Charnia Ecology
Protected species and habitat surveys

Phase 2:

Bat and Bird Activity survey Report

at

Huntley House
Teanford, Tean
Stoke-on-Trent

JULY 2016

Notice to readers

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

Client Details:
Mr. R. Andrzejweski

Application area:
Curtilage barn-building at
Huntley House
Teanford, Tean
Stoke-on-Trent

Postcode/ OS Grid Ref:
ST10 4ER / NGR:SK003412

Issue No:
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Checked by:

Principal Ecologist

NON-TECHNICAL SUMMARY

Report rationale

1. This report has been prepared at the request of the client Mr. R. Andrzejweski in relation to the identification of protected bat and bird species at **Huntley house, Huntley Lane, Cheadle, ST10 1UA** [NGR:SK003412]. The objective of this report is to provide the client with information regarding any known or potential bat roosts and/or nesting birds within the building units proposed for development, in-order to make recommendations on how to proceed with the works in a legal and ecologically sensitive manner. In the absence of any evidence, structures have been assigned a rating of suitability from negligible to high potential for supporting bats.

Proposed works

2. The proposed works considers conversion of the existing barn-building into a dwelling. The proposed works are speculated to begin during the course of January 2016 and will be phased.

Site description

3. The proposed application area comprises of a former curtilage barn-building of Huntley House, which is located in a semi-rural settlement of Huntley, Nr. Cheadle in North Staffordshire. The building is constructed of traditional red brick with a pitched, tiled roof and gable ends. The structure is surrounded by hand-standing and a low density of residential dwellings which in-turn are surrounded by open, agricultural farmland, hedgerows and woodland blocks, with good connectivity to the wider landscape.

Desk top study

4. There are no international, national (i.e. SSSI, or NNR) or local statutory designated nature conservation sites within 2km of the application site. Conversely, there are four non-statutory designated nature conservation sites within 2km that include three Sites of Biological Importance (SBI) and one Biodiversity Alert Site (BAS). None of these are considered as being within the immediate Zone of Influence, other than Huntley Wood & Quarry SBI, which sits marginally within the influence zone.

5. Pre-survey data search shows eleven of the seventeen resident UK bat species occur in Staffordshire. SWT biological records show three UK BAP species recorded within 2km of the proposed application area. A further four/five bat species that are not currently given UK BAP consideration are also recorded within 2 km of the proposed application site. Pre-survey data show no records of any bat roosts within the application area itself. Barn Owl (Tyto alba) is recorded within a 2km radius of the application area.

Preliminary roost assessment

6. Whilst **NO** evidence of roosting bats were recorded during the building inspection, the structure is rated as having **HIGH** potential for roosting bats, with numerous features suitable for both crevice-dwelling and void dwelling species. Under new BCT guidelines (2016), three activity surveys were subsequently carried out (2 x dusk / 1 x dawn) in May & June 2016.

Activity surveys

7. The single most dominant species onsite was that of common pipistrelle, with low levels of commuting and foraging recorded during dusk surveys, compared to high sustained levels during dawn survey. **NO** bats were seen emerging or re-entering the structure proposed for development. Internal surveillance recorded no pre-emergent void dwelling bats.

- ***Bats***

8. **NO evidence of any high conservation status bat roost(s)** were recorded *in-situ* within the proposed development. Conversely, due to the building rating being considered as having high potential for bats, coupled with a high level of sustained foraging and commuting activity onsite during the dawn survey, there is **moderate potential** that the structure may be utilized as a **transient satellite roost by individual bats over space and time**. This is particularly relevant to the more opportunistic common pipistrelle bat which was dominant onsite, and is known to switch between roosts and exploit a wider regime of environments.

- ***Birds***

9. Evidence of deceased House Sparrow was recorded internally, and thought to have been inadvertently entombed inside the building, with little evidence of notable ingression points recorded overall. No evidence of Barn Owl was recorded, and no further actions are considered for this species.

Impact assessment

10. Assessment onsite was undertaken during an optimal survey period and considered to be robust and representative of protected species currently onsite. **NO** survey limitations were encountered and **NO** further survey effort regarding bats and birds is considered.

11. Whilst no substantial evidence of spring/summer bat roosts were recorded during the building inspection; based on structural features of the building, the overall impact(s) to bats and birds under the proposed scheme is considered to be as follows:

BATS		
Short-term: Disturbance	**Long-term: Roost modification**	***Long-term: Roost loss**
LOW	**LOW**	**LOW**
BIRDS		
LOW TO MODERATE	**LOW TO MODERATE**	**LOW**
BARN OWL		
NEGLIGIBLE	**NEGLIGIBLE**	**NEGLIGIBLE**

12. Based on a small scale development, **NO impact to any statutory or non-statutory designated areas** is predicted under the proposed application.

13. Based on a small scale development, **NO immediate impact on potential foraging and commuting habitat** for bats is predicted with no additional land uptake considered. However, the site was seen to be actively used by commuting and foraging bats, and **careful consideration to a sensitive lighting design to avoid excessive light-spill should be made a condition of the application** (section 5.4.6)**.**

Mitigation licence

14. As **NO** bats were recorded roosting within the building proposed for development, it **will NOT** be necessary to apply for a European Protected Species (EPS) licence from Natural England.

Site safe-guard measures

15. Despite no evidence of roosting bats, the building pertains to features suitable for both crevice and void dwelling, synanthropic bats. As such, non licensable site safe-guard measures should be made a condition of the application, with consideration being given to the potential utilization of the building over space and time by individual roosting common pipistrelle bat.

16. It is considered prudent to undertake a precautionary **'soft demolition'** approach to any roof sections (or any demolition works that may encroach into roof sections). This should be carried out under the supervision of suitably qualified bat ecologist, in the event that individual bats may be present (section 5.4.2). Works should be undertaken outside the optimal period of May to mid August, and ideally carried out during autumn/winter (late Sept to Oct) to early spring (Jan to March) (section 5.4.3).

17. Consideration should also be given to nesting birds which are protected under the Wildlife and Countryside Act 1981 (as amended). The barn-building provides low to moderate ecological value for individual nesting birds, which are considered common and widespread throughout the UK. Ideally, any proposed works should be undertaken outside the bird breeding season (March to August inclusive).

18. In accordance with the Natural Environment and Rural Communities (NERC) Act 2006, it is recommended that at a minimum of three bat boxes and four bird boxes are incorporated into the curtilage of Huntley House, being fitted to either mature trees or to external elevation of buildings.

19. Any landscaping relating to the proposed development should encompass native grasses, trees and shrub species to encourage trophic food webs and increase foraging potential for species. No plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 should be planted during any landscaping within this development.

CONTENTS

1. INTRODUCTION

1.1.1 This report has been prepared at the request of the client Mr. R. Andrzejweski in relation to the identification of protected bat and bird species at **Huntley house, Huntley Lane, Cheadle, ST10 1UA** [NGR:SK003412].

1.1.2 A Preliminary Roost Appraisal (PRA) survey was initially carried out by Charnia Ecology in September 2015, whereby the building was considered as pertaining to features highly suitable for roosting bats. Due to the sub-optimal survey period, additional Phase 2 bat and bird activity surveys were recommended, and subsequently carried out during May 2016 by a Natural England licensed bat ecologist and member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

1.1.3 The objective of this report is to provide the client with information on the known and potential bat roosts and birds nesting within the building, and to outline recommendations on how to proceed with the works in a legal and ecologically sensitive manner, should bats and birds be resent. As defined in Planning Policy Statement 9 (ODPM, 2005) (now superseded by the National Planning Policy Framework - NPPF 2012), Biodiversity and Geological Conservation sites of biodiversity conservation value and protected species are material considerations in the planning process.

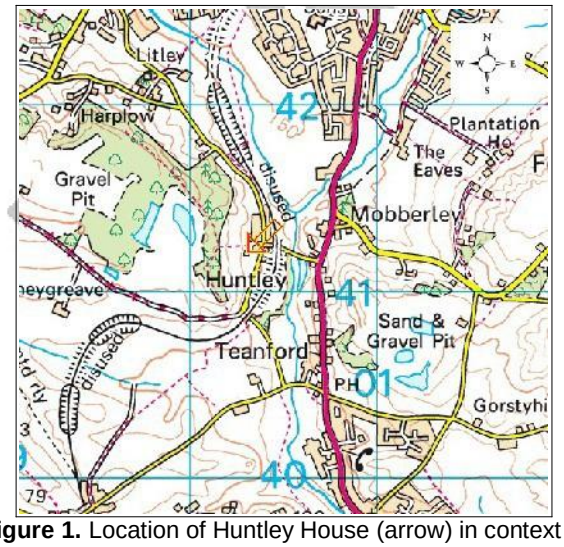

Figure 1. Location of Huntley House (arrow) in context to the surrounding landscape (source:www.gridref.org.uk).

1.1 SITE DESCRIPTION

1.1.1 The proposed application area comprises of a former curtilage barn-building of Huntley House, which is located in a semi-rural settlement of Huntley ca. 2km SW of Cheadle, and 2km NW of Tean in North Staffordshire. The structure is located along a private access which runs parallel to Huntley Lane [NGR:SK003412] and is surrounded by a low density of residential dwellings and farmland. The former Huntley Wood quarry and its associated woodland block is located immediately to the west of the site (ca.220m). The building has a footprint of ca. 192m^2 (0.0192ha) and is constructed of traditional red brick with a pitched, tiled roof and gable ends.

1.2 PROPOSED WORKS

121 The proposed works considers conversion of the existing barn-building into a dwelling. The proposed works are speculated to begin during the course of January 2016 and will be phased.

1.3 AIMS OF SURVEY

131 The main objectives of this report is to provide initial advice at the pre-acquisition stage with regards to any potential ecological impacts through development regarding protected bat and bird species under the Wildlife and Countryside Act 1981 (as amended) and/or the Conservation (Natural Habitats, &c.) Regulations 1994 (2); including species listed in the UK and local Biodiversity Action Plans (BAPs).

132 The scope of this appraisal has been determined in line with the proportional approach to ecological survey, assessment and subsequent recommendations for avoidance and mitigation of impacts, which is encouraged in the emerging 'BS 42020: Biodiversity – Code of practice for planning and development'. This report has been prepared with due consideration for various best practice guidance and methodologies including those of the Chartered Institute of Ecology and Environmental Management (CIEEM (2012)1, the emerging BS 42020 and BCT Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn) 2016.

133 The aims of the scoping survey is to provide an ecological evaluation of the building in relation to protected bat and bird species as follows:

Bats
• Probability of bats and their roost sites being present at the proposed redevelopment site i.e. buildings and trees
• To assess the roost status should bats be present.
• To assess commuting and foraging habitat that may be subject to impact from proposed development.
• To provide an overall impact assessment.

Table 1. Aims of survey in relation to bats.

134 A bat roost is interpreted as 'any structure or place, which any wild bat uses for shelter or protection' (i.e. buildings, trees, bridges, tunnels etc.). Bats tend to show a high fidelity to roosts; subsequently, legal opinion regards a roost to be protected whether or not the bats are present at the time. There are many types of roost used by temperate bats during their annual cycle: Any structures found having evidence of bats will be further evaluated to assess which of the following roost categories may be present onsite (if any):

Status	Description
• **Maternity / Nursery Roost**	used by breeding bats, where pups are born and raised to independence (Anecdotal evidence may support this prospect despite sub-optimal survey period).
• **Hibernation Site**	where bats may be found during the winter. (This is assessed within the context of this report).
• **Daytime Summer Roost**	used by males and/or non-breeding females (Seasonal limitations prevent robust analysis of this).
• **Night Roost**	where bats rest between feeding bouts during the night but are rarely present during the day.
• **Feeding Roost**	where bats temporarily utilize feeding perches and stations to eat an item of prey.
• **Transitional (or Swarming) Site**	where bats may be present during the spring or autumn (This can not be assessed within the context of this report).

Table 2. Bat roost status definitions

135 The survey protocol also considers all common wild birds that are protected under the Wildlife and Countryside Act 1981 (and as amended). This protection extends to bird nests during the breeding season, which makes it an offence to damage or destroy nests or eggs.

Birds
• Establish if birds are using the site.
• Locate nest sites, if present.
• Assess what types of activities were shown within the redevelopment site.
• Assess suitable food resources and habitat requirements.
• Provide an impact assessment, if nests are found.

Table 3. Aims of survey in relation to birds.

136 Certain rare breeding birds such as Barn Owl *Tyto alba*, are listed on Schedule One of The Wildlife and Countryside Act 1981 (and as amended). Under this legislation they are afforded the same protection as common wild birds and are also protected against disturbance whilst building a nest or on or near a nest containing eggs and unfledged young. Survey protocol considers the following:

Barn Owl (*Tyto alba)*
• Establish presence onsite.
• Establish potential nest sites (PNS).
• Locate any active roost sites (ARS).
• Locate any temporary roost sites (TRS)
• Assess potential feeding and dispersal habitats (PFH)
• Provide an impact assessment, should barn owl(s) be present

Table 4. Aims of survey in relation to Barn Owl.

1.3.7 Assessment also considers potential effects on Valued Ecological Receptors (VERs) and Zones of Influence (ZoI) during pre and post development, both onsite and off- site. The term Zone of Influence is used to describe the geographic extent of potential impacts of a proposed development.

1.3.8 Should a likely significance of negative impacts to bats and/or birds be identified during the survey period, then further surveys, mitigation and enhancement measures may be necessary to prevent, offset or reduce the degree of impact that may occur should development commence. Should bats be present onsite, then a European Protected Species (EPS) development license issued by Natural England (NE) may be required prior to any works taking place.

1.3.9 The purpose of this report will only provide a preliminary outline of a bat mitigation strategy. A detailed method statement will need to be determined through consultation with an appropriately qualified and experienced bat ecologist thereafter, to fully support the aforementioned licence application.

2. SURVEY METHODOLOGY

2.1 SUMMARY OF SURVEY METHODS

2.1.1 In accordance with BCT 3rd edition (2016) guidelines, the following survey protocol is considered appropriate to provide a full ecological evaluation of the site in order to determine the following criteria:

1. *What impact the redevelopment is likely to have on any protected species found at the site.*
2. *The need for any Natural England development licence application to be made in respect of activities concerning protected species.*
3. *Recommendations for any mitigation measures that would be required.*

2.2 PRE-SURVEY DATA SEARCH

2.2.1 Pre-survey data search provided historical records of any protected bat and bird species found within a 2km radius of the application area. Additional ecological data has been sourced to understand any constraints that the proposed planning application may have on species and habitat in the wider landscape. The National (UK) and local (Staffordshire) Biodiversity Action Plans (BAPs) were also scrutinized for protected habitats and species relevant to the application area.

2.2.2 A number of electronic sources sites were also consulted including; www.magic.gov.uk; www.naturalengland.org.uk; Google Earth and www.ordinancesurvey.co.uk.

- ***Walkover survey***

2.2.3 A walkover survey, including visual inspection of building and any trees, was undertaken to determine the availability of required resources for the protected species in the immediate area. The building was inspected both externally and internally for:

- Presence or absence of bats onsite (i.e. hibernating bats)
- Evidence and/or potential of bat roosts onsite (i.e. summer roosts)
- Whether additional surveys are required

2.3 SURVEYOR INFORMATION

2.3.1 Ecological assessment on-site was conducted by a Natural England licensed bat ecologist (CLS00836 – Level 2) and member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

The principal ecologist onsite has specialized in bat ecology for seven years, and is actively involved in scoping, presence/absence surveys, and method statement preparation with regard to planning and the law. He has a First Class Honours degree in Conservation of Biology and awarded the Vice-Chancellor prize for academic excellence. He is also an associate lecturer in ecological sciences at the University of Derby, and has undertaken a number of BCT training courses and conferences concerning bat ecology, bats and the law, mitigation and echolocation sound analysis. He is an active member of the Bat Conservation Trust (BCT) and Derbyshire Bat Conservation Group (DBCG).

Assistant ecologist(s):

- **Melissa Loughran** BSc (Hons).
- **Louise Cox** BSc undergraduate at University of Derbyshire
- **Carrie-Ann Rogers** BSc undergraduate at University of Derbyshire

2.4 FIELD SURVEYS

<table>
<tr><th>Jan</th><th>Feb</th><th>March</th><th>April</th><th>May</th><th>June</th><th>July</th><th>Aug</th><th>Sept</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td colspan="3">Inspection of Hibernation roosts- semi optimal survey</td><td>Limited activity-sub optimal</td><td colspan="5">Summer roost emergence & re-entry surveys -Optimal survey period</td><td>Limited activity -sub optimal</td><td colspan="2">Hibernation roosts - semi optimal survey</td></tr>
<tr><td colspan="12">Internal roost surveys are possible / Trees are best surveyed during Winter</td></tr>
</table>

Table 5. Annual survey optimality for bats.

2.4.0 All field surveys were conducted during an optimal period of the bat surveying season and with sufficient intervals between surveys to allow for any stochastic events over space and time. Weather conditions were optimal throughout all survey periods (Temp: >8°C / dry conditions). Assessment incorporated the use of binoculars, torch, endoscope and ladders where necessary.

2.4.1 Habitat survey

2.4.1.1 The survey assessed habitat onsite in context to the wider landscape with regard to any important bat roosts, commuting/foraging areas that may be affected by the proposed development.

2.4.2 Roost survey

2.4.2.1 All potential roost structures (i.e. buildings) onsite or within the Zone of Influence of the proposed development were assessed, based on standard methodologies set out by Natural England, the Bat Conservation Trust (BCT) and the Joint Nature Conservation Committee (JNCC). External inspection considered suitable ingression points where species such as bats and birds could gain entry into any structures to roost and/or nest.

- Condition of roof i.e. missing or raised roof tiles;
- Condition of windows and doors i.e. broken panes;
- Potential ingression points around ridges and apex of the buildings;
- Any anecdotal evidence of bats I.e. droppings, grease marks, feeding remains;
- Any evidence of birds i.e. nest material, droppings.

2.4.2.2 The external inspection incorporated visual assessment with the use of torch, endoscope and ladders to ascertain the following:

- Any potential internal roost features i.e. non-illuminated areas, joints, crevices, beams and cavities.
- To locate potential roost/nest sites;
- To listen for any bats and birds;
- To examine floors, walls and structural elements for anecdotal evidence i.e. droppings, urine stains, corpses and feeding remains.

- ***Building Rating***

2.4.2.3 In the absence of any evidence, trees and structures were assigned a rating of suitability from negligible to high potential for supporting bats. The rating is based on the number and type of features suitable for use by bats (such as rot holes, cavities and raised bark), location of the structure in the surrounding landscape and surveyor's experience (e.g. a structure with a high level of regular disturbance with few opportunities for access by bats, that is in a highly urbanised area with few or no mature trees, parkland, woodland or wetland would generally equate to having negligible potential. Conversely, a pre 20th century or early 20th century building with many features suitable for use by bats close to good foraging habitat would have high potential).

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation[b]). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.[c]	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

[a] For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.
[b] Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.
[c] This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

Table 6. Habitat assessment (BCT, 2016)

2.4.3 Activity surveys

2.4.3.1 Under new BCT guidelines (2016), the number of prescribed activity surveys are based on initial overall building rating and suitability to support roosting bats:

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.

Table 7. Survey effort in relation to roost suitability (BCT, 2016).

2.4.3.2 Activity surveys combined an overall assessment of any *in-situ* roost onsite, and any other Valued Ecological Receptors (VERs) considered to be within the Zone of Influence (ZoI) of the development, whilst considering any important commuting and foraging routes used by bats.

2.4.3.3 All activity surveys were undertaken in accordance with the guidelines published by the BCT 3rd edition 2016 to ascertain the following:

- Determine the presence/absence of species, i.e. the species present in a given area
- Determine the intensity of bat activity both spatially and temporally
- Determine the type of activity i.e. foraging (by feeding buzzes);commuting (by high directional pass rates); mating (by mating social calls)
- Find roosts by tracking back bat flight paths or observing commuting range

2.4.3.4 Evidence will be used to determine whether a European Protected Species (EPS) licence will be required to ensure legal compliance during development. This will also include identifying which mitigation measures [if any] would be most appropriate.

- ***Dusk emergence bat survey***

2.4.3.5 The object of this survey is to detect active bats leaving possible roost sites identified in the external and internal surveys. This was achieved by:

- Being at the site 1 hour before sunset.
- Listening for social calls at potential roost sites.
- Standing at different transect points around the buildings, to record any emerging bats and egress points.
- Standing at different transect points to assess foraging/commuting areas.
- Carrying out survey up to 1.5 - 2 hours after sunset to holistically consider interspecific differences between different bat species

- ***Dawn re-entry bat survey***
  - Being at the site 2 hours before sunrise.
  - Listening for social calls at potential roost sites.
  - Standing at different transect points around the buildings, to record any swarming behaviour around potential re-entry points.
  - Standing at different transect points to assess foraging/commuting areas.

2.4.3.6 Bat ultrasound data was gathered using a number of heterodyne units (Batbox Duet and SSF Bat2) and real-time recording devices (*EcoObs* Batcorder). Real time recordings were subsequently analyzed using BatSound v4.03 and statistical algorithm analysis was carried out using *EcoObs* BcAdmi, BatIdent and BcAnalyze software to provide an unbiased discrimination of species onsite.

- ***Weather conditions and timing***

2.4.3.7 All surveys were carried out during optimal survey conditions, with a minimum interval of two weeks between surveys to allow for stochastic events over space and time.

3. RESULTS

3.1 PRE-SURVEY DATA SEARCH

3.1.1 Designated sites

3111 There are no international (i.e. SAC, SPA, or Ramsar Site), national (i.e. SSSI, or NNR) or local (i.e. Local Nature Reserve (LNR)) statutory designated nature conservation sites recorded within 2km of the application site. There are four non-statutory designated nature conservation sites within 2km of the proposed application site that include three Sites of Biological Importance (SBI) and one Biodiversity Alert Site (BAS). None of these are considered as being within the immediate Zone of Influence, other than Huntley Wood & Quarry SBI, which sits marginally within the influence zone:

Huntley Wood & Quarry SBI (SJ988416: 250m West); Non- statutory designated site of importance for nature conservation. Oak-Birch ancient and semi-natural woodland. - Huntley Quarry and Wood contain a number of protected, UKBAP and SBAP species including badgers, bats and solitary bees and wasps. It also contains a population of the proposed UKBAP species, the dingy skipper butterfly. Important at County level.	- Huntley Wood is also listed on the Ancient Woodland Inventory (AWI) asAncient and Semi-Natural Woodland (ASNW). There is also a site of regionally important geology known as Huntley Railway within 1km of the survey site. - The geology of the site is that of Triassic Sherwood sandstone the Hawksmoor Formation. The quarry itself is designated as RIGS (regionally important geological sites), for the exposure of the Hawksmoor Formation and its close proximity to older coal measure rocks.(http://www.sbap.org.uk/sgap/pdf/SGAP.pdf).
Draycott Common Wood BAS (SJ996412)	Non- statutory designated site of potential importance for nature conservation. Important at County level.
Freehay Wood SBI (SK018416: 1.2km NE)	**Commonside Quarry SBI** (SJ989421).

Table 8. Designated sites in a 2km radius.

3.1.2 Protected species

3121 Pre-survey data finds seven British bat species are currently given UK BAP (2007) Priority Species Status. National Biodiversity Network and Staffordshire Wildlife Trust (SWT) records show that 11 of the 17 resident UK bat species occur in the county with two UK BAP species being recorded within 2km of the proposed application area (highlighted in orange):

UKBAP	Common name	Species	Recorded within 2km
☑	BROWN LONG-EARED BAT	*Plecotus auritus*	☑
☑	BARBASTELLE BAT	*Barbastella barbastellus*	☒
☑	BECHSTEIN'S BAT	*Myotis bechsteinii*	☒
☑	NOCTULE	*Nyctalus noctula*	☑
☑	GREATER HORSESHOE BAT	*Rhinolophus ferrumequinum*	☒
☑	LESSER HORSESHOE BAT	*Rhinolophus hipposideros*	☒
☑	SOPRANO PIPISTRELLE	*Pipistrellus pygmaeus*	☒

Table 9. UKBAP Bat species recorded within Staffordshire.

3.1.2.2 A further four/five bat species that are not currently given UK BAP consideration are also recorded within the county, whilst SER data show two of these species are recorded within a 2km radius of the site (highlighted in orange):

UKBAP	Common name	Species	Recorded within the county
☒	NATTERER'S BAT	*Myotis Nattereri*	☑
☒	DAUBENTON'S BAT	*Myotis daubentonii*	☑
☒	WHISKERED/ BRANDT BAT	*Myotis mystacinus/brandtii*	☑
☒	COMMON PIPISTRELLE	*Pipistrellus pipistrellus*	☑

Table 10. Non UKBAP Bat species recorded in Staffordshire.

3.1.1.3 Pre-survey data show no records of any bat roosts within the application area itself. Barn Owl (*Tyto alba*) is recorded within a 2km radius of the application area.

3.2 FIELD SURVEYS

Figure 2. Aerial view of "Huntley House" (red star) in context to habitats and the wider landscape. NB. Huntley Quarry and Wood SBI (yellow) ca.250m west (source:google earth).

3.2.1 Habitat description

3.2.1.1 The building subject to redevelopment falls within the curtilage of Huntley House, which is situated in a semi-rural setting of the Staffordshire Moorlands. It falls under the Regional (Joint) Character Area of 64 Potteries and Churnet Valley, and is located amongst 'Ancient Slope and Valley farmlands' landscape character types. The surrounding landscape comprises of lowland heath and agricultural farmlands with a number of woodland blocks and water-bodies present. A number of operable and defunct sand and gravel quarries are also present in the immediate landscape. There is good connectivity to the wider landscape which is considered as providing a number of valuable resources for local bat and bird populations.

Figure 3. Looking west to Huntley Wood SBI from SW corner of proposed application area.

3.2.2 Roost survey

- *External inspection*

3.2.2.1 The building subject to redevelopment is a rectangular stand-alone two-story, double brick structure with a continuous pitched and tiled roof section running north to south. A more recent single-story, brick built extension is attached onto the northern gable-end with a large metal sliding door present, with a further extension being recorded on the southern gable-end.

3.2.2.2 A number of wooden doors and windows are located across east and west elevations with gaps recorded around framework and in-between air bricks, providing potential ingression points for bats and birds. Additional brick-built lean-to extensions are present along the eastern elevation with a mixture of mono-pitched asbestos and corrugated sheet roofing.

3.2.2.3 A number of cracks in the brick-work were evident around the building, particularly at gable-ends and on the NE corner, where open windows and a broken door were also recorded. A number of lifted and raised roof tiles were noted across both east and west facing pitches with open ridge tile vents also present, allowing good ingress potential for bats and birds.

3.2.2.4 External inspection assess the building as having moderate to high features suitable for crevice-dwelling bats, although NO evidence of bats was recorded. Barn Swallow was recorded utilizing recesses between ventilation brick vents along the eastern elevation. No evidence of barn owl was recorded.

Photographs of external inspection

Figure 4. Western elevation

Figure 5. NW elevation.

Figure 6. Eastern elevation.

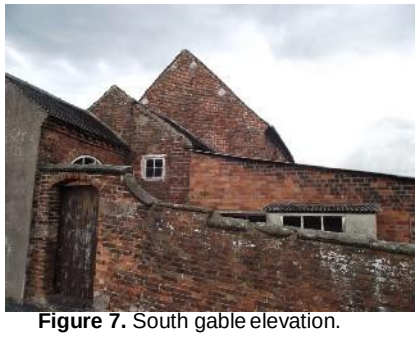

Figure 7. South gable elevation.

- *Internal inspection*

3.2.2.5 The main central barn-building section comprises of former cattle/ livestock compartments at ground level, with white-washed brick walls. The entire area is open to roof level with exposed Queen post timber truss work visible. The area was seen to be semi-illuminated by light ingress from windows along the west elevation, and voluminous in size, with good height for pre-emergent flight bat species (i.e. brown long-eared bat). The two end supporting walls were found to have numerous cracks and crevices evident providing potential for crevice dwelling bats. Plastic sheeting membrane was found to be fitted to the underside of the roof section across it's entirety, providing a potential intermediary layer beneath roofing tiles for bats.

3.2.2.6 An elevated section of staging is present on the southern section which was inspected via use of a ladder. No evidence of bats was recorded. A small number (<5) of butterfly wings were recorded at ground level near to the staging, which may indicate possible feeding remains, although no evidence of bat droppings were recorded alongside them.

3.2.2.7 A vertical wooden ladder was located in the southern compartment extension which gives access to an upper rood void compartment. Once again the roof void was found to be voluminous and dark, and considered highly suitable for void dwelling bats. This area was found to be covered in detritus although no evidence of bats was recorded. Missing brick-work around the internal wall apex points provide continuous fly-through potential into all sections of the building. A number of crevices were evident in-and-around pinning points between the retaining wall and roof line, providing opportunities for crevice-dwelling bats. Inspection via endoscope found no evidence of roosting bats.

3.2.2.8 The building extension section on the north gable-end was found to be used as a store room on the ground-floor area, with wooden stairs leading up into an internal roof void. Once again, the area was considered as providing excellent opportunities for void dwelling bats, although no evidence of bats (i.e. droppings or staining) was recorded.

3.2.2.9 Evidence of deceased House Sparrow (*Passer domesticus*) was recorded internally, and thought to have been inadvertently entombed inside the building, with little evidence of notable ingression points recorded overall. No evidence of Barn Owl was recorded.

Photographs of internal inspection

Figure 8. Central ground-floor section.

Figure 9. Central ground-floor section looking south

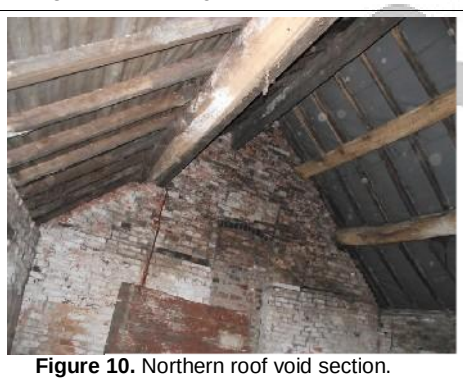

Figure 10. Northern roof void section.

Figure 11. Northern ground-floor section.

Figure 12. Northern roof void section..

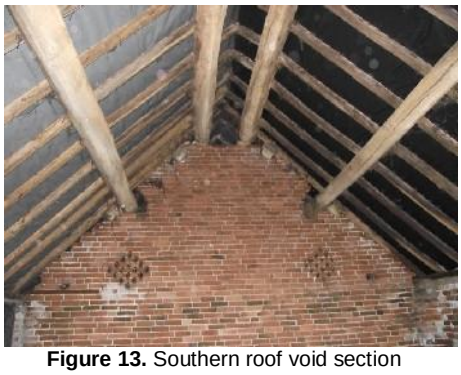

Figure 13. Southern roof void section

OVERALL BUILDING RATING *In the absence of any evidence, structures are assigned a rating of suitability from negligible to high potential.*	**BATS**	• HIGH POTENTIAL
	BIRDS	• LOW / MODERATE – for individual common species
	BARN OWL	• LOW POTENTIAL – lack of ingresspotential

3.2.3 Activity surveys

3.2.3.1 As the overall rating was considered as having high potential for bats, three activity surveys (2 x dusk / 1 x dawn) were subsequently assigned to the structure.

3.2.3.2 Activity surveys recorded low levels of commuting and foraging common pipistrelle during dusk surveys, compared to high sustained levels during dawn survey. **NO** bats were seen emerging or re-entering the structure proposed for development. Internal surveillance recorded **NO evidence of any high conservation status bat roosts** were recorded *in-situ* within the proposed development despite being rated as having high potential.

Survey 1 - Dusk emergence					**DATE: 02.05.2016**
SUNSET:	20:48hrs	**TEMP START**	16.7°C	**CLOUD COVER START**	40%
START TIME	20:30hrs	**TEMP FINISH**	17.5 °C	**CLOUD COVER FINISH**	50%
FINISH TIME	22:45hrs	**WIND SPEED**	<1	**PRECIPITATION**	NIL

Main highlights:			
Species recorded:	***(%)***	***Activity***	***Roost***
common pipistrelle *Pipistrellus pipistrellus*	*100%*	*Single Common pipistrelle recorded intermittently foraging over sight between 21:03 – 22:10hrs*	☒
Brown long-eared *Plecotus auritus*	-	*Non-echolocating bat heard at 21:32 – possible Brown long-eared bat but not confirmed.*	☒
commuting/ foraging activity:	• *Overall foraging and commuting activity was seen to be low onsite, with a total of eight bat passes (N8) recorded during entire survey period.*		
Roost status:	• *No bats were recorded emerging from the building* • *No evidence of pre-emergent flight during periodic internal inspection.*		

Survey 2 – Dawn re-entry					**DATE: 18.05.2016**
SUNRISE	04:33hrs	**TEMP START**	9°C	**CLOUD COVER START**	80%
START TIME	02:30hrs	**TEMP FINISH**	9°C	**CLOUD COVER FINISH**	80%
FINISH TIME	04:48hrs	**WIND SPEED**	<1	**PRECIPITATION**	NIL

Main highlights:			
Species recorded:	***(%)***	***Activity***	***Roost***
common pipistrelle *Pipistrellus pipistrellus*	*100%*	*Sustained activity throughout the entire survey period until 04:04hrs. Thereafter the site became quiet with only a few transient pips recorded commuting over site shortly before dawn*	☒
commuting/ foraging activity:	• *Overall foraging and commuting activity was seen to be High onsite, with a good deal of foraging predominantly recorded along the western elevation.*		
Roost status:	• *No bats were recorded re-entering the building* • *No evidence of pre-emergent flight during periodic internal inspection.*		

Survey 3 - Dusk emergence					DATE: 01.06.2016
SUNSET:	21:22hrs	TEMP START	14.4°C	CLOUD COVER START	80%
START TIME	21:00hrs	TEMP FINISH	12 °C	CLOUD COVER FINISH	80%
FINISH TIME	22:30hrs	WIND SPEED	<1	PRECIPITATION	NIL

Main highlights:			
Species recorded:	***(%)***	***Activity***	***Roost***
common pipistrelle *Pipistrellus pipistrellus*	*100%*	*Early emergence of Common pipistrelle recorded entering the site from the south indicating a roost is present nearby.* *Low levels of Pip45 recorded intermittently throughout the survey period*	☒
Noctule *Nyctalus noctula*	*100%*	*Heard intermittently commuting over site shortly around sunset.*	☒
commuting/ foraging activity:	• *Overall activity was seen to be low onsite, with a total of thirty six bat passes (N36) recorded over the survey period.* • *No bats were recorded emerging from the building subject to redevelopment.*		

Overall impact / Roost status:	• LOW - No evidence of roost(s) recorded in the building subject to redevelopment or within the ZoI.
Overall foraging & commuting	• MODERATE TO HIGH – sustained foraging recorded along the western elevation during dawn survey by individual common pipistrelle

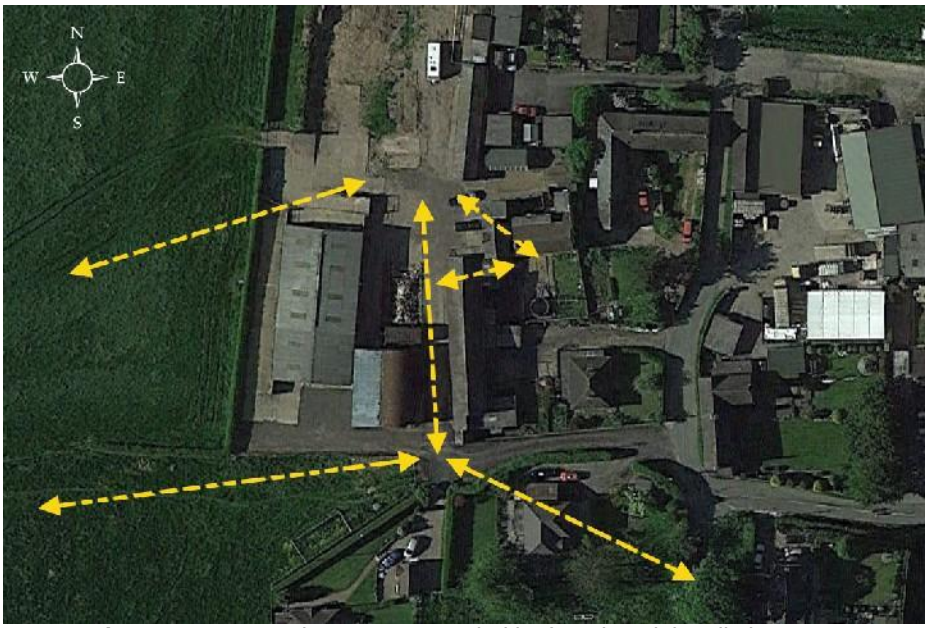

Figure 14. Commuting routes recorded by foraging pipistrelle bats.

4. IMPACT ASSESSMENT

4.1 CONSTRAINTS ON SURVEY INFORMATION

4.1.1 There were no survey constraints encountered during the inspection and survey period. Overall assessment of building in relation to bats and birds is considered as being robust.

4.2 CONSTRAINTS ON EQUIPMENT USED

4.2.1 No constraints were present with regards to the equipment used during the scoping effort (i.e. bat detectors, endoscope, ladders and high powered binoculars).

4.3 POTENTIAL IMPACTS OF DEVELOPMENT

4.3.1 Designated sites

4.3.1.1 The application is situated ca.250m east of Huntley Quarry and Wood which is designated as a Site of Biological Importance (SBI) and sits marginally within the ZoI. However, based on a small scale development, **NO impact** to any statutory or non-statutory designated areas is predicted under the proposed application. The scheme will retain the size and physical form of the existing building's footprint, with no additional land up-take considered. **NO** impact to any other VERs within the ZoI is also considered.

4.3.2 Roosts

4.3.2.1 Whilst the overall building rating was assessed as being high, with numerous features suitable for both crevice and void dwelling bats, **NO** evidence of any high conservation status bat roosts were recorded *in-situ* within the proposed development area.

BATS		
Short-term: Disturbance	**Long-term: Roost modification**	***Long-term: Roost loss**
LOW	**LOW**	**LOW**

*(*The impact of loss of roosts on bat populations is poorly understood and difficult to study. There is variation in the impacts depending on the particular species of bat with some being more sensitive to disturbance than others. Synanthropic species such as Pipistrelle bats for example are crevice roosters, and are known to move between roost sites (such as maternity roosts). These bats may find it easier to locate suitable new roosts as their requirements are not as specific as other species).*

BIRDS		
LOW TO MODERATE	**LOW TO MODERATE**	**LOW**
BARN OWL		
NEGLIGIBLE	**NEGLIGIBLE**	**NEGLIGIBLE**

4.3.2.2 No evidence of Barn Owl was recorded onsite during the survey period building inspection.

4.3.3 Foraging and commuting habitat

4.3.3.1 Based on a small scale development, **NO immediate** impact on potential foraging and commuting habitat for bats is predicted with no additional land uptake considered. However, the site was seen to be actively used by commuting and foraging bats, and careful consideration to a sensitive lighting design to avoid excessive light-spill should be made a condition of the application (see section 5.4.6).

4.4 LEGISLATION AND POLICY GUIDANCE

4.4.1 All UK bat species are legally protected, by both domestic and international legislation (See Appendix 5). In the UK, all species are listed on Schedule 5 of the the Wildlife and Countryside Act 1981 (as amended), and are therefore subject to the provisions of Section 9, which make it an offence to:

- Deliberately capture, injure or kill a bat
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat
- Intentionally or recklessly obstruct access to a bat roost

5. RECOMMENDATIONS

5.1 FURTHER SURVEY

5.1.1 Assessment onsite was undertaken during an optimal survey period and considered to be robust and representative of protected species currently onsite. **NO** further survey effort regarding bats is considered.

5.1.2 **NO** further survey recommendations are considered for protected bird species (including Barn Owl), on the proviso that care and vigilance is carried out during works (see section 6).

5.2 MITIGATION MEASURES

5.2.1 Proposed mitigation for roost sites

5.2.1.1 Mitigation should be proportionate, justifiable and avoid or minimize any harm to species found during works, and prevent any long-term detrimental effect on any local population. Mitigation measures for bat roost sites should be proportionate to:

- Type and scale of works and predicted impacts on bats
- Size, nature and complexity of the development site
- Likelihood of bats being present or affected
- Species and numbers of individuals concerned
- Type of roost and/or habitat affected.

5.2.1.2 Whilst no evidence of roosting bats were recorded within the building subject to development, a high level of sustained foraging and commuting activity was recorded during the dawn survey. Subsequently, there is moderate potential that the building may intermittently serve as a transient satellite roost for individual bats over space and time.

5.2.1.3 This is particularly relevant to the more opportunistic common pipistrelle bat, which is a known to switch between roosts, and exploit a wider spectrum of roost environments than most other bat species. Common pipistrelle is considered both common and widespread on a local, regional and national level.

5.2.2 Proposed mitigation for foraging and commuting habitat.

5.2.2.1 As the proposed development is situated in prime habitat for foraging and commuting bats, proposed works should give careful consideration to excessive light-spill and disturbance (i.e. noise pollution) onto the adjacent SBI woodland and surrounding habitat(s) during pre and post development (see section 5.4.6).

5.3 MITIGATION LICENSES

5.3.1 As **NO** bats were recorded roosting within the building proposed for development, it will **NOT** be necessary to apply for a European Protected Species (EPS) licence from Natural England.

5.3.2 However, it should be noted, that the building pertains to features suitable for both crevice and void dwelling, synanthropic bats. As such, precautionary site safe-guard measures are recommended during development, and should consider the potential utilization of the building over space and time by individual roosting bats.

5.4 PRELIMINARY RECOMMENDATIONS

5.4.1 It is recommended that a number of non licensable site safe-guard measures for both bats and birds are implemented during the development stages:

- ***Bats***
- ***Onsite supervision***

5.4.2 It is considered prudent to undertake a precautionary **'soft demolition'** approach to any roof sections (or any demolition works that may encroach into roof sections). This should be carried out under the supervision of suitably qualified bat ecologist, in the event that individual bats may be present. All building contractors should be made aware of the possible presence of individual bats, their legal protection and of working practices to avoid harming bats, before any work commences.

- ***Timing of works***

5.4.3 Although no physical evidence of roosting bats was recorded in the building structure during the survey period (and therefore unlikely that bats will be encountered during the proposed development), it is considered prudent to undertake any works that may encroach into the roof section outside the optimal period of May to mid August, when bats and young are established in summer maternity roost. Ideally works should be undertaken during autumn/winter (late Sept to Oct) to early spring (Jan to March).

5.4.4 **Should any bats be discovered during works** (or suspicion arise about the possible presence of bats, i.e. between gable-end cavities and intermediate layers obscured by roofing membrane)**,** then **ALL work must cease immediately** and a licensed bat ecologist should be consulted. Thereafter, the named ecologist should re-assess the structure, and determine whether works can continue without licence, or whether it will be necessary to apply for an EPS licence from Natural England.

- ***Receptor site***

5.4.5 As a site safeguard measure, it is recommended that a hibernation receptor bat box (Schwegler 1FW) is fitted on site, in the unlikely event that individual bats are unexpectedly discovered during works. The use of standard capture and exclusion methods may be necessary, and should be undertaken by a licensed bat ecologist in-order to transfer any such individuals to the aforementioned receptor box for safe-guarding.

- ***Lighting***

5.4.6 No impact to foraging or commuting habitat of bats is predicted under the proposed scheme providing a sensitive post lighting design is implemented. Mitigation should consider the use of low energy LED lighting to minimize light spill around the building. Alternatively, Low-pressure sodium lamps (SOX) are recommended, which should be fitted with hoods to direct the light below the horizontal plane to minimize light-spill. Where necessary any security lighting will be less than 200 lumens (150 watts) and placed on a timer setting and faced down down to reduce sky glow. Height of any columns around the development will not exceed eight metres oraging and commuting strategy of local bat species.

- ***Biodiversity enhancement***

5.4.7 In accordance with the Natural Environment and Rural Communities (NERC) Act 2006, development proposals should seek, where possible, to enhance opportunities available to the local bat population. It is recommended that at least three bat boxes are incorporated into the curtilage of Huntley House, being fitted to either mature trees or to external elevation of buildings.

5.4.8 Recommended commercially available woodcrete Bat boxes, such as schwegler 1FFH and the improved treble crevice bat box (The Nest Box company) for example, are considered to be suitable receptors for crevice-dwelling bats. These should be sited along north-east and a south-east elevations at a height of ca. 4-6m where possible.

5.4.9 Further information of increasing biodiversity prospects for roosting bats can be found on the Bat Conservation Trust website: http://www.bats.org.uk/pages/new_build.html.

- ***Birds***

5.4.10 Consideration should be given to nesting birds which are protected under the Wildlife and Countryside Act 1981 (as amended).The barn-building provides **moderate** ecological value for individual nesting birds which are common and widespread throughout the UK. Ideally, any proposed works should be undertaken outside the bird breeding season (March to August inclusive).

5.4.11 Where this is not possible, then a check for nesting birds should be undertaken by an ecologist prior to works. Should any active bird nests be found, then these should be left undisturbed until offspring have fully fledged. It may be necessary to enforce an exclusion work zone of 5m to reduce disturbance and minimize potential displacement of nesting birds.

5.4.12 In order to increase long term sustainability for local bird populations, a minimum of four nesting boxes (suitable for different species) should be incorporated into the curtilage of "Huntley House". These should be positioned at ca. 2-4m above ground level, where possible.

5.4.13 No evidence of Barn Owl was recorded and no further recommendations are given with regard to this species.

- Further information regarding nest boxes can be found on the RSPB website: http://www.rspb.org.uk/advice/helpingbirds/nestboxes/smallbirds/siting.aspx

- ***Landscaping***

5.4.14 Any landscaping relating to the proposed development should encompass native grasses, trees and shrub species to encourage trophic food webs and increase foraging potential for species. No plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 should be planted during any landscaping within this development.

- For further details of Schedule 9 plants visit the Defra website: www.defra.gov.uk/wildlife-pets/non-native.

6. REFERENCES

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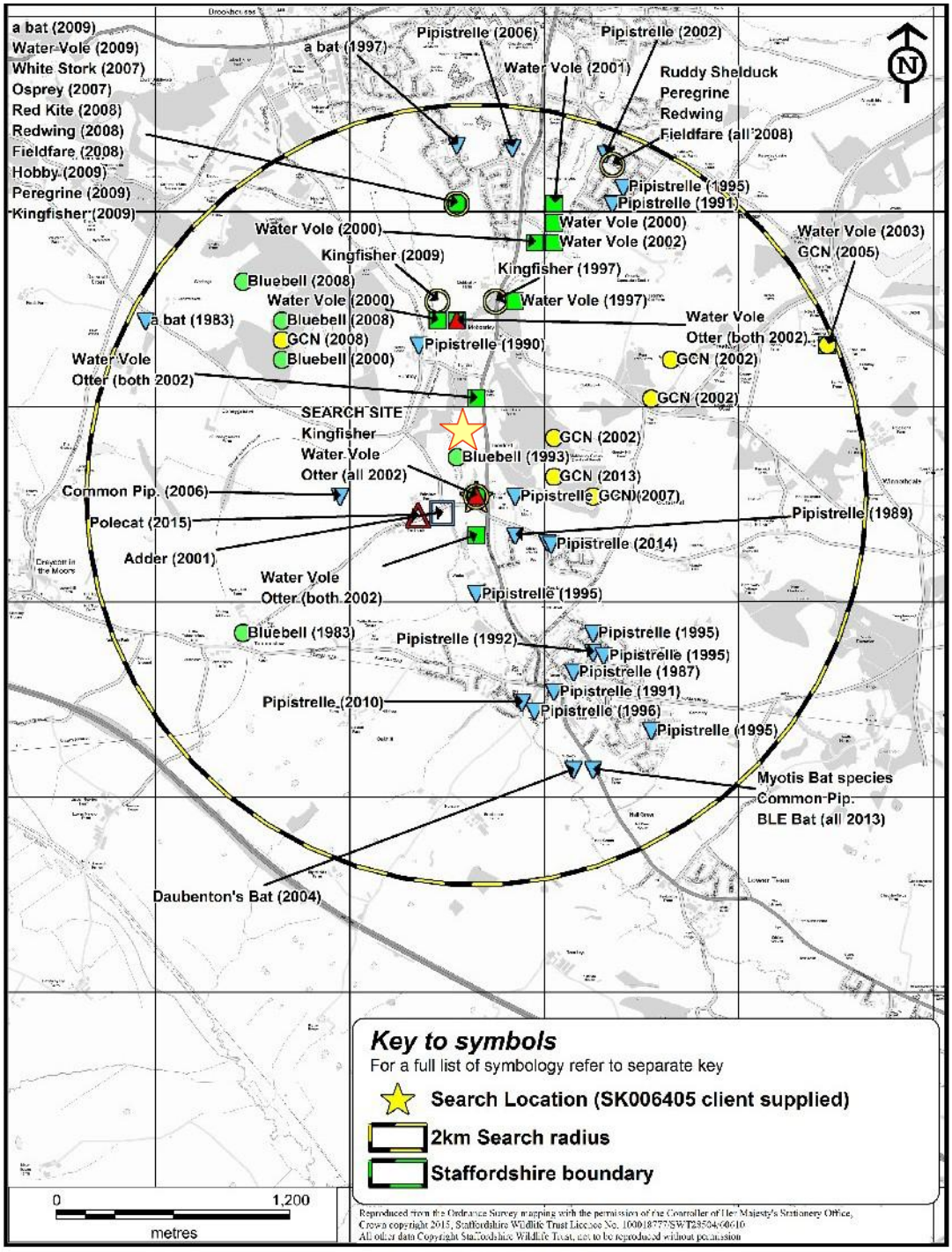
7. APPENDICES

Appendix 1 – Maps & forms

No architectural plans were made available at the time of writing.

SER data search map (2km)



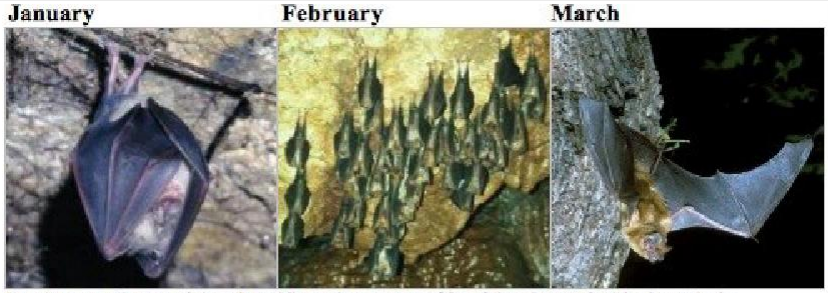
Appendix 2 – Policy guidelines

PAS 2010	*The published 'PAS 2010' 'Planning to halt the loss of biodiversity' which is the government's new policy aimed at all authorities and developers involved in the planning process in the UK to halt biodiversity decline by 2010 and deliver net biodiversity gains as part of the green infrastructure provisions.*
National Planning Policy Framework, Section 11:	*The recently published framework in 2012, replaces the previous Planning Policy Statement 9. Section 11: Conserving and enhancing the natural environment, reaffirms the Governments commitment to maintaining green belt protections and preventing urban sprawl, retains the protection of designated sites and preserves wildlife, aims to improve the quality of the natural environment, and halt declines in species and habitats, protects and enhances biodiversity and promotes wildlife corridors.*
Article 10 of the EC Habitats Directive:	*The published Article requires government to develop features such as 'stepping stones' on the landscape, such as clusters of ponds, tracts of rough grassland or scrubland and vegetated railway line embankments.*
Wildlife and Countryside Act 1981:	*All species of bat are fully protected under the Wildlife and Countryside Act 1981, the European Conservation (Natural Habitats etc.) Regulations 1994, and the Countryside and Rights of Way Act 2000. This legislation makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.*
Conservation of Habitats and Species Regulations (2010)	*The Conservation of Habitats and Species Regulations 2010 consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994, in respect of England and Wales. It is an offence to possess, sell or offer, or transport for sale any European species of bat or any part derived from such a species. These Regulations also remove the 'incidental result defence'. In other words, it is no longer a defence to show that the killing, capture or disturbance of a species covered by the Regulations or the destruction or damage of their breeding sites or resting places was the incidental and unavoidable result of a lawful activity. Natural England can grant European Protected Species (EPS) licences in respect of development to permit activities that would otherwise be unlawful.*
Natural Environment and Rural Communities Act (2006)	*Under Section 40 of the Natural Environment and Rural Communities Act (2006), public bodies, including Local and Regional Planning Authorities, have a duty to 'have regard' to the conservation of biodiversity in England when carrying out their normal functions, which includes consideration of planning applications. In compliance with Section 41 of the Act, the Secretary of State has published a list of species considered to be of principal importance for conserving biodiversity in England. This is known as The England Biodiversity List, all of which make up the UK BAP Priority Species. Regional Planning Bodies and Local Planning Authorities will use it to identify the species that should be afforded priority to maintain, restore and enhance species and habitats.*
Bird legislation	*Most resident nesting birds are protected under the Wildlife and Countryside Act 1981, which protects birds, nests, eggs and nestling's. Some rarer species, such as barn owls, are afforded extra protection.*

Table A. Policy guidelines.

Appendix 3 – Annual life cycle of a temperate bat

January **February** **March**



Jan: Bats spend most of the winter hibernating, a state of inactivity characterised by lower body temperature, slower breathing, and lower metabolic rate. **Feb:** Bats are still hibernating. They have little fat left to live off of now. They may leave the roost on warmer nights to find food and a drink of water. **March:** Bats may begin to emerge and signs of limited activity can be seen. There are small numbers feeding as it gets warmer. In bad weather, they may become torpid.

April **May** **June**

April: Bats have mainly come out of hibernation and are hungry and active, feeding on most nights. They may be moving between several roost sites. They may become torpid (cool and inactive) again when cold. **May:** Bats are fully active and feeding. Females start forming maternity colonies and looking for suitable nursery sites, such as buildings or trees. Males will roost on their own or in small groups. **June:** Female bats usually give birth to a single pup, which they feed on their milk. Young bats are very small (less than an inch) with thin, slightly grey fur. Adult bats will catch thousands of insects each in a night.

July **August** **September**

July: Mothers continue to suckle young. Some young are growing fast and almost full-size; others are still very small. At around three weeks old, young bats are sometimes found on the ground as they learn to fly. **Aug:** At six weeks old, the young bats begin to catch insects for themselves and no longer need their mothers' milk. The summer maternity colonies begin to disperse and bats may move to mating roosts. **Sept:** Mating season begins, with males of most species using special mating calls to attract females, which can include purrs, clicks, and buzzing. Bats are also concentrating on building up fat stores for the coming months.

October **November** **December**

Oct: More mating is taking place, and building up fat reserves is becoming crucial to survive the winter season. Bats are seeking suitable hibernation sites, and beginning periods of torpor. **Nov:** Periods of torpor are lasting longer. Some begin hibernation, to save energy over the colder months, when insects are harder to find. They are using stored fat as fuel. **Dec:** Bats are hibernating. They may roost on their own or in small groups, often in cool, quiet places like disused buildings, old trees or eaves, where they hopefully won't be disturbed. **(Source: Bat Conservation Trust).**

8. CONDITIONS & DISCLAIMERS

Services

8.1 This statement has been prepared with all reasonable skill, care and diligence, within the terms of the contract with the client. The actions of the surveyor on site and during the production of the report were undertaken in accordance with the Code of Professional Conduct of the Chartered Institute of Ecology and Environmental Management (www.cieem.org.uk). No part of this document may be reproduced without the prior written approval of:

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8.4 The report will purport not to express any opinion or comment as to the condition or structural integrity of any building; and no reliance should be made on any such comments other than description regarding suitability of species.

8.5 Every attempt has been made to provide an accurate ecological assessment under the current wildlife legislations at the time of surveying. The author cannot be made accountable for stochastic events over space and time.

8.6 The author remains impartial to any decision making and attempts only to make recommendations in the interests of conserving protected species and biodiversity, whilst acknowledging sustainable development.