

Land west of Clifton Hampden

Ecological Appraisal

August 2022

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Client	Thomas Homes
Project	Land West of Clifton Hampden E
Version	FINAL
Project number	-P22-456

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1 Summary

Report purpose	(1) To set out the ecological baseline at the site of a proposed residential development at Clifton Hampden, Oxfordshire. (2) To assess the potential ecological impacts of the Proposed Development. (3) To set out recommendations for ecological mitigation and enhancements.
Client and commission date	BSG Ecology were commissioned on 15 June 2020 by Thomas Homes to carry out survey work and reporting for an initial scheme. BSG Ecology were commissioned to produce this report, for a revised scheme, on 11 July 2022.
Date and methods of survey	<p>A desk study was carried out to obtain relevant ecological records from the surrounding area.</p> <p>A Phase 1 habitat survey (based on industry standard guidance (JNCC, 2010)) was carried out on 29 June 2020 and 14 July 2020. An update walkover survey was carried out on 02 August 2022 to check for any significant changes in habitats present on Site and in its potential to support protected species.</p> <p>Further surveys undertaken to inform this Ecological Appraisal included reptile surveys (in September and October 2020), building and tree assessments for bat roost suitability (on 29 June 2020), a walked bat activity transect (on 28 July 2020) and automated bat activity surveys (in summer, late-summer, and Autumn 2020).</p> <p>Given that the update survey carried out in July 2022 found no significant changes at the Site, in line with industry guidance, the desk study and survey work are considered appropriately up-to-date for this assessment.</p>
Key findings	<p>Two internationally designated sites are present within 10 km of the Site, and four non-statutory designated sites are present within 2 km of the Site.</p> <p>The northern parcel of the Site comprises active and abandoned allotments, semi-improved grassland, scattered scrub, tall ruderal vegetation, and an arable field.</p> <p>The southern parcel of the Site comprises a mixture of short and long poor semi-improved grassland, which together form a series of horse paddocks.</p> <p>The Site has suitability for protected species including foraging and commuting bats, roosting bats in trees, and breeding birds.</p> <p>Reptiles are likely to be absent from the Site.</p> <p>A disused badger sett is present along the northern boundary of the northern parcel of the Site. No other evidence of badger was recorded. The Site provides suitable foraging habitat for hedgehog.</p>
Potential impacts	<p>The Proposed Development is unlikely to have any significant impact on nearby designated sites.</p> <p>Development of the Site will cause a loss of semi-improved grassland, arable land, plantation woodland, poor semi-improved grassland, tall ruderal vegetation and scrub.</p> <p>Without a sensitive lighting scheme which maintains dark corridors on the periphery of the Site, bats could be disturbed through light spill.</p> <p>If any trees with bat roost suitability are removed or trimmed, this could adversely affect bats and their roosts.</p> <p>Without protective measures, clearance of woody vegetation could adversely affect nesting birds.</p>

	Without appropriate measures during construction, badger, hedgehog or other mammals could become trapped in excavations.
Measures to avoid and/or reduce impacts	Retention of habitats such as hedgerows, trees, scrub and grassland. Incorporation of a sensitive lighting regime for bats, which maintains dark corridors along hedgerows throughout the Site. Vegetation clearance outside the nesting bird season (March to August inclusive), or under the supervision of an ecologist. Covering of excavations overnight, or provision of an escape ramp for mammals.
Biodiversity enhancement	Creation of new habitats such as species-rich grassland and wetland features. Planting of native or flowering/fruited tree and shrub species. Provision of bat and bird boxes. Provision of habitat piles for reptiles, amphibians, small mammals and invertebrates.
Further requirements	Biodiversity impact assessment calculation demonstrating how BNG will be achieved in the development. Further assessment of trees with bat roost potential should the masterplan for the Proposed Development be altered and any of these trees require removal. Pre-construction badger survey.

2 Introduction

Background to commission

- 2.1 BSG Ecology was commissioned on 15 June 2020 by Thomas Homes to undertake an Ecological Appraisal of land to the west of Clifton Hampden, Oxfordshire, in support of a proposed residential development there.

Site description

- 2.2 The site of the proposed development (hereafter the “Site”) comprises two parcels of land to the north and south of the A415 road, to the north west of Clifton Hampden, Oxfordshire. The northern parcel measures 2.89 ha and is centred at approx. OS National Grid Reference, SU 54557 95700 while the southern parcel measures 1.4 ha and is centred at approx. OS National Grid Reference SU 54494 95512. Both parcels are currently undeveloped, with the northern parcel comprising an arable field and a mixture of abandoned and active allotments, while the southern parcel is currently used as grazing paddocks for horses.
- 2.3 To the south and east the Site borders scattered houses and wooded rural gardens forming part of the village of Clifton Hampden, while to the north and west the Site borders predominantly arable farmland, with the Culham Science Park situated 400 m to the north west. The River Thames is approximately 130 m south east of the Site.

Description of project

- 2.4 Thomas Homes proposes to construct a residential development (hereafter the “Proposed Development”) including eight semi-detached and six terrace houses plus a new doctor’s surgery and associated access on the northern parcel, and two semi-detached and one detached house on the southern parcel. A landscaped area with allotments is also proposed in the northern parcel, and an area of additional tree/orchard planting on the southern parcel. The proposed layout for the development is provided in Appendix 1.

Purpose of report

- 2.5 The purpose of this Ecological Appraisal (EA) report is:
- To set out the ecological baseline at the Site of the proposed residential development at Clifton Hampden, Oxfordshire.
 - To assess the potential ecological impacts of the Proposed Development.
 - To set out general recommendations for ecological mitigation and enhancements that are likely to be required to satisfy current legislation and planning policy requirements.

3 Methods

Desk study

- 3.1 To give broad ecological context to the Site an ecology desk study was carried out. The Thames Valley Environmental Records Centre (TVERC) was contacted to obtain records of protected species and non-statutory designated wildlife sites within a 2 km radius of the Site.
- 3.2 The Defra MAGIC mapping tool (Defra, 2020) was used to view Ordnance Survey mapping and aerial imagery of the Site and its surroundings, and was used to provide locations and details of statutory designated wildlife sites, ponds and granted European Protected Species Mitigation licenses within 2 km of the Site, and international statutory designated wildlife sites within 10 km of the Site.

Field survey

Extended Phase 1 habitat survey

- 3.3 A Phase 1 habitat survey was conducted by Dr Philip Chapman, Ecologist at BSG Ecology, on 29 June 2020 and 14 July 2020, with reference to industry standard guidance (JNCC, 2010). The survey involved a systematic walkover of the Site, during which habitats present were identified and mapped (Figure 1), dominant plant species present were recorded, and notes were taken on any other features of ecological interest (Target notes (TN), see Appendix 2). Photographs (see Section 10) were taken to provide supporting evidence.
- 3.4 The survey was “extended” to take into account the potential of the Site to support protected and notable species, including an assessment of habitat suitability for reptiles, amphibians, nesting birds, and foraging bats, as well as a search for evidence of badger.
- 3.5 An update walkover of the Site was undertaken by Kai Hayes, Assistant Ecologist at BSG Ecology, on 02 August 2022, to identify any significant changes in the habitats on Site and/or its potential to support protected species.
- 3.6 Given that the update survey carried out in July 2022 found no significant changes at the Site, in line with industry guidance (CIEEM, 2019), the desk study and further survey work detailed below are considered appropriately up-to-date for this assessment.

Reptile surveys

- 3.7 A reptile survey was carried out at the Site between late August and early October 2020 to establish whether reptiles are present or absent there. The survey employed a series of artificial reptile shelters (often called refugia) at the Site, followed by monitoring these for the presence of reptiles. These refugia comprised 0.5 by 1 m strips of heavy-duty roofing felt, and were deployed at the Site on 21 August 2020, covering all areas of suitable reptile habitat (approximately 2.1 ha). A total of 30 refugia were deployed, equating to 14 per hectare (locations are shown on Figure 2). The density used was higher than the five to ten per hectare suggested in Froglife’s (1999) guidance, in order to increase the likelihood of detecting reptiles. The refugia were left in situ for a week prior to the first survey visit to allow them to “bed down”. The refugia were checked for reptile presence on seven occasions during suitable weather conditions (e.g. sun or partial cloud, air temperature 9 to 18°C, sunshine after rain, first sunshine after dull overcast weather (Froglife, 1999)). Details of survey dates, surveyors and weather conditions details are provided in Table 1.

Table 1: Reptile survey details

Date	Surveyor	Weather conditions
01/09/20	Sarah Joscelyne	16°C, cloud 1/8, wind 1Bf and strong sun.
07/09/20	Glyn Brown	18°C, cloud 4/8, no rain, wind 1bf and occasional sun.
10/09/20	Glyn Brown	10°C, cloud 0/8, wind 1Bf and strong sun.

Date	Surveyor	Weather conditions
14/09/20	Glyn Brown	12°C, cloud 0/8, wind 1Bf and strong sun.
18/09/20	Glyn Brown	13°C, cloud 1/8, wind 3Bf and occasional sun.
23/09/20	Glyn Brown	16°C, cloud 8/8, wind 2Bf and no sun.
01/10/20	Jamie Peacock	15°C, cloud 2/8, wind 1Bf and occasional sun.

Bat survey

Building assessment for bats

- 3.8 An external bat roost assessment was undertaken of all buildings and structures within the Site to assess their suitability to support roosting bats. Internal parts were also viewed through the open stable doors. Each building/structure was inspected by Dr Philip Chapman on 29 June 2020 from the ground using binoculars and a high-powered torch where necessary. Any signs of bat presence were recorded, together with any features that might have suitability for roosting bats.
- 3.9 The buildings/structures were assigned a category defining their suitability to support roosting bats, in accordance with Table 2.

Table 2: Structure or tree suitability for roosting bats; adapted from Collins, 2016

Suitability	Roosting Habitat and Potential Roost Features (PRFs)
Negligible	A structure or tree with no or negligible PRFs, which may be isolated from suitable foraging habitat.
Low	A structure or tree with one or more PRFs which have a very limited potential to be used by individual opportunistic bats. These features do not have the correct dimensions or conditions and/or are not connected to suitable foraging habitat that could be used by a larger number of bats.
Moderate	A structure or tree with one or more PRFs which could be used by bats because of their dimension and conditions. However these features are unlikely to support a roost of high conservation status with respect to roost type only. The structure or tree may also have PRFs which are obscured or not possible to survey from the ground level. The surrounding habitat is continuous and/or well connected to the wider landscape.
High	A structure or tree with one or more PRFs which are obviously suitable for use by a larger number of bats on a more regular basis and potentially for longer periods of time, due to their dimensions and conditions. The surrounding habitat is high quality, continuous and/or well connected to the wider landscape.
Confirmed Roost	Presence of bats or evidence of recent use by bats.

Tree assessment for bats

- 3.10 A Ground Level Tree Assessment was undertaken of all trees on Site to assess their suitability to support roosting bats. Each tree was inspected by Dr Philip Chapman on 29 June 2020 from the ground using binoculars and a high-powered torch where necessary. A search was made of each tree for Potential Roost Features (PRFs) such as knot holes and rot damage, cracks and cavities created by branch loss, lifted bark, and dense ivy growth. Evidence of roosting bats, such as droppings or staining under PRFs was also searched for.
- 3.11 The trees were assigned a category defining their suitability to support roosting bats, in accordance with Table 2.

Bat activity surveys

- 3.12 The Site is assessed as being of moderate suitability for foraging and commuting bats given its location in proximity to the River Thames and the connecting hedgerows to woodland to the north. Given the Proposed Development is limited in extent, and the preliminary plans include retention of all hedgerows and the majority of trees (the habitats of highest suitability for foraging and commuting bats), a proportionate approach to bat activity surveys has been taken at this Site, based on three surveys using automated bat detectors and one walked activity transect.

Walked bat activity transects

- 3.13 One dusk walked activity transect was undertaken on 28 July 2020 by Sarah Joscelyne and Andrew Hearn. The aim of the survey was to identify the assemblage and interpret the behaviour and distribution of bats within the Site. The survey commenced at sunset and continued for two hours after sunset (20:59 – 22:59). The transect covered all suitable habitats within the site (see Figure 3 for transect route). Weather conditions for the survey were optimal with no cloud, no rain, no wind for the duration of the survey, and a temperature of 16°C at the start of the survey, and 10°C at the end.
- 3.14 Equipment used comprised an Anabat Express and a Batbox Duet ultrasonic bat detector, (the former allowed recording of bat calls for later analysis). Field notes were made during the survey to record of the time and location and of each bat encounter, and notes on any visible activity such as feeding.

Automated activity surveys for bats

- 3.15 Two full spectrum automated bat detectors (Wildlife Acoustics Songmeter SM2) were deployed at the site on three occasions, covering the summer, late summer and autumn periods (see Figure 3 for detector locations).
- 3.16 The automated detectors were deployed for up to seven consecutive nights in order to recorded data for up to five nights in each deployment. They were programmed to begin recording from half an hour before sunset until half an hour after sunrise, which allows continuous monitoring to take place during the period when bats are active, i.e. sunset to sunrise. Survey length varied throughout the survey season according to varying daylight hours.
- 3.17 Table 3 shows the dates the detectors were deployed.

Table 3: Deployment dates from automated detectors across the survey period.

Season	Location	Deployment period
Summer	1	28 July - 02 August 2020
	2	
Late Summer	1	04 September - 09 September 2020
	2	26 August – 31 August 2020
Autumn	1	01 October - 06 October 2020
	2	

Bat data analysis

- 4.10 The automated bat detectors were set to record WAV format files which were later converted (using Wildlife Acoustics Kaleidoscope software) into ZC format files. The Anabat Express detector used in the walked transect records data in ZC format. The ZC format files were viewed and analysed using the Titley Electronics AnaLookW software.
- 3.18 The Kaleidoscope software parameters used were as follows:

- Kaleidoscope Version 5.1.8.
- Outputs – ZC files using a division ratio of 8.
- Noise files were filtered and kept (and scanned and checked in AnaLook).
- Default signal of interest settings were used (16–120 KHz, 2–500ms and minimum no. of calls = 2).

3.19 The calls were analysed using AnalookW software to give an indication of the species of bat present and their relative levels of activity. The software enables analysis of the relative activity of different species of bats by counting the minimum number of bat calls recorded within discrete sound files. For the purpose of the analysis a bat pass is defined as a single, uninterrupted sequence of an echolocation calls lasting a maximum of 15 seconds. The species analysis follows the call parameters as described in Russ (2012). The assessment of relative bat activity between species was based on the relative abundance of recorded calls of each species within each survey period (i.e. each period of static monitoring per month) and across the combined study period.

3.20 It should be recognised that a series of separate sound files could represent multiple bats calling infrequently (e.g. as they each pass overhead moving in one direction) or a small number of bats (or even one individual) calling frequently (e.g. bats making repeated foraging passes up and down a feature). This cannot be determined unless bats can be directly observed at all times. Despite this, an indication of overall patterns of use of the Site by different species can be established based on the regularity of recorded calls.

3.21 Where possible, bat calls were identified to species level. However, species of the genus *Myotis* are typically grouped together as their calls are similar in structure and have overlapping call parameters, making species identification problematic (Russ, 2012). For long-eared bats *Plecotus* species, although calls between grey long-eared bats *Plecotus austriacus* and brown-long-eared bats *Plecotus auritus* cannot be distinguished due to overlapping call parameters, since grey long-eared bats are restricted to the extreme south of the UK (Harris & Yalden, 2008), any *Plecotus* calls recorded were assumed to be made by brown long-eared bats.

3.22 For pipistrelles (*Pipistrellus* species) the following criteria based on measurements of peak frequency were used to classify calls:

- Common pipistrelle *Pipistrellus pipistrellus* ≥ 42 and <49 KHz
- Soprano pipistrelle *Pipistrellus pygmaeus* ≥ 51 KHz
- Nathusius' pipistrelle *Pipistrellus nathusii* <39 KHz
- Common / soprano pipistrelle ≥ 49 and <51 KHz
- Common / Nathusius' pipistrelle ≥ 39 and <42 KHz

3.23 In addition, the following categories were used for calls which cannot be identified with confidence due to the overlap in call characteristics between species or species groups:

- *Myotis* / long-eared *Plecotus* sp.
- *Myotis* / serotine *Serotinus eptesicus*
- Leisler's bat *Nyctalus leisleri* / serotine
- Long-eared / serotine
- Serotine / *Nyctalus* sp.
- Noctule *Nyctalus noctula* / Leisler's bat

Limitations to methods

3.24 The Phase 1 habitat survey was carried out in mild, dry, warm weather at a suitable time of year for identifying plants. Therefore no limitations were identified for this survey.

- 3.25 One of the reptile surveys was undertaken on 01 October, which is outside the typical reptile survey period of April, May and September. However, as this was only one day after this period, weather conditions remained optimal during this survey, and all other survey visits were carried out within the optimal period, this is not considered to pose a significant constraint to the effectiveness of the reptile survey.
- 3.26 The automated bat activity survey carried out between 01 and 06 October failed to record a full five nights of data at both detector locations due to detector malfunction. Weather conditions for this deployment were also generally poor, with rain on most nights. Whilst this is a constraint, bats were recorded on all nights during this period on which the detectors were active, and so did provide useful data. In the context of the overall bat survey, involving two other deployments of automated detectors and a walked transect, this constraint is not considered to be significant. The bat survey is considered still to have provided a proportionate sample of bat activity at the Site.

Personnel

- 3.27 Dr Philip Chapman BA MSc PhD qualCIEEM conducted the Extended Phase 1 habitat survey and co-authored this report. Sarah Joscelyne BSc ACIEEM led the bat and reptile surveys and co-authored this report. Dr Tom Flynn BA MSc PhD MCIEEM reviewed the report and provided technical oversight for this project. Kai Hayes MBiolSci conducted the update walkover and updated this report. All staff have extensive experience of ecological survey and assessment, including habitat and protected species surveys. For more details, see www.bsg-ecology.com/people.

4 Results and Interpretation

Designated sites

- 4.1 No statutory designated sites are present within 2 km of the Site boundary. There are four non-statutory Local Wildlife Sites (LWS) within 2 km of the Site boundary. Details of these are given in Table 4 below.
- 4.2 Two European protected sites were present within 10 km of the Site. Little Wittenham Special Area of Conservation (SAC) is located 2.9 km south east of the Site boundary. This European protected site is designated for its large and well-studied population of great crested newt *Triturus cristatus*. Cothill Fen SAC is located 8.8 km north-west of the Site boundary. The SAC is designated for its alkaline fens, an Annex 1 habitat. The lowland valley mire there contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare.

Table 4. Designated sites within 2 km of the Site boundary

Site Name	Interest features (summarised and adapted from designation information supplied by TVERC)	Distance from Site
Clifton Hampden Wood LWS	Part of a narrow strip of wet ash woodland on the northern bank of the River Thames. Diverse natural native canopy and a good population of the nationally scarce Loddon lily <i>Leucojum aestivum</i> .	500 m NE
Clifton Hampden Meadow LWS	Two meadows adjacent to the Thames. Mosaic of dry rough grassland, swamp/fen and wet grassland areas with characteristic flora.	500 m E
Furze Brake LWS	Lowland mixed deciduous woodland with a diverse natural native canopy and woodland indicator plant species. This site houses the most important grey heron <i>Ardea cinerea</i> heronry in the upper Thames basin, with nearly 50 active nests.	1.0 km NW
Hayward's Eyot LWS	This is a low-lying former river island with wet woodland, reedbed, fen, ponds and partly silted side reaches of the River Thames. Large population of the nationally scarce Loddon lily <i>Leucojum aestivum</i> .	1.6 km S

Habitats

- 4.3 Habitats present at the Site are listed and described in Table 4 below and mapped in Figure 1. Of the habitats present, the hedgerows meet the definition of a Habitat of Principal Importance¹ (HPI) (Maddock, 2011). The remaining habitats are not considered HPI. For photographs showing each habitat see Section 10; for target notes, notes on hedgerows and species lists, see Appendix 2.

Table 5. Habitats at the Site

Habitat Type	Notes
Hedgerows	Parts of the external boundaries of both parcels are lined with hedgerows (Photographs 1 and 2). The majority of these are mature species-poor native hedgerows in good condition, and therefore correspond with the description of the Hedgerows HPI (Maddock, 2011). For a detailed description of each hedgerow, see Appendix 1.

¹ As listed by Natural England in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006.

Plantation woodland	<p>A small area of mixed plantation woodland is present within the northern parcel (Photograph 3). Historical aerial imagery indicates this was planted between 2004 and 2009, and it now forms a dense mixed stand up to 7.5 m high, comprising cherry <i>Prunus</i> sp, field maple <i>Acer campestre</i>, hawthorn <i>Crataegus mongyna</i>, small-leaved lime <i>Tilia cordata</i>, spindle <i>Euonymus europaea</i>, and spruce <i>Picea</i> sp. This woodland features minimal ground flora, with occasional common nettle <i>Urtica dioica</i>.</p> <p>The northern edge of the northern parcel borders a narrow strip of (offsite) woodland. This was not inspected closely but appears to be at least partly planted, grading into more semi-natural woodland to the east. Species noted included ash <i>Fraxinus excelsior</i>, elm <i>Ulmus</i> sp, and hawthorn.</p>
Scrub	<p>Areas in the northern parcel formerly occupied by allotments and fruit trees have become invaded by scrub, principally bramble <i>Rubus fruticosus</i> agg., but also including hawthorn, blackthorn <i>Prunus spinosa</i>, dog rose <i>Rosa canina</i>, sycamore <i>Acer pseudoplatanus</i>, elder <i>Sambucus niger</i>, and residual planted species such as domestic plum <i>Prunus domestica</i> and lilac <i>Syringa vulgaris</i>. In places this forms dense scrub banks, although there also areas of the grassland in the northern parcel (see below) which have invading bramble and are classed as scattered scrub.</p>
Scattered trees	<p>The field forming the southern parcel includes several planted common walnut <i>Juglans regia</i> trees (Photograph 4), and the southern boundary features a line of planted trees which are apparently offsite (the trunks are outside an external boundary fence) but which overhang the Site. These are predominantly small-leaved lime <i>Tilia cordata</i> but also include crack willow <i>Salix fragilis</i> (Photograph 5).</p> <p>The southern half of the northern parcel features a variety of scattered young to semi-mature trees. These mostly appear to have been planted and include a line of common walnut separating the grassland area from the northern field, a line of predominantly common walnut as standards in hedgerow H3, and a mixed-species line adjacent to Hedgerow H8 (including field maple, blackthorn, sycamore, small-leaved lime, domestic plum, elm and ash). A single semi-mature horse chestnut <i>Aesculus hippocastaneum</i> is present on the eastern boundary.</p> <p>These scattered trees have low intrinsic ecological value, but see paragraph 4.11 for a discussion of the suitability of these trees for roosting bats and paragraph 4.29 for their suitability for nesting birds.</p>
Tall ruderal vegetation	<p>Areas within the northern parcel which were formerly allotment or grassland have become overgrown with tall ruderal vegetation. These are dominated by stinging nettle <i>Urtica dioica</i>, but also include marsh thistle <i>Cirsium palustre</i>, greater burdock <i>Arctium lappa</i>, teasel <i>Dipsacus fullonum</i>, hogweed <i>Heracleum sphondyleum</i>, cleavers <i>Galium aparine</i>, white goosefoot <i>Chenopodium album</i>, and some bramble and elder, particularly in the north eastern corner of the Site.</p> <p>Some areas around the edges of the grassland in the southern parcel also feature tall ruderal vegetation dominated by stinging nettle, and also including spear thistle <i>Cirsium vulgare</i>, red campion <i>Silene dioica</i>, bristly ox-tongue <i>Helminthotheca echioides</i> and some bramble.</p>
Semi-improved grassland	<p>The northern parcel predominantly comprises semi-improved neutral grassland (Target Note TN1 Photograph 6). This grassland is dominated by false oat-grass <i>Arrhenatherum elatius</i> and is moderately species-rich with a</p>

	<p>good variety of native forbs, as well as a variety of garden and allotment escapes such as lupin <i>Lupinus</i> sp., rhubarb <i>Rheum rhabarbarum</i> and ornamental columbine <i>Aquilegia</i> sp. In places there are patches of bare ground and forb species more characteristic of disturbance, which suggests it has formed relatively recently. In the eastern portion of the northern parcel, where this grassland appears to have formed relatively recently over former allotments, this grassland is less species-rich and includes more patches of tall ruderal vegetation and a variety of scattered allotment escape species such as onions <i>Allium cepa</i> (TN2, Photograph 7).</p> <p>This grassland is not considered to meet the description of the Lowland Meadows HPI (Maddock 2011) due to its recent origins, the lack of indicator species for unimproved grassland and the relative dominance of grasses.</p> <p>This grassland is of moderate ecological value; see paragraph 4.35 for a discussion of its suitability for reptiles. For a species list, see Appendix 1.</p>
Species-poor semi-improved grassland	<p>The southern parcel is grassland managed for pony grazing and is internally divided with electric fences (Target note TN3, Photographs 4, 5, 8, 10, 11). This grassland comprises a mixture of areas of close grazed sward and areas with a longer sward. It has abundant perennial ryegrass <i>Lolium perenne</i>, false oat-grass, meadow foxtail <i>Alopecurus pratensis</i> and creeping bent <i>Agrostis stolonifera</i>. This grassland is classified as poor semi-improved grassland due to the dominance of a limited range of grass species, and the limited species richness and abundance of forbs. To the west (Photograph 9), the sward becomes increasingly shorter and even less diverse.</p> <p>The Phase 1 survey carried out in 2020 classified the short-grazed portion of this grassland as improved grassland, because of the abundance of perennial ryegrass. The update walkover found several other grass species to be present. As such it was decided to classify the whole of this area of grassland as poor semi-improved grassland. This is not considered a significant change. Due to the limited range and cover of forb species, this grassland is clearly poor semi-improved grassland rather than neutral grassland. This grassland is not considered to meet the definition of the Lowland Meadows HPI due to the low diversity of forbs, dominance of grasses and absence of indicator species. This grassland is of limited ecological value; see paragraph 4.35 for a discussion of its suitability for reptiles. For a species list, see Appendix 1.</p>
Arable land	<p>The northern half of the northern parcel includes an arable field, which was occupied by wheat at the time of the Phase 1 habitat survey visits (Photograph 12). This appeared to be intensively managed with few or no weed species noted, although there was a narrow margin along the northern edge comprising common grass and ruderal species (perennial rye grass, greater burdock, rough chervil <i>Chaerophyllum temulum</i>, cock's-foot <i>Dactylis glomerata</i> and wall barley <i>Hordeum murinum</i>).</p> <p>In addition, part of the northern parcel is an active allotment, which is also classed as arable land. This habitat is of negligible intrinsic ecological value.</p>
Bare ground	Two areas in the southern parcel are used for storing manure and are classified as bare ground.
Buildings	Two buildings in the southern portion (B1 and B2 on Figure 1) are wooden horse stables. These have negligible intrinsic ecological value.

Protected species

Bats

- 4.4 TVERC returned 38 records of bats from within 2 km of the Site boundary, of which 21 were identified to species level. All bats are European protected species. These comprised common pipistrelle (eight records), soprano pipistrelle (seven), brown long-eared bat *Plecotus auritus* (four), noctule (one) and serotine (one). There were also four records of an unidentified *Myotis* species. The nearest record of a bat to the Site was two soprano pipistrelles recorded feeding 70 m south east of the Site in 2008.
- 4.5 Four records corresponded to roosts. The nearest roost to the Site was a roost of common pipistrelles recorded 1.1 km east of the Site in 1987.
- 4.6 One European Protected Species mitigation licence for bats was granted within 2 km of the Site; this was 890 m to the east of the Site and was granted in 2012. This licence was for the destruction of a resting place and maternity roost of brown long-eared, common pipistrelle and soprano pipistrelle bats.

Bat roost suitability of buildings

- 4.7 Buildings B1 and B2 were surveyed externally, and internal parts were viewed through the open stable doors. Both buildings are modern wooden stable blocks with a roof of corrugated bitumen sheet over plywood. Building B1 (Photographs 13, 14) is a single block measuring approximately 2.5 x 4 m, and Building 2 (Photograph 15) is a double block measuring approximately 2.5 x 6 m.
- 4.8 Both buildings offer entry points to bats through the open upper portion of the stable door, and via small gaps under the felt sheeting near the ridge. However both buildings are of clean internal construction with no gaps or crevices apparent which might offer roosting sites for bats. These buildings therefore have negligible suitability for roosting bats.

Ground Level Tree Assessment

- 4.9 Four trees onsite and on the boundary of the Site have suitability for roosting bats. Tree T1, a common walnut in the southern parcel, has a split branch approximately 4 m high the northern aspect (Photograph 16). Tree T2, a small-leaved lime in Hedgerow H6 in the south-east corner of the southern parcel, has dense ivy covering on the trunk (Photograph 17). Tree T3, a pedunculate oak marginally offsite in the woodland to the north of the northern parcel, has two small knot scars on the northern aspect at approximately 5 m high (Photograph 18). Tree T4, a 6 m horse chestnut on the eastern boundary of the northern parcel has dense ivy covering the trunk. These trees have low suitability for roosting bats. None of these trees have suitability for hibernating bats. For a detailed description, see Appendix 1. The locations of these trees are shown on Figure 1 and Figure 3.
- 4.10 The remaining trees on Site and along the boundaries are mostly relatively young, with no PRFs evident, and have negligible suitability for roosting bats.

Habitat suitability for foraging and commuting bats

- 4.11 Both parcels of habitat at the Site have moderate suitability for foraging and commuting bats, with suitable habitat including the scrub, trees, grassland and hedgerows. The south-east corner of the Site is approximately 130 m (south parcel) and 160 m (north parcel) from the River Thames, which forms a relatively wooded corridor of suitable habitat, and the Site is well-connected by hedgerows and treelines to larger areas of woodland to the north. The Site may therefore be used by bats commuting between these landscape features, as well as by foraging bats roosting in the numerous old buildings in Clifton Hampden village itself. There are other commuting routes for bats to use in the wider landscape between the River Thames and woodland to the north.

Activity surveys

Walked Activity Transects

- 4.12 The walked transect survey at the Site recorded at least seven species of bat. The majority of the bat activity recorded was by foraging common pipistrelle, soprano pipistrelle and noctule. All three species were recorded widely across the site. A lower level of bat activity was recorded on the eastern boundary of the northern part of the Site and in the southern part of the Site.
- 4.13 The earliest activity was recorded 26 minutes after sunset by common pipistrelle along the northern hedgerow of the northern parcel of the Site, shortly followed by soprano pipistrelle recorded 30 minutes after sunset along the western boundary, between the two northern fields.
- 4.14 The transect results indicate that the majority of boundary features at the Site support commuting bats. These features are considered to contribute to habitat connectivity for bats at the local level.

Automated Activity Surveys

- 4.15 Analysis of the automated detector data found that the Site was used by at least nine species of foraging and/or commuting bats.
- 4.16 Pipistrelle species accounted for nearly 70% of bat activity within the Site. Soprano pipistrelle was the most frequently recorded species (number of passes (n) = 1,677; equating to 49.8% of recorded bat passes). Lower numbers of common pipistrelle were also recorded (n = 659; 19.6% of total passes) and there were also a few passes of the rarer Nathusius' pipistrelle (n = 2, 0.1% of total passes). There were also a small number of calls where identification of Pipistrellus to species level was not possible (n = 14, 0.4% of total passes). Common and soprano pipistrelles are both described as "Common" in Oxfordshire while Nathusius' bat is described as rare (Oxfordshire Bat Group, 2020).
- 4.17 *Myotis* genus bats were the next frequently recorded group, accounting for approximately 10.6% of bat activity within the Site. It is not possible to definitively identify *Myotis* genus bats to species level from their calls alone due to the overlap between parameters of these species.
- 4.18 A number of *Nyctalus* species bats (noctule and Leisler's bat) were also recorded, accounting for approximately 8.6 % of bat activity within the Site. The vast majority of *Nyctalus* bat calls identified to species level were noctule (n = 254; 7.5% of total passes). Seven passes of Leisler's bat were recorded throughout the entire survey period (0.2% of total passes). In addition, 31 *Nyctalus* bat calls were recorded which fit parameters for both species (0.9% of total). There were also seventeen called which fit parameters for *Nyctalus* bat species and serotine (0.5% of total), with a further 190 calls (5.6% of total) confirmed as serotine calls. Both noctule and Leisler's bat are tree roosting species described as "Uncommon though widespread" in Oxfordshire (Oxfordshire Bat Group, 2020); however Leisler's bat is a scarce species across the wider UK (BCT, 2010a). Serotine is an uncommon species nationally, found mostly in the southern counties and predominantly roost in buildings (BCT, 2010b). It is described as "Widespread though uncommon; few known roosts" in Oxfordshire (Oxfordshire Bat Group, 2020).
- 4.19 The remaining bat activity was attributed to brown long-eared bat (n = 154; 4.6% of total passes) and barbastelle *Barbastella barbastellus* (n = 8; 0.2% of total passes). Barbastelle is a rare species across the UK as a whole (BCT, 2010c), although in Oxfordshire it is described as "widespread though uncommon" (Oxfordshire Bat Group, 2020). Barbastelles are tree roosting species typically associated with woodland and parkland. Brown long-eared bats are often under-recorded due to the quiet and directional nature of their echolocation calls; the actual level of brown long-eared bat activity is likely to be higher than indicated. Brown long-eared bats are described as 'widespread and relatively common' in Oxfordshire (Oxfordshire Bat Group, 2020). They roost both in trees and buildings.
- 4.20 Soprano pipistrelle, barbastelle, noctule and brown long-eared bats are Species of Principal Importance² (SPI) in England.

² As listed by Natural England in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006.

- 4.21 Location 1 in the north of the northern parcel recorded the highest amount of activity with 61.6 % of total passes. This is primarily attributed to a higher number of common pipistrelle, soprano pipistrelle and noctule calls at this location, with most other species recorded showing similar levels of activity at both location 1 and Location 2 (in the south of the southern parcel). Serotine is an exception to this, with 65.8 % of passes being recorded at Location 2.
- 4.22 Table 6 shows the total number of bat passes and average pass rates (bat passes per hour) for each static detector location, and both combined, across the whole survey period by species.

Table 6: Summary results of automated surveys for bats. The bat pass rate is expressed as bat passes per hour (B/h).

Species	Location 1		Location 2		Total passes	Total B/h
	Passes	B/h	Passes	B/h		
Barbastelle bat	4	0.025	4	0.030	8	0.027
Common / Nathusius' pipistrelle	1	0.006	3	0.022	4	0.014
Common / Soprano pipistrelle	3	0.019	7	0.052	10	0.034
Common pipistrelle	475	2.961	184	1.360	659	2.228
Leisler's bat	3	0.019	4	0.030	7	0.024
Long eared bat sp.	73	0.455	81	0.599	154	0.521
Myotis species	162	1.010	194	1.434	356	1.204
Nathusius' pipistrelle	2	0.012		0.000	2	0.007
Noctule	193	1.203	61	0.451	254	0.859
Noctule / Leisler's bat	17	0.106	14	0.103	31	0.105
Serotine	65	0.405	125	0.924	190	0.642
Serotine / Nyctalus sp.	15	0.094	2	0.015	17	0.057
Soprano pipistrelle	1,062	6.620	615	4.545	1,677	5.671
Total	2,075	12.935	1,294	9.563	3,369	11.392

- 4.23 Table 7 presents a summary of the timing of bat passes through the survey nights; this information can be used to determine whether certain bat species recorded on Site have been recorded within typical emergence times for the species e.g. pipistrelle species typically emerge within 20 minutes of sunset (with reference to Russ, 2012 and Andrews, 2016). The following results could therefore indicate the possible presence of roosts in close proximity to the Site (such as within boundary tree lines, or nearby residential properties):
- Eleven passes of common pipistrelle were recorded within their typical emergence period (i.e. up to 20 minutes after sunset), the earliest of which was recorded seven minutes after sunset on 04 October 2020. All other passes were recorded on 02 October 2020, the earliest being nine minutes after sunset. One pass was also recorded 10 minutes prior to sunrise on 05 October 2020.
 - Thirty-six passes of soprano pipistrelle were recorded within their typical emergence period (i.e. up to 20 minutes after sunset), the earliest of which was recorded three minutes after sunset on 04 October 2020. All passes within 20 minutes of sunset were recorded on 01 and 04 October 2020. One pass was also recorded 8 minutes prior to sunrise on 05 October 2020.
 - Three passes of noctule were recorded within their typical emergence period (i.e. up to 20 minutes after sunset), all on 01 October, with the earliest recorded eleven minutes after sunset.
 - Three passes of serotine were recorded within 20 minutes of sunset (i.e. within their typical emergence period), all on 01 October, with the earliest recorded nineteen minutes after sunset.
 - One pass of a long-eared bat species recorded 14 minutes after sunset on 01 October, (approximately 45 minutes before their typical emergence period).

- Six passes of a *Myotis* species were recorded within 40 minutes of sunset (i.e. within their typical emergence period) the earliest of which was recorded twenty-seven minutes after sunset on 01 October 2020.

4.24 However, the low numbers of bat passes recorded overall within these typical emergence times indicates that there is unlikely to be a significant roost located on or adjacent to the Site. All bat passes that were recorded at the Site within typical emergence times of the above species were recorded in the autumn. The weather conditions for this detector deployment were generally poor, with persistent rain during the night on the 01 October, the day and night of the 02 and 03 October, and occasional rain on the nights of the 04 and 05 October. Therefore, the skies would likely have been darker earlier than sunset on these nights, and the amount of time available for bats to forage would have been reduced. This, rather than the presence of a nearby roost, could explain the increased bat activity close to sunset observed in the autumn survey.

Table 7: Summary of bat passes recorded by species and time period

Species	Number of bat passes 0 – 120 minutes after sunset						Number of bat passes Middle of Night	Number of bat passes 120 – 1 minute before sunrise						Total
	0-20	20-40	40-60	60-80	80-100	100-130		120-100	100-80	80-60	60-40	40-20	20-1	
Barbastelle bat					1		7							8
Common / Nathusius' pipistrelle	1						3							4
Common / Soprano pipistrelle			2	1	1		6							10
Common pipistrelle	11	43	37	60	44	43	347	16	4	38	13	2	1	659
Leisler's bat					1		6							7
Long eared bat sp.	1			5	4	3	132	1	5	3				154
Myotis species		6	4	21	29	33	248	7	5	3				356
Nathusius' pipistrelle					1		1							2
Noctule	3	17	12	14	22	19	156	2	4	3	1	1		254
Noctule / Leisler's bat	1	2		3	1	2	22							31
Serotine	3	13	9	67	14	21	63							190
Serotine / Nyctalus sp.		1					16							17
Soprano pipistrelle	36	13	136	77	117	180	943	58	25	23	50	10	9	1677
Total	56	95	200	248	235	301	1950	84	43	70	64	13	10	3369

Badger

- 4.25 TVERC returned 11 records of badger *Meles meles* from within 2 km of the Site. Badger is protected under the protection of Badgers Act 1992. The nearest record of a badger was of a (presumably roadkill) individual in Clifton Hampden on the A415 directly adjacent to the Site between the two parcels (although this record was to 100 m accuracy only) in 2013.
- 4.26 The Site provides suitable foraging habitat for badgers and some suitable areas for setts (in the hedgerows and wooded boundaries). A single (disused) badger sett was located within the offsite woodland to the north of the northern parcel, which is visible from the Site. This had no evidence of recent use by badgers, most of the entrances either being filled in with leaf litter (Photograph 19) and earth or occupied by rabbits *Oryctolagus cuniculus*. No other evidence of badger was detected during the Phase 1 habitat survey or subsequent further surveys.

Other mammals

- 4.27 TVERC returned 27 records of other mammals from within 2 km of the Site, comprising otter *Lutra lutra* (11 records), polecat *Mustela putorius* (seven), brown hare *Lepus europaeus* (five) and water vole *Arvicola amphibius* (four). These species are all SPIs. Otter and water vole are also protected under Schedule 5 of the WCA 1981 (as amended) and otter is additionally a European Protected Species under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). Of these, the Site has suitability for polecat and brown hare, although no evidence of either was found during any of the surveys.

Breeding birds

- 4.28 TVERC returned 2,474 records of birds from within 2 km of the Site, comprising 94 species. All birds and active nests are protected under the Wildlife and Countryside Act 1981 (as amended; see Appendix 2). The Site provides suitable breeding habitat for a variety of countryside, woodland and farmland species in the hedgerows, trees and buildings. These include one species recorded by TVERC which is specially protected from disturbance under Schedule 1 of the Wildlife and Countryside Act (Barn Owl, nine records). The nearest record of a barn owl was from 670 m south of the Site in 2010.
- 4.29 The records provided by TVERC included nine species for which the site provides suitable habitat: bullfinch *Pyrrhula pyrrhula* (52 records), song thrush *Turdus philomenos* (38), dunnock *Prunella modularis* (34) cuckoo *Cuculus canorus* (27), linnet *Linaria cannabina* (14), yellowhammer *Emberiza citrinella* (11), starling *Sturnus vulgaris* (seven), house sparrow *Passer domesticus* (three), and spotted flycatcher *Muscicapa striata* (two). The closest record of an SPI to the Site were records of song thrush and yellowhammer from 800 m south west in 2004.
- 4.30 In addition to these species, the large offsite trees adjacent to the southern parcel provide suitable breeding habitat for red kite *Milvus milvus* (specially protected on Schedule 1 of the Wildlife and Countryside Act). TVERC returned 56 records of red kite from within 2 km of the Site, the nearest being from 800 m north east of the Site in 2004.
- 4.31 Buildings 1 and 2 have some suitability for occasional use as a night feeding perch or day roost by barn owl, although the relatively high-intensity usage of these buildings as stables and feed/hay stores for horses, plus their small size and lack of suitable internal structures for nesting mean that this species is unlikely to be nesting. Barn owl were heard calling close to the Site during the bat transect.
- 4.32 Building 1 had an active nest of swallow *Hirundo rustica*, with five chicks in an advanced stage of development and nearly ready to fledge (Photograph 20) during the Phase 1 habitat survey. In addition, singing linnet (SPI), stock dove *Columna oenas* and whitethroat *Sylvia communis* were noted during the Phase 1 survey. No other evidence of breeding birds was found during the survey.

Reptiles

- 4.33 TVERC returned one record of a reptile from within 2 km of the Site, a grass snake *Natrix helvetica*, a SPI and specially protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This record was from approximately 2 km south of the Site.
- 4.34 The Site provides suitable habitat for reptiles, particularly in the semi-improved grassland, tall ruderal and scrub areas of the northern parcel, but also in the longer areas of species-poor semi-improved grassland in the southern parcel. Any compost heaps in the allotment areas, and the dung heaps in the southern parcel (TN3 and TN4) also provide potential basking and sheltering areas, and potentially also breeding sites for reptiles.
- 4.35 However, the reptile surveys undertaken in September and October 2020 did not record any reptiles. Reptiles are therefore likely to be absent from the Site.

Amphibians

- 4.36 TVERC returned 6 records of amphibians from within 2 km of the Site, comprising the common and widespread common frog *Rana temporaria* (five records) and common toad *Bufo bufo* (one). Common toad is an SPI. There were no records of great crested newt (GCN).
- 4.37 There are no ponds within 500 m of the Site boundary. The only waterbodies within this radius are the river Thames and an attached stream or ditch 214 m to the south east, and two flowing ditches 100 m west and 115 m north of the Site respectively. As flowing waterbodies these are not considered to provide suitable breeding habitat for GCN or common toad.
- 4.38 The Little Wittenham SAC, 2.9 km south east of the Site, is designated for breeding GCN. Given the distance from the Site and the presence of the River Thames between this SAC and the Site (approximately 50 m wide at Clifton Hampden and thus likely to present a barrier to dispersal to GCN), it is not considered likely that development of the Site will kill or injure any GCN from the SAC or destroy any terrestrial habitat used by them
- 4.39 Due to the absence of suitable breeding habitat on or near the Site, great crested newt is considered likely to be absent from the Site and common toad is considered unlikely to be present there in significant numbers. Amphibians are therefore not considered further in this report.

Invertebrates

- 4.40 TVERC returned 210 records of invertebrates from within 2 km of the Site. These predominantly comprise records of moths and butterflies. The habitats at the Site are unlikely to support important invertebrate assemblages and invertebrates are therefore not considered further in this report.

Plants

- 4.41 TVERC returned 179 records of plants from within 2 km of the Site. These include one species specially protected against sale under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended): bluebell *Hyacinthoides non-scripta* (17 records). They also include two SPIs: tubular water-dropwort *Oenanthe fistulosa* (four records) and red hemp-nettle *Galeopsis angustifolia* (one). The nearest record of one of these species was a bluebell recorded 130 east of the Site in 1990.
- 4.42 No evidence of the above plant species or any other rare or notable plant species was recorded during the Phase 1 habitat survey. In Oxfordshire, bluebell is typically associated with woodland (usually ancient woodland) and occasionally with old hedgerows. Tubular water dropwort is associated with wetland habitats. Red hemp-nettle is a plant of calcareous arable land. Given that habitats at the Site, and their condition, these species are considered unlikely to be present, and the Site is unlikely to support rare or notable plant species.
- 4.43 TVERC also returned 23 records of non-native plant species from within 2 km of the Site, including three invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended):

Himalayan balsam *Impatiens glandulifera* (10 records), rhododendron *Rhododendron ponticum* (three) and Japanese knotweed *Fallopia japonica* (two). No evidence of any of these species was recorded during the Phase 1 habitat survey and they are considered unlikely to be present on Site.

4.44 Protected, notable and invasive plant species are not considered further within this report.

5 Potential Impacts

Potential Impacts

Designated sites

- 5.1 Of the two nearest designated sites to the Site, the Clifton Hampden Meadows LWS has public access via a right of way, the Thames Path, which runs along the northern edge of the LWS. This connects to the Site via the Clifton Hampden Bridge. It is therefore possible that the Proposed Development could negatively affect the LWS by increased recreational footfall, which could cause trampling of the grassland (the principal interest feature at this designated site).
- 5.2 However, the modest size of the Proposed Development and diversity of footpaths surrounding Clifton Hampden in other directions mean that any increase in footfall at this site is likely to be limited. Considering the visual appeal of the River Thames, it is considered likely that the majority of visitors to the LWS (including any increase as a result of the Proposed Development) are likely to walk principally on the existing Thames Path which follows the northern periphery of the LWS, rather than extensively on the remainder of the LWS, which is boggy and inaccessible in places and not served by any other public rights of way. Therefore it is considered unlikely that any significant damage to the dry or wet grassland habitats of this LWS will result from any increase in footfall as a result of the Proposed Development.
- 5.3 The remaining LWSs have limited or no public access and are over 1 km from the Site, therefore negative impacts from recreation are not considered likely.
- 5.4 Recreational impacts on the Little Wittenham SAC originating from the Proposed Development are considered unlikely to be significant due to the distance from the Site, the small size of the Proposed Development and the relatively low sensitivity of the designated GCN population to recreational disturbance.
- 5.5 Little Wittenham SAC is 3.87 km from the Site and 4.61 km by road, meaning that recreational pressure from the Site is likely to comprise predominantly people driving to park at the SAC for a walk on an occasional basis, rather than walking directly from the Proposed Development on a daily basis.
- 5.6 Some parking is provided by the Earth Trust who manage the SAC and surrounding land, including Wittenham Clumps, a popular landmark. Public access is permitted to Wittenham Clumps and unofficial access is possible to the ponds (LUC, 2018). However the Earth Trust actively manages public access to the ponds containing the designated GCN population as part of an established management plan for the SAC, using trail signage to direct walkers away from the ponds (except for visiting a designated viewing area). Future developments to cater for increased visitor numbers at the Site (such as car park expansion) are also being designed to limit access to the ponds and encourage visitors to concentrate on Wittenham Clumps. A recent Habitats Regulations Assessment of the South Oxfordshire Local Plan (LUC, 2018) therefore concluded:
- 5.7 *“...that the great crested newt population is of low sensitivity to recreational pressure and that sufficient measures are in place to manage visitor numbers to Little Wittenham SAC such that they do not have an adverse effect on the site”.*
- 5.8 Recreational impacts on Cothill Fen SAC are also considered unlikely, due to the distance from the Site (a drive of 11.75 km) and limited parking. Cothill Fen comprises predominantly boggy habitats with limited public access and is not considered particularly vulnerable to recreational pressure (LUC, 2018)

Habitats

- 5.9 The Proposed Development will retain the hedgerows on Site, except for a breach of hedgerows H1 and H4 for access roads. Therefore, there are likely to only be minimal effects on Habitats of Principal Importance from the Proposed Development.

- 5.10 The Proposed Development will involve the loss of areas of semi-improved grassland (of moderate ecological value), poor semi-improved grassland, scrub, tall ruderal vegetation, plantation woodland, some scattered trees and arable land. In the absence of mitigation, this is likely to have an adverse ecological impact at the local level.

Bats

- 5.11 The masterplan for the Proposed Development retains Trees T1–T4, and therefore no direct impacts on roosting bats (if present) are anticipated. In addition, the key linear features likely to be used by foraging and commuting bats are to be retained. However, in the absence of mitigation, the Proposed Development has the potential to disrupt foraging and commuting bats via light spill onto these features and onto retained areas of grassland, scrub trees, both during construction work and post construction.
- 5.12 Given the abundance of greenspace and tree planting in the proposed development, and the current dominance of the site by open areas, means that there is not considered to be a significant reduction in the value of the site as a foraging resource for bats.

Badgers and other mammals

- 5.13 In the absence of mitigation, construction works associated with the Proposed Development has the potential to kill and injure foraging badgers and hedgehogs and other small animals during the construction phase, if they fall into active excavations and become trapped.

Birds

- 5.14 The Proposed Development is likely to cause the loss of foraging and breeding habitat for a variety of scrub and tree-nesting bird species, including SPI species, although the retention of extensive areas of hedgerow, and of trees in the Proposed Development limits this impact. The impact will also be temporary, since extensive planting and creation and enhancement of habitats required to produce a biodiversity net gain will provide compensatory bird habitat.
- 5.15 In the absence of mitigation, nests of common and widespread bird species may be destroyed during the clearance of the scrub and plantation woodland areas, and there is potential for the killing and injury of nesting birds.

6 Mitigation

Designed-in mitigation

6.1 The following mitigation has been incorporated into the design of the Proposed Development:

- Habitats have been retained where possible, in particular HPI habitats (hedgerows) and ecological connectivity.
- Habitat creation has been incorporated into the Proposed Development at the Site to help contribute to a net gain in biodiversity. Given the Site's location and the proposed design, appropriate habitat creation includes rough or wildflower grassland, additional native hedgerows, and wetland or pond areas.

Further Mitigation

- **Lighting:** It is recommended that lighting in proximity to the retained hedgerows is designed to ensure that light spill onto these features is avoided. Lighting should be directional, either facing directly downwards or away from the boundaries of the Site. A lighting regime should be developed with reference to the current good practice guidance (ILP and BCT, 2018). This should be taken into account for both the construction and occupation phases.
- **Vegetation clearance:** It is recommended that woody vegetation clearance be carried out outside the bird breeding season (March to August inclusive) to avoid impacting nesting birds. Alternatively, some clearance may be possible within the breeding season, if it is preceded by a search by an experienced ecologist. If nesting birds are found, the nest (and a suitable buffer around the nest) should be retained until any young have fledged or the nest is otherwise disused.
- **Pre-construction badger survey:** Badgers are a highly mobile species and often create new setts or re-use old ones. It is therefore recommended that a pre-construction badger survey is completed to verify that the badger sett identified off-site remains unoccupied and that no new setts have been created on Site.
- **Badger precautions during construction:** It is recommended that excavations during construction be left covered overnight, or, if this is not possible, a point of egress such as provision of ramps (planks or other building materials) be left to allow badgers or small animals to escape.
- **Tree check for bats:** If the masterplan for the Proposed Development is altered to require removal of any of trees T1-T4, then any works to these trees should be preceded by a climbing inspection by a licensed ecologist. If bats or signs of bats are found to be present, further survey or mitigation, including licensing may be required.

Enhancements

6.2 The following measures are recommended to enhance the biodiversity value of the Proposed Development. These include:

- **Bat boxes:** Provision of bat boxes in new buildings and on new trees at the Site is recommended, with the locations to be advised by an ecologist. A variety of bat box types can be provided, for example the Schwegler 2F (general purpose box) or 1FR (integral bat box) to increase the resource of roosting habitat for bats in the vicinity.
- **Bird boxes:** Provision of bird boxes in new buildings and on new trees at the Site, with the locations to be advised by an ecologist. Bird boxes could include a combination of designs such as the Schwegler 1B (those for hole nesters such as blue tit *Cyanistes caeruleus*, great tit *Parus major* and house sparrow), 2H (open fronted box for robins *Erithacus rubecula*), 3S (for starling) or No.17 (for swift *Apus apus*) to increase the resource of nesting habitat for birds in the vicinity.

- **Habitat Piles:** Creation of habitat piles in sheltered but sunny locations to provide shelter and a hibernation location for reptiles, amphibians, small mammals, and invertebrates. These could be formed of various branch and log sizes, vegetation arisings and soil.

Biodiversity Net Gain Assessment

- 6.3 The National Planning Policy Framework requires that development delivers a net gain in biodiversity (Appendix 3). Policy ENV3 of the South Oxfordshire District Council Local Plan 2034 states that *'All development should provide a net gain in biodiversity where possible. As a minimum, there should be no net loss of biodiversity. All proposals should be supported by evidence to demonstrate a biodiversity net gain using a recognised biodiversity accounting metric.'* (SODC, 2019).
- 6.4 A biodiversity metric is a calculation in which the biodiversity value of a site prior to a development is compared with its likely biodiversity value post-development. It is understood that South Oxfordshire District Council requires the submission of the Defra metric for all major applications (pers. comm). It is therefore recommended that a Biodiversity Impact Assessment is completed for this Site.
- 6.5 A biodiversity net gain assessment of the Proposed Development is therefore necessary, the result of which may require additional on or off-site habitat creation to provide biodiversity net gain. It is understood that this assessment is to be submitted in a separate document.

7 Conclusions

- 7.1 If the recommendations set out in this report are implemented in full in the design and construction of the proposed development, appropriate including measures to achieve a biodiversity net gain, it is considered that the Proposed Development will be in line with local and national planning policy, and will not be in breach of wildlife legislation.

8 References

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9 **Figures**

Figure 1: Phase 1 habitats plan

Figure 2: Reptile survey

Figure 3: Bat survey

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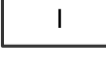

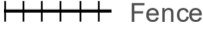
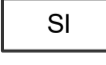


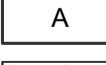







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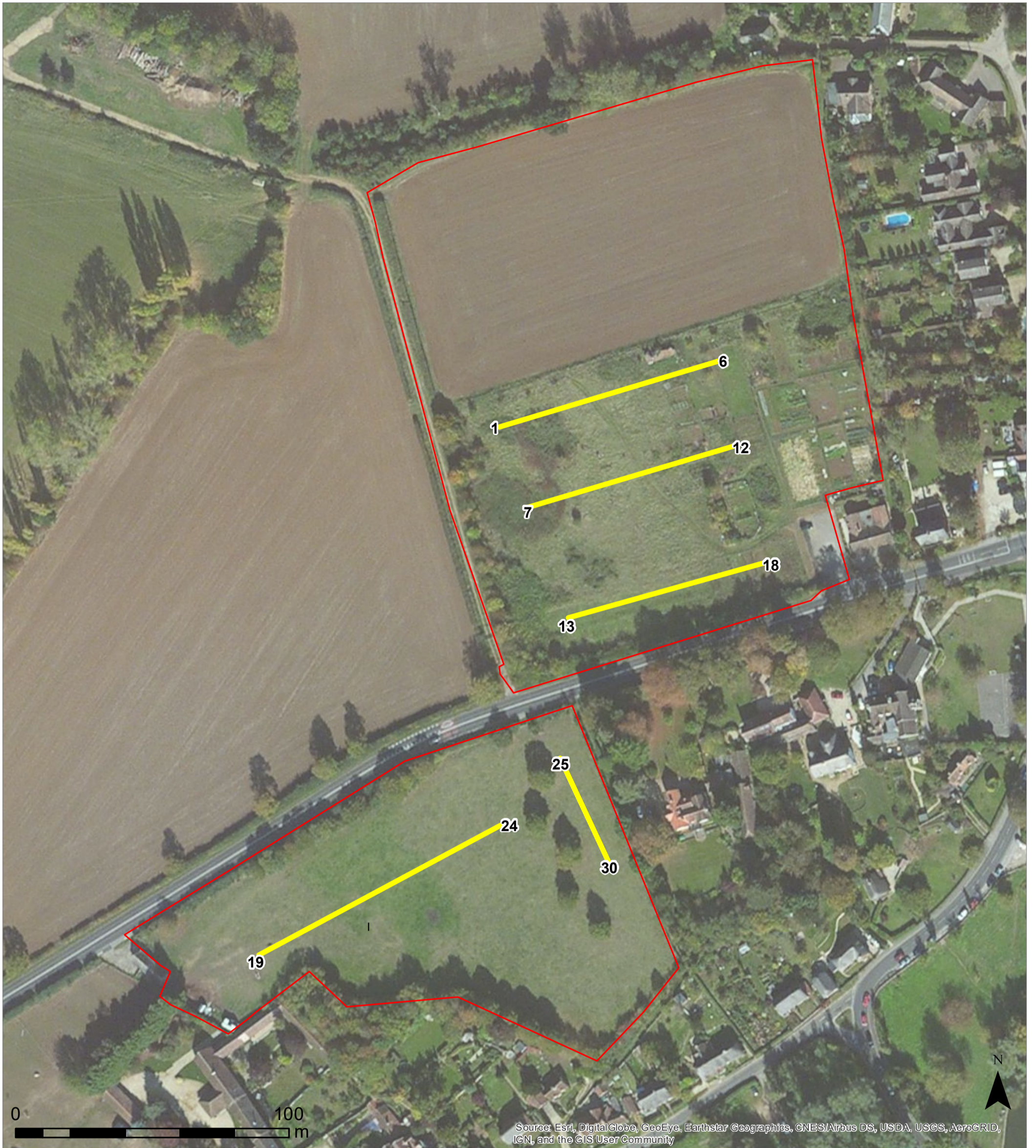
PROJECT TITLE
CLIFTON HAMPDEN

DRAWING TITLE
Figure 1: Phase 1 habitat survey map

DATE: 02/11/2020
DRAWN: KW
CHECKED: PMC
APPROVED: TF
SCALE: 1:1,350
VERSION: 1.3

LEGEND

	Site boundary		Intact species-poor hedge		Semi-improved grassland
	Target note		Defunct species-poor hedge		Improved grassland
	Tree		Fence		Poor semi-improved grassland
	Scattered scrub		Dense scrub		Arable
	Species-rich hedge with trees		Mixed plantation woodland		Bare ground
	Species-poor hedge with trees		Tall ruderal		Building
					Hardstanding



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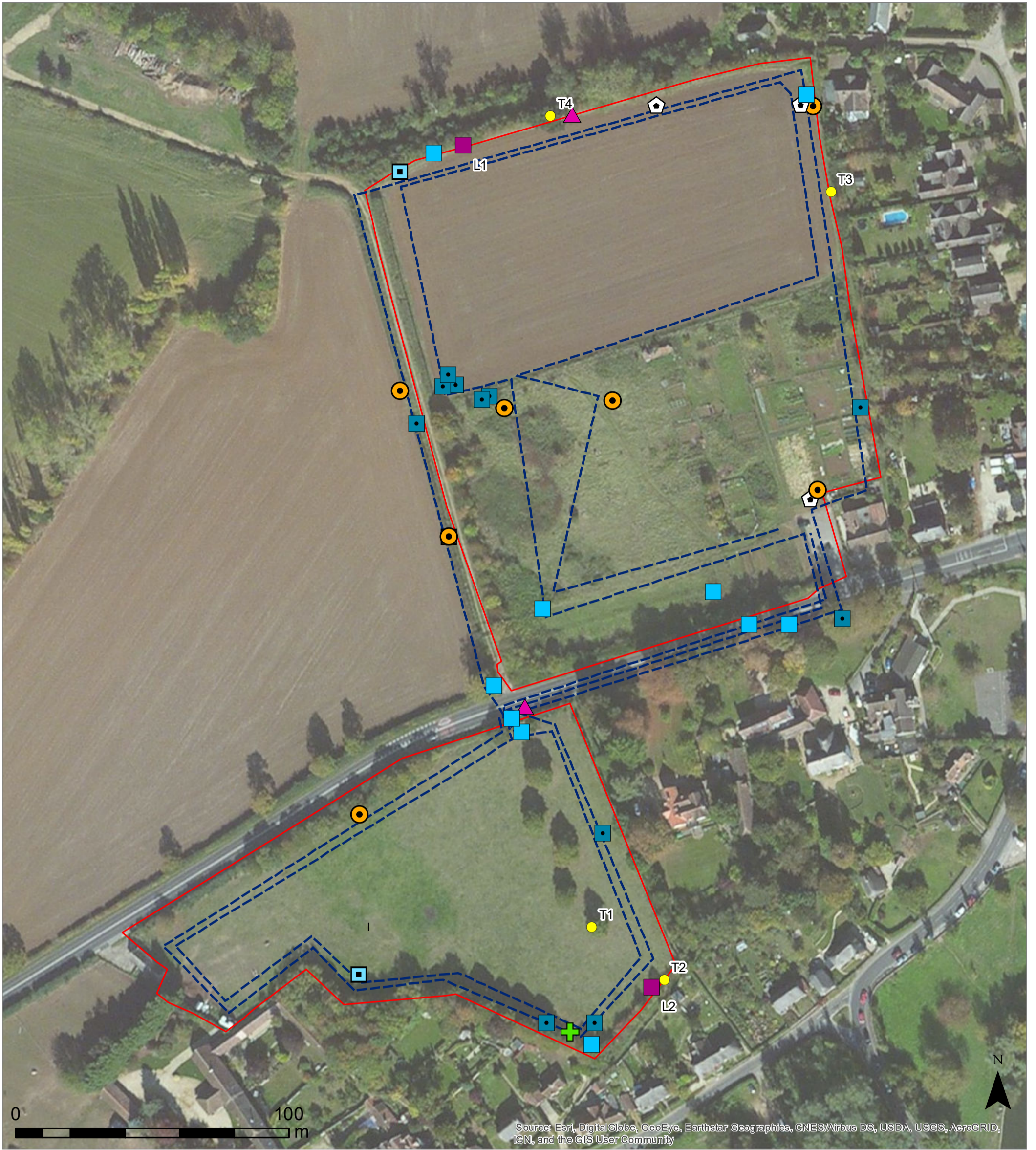
PROJECT TITLE
CLIFTON HAMPDEN

DRAWING TITLE
Figure 2: Reptile survey

DATE: 09/11/2020
DRAWN: KW
CHECKED: SJ
APPROVED: TF
SCALE: 1:1,350
VERSION: 1.2

LEGEND

-  Site boundary
-  Line of reptile survey mats and identification numbers



C:\Users\Kris\Documents\BSG\Clifton Hampden Spatial Data\1.0\Figure 3 Bat survey.mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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JOB REF: P20-219

PROJECT TITLE
CLIFTON HAMPDEN

DRAWING TITLE
Figure 3: Bat survey

DATE: 09/11/2020 CHECKED: SJ SCALE: 1:1,350
DRAWN: KW APPROVED: TF VERSION: 1.3

LEGEND

	Site boundary		Soprano Pipistrelle
	T1 Tree with low suitability to support roosting bats		<i>Pipistrelle</i> species
	L1 Static bat detector locations		<i>Myotis</i> species
	Transect route		Noctule
Transect results: bat observations			Serotine
	Common Pipistrelle		Leisler's

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No dimensions are to be scaled from this drawing. All dimensions are to be checked on site. Area measurements for indicative purposes only.
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OS Open data © Crown copyright and database right 2019 | Aerial Photography © Esri | Sources: BSG Ecology survey data

10 Photographs

Photograph 1: Northern parcel looking west, showing Hedgerow H1 and semi-improved grassland



Photograph 2: Northern boundary of the southern parcel looking east, showing Hedgerow H8 (right) and scattered trees along this boundary.



Photograph 3: Small area of plantation woodland in the northern parcel, viewed from the east.



Photograph 4: Species-poor semi-improved grassland in the east of the southern parcel, showing planted common walnut trees.



Photograph 5: Southern parcel looking west, showing closely-grazed improved grassland and boundary tree line.



Photograph 6: Semi-improved grassland in the northern parcel, looking west



Photograph 7: Semi-improved grassland on the site of abandoned allotments in the western portion of the northern parcel, with scattered tall ruderal vegetation.



Photograph 8: Species-poor semi-improved grassland in the eastern portion of the southern parcel, looking south. Note also planted walnut trees



Photograph 9: Species-poor semi-improved grassland in the southern parcel, looking south and showing longer sward (left) grading into shorter, less diverse sward (right)



Photograph 10: Southern parcel, showing species-poor semi-improved grassland (left) and improved, heavily-grazed grassland (right)



Photograph 11: Heavily grazed improved grassland in the southern parcel.



Photograph 12: Arable field in the northern parcel.



Photograph 13: Building 1 in the southern parcel.



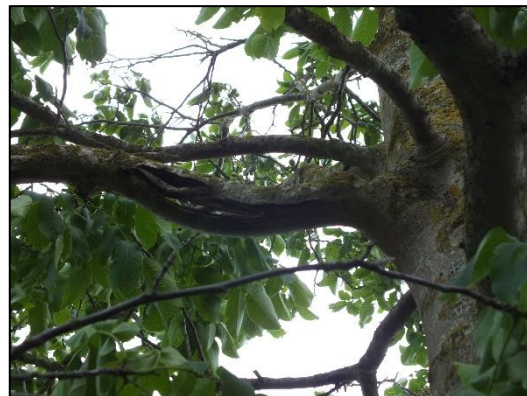
Photograph 14: Interior of Building 1 showing close wooden construction and negligible features suitable for roosting bats.



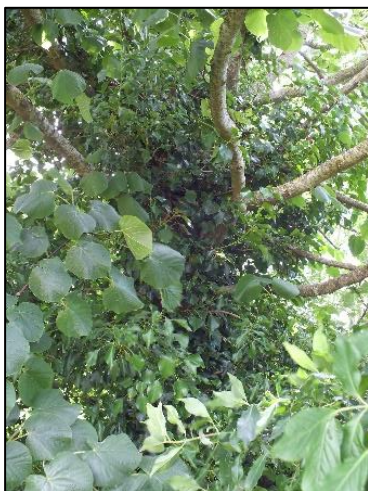
Photograph 15: Building 2 in the southern parcel.



Photograph 16: Split branch on Tree T1 offering potential roosting opportunities to bats.



Photograph 17: Dense ivy covering on Tree T2 offering potential roosting opportunities to bats.



Photograph 18: Cavity on Tree T3 offering potential roosting opportunities to bats.



Photograph 19: Entrance to defunct badger sett in offsite woodland by northern parcel.



Photograph 20: Nesting swallows in Building B1.



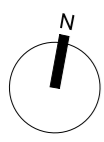
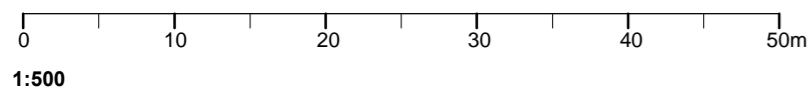
Appendix 1: Proposed Development layout

Drawing Title
SITE PLAN - GENERAL LAYOUT

Date	Drawn	Scale / Page	Drawing ref.	Rev.
JUNE '20	KJB	1:500 @ A1	19112.003	

arlington house, arlington grange, curridge road, west berkshire, rg18 9ab
t 01635 247 100 f 01635 247 070 e mail@woodfieldbrady.co.uk www.woodfieldbrady.co.uk

All dimensions to be checked on site prior to construction. Do not scale except for planning purposes. Issued for:
Any discrepancy between this drawing and other information to be referred to the architects.



Enriched Habitat landscape incorporating wetlands features and biodiversity enhancement- refer separate reports and landscape layout

Path (unit)

Trenoweth

Kar

Will

Li

Plots 7 & 8 - refer drawing refs. 19112.104 & 108

Plots 1-6 - refer drawing refs. 19112.101-103

Plots 9 - 12 - refer drawing refs. 19112.106 & 107

Plots 13 & 14 - refer drawing refs. 19112.108 & 109

Plots 17 - refer drawing refs. 19112.112 & 113

Plots 15 & 16 - refer drawing refs. 19112.110 & 111

new tree planting - refer landscape report/plans

tree protection to boundary - refer separate report

clear visibility splay from highway edge - refer transport statement & accompanying visibility splay drawings

existing hedgerow re-aligned to provide sufficient visibility to new entrance with grass verge to pavement

existing hedgerow cut back at footpath entrance

existing fencing removed alongside footpath and meadow

open up footpath to eastern plantation meadow

clear visibility splay from highway edge - refer transport statement & accompanying visibility splay drawings

new site access off Abingdon Road

47.6m

Appendix 2: Target notes and notes on hedgerows and trees

Target notes

TN1

Semi improved grassland. Sparse to moderately dense sward with scattered patches of scrub in the eastern and western edges.

Dominant:

False oat grass *Arrhenatherum elatius*

Frequent:

Field bindweed *Convolvulus arvensis*

Ground ivy *Glechoma hederacea*

Bramble *Rubus fruticosus* agg.

Hairy tare *Vicia hirsuta*

Black medick *Medicago lupulina*

Smooth hawk's-beard *Crepis capillaris*

Field forget-me-not *Myosotis arvensis*

Domesticated lupin *Lupinus* sp.

Domesticated columbine *Aquilegia* sp.

Occasional:

Cock's foot *Dactylis glomerata*

Smooth meadow grass *Poa pratensis*

Yorkshire fog *Holcus lanatus*

Creeping cinquefoil *Potentilla reptans*

Creeping thistle *Cirsium arvense*

Tufted vetch *Vicia cracca*

Agrimony *Agrimonia eupatoria*

Rare:

White campion *Silene latifolia*

Poppy *Papaver rhoeas*

Creeping buttercup *Ranunculus repens*

Bristly oxtongue *Helminthotheca echioides*

Perennial sow-thistle *Sonchus arvensis*

Red campion *Silene dioica*

Ragwort *Senecio* sp.

Yarrow *Achillea millefolium*

Hogweed *Heracleum sphondylium*

Curled dock *Rumex crispus*

Pineappleweed *Matricaria discoidea*

Field speedwell *Veronica persica*

Mugwort *Artemisia vulgaris*

Moth mullein *Verbascum blattaria*

Marsh thistle *Cirsium palustre*

Hogweed *Heracleum sphondylium*

Scentless mayweed *Tripleurospermum inodorum*

Rhubarb *Rheum rhabarbarum*

TN2

Semi-improved grassland. Sparse to moderately dense sward with scattered patches of tall ruderal vegetation and relict allotment planting in places.

Abundant:

False oat grass *Arrhenatherum elatius*

Frequent:

Yorkshire fog *Holcus lanatus*

Red dead-nettle *Lamium purpureum*

Broad-leaved dock *Rumex acetosella*

Mugwort *Artemisia vulgaris*

Ragwort *Senecio* sp.

Marsh thistle *Cirsium palustre*

Field bindweed *Convolvulus arvensis*

Domesticated lupin *Lupinus* sp.

Occasional:

Rough meadow grass *Poa trivialis*

Red fescue *Festuca rubra*

Perforate St. John's wort *Hypericum perforatum*

Creeping thistle *Cirsium arvense*

Burdock *Arctium minus*

Rare:

Comfrey *Symphytum* sp.

Great mullein *Verbascum thapsus*

Smooth hawk's-beard *Crepis capillaris*

Domesticated mint *Mentha* sp.

Domesticated onion *Allium cepa*

Domesticated blackcurrant *Ribes nigrum*

Domesticated raspberry *Rubus* var.

TN3

Species-poor semi improved grassland. Dense sward dominated by grasses.

Abundant:

False oat grass *Arrhenatherum elatius*

Creeping bent *Agrostis stolonifera*

Meadow foxtail *Alopecurus pratensis*

Yorkshire fog *Holcus lanatus*

Frequent:

Rough meadow grass *Poa trivialis*

Smooth hawk's-beard *Crepis capillaris*

Perennial sow-thistle *Sonchus arvensis*

Occasional:

Common couch *Elymus repens*

Barren brome *Bromus sterilis*

Cow parsley *Anthriscus sylvestris*

Spear thistle *Cirsium vulgare*

Shepherd's purse *Capsella bursa-pastoris*

Stinging nettle *Urtica dioica*

Field bindweed *Convolvulus arvensis*

Rare:

Ragwort *Senecio* sp.

Cock's foot *Dactylis glomerata*

Cleavers *Galium aparine*

Cut-leaved cranesbill *Geranium dissectum*

Rough hawkbit *Leontodon hispidus*
Selfheal *Prunella vulgaris*

TN4

Patches of bare ground in the southern parcel used for storing and shovelling manure, with some manure piles evident. These could offer sheltering, basking and breeding opportunities for reptiles.

TN5 – Location not shown on figure

Defunct badger sett under collapsed dead willow tree marginally offsite in woodland to the north of the northern parcel. At least five entrances noted suggesting a main sett, several more entrances dug by rabbits. All entrances either showing fresh rabbit spoil and droppings or long disused and mostly filled with soil, leaf litter and other debris.

Trees

T1: Common Walnut *Juglans regia*. Approximately 9 m high. Single cracked branch on north side affords sheltered crevice suitable for one or a small number of bats. Overall low suitability for roosting bats.

T2. Small-leaved lime *Tilia cordata*. Approximately 7 m high. Dense ivy covering trunk offering limited cover for roosting bats. Overall low suitability for roosting bats.

T3. Pedunculate oak *Quercus robur*. Approximately 12 m high. Two knot scars or holes on northern side at approximately 5m. Difficult to inspect from ground level due to dense understorey growth but may lead to internal cavities. Precautionary low suitability for roosting bats.

T4. Horse chestnut *Aesculus hippocastanum*. Approximately 6 m high. Dense ivy covering trunk offering limited cover for roosting bats. Overall low suitability for roosting bats.

Hedgerows

H1: Species-poor native hedgerow in good condition with no gaps. Height to 3.5 m. Dominated by blackthorn *Prunus spinosa* with some sycamore *Acer pseudoplatanus* and hawthorn *Crataegus monogyna*. Ground flora includes ivy *Hedera helix*, field forget-me-not *Myosotis arvensis*, stinging nettle *Urtica dioica*, hogweed *Heracleum sphondylium*, white bryony *Bryonia alba* and creeping thistle *Cirsium arvense*

H2 Species-poor native hedgerow of hawthorn, closely cut and in good condition, height to 1.25 m. Standard trees of common walnut *Juglans regia* and ornamental cherry *Prunus* sp.

H3 Species-poor mixed native/introduced hedgerow with alternating sections of Leyland cypress *Cypressa x leylandii*, beech *Fagus sylvatica* and hawthorn. In good condition with few gaps, height to 2 m.

H5 Defunct species poor hedgerow along northern part of fenceline, consisting of grown-out elm *Ulmus* sp. with some dog rose *Rosa canina*, elder *Sambuccus niger* and lilac *Syringa* sp.

H6. Species-rich native hedgerow in good condition along fenceline with no gaps, height to 3 m but grown out in places to form trees. Small leaved lime *Tilia cordata*, blackthorn, hawthorn, elder and spindle *Euonymus europaeus*, with ground flora including ivy, stinging nettle, red dead-nettle *Lamium purpureum*, and borage *Borago officinalis*.

H7. Species-poor mixed native/introduced hedgerow along fenceline, largely grown out to 5 m but still dense and in moderate condition with few gaps. Backed by woodland (offsite). Dominated by hawthorn with some elder, snowberry *Symphoricarpos* sp. and domestic plum *Prunus domestica*.

H8. Species poor native hedgerow in good condition with no gaps. Height to 3.5 m. Dominated by blackthorn with some elm and hawthorn.

H9. Species poor native hedgerow in good condition with no gaps. Height to 3 m. Dominated by elm with some elder, hawthorn and blackthorn.

H10. Species-poor defunct native hawthorn hedgerow with many gaps. Two sycamore standard trees to approximately 8 m high shading remainder of hedgerow.

H11. Species-poor mixed native/introduced hedgerow with alternating sections of Leyland cypress *Cypressus x leylandii*, and beech *Fagus sylvatica* with some elm and firethorn *Pyracantha* sp. In good condition with few gaps, height to 2 m.

Appendix 3: Summaries of Relevant Policy, Legislation and Other Instruments

This section briefly summarises the legislation, policy and related issues that are relevant to the main text of the report. The following text does not constitute legal or planning advice.

National Planning Policy Framework

The Government revised the National Planning Policy Framework (NPPF) in July 2021. Text excerpts from the NPPF are shown where they may be relevant to planning applications and biodiversity including protected sites, habitats and species.

The Government sets out the three objectives for sustainable development (economy, social and environmental) at paragraphs 8-10 to be delivered through the plan preparation and implementation level and 'are not criteria against which every decision can or should be judged' (paragraph 9). The planning system's environmental objective refers to 'to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity...' (paragraph 8c).

In conserving and enhancing the natural environment, the NPPF (Paragraph 174) states that 'planning policies and decisions should contribute to and enhance the natural and local environment' by:

- Protecting and enhancing...sites of biodiversity value... '(in a manner commensurate with their statutory status or identified quality in the development plan)'.
- Recognising the wider benefits from natural capital and ecosystem services including trees and woodland.
- Minimising impacts on and providing net gains in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.
- Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

In respect of protected sites, at paragraph 175, the NPPF requires local planning authorities to distinguish, at the plan level, '...between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value...take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.'

Paragraph 179 refers to how plans should aim to protect and enhance biodiversity. Plans should: 'identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity [a footnote refers to ODPM Circular 06/2005 for further guidance in respect of statutory obligations for biodiversity in the planning system], wildlife corridors and stepping stones that connect them and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation;' and to 'promote the conservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.'

Paragraph 180 advises that, when determining planning applications, '...local planning authorities should apply the following principles:

- a. if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- b. development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments) should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely

impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

- c. development resulting in the loss or deterioration of irreplaceable habitats, (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- d. development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.'

In paragraph 181, the following should be given the same protection as habitats sites³:

- i. potential Special Protection Areas and possible Special Areas of Conservation
- ii. listed or proposed Ramsar sites; and
- iii. sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.'

In paragraph 182 the NPPF refers back to sustainable development in relation to appropriate assessment and states: 'the presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site'.

In paragraph 183, the NPPF refers to planning policies and decisions taking account of ground conditions and risks arising from land instability and contamination at sites. In relation to risks associated with land remediation account is to be taken of 'potential impacts on the natural environment' that arise from land remediation.

In paragraph 185 the NPPF states that planning policies and decisions should ensure that development is appropriate to the location and take into account likely effects (including cumulative) on the natural environment and, in doing so, they 'should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation' (paragraph 185c).

Government Circular ODPM 06/2005 Biodiversity and Geological Conservation

Paragraph 98 of Government Circular 06/2005 advises that "the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Local authorities should consult Natural England before granting planning permission. They should consider attaching appropriate planning conditions or entering into planning obligations under which the developer would take steps to secure the long-term protection of the species. They should also advise developers that they must comply with any statutory species' protection provisions affecting the site concerned..."

Paragraph 99 of Government Circular 06/2005⁴ advises that "it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted".

³ Habitats sites are defined in the glossary as 'Any site which would be included within the definition at regulation 8 of the Conservation of Habitats and Species Regulations 2017 (as amended) for the purpose of those regulations, including candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation, Special Protection Areas and any relevant Marine Sites.'

⁴ ODPM Circular 06/2005. *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System* (2005). HMSO Norwich.

Standing Advice (GOV.UK)

The GOV.UK website provides information regarding protected species and sites in relation to development proposals: 'Local planning authorities should take advice from Natural England or the Environment Agency about planning applications for developments that may affect protected species.' GOV.UK advises that 'some species have standing advice which you can use to help with planning decisions. For others you should contact Natural England or the Environment Agency for an individual response.'

The standing advice (originally from Natural England and now held and updated on GOV.UK⁵) provides advice to planners on deciding if there is a 'reasonable likelihood' of protected species being present. It also provides advice on survey and mitigation requirements.

When determining an application for development that is covered by standing advice, in accordance with guidance in Government Circular 06/2005, Local planning authorities are required to take the standing advice into account. In paragraph 82 of the aforementioned Circular, it is stated that: 'The standing advice will be a material consideration in the determination of the planning application in the same way as any advice received from a statutory consultee...it is up to the planning authority to decide the weight to be attached to the standing advice, in the same way as it would decide the weight to be attached to a response from a statutory consultee.'

Natural Environment and Rural Communities (NERC) Act 2006 – Habitats and species of principal importance

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act require the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England as required by the Act. In accordance with the Act the Secretary of State keeps this list under review and will publish a revised list if necessary, in consultation with Natural England.

The S41 list is used to guide decision-makers such as public bodies, including local authorities and utilities companies, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions, including development control and planning. This is commonly referred to as the 'Biodiversity Duty.'

Guidance for public authorities on implementing the Biodiversity Duty⁶ has been published by Defra. One of the key messages in this document is that 'conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.' In England the administration of the planning system and licensing schemes are highlighted as having a 'profound influence on biodiversity conservation.' Local authorities are required to take measures to "promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species. The guidance states that 'the duty aims to raise the profile and visibility of biodiversity, clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making.'

In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for rarer species and habitats in the UK. The UK Post-2010 Biodiversity Framework⁷, which covers the period from 2011 to 2020, now succeeds the UK BAP. The UK priority list contained 1150 species and 65 habitats requiring special protection and has been used as a reference to draw up the lists of species and habitats of principal importance in England.

In England, there are 56 habitats of principal importance and 943 species of principal importance on the S41 list. These are all the habitats and species found in England that were identified as requiring

⁵ <https://www.gov.uk/protected-species-and-sites-how-to-review-planning-proposals#standing-advice-for-protected-species>

⁶ Defra, 2007. *Guidance for Public Authorities on Implementing The Biodiversity Duty*. (<http://www.defra.gov.uk/publications/files/pb12585-pa-guid-english-070516.pdf>)

⁷ JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). 2012. *UK Post-2010 Biodiversity Framework*. July 2012. (<http://jncc.defra.gov.uk/page-6189>)

action in the UK BAP and which continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

European protected species (Animals)

The Conservation of Habitats and Species Regulations 2017 (as amended) consolidates various amendments that have been made to the original (1994) Regulations which transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

“European protected species” (EPS) of animal are those which are shown on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). They are subject to the provisions of Regulation 43 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

- a. Intentionally or deliberately capture, injure or kill any wild animal included amongst these species
- b. Possess or control any live or dead specimens or any part of, or anything derived from a these species
- c. deliberately disturb wild animals of any such species
- d. deliberately take or destroy the eggs of such an animal, or
- e. intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place

For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

- a. to impair their ability—
 - i. to survive, to breed or reproduce, or to rear or nurture their young, or
 - ii. in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- b. to affect significantly the local distribution or abundance of the species to which they belong.

Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works and by Natural Resources Wales in Wales. In accordance with the requirements of the Regulations (2017, as amended), a licence can only be issued where the following requirements are satisfied:

- a. The proposal is necessary ‘to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment’
- b. ‘There is no satisfactory alternative’
- c. The proposals ‘will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Definition of breeding sites and resting places

Guidance for all European Protected Species of animal, including bats and great crested newt, regarding the definition of breeding and of breeding and resting places is provided by The European Council (EC) which has prepared specific guidance in respect of the interpretation of various Articles of the EC Habitats Directive.⁸ Section II.3.4.b) provides definitions and examples of both breeding and resting places at paragraphs 57 and 59 respectively. This guidance states that ‘The provision in Article

⁸ Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. (February 2007), EC.

12(1)(d) [of the EC Habitats Directive] should therefore be understood as aiming to safeguard the ecological functionality of breeding sites and resting places.’ Further the guidance states: ‘It thus follows from Article 12(1)(d) that such breeding sites and resting places also need to be protected when they are not being used, but where there is a reasonably high probability that the species concerned will return to these sites and places. If for example a certain cave is used every year by a number of bats for hibernation (because the species has the habit of returning to the same winter roost every year), the functionality of this cave as a hibernating site should be protected in summer as well so that the bats can re-use it in winter. On the other hand, if a certain cave is used only occasionally for breeding or resting purposes, it is very likely that the site does not qualify as a breeding site or resting place.’

Birds

All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

The Conservation of Habitats and Species Regulations 2017 (as amended) places duties on competent authorities (including Local Authorities and National Park Authorities) in relation to wild bird habitat. These provisions relate back to Articles 1, 2 and 3 of the EC Directive on the conservation of wild birds (2009/147/EC, ‘Birds Directive’⁹) (Regulation 10 (3)) requires that the objective is the ‘preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive...’ Regulation 10 (7) states: ‘In considering which measures may be appropriate for the purpose of security or contributing to the objective in [Regulation 10 (3)] Paragraph 3, appropriate account must be taken of economic and recreational requirements’.

In relation to the duties placed on competent authorities under the 2017 Regulations, Regulation 10 (8) states: ‘So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).’

Badger

Badger is protected under the Protection of Badgers Act 1992. It is not permitted to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A badger sett is defined in the legislation as “a structure or place, which displays signs indicating current use by a badger”.

ODPM Circular 06/2005¹⁰ provides further guidance on statutory obligations towards badger within the planning system. Of particular note is paragraph 124, which states that “The likelihood of disturbing a badger sett, or adversely affecting badgers’ foraging territory, or links between them, or significantly increasing the likelihood of road or rail casualties amongst badger populations, are capable of being material considerations in planning decisions.”

Natural England provides Standing Advice¹¹, which is capable of being a material consideration in planning decisions. Natural England recommends mitigation to avoid impacts on badger setts, which includes maintaining or creating new foraging areas and maintaining or creating access (commuting routes) between setts and foraging/watering areas.

⁹ 2009/147/EC Birds Directive (30 November 2009. European Parliament and the Council of the European Union.

¹⁰ ODPM Circular 06/2005. *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System* (2005). HMSO Norwich.

¹¹ <http://www.naturalengland.org.uk/ourwork/planningdevelopment/spatialplanning/standingadvice/specieslinks.aspx>

Reptiles

All native reptile species receive legal protection in Great Britain under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Viviparous lizard, slow-worm, grass snake and adder are protected against killing, injuring and unlicensed trade only. Sand lizard and smooth snake receive additional protection as “European Protected species” under the provisions of the Conservation of Habitats and Species Regulations 2017 (as amended) and are fully protected under the Wildlife and Countryside Act 1981 (as amended).

All six native species of reptile are included as ‘species of principal importance’ for the purpose of conserving biodiversity under Section 41 (England) of the NERC Act 2006 and Section 7 of the Environment (Wales) Act 2016.

Current Natural England Guidelines for Developers¹² states that ‘where it is predictable that reptiles are likely to be killed or injured by activities such as site clearance, this could legally constitute intentional killing or injuring.’ Further the guidance states: ‘Normally prohibited activities may not be illegal if ‘the act was the incidental result of a lawful operation and could not reasonably have been avoided’. Natural England ‘would expect reasonable avoidance to include measures such as altering development layouts to avoid key areas, as well as capture and exclusion of reptiles.’

The Natural England Guidelines for Developers state that ‘planning must incorporate two aims where reptiles are present:

- To protect reptiles from any harm that might arise during development work;
- To ensure that sufficient quality, quantity and connectivity of habitat is provided to accommodate the reptile population, either on-site or at an alternative site, with no net loss of local reptile conservation status.’

Wild mammals in general

The Wild Mammals (Protection) Act 1996 (as amended) makes provision for the protection of wild mammals from certain cruel acts, making it an offence for any person to intentionally cause suffering to any wild mammal. In the context of development sites, for example, this may apply to rabbits in their burrows.

Invasive non-native species

An invasive non-native species is any non-native animal or plant that has the ability to spread causing damage to the environment.

Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to release, or to allow to escape into the wild, any animal which is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state or is listed under Schedule 9 of the Act.

It is an offence to plant or otherwise cause to grow in the wild invasive non-native plants listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Hedgerows

Article 10 of the Habitats Directive¹³ requires that ‘Member States shall endeavour...to encourage the management of features of the landscape which are of major importance for wild fauna and flora. Such features are those which, by virtue of their linear and continuous structure...or their function as stepping stones...are essential for the migration, dispersal and genetic exchange of wild species’. Examples given in the Directive include traditional field boundary systems (such as hedgerows).

¹² English Nature, 2004. *Reptiles: guidelines for developers*. English Nature, Peterborough. <https://webarchive.nationalarchives.gov.uk/20150303064706/http://publications.naturalengland.org.uk/publication/76006>

¹³ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

The aim of the Hedgerow Regulations 1997¹⁴, according to guidance produced by the Department of the Environment¹⁵, is “to protect important hedgerows in the countryside by controlling their removal through a system of notification. In summary, the guidance states that the system is concerned with the removal of hedgerows, either in whole or in part, and covers any act which results in the destruction of a hedgerow. The procedure in the Regulations is triggered only when land managers or utility operators want to remove a hedgerow. The system is in favour of protecting and retaining ‘important’ hedgerows.

The Hedgerow Regulations set out criteria that must be used by the local planning authority in determining which hedgerows are ‘important’. The criteria relate to the value of hedgerows from an archaeological, historical, wildlife and landscape perspective.

¹⁴ Statutory Instrument 1997 No. 1160 – The Hedgerow Regulations 1997. HMSO: London

¹⁵ The Hedgerow Regulations 1997: a guide to the law and good practice, HMSO: London