

# **Weddle Landscape Design**

**LANDSCAPE ARCHITECTURE**

**ENVIRONMENTAL PLANNING**

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## **Haddon House, Shenstone**

### **Preliminary Ecological Appraisal (PEA)**

March 2023

#### **Revision A**

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# 1 SUMMARY

This Preliminary Ecological Appraisal (PEA) included a desk study of designated sites and ecological data, and a detailed walkover survey of the site considering habitats and species.

Roosting bats were identified as a material constraint to the development proposals and a single Bat presence / Likely Absence Survey should be carried out to fully understand how European Protected Species may be using the site.

The proposed development has the potential to cause inadvertent residual impacts to various ecological receptors and the following should be secured as an appropriately worded condition of planning prior to the commencement of works:

<b>Ecological Receptor / Constraint</b>	<b>Timescales</b>
<b>Badgers</b> Reasonable Avoidance Methods (RAMs) to be undertaken.	During construction
<b>Roosting Bats</b> Single Presence / Likely Absence Survey to be undertaken on B1a and B1c	May – August
<b>Foraging and Commuting Bats</b> Soft-lighting strategy to be produced by lighting engineer.	Prior to and during construction
<b>Amphibians</b> Reasonable Avoidance Methods (RAMs) to be undertaken.	During construction
<b>Other Terrestrial Mammals</b> Reasonable Avoidance Methods (RAMs) to be undertaken.	During construction

Figure 1: Table 1: Executive Summary of Ecological recommendations

## **2 INTRODUCTION**

### **2.1 Background**

Weddle Landscape Design were commissioned by StudioGötz to undertake a Preliminary Ecological Appraisal for the site at Haddon House, Shenstone.

This Preliminary Ecological Appraisal aims to:

- Identify any likely ecological constraints
- Propose any necessary design changes
- Identify any further ecological surveys required to enable an Ecological Impact Assessment (EclA) to be carried out
- Propose any ecological enhancements

This PEA includes a desk study and extended UK Habitat Survey undertaken in February 2023.

This report has been prepared by John Harvey BA (Hons.) ACIEEM (Natural England Bat Licence 2018-34117-CLS-CLS) and Great Crested Newt Licence (2018-37648-CLS-CLS).

A technical check has been undertaken by Neil Northrop BA DipLD MCIHort MArborA CMLI with over 15 years ecological field surveying, scoping, protected species surveys and report writing experience.

This report has been prepared in line with BS 42020:2013 Biodiversity: Code of practice for planning and development and the CIEEM Guidance for Preliminary Ecological Appraisal (2017), Ecological Report Writing (2017) and Ecological Impact Assessment (2022).

### **2.2 Site Description**

The redline application site is approximately 0.42ha in extent and contained an unoccupied residential dwelling and a curtilage consisting of driveways, mown amenity grassland, ornamental shrubs and planters and scattered mature trees within the site interior and along boundaries. The site was located at approximate OS Grid Reference: SK 10842 04264.

The surrounding landscape was dominated by suburban residential dwellings within a network of tertiary residential lanes. Treelined roads and a series of vegetated rear gardens may provide suitable connective habitats for a range of fauna such as terrestrial mammals and birds. Cereal crop arable fields were present further afield outside of the settlement of Shenstone.

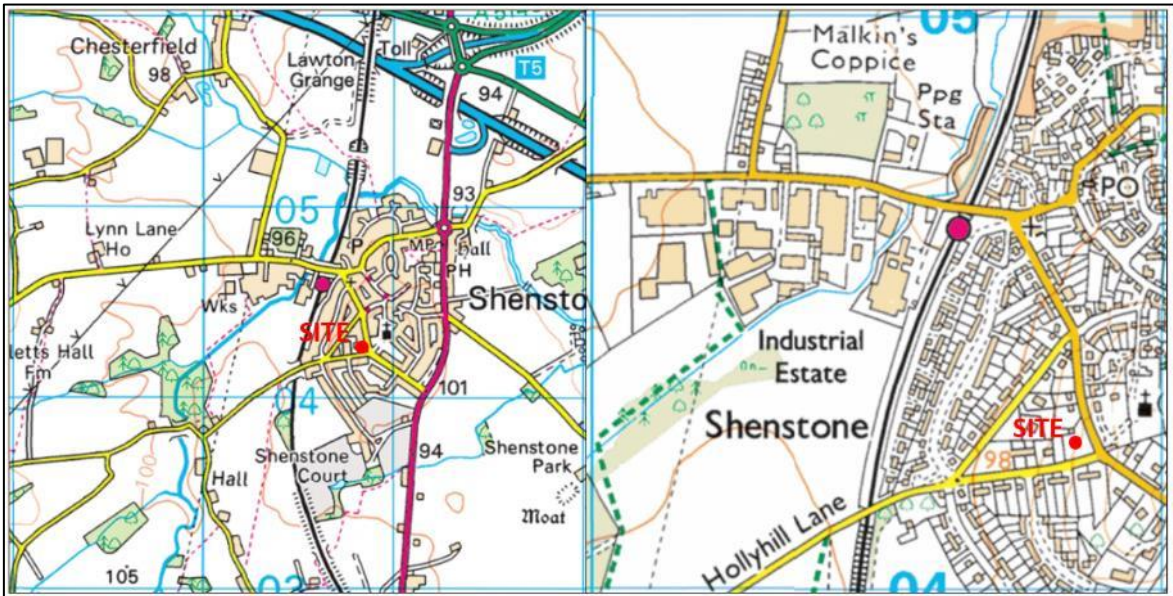


Figure 2: OS Map showing site location



Figure 3: Redline - development site boundary.



### 3 METHODOLOGY

#### 3.1 Desk Study

A desk study was undertaken to collate any existing ecological data for the site and its surroundings. As part of the desk study process, the following sources of record have been considered:

- Natural England Magic website for geographic information on key environmental schemes and designations. [www.magic.gov.uk](http://www.magic.gov.uk), March 2023 (see Appendix C).
- Staffordshire Ecological Record's data at OS grid reference SK 10911 04459. Received 1st March 2023 (see Appendix D – full data set available on request).

#### 3.2 Field Surveys

##### 3.2.1 Habitat Survey

Habitat surveys were carried out in accordance with the UK Habitat Classification<sup>1</sup> (Professional Edition) at a minimum of Level 4 and at a Minimum Mapping Unit of 25m<sup>2</sup>/5 linear m. The survey was undertaken on 15<sup>th</sup> February 2022.

This appraisal includes a:

- Description of each habitat including a general list of species and assessment of general management.
- Condition assessment for each habitat, carried out following the condition criteria of The Biodiversity Metric 3.1 – Technical Supplement<sup>2</sup>
- Identification of UK BAP Priority Habitats under S41 of NERC Act and Habitats Directive Annex I habitat types.

A UK Habitats Plan of the site showing the various identified habitats is provided as drawing number 1533 001.

##### 3.2.2 Badger Surveys

The site and immediate surroundings (where access was possible), was searched for any evidence of Badger (*Meles meles*) in accordance with Surveying Badgers<sup>3</sup> as part of the walkover survey.

During the walkover the site was searched for evidence of badger including setts, paths and prints, latrines, dung pits, snuffle holes, foraging signs, and hairs caught on wire fencing.

##### 3.2.3 Bat Preliminary Roost Assessment of Trees

Trees within the site were inspected from ground level using binoculars and elevated survey by ladder if safe to search for any field signs of bats or potential roost features (PRF's). The survey was undertaken as part of the walkover survey for all accessible trees.

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<sup>1</sup> The UK Habitat Classification User Manual, Version 1.1, Butcher et al, UKHab, 2020

<sup>2</sup> The Biodiversity Metric 3.1 – Technical Supplement, Natural England, 2021  
<http://publications.naturalengland.org.uk/file/6089603756064768>

<sup>3</sup> Surveying Badgers, Harris, Cresswell and Jefferies, The Mammal Society. 1989.

Each tree was searched for potential bat roost features (PRF's) including; Woodpecker Holes; Cavity's from knots, pruning wounds and cankers; Overlapping forks; Substantial Ivy; Cracks and splits; and Loose Bark.

Each tree was then categorised as the table below which has been structured in accordance with BCT Good Practice Guidelines<sup>4</sup> (Table 4.1) and BS 8596:2015 Surveying for Bats in Trees and Woodlands<sup>5</sup>.

Category (Potential risk)	Description of Tree and Potential Roost Features
<b>Known or Confirmed Roost</b>	Bats discovered roosting within the tree, or recorded emerging from / entering the tree at dusk and / or dawn. Tree found to contain conclusive evidence of occupation by bats, such as bat droppings within a potential roost feature. A confirmed record (as supplied by an established source such as the local bat group) would also apply to this category.
<b>High risk</b>	Trees with a suitable potential roost feature, or with several features with some bat roost potential. Usually mature or veteran trees with multiple woodpecker holes / deep cracks and /or crevices. Often with a hollow trunk. May support dense ivy.
<b>Medium risk</b>	Trees with few cracks and fissures (of usable depth for low numbers of bats) and /or dense ivy / loose bark. Often semi-mature or mature specimens. Trees tend not to have large splits, hollow trunks or woodpecker holes for example. If present suitable features are likely to be low level or shallower than those in trees with high risk.
<b>Low risk</b>	Trees of sufficient size and age to contain bat roosts but with no obvious potential roost features seen during the ground level survey, or features seen with limited roosting potential only, e.g., small amounts of ivy.
<b>Negligible/No risk</b>	Trees with low or no potential to support bats. Usually without ivy or loose bark and cracks / fissures. Often young or occasionally semi-mature specimens with small girth. Likely to be relatively isolated from suitable foraging habitat or commuting features. May be located in well lit areas.

Table 1: Classification of trees for risk of bat roost presence

### 3.2.4 Bat Preliminary Roost Assessment of Buildings

A thorough internal and external inspection of the building to look for evidence of bats and assess bat roosting potential was undertaken as part of the walkover survey. Evidence of bats may take the form of droppings, urine stains, feeding remains, live bats, dead bats, grease mark stains, fur and claw marks made by bats regularly roosting in the same location.

During the external survey the roof and walls were inspected from ground level (using binoculars to aid visibility where required) and elevated survey by ladder if safe to search for gaps and voids that would allow bats access to suitable roost sites.

The building was assigned a roost suitability as defined BCT Good Practice Guidelines, as depicted in the Table 2 below.

<sup>4</sup> Bat Surveys for Professional Ecologists, Good Practice Guidelines, 3<sup>rd</sup> Edition, Collins J, The Bat Conservation Trust, 2016.

<sup>5</sup> BS 8596:2015 Surveying for Bats in Trees and Woodlands. BSI Group.



Suitability	Description of Roosting Habitats
<b>High suitability</b>	A structure 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.
<b>Moderate suitability</b>	A structure 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).
<b>Low suitability</b>	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 (i.e. unlikely to be suitable for maternity or hibernation).
<b>Negligible suitability</b>	Negligible habitat features on site likely to be used by roosting bats.

*Table 2: Classification of building suitability for bats*

### 3.3.5 Foraging and Commuting Bats

Habitat features on site are assessed for their suitability to support foraging and commuting bat activity. This assessment is independent from the suitability of the site to support roosting bats and provides information on the likeliness of bat foraging activity within the local environment, and the dependence of individuals on these features for commuting to alternative roosting sites, foraging and migration.

The site was assigned a habitat suitability as defined BCT Good Practice Guidelines, as depicted in the Table 3 below.

Suitability	Description of Habitat
<b>High suitability</b>	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 foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site that is close to and connected to known roosts.
<b>Moderate suitability</b>	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as treelines 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.
<b>Low suitability</b>	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.
<b>Negligible suitability</b>	Negligible habitat features on site likely to be used by foraging or commuting bats.

Table 3: Suitability Assessment Criteria for foraging and commuting bats

### 3.2.5 Breeding Birds

Assessment of the sites overall suitability to support breeding and nesting birds was undertaken. The sites habitat composition, geographic locality and association with designated sites are all relevant considerations. Where habitats are suitable to support locally or nationally protected species, breeding individuals or populations of birds further breeding or wintering bird surveys may be required to understand the impact from a proposed scheme.

### 3.2.6 Pond Scoping Assessment

A pond scoping exercise was undertaken to identify any ponds or watercourses located within 250m. of the site using ordnance survey maps and aerial photography. The zone of influence may be amended based upon the scale of impact at the discretion of the ecologist.

### 3.2.7 Great Crested Newt Habitat Suitability Index Assessment

Habitat Suitability Index (HSI) assessment was carried out on accessible ponds. The survey was undertaken on as part of the walkover survey. The survey was undertaken in accordance with the methodology described in ARG UK Advice Note 5<sup>6</sup>.

The Habitat Suitability Index (HSI) was developed by Oldham et al (2000) in order to provide an index allowing a direct comparison to be made between different water bodies. This index assesses ponds against different criteria, each of which have a bearing on the likelihood of great crested newts (*Triturus cristatus*) being present in the pond under consideration.

The criterion are Geographic Location; Pond Area; Permanence; Water Quality; Perimeter Shading; Wildfowl presence; Fish Presence; Pond Count (within a 1.0 km radius); Terrestrial Habitat (within 250 m); and Macrophyte Cover.

<sup>6</sup> ARG UK (2010), ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index, Amphibian and Reptile Groups of the United Kingdom.

The HSI score is used to demonstrate whether a pond is suitable for breeding GCN and therefore, if it requires detailed survey. Generally, ponds with a high HSI score are more likely to support GCN than those with lower scores. Pond suitability is categorised using the following scale:

HSI Score	Pond Suitability
<0.5	Poor
0.5-0.59	Below Average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

Table 4: HSI Suitability

Dr L Brady<sup>7</sup> provides further advice on interpreting HSI suitability scores:

- GCN tend to avoid ponds with low HSI scores. Ponds with relatively low HSI scores (poor to below average) typically only support GCN when they are located close to another occupied pond. Low scoring ponds are therefore only likely to support GCN in areas of high pond density.
- GCN do not necessarily avoid ponds with average suitability, but nor do they actively seek them out. The presence of GCN in ponds with an 'average' HSI score appears to be simply down to chance.
- GCN appear to prefer ponds with high HSI scores. Ponds with relatively high HSI scores (good to excellent) frequently support GCN. Survey work undertaken in SE England indicates that great crested newt are present in more than 90% of ponds with an 'excellent' HSI score.

Therefore, any ponds that have an 'average' habitat suitability score or higher, or any low scoring ponds in areas of high pond density are likely to require further surveys to determine whether GCN are present, and if so, to establish population size.

### 3.2.8 Invasive Species

As part of the walkover survey the site and immediate surroundings were searched for any evidence of invasive non-native plant species (INNS) listed on Schedule 9 of the Wildlife and Countryside Act 1981.

The species which are often encountered are Japanese Knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*), Giant Hogweed (*Heracleum mantegazzianum*), *Cotoneaster sp.*, *Rhododendron sp.*, and Variegated Yellow Archangel (*Lamium galeobdolon subsp. argentatum*).

### 3.3 Limitations

No limitations were identified during the assessment and the results of this survey are considered suitable to reflect the existing ecological baseline of the development.

<sup>7</sup> Brady, L, Habitat Suitability Index; Interpreting HSI Scores, Calluma Ecological Services. Available: <https://www.calumma.co.uk/services/15-information/40-habitat-suitability-index>

## 4 BASELINE ECOLOGICAL CONDITION

### 4.1 Designations

There are no sites with statutory protection within the site or the 2km search area. The nearest was Stowe Pool and Walk Mill Clay Pit (SSSI) located approximately 5.4km to the north. The site was located within SSSI impact Zone 9 and does not require consultation from Natural England.

Four non-statutory sites were recorded within the 2km search area and are listed within Table 6 below:

Name	Area	Grid Ref.	Distance	Description	Interest
Griffin's Covert	3.8	SK095033	1.4km SW	An unmanaged mature sycamore dominated woodland with a well established hazel and elder sub-canopy. A stream runs through with woodland and supports associated wetland species. The ground flora is diverse.	Retained BAS
Footherley Rough	10.5	SK099040	0.9km W	12ha of mature mixed wood with good variety of trees, with a rich ground flora. The Footherley Brook and several ditches runs through the wood.	Local Wildlife Site
Malkin's Coppice	2.2	SK104047	0.6km NW	An acidic remnant of Ancient & Semi-Natural Woodland with a broad-leaved canopy, limited shrub layer and ground flora are present.	Local Wildlife Site
The Little Holmes, Shenstone	6.9	SK107050	0.5km N	An extensive area of semi-improved grassland with two small areas of deciduous plantation and a long stretch of the Crane Brook with its associated bands of emergent/fringing vegetation.	Retained BAS

Table 5: Summary of designated sites within 2km of the site boundary

### 4.2 Habitats and Flora

#### 4.2.1 Flora Records

Staffordshire Ecological Records (SER) provided no relevant records for any notable Wildlife and Countryside Act (1981) Schedule 8 plant species within the 2km search area however, historic records of Native bluebell (*Hyacinthoides non-scripta*) were returned.

All higher plant species present were recorded during the site walkover and are provided within the description of each habitat.

No rare or notable plants were recorded during the site walkover.

#### 4.2.2 Invasive Non-Native Species

SER provided no Wildlife and Countryside Act (1981) Schedule 9 Invasive Non-Native Species (INNS) records within the 2km search area, however, a single historic record of Japanese knotweed (*Fallopia japonica*) was returned.

Rhododendron species (*Rhododendron sp.*) was recorded frequently along the non-native mixed scrub boundaries to the south and east of the application area.

### 4.2.3 Field Survey

The table below (Table 7) summarises the habitats present within and immediately adjacent to the site, and their relevant inclusion as a National BAP Priority Habitat and / or within the Local Biodiversity Action Plan.

Primary Habitat Code	Secondary Code (Where required)	UKHab	UKBAP	LBAP	N/A
g4	66	Modified grassland			✓
h3h	48	Mixed scrub			✓
u1b	N/A	Developed land, sealed surface			✓
u1	1160	Introduced shrubs			✓
u1b	N/A	Buildings			✓
h2b	48, 75	Other hedgerow (non-native)			✓
N/A	N/A	Urban tree			✓

Table 6: UKHabs Habitat Types and their relevant inclusion in NHPI or LBAP

#### g4 66 - Modified Grassland (0.164ha)

Areas of intensively mown amenity lawns were present within the east, south and western portions of the application area, displaying winter seasonal flowers such as Snowdrop (*Galanthus sp.*) and Crocus (*Crocus sp.*) interspersed throughout the sward.

Given the timing of the survey it was not possible to identify the grass sward to species level as all seedheads had died off. The species composition was considered to be no less interesting than that of a standard lawn species mixture featuring a grass to herb ratio of 95:5 with *Bryophyta sp.* being dominant within shaded areas. Interspersed forb species includes Field speedwell (*Veronica agrestis*), Daisy (*Bellis perennis*), Creeping buttercup (*Ranunculus repens*).

Low Distinctiveness Grassland Condition Assessment	Pass / Fail
1. There must be 6-8 species per m2. Note - if a grassland has 9 or more species per m2 it should be classified as a moderate distinctiveness grassland habitat type. NB - this criterion is non-negotiable for achieving moderate condition.	Fail
2. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Fail
3. Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Fail
4. Physical damage evident in less than 5% of total grassland area, such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities.	Pass
5. Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Fail
6. Cover of bracken less than 20%.	Pass
7. There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species <sup>1</sup> make up less than 5% of ground cover.	Pass
<b>Condition Score</b>	<b>Poor</b>

Table 7: Low distinctiveness grassland Condition Assessment



Figure 5: Modified grassland located to the west of the application area

Figure 6: Modified grassland located to the south of the application area

### h3h 46 – Mixed scrub (0.075ha)

Three patches of mature well-trimmed ornamental non-native scrub were recorded within the application area, located along the southern boundary, eastern boundary and adjacent to the access to the north-east of the site. Each of the mixed scrub habitat supported similar species composition with Ivy (*Hedera helix*) being the dominant ground floral species.

Species abundant within the habitat portion included Cherry laurel (*Prunus laurocerasus*) and Spotted laurel (*Aucuba japonica*) and Rhododendron species (*Rhododendron sp.*). Frequent and occasional species included Spiny oleaster (*Elaeagnus pungens*), Variegated holly (*Ilex aquifolium 'Variegata'*), Yew (*Taxus baccata*), Cypress sp. (*Cupressus sp.*), Garden privet (*Ligustrum ovalifolium*). Palm (*Arecaceae*) was recorded rarely.

Scrub Condition Assessment	Pass / Fail
1. Habitat is representative of UKHab description (where in its natural range). There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be up to 100% cover).	Fail
2. There is a good age range – all of the following are present: seedlings, young shrubs and mature shrubs.	Fail
3. There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species make up less than 5% of ground cover.	Fail
4. The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs present between the scrub and adjacent habitat(s).	Pass
5. There are clearings, glades or rides present within the scrub, providing sheltered edges.	Pass
<b>Condition Score</b>	<b>Poor</b>

Table 8: Scrub Condition Assessment



*Figure 7: Mixed non-native scrub adjacent to the site access to the north of the site*  
*Figure 8: Mixed scrub on a retaining stone wall along the southern boundary*



*Figure 9: Mixed scrub beyond an area of amenity grassland along the eastern boundary*

### **u1b – Developed land; sealed surface (0.125ha)**

Driveways, footpaths and flagstone paving was recorded in the curtilage of the site predominantly adjacent to the buildings.

### **u1b5 – Buildings (0.043ha)**

There are two buildings onsite, both located within the centre of the application site.

Their description and suitability to support protected species are found within section 4.3.3.

### **u1 1160 – Introduced Shrub (0.009ha)**

Introduced shrubs were present as managed ornamental planting within the north-western portion of the application site, presenting predominantly as mixed-species planted in beds. Species recorded within the area of formal planting included Rose species (*Rosa* sp.), Mahonia (*Mahonia aquifolium*), Quince (*Cydonia oblonga*) Flowering currant (*Ribes sanguineum*), Male fern (*Dryopteris filix-mas*) with a ground cover of intermittent Crocus and Lesser celandine (*Ficaria verna*).

No condition assessment is required for this habitat type.

### **h2b – Other hedgerows (Non-native) (47m)**

Two hedgerows were recorded on the western boundary of the application site, pertaining to a Leylandii (*Cupressus leylandii*) (H1) and a Garden privet hedge (H2) located to the northern extent. Each hedgerow measured approximately 2.5m in height and 2m in width and were each dominated by a single non-native species with non-complex understorey vegetation.

There is no condition assessment for this habitat type.

### **Urban Trees (0.1872ha)**

Fourteen mature trees were recorded within the application site boundary which were assessed individually. Species within the site assessment area included Small leaved lime (*Tilia cordata*) (T1), Wild cherry (*Prunus avium*), White lilac (*Syringa vulgaris Madame Lemoine*) (T3), Leyland cypress (T4 and T11), Silver fir (*Abies alba*) (T5 and T6), Blue atlas cedar (*Cedrus atlantica*) (T7 and T10), Beech (*Fagus sylvatica*) (T8 and T13), Black locust (*Robinia pseudoacacia*) and Domestic cherry (*Prunus domestica*) (T14).

The trees displayed varying qualities and conditions and have been condition assessed individually. 1 tree was considered to be of 'Poor' condition, 9 were 'Moderate' and 4 were 'Good'

## **4.2.1 Biodiversity Net Gain – Baseline Assessment**

The habitats recorded within the application site were calculated to provide a total of:  
**2.45 Biodiversity Units.**



Ref	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Condition	Strategic significance	Suggested action to address habitat losses	Total habitat units
1	Grassland	Modified grassland	0.164	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	0.33
2	Heathland and shrub	Mixed scrub	0.075	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (a)	0.30
3	Urban	Developed land; sealed surface	0.167	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00
4	Urban	Introduced shrub	0.009	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	0.02
5	Urban	Urban Tree	0.1017	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (a)	0.61
6	Urban	Urban Tree	0.0814	Medium	Good	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (a)	0.98
7	Urban	Urban Tree	0.0041	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (a)	0.02
8								
9								
10								
11								
12								
		<b>Total habitat area</b>	<b>0.60</b>					<b>2.45</b>

Figure 10: Habitat Baseline Scores

## 4.3 Fauna

Species legislation is provided in Appendix B.

### 4.3.1 Amphibians

SER provided no records for amphibians within the 2km search radius. The application site contained limited suitability for amphibian species due to the coverage of sealed surface and frequently mown modified grassland. It is however possible that scrub boundaries may offer cover and hibernacula for common amphibians such as Common frog (*Rana temporaria*) and Common toad (*Bufo bufo*).

The pond scoping exercise returned zero ponds containing suitability for Great Crested Newt (*Triturus cristatus*) within the 500m zone of influence for the site.

It may however be perceivable that common amphibians episodically occur within the application site during development works.

### 4.3.2 Badger

SER provided eight records for Badger (*Meles meles*) within the 2km search radius. The closest record pertained to an individual observed within 700m of the site. No badger sett records were returned within the 2km search radius.

No setts or other field signs of badgers were identified on the site. Although fencing enclosing the garden on all sides presented a partial barrier to movement, there are suitable habitats within a reasonable commuting distance from the site and it is considered possible that individuals may occur onsite during development.

### 4.3.3 Bats

MAGIC Maps provided a single granted EPS development licence within the 2km radius. A licence allowing for the destruction of a Common Pipistrelle (*Pipistrellus pipistrellus*), Brown Long-eared (*Plecotus auritus*) and Natterer's bat (*Myotis nattereri*) breeding site and resting place located approximately 0.64km south-east of the site was issued in March 2010.

SER provided 18 records of bats within the 2km search area, one of which was a breeding roost located approximately 1.0km to the south-west for Whiskered/Brandt's bat (*Myotis mysticanus/brandtii*). The nearest record for an individual sighting was located 0.47km south of the site and pertained to a Common Pipistrelle.

#### *Roosting Bats - Trees*

All trees within the application site and located along the site's boundaries were assessed from ground level for their suitability to support roosting bats. Features were identified such as splits, cracks, hollows, woodpecker holes, occlusions etc.

Of the scattered mature trees recorded throughout the site, 2 were assessed to have 'Low' suitability to support roosting bats which are discussed in greater detail in Table 10 below.

The remaining mature trees onsite were considered to support 'Negligible' suitability to support roosting bats.

Tree sp.	Grid ref.	Potential Roosting Features, Evidence and Suitability	Suitability
Small-leaved lime (T1)	SK 10825 04242	<ul style="list-style-type: none"> <li>• Several occlusions on main stem on eastern and western elevation</li> </ul>	<b>Low</b>
Beech (T8)	SK 10865 04240	<ul style="list-style-type: none"> <li>• Failed limb scars and occlusions on main stem</li> </ul>	<b>Low</b>

Table 9: Ground-based bat roost assessment of trees



Figure 11: Example of occlusions on main stem of Small-leaved lime (T1)

Figure 12: Example of occlusions and failed branch scars on main stem of Beech tree (T8)

### Roosting Bats - Buildings

All buildings within the application site were externally and internally visually assessed for Potential Roosting Features (PRF's). Two buildings were recorded within the application site pertaining to the main residential unit (B1) which was split into three sections, the main residential building (B1a), conservatory (B1b) and garage / second living area (B1c). B1a and B1c were assessed to support 'low' suitability.

A greenhouse was recorded to the west of the application site which was considered to support 'negligible' suitability to support roosting bats due to an absence of PRFs and unsuitable materials to hold roosting bats.

Building No.	Building Description	Potential Roosting Features, Evidence and Suitability	Suitability
B1	<p>B1 was split into 3 sections (a – c) for ease of description.</p> <p>a) The predominant building within the site was a stone constructed building featuring overhanging eaves on each of the elevations supporting a pitched roof with lead flashing on each of the ridges. The building supported a refurbished roof space with a crawl space lined with MDF boards throughout.</p> <p>b) A timber and glass pane gabled conservatory (Orangery) was positioned immediately between sections a and c and was constructed.</p> <p>c) The northern-most section featured a garage on the lower floor and</p>	<p><u>External PRFs</u></p> <ul style="list-style-type: none"> <li>• Lifted tiles recorded in numerous areas of the roof on sections a and c.</li> <li>• Gaps underneath flashing on ridge and adjacent to chimney breast.</li> <li>• Bow in roof of section a exposing gaps underneath tiles.</li> </ul> <p><u>Internal PRFs</u></p> <ul style="list-style-type: none"> <li>• Access into the internal roof space was considered to be limited with the majority of PRFs pertaining to external only crevices. As such no internal features were</li> </ul>	<b>Low</b>

	refurbished living area on the upper storeys. An enclosed unused roof-space was present which featured exposed bitumastic lining with ample cobwebbing.	observed during the assessment. <b>No evidence of roosting bats was observed during the preliminary assessment.</b>	
B2	B2 was a timber and glass pane greenhouse located along the western boundary of the application site which lacked the suitable materials, features and microclimates suitable to hold a bat roost.	<b>No evidence of roosting bats was observed during the preliminary assessment.</b>	<b>Negligible</b>

Table 10: Roosting Bat assessment for Buildings



Figure 13: Southern elevation of B1a



Figure 14: Eastern elevation of B1a



Figure 15: Western elevation of B1a and B1b



Figure 16: Western elevation of B1c



Figure 17: B2 located to the west of the site



Figure 18: Internal crawl space of B1a



Figure 19: Internal roof space of B1c



Figure 20: Diagram depicting bat PRF locations. 1=lifted tiles, 2=Gap underneath flashing and 3=bow in roof exposing crevices underneath tiles

### Foraging and Commuting Bats

The site was considered to support **'low'** suitability for foraging and commuting bats. The site offers some varied vegetation types, such as mature trees, introduced shrub and sheltered amenity grassland and dense boundary scrub which may be used on an opportunistic basis by local bat populations as foraging habitat, or as part of their commuting pathways.

### 4.3.4 Birds

SER provided 58 individuals records for 27 different species of birds within the 2km search area. The closest record to the site was for Song Thrush (*Turdus philomelos*) located approximately 0.47km south of the site within St John's Wood.

The majority of the site provides foraging, cover and nesting for small common bird species. Suitable nesting habitat was recorded within patches of mature non-native scrub and within

various mature and semi-mature trees located within the application site. The grassland throughout the site may offer a suitable foraging resource. No active nests were noted during the site walkover; however, a disused wood pigeon (*Palumbus columba*) nest was recorded within T1.

Limited bird activity was observed during the site walkover with Wood pigeon, Long-tailed tit (*Aegithalos caudatus*), Blue tit (*Cyanistes caeruleus*) and Robin (*Erithacus rubecula*) identified flying onsite.

#### **4.3.5 Invertebrates**

SER provided two individual records across two species within the 2km search area. Species included Small Heath (*Coenonympha pamphilus*) and Wall (*Lasiommata megera*). The closest record pertained to Small Heath located approximately 1.2km north of the site.

The onsite habitats are likely to support a range of common invertebrate species. However, the lack of diverse habitat mosaic means it is unlikely to support a rare or notable invertebrate population.

#### **4.3.6 Other Terrestrial Mammals**

SER provided no records for other terrestrial mammals within the site or the 2km search area.

No incidental sightings were made and no specific field signs of small mammals were noted during the site walkover.

However, the site provides some cover and foraging opportunities within the dense scrub boundaries and may form corridors with rear gardens adjacent to the application site.

As such, this species may intermittently occur onsite during development.

#### **4.3.7 Riparian Mammals**

SER provided two records for Water Vole (*Arvicola amphibius*) and two records for Otter (*Lutra lutra*) within the 2km search area. The nearest record pertained to Otter located approximately 1.1km southwest of the site.

No evidence of water vole and otter was identified during the site walkover. The site and the surrounding area contained no suitable habitat for these species.

As such, this group are not considered likely to occur onsite.

#### **4.3.8 Reptiles**

SER provided no reptile records for the site or the 2km search area.

The majority of the site was assessed as providing little or no value to reptiles due to the lack of suitable mosaic habitats, opportunities for basking or hibernacula and its isolated location within a suburban environment. No reptiles were identified during the walkover survey and are considered unlikely to be present on the site.

## 5 ECOLOGICAL CONSTRAINTS AND OPPORTUNITIES

### 5.1 Ecological Constraints

Avoidance, mitigation and/or compensation measures are required for the following constraints:

#### 5.1.1 Badger

Though no badger setts or survey field signs were identified on site, it is possible that individuals may occur onsite during development. The following precautionary approach should be implemented:

- A check for badger should be undertaken alongside the scrub clearance and prior to commencement of any development to establish if any badger setts are present and/or been dug in the intervening period.
- Any pipes left uncovered overnight will be capped to prevent any badger getting trapped.
- Trenches or excavations left uncovered overnight will have a suitable means of escape (such as wooden plank).

#### 5.1.2 Bats

##### *Roosting Bats - Trees*

Two trees within the site ownership were assessed to provide '**low**' suitability to support roosting bats. In the occasion that these trees are removed to allow for the development proceedings, they should be subject to 'soft-felling' to mitigate against the impact to roosting individuals.

- Soft felling only to be undertaken during the transitional period (March – April and September – October inc.)
- Limbs are to be removed slowly and methodically and lowered to the ground
- Limbs and removed dead-wood left overnight to allow any individuals to disperse
- Limbs to be removed from the application site the following morning.

##### *Roosting Bats*

Building 1 was assessed to support '**low**' suitability to support roosting bats due to a presence of external PRF's on the roof of B1a and B1c.

The proposed development will see complete re-roofing works being carried out and extensive internal remodelling which holds the potential to cause disturbance to roosts if present within the identified features.

A single Presence / Likely Absence Bat Survey should be undertaken between the months of May and August. If bats are found to be roosting within any structure during the survey, additional roost characterisation surveys will be required to inform a suitable bat method statement.

##### *Foraging and Commuting Bats*

The application site was considered to support '**low**' suitability to support foraging and commuting bats due to the relatively small scale of the development area and abundance of comparable and better quality habitats located in the immediate surroundings. Although bats



may pass through the site, the proposed development pertains to the demolition and rebuild of a similar form and extent, therefore retaining the onsite suitability of this ecological receptor.

Artificial lighting during the construction phase of the development may result in short-term impacts to foraging and commuting individuals that may pass through the site on an episodic basis.

As such a sensitive low-level lighting scheme may need to be prepared by a lighting engineer and will follow best practice as dictated by the Bat Conservation Trust<sup>8</sup>:

- Consider employing a competent lighting designer who will apply the principals of providing the right light, in the right place, at the right time and controlled by the right system.
- Minimise the spread of light to at, or near horizontal and ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required.
- Consider the height of lighting columns. It should be noted that a lower mounting height is not always better. A lower mounting height can create more light spill or require more columns.
- Column height should be carefully considered to balance task and mitigation measures.
- Use temporary close-boarded fencing until vegetation matures, to shield sensitive areas from lighting.
- Limit the times that lights are on to provide some dark periods. The task being lit often varies, for example roads are less used after 23.00hrs and car parks are empty. A lighting designer can vary the lighting levels as the use of the area changes reducing lighting levels or perhaps even switching installations off after certain times. This use of adaptive lighting can tailor the installation to suit human health and safety as well as wildlife needs.

In addition, apply technical specifications:

- Use narrow spectrum light sources to lower the range of species affected by lighting.
- Use light sources that emit minimal ultra-violet light
- Lights should peak higher than 550 nm
- Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue short wavelength content they should be of a warm / neutral colour temperature <4,200 kelvin.

### 5.1.3 Breeding Birds

No active nests were recorded within the application area during the preliminary walkover assessment. However, the shrub vegetation and other mature vegetation within the garden are considered likely to support nests and breeding, potentially for BoCC Red-List species such as Greenfinch (*Chloris chloris*) or Sparrow species (*Passer spp.*) during the active periods of the year.

B1 may also support intermittent nesting habitat for BoCC Red-list bird species such as swallow (*Hirundo rustica*), starling (*Sturnus vulgaris*) or sparrows.

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<sup>8</sup> (A review of the impact of artificial light on invertebrates. Buglife. 2011)  
(Royal Commission on Environmental Pollution. 2009. Artificial light in the environment. London, HMSO)  
(The Ecological Consequences of Artificial Night Lighting" edited by Longcore and Rich)  
(Shedding Light: A survey of local authority approaches to lighting in England. CPRE 2014)

Onsite Reasonable Avoidance Methods (RAMs) should be followed by staff during the construction phase of the development. The RAMs will include, but not limited to, the following safe working guidance, in order for the works to proceed in a legal and ecologically sensitive manner:

- Vegetation clearance, building demolition and site clearance activities should only be undertaken outside of the recognised breeding birds' season, which runs between March – September inclusive.
- If this is unachievable, a Breeding Birds Check should be carried out by a qualified ecologist within 24hrs prior to the onset of works. If nesting birds are recorded within any vegetation due for removal, the area and surrounding 5m radius of the nest will be protected until the birds have fledged.
- If it is not possible to fully observe or inspect all the vegetation to be cleared, the ecologist will be required to supervise the clearance.

#### 5.1.4 Invasive Species

It is expected that the boundary vegetation will remain *insitu* as part of the development proceedings and therefore the risk of Rhododendron spreading is unlikely. If however vegetation removal is required, a management plan for its safe removal from the site should be in place prior to works proceeding to minimise the likelihood of pervasive flora spreading.

#### 5.1.5 Trees

Mature trees of higher ecological value should be retained if possible as part of the development.

Retained trees should be protected in line with BS5837:2012 '*Trees in relation to Design, Construction and Demolition -recommendations*'.

#### 5.1.6 Other Terrestrial Mammals / Hedgehog

To minimise the risk of killing or injury to hedgehog a precautionary site clearance method will be implemented.

- Any suitable habitat such as brash or log piles will be carefully searched by hand. Any hedgehogs found during the search will be relocated to an area of retained habitat.
- Trenches or excavations left uncovered overnight will have a suitable means of escape (such as wooden plank).
- Opportunities for hedgehogs should be included in the development design, including holes at least 13cm in size retained in the boundary walls or fencing allowing hedgehogs continued passage around the site and suitable planting to provide foraging and shelter for the species.

#### 5.1.7 Biodiversity Net Gain

The site application site was assessed as having **2.45 Habitat Units**. According to the 2016 Lichfield Biodiversity SPD, all developments are required to demonstrate a measurable biodiversity net gain<sup>9</sup>. However, the site is a small-scale self-build development and may

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<sup>9</sup> Lichfield District Council 2016, Biodiversity and Development Supplementary Planning Document, Available at: <https://www.lichfielddc.gov.uk/downloads/file/1112/supplementary-planning-document-biodiversity-and-development>

therefore be exempt from demonstrating biodiversity net gain as a material consideration of planning<sup>10</sup>

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<sup>10</sup> Defra 2023, Consultation outcome: Government response and summary of responses, section 3.1 – Exemptions.  
<https://www.gov.uk/government/consultations/consultation-on-biodiversity-net-gain-regulations-and-implementation/outcome/government-response-and-summary-of-responses>

## 5.2 Summary of Recommendations

The below information will be required, either to support the planning application or form part of a planning condition:

Ecological Receptor / Constraint	Timescales
<b>Badgers</b> Reasonable Avoidance Methods (RAMs) to be undertaken.	During construction
<b>Roosting Bats</b> Single Presence / Likely Absence Survey to be undertaken on B1a and B1c	May – August
<b>Foraging and Commuting Bats</b> Soft-lighting strategy to be produced by lighting engineer.	Prior to and during construction
<b>Amphibians</b> Reasonable Avoidance Methods (RAMs) to be undertaken.	During construction
<b>Other Terrestrial Mammals</b> Reasonable Avoidance Methods (RAMs) to be undertaken.	During construction

Table 11: Summary of Ecological recommendations

## 5.3 Ecological Enhancement Opportunities

The following ecological enhancements should be incorporated into the proposed development:

- Suitable bird nesting habitat should be incorporated into the design plans. This should take the form of installing x2 “Swift Boxes” underneath the eaves of the building. The boxes should be positioned close to one another to encourage a colony of birds to the area. x2 Generic bird boxes such as 26mm / 32mm and oval hole nest boxes to be positioned on mature trees within the garden. Each bird box should be positioned on the northern or eastern elevations at a height of no less than 5m from ground level.
- Through-site connectivity for amphibians, hedgehogs and other small mammals should be incorporated into the design plans by cutting several 13mm x 13mm holes at the base of garden fences.

## 5.4 Mechanism to secure Mitigation and Enhancement

The mitigation measures and enhancement opportunities set out above can be secured through appropriately worded planning conditions as part of any planning consents granted.

## **6 CONCLUSION**

This Preliminary Ecological Appraisal has identified a number of ecological constraints as defined within Section 5.1 and specific avoidance, mitigation and compensation measures have been provided.

Reasonable Avoidance Methods are required various ecological receptors and will need to be considered in the development phase of the construction and secured as an appropriately worded condition of planning.

Further bat Presence / Likely Absence Surveys are required to fully understand the ecological baseline of the site and allow for a Protected Species Survey Report to be submitted.

**APPENDIX A**  
**Species List**

<b>Common Name</b>	<b>Scientific Name</b>
Small-leaved lime	<i>Tilia cordata</i>
Domestic cherry	<i>Prunus domestica</i>
Wild cherry	<i>Prunus avium</i>
White Lilac	<i>Syringa vulgaris Madame Lemoine</i>
Leyland cypress	<i>Leylandii cupressus</i>
Silver fir	<i>Abies alba</i>
Blue atlas cedar	<i>Cedrus atlantica</i>
Spiny oleaster	<i>Elaeagnus pungens</i>
Cherry laurel	<i>Prunus laurocerasus</i>
Ivy	<i>Hedera helix agg.</i>
Variegated holly	<i>Ilex aquifolium 'variegata'</i>
Rhododendron species	<i>Rhododendron sp.</i>
Yew	<i>Taxus baccata</i>
Beech	<i>Fagus sylvatica</i>
Spotted laurel	<i>Aucuba japonica</i>
Holly	<i>Ilex aquifolium</i>
Palm	<i>Arecaceae</i>
Garden privet	<i>Ligustrum ovalifolium</i>
Silver birch	<i>Betula pendula</i>
Black locust	<i>Robinia pseudoacacia</i>
Field speedwell	<i>Veronica agrestis</i>
Crocus species	<i>Crocus sp.</i>
Daisy	<i>Bellis perennis</i>
Creeping buttercup	<i>Ranunculus repens</i>
Snowdrop species	<i>Galanthus sp.</i>
Bryophyta sp.	<i>Bryophyta sp.</i>
Lesser celandine	<i>Ficaria verna</i>
Rose species	<i>Rosa sp.</i>
Mahonia species	<i>Mahonia sp.</i>
Male fern	<i>Dryopteris filix-mas</i>
Quince	<i>Cydonia oblonga</i>
Flowering currant	<i>Ribes sanguineum</i>

## **APPENDIX B**

### **Key Species Legislation**

#### **Bats**

Bats are European Protected Species (EPS) listed on Annex IV of the Habitats Directive 1992 which is transposed into UK law by the Conservation (Natural Habitats &c) Regulations 1994 or “Habitats Regulations” and consolidated within The Conservation of Habitats and Species Regulations 2017. Bats are also protected through Schedules 5 and 6 of the Wildlife and Countryside Act (WCA) 1981 (as amended). Certain species are also listed in Section 41 of the NERC Act 2006, as species which are of principal importance for the conservation of biodiversity in England. A number of Bat species are listed as a Biodiversity Action Plan (BAP) priority species on the UK BAP.

#### **European Otter (*Lutra lutra*)**

Otters are an EPS listed on Annex IV of the Habitats Directive 1992 which is transposed into UK law by the Conservation (Natural Habitats &c) Regulations 1994 or “Habitats Regulations” and consolidated within The Conservation of Habitats and Species Regulations 2017. Otters are also a UK BAP priority species and listed as a species of principal importance for the conservation of biodiversity in England under Section 41 of the NERC Act 2006. Otters are also protected through Schedules 5 and 6 of the WCA 1981 (as amended).

#### **European Water Vole (*Arvicola amphibious*)**

Water Vole is protected under Schedule 5 of the WCA 1981 (as amended) and is listed as a species of principal importance for the conservation of biodiversity in England under Section 41 of the NERC Act 2006. Water Voles are also listed as a UK BAP priority species.

#### **Eurasian Badger (*Meles meles*)**

Badgers are protected in the UK under the Protection of Badgers Act 1992 which protects both the individual animals and their setts. However, habitats used for any other purpose are not afforded any form of protection under this or other legislation. This species is also listed on Schedule 6 of the Wildlife and Countryside Act 1981 (as amended) which outlaws certain methods of taking and killing when this is necessary.

#### **European Hedgehog (*Erinaceus europaeus*)**

Hedgehog are listed as a species of principal importance for the conservation of biodiversity in England under Section 41 of the NERC Act 2006 and is also listed as a UK BAP priority species.

#### **Birds**

All bird species including their eggs and nests, are protected from harm during the breeding season under the WCA 1981 to varying degrees. Some bird species are also included on Schedule 1 of the WCA 1981 (as amended) and inclusion on this schedule makes it an offence to intentionally or recklessly disturb these birds at, on or near an ‘active’ nest. A number of birds are listed as species of principal importance for the conservation of biodiversity in England under Section 41 of the NERC Act 2006.

#### **Reptiles**

Widespread reptiles; Adder (*Vipera berus*), Grass snake (*Natrix natrix*), Common lizard (*Lacerta vivipara*) and Slow-worm (*Anguis fragilis*) are protected against killing, injuring and sale under UK legislation through their inclusion in Appendix III of the Bern Convention (1979), Schedule 5 of the WCA 1981 (as amended).

Sand Lizard (*Lacerta agilis*) and Smooth snake (*Coronella austriaca*) are also EPS listed on Annex IV of the Habitats Directive 1992 which is transposed into UK law by the Habitats Regulations, and on Schedule 5 of the WCA 1981 (as amended).

All reptiles are listed as UK BAP Priority species and are also listed as a species of principal importance for the conservation of biodiversity in England under Section 41 of the NERC Act 2006.

### **Amphibians**

Widespread amphibians; Smooth newt (*Triturus vulgaris*), Palmate newt (*Triturus helveticus*), Common frog (*Rana temporaria*) and Common toad (*Bufo bufo*) are only protected from sale under Schedule 5 of the WCA 1981 (as amended). Common toad is also listed as a UK BAP Priority species.

Great crested newt (*Triturus cristatus*) and Natterjack toad (*Bufo calamita*) are also EPS listed on Annex II and IV and Annex IV respectively of the Habitats Directive 1992 which is transposed into U.K law by the Habitats Regulations, and on Schedule 5 of the WCA 1981 (as amended). Both are also listed as a UK BAP Priority species and GCN are also listed as a species of principal importance for the conservation of biodiversity in England under Section 41 of the NERC Act 2006.

### **Invertebrates**

A large number of British invertebrates are protected under Schedule 5 of the WCA 1981 (as amended). Different species are protected under one, some or all of the parts of Section 9. Hundreds of invertebrate species are of principal importance for the conservation of biodiversity in England under Section 41 of the NERC Act 2006. Similarly, several hundred are also listed as a UK BAP priority species.

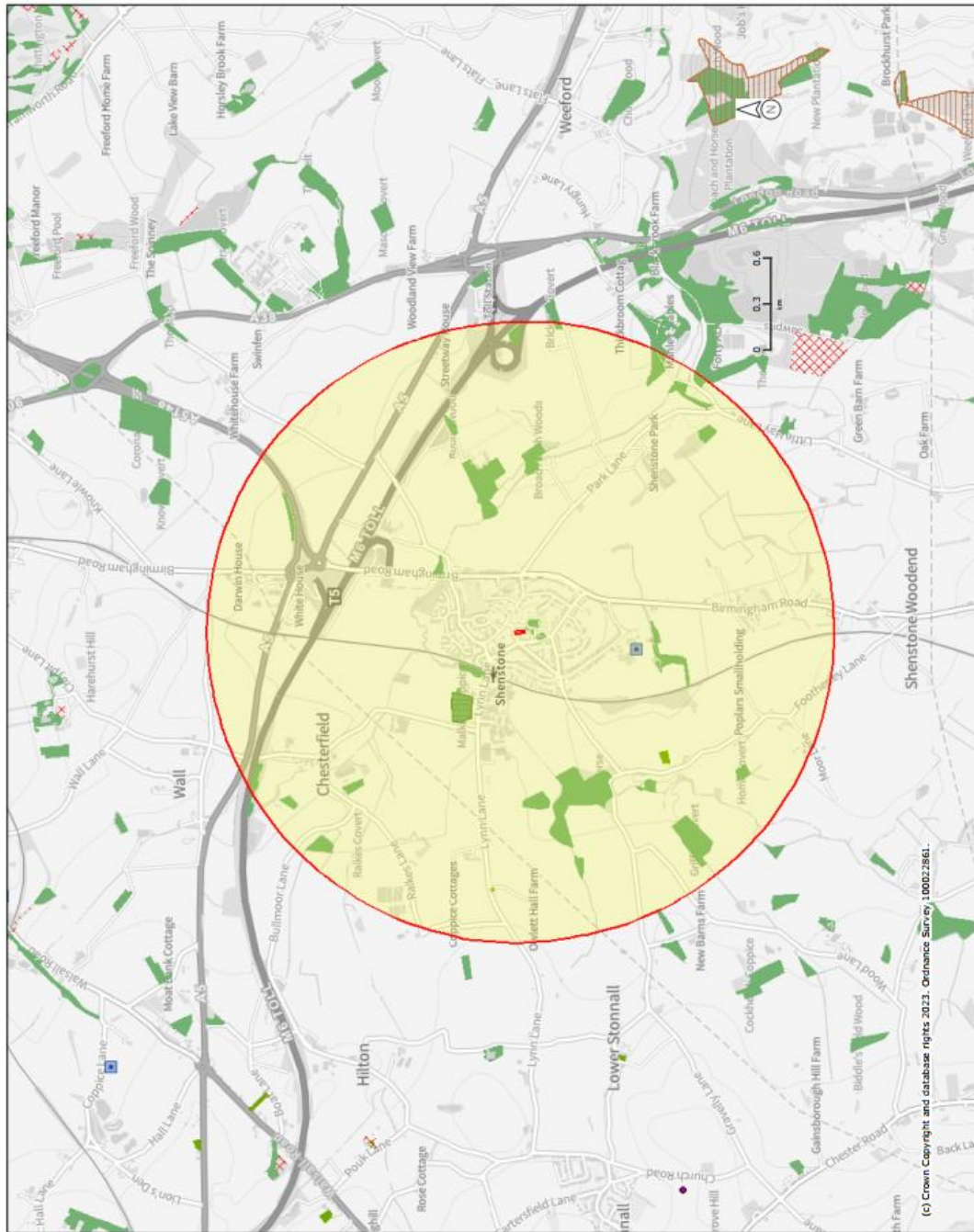


# APPENDIX C

Natural England Magic environmental schemes and designations. [www.magic.gov.uk](http://www.magic.gov.uk)  
 March 2023

MAGIC

## Magic Map



**Legend**

- Areas of Outstanding Natural Beauty (England)
- Local Nature Reserves (England)
- National Nature Reserves (England)
- Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)
- Biosphere Reserves (England)
- Ancient Woodland (England)**
- Ancient and Semi-Natural Woodland
- Ancient Replanted Woodland
- Priority Habitat Inventory - Deciduous Woodland (England)
- Priority Habitat Inventory - Traditional Orchards (England)
- Priority Habitat Inventory - No main habitat but additional habitat exists (England)
- Granted European Protected Species Applications (England)**
- Amphibian
- Bat
- Cetacean
- Invertebrate
- Other Mammal
- Plant
- Reptile
- Great Crested Newt Class Survey
- License Returns (England)

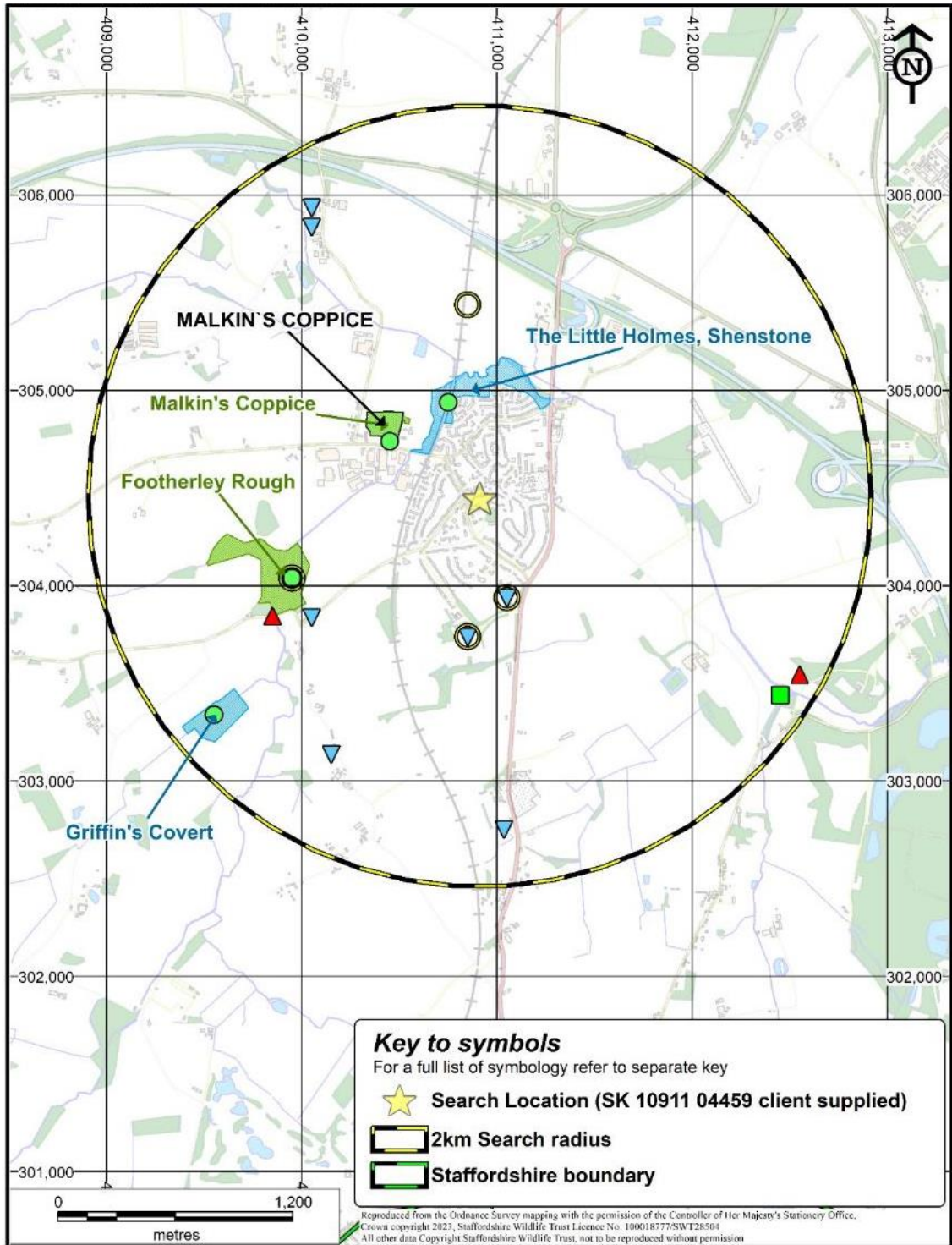
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Scale: 0, 0.5, 1 km

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**APPENDIX D**  
**SER Local Wildlife Sites. March 2023**



# UKHABS SURVEY PLAN

