.9). If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.
[b] Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

3.2.4 DNA Results

A small sample of droppings were collected and sent for DNA analysis at EcoWarwicker, based at the University of Warwick. The results from this assessment revealed that the droppings:

PCR amplification unsuccessful.

1. DNA degradation has occurred to an extent beyond which we can detect it using PCR technology.
2. The sample might have an unusually high content of inhibiting substances causing enzymatic failure in the analysis.
3. The sample might not have been the target species

The correspondence showing the DNA sequences can be found in Appendix G at the end of this report.

Please be aware that results from DNA testing reflect the droppings collected. This may not be a true representation of all species using the surveyed site.

3.2.5 Activity surveys

Three activity surveys were undertaken on the buildings on the 7th and 25th of August 2023, and the 8th of September 2023.

Activity Survey 1 (7th of August 2023):

The activity survey was undertaken at dawn, with sunrise being recorded at 05:35.

During this survey, seven soprano pipistrelle (*Pipistrellus pygmaeus*) bats were identified re-entering the building via gaps between the stone blocks on the southern elevation of the building.

Additional brown long-eared (*Plecotus auritus),* common pipistrelle (*Pipistrellus pipistrellus*), Natterer's (*Myotis nattereri*) and soprano pipistrelle bats were identified to be using the site for commuting and foraging purposes.

Figure 3: An aerial photograph of the surveyed buildings (red outline), the surveyor locations (yellow stars) and the common bat flight paths (dotted blue lines). The soprano pipistrelle bat re-entry point is shown by the blue star.

Activity Survey 2 (20th of June 2022):

The activity survey was undertaken at dusk with sunset being recorded at 20:20.

During this survey, no bats were identified emerging from the structure, nor were any bats identified during pre-emergent flight checks.

Despite this, common pipistrelle, Natterer's, noctule (*Nyctalus noctula*) and soprano pipistrelle bats were identified utilising the site for passing and foraging.

Figure 4: An aerial photograph of the surveyed buildings (red outline), the surveyor locations (yellow stars) and the common bat flight paths (dotted blue lines).

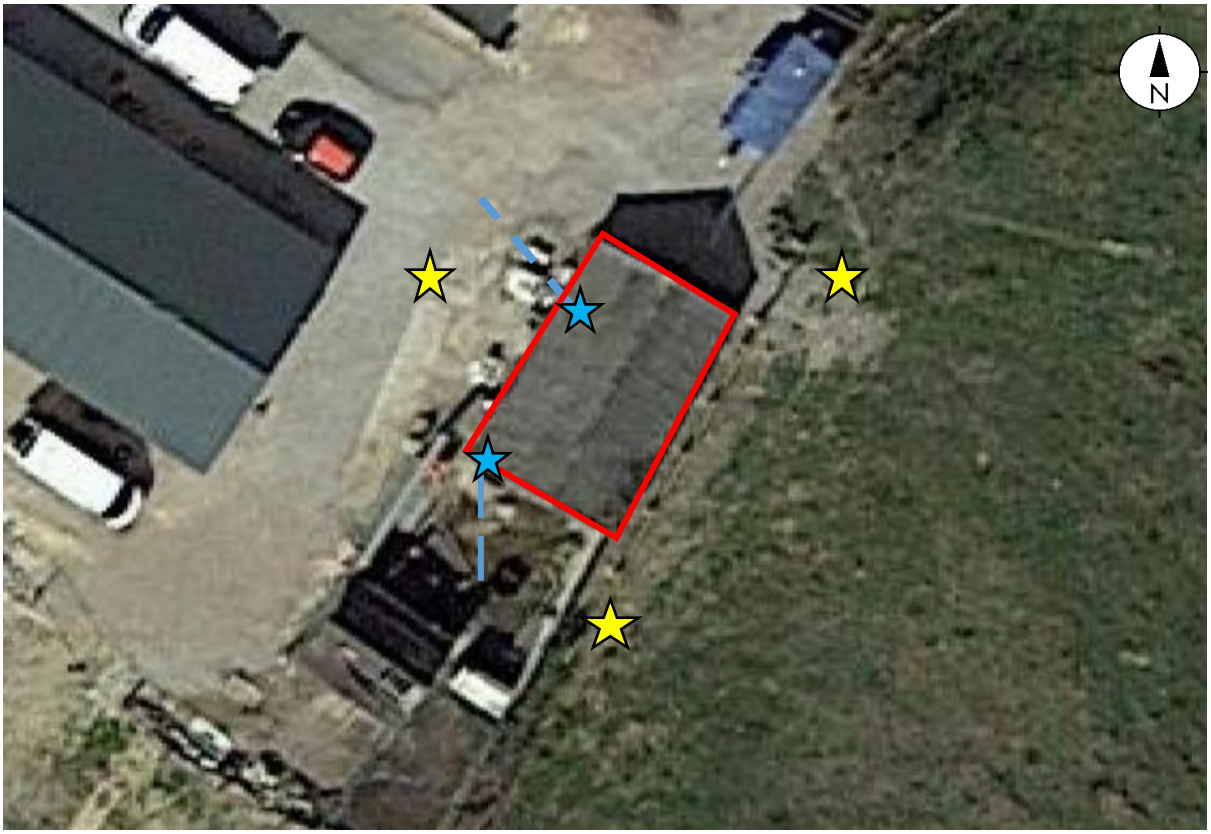
Activity Survey 3 (6th of July 2022):

The activity survey was undertaken at dawn with sunrise being recorded at 06:29.

During the survey one common pipistrelle bat and one soprano pipistrelle bat was identified re-entering the building on the southern elevation, and another common pipistrelle bat was identified re-entering the building via an open door on the western elevation.

In addition, brown long-eared (*Plecotus auritus*), common pipistrelle, noctule, and soprano pipistrelle bats for passing, foraging, and socialising.

Figure 5: An aerial photograph of the surveyed buildings (red outline), the surveyor locations (yellow stars), the common bat flight paths (dotted blue lines), and the bat re-entry points (blue stars).



Summary:

In summary, the structure has been shown to be in use as a day roost for common pipistrelle bats, and as a day roost for soprano pipistrelle bats. The structure has also been to be a historic day roost of brown long-eared (*Plecotus auritus*) bats as based on the finding by Penny Anderson Associates Ltd (2017)

In addition to this, foraging and commuting brown long-eared, common pipistrelle, Natterer's, noctule and soprano pipistrelle bats were detected around the site.

4. Impact Assessment

4.1 Constraints

Constraints on:	Survey Information	Equipment Used
Constraint (Yes or No):	No	No
Explanation of Constraints:	N/A	N/A
Action Taken:	N/A	N/A

4.2 Potential Impacts of the Re-development

Under the current proposals, the barn is to be converted into additional ancillary living accommodation and parking space for a new dwelling. The potential impacts of these works have been identified as follows:

4.2.1 Designated Sites

As the proposed works are due to remain within the site boundary, the presence of any designated sites nearby is not applicable to this project. This, therefore, means that any building works would be of no detriment to the surrounding habitats and landscape.

4.2.2 Bat Roosts

	Short-term Impacts: Disturbance	Long-term Impacts: Roost Modification	Long-term Impacts: Roost Loss
Classification:	**High**	**High**	**High**
Justification:	The structure was found to support a day roost of common pipistrelle (*Pipistrellus pipistrellus*) bats, a day roost of soprano pipistrelle (*Pipistrellus pygmaeus*) and historic day roost of brown long-eared (*Plecotus auritus*) bats.	The structure was found to support a day roost of common pipistrelle (*Pipistrellus pipistrellus*) bats, a day roost of soprano pipistrelle (*Pipistrellus pygmaeus*) and historic day roost of brown long-eared (*Plecotus auritus*) bats.	The structure was found to support a day roost of common pipistrelle (*Pipistrellus pipistrellus*) bats, a day roost of soprano pipistrelle (*Pipistrellus pygmaeus*) and historic day roost of brown long-eared (*Plecotus auritus*) bats.
Any further action:	Species-specific mitigation measures are required (please see **Section 5** for more information).	Species-specific mitigation measures are required (please see **Section 5** for more information).	Species-specific mitigation measures are required (please see **Section 5** for more information).

4.2.3 Bird Nests

Due to the absence of bird nests in relation to the surveyed structure, the proposed scheme of works will be of a **low** effect to the local bird populations. Please see **Section 5.2** for further recommendations.

4.2.4 Foraging and Commuting Habitat

It is considered that the re-development of the site would have a **negligible** effect on potential foraging and commuting habitat. The site itself offers little foraging habitat, with the adjacent land containing better opportunities for bats to use. Post development, all foraging and commuting habitats will be maintained, thus not negatively affecting the local landscape.

5. Recommendations

5.1 Bats

From the site survey, it has been established that the structure at Hayes Gate Farm, Oakamoor contains roosting bats. These are a day roost of common pipistrelle (*Pipistrellus pipistrellus*) bats, a day roost of soprano pipistrelle (*Pipistrellus pygmaeus*) bats and historic day roost of brown long-eared (*Plecotus auritus*) bats. In addition to this, foraging and commuting brown long-eared (*Plecotus auritus*), common pipistrelle, Natterer's (*Myotis nattereri*), noctule (*Nyctalus noctula*), and soprano pipistrelle bats were detected around the site.

Prior to any works, a Natural England Development Licence is necessary to legally close or disturb the bat roost. Natural England licences take thirty working days once all the paperwork has been completed and submitted. As part of the licence, post-monitoring surveys will be required in subsequent years to assess whether any bats are using the compensatory measures installed around the site.

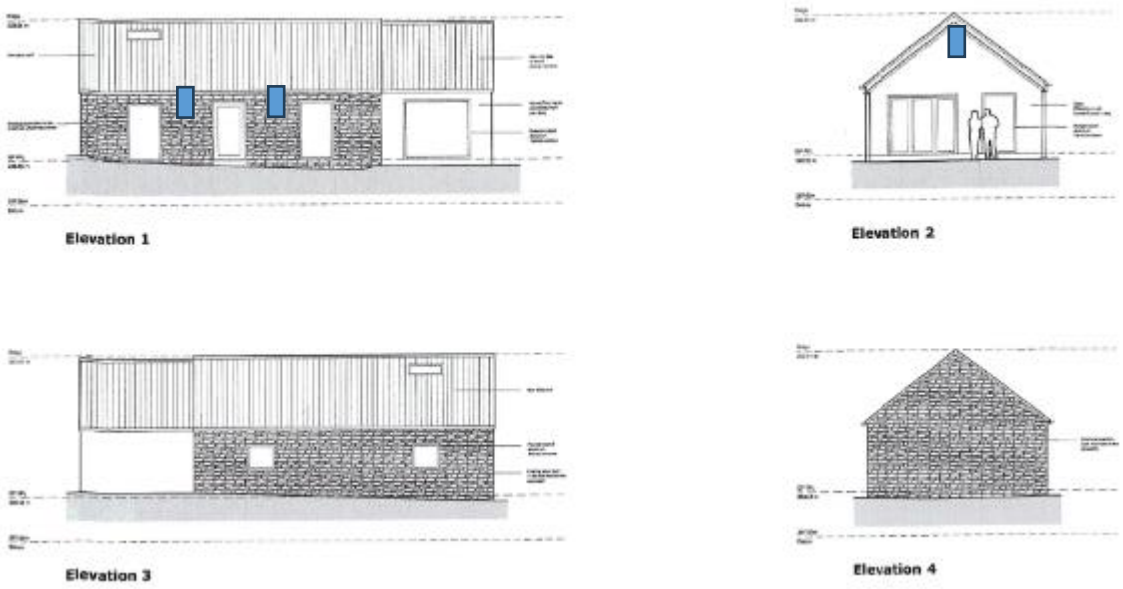
All works on the structure must wait until October/November when the bats typically move to their hibernation roosts. It is possible, however, that some bats may remain within their summer roost over the winter months for hibernation purposes. Due to this, at the beginning of the demolition works, a licenced ecologist is required to undertake soft demolition by accompanying building contractors in inspecting the structure by hand. This will ensure that no hibernating bats are harmed by the works. Two 1FS Schwegler Large Colony Bat Boxes or similar (one per species) will be required to be installed on the morning of the commencement of the bat inspection. This will need to be situated on a nearby tree (facing north) so that any bats found can be translocated to this feature and enable the works to commence without impacting upon the bats.

It is recommended that the existing access points are retained. If this is not possible, then a minimum of two Integrated Eco Bat Boxes (crevice dwelling cavity) and one Integrated Eco Bat Boxes (void dwelling cavity) must be implemented into the new development of **B1.** These can be purchased by contacting admin@eliteecology.co.uk, and should be placed as close to the existing bat access points as possible.

Artificial lighting should be avoided around compensatory roosting features. If artificial lighting is required, a sensitive lighting plan with sensored lights triggered by large bodies should be incorporated.

No breathable roofing membrane is to be used on the structure. This is due to all breathable membranes containing features which lead to the bat's demise.

Figure 6: Proposed elevation plans of the new building at Hayes Gate Farm, Oakamoor, with the locations of the Integrated Eco Bat Boxes shown by the blue shapes. Please note these are not to scale.



The site can also be enhanced by introducing a bat friendly planting scheme in the soft landscaping plan. The table below outlines species recommended by the Bat Conservation Trust, all of which could be incorporated into the site post development.

Flowers for borders	Trees, shrubs & climbers
Aubretia	Bramble
Candytuft	Common alder
Cherry pie	Dogrose
Corncockle	Elder
Corn marigold	English oak
Corn poppy	Gorse
Echniacea	Guelder rose
English bluebell	Hawthorn
Evening primrose	Hazel
Field poppies	Honeysuckle (native)
Honesty	Hornbeam
Ice plant ‘pink lady’	Ivy
Knapweed	Jasmine
Mallow	Pussy willow
Mexican aster	Rowan
Michaelmas daisy	Silver birch
Night-scented stock	**Herbs**
Ox-eye daisy	Angelica
Phacelia	Bergamot
Poached egg plant	Borage
Primrose	Coriander
Red campion	English marigolds
Red valerian	Fennel
Scabious	Feverfew
St. John’s Wort	Hyssop
Sweet William	Lavenders
Tobacco plant	Lemon balm
Verbena	Marjoram
Wallflowers	Rosemary
Wood forget-me-not	Sweet Cicely
Yarrow	Thyme

5.2 Birds

From the survey visit, the building was not found to support nesting birds.

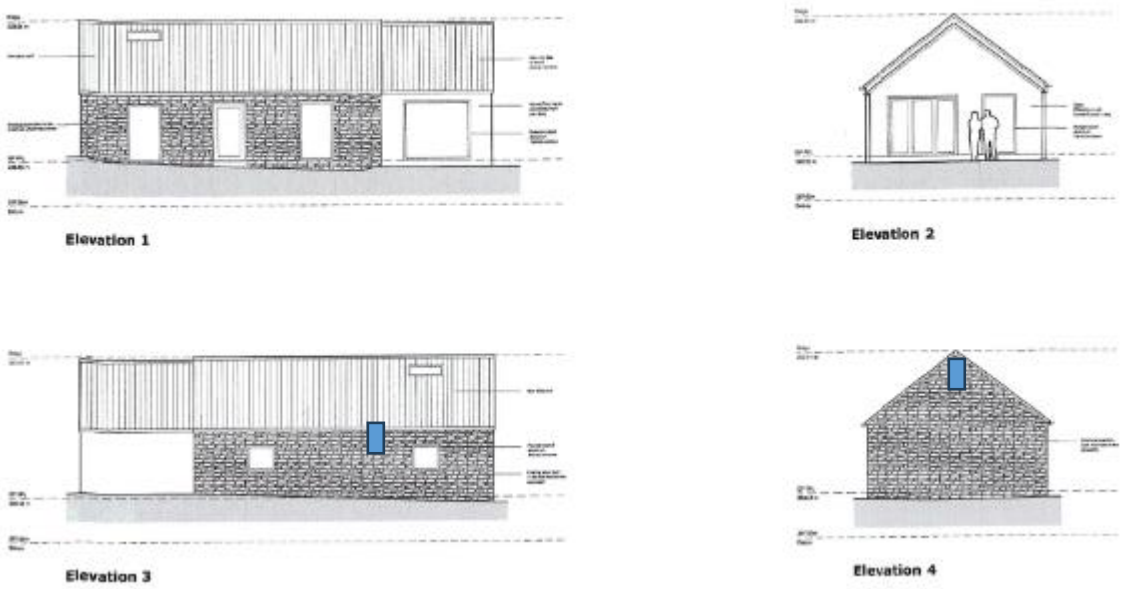
In order to enhance the site, a variety of bird boxes can be installed around the site to enhance the nesting opportunities for a variety of species within the local landscape. It should incorporate at least one of each of the following options:

- Apex Bird Box
- Apex Robin Box
- Large Bird Nest Box
- Blue Tit 25mm entrances (bark box)
- House Sparrow/Great Tit bird boxes (bark box)

Examples of placements of these can be found in **Figure 7**. These can be purchased by contacting admin@eliteecology.co.uk.

Bird boxes installed on buildings should face between north and east to avoid the strong sunlight and wet winds. Boxes installed on trees can face any direction as the trees will provide shelter however the entrance must be kept clear of branches and vegetation. All bird enhancements must be situated in a way that prevents access to predators such as cats.

Figure 7: Proposed elevation plans of the new building at Hayes Gate Farm, Oakamoor, with the locations of bird boxes shown by the blue shapes. Please note these are not to scale.



6. Summary

6.1 Bat Presence/Absence

From the site survey, it has been established that the structure at Hayes Gate Farm, Oakamoor contains roosting bats. These are a day roost of common pipistrelle (*Pipistrellus pipistrellus*) bats, a day roost of soprano pipistrelle (*Pipistrellus pygmaeus*) bats and historic day roost of brown long-eared (*Plecotus auritus*) bats. In addition to this, foraging and commuting brown long-eared (*Plecotus auritus*), common pipistrelle, Natterer's (*Myotis nattereri*), noctule (*Nyctalus noctula*), and soprano pipistrelle bats were detected around the site.

6.2 Bird Presence/Absence

From the survey visit undertaken on the site, it can be concluded that the surveyed structure does not contain nesting birds. In addition, the surrounding landscape provides all of the necessary habitat elements that birds require.

6.3 Ecological Value of Building Units

The ecological value of the structure has been deemed as **high** to bats due to the presence of a day roost of common pipistrelle bats and a maternity roost of soprano pipistrelle bats.

The ecological value of the buildings to birds has been deemed **negligible** due to all of the structures supporting nests.

6.4 Recommendations

The recommendations for Hayes Gate Farm, Oakamoor can be summarised as follows (please refer to **Section 5 – Recommendations** for a more in-depth description):

- Apply for a Natural England Development Licence to legally carry out the works.
- No re-development works can proceed on the structure until October when the bats have gone to their hibernation roosts.
- At the start of works, site supervision by a licenced bat ecologist in accordance with the Natural England Development Licence will be required.
- Install bat compensatory features on the site in accordance with **Section 5 Recommendations**.
- Artificial lighting should be avoided around compensatory roosting features.
- No breathable roofing membrane is to be used on the structure.
- **Optional:** Install a variety of bird boxes around the site post development to enhance the site for the local bird populations. Some suitable examples are shown in **Section 5**.

7. References

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8. Appendices

Appendix A: Site Plans

Appendix B: Eco Data Table

Appendix C: Artificial Light and Bats

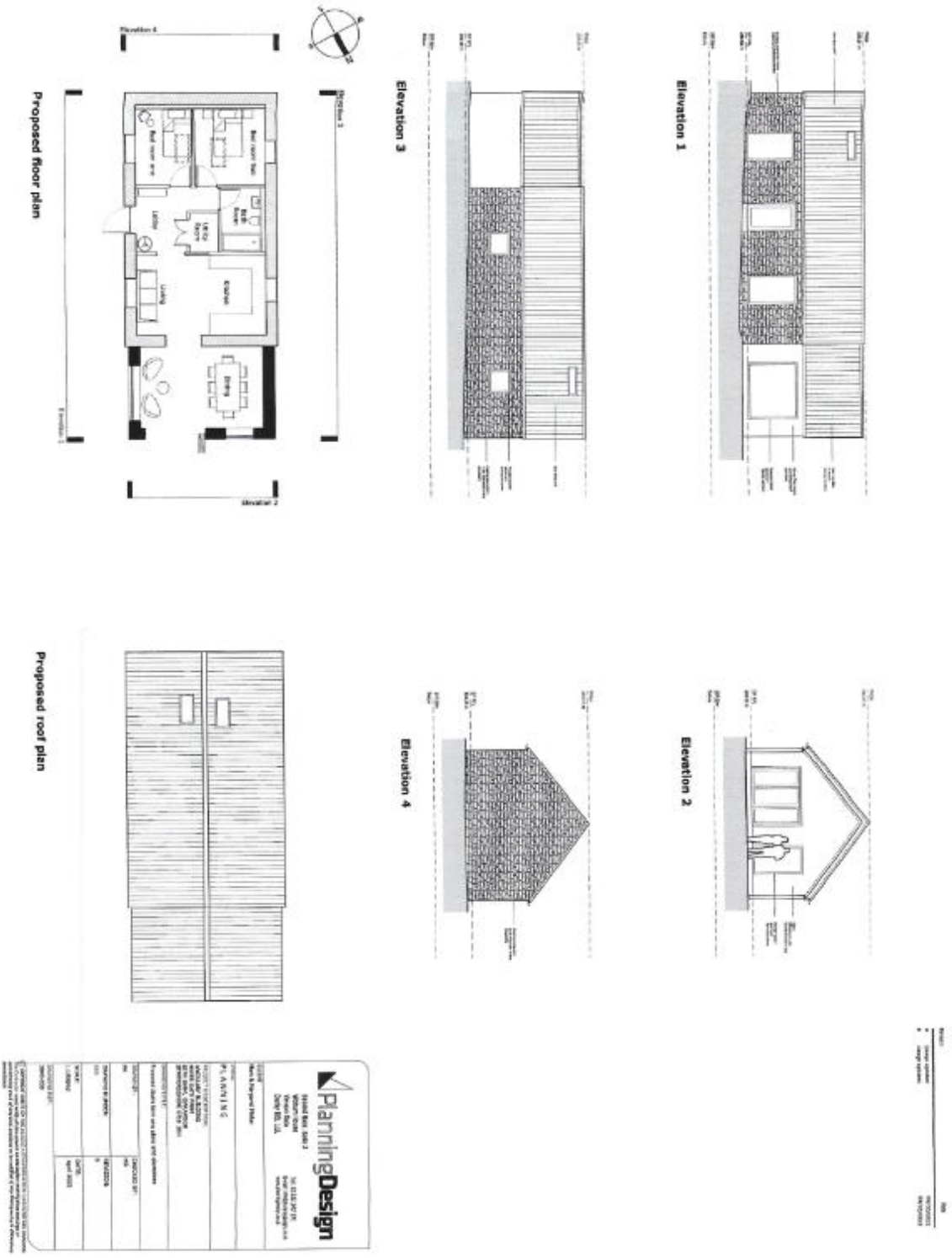
Appendix D: Photographic Records

Appendix E: The Annual Bat Year (BCT)

Appendix F: Legislation

Appendix G: Bat DNA Results

Appendix A: Site Plans



Appendix B: The Ecological Data Search Table

Birds	
Common Name	**Latin Name**
Barn Owl	*Tyto alba*
Black-headed Gull	*Chroicocephalus ridibundus*
British Dipper	*Cinclus cinclus subsp. gularis*
British Lesser Black-Backed Gull	*Larus fuscus subsp. graellsii*
Bullfinch	*Pyrrhula pyrrhula*
Common Crossbill	*Loxia curvirostra*
Cuckoo	*Cuculus canorus*
Curlew	*Numenius arquata*
Dipper	*Cinclus cinclus*
Dunnock	*Prunella modularis*
Fieldfare	*Turdus pilaris*
Golden Plover	*Pluvialis apricaria*
Goldeneye	*Bucephala clangula*
Goshawk	*Accipiter gentilis*
Grasshopper Warbler	*Locustella naevia*
Greenfinch	*Chloris chloris*
Grey Wagtail	*Motacilla cinerea*
Greylag Goose	*Anser anser*
Herring Gull	*Larus argentatus*
Hobby	*Falco subbuteo*
House Martin	*Delichon urbicum*
House Sparrow	*Passer domesticus*
Kestrel	*Falco tinnunculus*
Kingfisher	*Alcedo atthis*
Lapwing	*Vanellus vanellus*
Lesser Black-backed Gull	*Larus fuscus*
Lesser Redpoll	*Acanthis cabaret*
Linnet	*Linaria cannabina*
Little Ringed Plover	*Charadrius dubius*
Mallard	*Anas platyrhynchos*
Marsh Tit	*Poecile palustris*
Meadow Pipit	*Anthus pratensis*
Merlin	*Falco columbarius*
Mistle Thrush	*Turdus viscivorus*
Moorhen	*Gallinula chloropus*
Nightingale	*Luscinia megarhynchos*
Osprey	*Pandion haliaetus*
Oystercatcher	*Haematopus ostralegus*
Peregrine	*Falco peregrinus*

Pied Flycatcher	*Ficedula hypoleuca*
Pink-footed Goose	*Anser brachyrhynchus*
Pochard	*Aythya ferina*
Red Kite	*Milvus milvus*
Redstart	*Phoenicurus phoenicurus*
Redwing	*Turdus iliacus*
Reed Bunting	*Emberiza schoeniclus*
Rook	*Corvus frugilegus*
Ruddy Duck	*Oxyura jamaicensis*
Shelduck	*Tadorna tadorna*
Skylark	*Alauda arvensis*
Snipe	*Gallinago gallinago*
Snow Bunting	*Plectrophenax nivalis*
Song Thrush	*Turdus philomelos*
Sparrowhawk	*Accipiter nisus*
Spotted Flycatcher	*Muscicapa striata*
Starling	*Sturnus vulgaris*
Stock Dove	*Columba oenas*
Swift	*Apus apus*
Tawny Owl	*Strix aluco*
Tree Pipit	*Anthus trivialis*
Troglodytes troglodytes subsp. indigenus	*Troglodytes troglodytes subsp. indigenus*
Twite	*Linaria flavirostris*
Wheatear	*Oenanthe oenanthe*
Whinchat	*Saxicola rubetra*
Willow Tit	*Poecile montanus*
Willow Warbler	*Phylloscopus trochilus*
Wood Warbler	*Phylloscopus sibilatrix*
Woodcock	*Scolopax rusticola*
Woodpigeon	*Columba palumbus*
Wren	*Troglodytes troglodytes*
Yellow Wagtail	*Motacilla flava*
Yellow Wagtail	*Motacilla flava subsp. flavissima*
Yellowhammer	*Emberiza citrinella*
Yellow-legged Gull	*Larus michahellis*

Appendix C: Artificial Lighting and Bats

Artificial lighting is known to affect bat's roosting and foraging behaviour, with lighting resulting in a range of impacts that includes roost desertion (BCT, 2009), delayed emergence of roosting bats (Downs et al., 2003), increased activity of some bat species and decreased activity by others (Stone et al., 2012).

An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including the common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux.

In contrast, slow flying bats such as the myotid bats (Myotis spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone et al., 2012).

Current recommendations for all bat species specifies that no bat roost should be directly illuminated.

Due to the impacts of lighting, mitigation and sensitive lighting design schemes are required for projects where bats are present. These should include bat friendly lighting plans that should aim to avoid lighting wherever possible. If this is not possible, then the minimisation of any lighting impacts is required by adopting the following measures:

- To introduce lighting curfews or use of PIR sensors.

  Lighting curfews can be an effective way of avoiding impacts on bats. These curfews may involve either turning off lighting or dimming light units at specific times of the night, dimming units at key times of the year, providing the luminaire allows for this option via a control unit. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of time.

- To consider no lighting solutions where possible.

  Options such as white lining, good signage and LED cats eyes should be considered as preferable. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.

- To use only high pressure sodium or warm white LED lamps where possible.

  High pressure sodium and warm white LED lamps emit lower proportions of insect attracting UV light than mercury, metal halide lamps and white LED lighting. Generally, lamps should have a lower proportion of white or blue wavelengths, with a colour temperature <4200 kelvin recommended (BCT, 2014).

- To minimise the spread of light.

  The light spread should be kept at or near horizontal to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres and shields should be used where necessary to reduce light spill.

- To consider the height of the lighting column.

  While downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide up-lighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce any up-lighting.

- To avoid reflective surfaces below lights.

  The polarisation of light by shiny surfaces attracts insects increasing bat activity (BCT, 2012). Consequently, surface materials around lighting require consideration.

Appendix D: Photographic Records

Plate 1: An image of the southern elevation of **B1**.

Plate 2: An image of the gaps between the stone blocks of the walls of **B1**.

Plate 3: An image of the western elevation of **B1**.

Plate 4: An image of the roof void of **B1**.

Appendix E: The Annual Bat Year (BCT)

A Year in the Life of a Bat			
January		**February**	
	Hibernating; using up fat reserves.		Still hibernating; few fat reserves left.
March		**April**	
	Some activity; occasional bat seen feeding.		Awake and feeding at night.
May		**June**	
	Females looking for nursery sites.		Young born, usually only one.
July		**August**	
	Young still suckling.		Young start catching insects; females leave nursery to find males.
September		**October**	
	Mating season begins; start building fat reserves for hibernation.		Search for suitable hibernation site.
November		**December**	
	Hibernation begins although still some activity in warm weather.		Hibernating.

Appendix F: Legislation and Policy

All species of bat are fully protected under a variety of domestic, European and international legislation and conventions. These include:

- Bern Convention (Appendix II)
- Bonn Convention (Appendix II)
- Conservation Regulations (Northern Ireland) 1995
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
- Countryside Rights of Way Act 2000
- Eurobats Agreement
- Habitats Directive (Annexes IV and II)
- Habitats Regulations 1994 (as amended) Scotland
- NERC Act 2006
- Wildlife and Countryside Act 1981 (as amended)
- Wild Mammals Protection Act

In addition to this, some species have additional protection by being listed on the UK Biodiversity Action Plan (UKBAP).

The legislation afforded to bats 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.

All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which protects birds, nests, eggs and nestlings from harm. In addition to this, some rarer species, such as barn owls are afforded extra protection.

National Planning Policy Framework, Section 15:

In early 2012, the National Planning Policy Framework (NPPF) replaced much previous planning policy guidance, including Planning Policy Statement 9: Biological and Geological Conservation. The government circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System, which accompanied PPS9, still remains valid. A presumption towards sustainable development is at the heart of the NPPF. This presumption does not apply however where developments require appropriate assessment under the Birds or Habitats Directives. The latest National Planning Policy Framework was updated in February 2019, with the section in relation to conserving the natural environment being located within section 15.

Section 15, on conserving and enhancing the natural environment, sets out how the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and, where possible, provide net gains in biodiversity. Opportunities to incorporate biodiversity gains into a development should be encouraged.

Biodiversity 2020:

This sets out to halt overall biodiversity loss and support healthy well-functioning ecosystems by establishing coherent ecological networks, with more and better places for nature, to the benefit of wildlife and people. The government’s policy is aimed at individuals, communities, local authorities, charities, business and government, which all have a role to play in delivering Biodiversity 2020.

Appendix G: Bat DNA Results

WARWICK
THE UNIVERSITY OF WARWICK

GeoWarwicker
Geological Forensics

13 November 23

Re: Genotyping Identification Results for Richard Millington, Elite Ecology

Job number 20396, received 30 October 2023
Sample labelled: Hayes Gate Farm, Star Bank, Oakamoor, Staffordshire, ST10 3BN. 27/10/23.

PCR amplification unsuccessful.

Unfortunately, our analysis of this sample failed. We normally re-attempt the analysis up to three times depending on the availability of sample material sent. There are usually three possible reasons for sample failure:

1. DNA degradation has occurred to an extent beyond which we can detect it using PCR technology.
2. The sample might have an unusually high content of inhibiting substances causing enzymatic failure in the analysis.
3. The sample might not have been the target species.

Without further data we are not in a position to judge which of these possibilities is more likely correct. We are sorry to not have been able to identify this sample for you, and we make no charge for the attempt.

Best regards,

Robin Allaby
Associate Professor.

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

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Elite Ecology agrees to supply ecological consulting services and advice of a preliminary or thorough nature as advised or commissioned. Upon commissioning Elite Ecology to undertake the work, the client(s) grant access to the site upon the agreed date. If no site access is available upon this date, Elite Ecology holds the right to charge the client(s) for lost staffing time and additional travel costs.

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The latest good practice guidelines put in place by Natural England or the relevant statutory conservation bodies have been followed by the surveyors on site. If those methodologies fail to identify a protected species during the survey efforts, no responsibility can be attributed to Elite Ecology. If any of these guidelines are adapted between the date(s) of the surveys being undertaken and the submission of this report, then Elite Ecology takes no responsibility for this.

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The survey results purport the current status of the site and its potential for protected species utilisation at the time of surveying. It should not be viewed as a complete list of the possible flora and fauna species that could be using the site at different times of the year.

Elite Ecology has been provided with full payment for this report and thus the product has been released to the client(s) for the purpose of their planning application. If any part of the report is lost or altered without the written permission of Elite Ecology, then the entire report becomes invalid. Due to the potential for continual change within the natural world, this report is valid for **2 years only** from the date of the last survey visit. If this report is submitted after the 2 year deadline, then a further updated inspection will be required to ascertain whether the site remains in the same condition as it was when initially inspected.

No reliance should be made on any such comments in relation to the structural integrity of the features located on the surveyed site. All information within the report is based solely on evidence that has been found on site during the service provided. No individual opinion or inference will be made other than that of the suitably qualified ecologist appointed to the project.