

Appendix 9.1 Ecological Baseline Appraisal



Land North East of Harpenden
between Lower Luton Road, Bowers Heath Lane and Common Lane

Baseline Ecological Appraisal

March 2026

Quality Management	
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Project:	Land North East of Harpenden
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Contact Details
Aspect Ecology Ltd Hardwick Business Park Noral Way Banbury Oxfordshire OX16 2AF t 01295 279721 e info@aspect-ecology.com w www.aspect-ecology.com

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Confidential Annex

Badger Survey Results and Assessment (available on request)

1 Introduction

1.1 Background and Proposals

1.1.1 Aspect Ecology was commissioned by Crest Nicholson ('Crest') in April 2024 to undertake a Baseline Ecological Appraisal in respect of proposed development of land North East of Harpenden between Lower Luton Road, Bowers Heath Lane and Common Lane, centred at grid reference TL 14570 16068 (see Plan 6818/ECO1), hereafter referred to as 'the site'.

1.1.2 **Description of Development:** Outline Application for demolition of existing buildings and structures and construction of a mixed-use development comprising residential dwellings (including affordable housing), children's home, elderly extra care facility, local centre (flexible retail/ health/ community use), sports pitches and associated building, green infrastructure and landscaping works (to include public open space and community growing space); primary school with early years provision, vehicular and active travel infrastructure (including pedestrian and cycle access) and diversion of Bower Heath Lane; drainage works; and related infrastructure. All matters reserved save for access from Lower Luton Road.

1.1.3 **Planning Policy Position:** St Alban's District Council's (SADC's) adopted Development Plan comprises:

- District Local Plan Review 1994 Saved and Deleted Policies Version (July 2020), and supporting Maps;
- Harpenden Neighbourhood Plan 2018 – 2033 (2018); and
- Wheathampstead Neighbourhood Plan (2023).

1.1.4 The NPPF (February 2025) is a material consideration.

1.1.5 SADC is preparing a new emerging draft Local Plan. The Regulation 19 version is the latest version and weight can be given to it due to the advanced stage in preparation (i.e. it is progressing towards Stage 2 Hearing in Autumn 2025). The Draft Local Plan comprises:

- Draft Local Plan 2041 – Reg.19 Publication (September 2024); and
- Draft Policies Map.

1.1.6 Adoption of the new Local Plan is anticipated to take place in March 2026.

1.1.7 **Allocation:** The site comprises circa 32 hectares of the wider North East Harpenden allocation. The land to the south west is under the control of Miller Homes. The land to the south east is under the control of M E Simons Trust & Wimms, the land located to the south of this is under the control of Sauncey View Lodge.

1.1.8 The emerging new Local Plan includes the Site within the North East Harpenden Broad Location B2 for:

- A comprehensive mixed-use development
- Residential (circa 750 homes, plus Extra Care provision)
- 2 Form Entry Primary School (inc. Early Years)
- Local Centre

- On-site sports provision
- Other green infrastructure
- Improvements to transport infrastructure, including links to Katherine Warrington Secondary School.

1.1.9 Crest's land comprises the largest portion of the allocation. Crest is committed to working collaboratively with all neighbouring landowners and promoters to achieve the SADC's aspirations for North East Harpenden.

1.1.10 In progressing a collaborative approach, a Joint Illustrative Masterplan has been developed between all parties.

1.2 Site Overview

1.2.1 The site is located north-east of Harpenden and comprises around 32ha of land. To the south the site is bound by existing residential development associated with Harpenden, whilst in all other directions the site is predominantly bound by agricultural land, with small areas of woodland and other residential areas.

1.2.2 The site itself consists of a number of grassland paddocks with small areas of woodland and hedgerows, whilst a number of buildings and stables are present in the western part of the site.

1.3 Purpose of the Report

1.3.1 This report documents the methods and findings of the baseline ecology surveys and desktop study carried out in order to establish the existing ecological interest of the site, informing an appraisal of the likely ecological effects of the proposals. The importance of the habitats and species present is evaluated.

2 Methodology

2.1 Desktop Study

- 2.1.1 In order to compile background information on the site and its immediate surroundings, Herts Environmental Records Centre (HERC) and Bedfordshire and Luton Biodiversity Recording and Monitoring Centre (BRMC) were contacted in June 2024, with data requested on the basis of a search radius of 2km.
- 2.1.2 Information on statutory designations was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC) database¹, which uses data provided by Natural England, from within a search area extending to 25km from the site. The MAGIC database was also searched to identify the known presence of any Priority Habitats within or adjacent the site.
- 2.1.3 In addition, the Woodland Trust database² was searched for any records of ancient, veteran or notable trees within or adjacent to the site.
- 2.1.4 The information received from these organisations is discussed in the text and reproduced where appropriate at Annex 6818/1 and on Plan 6818/ECO2.

2.2 Habitat Surveys

- 2.2.1 The site was surveyed in May 2024 in order to ascertain the general ecological value of the land contained within the boundaries of the site and to identify the main habitats and ecological features present.
- 2.2.2 The survey was informed by Phase 1 Habitat Survey methodology³, with habitat types identified and mapped in accordance with the UK Habitat Classification system (version 2.0)⁴, together with an assessment of the species composition of each habitat. This technique provides an inventory of the habitat types present and allows identification of areas of greater potential for botanical interest which require further survey. Any such areas identified can then be examined in more detail through Phase 2 surveys. This method was extended, in line with the Guidelines for Preliminary Ecological Appraisal⁵ to record details on the actual or potential presence of notable or protected species.
- 2.2.3 In line with guidance⁶, the fine scale minimum mapping unit of 25m² or 5m in length has been used where appropriate.
- 2.2.4 The nomenclature used for plant species is based on the Botanical Society for the British Isles (BSBI) taxon list⁷.

¹ Multi-Agency Geographic Information for the Countryside (MAGIC), at <https://magic.defra.gov.uk/>

² Woodland Trust Ancient Tree Inventory, at <https://ati.woodlandtrust.org.uk/>

³ Joint Nature Conservation Committee (2010, as amended) *Handbook for Phase 1 habitat survey: A technique for environmental audit*.

⁴ UKHab Ltd (2023). *UK Habitat Classification Version 2.0* (at <https://ukhab.org>)

⁵ Chartered Institute for Ecology and Environmental Management (CIEEM) (2013) *Guidelines for Preliminary Ecological Appraisal*.

⁶ *The UK Habitat classification User Manual*. Version 1.1. 2020

⁷ <https://bsbi.org/taxon-lists>

Habitat Condition Assessment

- 2.2.5 To determine the pre-development biodiversity value of the site for the BNG calculation, the condition of habitats has been assessed in accordance with the methodology set out in the Statutory Biodiversity Metric Technical Annex⁸ and using professional judgement. Condition assessment data was collected during the May 2024 survey, and an additional survey undertaken in July 2024.
- 2.2.6 Grasslands have been surveyed based on the approach set out within the Farm Environment Plan (FEP) Manual⁹, allowing an assessment of species per m² and frequency of indicator species. A transect was walked through each grassland area, with five stopping points within each grassland parcel to record species within a 1x1m quadrat. An assessment of frequency can then be made based on occurrence at each 1x1m quadrat, with frequent species occurring in three or more quadrats out of five, occasional species occurring in two quadrats, and rare species occurring in one quadrat (modified from the FEP approach which is based on ten quadrats).

2.3 Faunal Surveys

- 2.3.1 General faunal activity, such as mammals or birds observed visually or by call during the course of the surveys was recorded. Particular attention was also paid to the potential presence of protected, rare or notable species, with specific survey work undertaken for bats, Badger *Meles meles*, Great Crested Newt *Triturus cristatus*, reptiles, and breeding birds, as described below.

Bats¹⁰

Preliminary Appraisal

- 2.3.2 A review was undertaken of the desk study information obtained to identify any known constraints in relation to bats, the bat species recorded and habitats likely to be used by bats within the site and the surrounding area. This included a review of background records, known designations including SACs or SSSIs relevant to bats and an appraisal of OS mapping and aerial photography to identify habitats likely to be of value to bats.
- 2.3.3 During the initial habitat survey, the potential suitability of the site for bats in relation to roosting habitats, potential flight-paths and foraging habitats (termed a 'daytime bat walkover') was investigated. Features were assessed as of negligible, low, moderate or high potential suitability for roosting, foraging and commuting, based on the framework set out under BCT guidance. This appraisal has informed the scope of the survey work undertaken as set out below.

Buildings and Built Structures

- 2.3.4 **Visual Inspection Surveys.** Buildings and built structures within the site assessed as suitable for use by roosting bats were subject to internal and external inspection surveys using ladders, torches and binoculars where necessary in July 2024.

⁸ Statutory Biodiversity Metric - Technical Annex 1 - Condition Assessment Sheets and Methodology

⁹ Natural England (2010) Higher Level Stewardship – Farm Environment Plan (FEP) Manual, 3rd Edition

¹⁰ Surveys based on: Reason, P.F. and Wray, S. (2023) UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. CIEEM; and Bat Conservation Trust (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn).

- 2.3.5 During the external inspections, particular attention was given to potential roost features or access points, such as broken or lifted roof tiles, lifted lead flashing, soffit boxes, weatherboarding, hanging tiles, and similar, and for any indications of use by bats such as accumulations of bat droppings or staining. Binoculars were used to inspect inaccessible areas more closely.
- 2.3.6 During the internal inspections, searches were made for evidence of the presence of bats with particular attention paid to any loft voids and locations such as ridge boards, rafters, purlins, gable walls, and mortise joints that may provide potential roost features. Specific searches were made for bat droppings that can indicate present or past use and the extent of use. Droppings collected during the course of the surveys were visually assessed and attributed to a species where possible on the basis of size/shape/texture¹¹. Other signs searched for included the presence of stained areas, feeding remains and corpses.
- 2.3.7 Building inspection surveys were undertaken by a CL19 (bat survey level 3) / CL20 (bat survey level 4) licence holder (registration numbers: 2023-11669-CL19-BAT / 2023-11671-CL20-BAT).
- 2.3.8 **Emergence Surveys.** Following the visual inspection surveys set out above, dusk emergence surveys were carried out on nine of the buildings between July and August 2024. These surveys set out to find evidence of whether bats were making use of the buildings identified as having potential to support roosting bats.
- 2.3.9 Based on the visual inspections, survey positions were identified so that all potential roosting features and entry/exit points (typically covering all building elevations) were able to be observed. Survey positions are shown on Plan 6818/ECO4. Infrared (IR) camera set-ups, comprising a 1080p IR sensitive camera and two Evolva T38 IR lights, were deployed at each survey position, along with one Anabat Scout bat detector paired with the IR camera to aid identification of any bats observed.
- 2.3.10 Use of IR cameras allows identification of precise roosting locations and enables the number of any emerging bats recorded to be determined. Surveyors were stationed at each survey position or covered a number of IR cameras (typically two or three) to monitor these during the survey and to respond to any bat activity observed.
- 2.3.11 Surveyors and IR cameras were in position 15-30 minutes prior to sunset and remained in place for approximately 2 hours. Emergence surveys were carried out during suitable weather conditions, as described in 2.1 below.

Table 2.1. Dusk survey details.

Date	Start & end times & time of sunset	Structure reference / location	Equipment used	Weather
17/07/24	Start time: 20:56 End time: 23:11 Sunset: 21:11	B1 and B8	3x 1080p IR sensitive camera, 6x Evolva T38 IR lights, 3x Anabat Scout.	Dry, 70% cloud, BF2-3, 20-17°C
Comments: The survey was undertaken by 4 surveyors.				
30/07/24	Start time: 20:38 End time: 22:53 Sunset: 20:53	B3a, B3b, B5 and B10	3x 1080p IR sensitive camera, 6x Evolva T38 IR lights, 3x Anabat Scout.	Dry, 5% cloud, BF2, 24-22°C

¹¹ Stebbings, RE, Yalden DW and Herman, JS (2007). Which bat is it? A guide to bat identification in Great Britain and Ireland. The Mammal Society

Date	Start & end times & time of sunset	Structure reference / location	Equipment used	Weather
Comments: The survey was undertaken by 3 surveyors.				
07/08/24	Start time: 20:24 End time: 22:39 Sunset: 20:39	B1, B7b and B7c	3x 1080p IR sensitive camera, 6x Evolva T38 IR lights, 3x Anabat Scout.	Light rain, 90% cloud, BF1-2, 18- 15°C
Comments: The survey was undertaken by 3 surveyors.				
20/08/24	Start time: 20:03 End time: 22:18 Sunset: 20:18	B8 and B10	3x 1080p IR sensitive camera, 6x Evolva T38 IR lights, 3x Anabat Scout.	Dry, 0% cloud, BF4, 17-15°C
Comments: The survey was undertaken by 4 surveyors.				
28/08/24	Start time: 05:22 End time: 07:07 Sunset: 06:52	B1 and B4	3x 1080p IR sensitive camera, 6x Evolva T38 IR lights, 3x Anabat Scout.	Dry, 70% cloud, BF2, 22-20°C
Comments: The survey was undertaken by 3 surveyors.				

BF0 = calm, BF12 = hurricane force

Trees

2.3.12 Trees were assessed for their suitability to support roosting bats based on the presence of features such as holes, cracks, splits or loose bark. Trees were categorised as supporting Potential Roost Features (PRFs), Further Assessment Required (FAR) or supporting no suitable features.

2.3.13 Ground Level Tree Assessment. Where practical, trees were subject to a Ground Level Tree Assessment (GLTA) based on relevant guidance¹² with PRFs categorised as PRF-I (only suitable for individual or small numbers of bats) or PRF-M (suitable for multiple bats). Any PRFs identified were inspected using binoculars from ground level for any signs indicating possible use by bats, such as staining, scratch marks or bat droppings. Where accessible from ground level, PRFs were subject to close inspection using a torch.

Activity Surveys

2.3.14 Night-time Bat Walkover Surveys. Night-time bat walkovers (NBWs) or walked transect surveys were undertaken in July and August 2024 to investigate foraging or commuting bat activity at the site. This survey method comprises walking transect routes around the site, specifically covering habitats and features which have been identified as potentially suitable for use by commuting or foraging bats. Anabat Scout handheld bat detectors were employed to aid identification of any bats observed. Each survey began at sunset close to identified potential roosting features or features likely to be of interest as commuting routes, with surveyors remaining in place for 30-60 minutes before commencing the walked transect, continuing until at least 2 hours after sunset. The transect route followed is shown at Plan 6818/ECO5a-c.

2.3.15 This survey work was carried out during suitable weather conditions, as set out in Table 2.2 below.

¹² Bat Conservation Trust (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn).

Table 2.2. Dusk walked transect survey details.

Date	Start & end times & time of sunset	Equipment used	Weather
15/05/24	Start time: 20:49 End time: 23.24 Sunset:20:49	Anabat Scout	Dry, 0% cloud, BF2, 13-12°C
Comments: The survey was undertaken by 2 surveyors.			
08/08/24	Start time: 20:41* End time: 22:41 Sunset:20:41	Anabat Scout	Drizzle, 75% cloud, BF3, 20-19°C
Comments: The survey was undertaken by 2 surveyors.			
11/09/24	Start time: 19.24 End time: 21.08 Sunset: 19:24	Anabat Scout	Light rain at start of survey, 70-50% cloud, BF4-2, 11-9°C
Comments: The survey was undertaken by 2 surveyors.			

BF0 = calm, BF12 = hurricane force

*due to equipment fault, only a visual survey began at 20:41. Anabat Scout was replaced by 21:39.

- 2.3.16 Automated Surveys.** Automated static bat detector surveys were also carried out during which Song Meter SM4BAT detectors were positioned at a number of locations within the site to record bat data over weekly periods during each month between May and October.
- 2.3.17** Detector 1 was deployed to the east of the site within hedgerow H9 and detector 2 was positioned in hedgerow H11 to the north of the site. Detector 3 was positioned to the west of the site within hedgerow H13 (see Plan 6818/ECO6).
- 2.3.18** Static bat detectors were set to switch on approximately 30 minutes before sunset and switch off approximately 30 minutes after sunrise. The specific timings and weather conditions during the static detector surveys are set out in Table 2.3 below.

Table 2.3. Automated detector survey details.

Survey Date	Weather Conditions			
	Wind (BF)	Temp(c)	Cloud Cover (%)	Precipitation (mm)
Static Deployment 1				
08/05/24	2	12.4	0	0.2
09/05/24	2	16.4	25	0
10/05/24	2	16.2	0	0
11/05/24	3	14.7	0	0
12/05/24	3	17.6	0	0
13/05/24	3	14.6	25	0
14/05/24	3	13.9	50	5.4
Static Deployment 2				
14/06/24	3	13.1	75	3.2
15/06/24	4	12.4	50	5
16/06/24	3	14.6	25	0
17/06/24	3	15.3	0	0
18/06/24	3	15.7	25	0
19/06/24	3	14.4	0	0
20/06/24	2	15.0	0	0
Static Deployment 3				
04/07/24	4	14.7	0	0
05/07/24	3	14.5	100	24
06/07/24	3	12.2	50	20
07/07/24	3	12.8	25	3.80
08/07/24	2	14.0	75	1.60
09/07/24	3	16.4	75	9.20
10/07/24	4	16.4	50	0.01

Survey Date	Weather Conditions			
	Wind (BF)	Temp(c)	Cloud Cover (%)	Precipitation (mm)
Static Deployment 4				
01/08/24	2	20.5	25	0.01
02/08/24	3	20.3	25	0.00
03/08/24	3	19.0	50	0.60
04/08/24	3	17.0	0	0.00
05/08/24	3	18.7	75	0.00
06/08/24	3	17.7	50	1.00
07/08/24	3	16.2	75	0.20
Static Deployment 5				
11/09/24	4	9.5	25	0.01
12/09/24	3	8.0	25	2.20
13/09/24	2	9.4	0	0.00
14/09/24	2	8.0	0	0.00
15/09/24	3	12.7	75	1.80
16/09/24	3	13.7	25	0.00
17/09/24	3	13.3	25	0.20
Static Deployment 6				
11/10/24	2	6.6	25	0.01
12/10/24	3	9.1	75	0.12
13/10/24	3	6.8	0	0.00
14/10/24	3	8.6	50	0.38
15/10/24	3	12.0	50	0.03
16/10/24	3	16.0	75	0.06
17/10/24	3	13.9	50	0.05

BF0 = calm, BF12 = hurricane force

Analysis of Bat Survey Recordings

- 2.3.19 All bat calls were analysed using Anabat Insight version 2.0 to identify the species recorded during the survey work. Where recordings could not be reliably attributed to species (such as for *Myotis* species) or where overlaps between otherwise distinguishable species occur (such as in *Pipistrelle* sp. bat calls around 40kHz or 50kHz) calls were identified to genus; in the case of calls which could not be distinguished between *Nyctalus* sp. and Serotine, these have been labelled as 'unidentified big bat' species.

Badger¹³

- 2.3.20 A Badger survey was carried out in May 2024 alongside the Phase 1 survey, whilst a specific survey for this species was subsequently undertaken in October 2024. The survey comprised two main elements. The first element involved searching for evidence of Badger setts. For any setts that were encountered, each sett entrance was noted and mapped. The following information was recorded:

- Number and location of well used and active entrances; these are clear from any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently;
- Number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance; and
- Number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the

¹³ Based on: Mammal Society (1989) Occasional Publication No. 9 – Surveying Badgers

entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of the spoil heap.

- 2.3.21 The second element involved searching for signs of Badger activity such as well-worn paths and push-throughs, snagged hair, footprints, latrines and foraging signs, so as to build up a picture of any use of the site by Badger.

Reptiles¹⁴

- 2.3.22 Given the presence of potentially suitable reptile habitat within the site, a survey was undertaken between May and June 2024 to establish the presence/absence of common reptile species.
- 2.3.23 A total of 93 50x50cm sheets of thick roofing felt were placed within suitable areas across the site to act as artificial refugia (see Plan 6818/ECO7). This represents a density of 2.9 refugia per hectare. The refugia, which provide shelter for reptiles, heat up more quickly than their surroundings in the morning and can remain warmer than their surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles will readily use these refugia to bask upon or beneath so as to raise their body temperature, which allows them to forage earlier and later in the day. Checking the refugia at appropriate times of the day (morning and evening) for the presence of reptiles provides an effective measure of assessing the presence/absence of common reptiles at a site to be determined.
- 2.3.24 The refugia were left in place undisturbed for approximately 1-2 weeks to allow reptiles to find and start using them. Following this initial bedding-in period, refugia were checked at appropriate times of the day on seven occasions during suitable weather conditions as set out below in Table 2.4. Reptile survey dates and weather conditions.

Table 2.4. Reptile survey dates and weather conditions

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°C)	Cloud Cover (%)	Precipitation
21/05/24	3	12-13	100	Light rain
24/05/24	2	10-15	60	Dry
04/06/24	3	17-18	95	Dry
07/06/24	4	13-16	0	None
11/06/24	4	10-12	30	None
14/06/24	3	14-16	50	Light rain, mostly dry
17/06/24	4	17-18	10	None

BF0 = calm, BF12 = hurricane force

- 2.3.25 Any reptiles that were observed basking in the open or within partial cover were also recorded. Searches were also made of existing natural objects (such as logs and rocks) and other artificial refugia (such as debris or discarded tyres), where present, for reptiles or evidence of reptiles (such as sloughed skin).

Great Crested Newt

- 2.3.26 As a first step in assessing the possible presence of Great Crested Newt at the site, Ordnance Survey mapping and satellite imagery were examined to identify water bodies within 500m of the site boundary.

¹⁴ Surveys based on: Froglife Advice Sheet 10 (1999) Reptile Survey - an introduction to planning, conducting and interpreting surveys for snake and lizard conservation.

- 2.3.27 Guidance set out within Natural England's Method Statement template, to be used when applying for a Great Crested Newt development licence, states that surveys of ponds within 500m of the site boundary are only required *"when all of the following conditions are met: (a) maps, aerial photos, walk-over surveys or other data indicate that the pond(s) has potential to support a large great crested newt population, (b) the footprint contains particularly favourable habitat, especially if it constitutes the majority available locally, (c) the development would have a substantial negative effect on that habitat, and (d) there is an absence of dispersal barriers."*
- 2.3.28 Given that in this instance, none of the four points listed above are applicable to the site, it is considered that survey of ponds within 500m of the site boundary is not required, and that survey of ponds within 250m¹⁵ represents adequate survey effort.

Environmental DNA (eDNA)

- 2.3.29 Water samples were taken for eDNA analysis to investigate the presence/absence of Great Crested Newt within off-site pond P1 (see Plan 6818/ECO8). Water samples were collected on 25 June 2024 following the procedure outlined in the methods manual prepared for DEFRA by Biggs *et al.* (2014)¹⁶. The survey fell within the acceptable seasonal window set out by Natural England (15 April to 30 June inclusive)¹⁷. Samples were collected by suitably trained Aspect Ecology staff. The water samples were sent for laboratory analysis which was conducted by Cellmark in accordance with the procedure set out by Biggs *et al.* (2014)¹⁴.

Breeding Birds¹⁸

- 2.3.30 The use of the site by breeding birds was assessed over three survey visits, (on separate days) in April, May and June 2024. Birds present within the site were recorded using a method modified from the British Trust for Ornithology's (BTO's) Common Bird Census technique (see Plan 6818/ECO9).
- 2.3.31 This involved walking a route over the site and recording all 'registrations' of birds either seen or heard. The sightings or 'registrations' were recorded on a site plan using standard BTO codes for each bird species and appropriate abbreviations.
- 2.3.32 This survey methodology has the advantage over other survey methods of mapping each registration to a specific point within the site and this therefore illustrates those areas containing the highest density and diversity of bird species. The dates of each survey, together with a summary of the weather conditions are given in Table 2.5 below.

¹⁵ 250m is the typical maximum migratory range of this species, see English Nature (2004) 'An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt *Triturus cristatus*'. English Nature Research Report 576

¹⁶ Biggs J., Ewald N., Valentini A., Gaboriaud C., Griffiths R.A., Foster J., Wilkinson J., Arnett A., Williams P. and Dunn F. (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA.* Freshwater Habitats Trust, Oxford.

¹⁷ Natural England (2015) Great crested newts: surveys and mitigation for development projects. Standing advice for local planning authorities who need to assess the impacts of development on great crested newts. Viewed at www.gov.uk on 24/12/2015.

¹⁸ Surveys based on methodology within: Baille *et al.* RA (2010) 'Breeding Birds in the Wider Countryside: their conservation status', BTO Research Report No. 385, BTO, Thetford.

Table 2.5. Breeding bird survey dates and weather conditions.

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°)	Cloud Cover (%)	Precipitation
21/04/2024	3	4	25	None
14/05/2024	3	16	100	None
10/06/2024	4	13	50-100	None

BF0 = calm, BF12 = hurricane force

2.4 Survey Constraints and Limitations

- 2.4.1 Not all of the species that occur in each habitat will necessarily be present or detectable during survey work carried out at any given time of the year, since different species are apparent during different seasons. The habitat survey was undertaken within the optimal season, and additional information on the habitats present within the site was collected during July 2024, allowing a robust assessment of habitats and botanical interest within the site to be made.
- 2.4.2 Note was made of any invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) that were observed during surveys. However, because the detectability of such species varies according to factors such as the time of year or site management regime, the absence of invasive species should not be assumed even if no such species were recorded during the surveys undertaken.
- 2.4.3 The bat emergence surveys were undertaken in line with best practise guidance, with IR cameras used to cover all aspects of the buildings being surveyed wherever possible. However, a number of the buildings had some aspects which were unable to be covered by IR cameras or by surveyors, due to the presence of dense vegetation and steep banks.
- 2.4.4 A recognised limitation of bat activity surveys is that bat detectors can only provide an index of activity rather than determine absolute numbers of bats. The results of bat activity surveys should therefore only be considered indicative of the amount of use bats make of an area rather than a measure of the abundance of bats. In addition, some bat species that are more difficult to detect because of their quiet echolocation calls, such as Brown Long-eared Bat, may be under-recorded.
- 2.4.5 During the first night-time bat walkover survey, there was a fault with the Anabat Scout. A visual survey was started at 20:49, however the survey with a replacement Anabat Scout could not be started until 21:39, during the walked transect survey. No audio recordings were made in the start area; however, bats were observed flying around the buildings in the start location, likely foraging, which is in line with the results of the other surveys, such that this is not considered to be a significant constraint.
- 2.4.6 Densely vegetated habitats within the site have the potential to reduce the detectability of field signs for faunal species such as Badger. A detailed survey was able to be completed and, whilst dense scrub vegetation is present within the site, it is considered that the survey results do provide an accurate baseline.
- 2.4.7 As set out above, reptile mats were deployed at a density of approximately 2.9 refugia per hectare, which is below the recommended density range of 5-10 refugia per hectare. However, this does not account for the fact that the majority of the site is unsuitable for reptiles, comprising short-sward pasture, with areas of suitable reptile habitat restricted to field boundaries and in the areas around the buildings, where the reptile mats were

deployed. As such, in reality the mats were deployed at a sufficiently high density to ensure adequate survey effort.

2.5 Ecological Evaluation Methodology

- 2.5.1 The evaluation of ecological features and resources is based on professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018)¹⁹, which identifies ‘important ecological features’ within a defined geographical context (i.e. international, national, regional, county, district, local or site importance). Further details are provided at Annex 6818/2.

¹⁹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, ver. 1.2, Chartered Institute of Ecology and Environmental Management, Winchester

3 Ecological Designations

3.1 Statutory Designations

- 3.1.1 The international statutory designations of nature conservation interest that are potentially relevant to the site are shown at Annex 6818/3. The nearest such designation is Chilterns Beechwoods Special Areas of Conservation (SAC), approximately 14.9km to the west of the site. This SAC is designated for its *Asperulo-Fagetum* beech forests, with other qualifying features including semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*), and the presence of Stag Beetle *Lucanus cervus*.
- 3.1.2 The next nearest designation is Wormley-Hoddesdonpark Woods SAC, located approximately 19.1km to the south-east of the site. The Special Area of Conservation is designated on the basis of its Sub-Atlantic and medio-European Oak or Oak-Hornbeam forests of the *Carpinion betuli*.

3.2 Statutory Designations

- 3.2.1 The national and local level statutory designations of ecological importance that occur within the local area around the site are shown on Plan 6818/ECO2. The nearest statutory designation is Batford Springs Local Nature Reserve (LNR), located approximately 0.5km to the south of the site. The LNR is designated on the basis of its springs, which serve chalk streams and ponds.
- 3.2.2 The next nearest statutory designation is Marshalls Heath LNR, located approximately 1.4km to the east of the site. The LNR is designated on the basis of its high biodiversity, with more than 1,300 species of plant and animal recorded in recent years, including over 40 species on national lists of threatened species.
- 3.2.3 Natural England has developed Impact Risk Zones (IRZs) as an initial tool to help assess the risk of developments adversely affecting SSSIs, taking into account the type and scale of developments. This site does not sit within any IRZs.

3.3 Non-statutory Designations

- 3.3.1 The non-statutory designations of nature conservation interest that occur within the local area are shown on Plan 6818/ECO2. The nearest non-statutory designation is Holcroft's Springs Local Wildlife Site (LWS), which is separated from the site by Common Lane, which forms the north-eastern boundary of the site. The LWS is designated as potentially comprising ancient Pedunculate Oak *Quercus robur* / Hornbeam *Carpinus betulus* woodland (albeit it is noted that this woodland is not identified as comprising ancient woodland on Natural England's Ancient Woodland Inventory).
- 3.3.2 The next nearest non-statutory designations are Sauncey Woodland LWS, located 0.2km to the east, and Bower Heath Common LWS and White Gables, Bower Heath Lane LWS, both located 0.2km to the north. These are designated for ancient woodland, common land supporting acid grassland and woodland, and buildings used by protected species respectively.

3.4 Priority Habitats, Ancient Woodland and Notable Trees

- 3.4.1 There are no records of any ancient woodland, priority habitats, notable or veteran trees within the site. The closest area to the site mapped as priority habitat is Holcroft's Springs

LWS, which is mapped as deciduous woodland. As discussed above, Holcroft's Springs LWS is designated on the basis that it potentially comprises ancient woodland, due to field evidence suggesting an ancient origin; and the fact it is shown on Bryant's map (1822), although it is not included in Natural England's Ancient Woodland Inventory. The closest area mapped as comprising ancient semi-natural woodland in Natural England's Ancient Woodland Inventory is Sauncey Woodland, located approximately 0.2km to the east of the site.

3.5 Summary

3.5.1 In summary, the site itself is not subject to any statutory or non-statutory ecological designations. A summary of ecological designations surrounding the site is set out below at Table 3.1.

Table 3.1: Summary of ecological designations in the local area (international designations within 20km, other statutory designations to 5km, non-statutory designations to 2km).

Site Name	Designation	Brief Description	Approximate Distance and Direction from the Site
International Statutory Designations			
Chilterns Beechwoods	Special Area of Conservation (SAC)	Designated due to its extensive <i>Asperulo-Fagetum</i> beech forests, supporting Coralroot <i>Cardamine bulbifera</i> . Qualifying features also include semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco-Brometalia</i>) and presence of Stag Beetle.	14.9km W
Wormley Hoddesdonpark Woods	SAC	Designated on the basis of its sub-Atlantic and medio-European Oak or Oak-Hornbeam forests of the <i>Carpinion betuli</i> .	19.1km SE
National and Local Statutory Designations			
Batford Springs	Local Nature Reserve (LNR)	Designated on the basis of its springs, which serve chalk streams and ponds.	0.5km S
Marshall's Heath	LNR	Designated on the basis of its high biodiversity, with more than 1,300 species of plant and animal recorded in recent years, including over 40 species on national lists of threatened species.	1.4km E
Wheathampstead Development Centre	LNR	Designated on the basis of its mosaic of habitats including unimproved neutral grassland, secondary woodland, scrub and a pond, which support a variety of wildflowers, invertebrates and birds.	3.6km SE
Non-statutory Designations			
Holcroft's Springs	Local Wildlife Site (LWS)	Designated for its ancient Pedunculate Oak / Hornbeam woodland.	0.005km to NE
Sauncey Woodland	LWS	Designated for its ancient Pedunculate Oak / Hornbeam woodland.	0.2km E
Bower Heath Common	LWS	Comprises common land supporting secondary woodland, scrub and semi-improved acidic grassland.	0.2km N
White Gables, Bower Heath Lane	LWS	Designated as its buildings and environs are important for protected species.	0.2km N
Wall Wood	LWS	Designated for its old semi-natural woodland.	0.3km N
River Lea Pastures, N. of Harpenden	LWS	Designated for the extensive pastures either side of the River Lea, supporting a reasonable species mix and grassland indicators.	0.3km W

Site Name	Designation	Brief Description	Approximate Distance and Direction from the Site
Batford Springs and Meadow	LWS	Partially overlaps with Batford Springs LNR. Designated for its mosaic of habitats including grassland, derelict cress beds, five natural springs (which emerge from the underlying chalk aquifer), broadleaved plantation, semi-natural woodland and the River Lea.	0.5km S
Westfield Wood	LWS	Designated for its ancient Pedunculate Oak / Hornbeam woodland.	0.6km W
Grasslands near Mackerye End	LWS	Comprises two small species-rich, neutral unimproved grasslands.	0.8km E
Ambrose Wood	LWS	Designated for its ancient Pedunculate Oak / Hornbeam woodland.	1.0km SW
Hill Farm, Bowers Heath	LWS	Designated as its buildings and environs are important for protected species.	1.0km N
Bishey Wood Green Lane	LWS	Comprises a green lane with substantial hedgerows.	1.0km N
The Nicky Line	LWS	Comprises a disused railway line bordered by a species-rich mosaic of linear woodland and scrub and open areas	1.1km SW
Marshallsheath Wood	LWS	Designated for its ancient Hornbeam coppiced woodland.	1.1km E
Castle Farm Woodland by River Lea	LWS	Designated for its mosaic of habitats including woodland, reed swamp, damp semi-improved neutral grassland, the river Lea and an excavated fishing lake surrounded by disturbed, rough ground.	1.2km SE
Leasey Bridge Dismantled Railway	LWS	Comprises a disused railway line supporting a mosaic of diverse rough neutral grassland and mixed scrub.	1.2km SE
Plummers Lane	LWS	Comprises an ancient green lane with substantial hedgerows and small patches of broadleaved woodland.	1.2km N
Marshall's Heath	LWS	Overlaps with the LNR of the same name and is designated for the same reasons.	1.4km E
Bishey Wood	LWS	Designated for its ancient Pedunculate Oak / Hornbeam woodland.	1.4km E
Piggottshill Wood	LWS	Designated for its ancient Pedunculate Oak / Hornbeam woodland.	1.6km SE
Harpenden Common	LWS	Designated for its mosaic of habitats including unimproved and semi-improved neutral grassland, acid grassland and scrubland.	1.9km S

4 Habitats and Ecological Features

4.1 Background Records

- 4.1.1 No specific records of any protected, notable or invasive plant species from within or adjacent to the site were returned from the desktop study. The closest record for any such species is of Japanese Knotweed *Fallopia japonica* located within the Coldharbour Lane allotments approximately 0.1km to the south of the site. No evidence for the presence of this species was recorded on-site.

4.2 Overview

- 4.2.1 The locations of habitat types and features within the site are indicated on Plan 6818/ECO3.
- 4.2.2 The site is dominated by horse-grazed fields classified as 'other neutral grassland'. Due to the nature of the site as a riding school, the fields are grazed on rotation and therefore the sward length varies between fields. Smaller areas of modified grassland, woodland, tall ruderal vegetation, vegetated gardens, buildings and hardstanding are present in the western corner of the site, and strips of woodland and tall forbs vegetation are present along the eastern boundary. Native hedgerows are present along the majority of the site boundaries and a number of the field boundaries. A number of individual trees are also present, mostly in the centre and west of the site.

4.3 Priority Habitats

- 4.3.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of habitats which are of principal importance for conservation in England. This list is largely derived from the 'Priority Habitats' listed under the former UK BAP, which continue to be regarded as priority habitats under the subsequent country-level biodiversity strategies.
- 4.3.2 Of the habitats within the site, the woodlands and hedgerows are considered to qualify as Priority Habitats and therefore constitute important ecological features. This is discussed further in the relevant habitat sections below.

4.4 Irreplaceable Habitats

- 4.4.1 Irreplaceable habitats are now defined under The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024 and include blanket bog, lowland fens, limestone pavements, coastal sand dunes, ancient woodland, ancient trees and veteran trees, spartina saltmarsh swards and mediterranean saltmarsh scrub.
- 4.4.2 No irreplaceable habitats are present within the site.

4.5 Habitat Descriptions and Evaluation

- 4.5.1 The habitats and ecological features present within the site are described in Table 4.1 below. This table sets out their UK Habitat Classification Primary Habitats and Secondary Codes, and the corresponding habitat type and condition according to the Statutory Biodiversity Metric. The table also indicates whether these habitats constitute an important ecological feature and sets out their level of importance, taking into account the status of

habitat types and the presence of rare plant communities or individual plant species of elevated interest. The value of habitats for the fauna they may support is considered separately in Chapter 5 below.

4.5.2 Details of habitat condition assessments are provided at Annex 6818/3.

Table 4.1a. Habitat Descriptions and Evaluation – Area Habitats

Ref	UK Hab Primary Habitat/ Secondary Codes*	Statutory Biodiversity Metric Habitat Type and Condition	Description	Evaluation
F1-F9	g3c Other neutral grassland 81, 103, 109, 510, 516, 521	Grassland: other neutral grassland (poor condition)	Fields F1-F9 are mostly horse-grazed grassland fields which dominate the site. As the fields are grazed on rotation, the sward length varies between fields. Fields F1-F4 generally have a longer sward than other fields, with a sward height range of approximately 5-30cm. Species found continually across grassland fields F1-4 include Perennial Ryegrass <i>Lolium perenne</i>, Rough Meadowgrass <i>Poa trivialis</i>, Red Fescue <i>Festuca rubra</i>, Yorkshire-fog <i>Holcus lanatus</i>, Soft Brome <i>Bromus hordeaceus</i>, Smaller Cat's-tail <i>Phleum bertolonii</i>, Cock's-foot <i>Dactylis glomerata</i>, Creeping Bent <i>Agrostis stolonifera</i>, Black Medick <i>Medicago lupulina</i>, Common Bird's-foot <i>Lotus corniculatus</i>, Mouse-ear <i>Cerastium fontanum</i>, Field Bindweed <i>Convolvulus arvensis</i>, Common Cat's-ear <i>Hypochaeris radicata</i>, Common Ragwort <i>Jacobaea vulgaris</i>, Greater Knapweed <i>Centaurea scabiosa</i>, Devil's-bit Scabious <i>Succisa pratensis</i>, Lesser Trefoil <i>Trifolium dubium</i>, Cut-leaf Cranesbill <i>Geranium dissectum</i>, Daisy <i>Bellis perennis</i>, Ribwort Plantain <i>Plantago lanceolata</i>, Greater Plantain <i>Plantago major</i>, Yarrow <i>Achillea millefolium</i>, Curled Dock <i>Rumex crispus</i>, Dandelion <i>Taraxacum officinale</i> agg., Red Clover <i>Trifolium pratense</i>, White Clover <i>Trifolium repens</i> and Creeping Buttercup <i>Ranunculus repens</i>. Field F5 was used for hay production at the time of the surveys, with a uniform long-sward at the time of the May survey, which had been cut by the time of the July survey. Fields F6-F9 had a shorter sward height than fields F1-F4 due to the presence of several horses, with F6, F8 and F9 being particularly heavily grazed. The species composition of F5-F9 was similar to those above but with lower numbers of herbaceous species, which included Cut-leaf Crane's-bill, White Clover, Spear Thistle <i>Cirsium vulgare</i>, Ribwort Plantain, Marjoram <i>Origanum majorana</i>, Dandelion <i>Taraxacum</i> sp. and Common Ragwort.	Does not form important ecological feature
F10-F11	g4 Modified grassland 103, 510	Grassland: modified grassland (poor condition)	Fields F10-F11 were very heavily grazed at the time of survey, with sward heights of <10cm. These fields were comprised of fewer species than the aforementioned fields, and consisted of grassland species including Perennial Rye-grass, Red Fescue, Rough Meadow Grass, Cock's-foot, Yarrow, White Clover, Field Bindweed, Common Nettle <i>Urtica dioica</i> and Curled Dock <i>Rumex crispus</i> .	Does not form important ecological feature

Ref	UK Hab Primary Habitat/ Secondary Codes*	Statutory Biodiversity Metric Habitat Type and Condition	Description	Evaluation
W1-W2	w1f Lowland mixed deciduous woodland 30, 200, 203, 522	Woodland and forest: Lowland mixed deciduous woodland (moderate condition)	Areas of deciduous woodland are present to the east and west of the site. They are comprised of native species including Blackthorn <i>Prunus spinosa</i>, Pedunculate Oak <i>Quercus robur</i>, Hornbeam <i>Carpinus betulus</i>, Holly <i>Ilex aquifolium</i>, Hawthorn <i>Crataegus monogyna</i>, Elder <i>Sambucus nigra</i>, Whitebeam <i>Sorbus aria</i>, Ash <i>Fraxinus excelsior</i> and Field Maple <i>Acer campestre</i>. Woodland W1, located to the east of the site, is a small strip of a more substantial woodland which is mostly located off-site. W1 has a ground flora of Garlic Mustard <i>Alliaria petiolata</i>, English Bluebell <i>Hyacinthoides non-scripta</i>, Barren Brome <i>Bromus sterilis</i> and Ground Ivy <i>Glechoma hederacea</i>. Woodland W2 is located within the west of the site, among the buildings and modified grassland fields. W2 has a ground flora of Bramble <i>Rubus fruticosus</i> agg., Garlic Mustard, Common Nettle and White Dead-nettle <i>Lamium album</i>.	Priority habitat, forms important ecological feature (local value)
-	(Tall forbs) 16, 521	Sparsely vegetated land: tall forbs (moderate condition)	Areas of tall forbs are present in the west of the site near the buildings, and along part of the northern boundary. These are comprised of Common Nettle, Perennial Ryegrass, Yorkshire Fog, Red Dead Nettle <i>Lamium purpureum</i> , Barren Brome, Common Ragwort, Dandelion, White Dead Nettle, Cleavers <i>Galium aparine</i> and White Campion <i>Silene latifolia</i> .	Does not form important ecological feature
-	h3d Bramble scrub 521	Heathland and shrub: Bramble scrub (condition assessment N/A)	A small section of Bramble scrub is present in the east of the site adjacent to W1, dominated by Bramble <i>Rubus fruticosus</i> agg.	Does not form important ecological feature
-	u1b Developed land – sealed surface 804, 818	Urban: developed land; sealed surface (N/A – other)	A number of buildings are present within the west of the site and are a combination of residential dwellings (B8 and B10) and horse stables/barns. Areas of hardstanding are associated with the buildings, including a car parking area and paths. The agricultural buildings vary in construction and are currently used as horse stables, storage or training areas for the horses. There is also hardstanding associated with the western half of a track that extends through the centre of the site.	Does not form important ecological feature
-	u1c Artificial unvegetated – unsealed surface	Urban: artificial unvegetated; unsealed surface (N/A – other)	Horse manèges are present around the buildings, comprising artificial but free-draining surfaces such as rubber chippings and sand.	Does not form important ecological feature

Ref	UK Hab Primary Habitat/ Secondary Codes*	Statutory Biodiversity Metric Habitat Type and Condition	Description	Evaluation
-	(Vegetated garden) 828	Urban: vegetated garden (condition assessment N/A)	The gardens of the two residential properties (B8 and B10).	Does not form important ecological feature
T3-T5, T7-T8, T10-T11, T14, T17- T29	(Trees) 200, 203	Individual tree: rural tree (moderate to good condition)	A number of individual trees occur across the site, especially in the centre and to the west. Species include a variety of predominantly native trees, such as Pedunculate Oak and Ash. See further detail at Annex 6818/3.	Does not form important ecological feature

* Habitat types not listed as a primary habitat are indicated in brackets

UK Hab Secondary Codes:

16 – Tall forbs

30 – Semi-natural woodland

81 – Ruderal or ephemeral

103 – Horse grazed

109 – Hay

200 – Tree

203 – Mature tree

510 – Bare ground

516 – Active management

521 – Unmanaged

522 – Native

804 – Car park

818 – Residential building

828 – Vegetated Garden

Table 4.1b. Habitat Descriptions and Evaluation – Hedgerows/Line of Trees

Ref	UK Hab Primary Habitat/ Secondary Codes*	Statutory Biodiversity Metric Habitat Type and Condition	Description	Evaluation
H1- H12, H14- H16	h2a Native hedgerow 200, 203, 517, 518, 522	Native hedgerow (good condition)	Native hedgerows line the majority of the site boundary as well as extending into the site at the southeast, south, southwest and west. The hedgerows vary in nature but are generally dense, except those at the south of the site (associated with offsite residential development) which are gappier and sparser in nature. The hedgerows mainly comprise native species, including Blackthorn, Holly, Dog-rose <i>Rosa canina</i> , Hawthorn, Field Maple, Hazel <i>Corylus avellana</i> , Pedunculate Oak, Elder <i>Sambucus nigra</i> , Ash and Hornbeam. Standard trees are present in some hedgerows, with species including Field Maple and Pedunculate Oak. Hedgerow ground flora species assemblages are generally a continuation of those in the grassland fields.	Priority habitat, forms important ecological feature (local value)
H13	h2a Native hedgerow 200, 518, 522	Native hedgerow (moderate condition)		

* Habitat types not listed as a primary habitat are indicated in brackets

UK Hab Secondary Codes:

200 – Tree

203 – Mature tree

517 – Recent management

518 – Neglected

522 – Native

4.6 Summary

- 4.6.1 On the basis of the above, the following habitats within the site are considered to form important ecological features:

Table 4.2. Evaluation summary of habitats forming important ecological features.

Habitat	Level of Importance
Lowland Mixed Deciduous Woodland	Local
Native Hedgerows	Local

- 4.6.2 Other habitats present within the site include other neutral grassland, modified grassland, tall forbs, Bramble scrub, buildings, hardstanding, horse manèges, vegetated gardens and individual trees. These habitats do not form important ecological features.

5 Faunal Use of the Site

5.1 Overview

- 5.1.1 During the survey work, general observations were made of any faunal use of the site with particular attention paid to the potential presence of protected or notable species. Specific survey work was undertaken in respect of bats, Badgers, Great Crested Newt, reptiles and breeding birds, with the results described below.

5.2 Priority Species

- 5.2.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of species which are of principal importance for conservation in England. This list is largely derived from the 'Priority Species' listed under the former UK BAP, which continue to be regarded as Priority Species under the subsequent country-level biodiversity strategies.
- 5.2.2 During the survey work undertaken, the Priority Species Soprano Pipistrelle *Pipistrellus pygmaeus*, Barbastelle *Barbastella barbastellus*, House Sparrow *Passer domesticus*, Song Thrush *Turdus philomelos*, Skylark *Alauda arvensis*, Linnet *Linaria cannabina*, Dunnock *Prunella modularis*, and Starling *Sturnus vulgaris* were recorded within the site. This is discussed further below.

5.3 Bats

- 5.3.1 **Legislation.** All British bats are classed as European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended) and are also listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). As such, both bats and their roosts (breeding sites and resting places) receive full protection under the legislation (see Annex 6818/4). If proposed development work is likely to result in an offence a licence may need to be obtained from Natural England which would be subject to appropriate measures to safeguard bats. Given all bats are protected species, they are considered to represent important ecological features. Several bat species are also S41 Priority Species.
- 5.3.2 **Background Records.** No specific records of bats from within or adjacent to the site were returned from the desktop study. Information received from Hertfordshire and Middlesex Bat Group and BRMC include records of Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *P. pygmaeus*, Brown Long-eared Bat *Plecotus auritus*, Noctule Bat *Nyctalus noctula*, Leisler's Bat *N. leisleri*, Serotine *Eptesicus serotinus*, Natterer's Bat *Myotis nattereri*, and Daubenton's Bat *Myotis daubentonii* within 2km of the site. The closest specific record is for a Common Pipistrelle from 2014, recorded under 0.1km to the south of the site.

Survey Results and Evaluation

Preliminary Appraisal

- 5.3.3 As detailed above, records of bats have been returned from within the surroundings of the site. These species are largely typical given the region and the types of habitats present in the wider area of the site. The desk study does not indicate any ecological designations within 10km of the site which are identified for their bat interest.

- 5.3.4 Habitats within the wider area of the site largely comprise open farmland, with features including woodlands and the River Lea likely to be of elevated interest for bats. The site is bounded by residential development to the south, although a reasonable network of hedgerows and woodlands extends to the north and east of the site, providing moderate connectivity to other woodlands such as Sauncey Wood and Bower Heath Common. Connectivity appears more limited to the west of the site, where strong hedgerow linkages are lacking, albeit the River Lea corridor does extend in this direction.
- 5.3.5 Within the site, several buildings have been identified as potentially suitable to support roosting bats, detailed further below. A preliminary assessment of habitats in terms of their likely value for foraging and commuting bats is set out in Table 5.1 below.

Table 5.1. Assessment of value of habitats within the site for foraging and commuting bats

Commuting (potential flight-paths)	Foraging habitats
Woodland edges and associated hedgerow network forms continuous habitat that is well connected to the wider landscape – high potential suitability. Hedgerows across the remainder of the site more fragmented – moderate potential suitability.	Areas of other neutral grassland, small areas of woodland and trees – moderate potential suitability.

Roosting – Buildings and Built Structures

Visual Inspection

- 5.3.6 All the buildings within the site were subject to detailed inspection, the findings of which are provided in Table 5.2 and summarised below.
- 5.3.7 The buildings, comprising open-sided barns (agricultural steel-framed structures), stables and houses, are of a mix of negligible to high bat roosting potential. Buildings B6, B9 and B7a were considered to be of negligible bat roosting potential, being bright, open and drafty, with no suitable crevices. Buildings B3a, B3b, B4, B5, B7b and B7c were considered to be of low bat roosting potential. Buildings B8 and B10 were considered to be of moderate bat roost potential.
- 5.3.8 Building B1 was considered to be of high bat roost potential, having gaps in the soffit at the southern corner, holes and cracks in the outer wooden boards leading to a cavity and gaps in the soffit along the northern strip.
- 5.3.9 No evidence of bat occupation, such as droppings, staining or feeding remains, was recorded during the inspection surveys.

Emergence Surveys

- 5.3.10 As all buildings are to be lost under the proposed development, all buildings assessed as providing bat roosting potential were subject to further survey work in the form of dusk emergence surveys. The results of the dusk emergence surveys are summarised in Table 5.2 below and at Plan 6818/ECO4.

Table 5.2. Building emergence survey results.

Building	Date	Sunset time	Roosting activity	Summary of other activity
B1	17/07/2024	Sunset: 21:11	None	Regular passes of Common and Soprano Pipistrelle, and occasional passes of 'Big Bat' sp. and Long-eared sp.
	07/08/2024	Sunset: 20:39	None	Frequent Soprano Pipistrelle passes and regular passes of Common Pipistrelle. Infrequent passes of 'Big Bat' sp., Long-eared sp. and Myotis sp.
	28/08/2024	Sunset: 19:56	None	Frequent passes of Soprano Pipistrelle, regular passes of Common Pipistrelle and infrequent passes of 'Big Bat' sp., Myotis sp., Long-eared sp. and Barbastelle.
B3a	30/07/2024	Sunset: 20:53	None	Regular Soprano Pipistrelle passes, with occasional Common Pipistrelle, 'Big Bat' sp., Long-eared sp. and Myotis sp. passes.
B3b	30/07/2024	Sunset: 20:53	Likely emergence and re-entry	Soprano Pipistrelle – repeated flights throughout the barn, possible emergences and re-entries from/into corner (into wall adjoining Building B3a). Regular Soprano Pipistrelle passes, with occasional Common Pipistrelle, 'Big Bat' sp., Long-eared sp. and Myotis sp. passes.
B4	28/08/2024	Sunset: 19:56	None	Frequent passes of Soprano Pipistrelle, regular passes of Common Pipistrelle and infrequent passes of 'Big Bat' sp., Myotis sp., Long-eared sp. and Barbastelle.
B5	30/07/2024	Sunset: 20:53	None	Regular Soprano Pipistrelle passes, with occasional Common Pipistrelle, 'Big Bat' sp., Long-eared sp. and Myotis sp. passes.
B7b	07/08/2024	Sunset: 20:39	None	Frequent Soprano Pipistrelle passes and regular passes of Common Pipistrelle. Infrequent passes of 'Big Bat' sp., Long-eared sp. and Myotis sp.
B7c	07/08/2024	Sunset: 20:39	None	Frequent Soprano Pipistrelle passes and regular passes of Common Pipistrelle. Infrequent passes of 'Big Bat' sp., Long-eared sp. and Myotis sp.
B8	17/07/2024	Sunset: 21:11	None	Regular passes of Common and Soprano Pipistrelle, and occasional passes of 'Big Bat' sp. and Long-eared sp.
	20/08/2024	Sunset: 20:18	None	Occasional passes of Soprano and Common Pipistrelle.
B10	30/07/2024	Sunset: 20:53	None	Regular Soprano Pipistrelle passes, with occasional Common Pipistrelle, 'Big Bat' sp., Long-eared sp. and Myotis sp. passes.
B10	20/08/2024	Sunset: 20:18	None	Occasional passes of Soprano and Common Pipistrelle.

Evaluation

- 5.3.11 At Building B3b, possible emergence and re-entries of Soprano Pipistrelle were recorded. The IR camera footage was non-conclusive; however, the surveyor present was confident that at least one emergence and re-entry occurred. Accordingly, Building B3b is considered

to be a likely Soprano Pipistrelle day roost. Soprano Pipistrelle is widespread within the region, and the roost is therefore assessed as being of site level importance²⁰.

Roosting – Trees

Assessment of Roosting Potential

- 5.3.12 Trees within the site were subject to an initial assessment for their suitability to support roosting bats. Where practical, trees have been subject to a ground level tree assessment (GLTA). Trees identified as supporting PRFs are indicated on Plan 6818/ECO3. The results of this assessment are summarised in Table 3 below.

Table 5.3. Tree assessment results

Tree Ref.	Species	Assessment and potential roosting features	Summary
T1	Unknown (dead)	Dense ivy cover	Potential PFR-Is
T2	Oak	Lifted bark and cracks on western side	PFR-Is
T6	Oak	Broken limb with a crack at the join of the trunk	PRF-I
T9	Oak	Small rot hole	PRF-I
T12	Oak	Large crack in lower limb facing south	PRF-I
T13	Ash	Crack facing south	PRF-I
T15	Oak	Lifted bark and cracks to east	PRF-Is
T16	Oak	Limbs to south east and south west have large cracks	PRF-I

Evaluation

- 5.3.13 Overall, the site supports a number of trees with bat roosting potential; albeit the roosting features recorded were all PRF-Is, likely only of value to small numbers of crevice dwelling species, such that they are considered to be of site level importance as a potential roosting resource.

Foraging and Commuting

Night-time Bat Walkover Surveys

- 5.3.14 The results of the NBW surveys are shown on Plan 6818/ECO5a-c, and a summary of the species recorded and numbers of registrations set out in Table 5.4 to 5.6 below.

Table 5.4 Results of the dusk walked transect on 15th May 2024

Species	Number of Passes Recorded	Approximate % of Total Passes Recorded	Overview of Recorded Activity
Common Pipistrelle	86	89.58	Common Pipistrelle were recorded along all transects, with particularly high numbers along transects E and D, which runs along the woodland edge to the east of the site. The largest number of registrations at one time was 6.

²⁰ Based on Table 3.2 'Assessing importance of roosts' within Reason, P.F. and Wray, S. (2023) UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. CIEEM.

Species	Number of Passes Recorded	Approximate % of Total Passes Recorded	Overview of Recorded Activity
Soprano Pipistrelle	6	6.25	Mostly recorded to the north and west of the site, along transects H and I. The largest number of registrations at one time was 3.
Long-eared bat sp.	2	2.08	One call was recorded to the east of the site, along transect D, whilst the other was recorded to the west of the site, along transect H. The largest number of registrations at one time was 1.
Barbastelle	2	2.08	Two Barbastelle were recorded in the same location along transect H. The largest number of registrations at one time was 1.
Total	96	100	

Table 5.5. Results of the dusk walked transect on 8th August 2024

Species	Number of Passes Recorded	Approximate % of Total Passes Recorded	Overview of Recorded Activity
Common Pipistrelle	106	72.60	Common Pipistrelle were recorded along all transects except transects G and H. Particularly high numbers were recorded along transects D/E and I. The largest number of registrations at one time was 7 along transect B.
Soprano Pipistrelle	40	27.40	Soprano Pipistrelle were mostly recorded along transect I. The largest number of registrations at one time was 6.
Total	146	100	

Table 5.6. Results of the dusk walked transect on 11th September 2024

Species	Number of Passes Recorded	Approximate % of Total Passes Recorded	Overview of Recorded Activity
Common Pipistrelle	4	10.53	Low numbers of Common Pipistrelle were recorded, with recordings only on transects E/D and I. The largest number of registrations at one time was 2.
Soprano Pipistrelle	33	86.84	Soprano Pipistrelle were recorded along transects C, D/E and I. The largest number of registrations at one time was 6.
Barbastelle	1	2.63	One call was recorded to the west of the site, along transect H.
Total	38	100	

5.3.15 In general, the majority of bat activity was recorded along transects D and E, corresponding to the edge of woodland W1 and the off-site woodland, and along transect I, around the buildings and W2. A total of 280 registrations were recorded during the surveys (a total of three dusk surveys). Activity was dominated by Common Pipistrelle, which accounted for a total of 196 registrations and 70% of all bat registrations. Soprano Pipistrelle accounted for a total of 79 registrations and 28.21% of all bat registrations, whilst Long-eared sp. and Barbastelle were recorded in low numbers, equating to 0.71%, and 1.07% of all registrations respectively.

5.3.16 Activity with this transect peaked during the August dusk survey, with a total of 146 bat registrations (which equates to an average of 2.43 registrations per minute), the vast majority of which were the result of activity by Common Pipistrelle.

Automated Surveys

- 5.3.17 The results of the automated static bat surveys are summarised in 5.7 to 5.9 below, and shown on Plan 5818/ECO6.

Table 5.7. Automated static bat survey summary for Location 1.

Species	No. registrations							Average registrations per night						% of total registrations
	May	June	July	Aug	Sept	Oct	Total	May	June	July	Aug	Sept	Oct	
Common Pipistrelle	5,509	1,188	777	3,343	3,879	*No data	14696	787.0	169.7	111.0	477.6	554.1	*No data	86.6
Soprano Pipistrelle	1,073	110	88	324	436		2031	153.3	15.7	12.6	46.3	62.3		12.0
Nathusius' Pipistrelle	7	0	0	0	0		7	1.0	0.0	0.0	0.0	0.0		0.0
Big Bat sp.	9	1	3	15	12		40	1.3	0.1	0.4	2.1	1.7		0.2
Myotis sp.	3	0	0	11	20		34	0.4	0.0	0.0	1.6	2.9		0.2
Long-eared sp.	3	3	6	23	41		76	0.4	0.4	0.9	3.3	5.9		0.4
Pip sp.	4	0	0	0	0		4	0.6	0.0	0.0	0.0	0.0		0.0
Barbastelle	62	8	4	1	13		88	8.9	1.1	0.6	0.1	1.9		0.5
Total	6,670	1,310	878	3,717	4,401	0	16,976	N/A	N/A	N/A	N/A	N/A	N/A	100

*Static detector failed to record

Table 5.8. Automated static bat survey summary for Location 2.

Species	No. registrations							Average registrations per night						% of total registrations
	May	June	July	Aug	Sept	Oct	Total	May	June	July	Aug	Sept	Oct	
Common Pipistrelle	*No data	11	4,580	2,496	*No data	924	8,011	*No data	1.6	654.3	356.6	*No data	132.0	92.0
Soprano Pipistrelle		1	98	219		117	435		0.1	14.0	31.3		16.7	5.0
Nathusius' Pipistrelle		0	1	1		0	2		0.0	0.1	0.1		0.0	0.0
Big Bat sp.		0	3	8		5	16		0.0	0.4	1.1		0.7	0.6
Myotis sp.		0	102	37		1	140		0.0	14.6	5.3		0.1	5.0
Long-eared sp.		0	26	27		13	66		0.0	3.7	3.9		1.9	2.4
Pip sp.		3	1	1		0	5		0.4	0.1	0.1		0.0	0.2
Barbastelle		0	19	3		11	33		0.0	2.7	0.4		1.6	1.2
Total		15	4,830	2,792	0	1,071	8,708	N/A	N/A	N/A	N/A	N/A	N/A	100

*Static detector failed to record

Table 5.9. Automated static bat survey summary for Location 3.

Species	No. registrations							Average registrations per night						% of total registrations
	May	June	July	Aug	Sept	Oct	Total	May	June	July	Aug	Sept	Oct	
Common Pipistrelle	793	197	325	1,004	834	586	3,739	113.3	28.1	46.4	143.4	119.1	83.7	64.4
Soprano Pipistrelle	139	226	298	802	95	170	1,730	19.9	32.3	42.6	114.6	13.6	24.3	29.8
Nathusius' Pipistrelle	0	1	1	0	0	0	2	0.0	0.1	0.1	0.0	0.0	0.0	2
Big Bat sp.	2	14	10	35	8	6	75	0.3	2.0	1.4	5.0	1.1	0.9	1.3

Species	No. registrations							Average registrations per night						% of total registrations
	May	June	July	Aug	Sept	Oct	Total	May	June	July	Aug	Sept	Oct	
<i>Myotis</i> sp.	3	1	11	91	22	4	132	0.4	0.1	1.6	13.0	3.1	0.6	2.3
Long-eared sp.	1	4	30	48	5	1	89	0.1	0.6	4.3	6.9	0.7	0.1	1.5
Pip sp.	1	18	7	1	0	0	27	0.1	2.6	4.3	0.1	0.0	0.0	0.0
Barbastelle	3	1	0	1	6	5	16	0.4	0.1	0.0	0.1	0.9	0.7	0.2
Total	942	462	682	1,982	970	772	5,810	N/A	N/A	N/A	N/A	N/A	N/A	100

- 5.3.18 Across the six months surveyed during 2024, Common Pipistrelle was the most commonly recorded species at all locations, although Soprano Pipistrelle also made up a large percentage of calls at location 3. Activity at location 1 peaked in May, at location 2 in July and at location 3 in August
- 5.3.19 Static location 1 recorded 16,976 bat registrations with 86.6% of all registrations attributed to Common Pipistrelle. The next highest number of registrations were 12.0% to Soprano Pipistrelle, with the remainder attributed to 'Big Bat' sp., Long-eared sp., Myotis sp., Barbastelle, Nathusius' Pipistrelle and Pipistrelle sp.. At static location 2 a total of 8,708 registrations were recorded, with 92.0% of all registrations attributed to Common Pipistrelle, 5.0% to Soprano Pipistrelle and 1.6% to Myotis sp., with the remainder attributed to 'Big Bat' sp., Long-eared sp., Barbastelle, Nathusius' Pipistrelle and Pipistrelle sp.. At static location 3 a total of 5,810 registrations were recorded, with 64.4% of all registrations attributed to Common Pipistrelle and 29.8% to Soprano Pipistrelle. The remainder of registrations were attributed to 'Big Bat' sp., Long-eared sp., Myotis sp., Barbastelle, Nathusius' Pipistrelle and Pipistrelle sp..
- 5.3.20 The average number of bat passes per night was less than ten registrations per night of the survey for all species across the six recording sessions at all three locations, with the exception of Common and Soprano Pipistrelle. This was particularly notable for Common Pipistrelle at location 1 and location 2, where the average passes per night were 419.9 and 286.1 respectively.

Evaluation

- 5.3.21 An evaluation of the importance of the bat assemblage, based on the methodology set out within the Bat Mitigation Guidelines²¹, is set out in Table 5.10 below.

Table 5.10. Evaluation of bat assemblage recorded within the site

Rarity category	Potentially occurring species (Southern England)		Species recorded within site	
	Species	Score	Species	Score
Widespread all geographies (score 1)	Common Pipistrelle Soprano Pipistrelle Brown Long-eared Bat	3	Common Pipistrelle Soprano Pipistrelle Brown Long-eared Bat*	3
Widespread in many geographies but not as abundant in all (score 2)	Whiskered Bat Brandt's Bat Daubenton's Bat Natterer's Bat Noctule	10	Daubenton's Bat* Natterer's Bat* Noctule*	6
Rarer or restricted distribution (score 3)	Alcathoe Bat Serotine Leisler's Bat Nathusius' Pipistrelle	12	Nathusius' Pipistrelle Serotine* Leisler's Bat*	9
Rarest Annex II species and very rare (score 4)	Greater Horseshoe Bat Lesser Horseshoe Bat Bechstein's Bat Barbastelle Grey Long-eared Bat	20	Barbastelle	4
Total	45		22 (49% of potential score)	

* Given the difficulties associated with confidently identifying *Myotis*, *Plecotus* and *Nyctalus*/ *Eptesicus* to species level, the species likely to be present on-site have been allocated based on the species known to be present in the area returned from the data search.

²¹ Based on the methodology for assessing the importance of the bat assemblage within Reason, P.F. and Wray, S. (2023) *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats*. CIEEM.

- 5.3.1 Based on the site's location in southern England, and the species recorded on-site (and deemed likely to be present due to their known presence in the surrounding area), the site exceeds the 45% threshold required to be considered of county-level importance under the Bat Mitigation Guidance. However, this is considered likely to be an overestimate of the value of the site itself. All species with the exception of Common and Soprano Pipistrelle were recorded infrequently. These rarer species were recorded most frequently at location 1, which is along hedgerow H9 which connects with woodland W1 and the network of off-site woodland. It is considered likely that the majority of the rarer species recorded at the site predominantly focus their activity on the mosaic of off-site woodland to the north and east of the site, with their use of the habitats on-site likely limited to occasional use of the boundary vegetation for commuting. On this basis it is considered that the assemblage of bats at the site is considered to be of district level value.

5.4 Badger

- 5.4.1 **Legislation.** Badger receives legislative protection under the Protection of Badgers Act 1992 (see Annex 6818/4), and as such should be assessed as an important ecological feature. The legislation aims to protect this species from persecution, rather than being a response to an unfavourable conservation status, as the species is in fact common over most of Britain.
- 5.4.2 Licences can be obtained from Natural England for development activities that would otherwise be unlawful under the legislation. The types of activity that should be licensed are described in the relevant best practice guidance.^{22, 23}
- 5.4.3 **Background Records, Survey Results and Evaluation.** Background records, survey results and evaluation in respect of Badger are set out in a Confidential Annex separate to this report.

5.5 Other Mammals

- 5.5.1 **Legislation.** Several other mammal species including Water Vole *Arvicola amphibius* and Otter *Lutra lutra* receive full protection under the Wildlife and Countryside Act 1981 (as amended). Otter is also a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended), whilst both Water Vole and Otter are S41 Priority Species.
- 5.5.2 Other UK mammal species do not receive direct legislative protection relevant to development activities but may receive protection against acts of cruelty (for example, under the Wild Mammals (Protection) Act 1996). In addition, a number of mammal species including Hedgehog *Erinaceus europaeus*, Brown Hare *Lepus europaeus* and Harvest Mouse *Micromys minutus* are S41 Priority Species and should be assessed as important ecological features.
- 5.5.3 **Background Records.** No specific records of other mammals from within or adjacent to the site were returned from the desktop study. Several records of Water Vole and two records of Otter were returned from the desktop study, from locations along the River Lea. The closest record is of Water Vole, located approximately 0.2km to the west of the site.

²² English Nature (2002) *Badgers and Development*

²³ Natural England (2011) *Badgers and Development: A Guide to Best Practice and Licensing*, Interim Guidance Document

5.5.4 Otherwise the closest record of any notable species is of Hedgehog (Priority Species) located 0.2km to south (Priority Species). Other records of notable mammals from within 2km of the site boundary include Brown Hare, and Harvest Mouse.

5.5.5 **Survey Results and Evaluation.** The habitats present within the site are unsuitable for use by Water Vole and Otter. Whilst suitable habitat for Dormouse is present, in the form of the hedgerows and woodland on-site, no background records for this species were returned from HERC and BRMC whilst a review of granted European Protected Species applications in relation to Dormouse (as mapped on MAGIC) has identified the nearest such application is located greater than 15km to the north-west of the site. Hertfordshire and Bedfordshire are at the edge of the current range of Dormouse and this species is patchily distributed within these counties, in a number of known locations, all of which are well removed from the site. On this basis, Dormouse are considered likely absent from the site. No evidence of any other protected, rare or notable mammal species was recorded from within the site.

5.5.6 Other mammal species likely to use the site, such as Fox *Vulpes vulpes*, remain common in both a local and national context, and do not receive specific legislative protection in a development context. Such species are not a material planning consideration and the loss of habitats used by these species to the proposals is of negligible significance.

5.5.7 The desktop study returned records of the Brown Hare and Hedgehog, which are considered Priority Species despite being relatively common and widespread in England. The site contains habitats that may be used by these species, such that Brown Hare and Hedgehog are assessed as being of potential importance, albeit at a site level only.

5.6 Reptiles

5.6.1 **Legislation.** All six species of British reptile are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), which protects individuals against intentional killing or injury. Sand Lizard *Lacerta agilis* and Smooth Snake *Coronella austriaca* receive additional protection under the Conservation of Habitats and Species Regulations 2017 (as amended), as set out at Annex 6818/4. All six reptile species are also S41 Priority Species. As such, all reptile species should be assessed as important ecological features.

5.6.2 **Background Records.** Information returned from the desk study included records of Grass Snake *Natrix helvetica*, Slow-worm *Anguis fragilis* and Common Lizard *Zootoca vivipara*, the closest of which was of Grass Snake located approximately 0.5km south-west of the site.

5.6.3 **Survey Results and Evaluation.** Specific survey work for reptiles was undertaken at the site, as shown on Plan 6818/ECO7. No reptiles were found during the surveys carried out, such that these species are considered likely absent from the site.

5.7 Amphibians

5.7.1 **Legislation.** All British amphibians receive a degree of protection under the Wildlife and Countryside Act 1981 (as amended). Great Crested Newt is protected under the Act and is also listed as a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended). As such, both Great Crested Newt and habitats used by this species are afforded protection (see Annex 6818/4). Great Crested Newt is also a S41 Priority Species, as are Common Toad *Bufo bufo*, Natterjack Toad *Epidalea calamita*, and Pool Frog *Pelophylax lessonae*. As such, these species should be assessed as important ecological features.

5.7.2 **Background Records.** No records of Great Crested Newt were returned from the site or wider search area by the desktop study. Records of Common Toad and Marsh Frog *Pelophylax ridibundus* were returned from the wider area, the closest of which is a record of Marsh Frog from 1.1km to the north-west.

5.7.3 **Survey Results and Evaluation.** Based on a review of OS mapping, one pond has been identified within 250m of the site (see Plan 6818/ECO8). Accordingly, this pond was subject to an eDNA survey during June 2024 to confirm presence or absence of Great Crested Newt.

5.7.4 The result of the eDNA survey was negative (see Annex 6818/5). Whilst there is some suitable terrestrial habitat for this species on-site, the lack of breeding ponds in the surrounding area is such that it is considered that this species is likely absent from the site.

5.8 Birds

5.8.1 **Legislation.** All wild birds and their nests receive protection under Section 1 of the Wildlife and Countryside Act 1981 (as amended) in respect of killing and injury, and their nests, whilst being built or in use, cannot be taken, damaged or destroyed. Species included on Schedule 1 of the Act receive greater protection and special penalties apply to legal offences (see Annex 6818/4).

5.8.2 **Conservation Status.** The conservation importance of British bird species is categorised based on a number of criteria including the level of threat to a species' population status²⁴. Species are listed as Green, Amber or Red. Red Listed species are considered to be of the highest conservation concern, being either globally threatened and/or experiencing a high level or rapid rate of population decline (>50% over the past 25 years). Numerous birds are also S41 Priority Species. Red and Amber listed species and Priority Species should be assessed as important ecological features.

5.8.3 **Background Records.** Information returned by the desk study included records for several bird species in the vicinity of the site, including the Red Listed species Skylark, House Sparrow *Passer domesticus*, Yellowhammer *Emberiza citrinella*, Fieldfare *Turdus pilaris* and Song Thrush *Turdus philomelos*, many of which are also all Priority Species. Records of the Schedule 1 species Barn Owl *Tyto alba* and Red Kite *Milvus milvus* were also returned from within the vicinity of the site. None of these records originate from within the site itself.

5.8.4 **Survey Results.** Due to the background records and the presence of suitable habitat for breeding birds on-site, specific breeding bird surveys were undertaken in 2024.

5.8.5 A total of 42 species of birds were recorded at the site during the survey, of which 22 were considered to be breeding, and two possibly breeding. The remaining 18 species were recorded either flying over, as migrants, breeding in adjacent habitats, or were represented only by non-breeding individuals.

5.8.6 A full list of species is included at Annex 6818/6 whilst birds recorded to be breeding within / adjacent to the site are shown at Plan 6503/ECO9, with a summary of notable species recorded given in Table 5.11 below:

²⁴ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win I. (2021). 'The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114, p.p. 723-747.

Table 5.11. Notable bird species recorded during bird surveys

Species	Birds of Conservation Concern listing	Priority species	No of breeding pairs within site	Comments
Mallard <i>Anas platyrhynchos</i> (MA)	Amber	N	0	One flew over in April.
Swift <i>Apus apus</i> (SI)	Red	N	0	Two flew over in June.
Stock Dove <i>Columba oenas</i> (SD)	Amber	N	0-1	-
Woodpigeon <i>Columba palumbus</i> (WP)	Amber	N	11	-
Lesser Black-backed Gull <i>Larus fuscus</i> (LB)	Amber	N	0	One flew over in May.
Red Kite (KT)	Schedule 1	N	0	Up to three regularly over the area.
Kestrel <i>Falco tinnunculus</i> (K.)	Amber	N	0	One present in May.
Hobby <i>Falco subbuteo</i> (HY)	Schedule 1	N	0	One hunting in May.
Rook <i>Corvus frugilegus</i> (RO)	Amber	N	0	Up to 25 foraging in grassland.
Skylark (S.)	Red	Y	0	Singing over nearby arable land.
Swallow <i>Hirundo rustica</i> (SL)	Amber	N	1	-
House Martin <i>Delichon urbicum</i> (HM)	Amber	N	0	One flew over in May.
Wren <i>Troglodytes troglodytes</i> (WR)	Amber	N	6	-
Starling <i>Sturnus vulgaris</i> (SG)	Red	Y	0	Up to 20 foraging in grassland.
Song thrush (ST)	Amber	Y	1	-
Mistle Thrush <i>Turdus viscivorus</i> (M.)	Red	N	0	Singles foraging in grassland.
House Sparrow (HS)	Red	Y	4	-
Dunnock (D.)	Amber	Y	12	-
Greenfinch <i>Chloris chloris</i> (GR)	Red	N	2	-
Linnet (LI)	Red	Y	2	-
Redpoll <i>Acanthis flammea</i> (LR)	Red	N	0	A migrant flew over in April.

- 5.8.7 Based on the survey results, the site supports a modest assemblage of breeding birds, with the breeding activity associated with the more vegetated areas of the site and particularly around the buildings and woodland to the west.
- 5.8.8 No Red List declining farmland species were recorded breeding at the site. Skylark were recorded off-site with birds noted to be holding territory in arable land to the west of the site.
- 5.8.9 Species recorded breeding within the vegetation at the site include Woodpigeon, Wren, Song Thrush, Dunnock, Greenfinch, Linnet and possibly Stock Dove, whilst Swallow and House Sparrow are nesting in the on-site buildings. All these species are included on the RSPB Red or Amber List, having undergone major or moderate declines in their UK populations, albeit they all remain abundant and widespread in suitable habitat in both a local and national context, as are all the remaining species recorded breeding at the site.

- 5.8.10 **Evaluation.** Overall, the site is considered to support a modest bird assemblage, with the species recorded typical of the habitats present on-site. No Red List declining farmland species were recorded breeding at the site, whilst all the Red or Amber Listed species recorded breeding within the vegetation at the site remain abundant and widespread in a local and national context. On this basis, the assemblage of birds supported by the site is considered to be of importance at the site level only and not comprise an important ecological feature.

5.9 Invertebrates

- 5.9.1 **Legislation.** Various invertebrate species are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). In addition, Large Blue *Phengaris arion*, Fisher's Estuarine Moth *Gortyna borelii lunata* and Lesser Whirlpool Ram's-horn Snail *Anisus vorticulus* receive protection under the Conservation of Habitats and Species Regulations 2017 (as amended), as set out at Appendix 6818/3. Some invertebrates are also S41 Priority Species. Where such species are present, they should be assessed as important ecological features.

- 5.9.2 **Background Records.** No records of invertebrates were returned from within or adjacent to the site. Several records of Roman Snail *Helix pomatia* have been returned from around the Westfield Allotments and River Lea area, approximately 0.2-0.3km to the south-west of the site, which are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), which protects individuals against intentional killing or injury. Several other records of Priority Species have also been returned from the wider search area, such as Blood-vein *Timandra comae*, White-letter Hairstreak *Satyrium w-album* and Ghost moth *Hepialus humuli*.

- 5.9.3 **Survey Results and Evaluation.** No evidence for the presence of any protected, rare or notable invertebrate species was recorded within the site. The site is dominated by heavily grazed pasture which is likely to support only a limited diversity of invertebrates. The site has several areas of bare ground and occasional patches of scrub but otherwise contains relatively few micro-habitats that would typically indicate elevated potential for invertebrates²⁵, such as a variable topography with areas of vertical exposed soil, areas of species-rich semi-natural vegetation; variable vegetation structure with frequent patches of tussocks combined with short turf; free-draining light soils or walls with friable mortar.

- 5.9.4 With specific regard to Roman Snail, as set out above, this species is known to be present within the surrounding area. However, all the nearby records are from a highly localised area to the south of the River Lea. This species is known to be poor at dispersal, with adults only moving small distances throughout their lives, whilst the presence of the river is likely to provide a significant dispersal barrier. Otherwise, no evidence of this species has been found on-site during the suite of survey work undertaken throughout 2024. On this basis this species is considered to be unlikely to be present on-site.

- 5.9.5 Overall, it is considered that the site is unlikely to support an invertebrate assemblage of value outside of a site context, such that invertebrates do not form an important ecological feature.

5.10 Summary

- 5.10.1 On the basis of the above, a summary of the evaluation of fauna is provided below:

²⁵ Natural England (2010) 'Higher Level Stewardship – Farm Environment Plan (FEP) Manual', 3rd Edition

Table 5.12. Evaluation summary of fauna forming important ecological features

Species / Group	Summary	Level of Importance
Bats – Roosting	Confirmed presence on site	Site
Bats – Foraging / Commuting	Confirmed presence on site	District
Badger	See Confidential Annex	
Other Mammals (Brown Hare/Hedgehog)	Potential presence on site	Site
Birds	Confirmed presence on site	Site
Invertebrates	Potential presence on site	Site

6 Conclusions

- 6.1.1 Aspect Ecology has carried out a baseline ecological appraisal in respect of proposed development at land North East of Harpenden between Lower Luton Road, Bowers Heath Lane and Common Lane.
- 6.1.2 A desk study has been undertaken and the site has been surveyed based around the extended Phase 1 methodology and the UK Habitat Classification system (version 2.0). A general appraisal of faunal species has also been undertaken to record the potential presence of any protected, rare or notable species, with specific surveys conducted in respect of bats, Badger, Great Crested Newt, reptiles and breeding birds.
- 6.1.3 **Ecological Designations.** A number of ecological designations are present within the surrounds of the site, the nearest of which Holcroft's Springs LWS, which is separated from the site by Common Lane, which forms the north-eastern boundary of the site. Several other LWSs are also present in the surrounding area. The nearest statutory designation is Marshalls Heath LNR, located approximately 1.4km to the east of the site.
- 6.1.4 **Habitats.** The site is dominated by other neutral grassland with other habitats present within and adjacent to the site including modified grassland, woodland, tall forbs, Bramble scrub, hedgerows, and areas of buildings and hardstanding. A summary of habitats considered to form important ecological features with and adjacent to the site is given in Table 6.1 below:

Table 6.1: Summary of habitat evaluation.

Habitat	Level of Importance
Lowland Mixed Deciduous Woodland	Local
Native Hedgerows	Local

- 6.1.5 **Faunal Species.** Surveys of the site have recorded evidence of a number of protected and notable faunal species including bats, Badger, and a modest assemblage of bird species. A summary of species considered to form important ecological features which are supported by or associated with the site is given in Table 6.2 below:

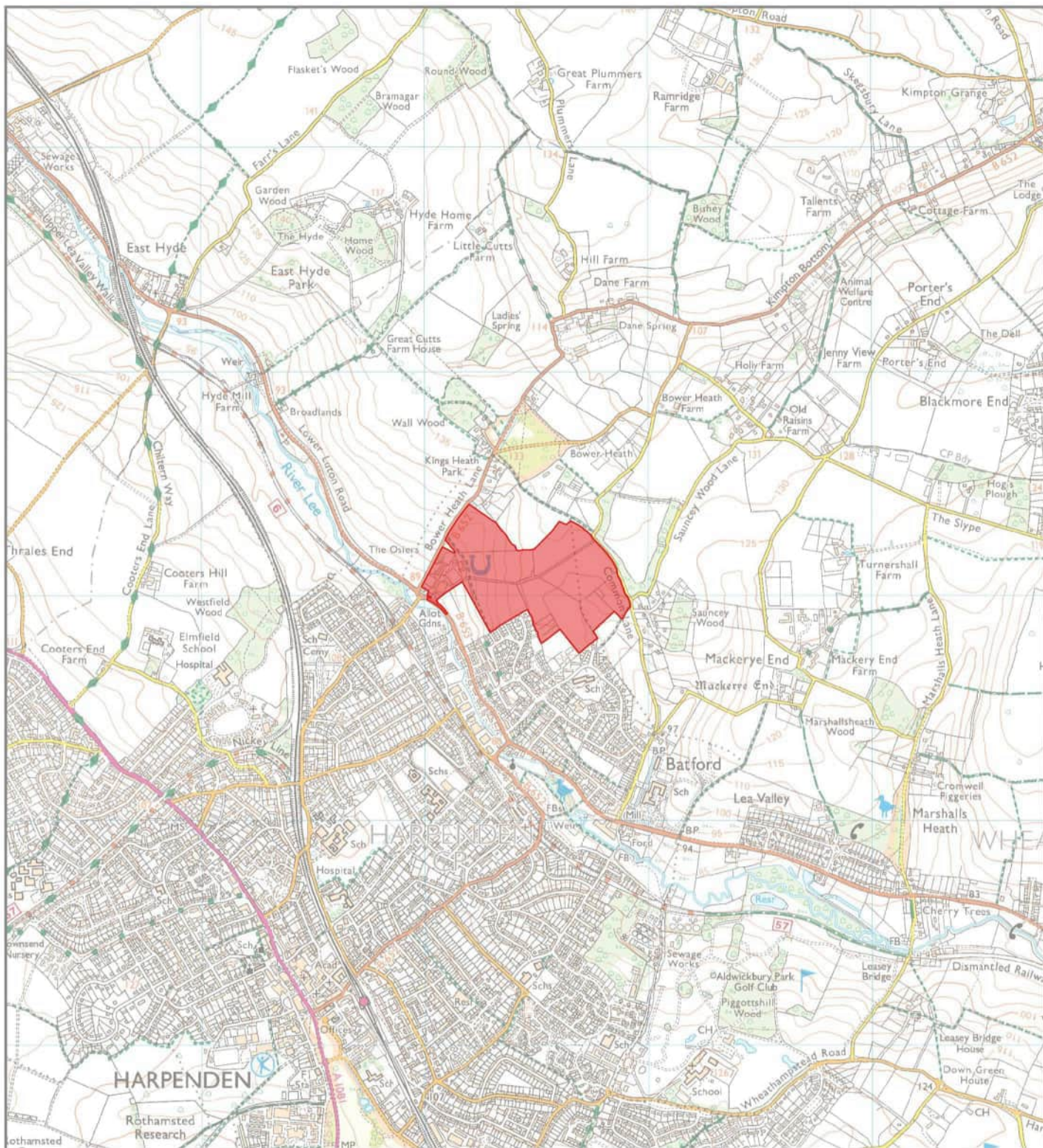
Table 6.2: Summary of faunal species.

Species / Group	Level of Importance
Bats – Roosting	Site
Bats – Foraging / Commuting	District
Badger	See Confidential Annex
Other Mammals (Brown Hare/Hedgehog)	Site
Birds	Site
Invertebrates	Site

- 6.1.6 **Conclusion.** The information in this report provides details of the ecological baseline position at the site, setting out the habitat types and species present and evaluating their ecological importance in the context of the site. The information in this report is considered to provide a sound ecological baseline, which can be utilised to inform the future proposals relating to the site.

Plan 6818/ECO1:

Site Location



Key:



Site Location

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APEM Group

Aspect Ecology Limited West Court Hardwick Business Park
Noral Way Banbury Oxfordshire OX16 2AF
01295 279721 info@aspect-ecology.com www.aspect-ecology.com

Land North East of Harpenden

PROJECT

Site Location

TITLE

6818/ECO1

DRAWING NO.

B/DO

REV

February 2026

DATE

CC/BG

QC



Plan 6818/ECO2:

Ecological Designations

Plan 6818/ECO3:

Ecological Features

Plan 6818/ECO4:

Bat Emergence Survey Results



- Key:
- Site Boundary
 - Building with High Potential for Bats
 - Building with Moderate Potential for Bats
 - Building with Low Potential for Bats
 - Building with Negligible Potential for Bats
 - Bat Flight Direction
 - Surveyor Locations
 - IR Camera Locations
 - Possible Soprano Pipistrelle emergences and re-entries on 30/07/2024



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Land North East of Harpenden

Bat Emergence Survey Results

6818/ECO4

C/LS

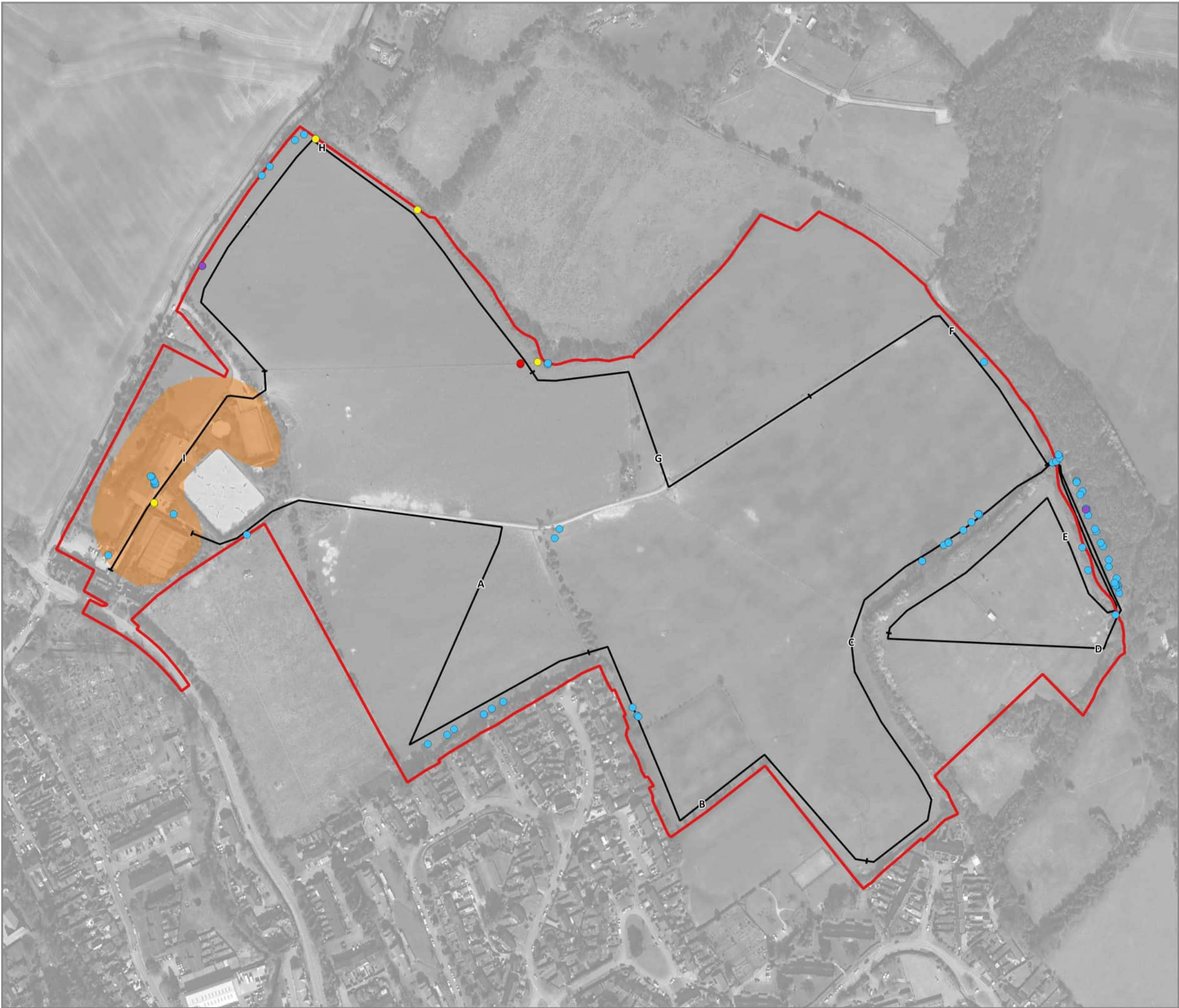
February 2026

SC/LS



Plan 6818/ECO5:

Night-time Bat Walkover Survey Results



- Key:
- Site Boundary
 - Starting Location
 - Night-time Bat Transect
 - Common Pipistrelle Registration
 - Soprano Pipistrelle Registration
 - Long-eared species Registration
 - Barbastelle Registration

Bat call registration defined as presence of one or more call sequences for that bat species within one file recording from Anabat Scout detector, with a maximum recording length of 10 seconds.

Note that bat call registrations which did not have GPS data recorded on the Anabat Scout detector have not been included on this plan.

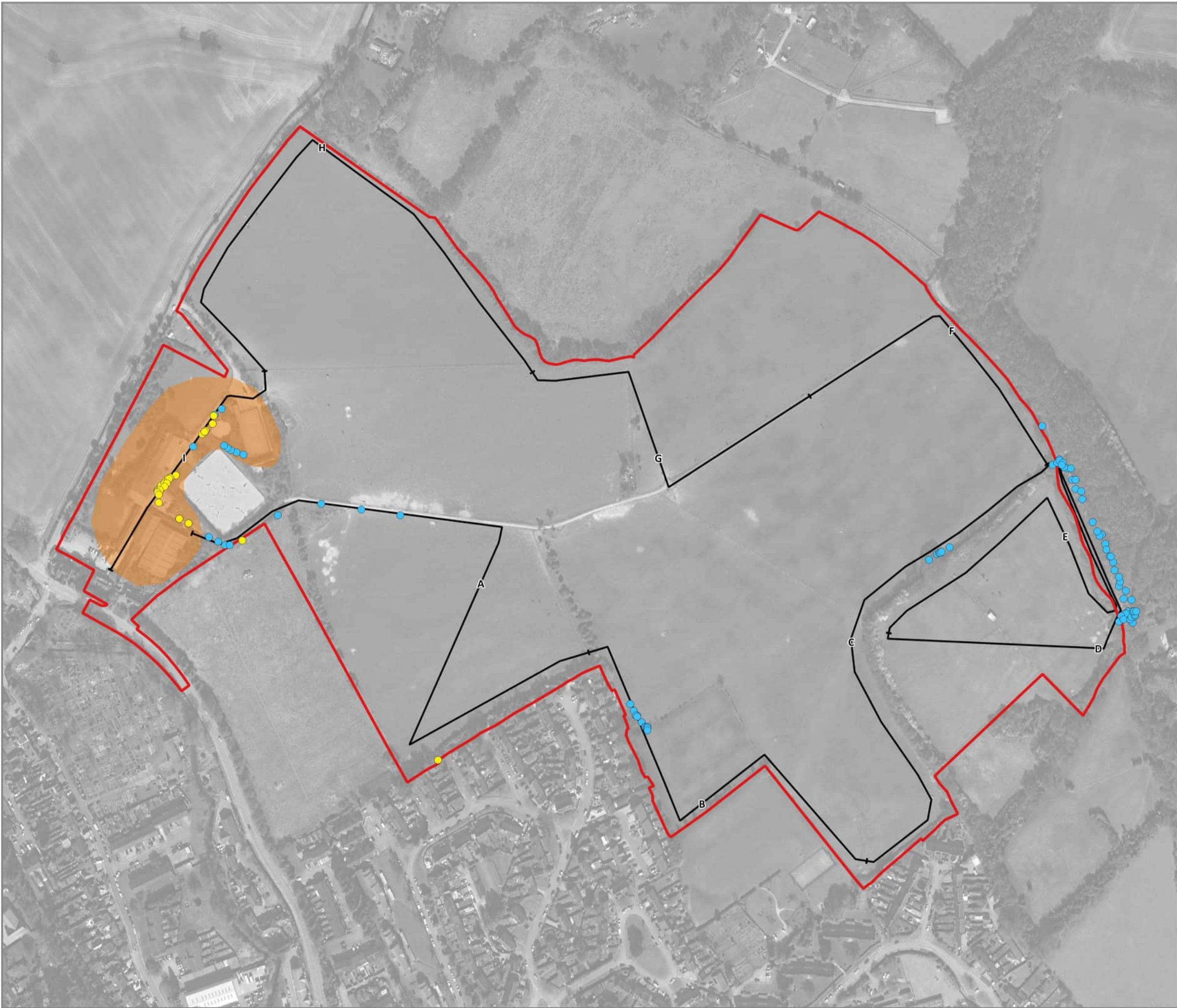
In instances where bat call registrations were recorded in exactly the same location and thus overlap completely, registrations have been stacked with priority given to rarer species.



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Land North East of Harpenden	PROJECT
Night-time Bat Walkover Survey Results: May	TITLE
6818/ECO5a	DRAWING NO.
B/BG	REV
February 2026	DATE
LB/BG	QC





- Key:
- Site Boundary
 - Starting Location
 - Night-time Bat Transect
 - Common Pipistrelle Registration
 - Soprano Pipistrelle Registration

Bat call registration defined as presence of one or more call sequences for that bat species within one file recording from Anabat Scout detector, with a maximum recording length of 10 seconds.

Note that bat call registrations which did not have GPS data recorded on the Anabat Scout detector have not been included on this plan.

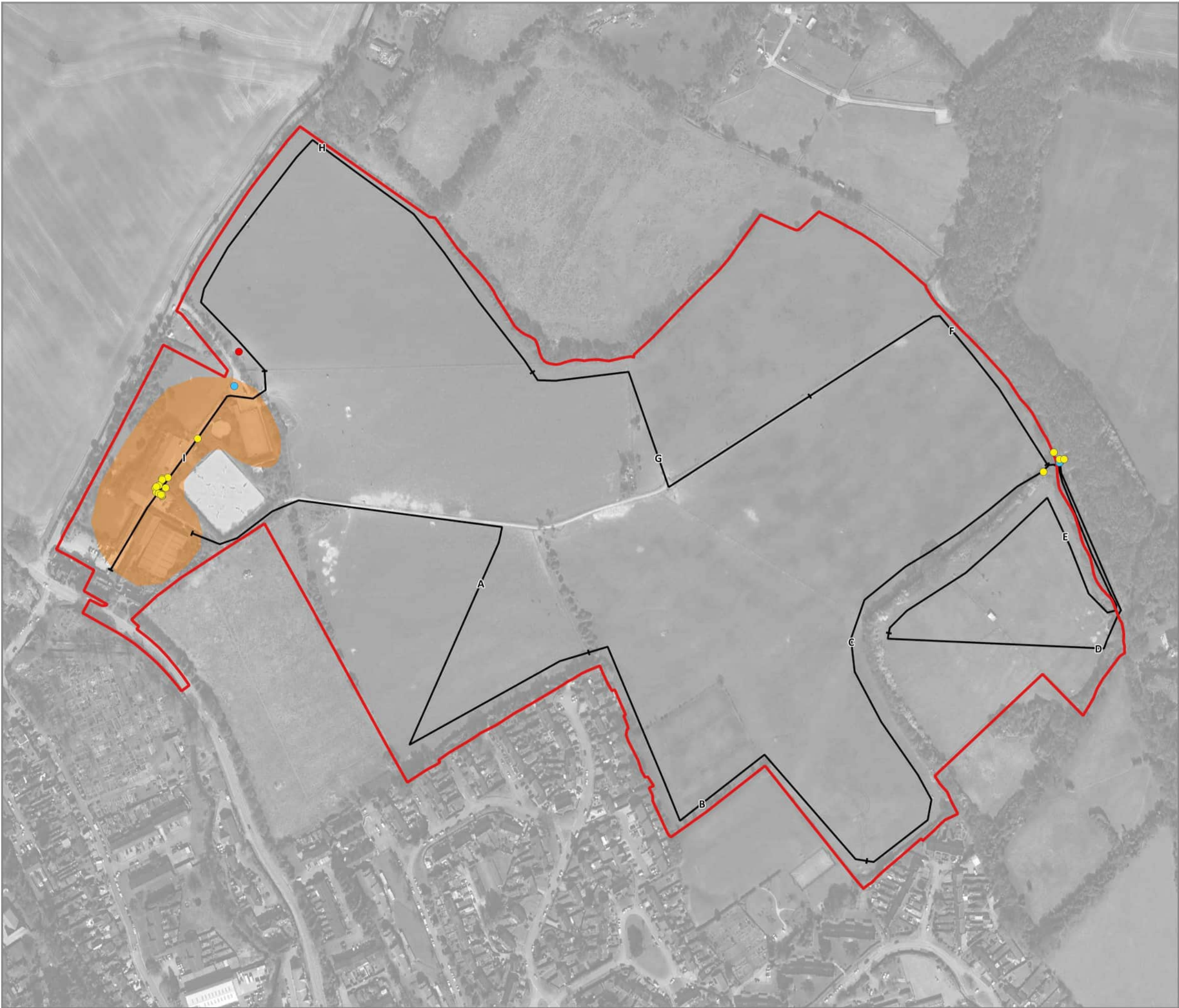
In instances where bat call registrations were recorded in exactly the same location and thus overlap completely, registrations have been stacked with priority given to rarer species.



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Land North East of Harpenden	PROJECT
Night-time Bat Walkover Survey Results: August	TITLE
6818/ECO5b	DRAWING NO.
B/BG	REV
February 2026	DATE
LB/BG	QC





- Key:
- Site Boundary
 - Starting Location
 - Night-time Bat Transect
 - Common Pipistrelle Registration
 - Soprano Pipistrelle Registration
 - Barbastelle Registration

Bat call registration defined as presence of one or more call sequences for that bat species within one file recording from Anabat Scout detector, with a maximum recording length of 10 seconds.

Note that bat call registrations which did not have GPS data recorded on the Anabat Scout detector have not been included on this plan.

In instances where bat call registrations were recorded in exactly the same location and thus overlap completely, registrations have been stacked with priority given to rarer species.



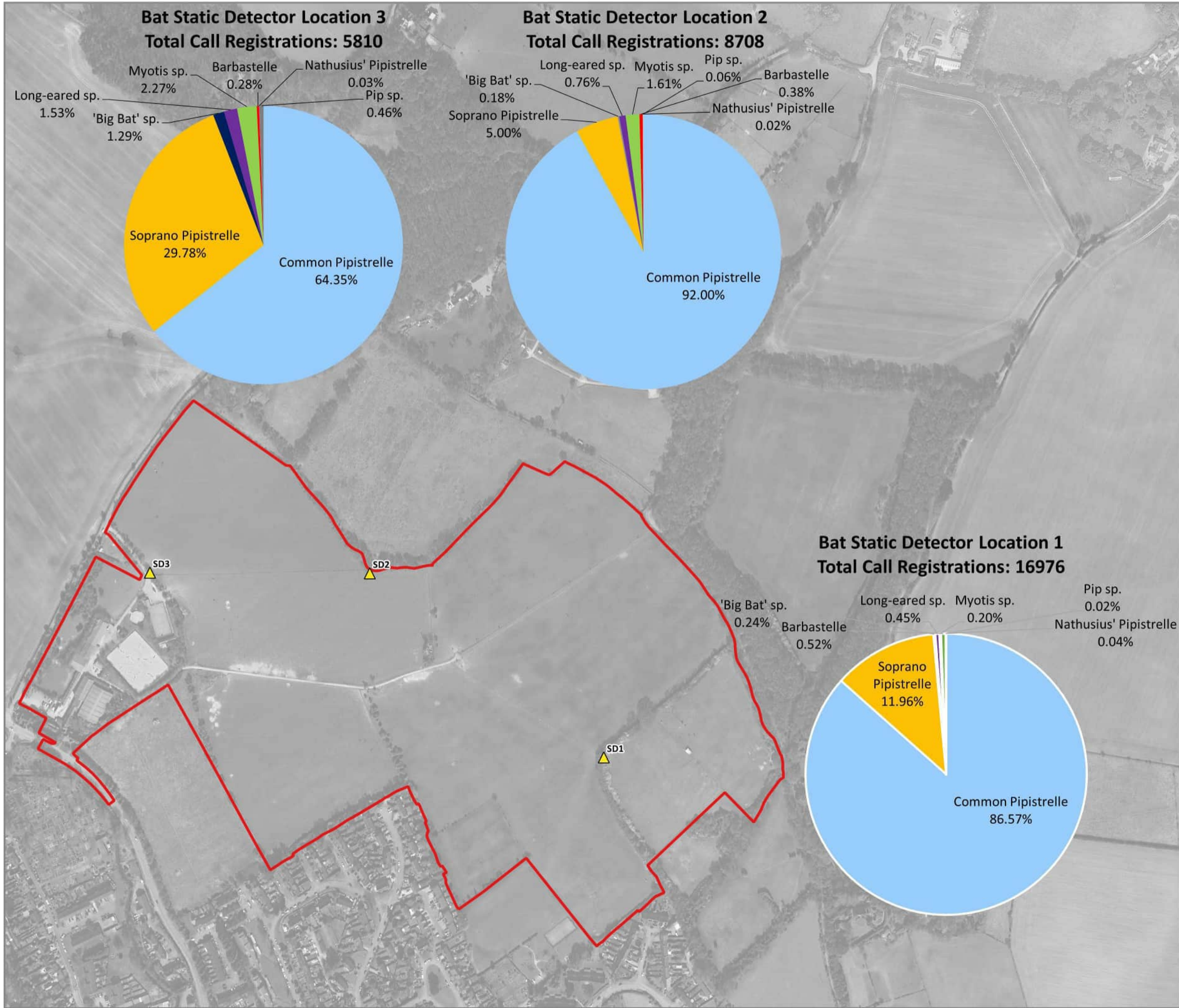
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Land North East of Harpenden	PROJECT
Night-time Bat Walkover Survey Results: September	TITLE
6818/EC05c	DRAWING NO.
B/BG	REV
February 2026	DATE
LB/BG	QC



Plan 6818/ECO6:

Automated Static Detector Survey Results



Key:

- Site Boundary
- Static Locations

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01295 279721 - info@aspect-ecology.com - www.aspect-ecology.com

Land North East of Harpenden

Static Survey Results

6818/ECO6

B/BG

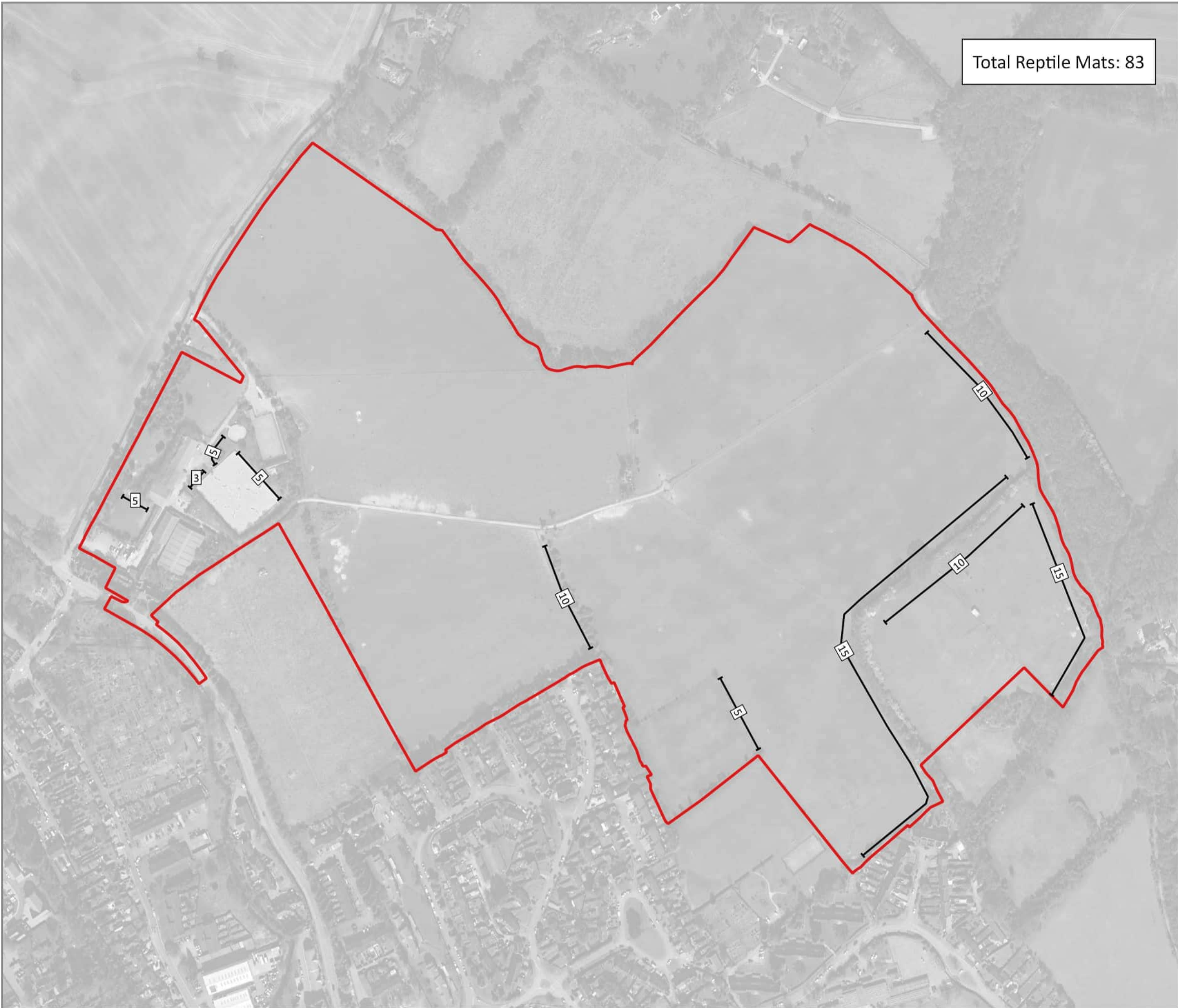
February 2026

LB/BG



Plan 6818/ECO7:

Reptile Survey Results



Key:

- Site Boundary
- Reptile Transect



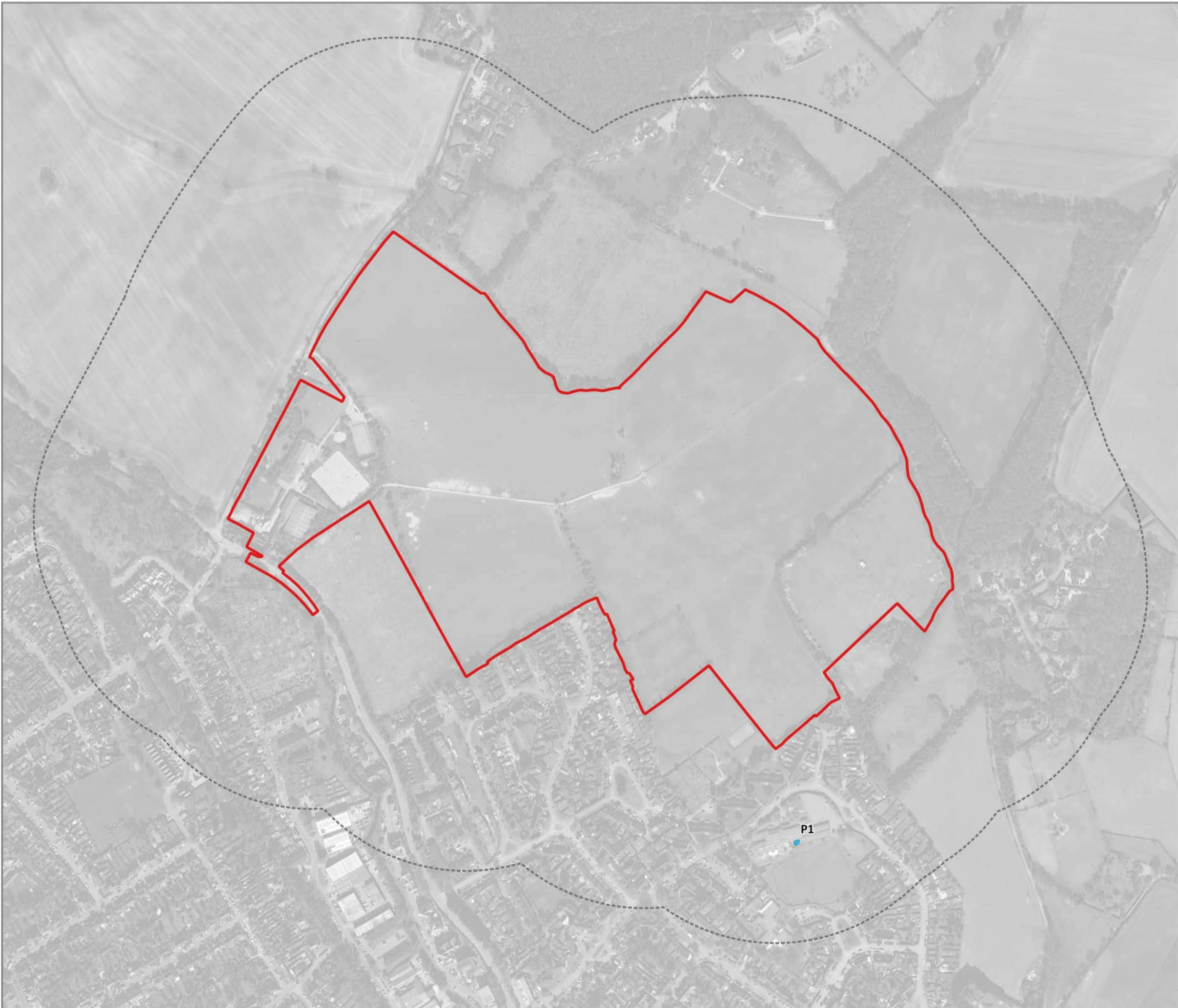
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Land North East of Harpenden	PROJECT
Reptile Transects	TITLE
6818/EC07	DRAWING NO.
C/LS	REV
February 2026	DATE
SC/LS	QC



Plan 6818/ECO8:

Great Crested Newt Survey Results



Key:

-  Site Boundary
-  250m Site Buffer
-  Pond



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Land North East of Harpenden

Great Crested Newt Survey Results

6818/EC08

C/LS

February 2026

BH/DO



PROJECT
TITLE
DRAWING NO.
REV
DATE
QC

Plan 6818/ECO9:

Breeding Bird Survey Results



- Bird Species:
- B. Blackbird
 - BC Blackcap
 - BT Blue Tit
 - BZ Buzzard
 - C. Carrion Crow
 - CC Chiffchaff
 - CD Collared Dove
 - GO Goldfinch
 - GT Great Tit
 - LW Lesser Whitethroat
 - LT Long-tailed Tit
 - MG Magpie
 - PH Pheasant
 - R. Robin
 - PW Pied Wagtail
 - D. Dunnock
 - ST Song Thrush
 - SL Swallow
 - WP Woodpigeon
 - WR Wren
 - SD Stock Dove
 - GR Greenfinch
 - HS House Sparrow
 - LI Linnet

- Key:
- Site Boundary
 - Breeding / Probable Breeding (BOCC Red List)
 - Possible Breeding (BOCC Red List)
 - Breeding / Probable Breeding (BOCC Amber List Species)
 - Possible Breeding (BOCC Amber List Species)
 - Breeding / Probable Breeding (BOCC Green List - Not Threatened)
 - Possible Breeding (BOCC Green List - Not Threatened)



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Land North East of Harpenden

Breeding Bird Survey Results

6818/ECO9

B/LS

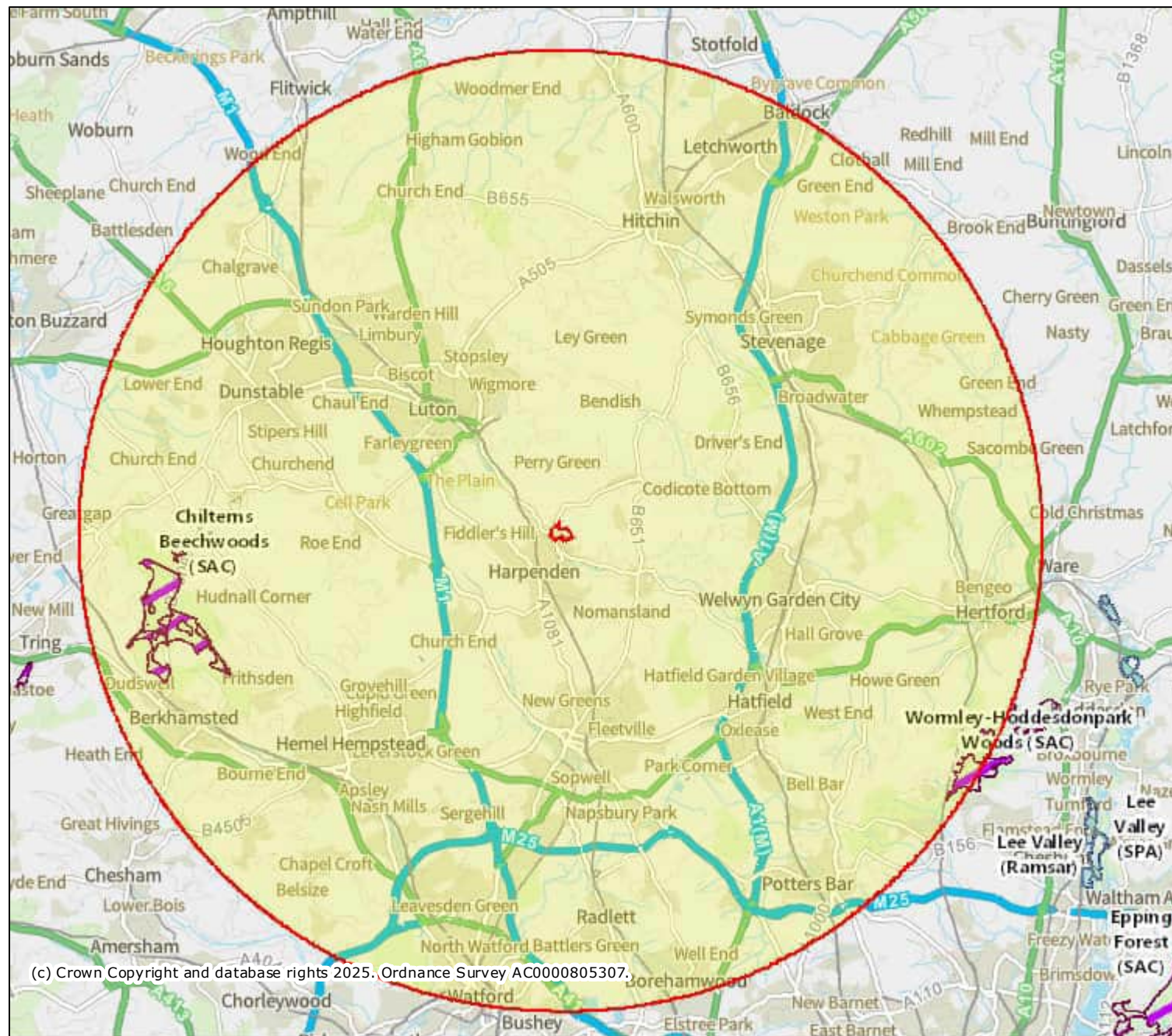
February 2026

BH/BG



Annex 6818/1

Desktop Study Data



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Legend

-  Ramsar Sites (England)
-  Proposed Ramsar Sites (England)
-  Special Areas of Conservation (England)
-  Possible Special Areas of Conservation (England)
-  Special Protection Areas (England)
-  Potential Special Protection Areas (England)

Projection = OSGB36

xmin = 452400

ymin = 186100

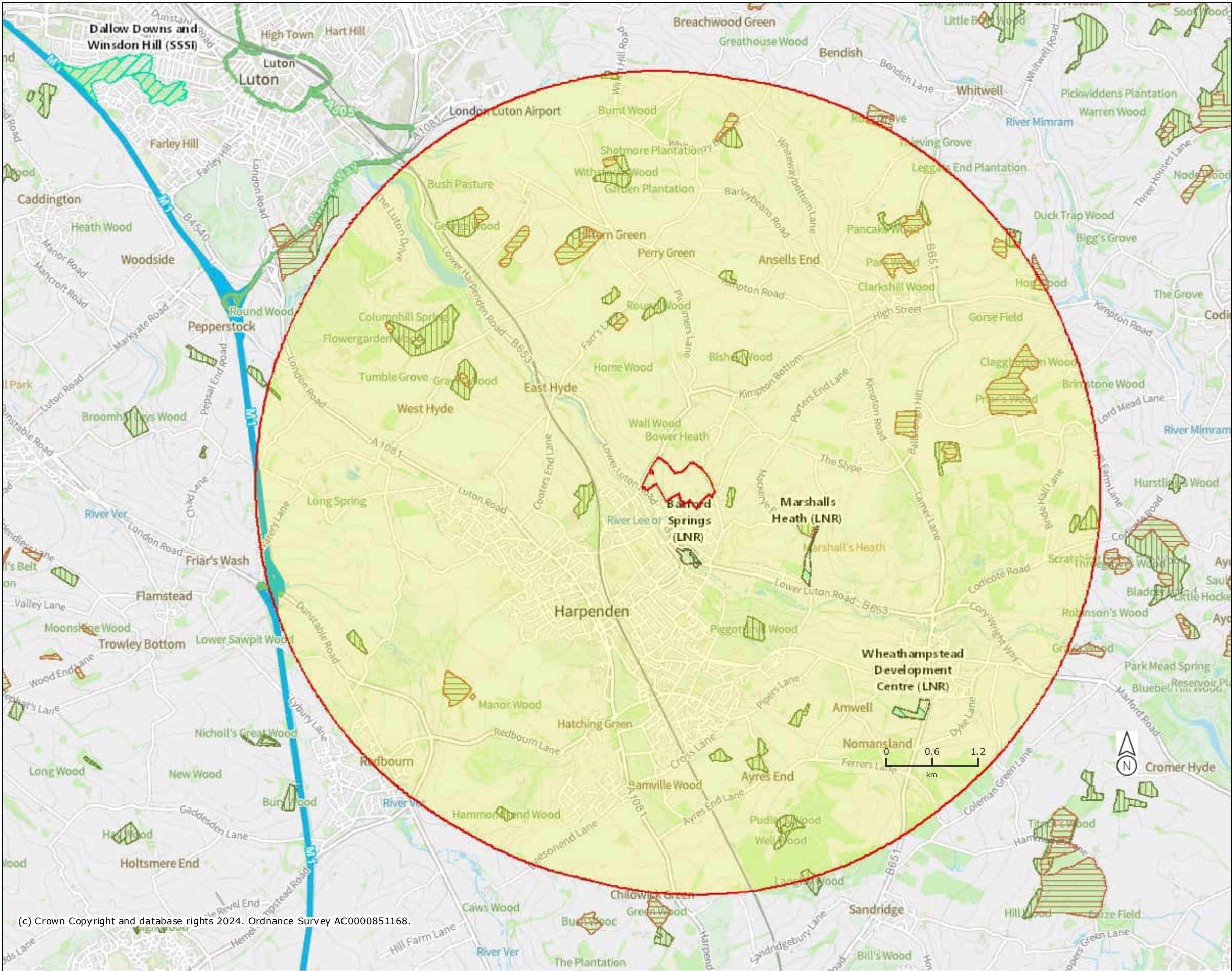
xmax = 579400

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Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)

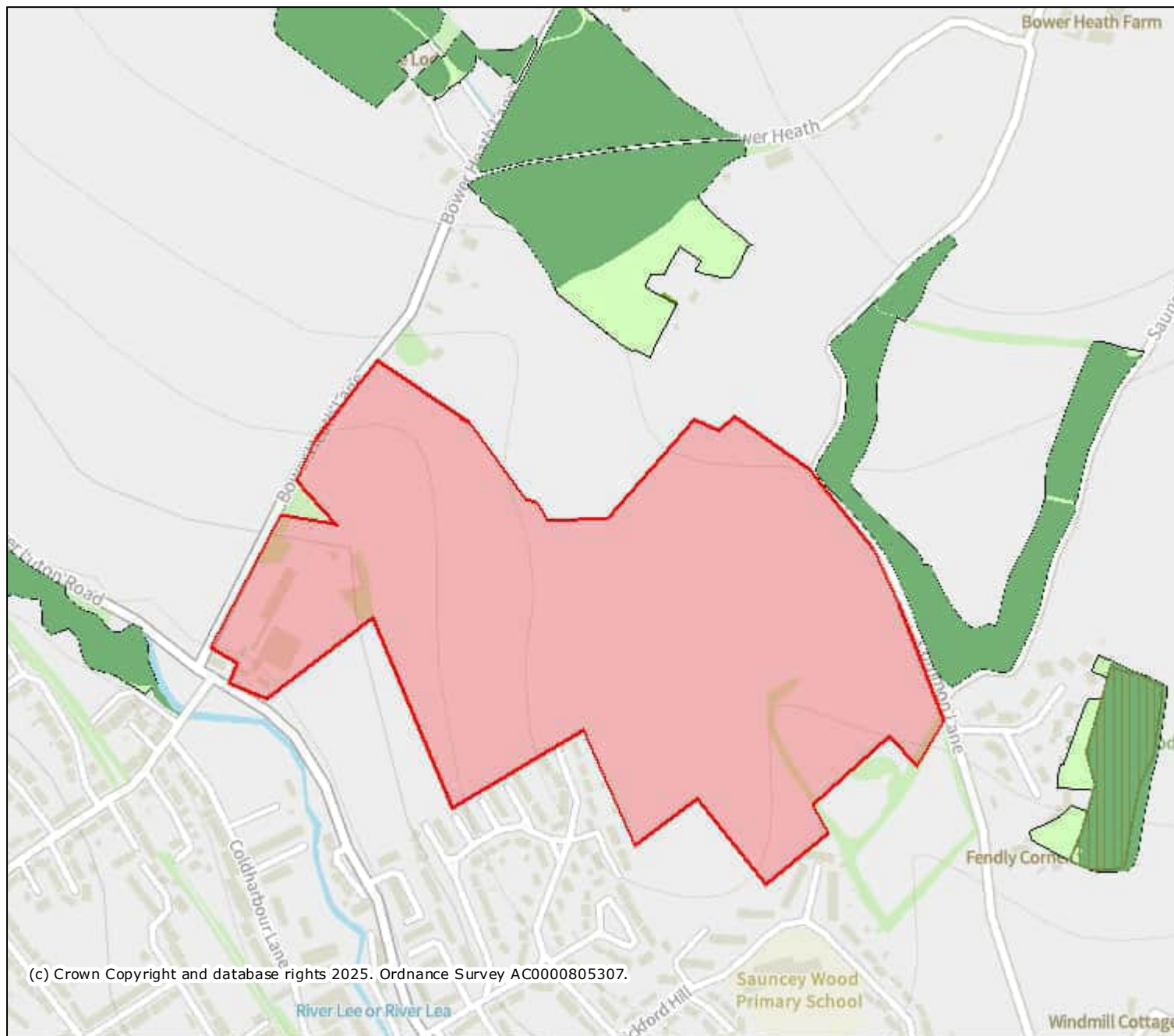
Ancient Woodland (England)

- Ancient and Semi-Natural Woodland
- Ancient Replanted Woodland

Projection = OSGB36
xmin = 501000
ymin = 209800
xmax = 526400
ymax = 222300

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6818 Priority Habitats



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Legend

- | | |
|--|--|
| Priority Habitat Inventory - Calaminarian Grassland (England) | Priority Habitat Inventory - Upland Heathland (England) |
| Priority Habitat Inventory - Coastal and Floodplain Grazing Marsh (England) | Priority Habitat Inventory - Limestone Pavements (England) |
| Priority Habitat Inventory - Good quality semi-improved grassland (Non Priority) (England) | Priority Habitat Inventory - Blanket Bog (England) |
| Priority Habitat Inventory - Lowland Calcareous Grassland (England) | Priority Habitat Inventory - Lowland Fens (England) |
| Priority Habitat Inventory - Lowland Dry Acid Grassland (England) | Priority Habitat Inventory - Lowland Raised Bog (England) |
| Priority Habitat Inventory - Lowland Meadows (England) | Priority Habitat Inventory - Reedbeds (England) |
| Priority Habitat Inventory - Purple Moor Grass and Rush Pasture (England) | Priority Habitat Inventory - Upland Flushes, Fens and Swamps (England) |
| Priority Habitat Inventory - Upland Calcareous Grassland (England) | Ancient Woodland (England) |
| Priority Habitat Inventory - Upland Hay Meadows (England) | Ancient and Semi-Natural Woodland |
| Priority Habitat Inventory - Lowland Heathland (England) | Ancient Replanted Woodland |
| Priority Habitat Inventory - Mountain Heaths and Willow Scrub (England) | Priority Habitat Inventory - Deciduous Woodland (England) |
| | Forestry Commission Legal Boundary (England) |

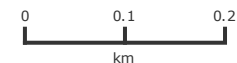
Projection = OSGB36

xmin = 512600

ymin = 215300

xmax = 516400

ymax = 217100



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Annex 6818/2

Principles of Ecological Evaluation

Evaluation Methodology

1. The evaluation of ecological features and resources is based on professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described by the Chartered Institute of Ecology and Environmental Management (CIEEM) 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (2018)¹.

Importance of Ecological Features

2. Ecological features within the site/study area have been evaluated in terms of whether they qualify as 'important ecological features'. In this regard, CIEEM guidance states that *"it is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable"*.
3. Various characteristics contribute to the importance of ecological features, including:
 - Naturalness;
 - Animal or plant species, sub-species or varieties that are rare or uncommon, either internationally, nationally or more locally, including those that may be seasonally transient;
 - Ecosystems and their component parts, which provide the habitats required by important species, populations and/or assemblages;
 - Endemic species or locally distinct sub-populations of a species;
 - Habitat diversity;
 - Habitat connectivity and/or synergistic associations;
 - Habitats and species in decline;
 - Rich assemblages of plants and animals;
 - Large populations of species or concentrations of species considered uncommon or threatened in a wider context;
 - Plant communities (and their associated animals) that are considered to be typical of valued natural/semi-natural vegetation types, including examples of naturally species-poor communities; and
 - Species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.
4. As an objective starting point for identifying important ecological features, European, national and local governments have identified sites, habitats and species which form a key focus for biodiversity conservation in the UK, supported by policy and legislation. These are summarised by CIEEM guidance as follows:

Designated Sites

- Statutory sites designated or classified under international conventions or European legislation, for example World Heritage Sites, Biosphere Reserves, Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA);

¹ CIEEM (2018) 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine', Chartered Institute of Ecology and Environmental Management, Winchester

- Statutory sites designated under national legislation, for example Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR);
- Locally designated wildlife sites, e.g. Local Wildlife Sites (LWS).

Biodiversity Lists

- Habitats and species of principal importance for the conservation of biodiversity in England and Wales (largely drawn from UK BAP priority habitats and priority species), often referred to simply as Priority Habitats / Species;
- Local BAP priority species and habitats.

Red Listed, Rare, Legally Protected Species

- Species of conservation concern, Red Data Book (RDB) species;
- Birds of Conservation Concern;
- Nationally rare and nationally scarce species;
- Legally protected species.

5. In addition to this list, other features may be considered to be of importance on the basis of local rarity, where they enable effective conservation of other important features, or play a key functional role in the landscape.

Assigning Level of Importance

6. The importance of an ecological feature should then be considered within a defined geographical context. Based on CIEEM guidance, the following frame of reference is used:
 - International (European);
 - National;
 - Regional;
 - County;
 - District;
 - Local (e.g. Parish or Neighbourhood);
 - Site (not of importance beyond the immediate context of the site).
7. Features of 'local' importance are those considered to be below a district level of importance, but are considered to appreciably enrich the nature conservation resource or are of elevated importance beyond the context of the site.
8. Where features are identified as 'important' based on the list of key sites, habitats and species set out above, but are very limited in extent or quality (in terms of habitat resource or species population) and do not appreciably contribute to the biodiversity interest beyond the context of the site, they are considered to be of 'site' importance.
9. In terms of assigning the level of importance, the following considerations are relevant:

Designated Sites

10. For designated sites, importance should reflect the geographical context of the designation (e.g. SAC/SPA/Ramsar sites are designated at the international level whereas SSSIs are designated at the national level). Consideration should be given to multiple designations as appropriate (where an area is subject to differing levels of nature conservation designations).

Habitats

11. In certain cases, the value of a habitat can be measured against known selection criteria, e.g. SAC selection criteria, 'Guidelines for the selection of biological SSSIs' and the Hedgerows Regulations 1997. However, for the majority of commonly encountered sites, the most relevant habitat evaluation will be at a more localised level and based on relevant factors such as antiquity, size, species-diversity, potential, naturalness, rarity, fragility and typicalness (Ratcliffe, 1977). The ability to restore or re-create the habitat is also an important consideration, for example in the case of ancient woodland.
12. Whether habitats are listed as priorities for conservation at a national level in accordance with Sections 41 and 42 of the Natural Environment and Rural Communities Act (NERC) 2006, so called 'Habitats of Principal Importance' or 'Priority Habitats', or within regional or local Biodiversity Action Plans (BAPs) is also relevant, albeit the listing of a particular habitat under a BAP does not in itself imply any specific level of importance.
13. Habitat inventories (such as habitat mapping on the MAGIC database) or information relating to the status of particular habitats within a district, county or region can also assist in determining the appropriate scale at which a habitat is of importance.

Species

14. Deciding the importance of species populations should make use of existing criteria where available. For example, there are established criteria for defining nationally and internationally important populations of waterfowl. The scale within which importance is determined could also relate to a particular population, e.g. the breeding population of common toads within a suite of ponds or an otter population within a catchment.
15. When determining the importance of a species population, contextual information about distribution and abundance is fundamental, including trends based on historical records. For example, a species could be considered particularly important if it is rare and its population is in decline. With respect to rarity, this can apply across the geographic frame of reference and particular regard is given to populations where the UK holds a large or significant proportion of the international population of a species.
16. Whether species are listed as priorities for conservation at a national level in accordance with Sections 41 and 42 of the Natural Environment and Rural Communities Act (NERC) 2006, so called 'Species of Principal Importance' or 'Priority Species', or within regional or local Biodiversity Action Plans (BAPs) is also relevant, albeit the listing of a particular species under a BAP does not in itself imply any specific level of importance.
17. Species populations should also be considered in terms of the potential zone of influence of the proposals, i.e. if the entire species population within the site and surrounding area were to be affected by the proposed development, would this be of significance at a local, district, county or wider scale? This should also consider the foraging and territory ranges of individual species (e.g. bats roosting some distance from site may forage within site whereas other species such as invertebrates may be more sedentary).

Annex 6818/3

Habitat Condition Assessment Matrix for Statutory Biodiversity
Metric

PROJECT NAME: Lower Luton Road, Harpenden
PROJECT NUMBER: 6818

[illegible]

[illegible]

[illegible]

HABITAT CONDITION ASSESSMENT MATRIX

PROJECT NAME: Lower Luton Road, Harpenden
PROJECT NUMBER: 6818



Habitat type/criteria		Feature Reference							
Individual trees / Tree Blocks and Groups		T27 - M	T23 - S	T28 - S	T29 - S	T26 - S	T25 - S	T24 - S	
A	Tree is a native species (or at least 70% within block are native)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
B	Tree canopy is predominantly continuous with gaps less than 10% of total area and no more than 5m wide individually. Automatically passed for individual trees.	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
C	Tree is mature (or at least 50% within block are mature)	Pass	Pass	Fail	Fail	Fail	Fail	Fail	
D	There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
E	Natural ecological niches for vertebrates and invertebrates are present (e.g. deadwood, cavities, ivy or loose bark)	Fail	Pass	Fail	Fail	Fail	Fail	Fail	
F	More than 20% of tree canopy is oversailing vegetation beneath	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
Condition		Good	Good	Moderate	Moderate	Moderate	Moderate	Moderate	

Individual trees / Tree Blocks and Groups continued		T21 - S	T17 - M	T14 - S	T20 - S	T19 - M	T18 - S	T4 - M	
A	Tree is a native species (or at least 70% within block are native)	Pass	Pass	Pass	Pass	Pass	Pass	Fail	
B	Tree canopy is predominantly continuous with gaps less than 10% of total area and no more than 5m wide individually. Automatically passed for individual trees.	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
C	Tree is mature (or at least 50% within block are mature)	Pass	Fail	Fail	Pass	Pass	Fail	Pass	
D	Little or no evidence of adverse impacts from human activities (e.g. vandalism, herbicide, agricultural activity) and no current regular pruning regime (so that trees retain more than 75% of expected canopy)	Fail	Pass	Pass	Pass	Fail	Pass	Pass	
E	Natural ecological niches for vertebrates and invertebrates are present (e.g. deadwood, cavities, ivy or loose bark)	Fail	Fail	Fail	Fail	Fail	Fail	Pass	
F	More than 20% of tree canopy is oversailing vegetation beneath	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
Condition		Moderate	Moderate	Moderate	Good	Moderate	Moderate	Good	

Individual trees / Tree Blocks and Groups continued		T3 - M	T22 - S	T5 - S	T7 - S	T8 - S	T10 - S	T11 - S	
A	Tree is a native species (or at least 70% within block are native)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
B	Tree canopy is predominantly continuous with gaps less than 10% of total area and no more than 5m wide individually. Automatically passed for individual trees.	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
C	Tree is mature (or at least 50% within block are mature)	Fail	Pass	Pass	Pass	Pass	Pass	Pass	
D	Little or no evidence of adverse impacts from human activities (e.g. vandalism, herbicide, agricultural activity) and no current regular pruning regime (so that trees retain more than 75% of expected canopy)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
E	Natural ecological niches for vertebrates and invertebrates are present (e.g. deadwood, cavities, ivy or loose bark)	Fail	Fail	Fail	Fail	Fail	Fail	Fail	
F	More than 20% of tree canopy is oversailing vegetation beneath	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
Condition		Moderate	Good	Good	Good	Good	Good	Good	

Native Hedgerow Condition Assessment Calculator

Hedgerow Condition Assessment										
Hedge No.	Hedgerow Habitat Description	A1	A2	B1	B2	C1	C2	D1	D2	Condition Score
H1	Native hedgerow	Pass	Pass	Pass	Fail	Pass	Pass	Pass	Pass	Good
H2	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Pass	Good
H3	Native hedgerow	Pass	Pass	Fail	Pass	Pass	Pass	Pass	Pass	Good
H4	Native hedgerow	Pass	Fail	Pass	Pass	Pass	Fail	Pass	Pass	Good
H5	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Pass	Good
H6	Native hedgerow	Pass	Pass	Pass	Fail	Pass	Pass	Pass	Pass	Good
H7	Native hedgerow	Pass	Pass	Pass	Fail	Pass	Fail	Pass	Pass	Good
H8	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Pass	Good
H9	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Good
H10a	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Good
H10b	Native hedgerow	Pass	Fail	Pass	Pass	Pass	Fail	Pass	Pass	Good
H11	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Good
H12	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Good
H13	Native hedgerow	Pass	Pass	Fail	Fail	Pass	Pass	Pass	Pass	Moderate
H14	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Pass	Good
H15	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Pass	Good
H16	Native hedgerow	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Pass	Good

**If more rows are required, unhide them rather than copying or dragging down.*

Annex 6818/4

Legislation Summary

LEGISLATION SUMMARY

1. In England and Wales primary legislation is made by the UK Parliament, and in Scotland by the Scottish Parliament, in the form of Acts. The main piece of legislation relating to nature conservation in the UK is the Wildlife and Countryside Act 1981 (as amended).
2. Acts of Parliament confer powers on Ministers to make more detailed orders, rules or regulations by means of secondary legislation in the form of statutory instruments. Statutory instruments are used to provide the necessary detail that would be too complex to include in an Act itself¹. The provisions of an Act of Parliament can also be enforced, amended or updated by secondary legislation.
3. In summary, the key pieces of legislation relating to nature conservation in the UK are:
 - Wildlife and Countryside Act 1981 (as amended)
 - Protection of Badgers Act 1992
 - Hedgerows Regulations 1997
 - Countryside and Rights of Way (CROW) Act for England and Wales 2000
 - Natural Environment and Rural Communities Act 2006
 - Conservation of Habitats and Species Regulations 2017
4. A brief summary of the relevant legislation is provided below. The original Acts and instruments should be referred to for the full and most up to date text of the legislation.
5. **Wildlife and Countryside Act 1981 (as amended)**. The WCA Act provides for the notification and confirmation of Sites of Special Scientific Interest (SSSIs) identified for their flora, fauna, geological or physiographical features. The Act contains strict measures for the protection and management of SSSIs.
6. The Act also refers to the treatment of UK wildlife including protected species listed under Schedules 1 (birds), 5 (mammals, herpetofauna, fish, invertebrates) and 8 (plants).
7. Under Section 1(1) of the Act, all wild birds are protected such that it is an offence to intentionally:
 - Kill, injure or take any wild bird;
 - Take, damage or destroy the nest of any wild bird whilst in use* or being built;
 - Take or destroy an egg of any wild bird.

* The nests of birds that re-use their nests as listed under Schedule ZA1, e.g. Golden Eagle, are protected against taking, damage or destruction irrespective of whether they are in use or not.
8. Offences in respect of Schedule 1 birds are subject to special, i.e. higher, penalties. Schedule 1 birds also receive greater protection such that it is an offence to intentionally or recklessly:
 - Disturb any wild bird included in Schedule 1 while it is building a nest or while it is in, on or near a nest containing eggs or young;
 - Disturb dependent young of such a bird.

¹ <http://www.parliament.uk/business/bills-and-legislation/secondary-legislation/statutory-instruments/>

9. Under Section 9(1) of the Act, it is an offence to:
 - Intentionally kill, injure or take any wild animal included in Schedule 5.
10. In addition, under Section 9(4) it is an offence to intentionally or recklessly:
 - Obstruct access to, any structure or place which any wild animal included in Schedule 5 uses for shelter or protection; or
 - Disturb any wild animal included in Schedule 5 while occupying a structure or place which it uses for that purpose.
11. Under Section 13(1) it is an offence:
 - To intentionally pick, uproot or destroy any wild plant listed in Schedule 8; or
 - Unless the authorised person, to intentionally uproot any wild plant not included in Schedule 8.
12. The Act also contains measures (S.14) for preventing the establishment of non-native species that may be detrimental to native wildlife, prohibiting the introduction into the wild of animals (releases or allows to escape) and plants (plants or causes to grow) listed under Schedule 9.
13. **Protection of Badgers Act 1992.** The Act aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is in fact common over most of Britain. It should be noted that the legislation is not intended to prevent properly authorised development. Under the Act it is an offence to:
 - Wilfully kill, injure, take, possess or cruelly ill-treat* a Badger, or attempt to do so;
 - To intentionally or recklessly interfere with a sett# (this includes disturbing Badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it).

* the intentional elimination of sufficient foraging area to support a known social group of Badgers may, in certain circumstances, be construed as an offence

A sett is defined as “any structure or place which displays signs indicating current use by a Badger”. Natural England advice (June 2009) is that a sett is protected so long as such signs remain present, which in practice could potentially be for some time after the last actual occupation by Badger. Interference with a sett includes blocking tunnels or damaging the sett in any way
14. Licences can be obtained from the Statutory Nature Conservation Organisation (SNCO) for development activities that would otherwise be unlawful under the legislation, provided there is suitable justification. The SNCO for England is Natural England.
15. **Hedgerows Regulations 1997.** ‘Important’ hedgerows (as defined by the Regulations) are protected from removal (up-rooting or otherwise destroying). Various criteria specified in the Regulations are employed to identify ‘important’ hedgerows for wildlife, landscape or historical reasons.
16. **Countryside and Rights of Way (CROW) Act for England and Wales 2000.** The CROW Act provides increased measures for the management and protection of SSSIs and strengthens wildlife enforcement legislation. Schedule 12 of the Act amends the species provisions of the WCA 1981, strengthening the legal protection for threatened species. The Act also introduced a duty on Government to have regard to the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.

17. **Natural Environment and Rural Communities Act 2006.** Section 41 of the NERC Act requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as local planning authorities, in implementing their duty under Section 40 of the Act, to have regard to the conservation of biodiversity in England, when exercising their normal functions. 56 habitats and 943 species of principal importance are included on the S41 list. These are all the habitats and species in England that were identified as requiring action in the UK Biodiversity Action Plan (BAP).
18. **Conservation of Habitats and Species Regulations 2017 (as amended).** The Regulations enact the European Union's Habitats Directive (92/43/EEC) in the UK. The Habitats Directive was designed to contribute to the maintenance of biodiversity within member states through the conservation of sites, known in the UK as Special Areas of Conservation (SACs), containing habitats and species selected as being of EC importance (as listed in Annexes I and II of the Habitats Directive respectively). Member states are required to take measures to maintain or restore these natural and semi-natural habitats and wild species at a favourable conservation status.
19. The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs)² classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These sites constitute the Natura 2000 network. The Regulations impose restrictions on planning decisions likely to significantly affect SPAs or SACs.
20. The Regulations also provide protection to European Protected Species of animals that largely overlaps with the WCA 1981, albeit the provisions are generally stricter. Under Regulation 43 it is an offence, *inter alia*, to:
 - Deliberately capture, injure or kill any wild animal of a European Protected Species;
 - Deliberately disturb any wild animals of any such species, including in particular any disturbance likely to impair their ability to survive, to breed or reproduce, to rear or nurture their young, to hibernate or migrate, or which is likely to affect significantly their local distribution or abundance;
 - Deliberately take or destroy the eggs of such an animal;
 - Damage or destroy a breeding site or resting place of such an animal.
21. Similar protection is afforded to European Protected Species of plants, as detailed under Regulation 47.
22. The Regulations do provide a licensing system that permits otherwise illegal activities in relation to European Protected Species, subject to certain tests being fulfilled.

² Special Protection Areas (SPAs) are protected sites classified in accordance with Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC) (aka the Birds Directive), which came into force in April 1979. SPAs are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.

Annex 6818/5

Great Crested Newt eDNA Survey Results

eDNA Technical Report



Ms. Laura Pratt
Aspect Ecology Ltd
West Court
Hardwick Business Park
Noral Way
Banbury

OX16 2AF

T: 01295279721

E: edna@aspect-ecology.com

Report Reference	R0000686
Report Date	10 Jul 2024
Reported By	mhooper

Dispatch Order Reference		P0000515					
Site Name		Sauncey Wood Primary School P1 6818					
Site Location		Harpenden					
Barcode	Received Date	Sampled Date	Sample Check	Degradation Check	Inhibition Check	Result	Positive Replicates
GCN009201	27/06/2024	25/06/2024	PASS	PASS	PASS	NEGATIVE	0 out of 12

eDNA Technical Report



SUMMARY

The water samples listed in the tables above were submitted to Cellmark for environmental DNA (eDNA) testing for the presence of Great Crested Newt (GCN; *Triturus cristatus*) DNA. The laboratory testing was carried out in compliance with the guidelines described in [WC1067: Analytical and methodological development for improved surveillance of The Great Crested Newt \(version 1.1\)](#)

INTERPRETATION OF THE RESULTS

Barcode	Each kit is given a unique sample barcode. A kit and the six sample tubes contained within it are labelled with the same sample barcode. This allows Cellmark to track where each kit has been sent and to track the samples through the laboratory once they have been returned.
Site Name	The name of the sampling site.
OS Reference	Ordnance Survey grid reference: the location of the pond.
Sample Check	Upon receipt in the laboratory, the 6 sample tubes are scored for sample volume, leakage, damage and for the presence of sediment, algae and other debris within the sample tubes. They are scored as 'PASS' or 'FAIL'. Samples that fail at this stage may not be suitable for further processing.
Degradation Check	A control marker is spiked into the sample tubes during the kit manufacturing process. This marker is analysed for degradation and reported as 'DEGRADED' or 'PASS'.
Inhibition Check	Some substances (inhibitors) can cause the GCN assay to give a negative result despite the presence of GCN DNA. An assay is performed to determine whether inhibitors are present in the eDNA extract. If inhibition is detected, steps are taken to mitigate the effects on the GCN detection assay. The degradation assay is reported as 'INHIBITED' or 'PASS'.
Result	Results are reported as 'POSITIVE', 'NEGATIVE' or 'INCONCLUSIVE'. A positive result indicates that there is evidence that Great Crested Newts are present or have recently been present in the pond. If no GCN DNA is detected, a negative result is reported. The results are deemed inconclusive if we do not detect the presence of GCN DNA and there is an indication that something in the sample is interfering with the analysis (inhibition or degradation).
Positive Replicates	A single eDNA extract is produced for each pond. The extract is then analysed to detect the presence of GCN DNA. A total of 12 replicates of this analysis is performed per eDNA extract. If at least 1 of the replicates is positive for the presence of GCN DNA, the pond is declared positive for the presence of Great Crested Newts.

METHODOLOGY

Upon arrival in the laboratory, the 6 sample tubes are checked for sample volume, leakage and any other damage. The samples are also inspected for macroscopic debris. Based on the outcome of this inspection, the decision is made as to whether the sample is suitable for further processing. Samples that have passed this inspection step are centrifuged. The resulting pellets (containing the eDNA) from each tube are then combined. The eDNA is then isolated (extracted) from the combined pellet.

Inhibitors, more specifically PCR inhibitors, are substances in the eDNA sample which may be co-isolated with the DNA and which interfere with eDNA detection assays. All eDNA extracts are tested for the presence of inhibitors. When a sample has been shown to be inhibited and the results of the GCN detection assay are negative, we cannot be sure whether the sample is truly negative for GCN DNA or that the inhibitors have prevented the GCN assay from working correctly. In this scenario, the result is reported as inconclusive.

eDNA Technical Report



The ability to detect a control marker that has been spiked into the sample tubes during the kit manufacturing process is also tested. If this marker cannot be detected, it suggests that that DNA in the sample has been degraded. Some possible causes of degradation can be the conditions under which the sample has been stored (eg exposure to high temperatures or UV from excessive sunlight) or contamination with substances that destroy DNA. If the control DNA is not detected but the GCN detection assay is positive for GCN, then the sample is reported as positive for GCN DNA. However, if neither the control DNA nor GCN DNA is detected, the sample is reported as inconclusive because we cannot know whether there was any GCN DNA present in the sample but it was degraded prior to analysis.

The GCN detection assay targets a portion of the GCN mitochondrial DNA. This assay is detailed in WC1067 Analytical and Methodological Development for Improved Surveillance of The Great Crested Newt (version 1.1). This assay specifically detects GCN DNA. If GCN DNA is detected in at least 1 of the 12 replicate GCN detection assays, the sample is reported as positive for the presence of GCN. A technique called quantitative PCR (qPCR) is used in the inhibition, degradation and GCN detection assays to detect specific regions of DNA. Positive and negative controls are used in each of the assays and these have to give the expected results in order for the sample to be declared positive or negative for GCN DNA.

Cellmark participates in the FERA proficiency testing scheme and achieved 100% in the 2021 test. Driven by quality, Cellmark has held international ISO quality certification since 1990. Cellmark provides a range of laboratory testing services accredited to ISO 17025 and although delivered to the same exacting quality standards, Cellmark's eDNA service is not yet included on the scope of its ISO 17025 accreditation. Cellmark is certified to ISO 9001, ISO 14001 and to ISO 27001.

Annex 6818/6

Breeding Bird Survey Results

6818

Land North of Harpenden

Breeding Bird Survey

Ecology Surveys

August 2024

Contents

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1 Introduction and Methodology

- 1.1 Ecology Surveys was commissioned in April 2024 to undertake a breeding bird survey of a sizeable area of pastoral farmland on the north side of the town of Harpenden in Hertfordshire.
- 1.2 Set in a generally agricultural landscape, the site comprises a series of large grassland fields, grazed by horses, plus associated equestrian facilities. The fields are generally surrounded and separated by fences, with hedgerows and trees being generally rather sparse. Residential areas of Harpenden lie adjacent to the south of the site, with open farmland to the west and north, and a tree-belt alongside Common Lane which forms the eastern boundary.
- 1.3 Three surveys (two morning and one evening) were carried out between April and June 2024 in order to assess breeding bird activity at the site. The times and weather conditions during the surveys are given in table 1.

Date (2024)	Times	Cloud cover (octants) & precipitation	Wind (direction & Beaufort force)	Start temperature
21 st April	04:55 – 09:00	2/8	N3	4°C
14 th May	16:05 – 19:55	8/8	SW3	16°C
10 th June	05:55 – 10:40	4-8/8	NW4	13°C

Table 1: Weather conditions during the breeding bird surveys at Harpenden.

- 1.4 On each survey an experienced ornithologist slowly walked a circuitous route around the site, covering all habitats, recording the locations, numbers and activity of all bird species present in and around the area during this time. This methodology ensures that the vast majority of species that use the site would be recorded over the course of the surveys, although some species that may use the site as part of a larger territory may be missed, particularly nocturnal species such as owls.
- 1.5 To ascertain the breeding status of birds using the site, criteria were applied following the standard methodology established by Gibbons *et al* (1993) in *The New Atlas of Breeding Birds in Britain and Ireland*, which accepts the activities listed below as denoting breeding. Note that a precautionary approach is taken, where appropriate, meaning that some species registrations may be assumed to relate to breeding, even if definite proof was lacking.
- Bird apparently holding territory.
 - Courtship and display.
 - Nest-building (including excavating nest-hole).
 - Distraction display or feigning injury.
 - Adult carrying faecal sac or food.
 - Adult entering or leaving apparently occupied nest site.
 - Nest with eggs or eggshells found, or bird sitting but not disturbed.
 - Nest with young; or downy young of ducks, game-birds, waders and other nidifugous species.
 - Recently fledged young.

2 Results

- 2.1 A total of 42 species of birds were recorded at the site during the survey, of which 22 were considered to be breeding, and two possibly breeding (i.e., not meeting the criteria in paragraph 1.5, although habitat suitable to support the species is present). The remaining 18 species were recorded either flying over, as migrants, breeding in adjacent habitats, or were represented only by non-breeding individuals.
- 2.2 A summary of observations for each species is included in table 2, including the estimated number of territories that include at least part of the site, whilst the distribution of breeding birds is shown in plan 1.

Systematic list of species (and BTO species code)	RSPB listed	Est. no. pairs	Notes
Canada goose <i>Branta canadensis</i> (CG)	Feral	0	Two flew over in May.
Mallard <i>Anas platyrhynchos</i> (MA)	Amber	0	One flew over in April.
Swift <i>Apus apus</i> (SI)	Red	0	Two flew over in June.
Pheasant <i>Phasianus colchicus</i> (PH)	Feral	2	
Stock dove <i>Columba oenas</i> (SD)	Amber	0-1	
Woodpigeon <i>Columba palumbus</i> (WP)	Amber	11	
Collared dove <i>Streptopelia decaocto</i> (CD)		1	
Lesser black-backed gull <i>Larus fuscus</i> (LB)	Amber	0	One flew over in May.
Buzzard <i>Buteo buteo</i> (BZ)		1	
Red kite <i>Milvus milvus</i> (KT)	Sch.1	0	Up to three regularly over the area.
Green woodpecker <i>Picus viridis</i> (G.)		0	One present in April.
Great spotted woodpecker <i>D. major</i> (GS)		0	Singles in April and June.
Ring-necked parakeet <i>Psittacula krameri</i> (RI)	Feral	0	Ones and twos flying over.
Kestrel <i>Falco tinnunculus</i> (K.)	Amber	0	One present in May.
Hobby <i>Falco subbuteo</i> (HY)	Sch.1	0	One hunting in May.
Magpie <i>Pica pica</i> (MG)		2	
Jackdaw <i>Coloeus monedula</i> (JD)		0	Up to 20 foraging in grassland.
Rook <i>Corvus frugilegus</i> (RO)	Amber	0	Up to 25 foraging in grassland.
Carion crow <i>Corvus corone</i> (C.)		1	
Blue tit <i>Cyanistes caeruleus</i> (BT)		7	
Great tit <i>Parus major</i> (GT)		2	
Skylark <i>Alauda arvensis</i> (S.)	Red	0	Singing over nearby arable land.
Swallow <i>Hirundo rustica</i> (SL)	Amber	1	
House martin <i>Delichon urbicum</i> (HM)	Amber	0	One flew over in May.
Long-tailed tit <i>Aegithalos caudatus</i> (LT)		1	
Chiffchaff <i>Phylloscopus collybita</i> (CC)		2	
Blackcap <i>Sylvia atricapilla</i> (BC)		3	
Lesser whitethroat <i>Curruca curruca</i> (LW)		1	
Nuthatch <i>Sitta europaea</i> (NH)		0	Noted in trees along Common Lane.
Wren <i>Troglodytes troglodytes</i> (WR)	Amber	6	
Starling <i>Sturnus vulgaris</i> (SG)	Red	0	Up to 20 foraging in grassland.
Blackbird <i>Turdus merula</i> (B.)		3	
Song thrush <i>T. philomelos</i> (ST)	Amber	1	
Mistle thrush <i>T. viscivorus</i> (M.)	Red	0	Singles foraging in grassland.
Robin <i>Erithacus rubecula</i> (R.)		10	
House sparrow <i>Passer domesticus</i> (HS)	Red	4	
Dunnock <i>Prunella modularis</i> (D.)	Amber	12	
Pied wagtail <i>Motacilla alba</i> (PW)		0-1	
Greenfinch <i>Chloris chloris</i> (GR)	Red	2	
Linnet <i>Linaria cannabina</i> (LI)	Red	2	
Redpoll <i>Acanthis flammea</i> (LR)	Red	0	A migrant flew over in April.
Goldfinch <i>Carduelis carduelis</i> (GO)		4	

Table 2: Bird species recorded during the breeding bird surveys at Harpenden.



Plan 1. Distribution of breeding birds at Harpenden. Red, Amber and Green List species are shown in their respective colour. Infilled circles indicate species breeding or probably breeding, unfilled circles those possibly breeding. Species locations do not necessarily show nest-sites, but show the location of each species within its presumed territory. For the key to species, see table 2 above.

3 Summary and Conclusions

- 3.1 The site supports a rather modest assemblage of breeding species, primarily on account of the sparsity of vegetation across most of the site, with the majority of breeding activity being associated with the more vegetated parts of the site, particularly around the equestrian centre in the west. Conversely, a relatively large number of non-breeding species were recorded, primarily a result of the relatively large survey area (and hence the time spent on site).
- 3.2 No Red List declining farmland species were recorded breeding at the site, and only skylark was recorded, with birds noted holding territory in arable land to the west of the site.
- 3.3 Species recorded breeding in vegetated areas at the site include woodpigeon, wren, song thrush, dunnoek, greenfinch, linnet and possibly stock dove, whilst swallow and house sparrow are nesting in on-site buildings. All these species are included on the RSPB Red or Amber List, having undergone major or moderate declines in their UK populations. Nevertheless, they all remain abundant and widespread in suitable habitat in both a local and national context, as are all the remaining species recorded breeding at the site.

ecology • landscape planning • arboriculture



Aspect Ecology Ltd
West Court
Hardwick Business Park
Noral Way
Banbury
Oxfordshire OX16 2AF

T: 01295 279721
E: info@aspect-ecology.com
W: www.aspect-ecology.com