Elite Ecology

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Woodhead Farm,

Bagnall



Bat Activity Survey

September 2022

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0. Executive Summary

0.1 This report has been prepared at the request of Ms. Michelle Beech (proprietor). It relates to the potential presence of bats and birds at the proposed re-development site located at Woodhead Farm, Bagnall, Staffordshire, ST2 7NH (OS Grid Reference: SJ 94727 49630). To fulfil this brief, Elite Ecology undertook both a desktop study and a field survey.

0.2 The two surveyed buildings are proposed to be re-developed. No specific site plans have been revealed to Elite Ecology at the production of this report.

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 = Moderate**
- **B2 = Moderate**

Therefore, further bat activity surveys are required during the bat survey season (May to September, inclusive). These were subsequently undertaken in August and September 2021.

All of the buildings were **confirmed** to support nesting birds.

0.4 Summary

Bat presence/absence

From the survey visit undertaken on the site, it can be concluded that Woodhead Farm contains a suspected maternity roost of common pipistrelle (*Pipistrellus pipistrellus*) bats. In addition to the emergences, commuting and foraging brown long-eared (*Plecotus auritus*) common pipistrelle *(Pipistrellus pipistrellus)*, Daubenton's (*Myotis daubentonii)*, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus)* and whiskered (*Myotis mystacinus)* bats are present in the local landscape.

Bird presence/absence

From the survey visit undertaken on the site, it can be concluded that the surveyed structures contain nesting swallow (*Hirundo rustica*) and wren (*Troglodytes troglodytes*). In addition to this, the surrounding landscape provides all of the necessary habitat elements that birds require.

Ecological value of building units

The ecological value of the buildings B1 and B2 has been deemed as **high** to bats due to the presence of roosting common pipistrelle (*Pipistrellus pipistrellus*) bats. The ecological value of the buildings to birds has been deemed **high** due to all of the structures supporting nests. The ecological value of the buildings have been deemed as **high** to bats due to the presence of roosting common pipistrelle (*Pipistrellus pipistrellus*) bats.

The ecological value of the buildings to birds has been deemed **high** due to all of the structures supporting nests of swallow (*Hirundo rustica*) and wren (*Troglodytes troglodytes*).

0.5 Recommendations

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

- The completion of two further activity surveys to determine the mitigation requirements. These need to be carried out between May and September with at least one completed before August 31st.
- No works can be undertaken during the bird breeding season of March to August (inclusive), unless the structure has been inspected by a suitably qualified ecologist no more than 24 hours prior to the commencement of works.
- Incorporate eaves/ridge overhangs or easily accessible loft spaces for to compensate for the loss of swallow (*Hirundo rustica*) nests. These should be enhanced with the inclusion of at least six No.10 Schwegler Swallow Nest boxes per feature.
- Two RSPB Robin and wren diamond nest boxes are to be incorporated on site, one per structure.
- **Optional Enhancement:** 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 Ms. Michelle Beech (proprietor). It relates to the potential presence of bats and birds at the proposed re-development site located at Woodhead Farm, Bagnall, Staffordshire , ST2 7NH (OS Grid Reference: SJ 94727 49630). 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 near the Staffordshire town of Stoke-on-Trent, which is situated to the south-west. The habitats located on the survey site are agricultural land, amenity grassland, hard standing ground, buildings, hedgerows and scattered trees, as well as the buildings of interest. 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 Woodhead Farm, Bagnall (as shown by the red outline). The arbitrary building numbers referred to throughout this report are also illustrated.



1.3 Proposed works

The two surveyed buildings are proposed to be re-developed. No specific site plans have been revealed to Elite Ecology at the production of this report.

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 Records (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 birds' 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, endoscope, 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, endoscope, 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 15 minutes before sunset (dusk survey) and 2 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 15 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. Connor Wild: MSc Ecologist, Natural England Bat Survey Licence Number**:** 2022-10201-CL17-BAT

Mr. Lewis Smith: BSc (Hons), Assistant Ecologist.

Ms. Evgenia Stancheva: BSc (Hons), Assistant Ecologist.

Mr. Simon Band: Assistant Ecologist

2.4 Field surveys

2.4.1 Site Surveys

Elite Ecology were not made aware of any previous ecological site surveys.

2.4.2 Roost Surveys

The buildings at Woodhead Farm, Bagnall 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	PRA and Activity Survey of the Building – 25th of August 2022. Dusk
Temp Start:	16°C
Temp Finish:	14°C
Humidity Start:	63%
Humidity Finish:	75%
Cloud Cover Start:	15%
Cloud Cover Finish:	0%
Wind Speed Average:	6mph
Precipitation:	None

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 Woodhead Farm, Bagnall.

3.1.1 Bats:

The ecological data search revealed several bat records within the 2km search radius identifying four different species. The UK BAP species recorded in the search were brown long eared (*Plecotus auritius*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bats. The non-BAP species recorded in the search were brandts (*Myotis brandtii),* common pipistrelle (*Pipistrellus pipistrellus*) bats. In addition to this, some records of unidentified bat (*Chiroptera* sp.) and unidentified bat (*Myotis* sp.) specimens were revealed.

The closest records to the site were of a common pipistrelle that was located approximately 1.12km away.

3.1.2 Birds:

Within the ecological data set received by SER, fifty-two bird species were revealed. The nearest records to the proposed works site are of barn owl (*Tyto alba)*, located approximately 1km away.

Please note: Any records may not truly represent the current species on site. The maps provided by SER showing the locations of the records obtained through the ecological data search 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

Therefore, the habitats that are present in and around the site contains all of the elements that are considered to be critical in both bat and bird life cycles.

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



3.2.2 Building survey

Two buildings are located on the survey site. These are both former barns.

Former Barn (B1)

External Inspection:

The surveyed structure is a former working barn and is constructed from stone bricks with a solid wall. Window and door frames are wooden with all windows missing, some of these have been boarded up whilst others are left open, several of the wooden doors are also missing. The pitched roof is constructed of clay tiles and a gable feature is present on the eastern side. Guttering and eaves are present along the edge of the structure and a chimney is present. A number of tiles have lifted and missing tiles can be found along the full length of the structure providing potential access for bats and birds. One wren (*Troglodytes troglodytes*), was found within a gap in the stone work on the east elevation.

Internal Inspection:

The internal inspection reveals that the structure has two stories with an additional attic space, Access to the second floor and attic are restricted due to damaged support beams. The structure is currently used for storage purposes. The internal of the building is constructed from stone bricks with timber beams forming the roof structure with polystyrene used for insulation. Spider webs are present throughout the structure and six swallow (*Hirundo rustica*) nests have been identified. No lighting is present within the structure.

Former Barn (B2)

External Inspection:

The surveyed structure adjacent to B1 and is constructed of solid stone brick walls, with a pitched clay tile roof. Some of the tiles upon the structure are lifted and others are missing, allowing potential access for bats and birds to the interior. The majority of the windows on the structure are missing with some of these having been boarded up. The doors are wooden and appear to be left open permanently allowing the swallows (*Hirundo rustica*) to access the nests within.

Internal Inspection:

The internal inspection revealed that the structure consists of a single storey. The structure is currently left empty, in preparation for renovation works. Internally the structure consists of stone brick walls with timber beams forming the roof structure and polystyrene used as a means of insulation. Cobwebs are present throughout. Moth and butterfly wings are also present, evidence of bat activity. Four swallow nests have also been identified. One wren was found within a gap in the stonework however this has been abandoned.

Barrel roof building (B3)

External Inspection:

The surveyed structure adjacent to B2 and is constructed of with a breeze block base and asbestos barrel roof with open ends mortared in place. No gaps can be found with the breeze blocks and a small gap can be found in the asbestos roof. No evidence of bats or birds was found internally.

Internal Inspection:

Natural daylight can be seen internally. No potential roosting features have been identified within the structure. No evidence of bats or birds was found externally.

3.2.3 Summary of the building inspection

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

Building	Bat Roost Potential	Bat Roost Potential	Number of bat activity surveys required
B1	**High**	**Moderate**	2
B2	**High**	**Moderate**	2
B3	**Negligible**	**Negligible**	N/A

Seven surveyors are required for the bat activity surveys.

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

No bat droppings were found at the surveyed site.

3.2.5 Activity surveys

One activity survey was undertaken on the buildings on the 25th of August 2022.

Activity Survey 1 (25th of August 2022):

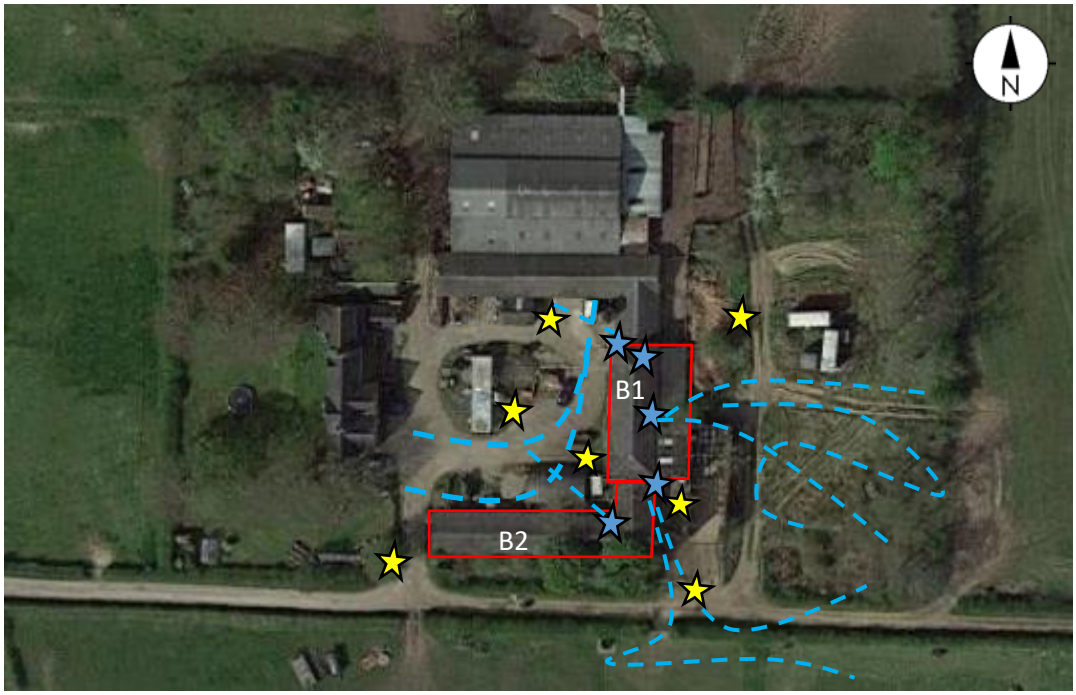
The activity survey was undertaken at dusk, with sunset being recorded at 20:14.

During this survey, two common pipistrelle (*Pipistrellus pipistrelle*) bats were identified emerging from the south-eastern elevation of **B1**, with six further common pipistrelle bat emerging from the wall at the eastern elevation. An additional common pipistrelle was seen to emerge from the north elevation of **B1.**

Two common pipistrelle bats were witnessed to emerge from under a ridge tile of **B2.**

In addition to the emergences from B1, commuting and foraging brown long-eared (*Plecotus auritus*) common pipistrelle *(Pipistrellus pipistrellus)*, Daubenton's (*Myotis daubentonii)*, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus)* and whiskered (*Myotis mystacinus)* bats are present in the local landscape.

Figure 3: An aerial photograph of the surveyed buildings (red outline), the surveyor locations (yellow stars), camera locations (red stars) and the common bat flight paths (dotted blue lines). The common pipistrelle emergence points are shown by the blue stars.



Summary:

In summary, B1 at Woodhead Farm, Bagnall contains a suspected maternity roost of common pipistrelle (*Pipistrellus pipistrellus*) bats, with eleven emergences recorded on the survey.

In addition to the emergences, commuting and foraging brown long-eared (*Plecotus auritus*) common pipistrelle *(Pipistrellus pipistrellus)*, Daubenton's (*Myotis daubentonii)*, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus)* and whiskered (*Myotis mystacinus)* bats are present in the local landscape.

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

The two surveyed buildings are proposed to be re-developed. No specific site plans have been revealed to Elite Ecology at the production of this report. 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 buildings were found to support roosts of common pipistrelle (*Pipistrellus pipistrellus*) bats.	The buildings were found to support roosts of common pipistrelle (*Pipistrellus pipistrellus*) bats.	The buildings were found to support roosts of common pipistrelle (*Pipistrellus pipistrellus*) 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 presence of numerous bird nests in relation to all of the surveyed structures, the proposed scheme of works will be of a **high** 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 Woodhead Farm, Bagnall contains a suspected maternity roost of common pipistrelle (*Pipistrellus pipistrellus*) bats. In addition to the emergences, commuting and foraging brown long-eared (*Plecotus auritus*) common pipistrelle *(Pipistrellus pipistrellus)*, Daubenton's (*Myotis daubentonii)*, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus)* and whiskered (*Myotis mystacinus)* bats are present in the local landscape.

Two further bat surveys will need to be carried out during the bat survey season of May to September, with at least one needs to be done in the optimal survey season of mid-May to August.

Further compensation, mitigation and enhancement measures will be devised following the additional survey effort.

5.2 Birds

From the survey visit, all of the buildings were found to support nesting birds.

All works on the structures must be undertaken outside of the bird breeding season (March to August, inclusive). If these features are required to be altered during the bird breeding season, then a further inspection by a suitably qualified ecologist is required no more than twenty-four hours before this process commences. This is to ensure that no active nest site is illegally destroyed, due to the protection afforded to **all** active bird nests under the Wildlife and Countryside Act 1981. If an active nest is found by a site inspection, an exclusion zone around the nest will be necessary to preserve this feature until the chicks have fledged the nest.

To compensate for the loss of the swallow (*Hirundo rustica*) nests, it will be necessary to incorporate eaves/ridge overhangs or easily accessible loft spaces. This will give these specimens the necessary internal opportunities to nest at the site. These should be enhanced with the inclusion of at least six No.10 Schwegler Swallow Nest boxes per feature with four features recommended for the site.

Two RSPB Robin and wren diamond nest boxes are to be incorporated on site, one per structure.

In addition to this, 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)

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.

6. Summary

6.1 Bat presence/absence

From the survey visit undertaken on the site, it can be concluded that Woodhead Farm contains a suspected maternity roost of common pipistrelle (*Pipistrellus pipistrellus*) bats. In addition to the emergences, commuting and foraging brown long-eared (*Plecotus auritus*) common pipistrelle *(Pipistrellus pipistrellus)*, Daubenton's (*Myotis daubentonii)*, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus)* and whiskered (*Myotis mystacinus)* bats are present in the local landscape.

6.2 Bird presence/absence

From the survey visit undertaken on the site, it can be concluded that the surveyed structures contain nesting swallow (*Hirundo rustica*) and wren (*Troglodytes troglodytes*). In addition to this, 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 buildings have been deemed as **high** to bats due to the presence of roosting common pipistrelle (*Pipistrellus pipistrellus*) bats.

The ecological value of the buildings to birds has been deemed **high** due to all of the structures supporting nests of swallow (*Hirundo rustica*) and wren (*Troglodytes troglodytes*).

6.4 Recommendations

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

- Two further bat activity surveys are to be carried out in the 2023 activity season between May and September, with at least one of these in the optimal survey season of mid-May to August.
- No works can be undertaken during the bird breeding season of March to August (inclusive), unless the structure has been inspected by a suitably qualified ecologist no more than 24 hours prior to the commencement of works.
- Incorporate eaves/ridge overhangs or easily accessible loft spaces for to compensate for the loss of swallow (*Hirundo rustica*) nests. These should be enhanced with the inclusion of two No.10 Schwegler Swallow Nest boxes per feature.
- Two RSPB Robin and wren diamond nest boxes are to be incorporated on site, one per structure.
- **Optional Enhancement:** 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 Map

Appendix C: Artificial Light and Bats

Appendix D: Photographic Records

Appendix E: The Annual Bat Year (BCT)

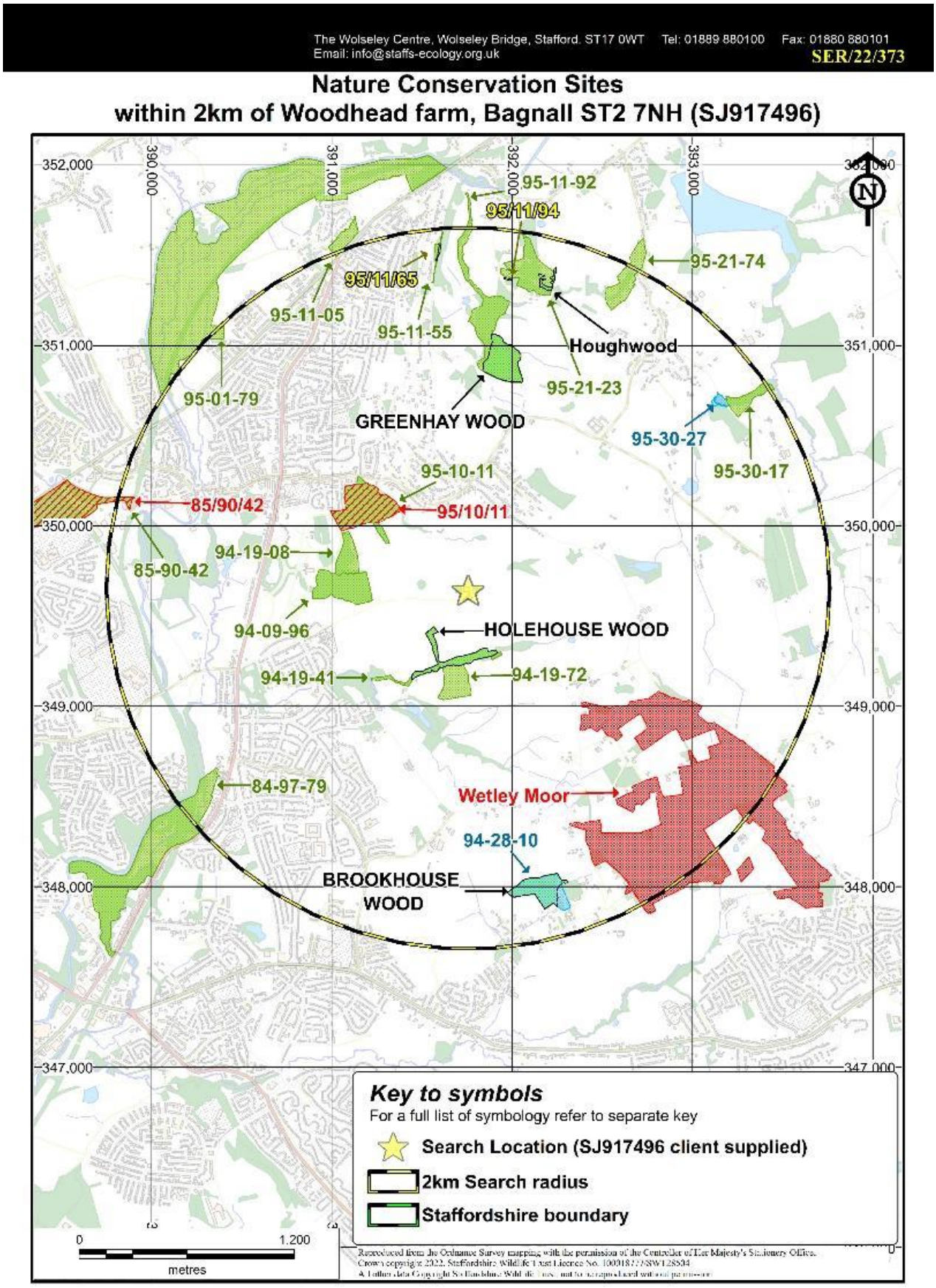
Appendix F: Legislation

Appendix G: Bat DNA Results

Appendix A: Site Plans

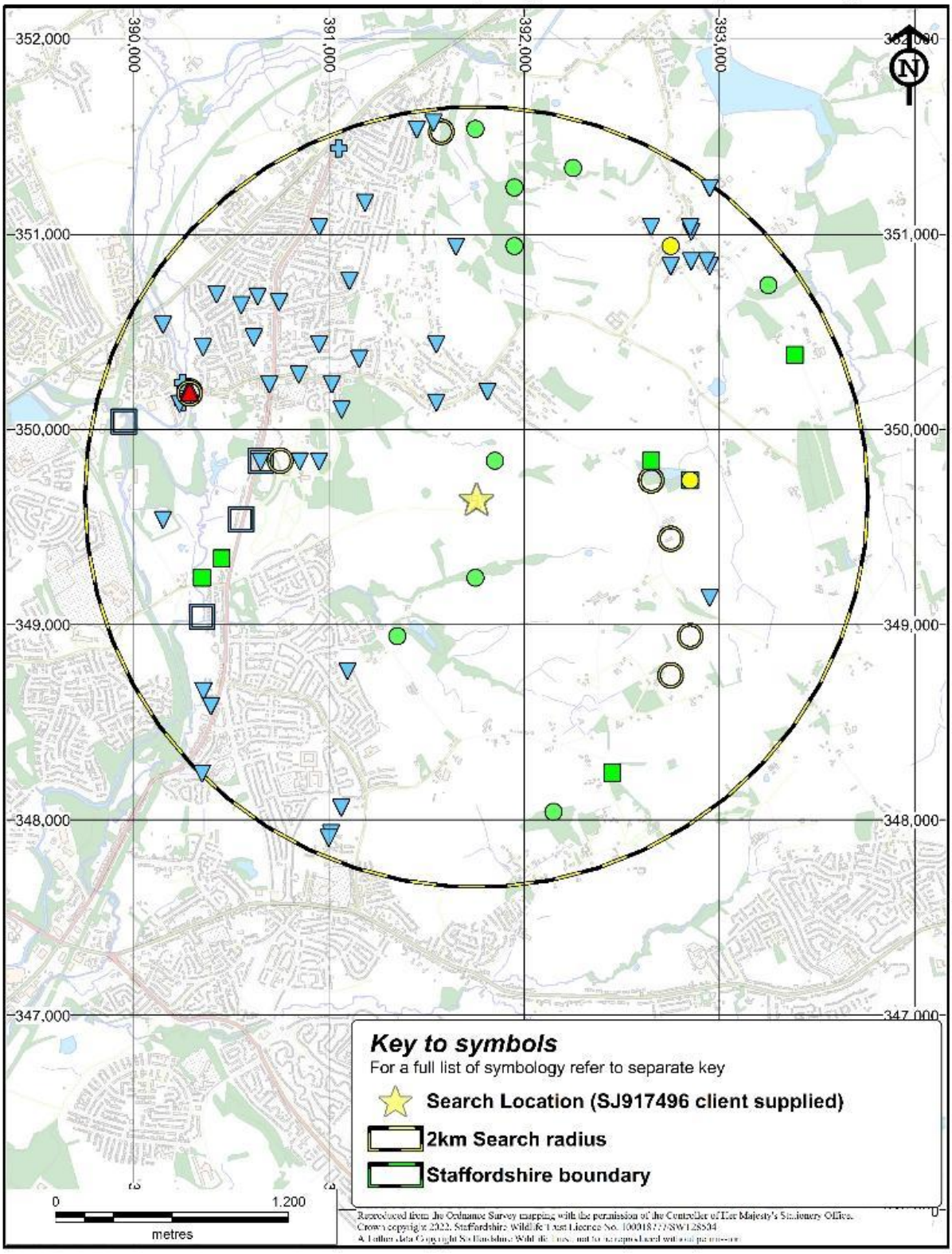
No site plans have been provided at the production of this report.

Appendix B: The Ecological Data Search Maps



The Wolseley Centre, Wolseley Bridge, Stafford. ST17 0WT Tel: 01889 880100 Fax: 01880 880101
Email: info@staffs-ecology.org.uk
SER/22/373

Protected Species
within 2km of Woodhead farm, Bagnall ST2 7NH (SJ917496)



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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: Photograph showing the interior of B2 including gaps in the roof.



Plate 2: Photograph displaying the exterior of B2, missing windows and raised roof tiles are visible.



Plate 3: Photograph displaying the interior roof structure of B1



Plate 4: Photograph displaying the interior of B1



Plate 5: Photograph displaying the southern exterior of B1.



Plate 6: Photograph of butterfly wing (evidence of bat feeding) within B1



Plate 7: Photograph displaying one of the Swallow nests located within 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

No DNA samples were obtained for this site.

9. Notice to Readers: Conditions of this Report

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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.

Should any equipment be damaged or lost on site at the fault of the client(s), then Elite Ecology withholds the right to charge 100% above the current market value for that exact product or the nearest similar product.

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.