



Glaven Ecology



## Barn at Hanworth Common

Protected Species  
Survey

Prepared by  
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on behalf of  
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Architectural Services

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Version	Status	Changes	Date	Author
1.1	Draft	Site visit and desktop results	05/07/2022	Carolyn Smith MSc, BSc (Hons), MCIEEM
1.2	Draft	Nocturnal survey results	05/09/2022	Carolyn Smith MSc, BSc (Hons), MCIEEM
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*The data contained within the report are accurate to the best of our knowledge and have been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management’s Code of Professional Conduct.*

*The report conforms to the British Standard 42020:2013 Biodiversity – Code of practice for planning and development.*

*We confirm that any opinions expressed are our best and professional true opinions. This report has been prepared by an ecology specialist and does not purport to provide legal advice. Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that animals and plants can migration/establish and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.*

# 1 Summary

- 1.1 Glaven Ecology was commissioned to undertake an ecological appraisal incorporating a Preliminary Roost Assessment (PRA) on a barn at Hanworth Common, Hanworth, NR11 7HP. The initial survey work was completed by Carolyn Smith BSc. (Hons) MCIEEM on 15<sup>th</sup> June 2022.
- 1.2 Follow-up emergence surveys were undertaken on 20<sup>th</sup> July 2022 and 17<sup>th</sup> August 2022 and a dawn re-entry survey on 4<sup>th</sup> August 2022.
- 1.3 Two common pipistrelle bats were observed emerging from two different areas and two brown long-eared bats were seen to emerge from the same tile on the northern aspect.
- 1.4 The roosts were assessed as being two common pipistrelle day roosts and a brown long-eared day roost and it is considered that the works will have a low impact on local bat populations.
- 1.5 The proposed development would result in the destruction of a bat resting place (i.e. a roost) as would be considered an offence under Article 12(1) of the Habitats Directive and its UK enactment, the Conservation of Habitats and Species Regulations 2010.
- 1.6 The developer will need to apply for a European Protected Species (EPS) mitigation licence from Natural England to legally proceed with the works.
- 1.7 There was a barn owl observed entering the central area of the barn and chicks were heard calling in the eastern end. Wood pigeons and a flycatcher was observed nesting in the ivy on the southern/western aspect of the barn.
- 1.8 No other protected species were assessed to be present on site.
- 1.9 The site sits within the outer limit of a SSSI Impact Risk Zones for Gunton Park Lake (2900m southeast) and Felbrigg woods (3050m north). However, it does not fall into the categories requiring further consultation with Natural England.
- 1.10 Full mitigation will be proposed in the EPS mitigation licence, other recommendations include permanent provision for the barn owls, the use of type 1F bitumen lining for roofs, and a low level lighting scheme.
- 1.11 Enhancements include bat and bird boxes.

## 2 Introduction

### 2.1 Background

2.1.1 Glaven Ecology was commissioned to undertake an ecological appraisal incorporating a Preliminary Roost Assessment (PRA) on a barn at Hanworth Common, Hanworth, NR11 7HP. The initial survey work was completed by Carolyn Smith BSc. (Hons) MCIEEM on 15<sup>th</sup> June 2022. Follow-up emergence surveys were undertaken on 20<sup>th</sup> July 2022 and 17<sup>th</sup> August 2022 and a dawn re-entry survey on 4<sup>th</sup> August 2022.

### 2.2 Site Location and Description

2.1.1 The site was located at OS Grid Reference TG 1935 3590 (Appendix 1) and consisted of a single storey redbrick barn with flint detailing and a pantile roof. The barn was derelict and in a bad state of repair with partial collapsed roof and heavy ivy growth, especially on the southern and western aspects.

2.2.2 The barn stood within an area of unmown grass with patches of scrub and nettles.

2.2.3 The wider environment is dominated by arable land but with areas of woodland to the north, west and south. There was also an area of woodpasture and parkland associated with Hanworth Hall to the south of site.

### 2.3 Site proposals

2.3.1 It is proposed to convert the barn on site to a residential dwelling.

## 3 Legal Protection

2.3.1 The main piece of legislation relating to nature conservation in Great Britain is The Wildlife and Countryside Act 1981 (as amended). This Act is supplemented by provision in The Countryside and Rights of Way (CROW) Act 2000 and The Natural Environment and Rural Communities Act 2006 (in England and Wales). This act provides varying degrees of protection for the listed species of flora and fauna, including comprehensive protection of wild birds and their nests and eggs.

2.2.3 UK wildlife is also protected under The Conservation (Natural Habitats &c.) Regulations 1994 (which were issued under the European Communities Act 1972), through inclusion on Schedule 2. In 2010, these Regulations, together with subsequent amendments, were consolidated into The Conservation of Habitats and Species Regulations 2010.

### 3.2 Bats

2.3.1 All UK bat species are protected under The Conservation of Habitats and Species Regulations 2017 and the Wildlife and Countryside Act 1981 (as amended). This legislation fully protects bats and their breeding sites or resting places, making it an offence to deliberately capture, injure or kill bats, deliberately disturb bats, damage or destroy a bat breeding or resting place.

### 3.3 Birds

2.3.1 All birds, their nests and eggs are protected by law under Part 1 of the Wildlife and Countryside Act 1981 (as amended).

2.2.3 Certain species (including barn owl *Tyto alba*) are also listed under Schedule 1 of the Wildlife and Countryside Act 1981, which prevents disturbance of the species or its nest and/or eggs at any time with protection by special penalties.

### 3.4 Great Crested Newts

2.3.1 Great crested newts *Triturus cristatus* and their habitat (aquatic and terrestrial) are afforded full protection by The Wildlife and Countryside Act 1981 (Section 9, Schedule 5 and as amended) and The Conservation (Natural Habitats & c.) Regulations 1994. It is an offence to:

- 1) Disturb, injure or kill recklessly a great crested newt.

- 2) Disturb or destroy recklessly great crested newt habitat (a breeding site or place of shelter).

### 3.5 Reptiles

2.3.1 Reptiles are all given limited legal protection under part of Section 9 (1) and all of Section 9 (5) of the Wildlife and Countryside Act 1981 (as 1.1.1 amended). This means that it is an offence to intentionally kill, injure and offer for sale.

### 3.6 Statutory Designated Conservation Sites

2.3.1 National designations such as Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR), are afforded statutory protection. SSSIs are notified and protected under the Wildlife and Countryside Act 1981 as amended. SSSIs are notified based on specific criteria, including the general representativeness and rarity of the site and of the species or habitats supported by it.

## 4 Survey Methods

### 4.1 Desk Study

- 2.1.1 Records held on Magic.gov.uk on Designated Sites and granted European Protected Species Licences were reviewed in June 2022 as was the map of Norfolk County Wildlife Sites on data.gov.uk.
- 2.2.2 A data search was requested from Norfolk Biodiversity Information Services in September 2022 with a search zone of 2km around the site.
- 2.2.3 The types of features considered within the desk study includes designated sites, habitats and species of principal importance for conservation of biodiversity and protected species.

### 4.2 Protected Species Survey

- 2.1.1 The survey was undertaken on 15<sup>th</sup> June 2022 by Carolyn Smith (Natural England Level 1 Licence for bats [reference 2018-34461-CLS]; Great Crested Newts [reference 2017-29746-CLS-CLS] and barn owl class licence [reference CL29/00568]). Carolyn also holds a MSc in Biological Recording and a 1st class BSc honours degree in Environmental Science as well as being a full member of CIEEM.

#### *Amphibians and reptiles*

- 2.2.2 The habitat was assessed for reptiles and amphibians and suitable materials were lifted to check for signs of reptiles.

#### *Badgers*

- 2.2.3 The habitats on site and in the immediate surrounding area were assessed for their potential to support badgers.

- 2.2.2 Evidence of badger activity (including setts, footprints, latrines, trails, scratching posts, guard hairs and foraging activity) was searched for within the site.

#### *Bats*

- 4.2.5 A Preliminary Roost Assessment was completed in accordance with the Bat Conservation Trust's "Bat Surveys for Professional Ecologists" (Collins, 2016). A scoring system was applied to the building using the criteria shown in Table 1.

2.2.3 The barn was investigated for evidence of bat use and evaluated for bat roosting potential. The visual search for signs of bats consisted of a slow methodical search both internally and externally for actual roosting bats and their signs:

Droppings on walls, windowsills and floors can be used to identify species;

Scratch marks and staining at roosts and exit holes can be used to identify the presence of bats;

Dense spider webs at a potential roost can often indicate bat absence;

The presence of butterfly wings may be an indication of bat presence.

Table 1: Assessing the potential suitability of a development site for bats (Collins, 2016)

Suitability	Description of roosting habitats	Description of commuting and foraging habitat
Negligible	Negligible habitat features on site likely to be used by roosting bats	Negligible habitat features onsite 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 and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats  A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential	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 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
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 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

2.2.2 A dusk emergence survey was undertaken on 20<sup>th</sup> July 2022 by Sally McColl BSc (NE Level 1 Licence for bats [reference 2019-39376-CLS] and six years of bat surveying), Juliette Banwell (NE Level 1 Licence for bats [reference 2021-54643-CLS] and over 20 years bat surveying experience), Keith Cotgrove (field surveyor with one year's experience, Fully trained in bat ID and bat call ID and the use of infra-red equipment) and Phil Farndon (field surveyor with over eight years' experience in bat surveying. Experienced user and trainer of thermal imaging equipment).



- 4.2.5 The survey took place 20 minutes before sunset until 1.5 hours after sunset. Weather conditions were suitable throughout: dry with 100% cloud cover with a moderate breeze. The temperature at sunset was 18°C, with an end temperature of 19°C.
- 4.2.5 A second dusk survey was undertaken on 17<sup>th</sup> August 2022 by Carolyn Smith (Natural England Level 1 Licence for bats [reference 2018-34461-CLS], ten years' experience of bat surveying), Juliette Banwell and Phil Farndon (details above).
- 4.2.10 The survey took place 20 minutes before sunset until 1.5 hours after sunset. Weather conditions were suitable throughout: dry with 100% cloud cover with a slight breeze. The temperature at sunset was 18°C, with an end temperature of 17°C.
- 4.2.11 A dawn re-entry survey was undertaken on 4<sup>th</sup> August 2022 by Juliette Banwell, Keith Cotgrove and Phil Farndon (details above). The survey took place 2 hours before sunrise until 15 minutes after sunrise.
- 4.2.12 Weather conditions were dry with 0% cloud cover breeze and a temperature at sunrise of 14°C, with an end temperature of 11°C.
- 4.2.10 Bat species on all surveys were detected and analysed using Echo Meter Touch2 detectors with automatic recording facilities.
- 4.2.12 Two infra-red cameras (Panasonic HC-VX990) and four infra-led lamps (2 x BW 48 HD Infrared lamps and 2 x JC Infrared Illuminators) were also deployed during the survey as well as one thermal imaging camera (Hikmicro Lynx LH15 Pro).
- 4.2.15 Bat calls were analysed using AnalookW and Kaleidoscope (version 5.4.8) software. Camera footage was watched back in real time by Juliette Banwell (NE Level 1 Licence for bats the day after each survey. Thermal imaging footage was reviewed by Phil Farndon after each survey.

### *Birds*

- 4.2.10 On-site habitats were assessed for their potential to support breeding (nesting) birds. This consisted of a methodical search for actual nesting birds or their signs, including signs for barn owl such as pellets, splashing and feathers.

4.2.12 Table 2 shows the criteria used when assessing the likelihood of a protected species being present within the survey area:

*Table 2: Criteria considered when assessing the likelihood of occurrence of protected species*

Assessment Category	Criteria
Present	Species are confirmed as present from the current survey or historical confirmed records.
High	Habitat and features of high quality for species/species assemblage. Species known to be present in wider landscape. Good quality surrounding habitat and good connectivity.
Moderate	Habitat and features of moderate quality. The site in combination with surrounding land provides all habitat/ecological conditions required by the species/assemblage. Within known national distribution of species and local records in desk study area. Limiting factors to suitability, including small area of suitable habitat, some severance/poor connectivity with wider landscape, poor to moderate habitat suitability in local area.
Low	Habitats within the survey area poor quality or small in size. Few or no records from data search. Despite above, presence cannot be discounted as within national range, all required features/conditions present on site and in surrounding landscape. Limiting factors could include isolation, poor quality landscape, or disturbance.
Negligible	Very limited poor quality habitats and features. No local records from desk study; site on edge of, or outside, national range. Surrounding habitats considered unlikely to support species/species assemblage.

## 5 Results

### 5.1 Desk Study

2.3.1 No statutory designated sites were identified on MAGIC Maps and NBIS, although there were five non-Statutory designated sites within 2km of the site (Appendix 2, Table 3).

2.2.3 The site sits within the outer limit of a SSSI Impact Risk Zones for Gunton Park Lake (2900m southeast) and Felbrigg woods (3050m north). However, it does not fall into the categories requiring further consultation with Natural England which is for *Infrastructure, general combustion processes or developments likely to cause air pollution*.

2.2.3 The site sits within the Nutrient Impact Area with regards new developments with overnight accommodation and the LPA should refer to Natural England's advice on Nutrient Neutrality.

Table 3: Non-statutory designated sites within 2km of site

Site designation and name	Citation	Distance from site
Icehouse Grove County Wildlife Site (CWS) 1140	This site is comprised of wet semi-natural broad-leaved coppice with standards woodland, marshy neutral grasslands, fen and mesotrophic ponds.	450m south
The Belt and the Square CWS 1188	This site is a broad-leaved, semi-natural woodland with mixed species	730m southeast
Thurgarton Wood CWS 1139	A mature broadleaved coppice with standards woodland.	790m southwest
Sustead Common CWS 2313	A partly registered common supporting a mosaic of habitats including neutral grassland, scrub, hedgerow and a small area of marshy grassland by a chalk stream	1500m northwest
Metton carrs and Marble Hill Wood CWS 1850	This is a broadleaved semi-natural woodland surrounded by arable land.	1800m north

### 5.2 Habitats

2.3.1 There was some hardstanding on site in front of the barn that was overgrown by grass and nettles.

2.2.3 The majority of the site was to species poor grass with species including Yorkshire fog *Holcus lanatus*, cock's-foot *Dactylis glomerata*, ragwort *Senecio jacobaea*, nettle *Urtica dioica*, creeping buttercup *Ranunculus repens* and broad leaved dock *Rumex obtusifolius*.

2.2.3 There was ivy *Helix hederacea* growing along the southern and western aspects of the barn and some areas of low scrub on the eastern gable.

### 5.3 Protected Species – Amphibians

2.3.1 There were no granted European Protected Species Mitigation Licences for great crested newt within 2km of the site.

2.2.3 There were no class licence returns for great crested newts within 2km of the site.

2.2.3 There was one record returned of great crested newt presence via the NBIS search. This was located in Aldborough approximately 1800m southwest of the site.

5.3.4 There was one pond with 250m of the site showing on Magic Maps. This was 100m west of site. The pond was completely shaded by trees and dry (Figure 1). The basin of the pond was very shallow and it likely dries out annually.



Figure 1 The dry, shallow pond 100m west of site.

5.3.5 The pond is in a GCN Green Risk Zone (although the boundary for an amber zone starts approximately 50m south of the pond). Green zones contain sparsely distributed GCN and are less likely to contain important pathways of connecting habitat for this species.

2.2.3 The pond had no water in to undertake a full Habitat Suitability Index, however assuming moderate water quality when present (although given the shaded nature of the pond and the amount of cattle poaching it is more likely to be poor quality) the pond came out as having below average suitability to support great crested newts (Table 4).

Table 4: habitat suitability Index score for the pond 100m west of site.

SI Description	SI assigned	SI Value
Geographic location	Optimal	1
Pond area	300m <sup>2</sup>	0.6
Pond permanence	Annual	0.1
Water quality	Moderate (upper estimate)	0.67
Shade	100%	0.2
Water fowl effect	Absent	1
Fish presence	Absent	1
Pond Density	1.9	0.8
Terrestrial habitat	Good	1
Macrophyte cover	50%	0.8
<b>HSI Score</b>		<b>0.59 - below average</b>

2.2.3 The grass on site was small in area and offered some suitable foraging habitat for amphibians, with possible refuge sites within the tree roots beyond the south of the site boundary.

2.2.3 There were no ponds on site and none will be directly affected by the works.

2.2.3 It was assessed that the likelihood of great crested newt presence within the site was **low**.

## 5.4 Bats

### Foraging and Commuting

2.3.1 The habitats immediately around the site were considered to have **high** potential to support foraging and commuting bats over the nearby common and woodlands to the west..

2.2.3 The wider environment offered **high** foraging and commuting opportunities predominantly around woodland edges to the north and south and the lakes around Hanworth hall to the south.

### Visual inspection

2.2.3 A single storey barn split into five rooms. The barn was of red brick with some flint detailing and a partially collapsed pantile roof (Figures 2 and 3). There was heavy vegetation growth on the southern and western aspects.

2.2.2 As already mentioned the roof was partially collapsed and there were lifted tiles throughout and several gaps in the ridge tiles.

2.2.2 There were two chimney stacks both with gaps in the bricks.

2.2.3 Much of the brickwork on the western gable and southern aspect was covered by vegetation and difficult to view, but other external brickwork was intact.

2.2.2 There was an open dormer window on the southern aspect as well as the collapsed roof, offering potential access into the building.



Figure 2: The barn northern and western aspect.



Figure 3: The barn – southern aspect.

2.2.3 Internally the barn was split into five rooms, only three of which were safe to enter.

2.2.3 The first room (western end) was open to the roof space which was lined with straw, although this was loose and missing in places, with obvious holes in the roof where tiles had slipped (Figure 4). The beams were very narrow, with a larger cross beam, but no cracks and splits were present.

4.2.10 There was a large silo taking up much of the space in the room with the internal brickwork appearing intact.

5.4.11 The second room had a collapsed ceiling and large open areas in the roof (Figure 5). There was a window in the southern aspect and the room was very bright and draughty. Despite the collapsed ceiling the internal walls were intact.

4.2.10 The third room wasn't safe to access, but it could be seen that the whole roof had collapsed (Figure 6).

4.2.10 The fourth room had a partially vaulted ceiling which left a low roof void. There were gaps in the ceiling showing a roof lined with loose straw (Figure 7).

4.2.10 There was no access into the fifth (eastern-most) room.



Figure 4: Internal view of western-most room



Figure 5: Room 2 – collapsed ceiling



Figure 6: Room 3 collapsed roof.



Figure 6: Room 4 – boarded ceiling leaving a low roof void.

4.2.10 No signs of bats such as droppings or staining were found during the visual inspection, but the state of some of the rooms meant that a full inspection of the floor and flat surfaces was impossible. No actual bats were observed.

4.2.10 The building was assessed as having **moderate potential** to support roosting bats with roosting opportunities available under roof tiles with plenty of access opportunities into the building and the low roof void over room 4.

4.2.10 The building has **negligible potential** to support hibernating bats as it had high light levels with limited roosting options internally and the open nature of the roof would limit the buildings ability to provide the stable low temperatures required.

Dusk emergence survey – 20<sup>th</sup> July 2022.

4.2.10 Two brown long-eared bats were seen emerging from the northern aspect of the roof above room two, close to the ridge.

4.2.10 One common pipistrelle was seen to emerge from under a tile close to the ridge on the southern aspect.

4.2.10 Other species recorded around site included noctule, soprano pipistrelle and one barbastelle.

5.4.11 Bat activity across site was moderate with foraging and commuting activity centred around the north of the barn and along the road and field to the west.

*Dawn re-entry survey – 4<sup>th</sup> August 2022.*

4.2.10 One brown long-eared bat was seen to return to roost close to the ridgeline on the northern aspect of the barn – above room two.

4.2.10 Bat activity across site was lower than the previous dusk with only brown long-eared and common pipistrelle recorded.

*Dusk emergence survey – 17<sup>th</sup> August 2022.*

4.2.10 One common pipistrelle was seen to emerge from the gap in the roof of room two.

4.2.10 Bat activity was relatively low but with notable recordings of one barbastelle (no visual) and one serotine observed foraging to the north of the site.

4.2.10 The roosts observed within the barn are assessed as being a day roost for brown long-eared bats and two day roosts for common pipistrelle.

## 5.5 Birds

2.3.1 There were old barn owl pellets found in room 1 during the initial survey. A barn owl observed entering the central area of the barn (room 3 collapsed roof) and chicks were heard calling in the eastern end (room 5) on the first dusk survey.

2.2.3 Wood pigeons and a flycatcher was observed nesting in the ivy on the southern/western aspect of the barn.

## Reptiles

2.2.3 The NBIS search returned no records of reptiles within 2km of the site.



2.2.2 There was a small area of grass on site which would provide some foraging but basking site were limited and although there was scrub on site this was low and didn't offer much in the way of refugia.

2.2.2 It was assessed that the likelihood of these species being present within the site was **negligible**.

## 5.6 Survey Limitations

2.3.1 Two of the rooms within the barn were inaccessible and therefore a full assessment of them for signs was bats was not possible.

## 6 Impact Assessment

### 6.1 Designated Sites and Habitats

2.3.1 No impacts on Designated Sites are envisaged given the scale of the works and distance to the designated sites.

2.2.3 No other habitats of ecological significance will be impacted by the proposed works

### 6.2 Amphibians

2.3.1 The pond 100m west of site was dry at the time of survey but assuming moderate water quality it still came out as below average for great crested newts.

2.2.3 Subjecting the pond to the Natural England Rapid Risk Assessment tool gives a result of Green: Offence Highly Unlikely (Table 5). This indicates that the development activities are of such a type, scale and location that it is highly unlikely any offence would be committed should the development proceed.

2.2.3 Neutral effects are predicted.

Component	Likely effect	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	0.001 - 0.01 ha lost or damaged	0.05
Land 100-250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.1
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	No effect	0
	Maximum:	0.1
Rapid risk assessment result:	<b>GREEN: OFFENCE HIGHLY UNLIKELY</b>	

## 6.3 Bats

2.3.1 The proposed development will result in the destruction of a bat resting place (i.e. a roost) as would be considered an offence under Article 12(1) of the Habitats Directive and its UK enactment, the Conservation of Habitats and Species Regulations 2010.

2.2.3 The roosts were assessed as being a common pipistrelle and brown long-eared day roosts.

2.2.3 Low numbers of a common species were observed and it is considered that the works will have a low impact on local bat populations.

2.2.3 It is assessed that the project will have no impact on bat commuting routes.

## 6.4 Birds

2.3.1 The proposed development will destroy a breeding site of a schedule 1 bird (barn owl). There were also other birds nesting within vegetation around the barn.

2.2.3 During the demolition works there is the risk of killing and injuring nesting birds and damaging their nests or eggs.

## 6.5 Reptiles

2.3.1 The desk study and field survey suggest these species are highly unlikely to be on site, no impacts are predicted.

## 7 Recommendations

7.1.1 The following species-specific recommendations are made for the site:

### *Amphibians*

7.1.2 The grass on site should be kept short prior to work commencing to further decrease the likelihood of amphibians being present.

7.1.3 Machinery and equipment must be stored on raised pallets or skips.

7.1.2 All waste should be stored in skips prior to removal from site.

2.2.3 All excavations should be covered / back filling each evening to prevent foraging or commuting amphibians from falling in and becoming trapped. If this is not possible then an escape ramp – made from earth or wooden sticks – will need to be placed within each excavation.

### *Bats*

7.1.3 The developer will need to apply for a European Protected Species (EPS) mitigation licence from Natural England to legally proceed with the works. The licence will be a condition of any planning approval granted.

7.1.2 Full mitigation plans will be outlined within the EPS licence. These are likely to include bat boxes/bat tubes.

2.2.3 As bats are known to be in the area only traditional type 1F bitumen should be used to line the roofs. With adequate ventilation British Standard 5250:2011+A1:2016 states that both type 1F bitumen and low resistance non-bitumen coated roof membranes (NBCRM) are acceptable. However, NBCRM are proven to entangle bats through regular contact (which also compromises the membrane) and therefore the Bat Conservation Trust recommend only type 1F bitumen be used.

2.2.3 Any external lights associated with the finished project should be of a low light level to minimise impacts on bats that might forage and commute in the vicinity.

7.1.10 Warm white lights should be used at <2700k. This reduces the ultraviolet component or that has high attraction effects on insects which can lead to a reduction in prey availability for some light sensitive bat species.

### *Birds*

7.1.11 Alternative temporary provision for the barn owl, in the form of one nest box, should be made at least 30 days before development begins. This could be sited in a suitable tree within 200m of the site, at least 3m from the ground.

7.1.12 To avoid committing an offence under the Wildlife and Countryside Act 1981 (as amended), any site clearance will take place outside of the bird nesting period (i.e. outside of March to August), or failing that, following confirmation by a suitably qualified ecologist that nesting birds are absent from the areas to be cleared.

7.1.10 Permanent provision for barn owls should be designed and ideally be built into the eastern gable which is the current roosting point.

7.1.12 Further design requirements for barn owl provision can be found in Appendix 4.

## 8 Enhancements

2.3.1 Full plans were not available at the time of writing but the following enhancements are suggested for the site:

One integral bat box to be installed within the southern aspect of the barn. The [Integrated Eco Bat Box](#) or [Vivara Pro Build in Bat box](#) are suitable examples.

- Install one bird box on the northern aspect and one on the western gable end. Suitable boxes include the [Vivara Pro 32mm Woodstone nest box](#) and the [Vivara Pro Woodstone Open nest box](#).

Consideration should also be given to incorporating pollinator and bat friendly planting schemes into any planned landscaping around the house. Suggested plants include:

<b>Bedding Plants</b>	
Nottingham catchfly	<i>Silene nutans</i>
Night-scented catchfly	<i>S. noctiflora</i>
Bladder campion	<i>S. vulgaris</i>
Night-scented stock	<i>Matthiola bicornis</i>
Sweet rocket	<i>Hesperis matronalis</i>
Evening primrose	<i>Oenothera biennis</i>
Tobacco plant	<i>Nicotiana affinis</i>
Cherry pie	<i>Heliotropum x hybridum</i>
Soapwort	<i>Saponaria officinalis</i>
<b>Climbers</b>	
European honeysuckle	<i>Lonicera caprifolium</i>
Italian honeysuckle	<i>L. etrusca superba</i>
Japanese honeysuckle	<i>L. japonica halliana</i>
Honeysuckle (native)	<i>L. periclymenum...</i>
White jasmine	<i>Jasminium officinale</i>
Dogrose	<i>Rosa canina</i>
Sweetbriar	<i>R. rubiginosa</i>
Fieldrose	<i>R. arvensis</i>
Ivy	<i>Hedera helix</i>
Bramble	- many species

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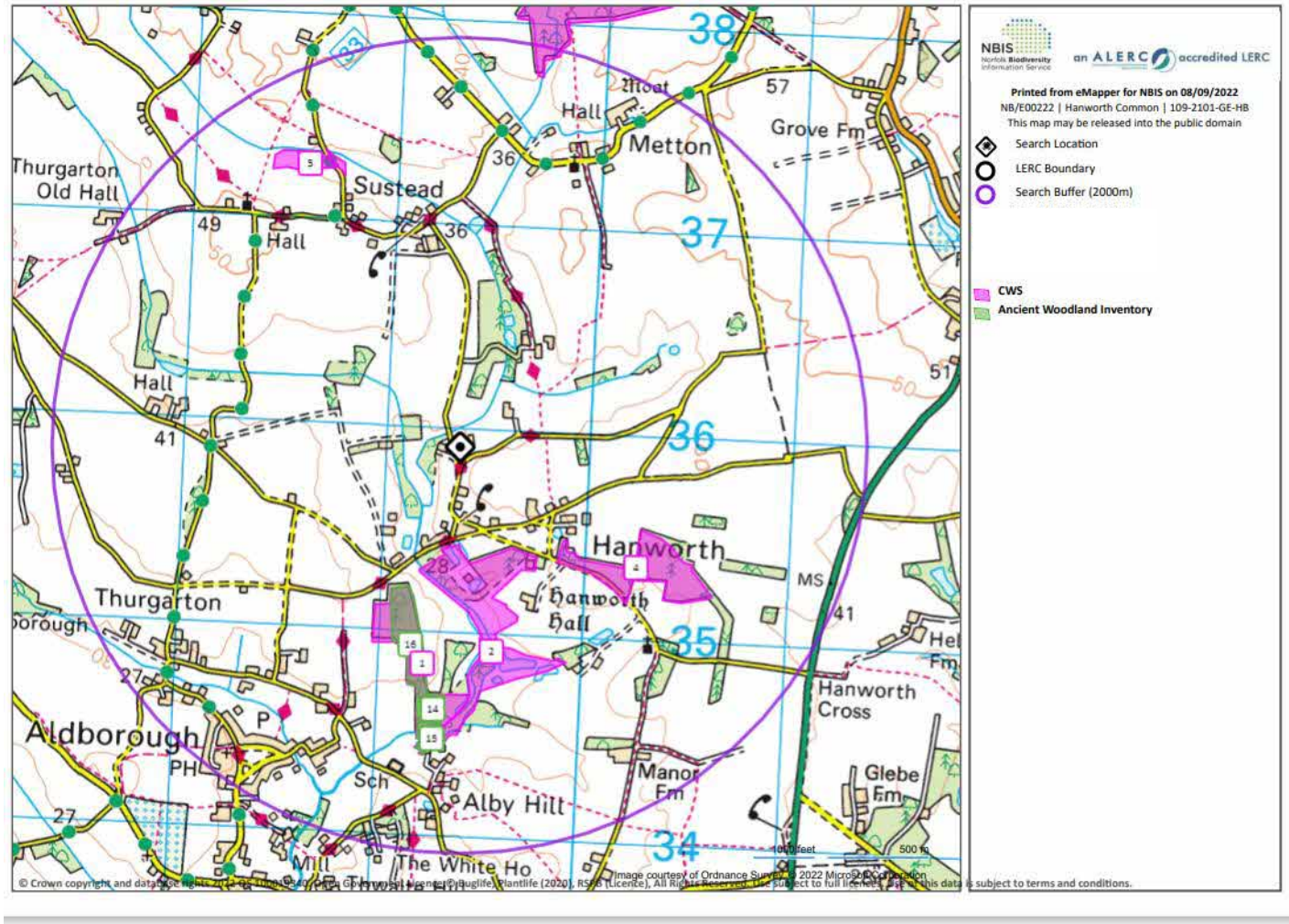
## Appendix 1 – Site Location



(Source Google Earth Pro: 2022)



## Appendix 2 – NBIS Map



## Appendix 3 – Nocturnal survey results

Dusk survey results – 20<sup>th</sup> July 2022

Surveyor Locations:



(Image source: Google Earth Pro, 2022)

Sunset: 21.06 - Start time: 20.50; End time: 22:45  
 Surveyors: Sally McColl (SM), Juliette Banwell (JB), Phil Farndon (PF)

Time	Species and numbers	Comments	Surveyor
21.23	Noctule x 1	Flying west to east over site	All
21.23	Barn owl x 1	Landed in building through collapsed roof – chicks heard at eastern end	PF / SM
21.40	Soprano pipistrelle (S.pip) x 1	Flew from south	SM / PF
21.41	Noctule x 1	Flying high to east	SM
21.41	Common pipistrelle (C.pip) x 1	Emerged from tiles near ridge next to ivy	PF
21.43	Brown long-eared (BLE) x 1	Emerge from under tile close to ridge near where ivy starts at western end	JB
21.47	S.pip x 2	Flew west to east in front of barn	SM / JB
21.47	BLE x 1	Emerged from similar location to before	JB
21.57	BLE x 1	Flew over barn from south	SM
22.02	C.pip x 1	Heard not seen	SM
22.04	Barbastelle x 1	Heard not seen	PF / JB
22.08	BLE x 1	Heard not seen	SM
22.09	BLE x 1	Foraging along roadside until end of survey	JB

22.17	C.pip x 1	Foraging until end of survey – no visual	SM
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### Dawn survey results – 4<sup>th</sup> August 2022

#### Surveyor Locations:



(Image source: Google Earth Pro, 2022)

Sunrise: 05.17 - Start time: 03.10; End time: 05.32  
 Weather conditions: 13°C, BWS 0, dry, 0% cloud cover.  
 Surveyors: Phil Farndon (PF), Juliette Banwell (JB), Keith Cotgrove (KC)

Time	Species and numbers	Comments	Surveyor
03.15	BLE x 1	Heard not seen	KC
03.15	BLE x 2	Foraging to east	PF
03.25	BLE x 1	Foraging – no visual	JB / KC
03.40	BLE x 1	Foraging – no visual	JB / KC
03.58	BLE x 1	Heard not seen	KC
04.04	BLE x 1	Returned to roost under tile towards western end	PF / JB
04.05	C.pip x 1	Foraging – no visual	JB
04.13	BLE x 1	Not seen	JB
04.14	C.pip x 1	Foraging along northern side of site	JB

## Dusk survey results – 17<sup>th</sup> August 2022

### Surveyor Locations:



(Image source: Google Earth Pro, 2022)

Sunset: 20.17 - Start time: 19.55; End time: 22.50  
 Surveyors: Carolyn Smith (CS), Juliette Banwell (JB), Phil Farndon (PF)

Time	Species and numbers	Comments	Surveyor
20.15	C.pip x 1	Emerged from gap in roof above second room	JB
20.30	C.pip x 1	Faint – not seen	PF
20.43	S.pip x 1	Foraging to west of site	JB
20.47	Barn owl x 2	Emerged from eastern end through missing tiles	PF / CS
20.50	C.pip x 1	Foraging along western gable and across road	JB
20.55	C.pip x 1	Commuting across site	PF
21.03	Barbastelle x 1	Heard not seen	JB / CS
21.04	Serotine x 1	Foraging to the north of site	JB / CS
21.07	BLE x 1	Foraging around gable end then away to the north	JB
21.08 to end	C.pip x 1 and S.pip x 1	Intermittent foraging – no visual	JB

## Appendix 4 – Barn owl provision

### Design requirements for integral barn owl provision:

- Owl hole minimum size: 100mm wide x 200mm high, optimum size 130mm x 250mm, maximum size 200mm x 300mm.
- The bottom of the hole must not have any sharp edges or narrow gaps in which a toe or talon could get caught.
- Where necessary there can be a 'tunnel', minimum 150mm wide x 200mm high, between the hole and the nest space.
- A grippable ledge (e.g. stone or slatted timber) below the owl hole provides an exercise platform for emerging owlets.
- The internal box depth from bottom of entrance hole to floor of nesting area must be not less than 700mm.
- Floor area of nest chamber: minimum 0.4m<sup>2</sup> (e.g. 500mm x 800mm or 400mm x 1m), ideal size is 1m<sup>2</sup> (1m x 1m).
- Depth from bottom of entrance hole to floor of nesting area must be not less than 450mm provided that there will definitely be an easy-to-grip external exercise platform for fledglings to stand on outside the owl hole.



*Example barn owl access and internal view within vaulted ceiling: Barn Owl Trust, 2022*