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16 KNOSSINGTON ROAD, BRAUNSTON
Preliminary Ecological Appraisal &
Biodiversity Enhancement Plan

Mrs Karen Nagel

November 2023



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EXECUTIVE SUMMARY

In November 2023, Ecology Resources Ltd undertook a Preliminary Ecological Appraisal (PEA) at 16 Knossington Road, Braunston, Rutland ('the Site' hereafter).

The proposal relates to the demolition of an existing bungalow and its replacement with a 'passive house'. Works will also include the partial relandscaping of the existing front and rear gardens.

The aim of the survey was to assess the Site for its baseline ecological value and, where required, to provide recommendations for stage 2 ecological surveys, mitigation, compensation, and enhancement.

Onsite habitats are deemed typical of a large urban garden and therefore common and widespread. Whilst some will be lost to development, most of the green outdoor space will be retained and enhanced, with the addition of more biodiverse habitats as detailed in the biodiversity enhancement proposal chapter of this report.

As part of the baseline ecological assessment, a Preliminary Roost Assessment (PRA) for bats was undertaken on the existing bungalow by a licenced surveyor. Droppings (3no.) of an unidentified species were found, collected and sent for DNA analysis, which attributed them to Eurasian pigmy shrew.

At the time of writing, presence of bats in the building is deemed unlikely; however, given that the proposal will involve the demolition of the existing dwelling, which has been assessed as *low* potential in accordance with the applicable professional guidance, a single emergence survey is recommended to determine presence/likely absence prior to works commencing.

The suitability of the on-site pond has been assessed as 'below-average' and therefore, no further survey work is recommended. However, in line with Leicester, *Leicestershire and Rutland Great Crested Newt Survey Protocol*, it is recommended that a precautionary method of works is implemented throughout the development phase to prevent accidental harm to the species, should it be found on Site.

No evidence of other protected or notable species' presence/activity was identified on Site at the time of survey.

1. INTRODUCTION

- 1.1 Ecology Resources Ltd were commissioned by Mrs Karen Nagel (the 'Client') to carry out a Preliminary Ecological Appraisal (PEA) at 16 Knossington Road, Braunston, Rutland (the Site' hereafter), to support a planning application for the demolition of the existing property and the construction of a new residential dwelling. The findings of the PEA have been used to inform a Biodiversity Enhancement Proposal, which is presented in Chapter 5 of this report. The Site outline is shown in Figure 1.

Background Information

- 1.2 The Site is residential in character and comprises a bungalow, front and rear garden and a driveway, collectively occupying an area of ca 0.2ha.
- 1.3 The Site is located at the west end of Braunston, Rutland, at Grid Reference SK 83042 06697. It adjoins residential properties to the east and the west, a paddock to the south and Knossington road to the north. The wider landscape is largely characterised by intensively farmed land.

Project Scope

- 1.4 The proposal comprises the demolition of the existing bungalow and the construction of a new house, broadly at the same location but with a different footprint.
- 1.5 To accommodate the new dwelling, an area of soft-landscape to the east of the existing property will be lost to development; however, the proposal makes ample allowance for the delivery of biodiversity enhancements within the retained front and rear gardens.

Purpose Of This Report

- 1.6 The aims of this report are to:
- relay the findings of the baseline survey pertaining to the habitats and species present, or deemed likely to be present, within the Site;
 - identify any ecological constraints associated with the proposed development, and
 - where required, set out recommendations for stage 2 ecological surveys, mitigation, compensation, and enhancement.
- 1.7 It is understood that this document will form part of a formal planning application and, as such, will be open to public scrutiny and comment.

2. METHODOLOGY

Desktop Study

2.1 Relevant ecological and spatial information was sourced to provide additional Site context and identify any features of potential importance for nature conservation in the wider landscape, including:

- Multi Agency Geographic Information for the Countryside (MAGIC) ¹;
- Leicestershire and Rutland Environmental Records Centre (LREC);
- 1:25000 OS base maps (www.ordnancesurvey.co.uk);
- aerial imagery from Google Earth (www.maps.google.co.uk),

2.2 The search area related to potential zones of influence for significant sites and species:

- 2km for sites of International Importance (e.g. Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites).
- 1km for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSIs)) and species records (e.g.: protected, Species of Principal Importance, Local Biodiversity Action Plan (LBAP) species and other notable species).
- 1km around the application site for sites of County Importance (e.g. local nature reserves (LNR) / Other Sites of Wildlife Interest (OSWI – formally Local Wildlife Sites).

Habitats

2.3 The field survey was completed on the 7th November 2023 by Martino Ginepro ACIEEM.

2.4 The survey method adopted for the assessment of on-site habitats was based upon the UK Habitat Classification Survey technique, as outlined in the UK Habitat Classification Use Manual Version 2.0 ². All habitat types were spatially recorded to Level 4 of the UKHab hierarchy, using GIS, and the assessment of their condition (where applicable) was carried out in line with the criteria set out in the relevant habitat condition sheet ³.

2.5 Target Notes (TN) were recorded to identify features of interest and photographs were taken to provide visual context.

Fauna

2.6 During the survey, any signs indicating presence/activity of any species protected under the following list of Acts and Regulations were noted:

- Part 1 of the Wildlife and Countryside Act 1981 (as amended);
- Protection of Badgers Act 1992⁴;
- Conservation of Habitats and Species Regulations 2010 (as amended) ⁵;
- (NERC) Act (2006) S41 species of principal importance for the conservation of biodiversity; and,
- Local BAP or Red Data Book (RDB) species.

¹ www.magic.defra.gov.uk (all websites cited in this report were accessed in August 2023)

² UK Hab Ltd (2023). UK Habitat Classification Version 2.0 (at <https://www.ukhab.org>)

³ The Biodiversity Metric 4.0: auditing and accounting for biodiversity Condition assessment sheet (Excel format)

⁴ The Protection of Badgers Act 1992 (as amended). London: HMSO <https://www.legislation.gov.uk/ukpga/1992/51/contents>

⁵ The Conservation of Habitats and Species Regulations 2010 – Statutory Instrument 2010 No.490. London: HMSO: <https://www.legislation.gov.uk/uksi/2010/490/introduction/made>

Great Crested Newts

Terrestrial Habitat

2.7 An assessment of the suitability of the terrestrial habitats to support great crested newt (GCN) was completed within the site. Suitable terrestrial habitat includes shelter habitat such as scrub and rank vegetation, and habitat that could provide suitable hibernation sites such as rubble piles, tussock grassland and compost heaps.

Habitat Suitability Index

2.8 A Habitat Suitability Index (HSI) ⁶ assessment was undertaken for accessible waterbodies within a 250m radius from the Site's boundary. A HSI provides a measure of the likely suitability that a waterbody has for supporting GCN⁷. A score is assigned to each of the attributes included in the assessment form, and a total score of between 0 and 1 derived. Pond suitability is then determined according to the scale set out in Table 1. Using the index score, presence of GCN within a given pond can be inferred and further assessment prescribed as required.

Table 1: HSI Scores as a Measure of Pond Suitability

HSI score	Pond Suitability	Predicted GCN Presence
<0.5	Poor	3%
0.5 - 0.59	Below average	20%
0.6 – 0.69	Average	55%
0.7 – 0.79	Good	79%
>0.8	Excellent	93%

Bats

Building assessment

2.9 Any buildings on site were subjected to a building survey in line with survey guidelines set out by the Bat Conservation Trust⁸. Features deemed suitable within buildings include but are not limited to:

- lifted, missing or broken tiles.
- Lifted or damaged lead flashing (i.e. around chimney stacks or gulleys).
- Damaged soffits or gaps present in open ended eaves.
- Lifts or damaged fascia boards.
- Missing cement in brickwork leading to cavity.
- Direct evidence in the form of individuals, droppings, scratchmarks, foraging remains or staining.

⁶ Oldham, R.S., Keeble, J. Swan, M.J.S, and Jeffcote, M. 2000. *Evaluating the Suitability of Habitats for the Great Crested Newt (Triturus cristatus)*, *Herpetological Journal* 10:143-155.

⁷ ARG UK 2010. ARG UK Advice Note 5: *Great Crested Newt Habitat Suitability Index*.

⁸ Bat Conservation Trust, 2015. *Bat Surveys for Professional Ecologists. Good Practice Guidelines*.

Tree assessment

2.10 Trees expected to be impacted by the development were examined from ground level for features that could provide suitable roosting opportunities. Features deemed suitable for bat roosting include:

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar.
- Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems).
- Woodpecker holes.
- Cracks/splits in stems or branches (horizontal and vertical).
- Partially detached, loose or bark plates.
- Cankers (caused by localised bark death) in which cavities have developed.
- Other hollows or cavities, including butt rots.
- Compression of forks with included bark, forming potential cavities.
- Crossing stems or branches with suitable roosting space between.
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).
- Bat or bird boxes.
- Other suitable places of rest or shelter.

2.11 Factors such as aspect, height, exposure to abiotic factors and location in respect to other features may enhance or reduce the potential value of a feature.

Foraging/Commuting Habitat

2.12 The Site and the immediate surroundings were assessed for their potential to provide feeding and commuting opportunities for bat species. Consideration was given to the presence of continuous lines of vegetation providing connectivity within the wider landscape and to the presence of habitats such as scrub, woodland, grassland and open water near known bat roost sites (identified through the consultation process and from field survey).

2.13 Table 2 outlines the criteria of assessment for the determination of bat habitat suitability in buildings, trees and the wider landscape.

Table 2: Assessment criteria for assessing potential suitability of the Site for bats.

Potential Suitability	Description	
	Roosting habitats in structures	Potential flight paths and foraging habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground level)	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats).
Negligible	No obvious habitat features on site likely to be used by roosting bats; however, a small element	No obvious habitat features on site likely to be used as flight-paths or by foraging bats;

Potential Suitability	Description	
	Roosting habitats in structures	Potential flight paths and foraging habitats
	of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	however a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. 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 and not a classic cool/stable hibernation site, but could be used by individual hibernating bats).	Habitat could be used by a small number of bats as flight-paths such as gappy hedgerows or unvegetated streams, but isolate, 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 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, such as maternity and hibernation – the categorisation described in this table is 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 flight-paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees scrub grassland or water.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger number of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees, and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses, and grazed parkland. Site is close to and connected to known roosts.

Badgers

2.14 In accordance with the guidance set out by Harris *et al.*⁹ and the approach applied in the national badger survey¹⁰, the Site was assessed for evidence of badger presence/activity including setts, runs, prints, latrines, and hairs caught on fences.

Reptiles

2.15 In line with the applicable guidance¹¹, a visual check for suitable habitat features was carried out at time of survey, with a focus on:

- Mounds of soil, rocks, brash and other organic material
- Well-developed varied structure grassland
- Log/brash piles
- Stone/brick walls with a south-facing aspect
- Bare ground
- grassland and basking areas, such as open areas next to vegetation, rocks, bare ground, and wood piles.

Invertebrates

2.16 The Site was also assessed for its potential to support invertebrates, based on the methodology set out in the Open Mosaic Survey Handbook¹². Unmanaged grassland sites can be particularly valuable for a range of invertebrate species.

Other species

2.17 Any sightings, evidence of or suitable habitats for other protected species and notable fauna such as local BAP species and breeding birds were recorded during the site visit.

⁹ Harris, S. Creswell, P. Jefferies, D. (1989). Surveying Badgers.

¹⁰ Cresswell, P. Harris, S. Jefferies, D. (1990). *The history, distribution, status and habitat requirements of the badger in Britain*. Nature Conservancy Council

¹¹ Gent T and Gibson S (2003). Herpetofauna Workers Manual. JNCC, Peterborough.

¹² Lush, Kirby, Sheperd. *Open Mosaic Habitat Survey Handbook*. exeGesIS SDM.

3. RESULTS

Desktop Study

3.1 The desk study results are summarised in Table 3 and illustrated in Figure 2.

Statutory & Non-Statutory Designated Sites

3.2 Statutory and Non-statutory designated sites identified within 2km of the Site are outlined in Table 3.

Table 3 – List of statutory and non-statutory Designated sites.

Site name	Designation	Description	Distance from application site
Prior Coppice	SSSI	The site comprises one of the best remaining ash-maple woods in Leicestershire and is representative of semi-natural woodland developed on clay soils in Central and Eastern England. https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1001166.pdf	~1.2Km S
Braunston Hedgebank	LWS	This hedgerow meets the primary criteria for selection as a Site of Importance for Nature Conservation, because it exceeds the minimum height criterion of 1.3m, and has at least 6.0 locally native trees or shrubs from list A1 per 30m average plus at least two additional habitat features of value from list A2.	~375m SE
Hedgerow, Brooke	LWS	This hedgerow meets the primary criteria for selection as a Site of Importance for Nature Conservation, because it exceeds the minimum height criterion of 1.3m, and has at least 6.0 locally native trees or shrubs from list A1 per 30m average plus at least two additional habitat features of value from list A2.	~570m SE
Braunston in Rutland Meadow	LWS	Field 1 (SK829062) meets the primary criteria for Mesotrophic grassland because it is over 2500m ² and has 13 species from List F:	270m SW
Braunston Pasture 1	LWS	The grassland meets the Primary criteria for Mesotrophic Grassland in being at least 2500m ² in area or 200m in length and in having at least 10 (actually 11) species from Mesotrophic Grassland	~640m W

Protected and notable species

3.3 Records of protected and notable species sighted in the last 10 years within 1km from the Site are summarised in Table 4. Their location, obscured for confidentiality with an accuracy of up to 100m is shown in Figure 2.

Table 4: Summary of protected species within 1km of the Site

Species	Status	Distance from site and Comments
Amphibians	WCA	3 records. 2x Common Frog <i>Rana temporaria</i> . 1x Common Toad <i>Bufo bufo</i> . Closest record 317m
Bats <i>Chiroptera</i>	WCA, SPI	48 records. Common pipistrelle <i>Pipistrellus pipistrellus</i> . Soprano pipistrelles <i>Pipistrellus pygmaeus</i> . Brown Long-eared bat (BLE) <i>Plecotus auratus</i> , Serotine <i>Eptesicus serotinus</i> , Noctule <i>Nyctalus noctule</i> . Closest record 90m 1 EPSL licence granted for the destruction if a resting place of BLE and Common pipistrelle ~300m
Terrestrial Mammals	WCA, SPI, BAP	3 records. Otter <i>lutra lutra</i> , Water Vole <i>Arvicola amphibius</i> , Badger <i>meles meles</i> . Closest record 291m
Reptiles	WCA, SPI	1 record. Grass snake <i>Natrix Helvetica</i> . 469m
Birds	WCA, SPI, BoCC, LBAP	63 records. Red Kite <i>Milvus milvus</i> , Firecrest <i>Regulus ignicapilla</i> , Fieldfare <i>Turdus pilaris</i> , Barn Owl <i>Tyto alba</i> , Cuckoo <i>Cuculus canorus</i> , House Martin <i>Delichon urbicum</i> , Lesser Spotted Woodpecker <i>Dryobates minor</i> , Yellowhammer <i>Emberiza citronella</i> , Grasshopper Warbler <i>Locustella naevia</i> , House Sparrow <i>Passer domesticus</i> , Marsh Tit <i>Poecile palustris</i> , Bullfinch <i>Pyrrhula pyrrhula</i> , Starling <i>Sturnus vulgaris</i> . Closest record 391m

Key: WCA – Part 1 of the Wildlife & Countryside Act 1981 (as amended); SPI - Species of Principal Importance in England listed on S41 of the NERC Act 2006; BA - The Protection of Badgers Act 1992; BoCC - Birds of Conservation Concern; BAP - UK Biodiversity Action Plan Priority Species; LBAP - Leicestershire & Rutland Local Biodiversity Action Plan Species

Field Survey

Flora

3.4 The IDs attributed to the habitats discussed in the paragraphs to follow (i.e. H1, H2) are referenced in Figure 3. The habitat codes attributed to the identified habitats (i.e. g4) relate to the UK Habitat classification method.

Habitats

3.5 The front garden (H10) supports close-mown modified (amenity) grassland (g4) and is bounded by a hedgerow to the north and east (HE4, HE5), and by a patch of scrub to the north-west (HE6, Plate 1). The latter is characterised by a mixture of native species and therefore classified as mixed scrub (h3), although it also includes a stand of non-native buddleja.



Plate 1 - Front Garden

- 3.6 Part of the northern boundary is formed by a well-established and relatively diverse hedge (HE5, Plate 2), which comprises hornbeam *Carpinus betulus*, privet *Ligustrum sp.*, hawthorn *Crataegus monogyna*, bramble *Rubus fruticosus agg.*, elm *Ulmus sp.* and ivy *Hedera helix*.



Plate 2 - Hedge HE5

- 3.7 This boundary feature changes significantly in character at its east end (HE4, Plate 3), becoming dominated by laurel *Laurus sp.* with the occasional shrub of holly *Ilex aquifolium*, beech *Fagus sylvatica* and *Lonicera nitida*. The monoculture character of this section of hedgerow suggests that the historic hedge was removed and replaced at some point in the past.



Plate 3 - Hedge HE4

- 3.8 A thin, short and gappy hedge (HE6, Plate 4) comprising variegated privet *Ligustrum sp.*, *Prunus sp.*, elm, ash saplings forms the NW boundary of the property. This feature was found in poor condition and of negligible ecological value.



Plate 4 - Hedge HE6

- 3.9 The rear garden (H1, Plate 5) is bounded by hedgerows on all aspects and is dominated by close-mown modified grassland (g4), with stands of ornamental shrubs (H5, H6, H7). The recorded hedgerows comprise the following species:

- HE1: Hawthorn, ash saplings, elder *Sambucus nigra*, blackthorn *Prunus spinosa*, wayfaring tree *Viburnum lantana*.
- HE2: hawthorn, elder
- HE3: hornbeam, beech, ash saplings, elder, hazel *Corylus avellana*

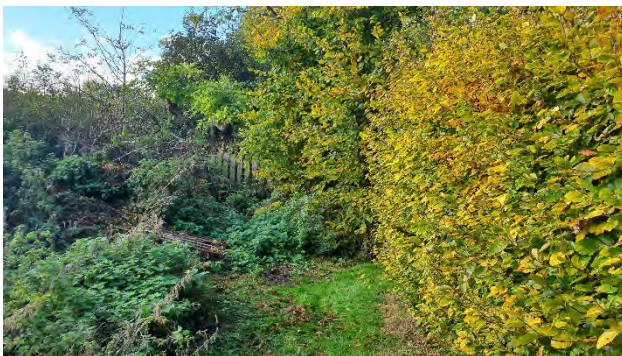


Plate 5 – Views of the rear garden

3.10 A pond (P1, Plate 6)) occupying an area of ca. 25m² was identified at the southeastern end of the garden and appeared to have been unmanaged for some time (Plate 6). Marginal vegetation was dominated by tall ruderals/ephemerals such as willowherb *Epilobium sp.* and nettle *Urtica dioica*, with some bramble encroachment. Two young hawthorn trees were rooted on the northern bank, whereas the southern edge is demarcated by the boundary hedgerow. The pond is dominated by emergent aquatic vegetation and held little water at the time of survey.



Plate 6 - Pond P1

3.11 A compost heap mostly made of grass cuttings was observed to the west of the pond, with ruderals growing around it (TN1).

3.12 The site also supports scattered landscape trees, comprising the following species, mostly of early maturity:

- Silver birch *Betula pendula*
- Ash *Fraxinus excelsior*
- Crack willow *Salix fragilis*
- Smooth Japanese maple *Acer palmatum*
- Walnut *Juglans regia*
- Corkscrew hazel *Corylus contorta*
- Wild cherry *Prunus avium*
- *Thuja sp.*
- Apple *Malus sp.*

3.13 Detailed survey results and associated figures can be found in the arboricultural survey report¹³ submitted alongside this document.

¹³ Ginepro, M (2023): Pre-development Tree Survey Report. 16 Knossington Road, Braunston. Ecology Resources Ltd, Oakham.

Fauna

Great Crested Newt

Habitat assessment

- 3.14 There is one onsite pond (P1) and an offsite pond (P2) c. 130m to the west, with connectivity to the Site via the boundary hedgerow. A third pond (P3) was identified through examination of 1:25000 OS maps approximately 220m to the northwest of the Site's boundary and ca. 300m from P1. The latter is poorly connected to Site through a combination of distance and the presence of barriers to dispersals (road). Ponds P2 and P3 were not accessed at the time of survey as they were located on third-party land.
- 3.15 Their location is referenced in Figure 2 and spatial information and HSI results (where applicable) are shown in Table 5.

Table 5: Summary of habitat suitability for GCN.

Waterbody	Distance from Site Boundary	Pond Area	HSI Score	Pond Suitability	Predicted Presence
P1	Onsite	~25m ²	0.56	Below average	20%
P2	130m	~37m ²	N/A	N/A	N/A
P3	220m	~30m ²	N/A	N/A	N/A

Bats

Buildings assessment

- 3.16 A summary of the building assessment results is provided here; full survey results are referenced in Appendix A.
- 3.17 The house is a one storey bungalow with flat roofed extension and PVC conservatory. The roof of the main house is hipped and the garage flat-roofed. The roof is made of concrete tiles.
- 3.18 Gaps were observed in a ridge tile at the north-eastern aspect, at ~2.5m (Plate 6#7) and ridge tiles were lifted at the south-eastern aspect (Plate 8).



Plate 7 - Gap in ridge tile



Plate 8 - Lifted ridge tiles at SE and gap in ridge tile at NE

- 3.19 The internal loft space is approximately 3m high, 13m long and 7m wide and lined with bitumen felt. Two sections were torn, one at the western aspect and the other to the south. No gaps were visible to the exterior.
- 3.20 Droppings (3 no.) were found on sections of loft board within the roof void. Analysis of these attributed them to Eurasian pygmy shrew *Sorex minutus* (see Appendix B). No further evidence suggesting use of the roof void by bat species was observed.

Tree assessment

- 3.21 All trees recorded onsite were considered **negligible** for bat roosting potential, as none displayed features deemed suitable for shelter or protection as described in Para. 2.10.

Habitat assessment

- 3.22 Due to the size and composition of the garden the site is considered to have **low** potential to support foraging bats.
- 3.23 The site is considered of **moderate** commuting value for bats due to the presence of vegetated boundary features, in particular the southern boundary which provides connectivity to a network of linear features in the surrounding landscape, including the River Gwash and areas of woodland further afield.

Badger

- 3.24 Whilst records of badgers are treated as confidential, it can be confirmed that no setts or evidence of activity (runs or foraging) were observed within the Site and the surrounding 30m (where accessible).

Reptiles

- 3.25 Onsite habitats are considered of limited value to support breeding populations of common reptiles. However, the habitats present at the south end of the garden (i.e. compost heaps in proximity to pond P1) could support foraging grass snake, particularly around the pond. The compost heap is suitable habitat for hibernation for grass snake and slow-worm *Anguis fragilis*.

Birds

- 3.26 Breeding and roosting opportunities for common bird species were restricted to trees and boundary hedgerows and scrub. Birds most likely to be present on Site are those that closely associate with woodland, garden, and farmland, such as wood pigeon *Columba palumbus*, wren *Troglodytes troglodytes*, robin *Erithacus rubecula*, and goldfinch *Carduelis carduelis*.
- 3.27 The Site offers foraging potential for ground feeding species such as wood pigeon, green woodpecker *Picus viridis* and starling *Sturnus vulgaris*.

Other Species

- 3.28 No evidence of any other protected or notable species was identified during the survey visit.

4. DISCUSSION

Proposals

- 4.1 Proposals for the Site include demolition and reconstruction of the dwelling, in broadly the same location, with a larger footprint. Associated soft and hard landscaping will include elements of habitat retention, enhancement and creation in line with the recommendations set out in this report.

Statutory and Non-Statutory Designated Sites

- 4.2 Due to the limited scope of the development and distance from identified statutory or non-statutory designated sites, no impacts are expected. Therefore, the presence of these sites is not considered a constraint to the proposed development.

Flora

Habitats

- 4.3 The degree to which habitats receive consideration within the planning system relies on several mechanisms, including:
- Inclusion within specific policy (e.g. veteran trees, ancient woodland and linear habitats in the National Planning Policy Framework (NPPF), or non-statutory site designation),
 - Identification as a Habitat of Principal Importance (HPI) for biodiversity under the NERC Act 2006 and consequently identification as a Priority Habitat within the local Biodiversity Action Plan (LBAP) and a Priority Habitat for England under Biodiversity 2020.
- 4.4 Under the NPPF, opportunities to incorporate biodiversity improvements in and around developments should be encouraged. Furthermore, Biodiversity Net Gain, introduced in the planning system with the Environment Act 2021 and due to become a legal requirement in January 2024, requires that the natural environment is returned in a measurably better state relative to pre-development condition, in the measure of 10%.
- 4.5 A quantitative assessment applying the Defra Metric has not been requested by the Client and is unlikely to be needed, due to the limited size of the Site; however, field data has been gathered to enable quantification of impact at a later stage, should it be necessary. In this report, impacts on habitats and species have been subjected to a qualitative assessment.
- 4.6 The habitats present onsite - modified grassland, native and ornamental scrub, ruderal vegetation and pond – are relatively common to an urban garden setting, and therefore, in the absence of protected species, are not afforded protection through legislation or special consideration in the planning system.
- 4.7 However, the assemblage of habitats identified on Site provide niches for a range of urban and urban edge species and should therefore be retained and enhanced, where possible, with a view to achieve a 'net gain' (albeit qualitative) for biodiversity.
- 4.8 Recommendations for biodiversity enhancements are covered in chapter 5.

Fauna

Great Crested Newts

- 4.9 The environmental record search did not return records of GCN within the 1km radius and the onsite pond (P1) was attributed '*below average*' suitability through a Habitat Suitability Index. Whilst no additional survey effort is deemed necessary, in line with Leicester, Leicestershire and Rutland GCN Survey Protocol¹⁴ (Para. 6.3), it is recommended that a precautionary method of works is implemented throughout the development phase to prevent accidental harm to the species, should it be found on Site.
- 4.10 Mitigation shall be limited to on-site personnel remaining vigilant, particularly during the demolition phase and while digging foundations. Should any newts be found unexpectedly, works shall cease and an ecologist contacted for advice, to remain compliant with the applicable legislation.

Bats

- 4.11 All UK bat species are listed on the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, making it illegal to deliberately disturb, damage or destroy any such animal, breeding site or roosting place. Bats are also afforded full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation, it is illegal to recklessly or intentionally disturb, kill, injure, or take a species of bat and to recklessly or intentionally damage or obstruct access to, or destroy, any place of shelter or protection. Some bat species, including soprano pipistrelle, are Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC).

Building Assessment

- 4.12 The bat droppings identified within the loft were attributed to Eurasian pigmy shrew *Sorex minutus*; therefore, historic presence of bats in the building has been discounted.
- 4.13 As the assessment was conducted during the winter season (4th December 2023) and no live bats were observed within it, its use for hibernation is deemed highly unlikely. This statement is further corroborated by the fact that lofts generally do not provide the climatic conditions required by bats during hibernation (i.e. consistently low temperature below 5°C and high humidity).
- 4.14 Owing to its architecture, construction and materials, the building is considered sub-optimal for roosting bats. However, given a gap between ridge tiles (NE aspect, ca. 2.5m) and a lifted ridge tile (SE aspect), it was attributed 'low potential'.
- 4.15 in line with the applicable professional guidance, 1no. emergence survey shall be undertaken in the 2024 active season (April/May, depending on suitability of weather conditions).
- 4.16 The survey should involve 3no. surveyors operating bat audio detectors and night vision aids (infrared cameras, thermal imaging), for a duration of 1.5 hours after dusk.
- 4.17 If no emergence is observed, the building will be deemed free of bats and no further investigation will be required prior to the demolition of the dwelling.

¹⁴ Leicestershire County Council Planning Ecology Service. Leicester, Leicestershire and Rutland Great Crested Newt Survey Protocol. August 2022.

Habitat Assessment

- 4.18 Whilst the value of the Site for foraging and commuting bats has been assessed as *low* and *moderate* respectively, further activity surveys for bats are not deemed proportional or required given the negligible impact of the proposed development upon boundary features.

Tree Assessment

- 4.19 None of the trees assessed onsite displayed features conducive to the presence of roosting bats; therefore, no further tree surveys for bats are deemed necessary.

Birds

- 4.20 The Site supports breeding and foraging habitat for birds in hedgerows, scrub and trees. Vegetation clearance to facilitate development will be limited to the removal of 4 small to medium size trees that do not provide significant nesting opportunities.
- 4.21 All the existing linear features will be retained, and an abundance of suitable breeding and foraging habitat exists in the surrounding area. Therefore, the proposed development will have a negligible effect on local bird populations.
- 4.22 That said, to ensure compliance with the requirements of the Wildlife & Countryside Act 1981 (as amended), it is recommended that the clearance of woody vegetation is completed outside of the nesting season (March – August inclusive). Where this is not possible, works shall only commence after a pre-clearance nesting bird check has been carried out on Site by a suitably qualified person. Should the survey identify any active nests, these will have to be retained and suitably buffered from disturbance until such time that the young birds have fledged and the nest has been vacated.

5. BIODIVERSITY ENHANCEMENT PROPOSAL

- 5.1 Established habitat features are largely confined to the boundaries and the southernmost part of the rear garden, which hosts a small pond and is subjected to relaxed management regimes. Therefore, the Site offers opportunities to deliver biodiversity enhancements in a manner which is practical, achievable and in keeping with the Client's aspirations.
- 5.2 The core principles underpinning this proposal are:
- the retention and enhancement of connectivity with the wider landscape
 - the introduction of habitats that are expected to benefit species of principal importance (BAP) known to occur in the locality
 - the compatibility of the proposed prescriptions with the cultural component that defines the locality.
- 5.3 The prescriptions set out herein are summarised and spatially referenced in Figure 4 – Biodiversity Enhancement Plan.

Expected Outcomes

- 5.4 If adhered to during implementation, this scheme is expected to result in:
- the establishment of an area of more diverse grassland habitat, to the benefit of the invertebrate assemblage;
 - the introduction of species currently not recorded on Site;
 - the planting of more trees, to offset the losses driven by the development and achieve a net increase in canopy cover;
 - supporting a wider range of invertebrate communities by increasing the habitat mix. This will in turn attract a variety of species that feed on invertebrates, including amphibians, bats and birds.
 - the delivery of ready-made habitat features to encourage species to use the site (i.e. bat, bird, bug boxes)

Ornamental Shrub Planting (PH1)

- 5.5 Given the formal character of the garden, the addition of ornamental shrubs to existing planting beds is recommended, prioritising nectar-rich and wildlife friendly species. Besides their aesthetic value, ornamental shrubs can provide foraging habitat for a range of species including invertebrates, birds and bats.
- 5.6 The species listed in Table 6 have been selected considering the Client's preference and their known contribution to improving biodiversity.

Table 6 – Ornamental shrub species list (on-site)

Species	Status	Biodiversity and amenity benefits
Hazel <i>Corylus avellana</i>	Native	A naturally multi-stemmed species that is nut bearing and provides dense cover for nesting birds.
Dogwood <i>Cornus sanguinea</i>	Native	A dense growing shrub that is colourful and of value to nectar seeking insects. The berries are eaten by mammals and birds.

Species	Status	Biodiversity and amenity benefits
Holly <i>Ilex aquifolium</i>	Native	An evergreen that will offer winter cover for birds and provide amenity value due to greening of the local context. The autumn berries are a valuable food source for birds.
Hawthorn <i>Crataegus monogyna</i>	Native	The shrub forms a dense structure that is favourable for nesting birds. The flowers are an important nectar source and the berries are offer food for birds.
Honeysuckle <i>Lonicera periclymenum</i>	Native	A loose trailing shrub that winds its way around shrubs, particularly hazel. It is an importance for butterflies and bees.
Guelder Rose <i>Viburnum opulus</i>	Native	White flowering shrub with bright red berries providing nectar for insects, particularly hoverflies. Fruits for birds and small mammals, especially liked by woodmouse.
Sweet Briar <i>Rosa rubiginosa</i>	Native	Pink flowering shrubs with red / orange hips providing food source for small mammals and birds and good nesting cover.
Red-leaved Rosa <i>Rosa Glauca</i>	Non-native	Native to mountain areas in central and southern Europe. Grows in sun to partial shade. Attractive to bees
<i>Rosa gallica</i> 'complicata'	Non-native	Plant of unknown origin. Grows in full sun. Attractive to bees
Common peony <i>Paeonia officinalis</i>	Non-native	Native to Europe, Asia and Western US. Ornamental with limited value for UK pollinators. Increases presence of ants
Chinese peony <i>Paeonia lactiflora</i>	Non-native	Native to Asia Ornamental with limited value for UK pollinators. Increases presence of ants

Orchard creation (PH2)

- 5.7 An orchard has been proposed for the southern end of the rear garden, to enhance both the amenity and the ecological value of the Site. Orchards were historically a common feature in the rural landscape; however, a significant rate of loss has been recorded since the 1950s (ca. 90%) due to change in land use, development and lack of maintenance. Orchards, if sensitively managed, contribute positively to biodiversity by supporting a wide species' assemblage including invertebrates, birds and bats. The allocated area is relatively sheltered from the prevailing winds and the ground is expected to hold good moisture content.
- 5.8 Planted in two lines, 4 to 6m apart, the allocated site would comfortably accommodate 6no. trees. The proposed planting pattern and density are loosely based on Natural England's Technical Notes TIN013 - *Site and tree selection* and TIN014 - *Planting and establishment*. The trees should be grafted either on semi-standard or standard rootstocks, which would deliver a plant with a height at maturity ranging from 3.5 to 7.5m respectively.
- 5.9 Trees should be sourced from a local supplier and certified as pest and disease free. A selection that would deliver flowering and fruits at different times of the growing season is provided in Table 7.

Table 7 – proposed orchard tree species

SPECIES	NUMBER OF TREES
Apple <i>Malus domestica</i>	1
Pear <i>Pirus communis</i>	1
Greengage <i>Prunus domestica var. Italica</i>	1
Damson <i>Prunus domestica</i>	1
Plum <i>Prunus domestica</i>	1
Quince <i>Cydonia oblonga</i>	1

Species-rich grassland creation (PH3)

- 5.10 The grassland found within the footprint of the proposed orchard (ca. 90m²) can be enhanced in species' diversity, through a combination of management practices and seed sowing.
- 5.11 It should be noted that the establishment of a species-rich grassland depends on the nutrient levels of its growing medium; in simplified terms, nutrient-rich soils are unsuitable for wildflowers because they become dominated by vigorous grasses, which smother shorter herbs. Based on observation, it is deemed possible that the existing grassland has undergone regular applications of nitrogen fertiliser; should it be the case, the establishment of a more diverse sward will require more time and will heavily rely on the adherence to the recommended management regimes.

Species Introduction

- 5.12 The most successful way to introduce wildflowers and grasses from seed on existing grassland is to cultivate patches of the existing sward (as opposed to the whole area) and then sow seeds on them. Ground preparation should be carried out in late winter, in readiness for sowing in early spring. With enough heat and rainfall, germination would soon ensue.
- 5.13 A suitable seed mix shall be sourced from specialist suppliers (e.g., EM1 Emorsgate Seeds¹⁵). Species such as those listed below are likely to establish within year 1-2.
- Yarrow *Achillea millefolium*
 - Common knapweed *Centaurea nigra*
 - Ox-eye daisy *Leucanthemum vulgare*
 - Bird's-foot trefoil *Lotus corniculatus*
 - Selfheal *Prunella vulgaris*
 - Red clover *Trifolium repens*
 - Red campion *Silene dioica*
 - Red fescue *Festuca rubra*
 - Common bent *Agrostis capillaris*
- 5.14 In addition, yellow rattle *Rhinanthus minor*, an annual root-hemiparasite, could be sowed in the prescribed quantities as a natural means to control vigorous grasses. By drawing nutrients from surrounding vegetation, it impedes growth and helps maintain an open sward structure.

¹⁵ <https://wildseed.co.uk/mixtures>

Management

- 5.15 Within the allocated area, grasses and herbs shall be allowed to grow to maturity. This can be achieved by applying a maximum of 4 times a year (i.e. June, July, August, September), except during exceptional growing seasons, where more frequent cutting might be required to prevent mature grasses to fold over.
- 5.16 Cuts should be applied to a height of 150mm, to maintain cover from predators, and directionally, to allow animals to disperse. Preferably, the grass should be cut in the early hours of the morning, when before diurnal animals start foraging. This is particularly relevant to herpetofauna (reptiles and amphibians).
- 5.17 Cuttings shall be raked and removed, to prevent soils enrichment and allow late flowering species enough light to germinate and grow.
- 5.18 Grass cuttings can be heaped at the existing receptor (compost heap), to maintain suitable habitat for invertebrates, reptiles and other wildlife.
- 5.19 Undesired perennial weeds such as broad-leaved dock and ragwort should be controlled mechanically. The use of herbicide to control unwanted species is not recommended.
- 5.20 To enable access to the orchard area, a 1-metre-wide meandering path of short grass can be maintained through the grassland (see Plate 9, below). Besides enabling access whilst minimising disturbance (as people generally tend to adhere to well-treaded paths), this solution is also aesthetically pleasing.



Plate 9 – meandering path through grassland

Landscape Tree Planting (PT1-PT4)

- 5.21 To deliver the proposed development, some of the existing trees will have to be removed. In addition to those planted within the orchard, 4 landscape trees (PT1-PT4) are proposed at the locations shown in Figure 4. A selection of suitable species is referenced in Table 9.

Table 8 – Proposed New Trees

REF.	COMMON NAME	LATIN NAME	HEIGHT AT MATURITY (m)	TOLERANCE	
				DROUGHT	SHADE
PT1	Corkscrew hazel	<i>Corylus avellana 'Contorta'</i>	<10m	MODERATE	LOW
PT2	Red snake-bark maple	<i>Acer capillipes</i>	10-15	LOW	MODERATE
PT3	Rowan	<i>Sorbus aucuparia</i>	10-15	MODERATE	MODERATE
PT4	Japanese cherry	<i>Prunus serrulata</i>	12	MODERATE	MODERATE

5.22 Trees shall be selected of standard size (6-8ft) and bare root, preferably from local suppliers and certified as pest and disease free.

Hedgerow Planting (PHE7)

5.23 A species-rich hedgerow can be created to form the new eastern boundary, east, which will provide foraging, roosting, connecting and nesting habitat for a range of species. Species deemed suitable for inclusion in this proposal are referenced in Table 9.

Table 9 - Mixed Scrub Planting

COMMON NAME	LATIN NAME	HEIGHT AT MATURITY
Dogwood	<i>Cornus sanguinea</i>	3m
Wayfaring tree	<i>Viburnum lantana</i>	5m
Guelder rose	<i>Viburnum opulus</i>	5m
Gorse	<i>Ulex europaeus</i>	2.5m
Hazel	<i>Corylus avellana</i>	5m
Wild privet	<i>Ligustrum vulgare</i>	3m
Hawthorn	<i>Crataegus monogyna</i>	10m
Spindle	<i>Euonymus europaeus</i>	3m
Field maple	<i>Acer campestre</i>	25m
Dog rose	<i>Rosa canina</i>	4m
Elder	<i>Sambucus nigra</i>	6m

Marginal Vegetation Planting (PH4)

5.24 The margins of pond P1 can be enhanced through marginal vegetation planting. Planting shall be delivered in late winter/early spring, and plug planting has greater chance of success over seeding.

5.25 The species mix may include lesser reedmace *Typha angustifolia*, common club-rush *Schoenoplectus lacustris*, reed sweet-grass *Glyceria maxima* and yellow flag iris *Iris pseudacorus*.

5.26 Plugs shall be planted at, or just above, the water's edge, at an indicative density of ca. 8 per m². Plants can either be sourced online (for example, from <https://grassandflower.co.uk/british-flora/>) or procured from a local supplier.

Bat Box Installation (Ba1 – Ba4)

5.27 The proposals should consider the provision of bat boxes, either integrated in the fabric of the buildings or mounted on existing trees, for the benefit of the local bat population. Table 10 outlines a selection of tree-mounted, wall-mounted and integrated bat boxes, designed to provide a variety of roosting spaces. The boxes recommended are draught-proof and made from a thermally stable, resilient ecostyrocete or woodcrete material.

Table 10 – Recommended Bat Boxes









Photo	Description and suitability
	<p><u><i>Bark boxes – Bark rot hole</i></u></p> <p>This box creates a crevice against the bark of the tree and mimics a natural rot hole. This box can be used by individual roosting bats but may also be used by small birds.</p> <p>https://www.barkboxes.co.uk/product/bark-rot-hole/</p>
	<p><u><i>Bark boxes – Hibernation bat box</i></u></p> <p>This large, enclosed bat box allows for group or individual hibernation.</p> <p>https://www.barkboxes.co.uk/product/large-bat-box/</p>
	<p><u><i>Bat boxes – Kent Type Twin Crevice</i></u></p> <p>This box type offers opportunities for a small communal roost which can be used by a variety of species. It features two parallel crevices with an internal connection allowing for temperature variation between the sections.</p> <p>https://www.barkboxes.co.uk/product/kent-type-twin-crevice/</p>
	<p><u><i>Bark boxes – Maternity bat box</i></u></p> <p>This design is aimed at accommodating larger numbers of bats from a range of species. It can be used on trees or in indoor roosts to provide extra roosting features. It is ideal for a maternity roost as it offers multiple compartments.</p> <p>https://www.barkboxes.co.uk/product/maternity-bat-box/</p>

Photo	Description and suitability
	<p><u><i>Bark boxes – Large bat box</i></u></p> <p>Suitable for larger bats such as noctule, serotine <i>Eptesicus serotinus</i> and Daubenton's bat <i>Myotis daubentonii</i> or for larger groups of smaller bat species such as pipistrelles or myotis.</p> <p>https://www.barkboxes.co.uk/product/large-bat-box-2/</p>
	<p><u><i>Bark boxes – Small crevice bat box</i></u></p> <p>Ideal for placement on smaller trees. This box attracts small numbers or individual pipistrelles and smaller bat species such as myotis or barbastelle.</p> <p>https://www.barkboxes.co.uk/product/contract-demo/</p>
	<p><u><i>Bark boxes – Standard bat box</i></u></p> <p>Standard bat box design with wedge top. Primarily suitable for use as a mating/autumn roost for a range of species such as myotis, pipistrelle, and brown long-eared.</p> <p>https://www.barkboxes.co.uk/product/standard-bat-box/</p>
	<p><u><i>Miramare Woodstone Bat Box</i></u></p> <p>The Miramare is designed to reproduce a natural roost site in a hollow tree and has 4 internal roosting compartments and 3 grooved wooden panels inside to accommodate a large number of bats.</p> <p>It is painted black to absorb the heat of the sun and provide the warmth that the bats need. The concrete and wood fiber mix make this box durable and maintenance-free.</p> <p>It has mounting brackets but for more exposed locations there are also two fixing eyes on the side of the box that allow a rope or wire to be passed around a tree trunk.</p> <p>https://www.wildcare.co.uk/miramare-woodstone-bat-box-11268.html</p>



Photo	Description and suitability
	<p><u><i>1FQ Schwegler Bat Roost</i></u></p> <p>Ideal for all types of bats which inhabit buildings. The shape and design make it equally attractive to bats as a roost or nursery. Access is via a step-like recess which enables even young and inexperienced bats to safely access the box. The internal layout provides three different areas from which bats can hang and which offer different levels of light and temperature.</p> <p>It can easily be attached to most types of external brick, timber or concrete and can also be placed inside a roof space. The box should be positioned a minimum of 3m above the ground and where there is a clear flight path for bats entering and leaving.</p> <p>https://www.nhbs.com/1fq-schwegler-bat-roost-for-external-walls</p>
	<p><u><i>Bat Access Brick</i></u></p> <p>The bat brick is a standard sized brick, shaped especially to allow bats to access the cavity of a house. They can be incorporated during both new build or renovation projects. (A cavity chamber may need to be constructed to maintain an area free of insulating material where bats can roost).</p> <p>Brick dimensions:</p> <ul style="list-style-type: none"> * Height: 60 mm * Width: 215 mm * Depth: 100 mm * Entrance dimensions: approx. 110 x 25 mm
	<p><u><i>1FE Schwegler Bat Access Panel</i></u></p> <p>Provides access for bats to existing roost sites. With a specially shaped entrance hole and open back, bats can crawl through the entire panel. This is particularly useful when renovation or conservation work is being undertaken in buildings already containing bat roosts. Overall depth is just 8cm. The 1FE Bat Access Panel is made from Schwegler wood-concrete; an exceedingly durable, rot-proof and breathable natural material designed to mimic the properties of natural nest sites. The design is maintenance-free with a sloping shelf to allow droppings to fall out.</p>
	<p><u><i>Habibat Bat Box - Custom Brick Facing</i></u></p> <p>The Habibat Bat Box is a large, solid box made of insulating concrete with an internal roost space, which can be incorporated into the fabric of a building as it is built or renovated. A variety of facings can be fitted to suit any existing brick, wood, stonework or rendered finish, rendering the box unobtrusive and aesthetically pleasing. The Habibat box is suitable for species which are most commonly found roosting in buildings in the UK, such as Pipistrelle, Natterer's, Whiskered, and Brandt's bats.</p>





4.23 Bat boxes should always be located close to/within unlit linear features, such as lines of trees or woodland edge. Several bat species are highly susceptible to light pollution and a box placed in proximity to a source of artificial light is likely to remain vacant. When fitted on trees, the approach to the box must not be impeded by overhanging branches. Bat boxes should be placed at a suitable height (3-5m) to reduce the risk of predation.

Bird Box Installation (Bi1 – Bi4)

4.24 The installation of bird nest boxes should be considered in the proposal to provide additional roosting and breeding habitat. In a heavily modified landscape, features such as cavities, and knot holes are generally scarce and their artificial alternatives, if suitably selected and placed, can partly offset the habitat deficit. Table 11 outlines a selection of tree-mounted nest boxes.

Table 11 – Recommended bird boxes

Photo	Description and suitability
	<p><u>Schwegler 2GR Nestbox 3x27mm Hole</u></p> <p>The design of this nest box and its front panel provides effective protection against cats and martens. With its choice of oval or three-hole entrance, the nesting chamber is well lit despite its size. Because of the light entering, the nest is built very low down at the rear of the box, away from the reach of predators. The front panel, with its integrated protection against cats and martens, can be easily removed for inspection and monitoring, providing an unobstructed view of the nest.</p> <p>https://www.arkwildlife.co.uk/Item/NA/SC-2GR-27/Schwegler_2GR_Nestbox_3x27mm_Hole.html</p>
	<p><u>Bark boxes - House Sparrow/Great Tit bird box 32mm entrance</u></p> <p>Nest box and roost site with 32mm entrance suitable for house sparrow, nuthatch etc.</p> <p>When using to attract house sparrow, multiple boxes should be placed close together above head height, particularly close to thick hedges.</p> <p>https://www.barkboxes.co.uk/product</p>

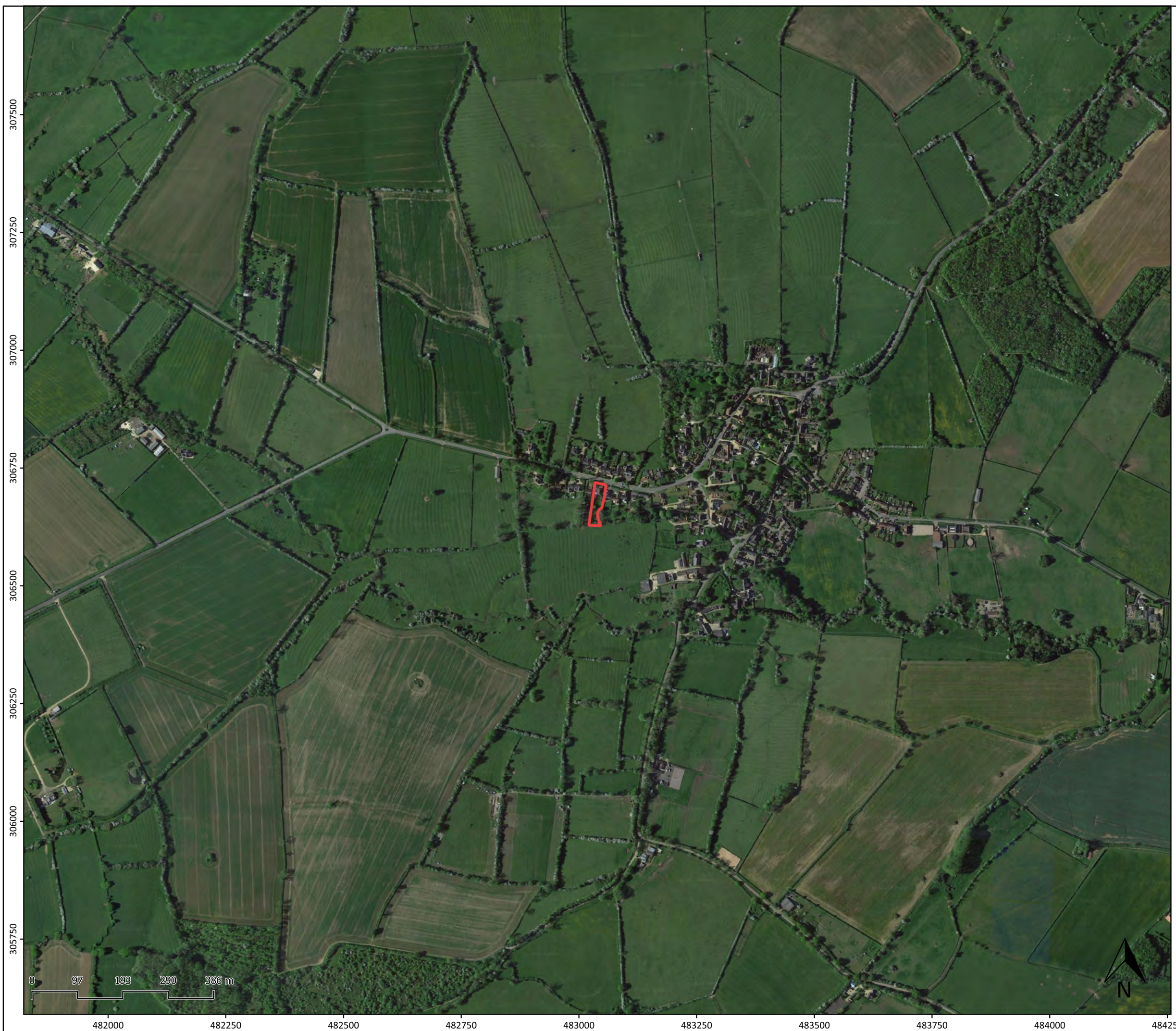
	<p><u><i>Branch Stub varying sizes</i></u></p> <p>Replicating a rotting branch stub with void. Available in small (25mm entrance - suitable for wrens), medium (28mm – suitable for tree sparrows) and large (32mm – suitable for house sparrow). Simple and effective design.</p> <p>https://www.barkboxes.co.uk/product</p>
	<p><u><i>Bark boxes – Sparrow Terrace</i></u></p> <p>Can be used in conjunction with the house sparrow/great tit box as well as the tree sparrow/pied flycatcher box. Sparrows are communal nesters and this box with multiple entrances and nest compartments will encourage house and tree sparrows to nest.</p> <p>Tree sparrows require multiple boxes on one try with others in proximity. They should be above head height. To encourage tree sparrows nearby hedges should be maintained and thick and pollard trees should be managed with any neglected trees being re-pollarded</p> <p>https://www.barkboxes.co.uk/product/house-sparrow/</p>
	<p><u><i>Bark boxes – Tree sparrow/pied flycatcher 28mm entrance</i></u></p> <p>Like the house sparrow/great tit box but with smaller entrance hole more suited to tree sparrow and pied flycatcher. If using for tree sparrow, they should be placed near other boxes.</p> <p>https://www.barkboxes.co.uk/product/tree-sparrow-pied-fly-catcher-28mm/</p>
	<p><u><i>Bark boxes – Starling box</i></u></p> <p>Larger box aimed at encouraging starlings to nest. The box's larger diameter hole may also appeal to thrush species, great tits, robins and even redstarts.</p> <p>https://www.barkboxes.co.uk/product/starling-box/</p>

Habitat Log Piles (LP1 and LP2)

4.25 Two habitat log piles can be created, in the SW corner (near the compost heap) and along the E boundary respectively, using site-won cordwood arising from the removal of on-site trees. Habitat piles can either be constructed by stacking 1m long logs on the ground or by placing them vertically, to create standing deadwood habitat. The proposed options are reviewed in Table 12, below.

Table 12 – Habitat log piles

	<p>Habitat log piles can be created stacking ca. 1m length of wood arising from tree works on the ground, in piles of up to 1m high. Where possible, wood from different species (broadleaf preferable) should be utilised. Partly decomposed deadwood lying on the woodland floor can also be added to the pile. These features are optimal refugia for reptiles and amphibians, as well as providing habitat for invertebrates, decay fungi and other microorganisms.</p>
	<p>Upright piles of deadwood are generally known as “stag-beetle loggeries” because of their habitat suitability for the species. However, standing deadwood suits a wide array of invertebrates, fungi and other microorganisms that are critical to the functioning of woodland ecosystems.</p> <p>The logs should be at least 200mm in diameter and sourced from broadleaved species. Partially bury the logs in the soil so that they do not dry out and they remain upright. Allow plants to grow over the log pyramid to retain moisture and provide shade.</p> <p>The loggerie should be sited in partial shade to prevent them drying out.</p>



LEGEND


 Red Line Boundary

Figure 1. Site Location Plan

PROJECT TITLE		16 Knossington Road			
REF	23190	CLIENT	Mr & Mrs Nagel		
VER	DATE	CREATED BY	VER	DATE	CREATED BY
01	05/12/2023	Ben Payne			
CRS		OSGB36 \ British National Grid EPSG:27700			1:7719





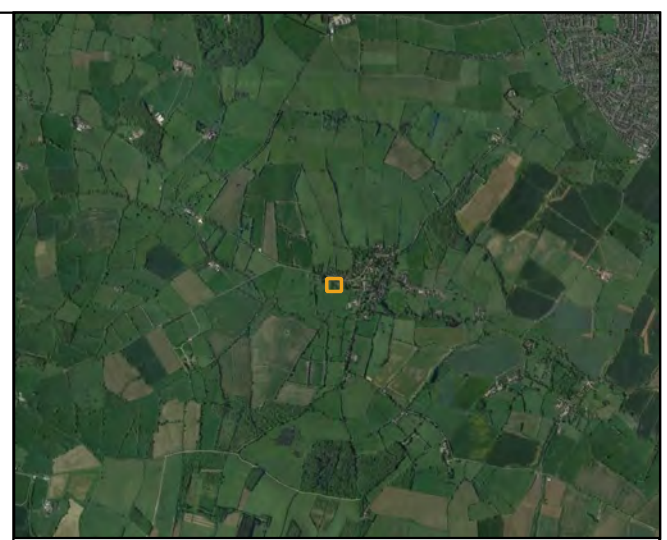
LEGEND

- Red Line Boundary
 - 1Km Buffer
 - 500m Buffer
 - Local Wildlife Site
 - Ponds
- Protected Species (accuracy up to 100m)**
- Amphibian
 - Bird
 - Flowering Plant
 - Insect - Butterfly
 - Reptile
 - Terrestrial Mammal

Figure 2. Desk Study Plan

PROJECT TITLE		16 Knossington Road			
REF	23190	CLIENT	Mr & Mrs Nagel		
VER	DATE	CREATED BY	VER	DATE	CREATED BY
01	05/12/2023	Ben Payne			
CRS		OSGB36 \ British National Grid EPSG:27700			1:7719





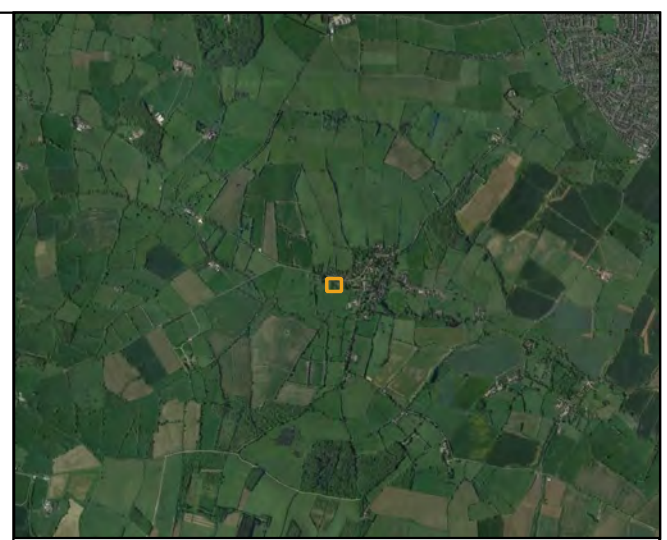
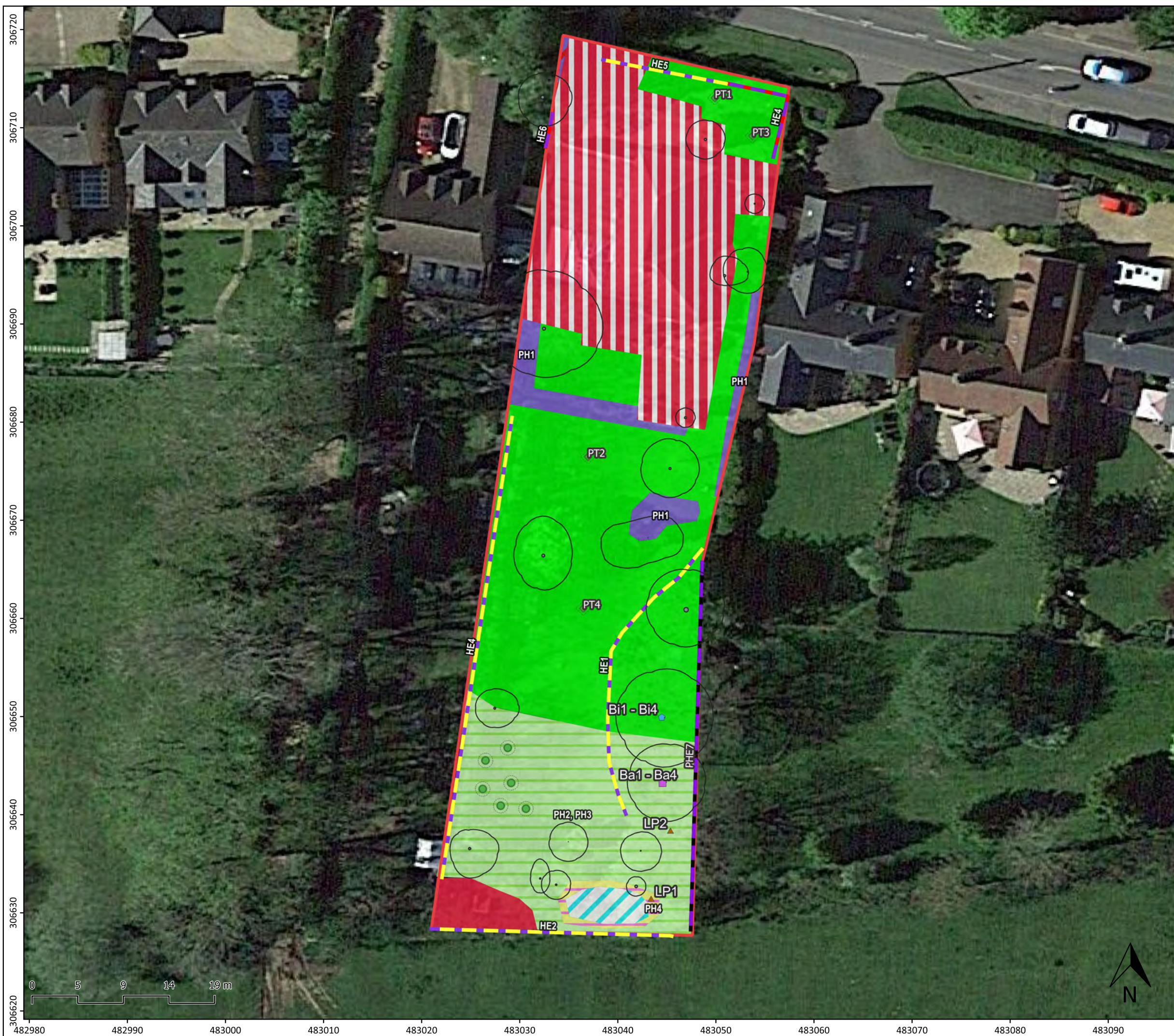
LEGEND

- Red Line Boundary
- Tree
- Non-native and ornamental hedgerow
- Native hedgerow
- Developed land; sealed surface
- Introduced shrub
- Mixed scrub
- Modified grassland
- Ornamental lake or pond
- Ruderal/Ephemeral
- Vegetated garden

Figure 3. Baseline Habitat Survey Plan

PROJECT TITLE		16 Knossington Road			
REF	23190	CLIENT	Mr & Mrs Nagel		
VER	DATE	CREATED BY	VER	DATE	CREATED BY
01	05/12/2023	Ben Payne			
CRS		OSGB36 \ British National Grid EPSG:27700			1:372





LEGEND

- New Boundary
- Existing Tree
- Proposed Habitats**
- Developed land; sealed surface
- Introduced shrub
- Mixed scrub
- Modified grassland
- Ornamental lake or pond
- Other neutral grassland
- Reedbeds
- Vegetated garden
- Species-rich native hedgerow
- Non-native and ornamental hedgerow
- Native hedgerow
- Proposed Small Urban Tree
- Proposed Orchard Tree
- Habitat Features**
- Bat
- ◆ Bird
- ▲ Log Pile

Figure 4. Biodiversity Enhancement Plan

PROJECT TITLE		16 Knossington Road			
REF	23190	CLIENT	Mr & Mrs Nagel		
VER	DATE	CREATED BY	VER	DATE	CREATED BY
01	05/12/2023	Ben Payne			
CRS		OSGB36 \ British National Grid EPSG:27700			1:372






APPENDIX A – PRELIMINARY ROOST ASSESSMENT RESULTS

General External description	Notes
No. of storeys	1 storey bungalow with loft space
Basic construction (Brick, stone, concrete, timber, metal sheet, concrete fibre board)	Brick (single skin) with flat roofed extension and PVC conservatory.
Roof type (Pitched, hipped, flat, single pitch, multi-ridge)	Hipped roof with one brick chimney stack at rear. Flat roofed, lead lined double garage and PVC/ Glass conservatory on Eastern side.
Roof material (Tiles- slate, clay, concrete, pantile, felted timber roof, metal/ concrete sheet, concrete slab)	Concrete roof tiles and ridge tiles. Dense coverage of moss on all sides provided obstruction for viewing potential access e.g. lifted tiles. Bitumen lined flat roof on Lean-to on rear of building, above patio doors.
Chimney	1 single, brick chimney stack at rear of main building.
Conservatory/ extension? (note the height relative to building)	Flat roofed double garage and conservatory extension off Western aspect.
Front External description: _7m_/ 2.5m extension__ Elevation	Notes
Gable ends	N/A
Eaves (overhanging?)	Yes
Fascias (Timber or plastic)	Plastic
Soffits (Boxed, material)	Boxed plastic soffits throughout
Barge-boards? (fascia boarding present on gable	Present on flat roofed garage extension.
Window construction	PVC throughout
Dormers (a separate roof section within an already sloping roof)	N/A
Flashing	Around chimney stack/ ridges. – Lead.
Hanging tiles	N/A
Verges (the end row of tiles on a pitched roof)	N/A
Timber cladding/ weatherboarding (wooden boards placed vertically on walls)	N/A
Shingles (small timber tiles)	N/A
Lintels (lateral timber, concrete, metal beam over windows and doors)	N/A

Mortar (filling between bricks and stonework-condition, gaps??)	Sealed throughout.
Side External description: ____7m____ Elevation	Notes
Gable ends	N/A
Eaves (overhanging?)	Yes
Fascias (Timber or plastic)	Plastic
Soffits (Boxed, material)	Boxed plastic soffits throughout
Barge-boards? (fascia boarding present on gable	Present on flat roofed garage extension.
Window construction	PVC throughout
Dormers (a separate roof section within an already sloping roof)	N/A
Flashing	Around chimney stack/ ridges. – Lead.
Hanging tiles	N/A
Verges (the end row of tiles on a pitched roof)	N/A
Timber cladding/ weatherboarding (wooden boards placed vertically on walls)	N/A
Shingles (small timber tiles)	N/A
Lintels (lateral timber, concrete, metal beam over windows and doors)	N/A
Mortar (filling between bricks and stonework-condition, gaps??)	Sealed throughout.
Side External description: _____ Elevation	Notes
Gable ends	N/A
Eaves (overhanging?)	Yes
Fascias (Timber or plastic)	Plastic
Soffits (Boxed, material)	Boxed plastic soffits throughout
Barge-boards? (fascia boarding present on gable	Present on flat roofed garage extension.
Window construction	PVC throughout
Dormers (a separate roof section within an already sloping roof)	N/A
Flashing	Around chimney stack/ ridges. – Lead.

Hanging tiles	N/A
Verges (the end row of tiles on a pitched roof)	N/A
Timber cladding/ weatherboarding (wooden boards placed vertically on walls)	N/A
Shingles (small timber tiles)	N/A
Lintels (lateral timber, concrete, metal beam over windows and doors)	N/A
Mortar (filling between bricks and stonework-condition, gaps??)	Sealed throughout.
Back External description: ____7____ Elevation	Notes
Gable ends	N/A
Eaves (overhanging?)	Yes
Fascias (Timber or plastic)	Plastic
Soffits (Boxed, material)	Boxed plastic soffits throughout
Barge-boards? (fascia boarding present on gable	N/A
Window construction	PVC throughout
Dormers (a separate roof section within an already sloping roof)	N/A
Flashing	Around chimney stack/ ridges. – Lead.
Hanging tiles	N/A
Verges (the end row of tiles on a pitched roof)	N/A
Timber cladding/ weatherboarding (wooden boards placed vertically on walls)	N/A
Shingles (small timber tiles)	N/A
Lintels (lateral timber, concrete, metal beam over windows and doors)	N/A
Mortar (filling between bricks and stonework-condition, gaps??)	Sealed throughout.

Internal description- Roof void	
Dimensions (height, width and length)	3m high, 13m long, 7m wide.
Underlining- Present or absent	Present.
Underlining type- (underfelt, sarking or plastic sheeting). How sealed is the roof?	<p>Bitumen underfelt, coarse / rough texture. Well sealed throughout. No daylight through anywhere. 2 torn sections – 15cm² (one on Westen aspect and one on Southern) at around 1m.</p>  
Structure of beams- (queen post, king post, modern trusses, bob-tail trusses)- machined/non-machined)	Modern trusses, no vertical struts. Non machined, rough textured timbers

	
Cobwebs? How much?	Some present, largely around chimney stack. Not a large amount, generally clean, dry and tidy.
How drafty? How light is the void?	Very dark void, not drafty.
Access points observed	<p>F001 – bottom ridge tile slipped creating gap on NE aspect</p> <p>F002 – 2 lifted ridge tiles on SE ridge. 1 1m from gutter and 1 2m from apex.</p>
Bats present or evidence? Potential features?	Droppings found and sent to lab for analysis

APPENDIX B – BIOLOGICAL SAMPLE ANALYSIS RESULTS (DROPPINGS)

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Biological Report

Technical Report



SureScreen Scientifics

Biological Sample Analysis

Summary

Most biological materials (tissue, feces, hair, blood, etc.) contain small amounts of DNA from the organism of which it originated. Using molecular methods such as PCR (polymerase chain reaction) and DNA sequencing, SureScreen Scientifics are able to analyze an unknown sample to determine which species the sample originates from our methods are optimized for the detection of species including bats (over 92% of bat species worldwide can be identified including all 18 UK bat species), mammals; bees, wasps & hornets; birds; fish; plants (from roots, leaves, stem and even dried wood) and many more species.

Results

Lab ID	Site Name	OS Reference	Sample Type	Species Name	Match(%)
82877	16 Knossington Road		Bat Dropping	Eurasian pygmy shrew (Sorex minutus)	100.00
Genetic Sequence AACTGACTCATTTCCTCTAATAATTGGTGCACCAGATATAGCATTTCACGAATAAATAATATAAGCTTCTGACTAC TCCCACCATCATTTCCTCTAATAATTGGTGCACCAGATATAGCATTTCACGAATAAATAATATAAGCTTCTGACTAC ACCACTAGCCGAAATCT					

Matters affecting result: none
Reported by: pos

Approved by: Jennifer Higginbottom

Methodology

Once samples have arrived in the laboratory, the DNA is isolated using a commercial DNA extraction kit. Using PCR, DNA (if present within the sample) is amplified using universal molecular markers designed to amplify a short fragment of the DNA of the target species group (i.e. mammal, fish, arthropod, reptile, plant etc.). If amplification is successful, the resulting DNA sequence is revealed using a process known as Sanger Sequencing in order to obtain the genetic sequence of the mitochondrial gene within the sample. The sequence results are aligned against a library of known reference sequences using bioinformatics software, which enables us to determine which species the DNA sequence from the sample matches with, informing the species identity and sequence similarity (match %).

If the initial analysis is unsuccessful, the entire process is repeated up to two additional times with a fresh reserve sample (if available) in order to obtain a species identification. If no DNA is detected after three attempts, then we can be confident that any further analysis of the sample will likely also fail to result in species identification.

Interpretation of Results

Sample Type: The sample you send to us can come from a variety of sources. Fecal, dropping, urine, hair, blood, carcass (skin, flesh, bone), gamete, plant matter or unknown biological material all contain DNA that we can test for in order to identify the species of origin.

Genetic Sequence: The unique DNA sequence obtained from the sample.

Match (%): How closely matched the DNA sequence from your sample is to the sequences within our reference database. This can be interpreted as a score of result accuracy, with the maximum score of 100% indicating an exact match of the sample to the indicated species' reference sequence. Lower scores (80-99%) indicate some variation between the sample and reference sequence, likely due to natural variation between individual genetic sequences and/or systematic variations generated through the sequencing process. Scores below 80% similarity should be interpreted with care and can indicate part degraded or part contaminated samples.

Inconclusive Result:

Degraded sample:
DNA is degraded and we are unable to determine species identification due to degradation of sample DNA. This can happen either before sample collection (old samples, exposure to UV etc.) or after sample collection if stored for long periods before analysis or not handled correctly.

Inhibited/contaminated sample:

We are unable to determine species identity due to contamination or the suspected presence of large quantities of PCR inhibitors. Contamination sources can originate from other species which could have come into contact with the samples, or human contamination during sample collection.

Alternative Result: Sometimes, for targets such as bat dropping analysis, other mammalian species such as rodents are detected. We find this to be a common occurrence as some bat droppings can be similar in appearance to rodent droppings. Although sometimes unexpected, repeat analyses in these cases would likely return the same results.