Ecological Impact Assessment

June 2025

Land South of A507 and West of Buntingford

Prepared by
CSA Environmental

On behalf of
Hallam Land Management Limited

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CSA environmental

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This report may contain sensitive ecological information. It is the responsibility of the Local Authority to determine if this should be made publicly available.

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EXECUTIVE SUMMARY

Commercial development including employment land is proposed at Land South of A507 and West of Buntingford, Hertfordshire, for which outline planning permission will be sought.

CSA Environmental was instructed by Hallam Land Management Limited to undertake an Ecological Impact Assessment (EcIA) of the proposed development. To inform this assessment, a desktop study was undertaken, followed by a suite of targeted habitat and species surveys.

The Site is dominated by arable land with hedgerows, and no nature conservation designations cover the Site or adjacent land. Small woodlands within and adjacent to the Site provide greater interest, with Thistley Vale Brook located c. 0.02km to the west of the Site.

Habitat creation is proposed to include 'Buntingford Park', to comprise structural tree planting, grasslands and SuDS, as well as wildlife niche features such as invertebrate banks. Opportunities for ecological enhancement may be secured by planning condition.

Based on successful implementation of the proposed avoidance, mitigation and enhancement, the development is not anticipated to result in any significant residual negative effects on important ecological features. The scheme is considered to accord with all relevant nature conservation legislation, as well as with the provisions of East Hertfordshire District Plan.

1.0 INTRODUCTION

1.1 This report has been prepared by CSA Environmental on behalf of Hallam Land Management Limited. It sets out the findings of an Ecological Impact Assessment (EcIA) of proposed development at Land South of A507 and West of Buntingford, Hertfordshire (hereafter 'the Site'). Commercial development including employment land is proposed at the Site, for which outline planning permission is sought.

1.2 The scope of this assessment has been determined with consideration of best-practice guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and the Biodiversity: Code of practice for planning and development published by the British Standards Institute (BS 42020:2013).

1.3 The Site occupies an area of c. 13.28ha and consists of a single arable field bound by hedgerows, with a small, wooded copse (see Habitats Plan in Appendix A). The Site is located around central grid reference TL 3526 2940, to the west of Buntingford. The landscape surrounding the Site is dominated by arable fields and associated ditches and boundary hedgerows, with small, scattered parcels of semi-natural woodland. Residential and commercial land within Buntingford lies to the east. The survey area covers the Site boundary and a wider area to the west, shown with a blueline on the Habitats Plan.

1.4 An initial desk study and field survey, including a UK Habitat Classification survey were undertaken for the Site in November and December 2023 as part of a Preliminary Ecological Appraisal, the findings of which are presented herein. In addition, the following further survey work was undertaken between December 2023 and September 2024:

- Detailed Botanical Surveys (May 2024)
- Badger Survey (February 2024)
- Bat Ground Level Tree Assessment (September 2024)
- Bat Activity Surveys (April – August 2024)
- Dormouse Surveys (April – August 2024)
- Water Vole & Otter Surveys (March & July 2024)
- Breeding Bird Surveys (March – June 2024)
- Wintering Bird Surveys (December 2023 – February 2024)
- Reptile Surveys (April – June 2024)
- Great Crested Newt Surveys (May 2024)

1.5 This EcIA aims to:

- Establish baseline ecological conditions at the Site.
- Determine the importance of ecological features which could be affected by the proposed scheme.

- Identify any likely significant impacts or effects of the proposed development on important ecological features, in the absence of mitigation, including cumulative impacts.
- Set out any measures necessary to effectively avoid or mitigate likely significant effects, and identify residual impacts.
- Identify any compensation measures required to offset residual impacts.
- Set out potential ecological enhancement measures that may be secured by the proposed scheme.
- Confirm how proposed mitigation, compensation and enhancement measures could be secured.
- Provide sufficient information to determine whether the project accords with relevant nature conservation policies and legislation, and where appropriate, to allow conditions or obligations to be imposed by the relevant authority.

1.6 An EcIA can be used for the appraisal of projects of any scale. This is a best practice evaluation process, recommended by CIEEM (2018). It is intended that the evaluation of findings presented here-in will aid the East Hertfordshire District Council in their review of the planning application.

1.7 This report should be read in conjunction with the Biodiversity Net Gain Assessment: Design Stage report (CSA/6755/03/C) which details further ecological assessment undertaken for the purpose of assessing Biodiversity Net Gain (BNG), and the predicted net effect of the proposed development on biodiversity.

2.0 LEGISLATION, PLANNING POLICY & STANDING ADVICE

Legislation

2.1 Legislation relating to wildlife and biodiversity of particular relevance to this EcIA includes:

- The Conservation of Habitats and Species Regulations 2017 (as amended)
- The Wildlife and Countryside Act 1981 (as amended)
- The Natural Environment and Rural Communities (NERC) Act 2006
- The Protection of Badgers Act 1992
- The Environment Act 2021

2.2 This legislation has been addressed, as appropriate, in the production of this report with further information provided in Appendix B.

National Planning Policy

2.3 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government, 2024) sets out the government planning policies for England and how they should be applied. Chapter 15: Conserving and Enhancing the Natural Environment, is of particular relevance to this report as it relates to ecology and biodiversity. Further details are provided in Appendix B.

2.4 Accompanying the NPPF, central government guidance on the implementation of planning policies is set out within online Planning Policy Guidance (PPG). The Natural Environment PPG addresses biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services. Further guidance in respect of statutory obligations for biodiversity conservation within the planning system is provided by Government Circular 06/2005.

Local Planning Policy

2.5 A number of local planning policies relate to ecology, biodiversity and/or nature conservation. These are summarised in Appendix B.

Standing Advice

2.6 Natural England Standing Advice regarding protected species aims to support local authorities and forms a material consideration in determining applications in the same way as any individual response received from Natural England following consultation. Standing advice has therefore been given due consideration, alongside other detailed guidance documents, in the scoping of ecological surveys and production of this report.

3.0 METHODS

Desk Study

3.1 An ecological desk study was undertaken in November 2023 comprising a review of online resources and biological records centre data as detailed below.

3.2 The Multi-Agency Geographic Information for the Countryside (MAGIC) online database was reviewed to identify the following ecological features (based on the Site's likely 'zone of influence' in respect of such features):

- Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites within 10km of the Site (including possible/proposed sites)
- Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature Reserves (LNR) within 3km of the Site
- Other relevant data e.g. Ancient Woodland Inventory within 1km of the Site

3.3 A review was undertaken of the location of any such designations, their distance from and connectivity with the Site, and the reasons for their designation. This information was used to determine whether they may be within the proposed development's Zone of Influence (ZoI).

3.4 Hertfordshire Environmental Records Centre (HERC) was contacted for details of any non-statutory nature conservation designations and records of protected/notable habitats and species. This information was requested for an area encompassing the Site and adjacent land within c. 2km of its central grid reference. This search area was selected to include the likely zone of influence of effects upon non-statutory designations and protected or notable habitats and species.

3.5 Further online resources were reviewed for information which may aid the identification of important ecological features. The Woodland Trust's online Ancient Tree Inventory was reviewed for known ancient or veteran trees within the Site and adjacent land. Interactive online mapping provided by the charity 'Buglife' was used to determine whether the Site falls within an Important Invertebrate Area.

3.6 In accordance with Natural England's Great Crested Newt Mitigation Guidelines (2001), a desktop search was undertaken to identify ponds within 500m of the Site which may have potential to support breeding great crested newts *Triturus cristatus*, using Ordnance Survey (OS) mapping, the MAGIC database and aerial photography.

3.7 Where possible under the terms of the data provider, relevant desk study data are presented in Appendix C.

Field Surveys

3.8 A UK Habitat Classification ('UKHab') survey was carried out in fine and dry weather conditions on 06 December 2023 and 15 May 2024 by Alexandra Cole MCIEEM, FISC Level 4, encompassing the Site and immediately adjacent habitats that could be viewed.

3.9 UKHab is a unified and comprehensive system for mapping and classifying habitats, designed to provide a simple and robust approach to surveying and monitoring, and replaces Phase 1 Habitat survey methods. The method allows for identification of important habitat types, including habitats of Principal Importance under Section 41 (S41) of the NERC Act (2006) and Habitats Directive Annex I habitats. This method also allows for direct translation of habitats into the Statutory Biodiversity Metric (Defra, 2024).

3.10 The following parameters were adopted for the UKHab survey undertaken for this PEA:

- UKHab Professional edition (Butcher *et al*., 2020, commercial End User Licence Agreement (EULA))
- Minimum Mappable Unit (MMU):
    - $10m^2$/0.001ha (polygons)
    - 5m (linear)
- Primary Habitats recorded to a minimum of Level 2 (see below) with UKHab codes provided
- Mandatory secondary codes used
- Base-mapping comprising a combination of aerial imagery and topographic information

3.11 Primary Habitats are recorded to a minimum of Level 2. Where the survey is conducted at an appropriate time of year (e.g. May to July for grassland) habitats may be recorded to Level 3, 4 or 5, only if conditions and the experience of the surveyor allow.

3.12 Alongside the UKHab survey, additional field survey information was collected, comprising:

- Detailed floral species lists recorded for each identified habitat/parcel
- Evidence of, or potential for, European Protected Species (EPS) (including bats, great crested newt, dormouse and otter)
- Evidence of, or potential for, other protected species (including birds, reptiles, water vole, badger and certain invertebrates)
- Evidence of, or potential for, other notable species (including S41 Species of Principal Importance as well as notable, rare, protected or controlled plants and invertebrates)
- Any other survey information relevant to ecological matters

3.13 Results of the UKHab survey are presented on the Habitats Plan in Appendix A. Appendix D provides a list of floral species recorded in each habitat parcel. Nomenclature for higher plants within this report is consistent with the fourth edition of The New Flora of the British Isles (Stace, 2019).

Further Survey Work

3.14 The following detailed field survey work was carried out between January and September 2024, with full methods and results provided in the relevant Appendices:

- Botany (Appendix E)
- Hedgerows (Appendix F)
- Bats (Appendix G)
- Badger (Appendix H)
- Dormouse (Appendix I)
- Riparian Mammals (Appendix J)
- Birds (Appendix K)
- Reptiles (Appendix L)
- Great Crested Newts (Appendix M)

Limitations

3.15 There were no specific limitations to the desktop study. The UKHab survey was conducted outside of the optimal period for botanical surveying when some plant species may not be visible above ground. As the aim was to identify broad habitat types, it is unlikely that this would have compromised the overall aim of the survey. Detailed botanical surveys were subsequently undertaken in 2024.

3.16 Limitations in respect of specific surveys are addressed in the relevant appendices. However, no substantive limitations to work undertaken have been identified.

Evaluation and Assessment

3.17 Ecological features are identified, evaluated and assessed in accordance with the CIEEM Guidelines for Ecological Impact Assessment (2018), with detailed methods provided in Appendix E.

3.18 It is an established principle (CIEEM, 2018) that EcIA is an iterative process. Specialist advice on the avoidance and mitigation of the potential negative effects of the proposed development has been input from an early design stage.

4.0 BASELINE ECOLOGICAL CONDITIONS

Nature Conservation Designations

Statutory

4.1 There are no statutory designations covering any part of the Site and no international or national/local statutory designations were identified within 10km or 3km or the Site, respectively.

Non-Statutory

4.2 Seven Local Wildlife Sites (LWSs) were identified within 2km of the Site. These non-statutory designations are described in Table 1 below.

4.3 LWSs are designated according to criteria applied in a county context and are therefore considered to be of ecological importance at a County level.

Table 1. Statutory and non-statutory designations within search radii

Site Name & Designation	Distance & Direction from Survey Area	Special Interests or Qualifying Features
International Designations within 10km		
-		
National Designations within 3km		
-		
Non-Statutory Designations within 2km		
Porters Close	c. 0.8km east	Building and environs important for protected species. Supports a pipistrelle sp. maternity roost.
Downhall Ley (Buntingford)	c. 0.8km east	Building and environs important for protected species. Supports a pipistrelle sp. bat roost and Leisler's maternity roost.
Foxglade & Perryden, Aspenden	c. 0.9km south	Building and environs important for protected species. Supports pipistrelle sp. and brown long-eared bat roosts.
Wakeley Spring Green Lane (part)	c. 1.1km south	Ancient hedge and tree-lined green lanes supporting a good range of native woody species. There is a greater number of woody species along the northern end. The ground flora supports typical flora of hedgerows.
Throcking Churchyard	c. 1.2km north-west	Churchyard with heavily mown but moderately species-rich old neutral grassland plus hedgerows and trees. Grassland indicator species present include bird's-foot-trefoil *Lotus corniculatus*, common knapweed *Centaurea nigra*, cowslip *Primula veris* and common sorrel *Rumex acetosa*.
Corneybury Farm Area	c. 1.2km north-east	Building and environs important for protected species. Supports Natterer's

		and brown long-eared bat maternity roosts.
Burymead Lane and Paddock	c. 1.7km west	Ancient green lane and a small field. The lane supports several woodland indicators. Trees, including ash *Fraxinus excelsior* and hazel *Corylus avellana*, occur along the banks with some neutral grassland along the track. The small field supports unimproved damp neutral grassland indicators. Protected species have been recorded.

Habitats and Flora

4.4 Habitats recorded on-site are illustrated in Appendix A with detailed species lists provided in Appendix D. Relevant UKHab codes are provided within parentheses for each habitat type recorded e.g. Other Neutral Grassland (g3c).

Irreplaceable Habitats

4.5 There is no ancient woodland, as shown on the ancient woodland inventory, covering any part of the Site or immediately adjacent land. The closest area of ancient woodland inventory is Alswickhall Wood, located c. 2.4km east of the Site.

4.6 A small woodland (W2, c. 1.3ha) is present to the south of F1, outside of the redline boundary. This woodland is named on historic maps dating to 1888 as 'The Thicket', indicating that it is old and potentially ancient in origin. Further botanical and arboricultural survey identified a total of 3No. veteran oak *Quercus robur* trees within the woodland. However, ground flora and other evidence is not indicative of ancient woodland. In addition to The Thicket (W2), three small, wooded copses (W3, W4 & W5) are located further the south of the redline boundary and also appear on historic maps dating to 1888. W4 appears on historic maps as 'Old Gravel Pit' and comprises a steep bank with chalk substrate and vegetation comprising abundant hawthorn *Crataegus monogyna* and elder *Sambucus nigra*. It also supports a main badger sett. These woodlands are discussed in greater detail below.

4.7 No trees on or adjacent to Site are listed on the Ancient Tree Inventory.

4.8 Aspenden Hall is located off-site to the south. Based on historic maps, parkland formerly associated with the hall appears to extend into the Site with remnant woodlands (W3 and W5) having planted species (horse chestnut) present. Woodland W2 (The Thicket) may have formed the far north-eastern corner of the parkland. The former parkland within the Site appears to have come into arable cultivation in the late 19th/early 20th Century.

Notable Flora Records

4.9 The HERC provided 68 records of 25 notable plant species from within the search area. Those of potential relevance to the Site include species associated with arable habitats and field margins such as cornflower *Centaurea cyanus*, shepherd's-needle *Scandix pecten-veneris*, dwarf spurge *Euphorbia exigua* and field scabious *Knautia arvensis*.

4.10 Other species of note include 17 records of four species listed within the Wildlife and Countryside Act's Schedule 9 (WCA9) list of invasive non-native species. These species included variegated yellow archangel *Lamiastrum galeobdolon subsp. argentatum*, Himalayan balsam *Impatiens glandulifera*, Japanese knotweed *Reynoutria japonica* and giant hogweed *Heracleum mantegazzianum*. However, the majority of records were given to a grid reference accuracy of 2km and therefore their exact location could not be determined. No non-native invasive species were identified during the survey.

Arable and horticulture (c1)

4.11 The Site is dominated by a single arable field (F1), which had been sown with a winter crop at the time of survey, determined to be wheat during later surveys. Field margins across the Site are very narrow, up to a maximum of c. 1.5m, and supporting common arable plant species. Grasses include perennial rye-grass *Lolium perenne*, annual meadow-grass *Poa annua*, false oat-grass *Arrhenatherum elatius*, common couch *Elytrigia repens*, red fescue *Festuca rubra* and Yorkshire fog *Holcus lanatus*. Herb species include cow parsley *Anthriscus sylvestris*, creeping thistle *Cirsium arvense*, dove's-foot crane's-bill *Geranium molle*, nipplewort *Lapsana* sp., mugwort *Artemisia vulgaris*, common knapweed *Centaurea nigra*, bristly oxtongue *Helminthotheca echioides*, white dead-nettle *Lamium album*, common ragwort *Senecio jacobaea* and common field speedwell *Veronica persica*.



Photograph 1. Field F1 sown with a winter wheat crop, with narrow field margins. Looking north-east towards Baldock Road.

Importance

4.12 Taken together, the narrow arable field margins are indicative of the arable habitats which dominate the wider landscape. Given their limited extent and absence of rare or notable arable plants, this habitat falls short of the criteria for ecological importance and is scoped out of further assessment.

Other broadleaved woodland (w1g)

4.13 A single wooded copse W1 is located in the south-east of the Site and comprises an outgrown hazel *Corylus avellana* coppice with hawthorn, goat willow *Salix caprea*, dog rose *Rosa canina*, ash, ivy and elder.



Photograph 2. Woodland W1 with outgrown hawthorn, hazel and dense bramble scrub.

Importance

4.14 Woodland W1 falls short of the threshold for consideration under the Hertfordshire Local Wildlife Sites selection criteria. However, this woodland comprises native woody species and provides habitat opportunities for a range of species. This woodland is therefore of intrinsic ecological importance, significant at the **Local** level.

Hedgerows (h2a)

4.15 A total of four hedgerows are present across the Site labelled H1, H2, H5 and H8 on the Habitats Plan (CSA/6815/103/B) and described in Appendix F. All hedgerows are well-established and subject to varying management. Hedgerow H1 runs along the north of the Site, adjacent to the A507 and is subject to closer management, preventing encroachment on the road. H1 widens to an off-site tree-belt the east,

as it runs adjacent to F1. Hedgerows H2 and H5 are associated with dry ditches. H8 is located to the north of the A507. Ground flora associated with the on-site hedgerows is restricted to the narrow field margins which comprise a range of common grass and herb species.



Photograph 3. Hedgerow H5 looking north.

4.16 On-site hedgerows comprise a range of species with mature trees including elm *Ulmus* sp., field maple *Acer campestre*, wayfaring tree *Viburnum lantana* and ash *Fraxinus excelsior*. Hedgerows also comprise understorey species including blackthorn *Prunus spinosa,* hawthorn *Crataegus monogyna*, elder *Sambucus nigra* and dogwood *Cornus* sp., with climbers including ivy *Hedera helix*, rose *Rosa* sp. and spindle *Euonymus europaeus*. The ground flora is mostly comprised of common herb and ruderal species. However, some woodland species are occasionally present, including wood meadow-grass *Poa nemoralis*, false brome *Brachypodium sylvaticum*, dog's mercury *Mercurialis perennis*, wood avens *Geum urbanum* and lords-and-ladies *Arum maculatum*.

Importance

4.17 An assessment of hedgerows found all on-site hedgerows (H1, H2 and H5) to be species-rich, in addition to off-site hedgerows H7 (see Appendix F). All hedgerows on-site meet the criteria as a habitat of Principal Importance 'Hedgerows' under Section 41 of the NERC Act (2006). The network of hedgerows at the Site is therefore assessed to be of ecological importance at the **Local** level.

<u>Lowland mixed deciduous woodland (w1f) (off-site)</u>

4.18 Woodland W2 is named on historic maps dating to 1888-1915 as 'The Thicket', indicating that it is old and potentially ancient in origin. W2 has a chalky substrate and undulating topography with features including a

bank along the eastern boundary which runs adjacent to a grassed track, a central ride, deadwood and pits which contained water at the time of survey. A seasonally wet ditch also runs along the western boundary. At the time of survey there was evidence of human activity in the form of litter and fly tipping within the woodland. The woodland comprises a diverse range of mature trees, including oak trees with veteran characteristics, field maple *Acer campestre*, elm *Ulmus* sp., beech *Fagus sylvatica* and sycamore *Acer psuedoplatanus*. Understorey species include holly *Ilex aquifolium*, hawthorn and hazel. Field maple, hazel and holly are all included on the Hertfordshire ancient woodland vascular plants list. However, ground flora was sparse at the time of survey, dominated by cow parsley, with grasses including wood meadow-grass, rough meadow-grass *Poa trivialis* and false brome, and herbs including dog's mercury, wood avens, herb Robert *Geranium robertianum* and common nettle.



Photograph 4. Woodland W2 'The Thicket', with bank along eastern boundary, deadwood and mature trees.

Importance

4.19 Woodland W2 does not appear on the ancient woodland inventory, although it is shown on both OS six-inch maps dating between 1888-1915, and first edition one inch to one mile OS maps. However, field evidence does not support this woodland being ancient in origin, with less than 10 ancient woodland indicator species identified and field evidence to support evidence of ancient origin restricted to ditches, boundary banks and 3No. veteran trees.

4.20 Lowland mixed deciduous woodland is listed as a habitat of Principal Importance under Section 41 (S41) of the NERC Act (2006). Woodland W2 is therefore of ecological importance at the **Local** level.

Fauna

Bats

Desk Study

4.21 A total of 516 bat records were identified within the search area, dating from 1976 to 2020. These include the following species: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P. pygmaeus*, Nathusius's pipistrelle *P. nathusii*, noctule *Nyctalus noctula*, brown long-eared bat *Plecotus auritus*, Leisler's bat *N. leisleri*, Natterer's bat *Myotis nattereri*, Daubenton's bat *M. daubentonii*, whiskered/Brandt's bat *M. mystacinus/M. brandtii*, serotine *Eptesicus serotinus* and barbastelle *Barbastella barbastellus*. Of these records, 145 pre-date 2000 and 347 records were given to a grid reference accuracy of 1km or less and therefore their exact location could not be determined.

4.22 The closest records to the Site are of common pipistrelle (c. 0.5km to the east of the Site), from aural bat detector records near to hedgerows bordering arable land. Records of other species are c. 0.75km or further from the Site. There are 59 records that describe roosting bats, dating between 1976 and 2014, with 24 of these records considered historical (pre-2000). All bat roost records are c. 0.8km or further from the Site, with the majority in association with the village of Buntingford. Four of the LWSs within 2km of the Site are designated for their buildings and environs which support bat roosts, including maternity roosts, of the following species: Natterer's bat, brown long-eared bat, pipistrelle sp. and Leisler's bat.

Use of the Site

4.23 The on-site arable habitats provide some sub-optimal opportunities for foraging bats. However, hedgerows, in particular those with associated mature trees, and the (off-site) Thistley Vale Brook provide greater opportunities including navigational features and foraging opportunities for bats. The on-site woodland (W1) has limited potential to provide roosting opportunities for bats. However, W2-W5 provide greater opportunities. In the wider landscape, small pockets of woodland are present within a 2km radius of the Site and further afield. These include ancient and semi-natural woodlands. Thistley Vale Brook runs c. 0.02km west of the Site, continuing to the north-west and south-east and providing navigational features and foraging opportunities for bats.

Preliminary Roost Assessment – Trees

4.24 Ground level tree assessments (GLTAs) of trees identified for removal did not identify any potential roosting features and therefore no further

survey work was undertaken in this regard. Methods and detailed results of the GLTA are provided in Appendix G.

Activity Surveys

4.25 Use of the Site by bats was assessed through bat activity surveys, including night-time bat walkover and automated/static monitoring surveys undertaken from April to August 2024. At least six species of bat were identified during activity surveys, including common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, brown long-eared bat and barbastelle. Additional bat species were present which fall within the genera of *Myotis* sp., *Nyctalus/Eptesicus* sp., and *Pipistrellus* sp. but were not identified to species level. The majority of activity recorded was attributable to common pipistrelle, with foraging and commuting behaviour observed during night-time bat walkovers. Much lower levels of activity were found for all other species, mostly associated with occasional passes. Activity on-site was concentrated along the northern edge of woodland W2 and hedgerow H5. There were no activity patterns or observations to suggest that bats are roosting on or adjacent to the Site. Methods and detailed results of the bat activity survey are provided in Appendix G.

Importance

4.26 The habitats on-site provide some limited opportunities for bats, restricted to linear features including hedgerows. Greater opportunities are afforded by adjacent woodlands, Thistley Vale Brook and the wider landscape; however, these remain limited. Following the UK Bat Mitigation Guidelines (2023), bat species using the Site fall into "widespread" (common pipistrelle, soprano pipistrelle and brown long-eared), and "widespread in many geographies, but not as abundant in all" (noctule). Barbastelle fall into the "Rarest Annex II species and very rare" category.

4.27 Myotis species bats fall into the categories of "widespread in many geographies, but not as abundant in all" (Daubenton's, Natterer's and noctule) and "rare or restricted distribution" (Brandt's, whiskered, Nathusius' pipistrelle, Leisler's and serotine). It should be noted that bat contacts attributable to Myotis, Nyctalus and Esptesicus species bats were not identified to species level and therefore whilst the above listed species are known to be present in Hertfordshire, it is likely that not all of the Myotis species bats listed above use the Site.

4.28 Barbastelle are noted to be considered very rare. However, the majority of activity is associated with occasional passes and opportunistic use of the Site, with no pattern to suggest a roost nearby.

4.29 Based on the above, the bat assemblage using the Site for foraging and commuting is of **Local** ecological importance.

Badger

Desk Study

4.30 The HERC have provided 34 records of badger *Meles meles* from within the search area, dating from 1970 to 2021. The closest record to the Site is of a roadkill from Buntingford Bypass, dating from 2014. Six records of setts were provided within the search area. The closest record of a sett dates from 1997 and is located 0.9km south of the Site, in association with a wooded belt. The most recent record of a sett dates from 2013 and is located c. 1.0km south-east of the Site in association with a new residential development.

Use of the Site

4.31 A main badger sett with c. 20 active sett entrances was identified within off-site woodland W4, west of the Site. The sett has evidently been in recent use, with fresh spoil piles and well-defined paths between entrances and throughout W4. Three further active sett entrances with fresh spoil are located on the north-western boundary of the woodland, within the adjacent arable field. A single sett entrance was also identified at the south-western end of H4. Methods and detailed results of the badger survey are provided in Appendix H.

4.32 Hedgerows along Site boundaries and the woodland parcels provide opportunities for badger to dig setts on-Site, with arable habitats providing some limited foraging opportunities for badger.

Importance

4.33 Badgers are not of current conservation interest but both badgers, and their setts, are protected under the Protection of Badgers Act 1992 and are therefore considered as part of this assessment on this basis only.

Dormouse

Desk Study

4.34 No records of dormouse *Muscardinus avellanarius* were identified within the search area. Dormice have historically been present within Hertfordshire, although their current distribution is known to be very limited due to fragmentation of suitable habitat for this species within the County. Both historic and more recent records as referenced in the Hertfordshire Biodiversity Action Plan show the closest known dormouse population to be within Scales Park, over 5km north-east of the Site. This woodland is separated from the Site by urban development and arable farmland, with little suitable habitat to provide connectivity.

Use of the Site

4.35 Hedgerows and woodlands (W1-W5) on and adjacent to the Site provide some habitat for dormice albeit with limited floristic and structural diversity required to provide optimal habitat for this species. These habitats have some connectivity to wider hedgerows and

woodland, albeit in the absence of optimal habitats (e.g. ancient woodland >20ha). Dormouse surveys were undertaken between April and August 2024 with no evidence of dormouse identified. Methods and detailed results of the dormouse surveys are provided in Appendix I.

Importance

4.36 The habitats on and adjacent to the Site provide some limited opportunities for dormice. However, no evidence of dormice was identified on-site or in the wider survey area and there are no known records for the area. Therefore, dormice are considered likely absent from the Site and not considered further within this report.

Riparian Mammals

Desk Study

4.37 No records of water vole *Arvicola amphibius* were identified within the search area. Two records of otter *Lutra lutra* were identified within the search area, dating from 1991 and 2008. These records were given to a grid reference accuracy of 1km or less and therefore their exact location could not be determined.

Use of the Site

4.38 No watercourses are present on-site. Thistley Vale Brook runs c. 0.02km west of the Site boundary and connects to the River Rib (c. 0.9km east of the Site) which has the potential to support water vole and otter. An off-site ditch associated with H7 is also present c. 0.02km west of Thistley Vale Brook.

4.39 A riparian mammal survey was undertaken, comprising two visits in March and August 2024. The channel and banks are suitable for use by water vole for dispersal, foraging and burrowing along majority of the watercourse surveyed. In some areas, the brook becomes heavily shaded/choked with bramble scrub vegetation, reducing suitability for water vole. Overall, Thistley Vale Brook provides moderate suitability to support a water vole population and suitability could be improved if the channel and bankside vegetation were subject to an appropriate management regime. No evidence of water vole was identified during the surveys. Four burrows of a size that could be used by water vole were found along Thistley Vale Brook during the first survey. However, there was no evidence to suggest use by water vole.

4.40 Otter may use Thistley Vale Brook channel for dispersal, and occasional foraging. However, adjacent habitats do not provide suitable opportunities for holts with on-site woodland separated from the brook by arable habitats. Thistley Vale Brook has overall low suitability to support otter, with the potential for use by transient individuals only. No evidence of otter was found during the surveys. Methods and detailed results of the riparian mammal survey are provided in Appendix I.

Importance

4.41 Water vole and otter are listed as a species of Principal Importance under Section 41 of the NERC Act (2006) and presence of either species would meet the criteria for Local Wildlife Site selection. However, given that no evidence of these species were found on-site or in association with nearby watercourses, water vole and otter are considered likely absent from the Site and are not considered further within this report.

Other Mammals

Brown Hare

4.42 Twenty-seven records of brown hare *Lepus europaeus* were identified within the search area, dating from 1984 to 2021. Eight of these records are considered historical (pre-2000), with the rest dating from 2014 or later. The closest record dates from 1984 and is located c. 1.3km north of the Site, within an arable field.

4.43 The Site provides suitable habitat for brown hare with arable habitats providing opportunities for this species to lay-up and forage. The surrounding area provides additional habitat suitable to support this species which is known to have a large home range.

4.44 Brown hare occupy large home ranges and the c. 13ha of arable land which dominates the Site likely contributes to the home range for an individual hare, albeit, providing suboptimal habitat as the Site lacks the long grassland and mosaic of habitats favoured by this species.

4.45 Brown hare are listed as a species of Principal Importance under Section 41 of the NERC Act (2006). Given the extent of suitable habitat for this species, the Site is concluded to be of **Local** importance for brown hare.

Hedgehog

4.46 Thirty-two records of hedgehog *Erinaceus europaeus* were identified within the search area, dating from 1966 to 2021, with six records considered historical. The closest recent record dates from 2015 and is located is c. 0.3km north-east of the Site within the village of Buntingford.

4.47 No evidence of hedgehog was identified during the survey. On-site opportunities for hedgehog are provided by hedgerow, woodland and arable habitats which provide shelter and foraging opportunities. Within the wider landscape, nearby residential gardens situated within Buntingford provide further opportunities for this species.

4.48 Hedgehog are listed as a species of Principal Importance under Section 41 of the NERC Act (2006). As such, ecological enhancement measures have been set out to ensure hedgehog and other small mammals can make use of garden habitats at the Site following construction. However, hedgehog are not considered to be an important ecological feature in the context of this assessment.

Harvest Mouse

4.49 One historical record of harvest mouse *Micromys minutus* was identified within the search area, dating from 1985. This record was given to a grid reference accuracy of 2km and therefore the exact location could not be determined.

4.50 No evidence of harvest mouse was recorded during the survey. Harvest mice are listed as a species of Principal Importance under Section 41 of the NERC Act (2006). However, the current management of the arable land dominating the Site provides no substantial breeding opportunities for this species. Therefore, based on current conditions harvest mouse are considered likely absent from the Site and are not considered further within this report.

Birds

Desk Study

4.51 A total of 9,493 records of 88 bird species were identified within the search area, dating from 2001 to 2020. Those of potential relevance to the Site comprise species associated with arable land and field margins.

4.52 Records for the breeding season include several passerine species of nature conservation importance (e.g. turtle dove *Streptopelia turtur*, and yellow wagtail *Motacilla flava*), as well as a number of species listed on Schedule 1 of the Wildlife & Countryside Act (1981), as amended. These include: quail *Coturnix coturnix*, stone curlew *Burhinus oedicnemus*, red kite *Milvus milvus*, hobby *Falco Subbuteo* and barn owl *Tyto alba*.

4.53 Notable desk study records for the winter/passage periods include flocks of lapwing *Vanellus vanellus*, and potentially golden plover *Pluvialis apricaria*, as well as farmland passerines such as skylark *Alauda arvensis*, corn bunting *Emberiza calandra*, and yellowhammer *Emberiza citronella*.

Use of the Site

4.54 Breeding bird surveys undertaken between March and June 2024 have identified that the Site supports a range of breeding birds typical of farmland and urban fringe habitats. A total of 51 species were recorded within the Site and the wider survey area. This included 26 priority species (i.e. species classified as being of national and/or local nature conservation priority). For example, through their inclusion on the Red and Amber Lists in the fifth Birds of Conservation Concern (Stanbury *et al*., 2021), as follows: corn bunting; dunnock *Prunella modularis*; fieldfare *Turdus pilaris*; greenfinch *Chloris chloris*; grey partridge *Perdix* perdix; herring gull *Larus argentatus*; house sparrow *Passer domesticus*; kestrel *Falco tinnunculus*; lesser black-backed gull *Larus fuscus*; linnet *Linaria cannabina*; mallard *Anas platyrhynchos*; meadow pipit *Anthus*

pratensis; mistle thrush *Turdus viscivorus*; red kite; reed bunting *Emberiza schoeniclus*; skylark; song thrush *Turdus philomelos*; starling *Sturnus vulgaris*; stock dove *Columba oenas*; swift *Apus apus*; whitethroat *Curruca communis*; willow warbler; woodpigeon *Columba palumbus*; wren *Troglodytes troglodytes*; yellowhammer and yellow wagtail.

4.55 Four skylark breeding territories were identified on-site, with a further eight identified in the wider survey area. A corn bunting pair were recorded along Thistley Vale Brook and a male along H6 during one visit. Multiple yellowhammer and yellow wagtail pairs were identified around the margins of F3, probably breeding. The majority of other passerine breeding territories are associated with hedgerows and the off-site woodland copses.

4.56 Two grey partridge were observed foraging in the gateway at northern end of F2 on a single visit. This species is possibly breeding off-site.

4.57 Red kite individuals were recorded on all surveys flying over the Site and wider landscape. Some calling behaviour was recorded but there was no particular association with woodland/trees on or near the Site. Therefore, nesting is possible but not confirmed.

4.58 The 2023/24 winter bird surveys have identified that the Site supports a range of wintering birds that is typical of farmland and urban fringe habitats. A total of 40 species were recorded within the Site and its immediate surroundings. This included 20 priority species (i.e. species classified as being of national and/or local nature conservation priority, for example, through their inclusion on the Red and Amber Lists in the Birds of Conservation Concern 5 (Stanbury et al., 2021), as follows: barn owl; black-headed gull *Larus ridibundus*; dunnock; fieldfare; greenfinch; herring gull; house sparrow; kestrel; linnet; rook *Corvus frugilegus*; red kite; redwing *Turdus iliacus*; skylark; song thrush; sparrowhawk *Accipiter nisus*; stock dove; tawny owl *Strix aluco*; woodpigeon; wren; and yellowhammer.

4.59 The only farmland wader recorded during the 2023/24 winter bird surveys was lapwing; however, all sightings related to birds flying (commuting) over the Site. No lapwing (or any other farmland waders) were recorded within the Site and its surroundings during the winter bird surveys.

4.60 Five priority raptor species were recorded during the winter 2023/24: kestrel; red kite; sparrowhawk barn owl; and tawny owl. The majority of these the observations involved individual birds commuting and/or foraging through the Site and/or its surroundings. A peak count of four red kite was recorded in January 2024. This included two birds that appeared to be engaging in a brief period of display/courtship flight. Two birds were also observed exhibiting possible breeding behaviour in February 2024. No nest sites that could have been used by nesting red

kite in previous years were recorded within woodland or mature trees within the survey area, and no evidence of nest building was recorded during the winter bird survey visits in January and February 2024. Whilst the area of mature woodland to the south of the Site appeared to offer potentially suitable roosting opportunities for this species, no evidence of any communal roost sites was recorded during the winter bird surveys.

4.61 The Site and its surroundings were found to support a range of wintering passerines that was considered to be typical of farmland and urban fringe habitats. Skylark was recorded within an area of arable farmland to the west of the Site. The remaining priority passerine species were primarily associated with the Site's hedgerow/scrub and adjacent woodland habitats. In all cases, the species recorded considered to be present at relatively low densities.

4.62 Four mature trees located in off-site woodland W2 to the south of the Site were subject to inspection from ladder and found to contain features which could be used by nesting (and roosting) barn owl, on account of their size and structure. None of the features contained any evidence to confirm current or recent occupation by barn owl; however, some of the cavities could not be comprehensively inspected due to their extent, complexity, accessibility or height. Although located within a woodland, the trees were in close proximity to surrounding farmland habitats (where a barn owl has previously been recorded foraging during the nocturnal bird surveys). In view of these factors, the presence of nesting barn owl in these features cannot be discounted.

4.63 Methods and detailed results of the breeding and winter bird surveys are provided in Appendix J.

Importance

4.64 Based upon the relatively limited diversity and low density of birds recorded during the 2023/24 winter and breeding bird surveys, the Site is considered of no greater than **Local** ecological importance for this group.

Reptiles

Desk Study

4.65 A total of nine records of two reptile species were identified within the search area including eight slow-worm *Anguis fragilis* records dating from 2012-2013, and one historical adder *Vipera berus* record dating from 1934. The adder record was given to a grid reference accuracy of 10km and therefore an exact location could not be determined. The slow-worm records are all from the same location, c. 0.4km south-east of the Site in association with an arable field margin.

Use of the Site

4.66 The majority of the Site, being under arable cultivation, provides limited foraging and refuge habitats for reptiles. However, hedgerows and off-site grassland field margins associated with Thistley Vale Brooke provide suitable basking, foraging and refuge opportunities.

4.67 Reptile surveys were undertaken in May and June 2024 within suitable habitats, including off-site grassland field margins and a woodland ride within W2. Field margins on-site were too narrow to provide suitable habitat for reptiles and were not surveyed. Methods and detailed results of the surveys are provided in Appendix L.

4.68 A 'low' population of slow-worm was recorded off-site along the south-west margin of F3. No reptiles were found within W2 adjacent to the Site.

Importance

4.69 All British reptile species are listed as a species of Principal Importance under Section 41 of the NERC Act (2006). Additionally, any site supporting a breeding population of two or more native reptile species would meet the criteria for Local Wildlife Site selection. Habitats on-site have limited potential to support reptiles. However, slow-worm are know to be present in the wider landscape. Therefore, given the legal protection afforded to reptiles, this group is taken through to the assessment section on this basis.

Amphibians

Desk Study

4.70 A total of four records of amphibians were identified within the search area, including two great crested newt *Triturus cristatus* records, dating from 2003 and 2015, and two common toad *Bufo bufo* records, dating from 1970 and 2018. The 2015 great crested newt record is c. 1.2km north-west of the Site and is associated with a 'Great Crested Newt Class Survey Licence Return'. The other three amphibian records were given to an accuracy of 1km or less and therefore their exact locations could not be determined.

Use of the Site

4.71 Despite spending much of their annual lifecycle within the terrestrial environment, great crested newts (GCN) are dependent upon the presence of suitable aquatic breeding habitat in order for a population to persist. No permanent waterbodies were identified on-site which may act as potential breeding ponds, although five ephemeral waterbodies were identified within W2, and 11 appear to be present within a dispersible range of the Site, based on OS mapping.

4.72 The majority of the Site, being dominated by arable habitat provides suboptimal opportunities for amphibians during their terrestrial phase.

However, field margins and hedgerows provide suitable dispersal corridors, foraging and hibernation opportunities for any GCN which may be present within the off-site ponds or those in the surrounding area.

4.73 Due to the limited suitable habitat present on-site and small number of GCN records in the wider area, only ponds within the core 250m dispersal range were taken forward for further survey. A Habitat Suitability Assessment (HSI) for GCN was undertaken on five ponds (P1-5) within the core 250m dispersal range. P6 was not accessible to survey. All ponds scored 'poor' or 'below average'. Environmental DNA (eDNA) sampling was carried out on P1, P2 and P5, with tests returning a negative result, indicating likely absence of GCN. Methods and detailed results of the survey are provided in Appendix M.

Importance

4.74 Populations of GCN are known to be present within the wider area, but limited opportunities are present on-site for breeding amphibians. Further surveys found GCN to be likely absent from ponds surveyed. However, given that P6 is within close proximity to the Site and was not accessible to survey, along with potential for amphibians to use the Site during their terrestrial phase and the legal protection afforded to GCN, amphibians are taken through to the assessment section on this basis.

Invertebrates

Desk Study

4.75 A total of 125 records of 25 invertebrate species were identified within the search area. Those of potential relevance to the Site include white-letter hairstreak Satyrium w-album, small heath *Coenonympha pamphilus*, Essex skipper *Thymelicus lineola* and cinnabar *Tyria jacobaeae*. The Site is not located within an Important Invertebrate Area (IIA) or within a 'B-line', a network of flower-rich pathways created by Buglife to benefit pollinators and other wildlife.

Use of the Site

4.76 The arable habitats which dominate the Site are unlikely to support a locally important assemblage of invertebrates. However, field margins, woodlands and hedgerows present on-site have the potential to support a range of common and widespread species but there is no indication that these habitats would support large or notable invertebrate assemblages.

Importance

4.77 There is no indication that habitats within the Site would support a particularly notable or large assemblage of invertebrates. As such, the invertebrate assemblage at the Site is anticipated to fall short of the criteria for Local ecological importance and invertebrates are not considered further in this assessment.

Future Baseline

4.78 The Site is presently under active arable management, including the periodic cutting of field margins and hedgerows. Notwithstanding the potential rotation of crop-type, these management interventions maintain the on-site conditions in a relatively stable state. There is no known intention to cease this management, other than to accommodate the proposed development should planning permission be granted. As such, the future baseline status of important ecological features is not anticipated to vary significantly from that at present.

Summary of Ecological Features

4.79 Table 2 below summarises all important ecological features identified within the respective zones of influence, together with the geographic context of their importance:

Table 2. Summary of important ecological features and their geographic context

Ecological Feature	Geographic Context of Importance and/or Protection Status
Non-statutory designations (7 No. LWSs)	County
Lowland mixed deciduous woodland (w1f)	Local
Other broadleaved woodland (w1g)	Local
Hedgerows (h2a)	Local
Watercourses (r1)	Local
Bats	Local Protected (Wildlife and Countryside Act, 1981 [as amended]; The Conservation of Habitats and Species Regulations, 2010 [as amended])
Badger	Protected (Protection of Badgers Act 1992)
Brown hare	Local
Breeding birds	Local
Wintering birds	Local
Nesting birds	Protected (Wildlife and Countryside Act, 1981 [as amended])
Reptiles	Protected (Wildlife and Countryside Act, 1981 [as amended])
Great crested newt	Protected (Wildlife and Countryside Act, 1981 [as amended]; The Conservation of Habitats and Species Regulations, 2010 [as amended])

5.0 ASSESSMENT OF EFFECTS

The Proposed Development

5.1 The following consent is sought from East Hertfordshire District Council:

"Outline planning application for development of employment land (flexible use B2, B8, E(c) and E(g)), up to 60 elderly accommodation units, informal open space, associated works and infrastructure including a new access from A507, with all matters reserved save for access."

5.2 The following impact assessment is based on the Framework Plan (HLM082/016/E) prepared by David Lock Associates and the Draft Illustrative Masterplan (HLM082-020) prepared by Stantec on behalf of Hallam Land Management Limited.

5.3 The construction phase of the proposed development will comprise the following:

- Cessation of arable cultivation
- Removal of sections of hedgerow from H1 and H8 (c. 0.79km) for vehicular and pedestrian accesses
- Construction of employment land (4.71ha)
- The establishment of 'Buntingford Park' (4.49ha), including Informal Open Space, proposed structural planting concentrated at the west of the Site, as well as recreational routes around areas of open space
- Establishment of Sustainable Drainage Systems (SuDS) including attenuation basins set within Informal Open Space to the east of the employment land

5.4 The operational phase of the proposed development will comprise the following:

- Occupation of new employment land
- Increase in human activity, including use of vehicles
- Increased artificial lighting and anthropogenic noise

Assumptions

5.5 The following assumptions have been made during the assessment of potential effects of the proposed development on important ecological features. Although 'assumed' and therefore taken as part of the pre-mitigation scenario, these measures are referenced in the proceeding sections where integral to the mitigation strategy.

5.6 In accordance with BS42020:2013, it is assumed that a Construction Environmental Management Plan (CEMP) will be secured by planning condition and prepared at the detailed design stage of development. In addition to the construction phase impact avoidance and mitigation measures identified in the following sections, the CEMP will detail

standard environmental control measures, including though not limited to the following:

- Implementation of strict protection measures for the root protection areas of retained woodland, trees and hedgerows, in accordance with BS5837:2012
- Standard best practice construction phase pollution prevention and control measures
- Sensitive working methods and timing to avoid direct impacts to nesting birds (generally vegetation removal outside nesting season of March through August)
- All working measures needed to comply with the terms of precautionary working methods for protected species specific to the
- works activity
- Updated ecological surveys, where necessary, to identify shifts in the baseline ecological condition (such as to support EPS derogation licence applications) in order that revised impact avoidance and mitigation measures can be adopted as required

5.7 In accordance with BS42020:2013, it is assumed that a Landscape and Ecology Management Plan (LEMP) will be secured by planning condition and prepared at the detailed design stage of development. The LEMP will set out measures for the establishment and long-term management of newly created and retained habitats to maximise benefits for biodiversity.

Mitigation Hierarchy

5.8 It is an established principle (CIEEM, 2018) that, wherever possible, potential negative effects should be avoided through 'Mitigation by Design', as this gives greater certainty over deliverability, demonstrates a well-designed scheme and ensures the correct application of the 'Mitigation Hierarchy' (as advocated by BS42020:2013, Defra 2019 and CIEEM, CIRIA & IEMA 2016).

5.9 The Proposed Development has sought to minimise effects on existing ecological habitat features at the Site through sensitive design, maintaining and buffering the majority of green corridors currently present at the Site, including the on-site woodland (W1), off-site woodland to the south (W2), on-site hedgerows (H1, H2 and H8) and offsite hedgerow (H5). These existing habitats are to be incorporated into green corridors within and connecting to the proposed Buntingford Park and Informal Open Space across the Site, as shown on the Framework Plan. As shown on the Illustrative Masterplan, Buntingford Park is proposed to feature new structural planting creating a green corridor along the west of the Site and new woodland planting to the west of the employment area. Tree planting is also proposed around boundaries of the open space, with structural planting, hedgerows and

tree planting buffering areas of open space from development from development edge effects.

5.10 The proposed development will necessitate the removal of c. 0.72km of hedgerow to allow access to the Site. However, the retained hedgerows, totalling c. c. 0.91km will be enhanced through infill planting to create species-rich hedgerows, representing a c. 20.46% net gain in the availability of this habitat at the site level.

5.11 This proposed habitat creation not only avoids potential negative effects on existing habitats at the Site, but also prevents loss of habitat for the range of fauna confirmed to be using the Site.

5.12 Further detail of the establishment and long to management of these habitats, to maximise benefits for biodiversity, will be set out in a LEMP at the detailed design stage.

Potential Impacts and Ecological Effects

Local Wildlife Sites (7No.)

5.13 No nature conservation designations are present on-site or adjacent which would be directly affected by the proposed scheme, either in construction or in-operation.

5.14 These Local Wildlife Sites within the surrounding area are all acknowledged to be sensitive to a range of factors. However, as above, no pathways of impact are identified from the proposed commercial/employment development to the LWSs and therefore no significant adverse effects predicted.

Other broadleaved woodland (w1g)

5.15 The on-site wooded copse (W1) is to be retained as part of the proposed development and buffered by areas of Informal Open Space. Adjacent woodland W2 is located south of the on-site green corridor and adjacent to new woodland and structural planting. Whilst retained, the woodlands will be subject to recreational pressure (i.e. trampling of woodland understorey, dog fouling, littering etc.) facilitated by the development but arising from existing and proposed residential dwellings locally.

5.16 In the absence of mitigation, the retained woodlands will also be vulnerable to damage during the construction phase from construction works located close to these habitats or within Root Protection Areas.

5.17 Overall, the proposed development is anticipated to result in impacts to woodlands W1 & W2, resulting in an adverse effect, significant at the **Local** level.

Mitigation

5.18 Retained woodland and other habitats will be protected in line with standard arboricultural practice (BS5837: 2012).

5.19 Buntingford Park forms part of the development proposals and includes areas of Informal Open Space with natural play trails and new tree/copse planting. No trails cross through the on-site or off-site woodlands. However, interpretation boards/signage and information leaflets will be provided to educate and inform visitors on the importance of the habitats within and adjacent to Buntingford Park and how to limit negative impacts on these habitats. Dog waste bins will also be provided within Buntingford Park and to prevent dog fouling and build-up of nutrients.

5.20 The retained woodland habitats will be restored through appropriate management interventions, such as coppicing, thinning, retention of deadwood features and, where appropriate, under-planting/seeding. These mitigation and management interventions would be secured by an appropriately worded planning condition, with management set out within a LEMP. It should be noted that woodland restoration works are likely to serve as mitigation for recreational impacts, and therefore the overall condition of the woodlands will be maintained rather than enhanced.

5.21 These measures would be secured by an appropriately worded planning condition.

Residual Effects

5.22 Subject to the full implementation of the above mitigation no significant adverse effects are predicted.

<u>Hedgerows (h2a)</u>

5.23 The scheme would result in the direct loss of 0.79km of hedgerow, within H1 and H8. The severance of this hedgerow will result in a reduction in connectivity across the hedgerow network. Damage of any retained hedgerows could also occur due to construction works located close to hedgerows or within Root Protection Areas.

5.24 Overall, the scheme is anticipated to result in direct loss of hedgerows at the Site, resulting in an adverse effect, significant at the **Local** level.

Mitigation

5.25 Retained hedgerows and mature trees will be protected in line with standard arboricultural practice (BS5837:2012).

5.26 To compensate for the severance of hedgerows, retained hedgerows will be 'gapped up' with new shrub and tree planting. Planting will

comprise native species of local provenance, with enhanced hedgerows proposed to be species-rich (>7 species per 30m).

5.27 This habitat creation would be secured by an appropriately worded planning condition and control of detailed landscape design.

Residual Effects

5.28 Subject to the full implementation of the above mitigation no significant adverse effects are predicted.

Bats

5.29 All British bat species and their roosts are protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended).

5.30 The on-site arable habitats provide some sub-optimal opportunities for foraging bats. However, hedgerows, in particular those with associated mature trees, and the (off-site) Thistley Vale Brook provide greater opportunities including navigational features and foraging opportunities for bats. The on-site and adjacent woodlands (W1-W5) also have the potential to provide roosting opportunities for bats.

5.31 The proposed development will result in severance of hedgerows H1 and H8 for Site access, resulting in a reduction in connectivity across the Site.

5.32 The Site is currently unlit. New artificial lighting of retained habitat during the construction and operational phases may lead to adverse disturbance impacts to bats and other nocturnal wildlife, with a reduction of use and diversity in these areas.

5.33 Overall, given the impacts to hedgerows on-site and in the absence of mitigation, the scheme would likely result in an adverse effect on the local bat population significant at the **Local** level, subject to the results of confirmatory surveys.

Mitigation

5.34 It is not predicted that the loss of habitat on-site would have a significant adverse effect on the bat population within the local area. Creation of green corridors, structural landscaping and Informal Open Space across the Site, will provide enhancement of habitats available to bats at the Site.

5.35 The lighting scheme for the Site will be sensitively designed so as to avoid light spill onto created habitat, existing hedgerows and retained vegetation thereby maintaining these habitats as foraging/commuting features for bats. This would be secured via control of detailed lighting designs and/or a suitably worded planning condition.

5.36 In addition to any mitigation required, enhancement measures will include integrated roosting features into new building/structures across the Site.

5.37 These measures would be secured by an appropriately worded planning condition.

Residual Effects

5.38 Subject to the full implementation of the above mitigation no significant adverse effects are predicted.

Badger

5.39 Badgers are protected under the Protection of Badgers Act (1992). Killing or injury of a badger, or interference with a sett is prohibited.

5.40 A main badger sett has been identified within the off-site woodland W4, with a single outlier sett located off-site at the south-western end of H4. All identified setts will be retained as part of the proposals.

5.41 Given the legal protection badgers are afforded under the Protection of Badgers Act 1992, unlicensed destruction of any active setts to make way for development of the Site would result in potential infringements.

5.42 The Site is currently unlit. New artificial lighting of retained habitat during the works may lead to adverse disturbance impacts to badger and other nocturnal wildlife, with a reduction of use and diversity in these areas.

Mitigation

5.43 No badger setts have been identified on-site. Nearby badger setts have can be retained during and following the development, with no requirement for a mitigation licence from Natural England.

5.44 During the proposed works, badgers are at risk of falling into open excavations or entering open ended pipework (above 150mm diameter), risking an offence under the above legislation. Given the protection badgers received under the Protection of Badgers Act 1992, the following precautionary measures will be implemented which could be secured via a suitably worded Planning Condition:

- Pre-construction badger survey and monitoring for signs of new sett digging.
- Covering any open excavations with wooden boards, or fitting them with appropriate escape ramps, in order to prevent badgers falling into them and injuring themselves or becoming trapped.
- Monitoring of works area for any new sett excavation during prolonged remediation, construction or landscaping works.

- Night working within 30m of any active existing or new setts will be avoided to prevent noise disturbance and night-time illumination near to setts.

5.45 These measures would be secured by an appropriately worded planning condition.

5.46 In order to maintain ecological functionality of retained and proposed habitats for badger, a sensitive external lighting scheme will be prepared. The future lighting scheme will be developed in consultation with an ecologist to avoid/minimise light spill onto retained and created habitat. This is to maintain dark corridors available for badger and other nocturnal wildlife.

Residual Effects

5.47 Following implementation of the mitigation measures set out at above, no significant residual effects are anticipated.

Brown Hare

5.48 The proposed development will result in the loss of arable habitats used by brown hare as part of a wider mosaic of habitats within their home range. However, given the location of the Site within a wider landscape of arable habitats, no significant adverse effects are anticipated to the wider population due to the loss of on-site arable habitat.

5.49 During the construction phase there is a risk of brown hare and other small mammals falling into and becoming trapped within open excavations. The above measures proposed to safeguard badgers will also mitigate these risks.

Breeding Birds

5.50 Surveys have confirmed the Site supports a range of breeding birds that is typical of farmland and urban fringe habitats. A total of 51 species were recorded within the Site and the wider survey area, including 26 priority species.

5.51 The development proposals would result in the permanent loss of all arable land (12.44ha) within the Site. Whilst the proposed employment area would account for 4.71ha of this land-take, a further 7.19ha of arable land would be subject to soft landscaping works to deliver the provision of Informal Open Space.

5.52 It is likely that the proposed development will lead to the permanent loss of at least four skylark breeding territories. However, the majority of breeding territories for other species are associated with hedgerows and woodland with greater activity beyond the Site boundary, within the wider survey area. These habitats will largely be retained.

5.53 Overall, in the absence of mitigation, the scheme would result in an adverse effect on breeding birds, significant at the **Local** level.

Mitigation

5.54 The design of the Informal Open Space is expected to offer benefits to the assemblage of passerines recorded during the 2024 breeding bird surveys, through the creation of an extensive area of species-rich grassland and wildflower meadow. This habitat creation measure would be achieved by planting a mix of native grasses, wildflowers and arable weeds of local provenance. To maximise the availability of breeding habitat and food resources for birds, a grassland habitat management plan would also be adopted, which would require that grass cutting within some areas of the Informal Open Space takes place after late summer to prevent disturbance to ground-nesting birds, including skylark.

5.55 The design of the Informal Open Space includes the retention of the existing copse and W2. Notwithstanding this, the development proposals would still give rise to small-scale losses in hedgerow vegetation; however, these would be outweighed by measures to create linear structural planting (collectively comprising 0.97ha in area) within the Informal Open Space. The new structural planting would form a corridor through the centre of the Site between informal and formal open spaces, and the species composition would comprise a diverse mix of native trees and shrubs of local provenance. This would include a variety of fruit- and seed-bearing species to provide additional foraging and nesting resources for birds, particularly green finch, linnet and yellowhammer. These species were recorded during the breeding bird surveys, and an increase in the availability of seed and fruit-bearing shrubs and trees could lead to increases in the local breeding populations of these birds.

5.56 The area of Informal Open Space on-site will not be sufficient to mitigate the loss of the four skylark breeding territories when accounting for recreational use by the public. To mitigate for the loss of skylark territories, skylark plots will be created within surrounding arable land. It is generally accepted that the provision of two skylark plots for each territory lost is an appropriate mitigation. Therefore, eight skylark plots, each comprising a minimum area of 3m x 6m (16m²), will be created and consist of unsown plots at a density of two plots per ha and located at least 24m from field margins.

Residual Effects

5.57 The habitat creation and enhancement measures that are embedded in the design of the Informal Open Space (as described above) proposals are considered sufficient to offset any associated adverse impacts upon the Site's breeding bird assemblage.

5.58 With the implementation of the above mitigation measures, no residual effects on breeding birds are anticipated.

Wintering Birds

5.59 Surveys have confirmed the Site supports a range of wintering birds that is typical of farmland and urban fringe habitats. A total of 40 species were recorded within the Site and its immediate surroundings, including 20 priority species.

5.60 The development proposals would result in the permanent loss of all arable land (13.28ha) within the Site. The employment area would account for just 4.71ha of this loss, with a further 7.24ha being subject to soft landscaping works, in order to deliver the proposed development's provision of Informal Open Space (IOS). The design of the proposed informal open space includes a range of habitat creation/enhancement measures that are considered likely to offset the loss of arable land on the Site's wintering bird assemblage.

5.61 Notwithstanding the habitat creation and enhancement measures associated with the proposed informal open space, it is considered possible that skylark *Alauda arvensis* may still be displaced from the Site as a wintering species (owing to their close association with arable habitats). However, given that: (a) a very small numbers of birds were recorded within the Site during the 2023/24 winter bird surveys; (b) and the large extent of suitable arable habitat for this species that exists in the Site's wider surroundings, their potential absence from the Site is not considered to be significant in the context of the Site's wintering bird assemblage.

Mitigation

5.62 The informal open space proposals include the provision of new wetland habitats through the creation of a Sustainable Drainage System (SuDS) basin in the south-east of the Site. These waterbodies would provide suitable foraging and roosting opportunities for a range of wetland birds, such as mallard *Anas platyrhynchos*, snipe *Gallinago gallinago*, and reed bunting *Emberiza schoeniclus*. This could be achieved by incorporating a range of micro-habitats into the design of the wetlands, including areas of open water, vegetated waterbody margins, areas of soft mud, and stands of tall rushes and reeds.

5.63 The landscape design of the informal open space would also be expected to offer benefits to the assemblage of passerines that was recorded during the 2023/24 winter bird surveys. On-site and adjacent woodland will be retained as well as the existing hedgerow network. Further to this, a series of linear copses and new woodland habitat would be created, which would increase the extent of woodland habitat on the Site from 0.15ha (under the existing situation) to 1.05ha (under the proposed development). The new copse planting would form a corridor

through the centre of the Site, and the woodland would effectively represent an extension to the existing woodland area. New tree and shrub planting would comprise a diverse mix of native species of local provenance, including a variety of fruit- and seed-bearing species. This would provide additional foraging and roosting resources for birds, particularly wintering thrushes (such as fieldfare, redwing, and song thrush). These species were recorded on the Site at relatively low densities during the 2023/24 winter bird surveys, and an increase in the availability of fruit-bearing shrubs and trees could lead to increases in the local wintering populations of these birds.

5.64 A significant proportion of the informal open space would undergo works to create an area of species-rich grassland and wildflower meadow habitat. This habitat creation measure would be achieved by planting a mix of native grasses, wildflowers and arable weeds of local provenance. Particular emphasis would be placed upon the inclusion of seed-bearing species within the planting mix, since these would offer farmland passerines (such as linnet *Linaria cannabina*, and yellowhammer *Emberiza citrinella*) with an abundant winter foraging resource. In order to maximise the availability of the seed resource for birds during the winter months, a grassland habitat management plan would also be adopted, which would require that: (a) areas of grassland/meadow be left 'uncut' and retained over the winter months: and (b) grass cutting elsewhere within the informal open space takes place after late-summer to allow flowering plants to set seed.

Residual Effects

5.65 Whilst the development proposals would give rise to the permanent loss of arable habitat within the Site, the habitat creation and enhancement measures that are embedded in the design of the informal open space (as described above) are considered sufficient to offset any associated adverse impacts upon the Site's wintering bird assemblage. Therefore, with the implementation of the above mitigation measures, no residual effects on wintering birds are anticipated.

<u>Nesting Birds</u>

5.66 Wild birds, their active nests, and their eggs are protected under the Wildlife and Countryside Act 1981 (as amended). Throughout the works there is the risk of offences in respect of any birds nesting in vegetation during the nesting bird season (March to August, inclusive).

Mitigation

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

Residual Effects

5.68 With the implementation of the above mitigation measures, no residual effects are anticipated.

Barn Owl

5.69 In addition to nesting birds more generally, the potential for nesting and roosting barn owl has been identified within cavities in four mature trees within woodland to the south of the Site. Whilst no evidence of current or recent occupation by barn owl has been recorded, comprehensive inspections have not been possible due to the nature and extent of the cavities.

5.70 In addition to the above protection under Wildlife & Countryside Act, barn owl receives protection through their inclusion on Schedule 1 of the Act, which makes it an offence to disturb this species while it is building a nest or is in, on or near a nest containing eggs or young. It is also an offence to disturb their dependent young.

5.71 The proposed development would not necessitate the felling of any of the trees identified as providing potentially suitable nesting opportunities, Therefore, the physical loss of any barn owl nest sites in these trees (if present) would not be expected to occur.

5.72 Construction phase activities are likely to give rise to increased levels of human activity, noise and potentially vibration throughout their duration. There remains potential therefore for at least one pair of nesting barn owls (if present) to be disturbed and potentially displaced.

5.73 Whilst individually unlikely to significantly undermine the conservation interests of local barn owl populations, the above potential impacts could, in combination, produce a negative effect significant at the Local level. Disturbance to nesting barn owl as a result of activities associated with the proposed development may also constitute an offence under subsection 1(5) of the Wildlife and Countryside Act 1981 (as amended).

Mitigation

5.74 The impact assessment has identified that the development proposals could result in the effective loss of potential nesting sites within the existing area of woodland, as a result of new adjoining areas of woodland planting deterring barn owl from accessing these sites (once the new tree planting has reached sufficient maturity). Whilst this would not be expected to occur for a number of years following the planting of the new woodland habitat, artificial nest boxes will be installed at two nearby locations to mitigate for the potential future loss of these nesting opportunities. The artificial nest boxes would be installed in locations which: (i) are not currently known to support nesting barn owl; (ii) could be safeguarded in the long-term; and (iii) could be accessed to allow

to annual maintenance under a Landscape Environment Management Plan (LEMP) or similar management agreement.

5.75 A monitoring programme to determine the presence/absence of nesting barn owl from any trees which are considered to offer potential nesting opportunities for this species would also be undertaken prior to and/or during nearby construction/habitat creation works. In the event that any active barn owl nest sites were identified, restrictions on the timing, nature and extent of any nearby construction and habitat creation works may need to be imposed in order to avoid displacing nesting birds, and to avoid any associated offence from being committed under the Wildlife and Countryside Act (1981), as amended. Barn owl typically nest from March to August (inclusive), although active nests have been recorded in any month of the year.

Residual Effects

5.76 With the implementation of the above mitigation measures, no residual effects are anticipated.

Reptiles

5.77 All British reptile species are listed within Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are afforded protection against killing and injury under parts of sub-section 9(1) of the Act. In addition, all British reptile species are S41 species of Principal Importance in England.

5.78 Hedgerows and adjacent off-site grassland provide limited areas of suitable habitat for reptiles, with a low population of slow-worm identified within the wider survey area along the south-west margin of F3. Removal of suitable reptile habitat across the Site (limited to hedgerows and narrow field margins) therefore has the potential to kill or injure slow-worm, resulting in offences being caused under their protective legislation.

Mitigation

5.79 Any hedgerow or grassland habitats to be lost or damaged by construction works will be subject to precautionary clearance works to allow reptiles to disperse safely into adjacent retained habitat, avoiding any direct impact to individual reptiles.

5.80 Vegetation clearance will ideally take place during the period March to September, during warm and dry conditions when reptiles will be active and able to disperse safely, subject to nesting bird constraints.

5.81 Clearance will be completed in a staged manner, comprising gradual vegetation height reduction from 200mm to ground level. All arisings will be removed to prevent use as refugia.

5.82 Directional cutting will be undertaken strategically at the furthest point from the retained suitable reptile habitats, moving gradually towards retained habitats. Suitably experienced persons will move ahead of the clearance works, conducting a hand search of any potential refugia (including brash and rubble piles) for reptiles. Any reptiles found will be captured and relocated to an adjacent area of retained habitat.

5.83 Prior to the onset of works vegetation height will be maintained below 150mm to maintain habitat as unsuitable for reptiles and prevent the dispersal of reptiles into the area of works.

5.84 It is not predicted that the loss of habitat on-site would have a significant adverse effect on the reptile population within the local area. Creation of green corridors, structural landscaping, Informal Open Space and provision of wildlife ponds across the Site, will provide enhancement of habitats available to reptiles at the Site.

5.85 These measures would be secured by an appropriately worded planning condition and control of detailed landscape design, with management set out within the LEMP.

Residual Effects

5.86 With the implementation of the above mitigation measures, no residual effects are anticipated.

Great Crested Newt

5.87 Great crested newts (GCN) and their habitats are strictly protected under the Wildlife and Countryside Act 1981 (as amended) and the conservation of Habitats and Species Regulations 2010. In combination this legislation protects great crested newts from deliberate capture, killing and injury, intentional or reckless disturbance, damage or destruction of a resting site or breeding place, and intentional or reckless damage, destruction or obstruction of a breeding site or rest place.

5.88 A number of ephemeral waterbodies were identified within the off-site woodland (W2), and six further water bodies appear to be present within a dispersible range of the Site, based on OS mapping. Furthermore, GCN are known to be present in the wider area. Whilst aquatic habitats on-site are limited to ephemeral waterbodies which dry and therefore provide sub-optimal suitability for GCN, there remains a small possibility these waterbodies may be used for breeding and that habitats on-site may be used by individual GCN during their terrestrial phase. Therefore, in the absence of mitigation there is the potential to kill or injure GCN and therefore result in offences being caused under their protective legislation.

5.89 The loss of habitat on-site to development is not predicted to have a significant adverse effect on the GCN population within the local area. Furthermore, creation of green corridors, structural landscaping,

Informal Open Space and provision of wildlife ponds across the Site, will provide enhancement of habitats available to GCN at the Site.

Mitigation

5.90 It is acknowledged that the 'favourable conservation status' of the local GCN population is unlikely to be affected by the proposed scheme. Nonetheless, it is advised that works be covered under a mitigation ('derogation') licence or permit to ensure legal compliance (i.e. to avoid killing or injury of individual GCN), with the following options available:

- Non-licenced method statement following a precautionary approach to Site clearance, but without the need for a licence.
- 'Traditional licensing' approach, whereby a European Protected Species (EPS) 'derogation' licence is sought for the project from Natural England. With potential requirement for trapping, translocation, habitat compensation and monitoring.
- As above, but with the adoption of Natural England's New Licencing Policies (NLPs), reducing or avoiding the need for trapping and exclusion fencing, with a more 'progressive' mitigation approach focused upon the provision of new habitat for GCN.
- Registration of the Site under the Hertfordshire District Level Licencing (DLL) scheme in association with Natural England, whereby an off-site payment is made to strategic mitigation.

5.91 Utilisation of one of the above methods would prevent or cover any potential killing or injury of individual GCN during construction, which is a legal offence. Consideration of the most suitable mitigation measure to employ will be decided upon following completion of as part of a detailed application.

5.92 These measures would be secured by an appropriately worded planning condition.

Residual Effects

5.93 With the implementation of the above mitigation measures, no residual effects are anticipated.

Residual Effects

5.94 Table 3 below summarises the assessment of potential impacts on each important ecological feature, proposed mitigation and the assessed residual effects.

Table 3. Summary of effects

Important Ecological Feature	Potential Impacts and Effects	Avoidance & Mitigation Measures	Mechanism by which Measures are Secured	Residual Effects
Local Wildlife Sites	No significant adverse effect	-	-	-
Other broadleaved woodland	Local, adverse	Provision of informal open space inc. new tree/copse planting, signage, provision of dog waste bins and detailed management plan	LEMP and detailed design secured through Planning Condition	No significant effect
Hedgerows	Local, adverse	Compensatory tree planting, strengthening of boundary vegetation	Detailed design secured through Planning Condition	No significant effect
Bats	Local, adverse	Creation of green corridors, new infill planting, lighting scheme, provision of integrated bat boxes	Detailed design secured through Planning Condition	No significant effect
Badger	Potential offences caused	Pre-commencement badger survey, precautionary working methods, lighting scheme	Legal requirement/ planning condition	No legal infringement
Brown Hare	No significant adverse effect	-	-	-
Birds	Local, adverse Potential offences caused	Nesting bird avoidance measures, habitat creation, provision of integrated bird boxes	Legal requirement/ planning condition	No legal infringement
Reptiles	Potential offences caused	Precautionary working methods, habitat creation, management of habitats on-site	Legal requirement/ planning condition	No legal infringement
Great Crested Newt	Potential offences caused	Precautionary working methods, habitat creation, management of habitats on-site	Legal requirement/ planning condition	No legal infringement

Enhancement

5.95 Areas of new habitat creation will provide significant opportunities for a range of species on-site, as well as increasing the biodiversity of the habitats on-site through the provision of new habitats such as grassland, greater structural diversity and improved management of woodlands/hedgerows.

5.96 In addition to these enhancements which are embedded into development proposals, a range of additional ecological enhancement measures will be delivered as part of the proposed development, as identified below. Further details will be set out in a LEMP at the detailed design stage, the following key elements/features are proposed:

- Large-scale habitat creation within Buntingford Park- the western portion of the Site will be landscaped to form an area of open grassland and linear wooded habitat running north-south.
- Structural planting across the site will established and managed to form 'ecotones' from high canopy down through shrub layers to tall herbs and grassland, to provide botanical and structural interest along areas of new structural planting, retained woodland and hedgerows.
- Wetland features will be formed around SuDS features in the east of the site to comprise wet grassland and areas of permanent water.
- A range of other ecological enhancement measures will be included subject to detailed design of commercial areas including but not limited to:
    - Wildlife ponds
    - Log piles and hibernacula
    - Further invertebrate banks
    - Bee posts/standing dead wood features
    - Ecological niches such as bird nesting, bat roosting and bee brick features, where construction allows

6.0 CONCLUSIONS

6.1 In the absence of any mitigation measures, the proposed development would have the potential to result in negative effects significant at up to the Local level. However, through the implementation of some straightforward mitigation and precautionary measures as proposed here, the development is not anticipated to result in any significant residual negative effects on important ecological features.

6.2 The Framework Plan and Illustrative Masterplan demonstrate the potential to deliver net benefits for wildlife in the form of additional habitats, with the opportunity to provide additional biodiversity enhancement measures alongside the new housing.

6.3 The measures set out herein can be secured through appropriate conditions attached to any planning consent, and the development may therefore be delivered without harm to nature conservation interests. Specifically, it is anticipated that planning conditions would be used to secure:

- Construction Environmental Management Plan (CEMP): In addition to wider environmental controls and best practice construction management, the CEMP will set out construction-phase impact avoidance measures with respect to nesting birds, barn owl, badger, water vole, otter, reptiles and GCN.
- Landscape and Ecology Management Plan (LEMP): The LEMP will detail the establishment and long-term management of retained and newly created habitats to maximise benefits for wildlife. It will include an Ecological Enhancement Plan drawing, setting out the number, type and position of enhancement features as proposed herein.
- Lighting Strategy: A sensitive lighting strategy will accompany the detailed layout, ensuring that dark corridors are maintained, and minimising light spill to retained and newly created habitats.

6.4 Based on the successful implementation of avoidance, mitigation and enhancement measures set out herein, the scheme is considered to accord with all relevant nature conservation legislation, as well as with the provisions of East Hertfordshire District Plan.

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Appendix A

Habitats Plan



N

- Site boundary
- Survey area
- Arable and horticulture (c1)
- Lowland mixed deciduous woodland (w1f)
- Other neutral grassland (g3c)
- Other woodland-broadleaved (w1g)
- Developed land, sealed surface (u1b)
- Dense scrub (h3)
- Hedgerows (h2a)
- Rivers and streams (r2) (Thistley Vale Brook)
- Trees
- Contours

Note: Hedgerow H6 contains small sections of established hedgerow, with new planting within gaps.

0 200 400 m

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Project	Land South of A507 and West of Buntingford	Date	June 2024	Drawing No.	CSA/6815/103
Drawing Title	Habitats Plan	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC

Appendix B

Legislation and Planning Policy

1.1. The **Conservation of Habitats and Species Regulations 2017** (as amended) make prescriptions for the designation and protection of Sites of Community Importance ('European sites', i.e. Special Areas of Conservation and Special Protection Areas) and European Protected Species (EPS). The latter include all native bats, great crested newts, dormice, otters and certain reptiles, listed under Annex II of the Regulations. Following the UK's departure from the European Union, the provisions of the Regulations have been retained through enactment of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which came into force on 31 December 2020.

1.2. The **Wildlife and Countryside Act 1981** (as amended, principally by the Countryside and Rights of Way Act 2000) forms the basis for protection of statutory designated sites of national importance (e.g. Sites of Special Scientific Interest; SSSIs) and native species that are rare and vulnerable in a national context. Additionally, badgers are protected under the **Protection of Badgers Act 1992**.

1.3. The **Environment Act 2021** received Royal Assent in November 2021. Through an amendment to the Town and Country Planning Act 1990 the Environment Act introduced a mandatory requirement for all planning permissions to be conditional upon the submission of a Biodiversity Gain Plan for approval by the Local Planning Authority. The Plan will need to demonstrate a net gain of at least 10% in the biodiversity value of the development site.

1.4. Section 40(1) of the **Natural Environment and Rural Communities (NERC) Act 2006** (as amended) states that each public authority, "must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving and enhancing biodiversity." This legislation makes it clear that planning authorities should consider impacts to biodiversity when determining planning applications, with particular regard to the Section 41 (S41) lists of 56 habitats and 943 species of principal importance. The UK Biodiversity Action Plan (BAP) has been superseded by the Biodiversity 2020 Strategy, however Local BAPs continue to influence biodiversity management and conservation effort, including through the spatial planning system, at the local scale.

1.5. The **National Planning Policy Framework (2024)** (NPPF) sets out the government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 15: Conserving and Enhancing the Natural Environment, paragraph 187, states that the planning system and planning policies should minimise impacts on and provide net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

1.6. Paragraph 193 sets out the principles that local planning authorities should apply when determining planning applications:

- If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.
- Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest.
- Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.
- Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

1.7. Accompanying the NPPF, central government guidance on the implementation of planning policies is set out within online Planning Policy Guidance (PPG). The Natural Environment PPG addresses principles across a broad spectrum of topics targeting biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services, and the use of local ecological networks to support the national Nature Recovery Network. In particular, the PPG promotes the delivery of measurable Biodiversity Net Gain through the creation and enhancement of habitats alongside development.

1.8. The **Government Circular 06/2005**, which is referred to within the NPPF, defines statutory nature conservation sites and protected species as a material consideration in the planning process.

1.9. Local planning policies of relevance to ecology, biodiversity and/or nature conservation have been set out in Table 1 below.

Table 1. Summary of regional and local planning policy relating to ecology

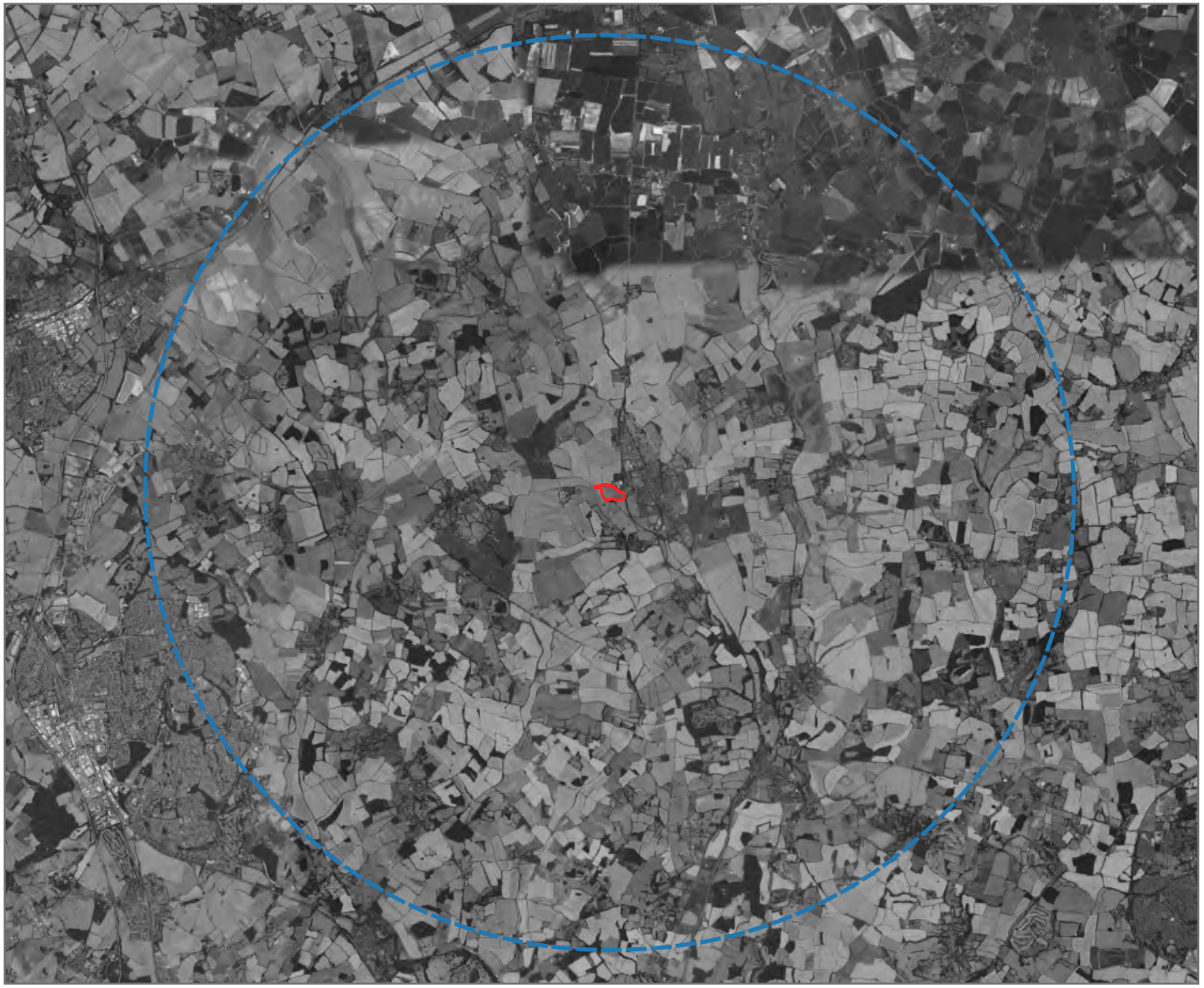
Policy	Summary
East Herts District Plan (adopted 2018)	
Policy NE1: International, National and Locally Designated Nature Conservation Sites	"Development proposals, land use or activity (either individually or in combination with other developments) which are likely to have a detrimental impact which adversely affects the integrity of a designated site, will not be permitted unless it can be demonstrated that there are material considerations which clearly outweigh the need to safeguard the nature conservation value of the site, and any broader impacts on the international, national, or local network of nature conservation assets. Evidence will be required in the form of up-to-date ecological surveys undertaken by a competent ecologist prior to the submission of an application. The type of evidence required will be commensurate to the scale and location of the development and the likely impact on biodiversity, the legal protection or other status of a site. Where insufficient data is provided, permission will be refused. Proposals should avoid impacts on sites of nature conservation value and wherever possible, alternative options which reduce or eliminate such impacts should be pursued. Where adverse impacts are unavoidable, measures to mitigate the impact will be sought, commensurate to the importance of the site in terms of its status in the hierarchy and the contribution it makes to the wider ecological networks. Where adequate mitigation measures are not possible, compensatory measures may be appropriate. Such compensatory schemes should seek to achieve a net gain for nature and the Council will consider the use of conditions and/or planning obligations to secure appropriate mitigation/compensation commensurate to the type and scale of development. Compensatory measures can be situated on or off the development site. The availability of compensatory measures will be a material consideration in the determination of development proposals. Ecological impacts will be quantified by utilising and taking into account a locally approved Biodiversity Metric where appropriate. Development must demonstrate a net gain in ecological units. Ecological information must be supplied in accordance with BS 42020 2013."
Policy NE2: Sites or Features of Nature Conservation Interest (Non-Designated)	"All proposals should achieve a net gain in biodiversity where it is feasible and proportionate to do so, as measured by using and taking into account a locally approved Biodiversity Metric, and avoid harm to, or the loss of features that contribute to the local and wider ecological network. Proposals will be expected to apply the mitigation hierarchy of avoidance, mitigation and compensation, as set out in the NPPF, and integrate ecologically beneficial planting and landscaping into the overall design."

Policy	Summary
Policy NE3: Species and Habitats	"Development should always seek to enhance biodiversity and to create opportunities for wildlife. Proposals must demonstrate how the development improves the biodiversity value of the site and surrounding environment. Evidence will be required in the form of up-to-date ecological surveys undertaken by a competent ecologist prior to the submission of an application. The Biodiversity value of a site pre and post development will be determined by applying a locally approved Biodiversity Metric where appropriate. Submitted information must be consistent with BS 42020 2013. Where insufficient data is provided, permission will be refused. Proposals should detail how physical features will be maintained in the long term. Development which would result in the loss or significant damage to trees, hedgerows or ancient woodland sites will not be permitted. The Council will seek their reinforcement by additional planting of native species where appropriate. Protective buffers of complementary habitat will be expected to adjoin these features, sufficient to protect against root damage and improvement of their long term condition. A minimum buffer zone of 10m (or greater if required) is considered appropriate. Proposals will be expected to protect and enhance locally important biodiversity sites and other notable ecological features of conservation value. Proposals should avoid impacting on Species and Habitats of Principle Importance as published under section 41 of the Natural Environment and Rural Communities Act 2006 (or as subsequently amended). Where adverse impacts are unavoidable, appropriate mitigation and compensation measures must be employed, commensurate to the importance, the legal protection or other status of the species or habitat. The District Council will impose conditions / planning obligations which seek to: • Facilitate the survival of existing populations as well as encouraging the establishment of new populations • Reduce disturbance to a minimum • Provide adequate alternative habitats to sustain at least the current levels of populations Development adjoining rivers or streams will be required to preserve or enhance the water environment in accordance with Policy WAT3 (Water Quality and the Water Environment). Integrated bird and bat boxes will be expected in all development bordering public green space and beneficial habitat."
Policy WAT3: Water Quality and the Water Environment	"Development proposals will be required to preserve or enhance the water environment, ensuring improvements in surface water quality and the ecological value of watercourses and their margins and the protection of groundwater.

Policy	Summary
	Unless there is clear justification for not doing so, an undeveloped buffer strip at least 8 metres wide should be maintained alongside all main rivers, and an appropriate buffer strip should be maintained at ordinary watercourses. Any development proposals should include an appropriate management scheme for buffer strips. Opportunities for removal of culverts, river restoration and naturalisation should be considered as part of any development adjacent to a watercourse. Additional culverting and development of river corridors will be resisted."

Appendix C

Desk Study Information



N

Site boundary

10km buffer

*No International Statutory Designations identified within search area.

0 2.5 5 km

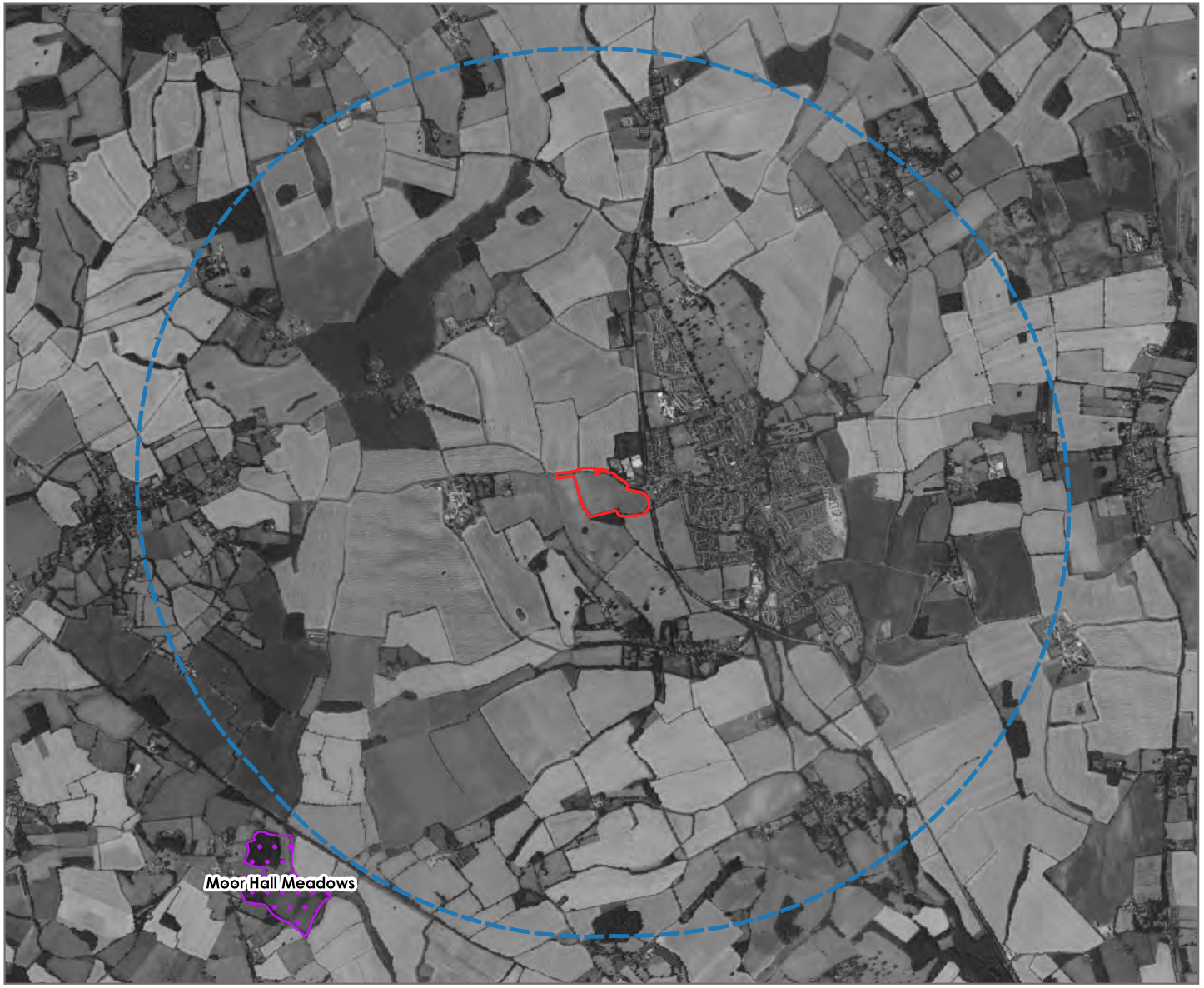
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Project	Land South of A507 and West of Buntingford	Date	June 2024	Drawing No.	CSA/6815/105
Drawing Title	International Statutory Designations	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC



Site boundary

3km buffer

Sites of Special Scientific Interest

*No National/Local Statutory Designations identified within search area.

0 1 2 km

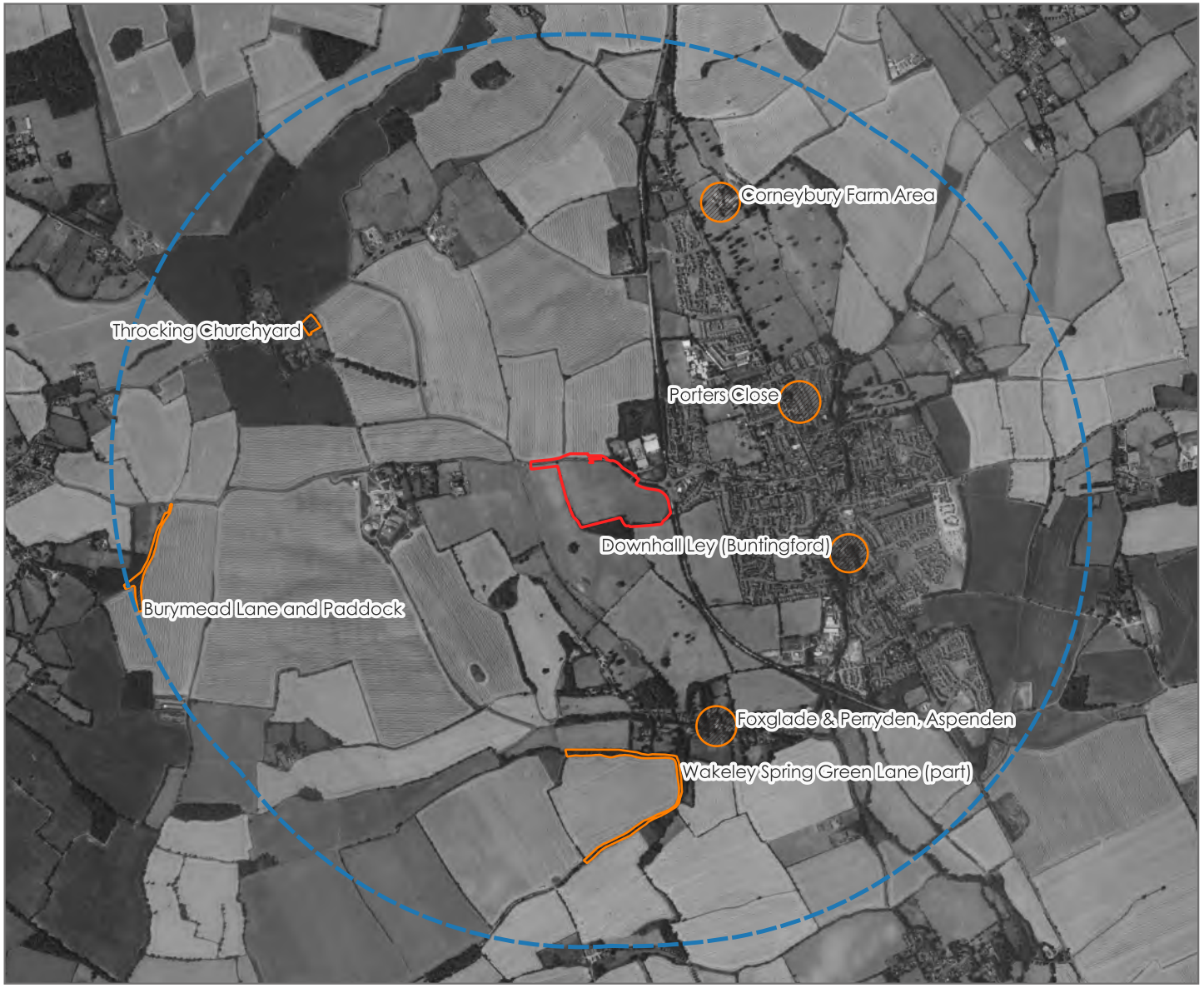
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Drawing Title	National/Local Statutory Designations	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC



N

Site boundary

2km buffer

Local Wildlife Sites

0 0.5 1 km

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Project	Land South of A507 and West of Buntingford	Date	June 2024	Drawing No.	CSA/6815/104
Drawing Title	Non-Statutory Designations	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC



N

Site boundary

1km buffer

Deciduous woodland

Traditional orchard

Chalk river - high certainty

Chalk river - low certainty

0 0.5 1 km

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Project	Land South of A507 and West of Buntingford	Date	June 2024	Drawing No.	CSA/6815/102
Drawing Title	Priority Habitats	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC



Site boundary

1km buffer

*No ancient woodland, as shown on the ancient woodland inventory within search area.

0 0.5 1 km

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Project	Land South of A507 and West of Buntingford	Date	June 2024	Drawing No.	CSA/6815/107
Drawing Title	Ancient Woodland	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC



N

Site boundary

500m buffer

250m buffer

Pond (with reference number)

0 250 500 m

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Project	Land South of A507 and West of Buntingford	Date	June 2024	Drawing No.	CSA/6815/101
Drawing Title	Pond Plan	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC

Appendix D

Habitats and Flora Species List

Table 1. Habitat Polygons

Site Name	Land South of A507 and West of Buntingford						
Survey Date and Surveyor(s)	06/12/2023, 20/02/2024 and 15/05/2024 Alexandra Cole						
		Habitat Parcel Number/Habitat Type					
Scientific Name	**Common Name**	F1-F3 (c1)	W1 (w1g)	W2 (w1f)	W3 (w1f)	W4 (w1g)	W5 (w1f)
Herb Species							
Aegopodium podagraria	Ground-elder			X			
Alliaria petiolata	Garlic mustard			X			X
*Anthriscus sylvestris^*	Cow parsley^	X		X	X		
Arctium minus	Lesser burdock			X			
Arctium sp.	Burdock	X					
Artemisia vulgaris	Mugwort	X					
Arum maculatum	Lords-and-ladies			X	X	X	X
Centaurea nigra	Common knapweed	X					
*Cirsium arvense^*	Creeping thistle^	X					
*Cirsium vulgare^*	Spear thistle^	X					
Conium maculatum	Hemlock			X		X	
Ficaria verna	Lesser celandine			X	X		X
Galium aparine	Cleavers	X		X	X	X	X
Geranium dissectum	Cut-leaved crane's-bill			X			
Geranium molle	Dove's-foot crane's-bill	X					
Geranium robertianum	Herb Robert			X			
Geum urbanum	Wood avens			X			
Glechoma hederacea	Ground-ivy	X		X	X		
Helminthotheca echioides	Bristly oxtongue	X					
Heracleum sphondylium	Hogweed	X		X			
Hyacinthoides × massartiana	Bluebell (hybrid)				X		X
Lamium album	White dead-nettle	X		X			
Lapsana sp.	Nipplewort	X					
Mercurialis perennis	Dog's mercury			X	X		
Ranunculus acris	Meadow buttercup			X			
Ranunculus auricomus	Goldilocks buttercup			X			
*Ranunculus repens^*	Creeping buttercup^	X					
Rumex sp.	Dock	X		X			
Senecio jacobaea	Common ragwort	X					
Senecio vulgaris	Groundsel	X			X		X
Silene sp.	Campion sp.			X			
Taraxacum officinale agg.	Dandelion	X					
*Urtica dioica^*	Common nettle^	X	X	X	X	X	X
Veronica persica	Common field-speedwell	X		X			
Viola sp.	Violet			X			
Grasses							
Alopecurus pratensis	Meadow foxtail			X			
Anisantha sterilis	Barren brome			X	X		X
Arrhenatherum elatius	False oat-grass	X		X	X		
Brachypodium sylvaticum	False brome			X	X		
Dactylis glomerata	Cock's-foot	X		X			
Elytrigia repens	Common couch	X					
Festuca rubra	Red fescue	X					
Holcus lanatus	Yorkshire-fog	X					
Lolium perenne	Perennial rye-grass	X					
Phalaris arundinacea	Reed Canary-grass	X					
Poa annua	Annual meadow-grass	X					
Poa nemoralis	Wood meadow-grass			X	X		X
Poa trivialis	Rough meadow-grass			X			
Woody Species							
Coniferous							
Taxus baccata	Yew			X			
Broadleaved							
*Acer campestre**	Field maple*			X			
Acer pseudoplatanus	Sycamore			X	X		
Aesculus hippocastanum	Horse-chestnut			X	X		X
Castanea sativa	Sweet chestnut			X	X		X
*Corylus avellana**	Hazel*	X		X			
Crataegus monogyna	Hawthorn			X	X	X	X
Fagus sylvatica	Beech			X			
Fraxinus excelsior	Ash	X					
Hedera helix	Ivy	X	X	X	X		X
*Ilex aquifolium**	Holly*			X			
Quercus robur	Pedunculate oak			X			
Ribes uva-crispa	Gooseberry			X			
Rubus fruticosus agg.	Bramble	X	X				
Sambucus nigra	Elder		X			X	X
Tilia sp.	Lime sp.				X		
Ulmus sp.	Elm			X	X		X

** = Hertfordshire ancient woodland vascular plants list*

^ = Species indicative of suboptimal condition for grassland habitats

Table 2. Linear Habitats

Site Name	Land South of A507 and West of Buntingford								
Survey Date and Surveyor(s)	06/12/2023 Alexandra Cole, 01/05/2024 and 30/05/2024 Rhodri Gruffydd								
Scientific Name	**Common Name**	**Habitat Parcel Number/Habitat Type**							
		H1 (h2a)	H2 (h2a)	H3 (h2a)	H4 (h2a)	H5 (h2a)	H6 (h2a)	H7 (h2a)	H8 (h2a)
Herb Species									
Alliaria petiolata	Garlic mustard	X	X	X	X	X	X	X	X
Anthriscus sylvestris	Cow parsley		X	X	X		X		X
Arctium sp.	Burdock sp.	X							
Arctium minus	Lesser burdock				X				
Artemisia vulgaris	Mugwort	X							
Arum maculatum	Lords-and-ladies					X		X	
Centaurea nigra	Common knapweed								X
Cirsium arvense	Creeping thistle	X	X		X			X	X
Cirsium vulgare	Spear thistle	X			X	X		X	X
Conium maculatum	Hemlock	X			X	X	X	X	X
Dipsacus fullonum	Wild Teasel				X				
Epilobium sp.	Willowherb	X					X		
Ficaria verna	Lesser celandine						X		
Galium album	Hedge bedstraw						X		X
Galium aparine	Cleavers	X	X		X	X	X	X	X
Geranium dissectum	Cut-leaved crane's-bill						X		X
Geranium molle	Dove's-foot crane's-bill			X	X				
Geranium pyrenaicum	Hedgerow crane's-bill								X
Geum urbanum	Wood avens		X		X	X			X
Glechoma hederacea	Ground-ivy	X	X			X	X	X	X
Helminthotheca echioides	Bristly oxtongue	X					X		
Heracleum sphondylium	Hogweed	X	X		X	X	X		X
Humulus lupulus	Hop				X				
Hyacinthoides × massartiana	Bluebell (hybrid)						X		
Hypericum sp.	St John's-wort								X
Lamium album	White dead-nettle		X	X	X	X	X	X	X
Malva sylvestris	Common mallow						X		
Mercurialis perennis	Dog's mercury				X				X
Myosotis arvensis	Field forget-me-not								X
Ranunculus repens	Creeping buttercup						X		
Rumex obtusifolius	Broad-leaved dock						X		
Rumex sp.	Dock		X	X	X	X		X	
Senecio jacobaea	Common ragwort				X		X		
Silene dioica	Red campion				X				
Solanum dulcamara	Bittersweet					X		X	
Sonchus asper	Prickly sowthistle	X							
Sonchus oleraceus	Smooth sowthistle						X		
Stachys sylvatica	Hedge woundwort			X				X	X
Stellaria holostea	Greater stitchwort								X
Tamus communis	Black bryony				X			X	
Urtica dioica	Common nettle	X	X	X	X	X	X	X	X
Veronica chamaedrys	Germander speedwell								X
Grasses									
Anisantha sterilis	Barren brome	X	X		X	X	X	X	X
Arrhenatherum elatius	False oat-grass	X				X	X		X
Brachypodium sylvaticum	False brome			X	X	X			X
Bromus hordeaceus	Soft-brome			X	X		X		
Dactylis glomerata	Cock's-foot		X		X		X	X	X
Elytrigia repens	Common couch						X		X
Festuca rubra	Red fescue						X		
Poa nemoralis	Wood meadow-grass							X	
Poa trivialis	Rough meadow-grass	X	X	X	X	X	X	X	X
Woody Species									
Broadleaved									
*Acer campestre**	Field maple*	X	X	X	X	X	X	X	X
Acer pseudoplatanus	Sycamore		X	X	X	X			
Betula pendula	Silver birch	X							
Cornus sp.	Dogwood	X	X			X	X		X
*Corylus avellana**	Hazel*	X	X			X		X	X
Crataegus monogyna	Hawthorn	X	X	X	X	X	X	X	X
Euonymus europaeus	Spindle		X						X
Fraxinus excelsior	Ash	X		X	X	X	X	X	X
Hedera helix	Ivy	X	X	X	X	X			X
Juglans regia	Walnut	X							
Ligustrum vulgare	Wild privet								X
Malus sp.	Apple		X					X	
Prunus avium	Cherry	X							
Prunus spinosa	Blackthorn	X	X	X	X	X	X	X	X
Prunus sp.	Prunus sp.	X							
Quercus robur	Pedunculate oak	X					X	X	X
Rosa sp.	Rose sp.		X	X					X
Rosa canina sp.	Dog-rose	X		X	X	X	X	X	X
Rubus fruticosus agg.	Bramble	X	X	X	X	X	X	X	X
Salix sp.	Willow					X			
Sambucus nigra	Elder	X	X	X	X	X		X	X
Tilia x europaea	Common lime	X							
Ulmus sp.	Elm	X	X	X		X	X	X	X
Viburnum lantana	Wayfaring-tree	X				X	X		X
*Viburnum opulus**	Guelder-rose*	X							

** = Hertfordshire ancient woodland vascular plants list*

Appendix E

Evaluation & Assessment Methods

1.1. Ecological features are evaluated and assessed in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) 2018 Guidelines for Ecological Impact Assessment (EcIA). For clarity, the evaluation and assessment process adopted within this EcIA is set out below.

Establishing Potentially Important Ecological Features

1.2. Ecological features are assessed where they are considered to be important, and where they may be impacted by a proposed development. A feature may be considered important for a variety of reasons, such as quality, extent, rarity and/or statutory protection. Table 1 below sets out a non-exhaustive list of ecological features that are typically considered, along with key examples:

Table 1. Potentially important ecological features (adapted from CIEEM 2018)

Potentially Important Ecological Features	**Typical examples**
Statutory designated sites under international conventions or European Legislation	Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA)
Statutory designated sites under national legislation	Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR, Local Nature Reserves (LNR)
Non-statutory, locally designated wildlife sites	Local Wildlife Sites (LWS), County Wildlife Sites (CWSs), Sites of Importance for Nature Conservation (SINCs)
National biodiversity lists	Habitats or Species of Principal Importance for the Conservation of Biodiversity (Section 41, NERC Act 2006), Ancient Woodland Inventory
Local biodiversity lists	Local Biodiversity Action Plan (BAP) priority species or habitats
Red Listed / Rare Species	Species of conservation concern, Red Data Book (RDB) species, Birds of Conservation Concern, nationally rare and nationally scarce species
Legally Protected Species	E.g. species listed under Sch.5 of the W&C Act 1981, or Sch.2 of the Hag. Regs. 2017
Legally Controlled Species	E.g. species listed under Sch.9 of the W&C Act 1981

1.3. It should also be noted that the social, community, economic or multi-functional importance attributed to ecological features are not assessed as they fall outwith the scope of this assessment.

Establishing Likely Zone of Influence

1.4. The 'zone of influence' for a project is the area over which ecological features may be subject to significant effects as a result of the project and associated activities. The project's zone of influence varies across different ecological features, which have different vulnerabilities and

sensitivities. For the purposes of this assessment, the following zones were considered:

- International statutory nature conservation designations up to 10km from the Site
- National and local statutory nature conservation designations up to 3km from the Site
- Non-statutory locally designated wildlife sites up to 1km from the Site

1.5. These arbitrary distances are considered sufficient for identifying the nature conservation designations which could be subject to significant effects. However, it is acknowledged that in certain circumstances effects beyond these distances are possible and should be considered as far as is reasonably practicable to do so.

1.6. For other ecological features, such as habitats and species, the appropriate zone of influence is described and justified as appropriate within the report, depending on their respective sensitivity to an environmental change.

1.7. The results of professionally accredited or published scientific studies have been used and referenced, where available, to establish the spatial and temporal limits of the biophysical changes likely to be caused by specific activities, and to justify decisions about the zone of influence.

Geographic Context and Significance Criteria

1.8. The importance of ecological features, as well as the significance of any likely impacts and their effects, are considered here within a defined geographic context:

- International
- National
- Regional
- County
- Local

1.9. While higher geographic tiers correspond to clearly defined areas, local context is subjective and will vary on a case-by-case basis. It will range from the Site and its surroundings, to ecologically connected environs, to the scale of the District/Borough, according to the professional judgement of the author.

1.10. The size, conservation status and the quality of features are all relevant in determining their importance and assigning this to the geographic scale. Where the importance of a feature is considered to fall below the Local scale, they are scoped out of detailed assessment.

1.11. Impacts and their effects are taken to be significant where they support or undermine biodiversity conservation objectives, with the scale of significance defined according to the above geographic context. Where an impact or effect is unlikely to be perceptible at a Local scale, this is taken to be not significant.

Characterising Ecological Impacts and their Effects

1.12. Where likely significant ecological impacts and effects are identified in connection with the proposed project, these are considered and described with reference to the following characteristics (where this is helpful in accurately portraying the ecological effect and determining the scale of significance):

- Positive or negative (i.e. does the anticipated change accord with nature conservation policies and objectives?)
- Extent (i.e. the spatial area over which the impact or effect may occur)
- Magnitude (i.e. the quantified size, amount, intensity or volume)
- Duration (i.e. the timeframe over which the impact or effect may occur, in both human and ecological terms)
- Frequency and timing (i.e. the number of times an activity occurs, where this is likely to influence the effect)
- Reversibility (i.e. is spontaneous recovery possible or may the effect be counteracted by mitigation?)

Appendix F

Hedgerows

1.0 Legislation

1.1 All hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species are categorised as habitats of Principal Importance under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006). Hedgerows are also assessed under the Hedgerows Regulations 1997.

1.2 The term 'hedgerow' is not defined in the Hedgerows Regulations, but is defined in the Hedgerow Survey Handbook (Defra, 2007) as:

"…any boundary line of trees or shrubs over 20m long and less than 5m wide at the base, provided that at one time the trees or shrubs were more or less continuous. It includes an earth bank or wall only where such a feature occurs in association with a line of trees or shrubs. This includes 'classic' shrubby hedgerows, lines of trees, shrubby hedgerows with trees and very gappy hedgerows (where each shrubby section may be less than 20m long, but the gaps are less than 20m)."

1.3 The Hedgerows Regulations are aimed primarily at countryside hedgerows and apply to:

"…any hedgerow growing in, or adjacent to, any common land, protected land, or land used for agriculture, forestry or the breeding or keeping of horses, ponies or donkeys, if:

- *it has a continuous length of, or exceeding, 20m; or*
- *it has a continuous length of less than 20m AND, at each end, meets (whether by intersection or junction) another hedgerow."*

1.4 In terms of length of hedgerows and their measurement:

- Each hedgerow is to be regarded as starting and/or ending at the point where it forms a junction or intersection with another hedgerow.
- Gaps are also treated as part of a hedgerow if there are 20m or less or have been made in contravention of the Regulations. A gap is defined as an opening, whether or not it is filled (i.e. by a gate).

1.5 The Hedgerows Regulations do not apply to garden hedges i.e. those which lie within the curtilage of, or mark the boundary of the curtilage of, a dwelling house.

2.0 Methods

2.1 The hedgerow assessment survey was undertaken on 30 May 2024 by Rhodri Gruffydd (FISC Level 3), encompassing all hedgerows within and bounding the survey area.

2.2 The information collected via desktop and during the site survey, and the methods of assessment are based on the Criteria for Determining 'Important' Hedgerows as outlined within the Hedgerows Regulations.

Species-richness is determined using criteria from the Hedgerow Survey Handbook. In addition to this a Condition Assessment of each hedgerow was undertaken in-line with the Statutory Biodiversity Metric (Defra, 2024).

2.3 Each hedgerow was assigned a reference number H1 to H8, and the location of each hedgerow is shown on the Habitats Plan (CSA/6815/103/B).

Criteria for Determining 'Important' Hedgerows

Archaeological and Historical

- Marks a pre-1850 parish or township boundary
- Incorporates an archaeological feature
- Is part of, or associated with an archaeological site
- Mark the boundary of, or is associated with, a pre-1600 estate or manor
- Forms an integral part of a pre-Parliamentary enclosure field system

Wildlife and Landscape

- Includes certain categories of species of birds, animals or plants listed in the Wildlife and Countryside Act of Joint Nature Conservation Committee (JNCC) publications.
- Includes at least seven woody species, on average, in a 30m length, OR
- Includes at least six woody species, on average, in a 30m length and is associated with at least three of the Associated Features listed below.
- Includes at least six woody species including one of the following:
    - Native black-poplar *Populus nigra* ssp *betulifolia*
    - Large-leaved lime *Tilia platyphyllos*
    - Small-leaved lime *Tilia cordata*
    - Wild service-tree *Sorbus torminalis*
- Includes at least five woody species, on average, in a 30m length and be associated with at least four of the Associated Features listed below.

* List includes species native in part or all of the UK and those considered archaeophytes as per the Hedgerow Regulations and Hedgerow Survey Handbook

2.4 The number of woody species is reduced by one in northern counties. The list of 56 woody species comprises mainly of shrubs and trees. It generally excludes climbers and bramble, but includes wild roses.

2.5 Hedgerows that are located adjacent to a footpath, bridleway, or Road Used as a Public Path (RUPP), or byway open to all traffic AND include at least four specified woody species, on average, in a 30m length AND has at least two of the Associated Features listed below.

Associated Features

- A bank or wall that supports the hedgerow along at least one half of its length
- Gaps which in aggregate do not exceed 10% of the length of the hedgerow
- On average, at least one tree per 50m
- At least three woodland species (as listed on Schedule 2 of the Regulations) within 1m, in any direction, of the outermost edges of the hedgerow
- A ditch along at least one half of the length of the hedgerow
- Connections scoring four points or more. A connection with another hedgerow score one point; a connection with a pond or a woodland scores two points
- A parallel hedgerow within 15m of the hedgerow

Criteria for Determining 'Species-rich' Hedgerows

2.6 To determine species-richness, a 30m section of hedgerow is selected. Where the structural species making up the 30m section of hedgerow include at least five (or at least four in northern and eastern England, upland Wales and Scotland) woody species that are either native somewhere in the UK, or which are archaeophytes, the hedgerow is defined as species-rich. Climbers and bramble do not count towards the total except for roses *Rosa* sp.

The Statutory Biodiversity Metric Condition Assessment

2.7 The Statutory Biodiversity Metric condition assessment criteria for hedgerows uses a series of ten attributes, representing key physical characteristics to determine whether a hedgerow is in favourable condition.

2.8 Each attribute is assigned to one of five functional groups (A-E), as indicated below, and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria.

2.9 The hedgerow condition assessment generates a weighting (score) ranging from 1-3 which is used in the Statutory Biodiversity Metric. The scores places each hedgerow in a category of 'Good', 'Moderate' or 'Poor' condition.

Attributes

- A1. Height
- A2. Width
- B1. Gap – hedge base
- B2. Gap – hedge canopy continuity
- C1. Undisturbed ground and perennial vegetation
- C2. Undesirable perennial vegetation

- D1. Invasive and neophyte species
- D2. Current damage
- *E1. Tree age
- *E2. Tree health

* Additional group, applicable to hedgerows with trees only

Limitations

2.10 There were no limitations to the survey.

3.0 Results

3.1 Full hedgerow descriptions are provided in Section 4.0 of the EcIA report (CSA/6815/02/C). Hedgerow numbers are shown on the Habitats Plan (CSA/6815/102/B) in Appendix A. Full survey results are shown in Tables 1-4 below and species lists for each hedgerow are available in Appendix E (Table 2).

Table 1. Hedgerow Survey Results Overview

Number	**Length** *(m)*	**Important Hedgerow?** *(As defined by 'Hedgerow Regs')*	**Species Rich?** *(5 or more woody species along selected 30m section?)*	**Condition: 'Good', 'Moderate' or 'Poor'?** *(As defined by the Statutory Biodiversity Metric Condition Assessment)*
H1	645	✓	✓	Moderate
H2	160	✓	✓	Moderate
H3	160	✓	×	Moderate
H4	320	✓	×	Moderate
H5	308	✓	✓	Moderate
H6	305	✓	×	Moderate
H7	375	✓	✓	Moderate
H8	400	✓	×	Moderate

Table 2. Hedgerow Survey Results (H1 - H8)

Date of Survey	30/05/2024
Surveyor(s)	Rhodri Gruffydd (FISC Level 3)

General Hedgerow Information	**H1**	**H2**	**H3**	**H4**	**H5**	**H6**	**H7**	**H8**
Hedgerow length (m)	645	160	160	320	308	305	375	400
Average height along length of hedgerow (m)	2	3.5	3	3.5	3	1.5	3.5	2
Average width at widest point of hedgerow (m)	3	2.5	1.5	2.5	4.5	1.5	3.5	2.5
Is woody component of hedgerow <5m at base?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of 30m sections for specified sampling technique	3	2	2	3	3	3	3	3
Average number of native woody species (following specified sampling technique)	6.7	5	4	4.7	6.7	3	5.7	4.7
Number of native woody species (along total length)	16	10	6	7	12	8	10	13
Species-rich hedgerow? (5 or more native woody species in 30m section)	Yes	Yes	No	No	Yes	No	Yes	No

Table 3. Assessment of Important Hedgerows (H1 - H8)

Application of Regulations	**H1**	**H2**	**H3**	**H4**	**H5**	**H6**	**H7**	**H8**
Does the hedgerow lie within, or mark the boundary to, a private garden?	No	No	No	No	No	No	No	No
Regulation 4: Criteria for determining "Important Hedgerows"								
Has the hedgerow existed for 30 years or more? (Consider age of trees/coppice and review aerial photography or historic mapping.)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
If so, does it meet one or more of the criteria listed in Part II of Schedule 1, listed below?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
As such, is it an **Important Hedgerow**?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Schedule 1: Additional Criteria for Determining "Important Hedgerows"- Part II, Criteria								
Archaeology and history								
Has a desk-based assessment of historic/archaeological significance been undertaken?	No	No	No	No	No	No	No	No
If so, has the hedgerow been considered '**Important**' under these criteria?	-	-	-	-	-	-	-	-
Wildlife and Landscape								
Does the hedgerow 'contain' any of the following species, or are there records of these species (within the last five or ten years for animals or plants, respectively) with no subsequent *negative* records?:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Those listed in Part 1 of Schedule 1 (birds protected by special penalties e.g. barn owl), Schedule 5 (animals which are protected e.g. hazel dormouse) and schedule 8 (plants which are protected e.g. bluebell) of the Wildlife and Countryside Act 1981.	No	No	No	No	No	No	No	No
Those included on the Birds of Conservation Concern 'Red' or 'Amber' list. *(Primary legislation refers to the outdated 'Red Data Birds in Britain', 1990)*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Those categorised as 'endangered', 'extinct', 'rare' or 'vulnerable' in Red data books for Vascular Plants, Insect, Invertebrates other than insects (see primarily legislation for more details)	No	No	No	No	No	No	No	No
Does the hedgerow include at least 7 woody species? (Subject to specified sampling technique)	No	No	No	No	No	No	No	No
Does the hedgerow include 6 woody species and support at least 3 additional features, or 5 woody species and at least 4 of the following additional features, as set out below?:	No	No	No	No	Yes	No	No	No
Bank or wall which supports the hedge along half its length?	No	No	No	No	No	No	No	No
Gaps <10% aggregate length of hedgerows?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
One standard tree per 50m?	No	Yes	Yes	Yes	No	No	Yes	No
At least three woodland (ground flora) species within 3m of the hedgerow?	No	No	No	No	Yes	No	No	Yes
Ditch along at least half hedgerow length?	No	No	No	No	Yes	No	Yes	No
At least 4 points based on the following: 1 point for 'connection' with another hedgerow and 2 points for connection with a pond or broadleaved woodland? (N.B. A hedgerow is considered connected when it meets or ends within 10m of another feature, where it would meet it if continued.)	No	No	No	No	No	No	No	No
Parallel hedgerow within 15m?	No	No	No	No	No	No	No	No
Does the hedgerow include at least 6 woody species including one of the following; black-poplar tree, large-leaved lime, small-leaved lime or wild service-tree?	No	No	No	No	No	No	No	No
Is the hedgerow adjacent to a bridleway or footpath?	No	No	No	No	No	No	No	No
Is the hedgerow adjacent to a bridleway or footpath and include at least four woody species and two additional features?	No	No	No	No	No	No	No	No
Schedule 2: Woodland Species (ground flora)	**1**	**1**	**0**	**2**	**3**	**0**	**2**	**3**
Dog's mercury *Mercurialis perennis*	✓			✓				✓
Lords-and-ladies *Arum maculatum*					✓		✓	
Wood avens/Herb bennet *Geum urbanum*		✓		✓	✓			✓
Wood false-brome *Brachypodium sylvaticum*					✓			✓
Wood meadow-grass *Poa nemoralis*							✓	
Schedule 3: Woody Species (including species native in the UK and archaeophytes)^ **Species only found in Hedgerow Regulations* ***Species only found in Hedgerow Survey Handbook*	**16**	**10**	**6**	**7**	**12**	**8**	**10**	**13**
Apple *Malus sp.*		✓					✓	
Ash *Fraxinus excelsior*	✓			✓	✓	✓	✓	✓
Blackthorn *Prunus spinosa*	✓	✓	✓	✓	✓	✓	✓	✓
Buckthorn *Rhamnus cathartica*							✓	
Cherry, wild *Prunus avium* *	✓							
Dog-rose *Rosa canina* sp.	✓		✓	✓	✓	✓	✓	✓
Dogwood *Cornus sanguinea*	✓				✓			✓
Elder *Sambucus nigra*		✓	✓	✓	✓		✓	✓
Elm, English *Ulmus procera*	✓	✓	✓		✓	✓		✓
Guelder rose *Viburnum opulus*	✓							
Hawthorn *Crataegus monogyna*	✓	✓	✓	✓	✓	✓	✓	✓
Hazel *Corylus avellana*	✓	✓			✓		✓	✓
Holly *Ilex aquilfolium*	✓							
Lime, common Tilia x europea **	✓							
Maple, field *Acer campestre*	✓	✓		✓	✓	✓	✓	✓
Oak, pedunculate *Quercus robur*						✓	✓	✓
Plum species *Prunus sp.*	✓							
Privet, wild *Ligustrum vulgare*								✓
Spindle *Euonymus europaeus*		✓						✓

Sycamore *Acer pseudoplatanus* **	✓	✓	✓	✓	✓			
Walnut *Juglans regia* *	✓							
Wayfaring-tree *Viburnum lantana*	✓				✓	✓		✓
Willow *Salix sp.*		✓			✓			

Table 4. The Statutory Biodiversity Metric Condition Assessment of Hedgerows (H1 - H8)

Hedgerow Condition Assessment	**H1**	**H2**	**H3**	**H4**	**H5**	**H6**	**H7**	**H8**
Hedgerow Type	Native species rich	Native with trees	Native with trees	Native	Native with trees - associated with bank/ditch	Native	Native with trees - associated with bank/ditch	Native species rich
A1. Height >1.5m average along length	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
A2. Width >1.5m average along length	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
B1. Gap - hedge base, Gap between ground and base of canopy <0.5 m for >90% of length [unless 'line of trees']	Pass	Fail	Fail	Pass	Pass	Pass	Fail	Pass
B2. Gap - hedge canopy continuity. Gaps make up <10% of total length; and no canopy gaps >5m	Fail	Pass	Pass	Pass	Pass	Fail	Pass	Fail
C1. Undisturbed ground and perennial vegetation. >1m width of undisturbed ground with perennial herbaceous vegetation for >90% of length [measured from outer edge of hedgerow], present on at least 1 side of hedgerow	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail
C2. Nutrient-enriched perennial vegetation. Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground (nettle, cleavers & docks)	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail
D1. Invasive & neophyte species. >90% of hedgerow and undisturbed ground vegetation is free of invasive non-native plant species and recently introduced species [i.e. <10% invasives]	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
D2. Current damage. >90% of hedgerow or undisturbed ground is free of damage caused by human activities [i.e. pollution, manure, rubble, poor management]	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Hedgerows with Trees Only								
E1. Tree age. There is more than one age-class (or morphology) of tree present (e.g. young, mature, veteran and/or ancient), and there is on average at least one mature, ancient or veteran tree present per 20-50m of hedgerow.	-	Pass	Pass	-	Pass	-	Pass	-
E2. Tree health. At least 95% of hedgerow trees are in a healthy condition [excluding veteran features valuable for wildlife]. There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	-	Pass	Pass	-	Pass	-	Pass	-
Condition								
Poor, Moderate or Good	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate

^ Hedgerow Regulation 1997 states elm, rose and willow 'species' only, whereas the Hedgerow Survey Handbook lists out the individual species within these categories.

Appendix G

Bats

1.0 Legislation

1.1 All British bat species are legally protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended). These Regulations make it an offence to:

- Deliberately capture, injure, or kill a bat
- Deliberately disturb bats, impairing their ability to survive, breed, reproduce or rear/nurture their young, or which significantly affects the local distribution or abundance of the species
- Damage or destroy a breeding site or resting place used by bats

1.2 All bats and their roosts in the UK were previously fully protected under the Wildlife & Countryside Act 1981 (as amended). Amendments to the Act have removed most provisions as they relate to bats, however it remains an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection

1.3 It is important to note that bat roosts are protected throughout the year, regardless of whether or not bats are present at the time. Under the Regulations, the offence of damaging or destroying a breeding site or resting place is subject to 'strict liability', i.e. an offence is commented irrespective of whether the causal act was deliberate or otherwise.

1.4 Where development is proposed that would result in an offence under the Regulations, a European Protected Species (EPS) statutory derogation licence (often termed 'EPS Mitigation Licence') will need to be secured from Natural England to permit an act that would otherwise be unlawful. Such a licence can only be granted following receipt of planning permission with all relevant conditions discharged, and where it has been demonstrated that specific statutory derogation tests have been met.

2.0 Methods

2.1 The following survey methods, design, data analysis and interpretation have been undertaken with due consideration of the Bat Conservation Trust (BCT) guidelines 4th edition (Collins, 2023).

Daytime Bat Walkover

2.2 A Daytime Bat Walkover (DBW) was undertaken on 06 December 2023 by Alexandra Cole MCIEEM in fine and dry weather conditions. The aim of the survey is to observe, assess and record any habitats suitable for bats to roost, commute and forage on-site and within the surrounding area.

2.3 As part of the survey, surveyors identified any structures, trees or other features that could be suitable for bats to roost in, and habitats that could be suitable for bats to use to commute, forage or swarm. Assigning potential to roosting features is discussed in the relevant sections below.

2.4 Following the survey, suitability of commuting and dispersal habitats are assigned under the following categories:

2.5 *Either:*

- ***High*** – Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.
- ***Moderate*** – Continuous habitat connected to the wider landscape that could be used by bats for flight-paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
- ***Low*** – Habitat that could be used by small numbers of bats as flight-paths such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
- ***Negligible*** – No obvious habitat features on-site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
- ***None*** – No habitat features on-site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flightlines, or generate/shelter insect populations available to foraging bats).

<u>Ground Level Tree Assessment (GLTA) - Trees</u>

2.6 A GLTA is a detailed inspection of the exterior of a tree from the ground to look for features that bats could use for roosting, Potential Roost Features (PRFs).

2.7 All trees to be affected by the development were inspected from ground level, using binoculars and high-powered torches, as appropriate. The survey was completed on 24 September 2024 by Rhodri Gruffydd.

2.8 The aim of this inspection was to look for PRFs from ground level and give a preliminary description of each (such as type of PRF, height, size and

location on tree). Surveyors also recorded direct (i.e. actual roosting bats) or indirect evidence of roosting bats (e.g. droppings), as well as the nature and number of features with 'potential' to support roosting bats. This includes consideration of trees to support bats whilst in hibernation.

2.9 Following the GLTA, unless no PRFs were identified, each tree was assigned one of the following categories:

- ***PRF*** – A tree with at least one PRF.
- ***FAR*** – Further assessment required to establish if PRFs are present in the tree.

Assessing 'Potential' of Trees to Support Roosting Bats

2.10 Each PRF was assigned to one of the following categories:

- ***PRF-I*** – Tree with a Potential Roost Feature (PRF) that is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surroundings.
- ***PRF-M*** – PRF is suitable for multiple bats and may therefore be used by a maternity colony.

2.11 The categories above are intended to provide initial guidance on whether further inspections are necessary to prove presence or likely absence of roosting bats, rather than to assign importance to such features.

2.12 The potential of a tree to support roosting bats is often influenced by its age, thermal stability, lighting and levels of human activity. Furthermore, the proximity to foraging habitat - particularly woodland, parkland and wetland- as well as the presence of navigational routes (e.g. hedgerows, treelines and watercourses) influence both the potential for bats to roost, as well as the species which may roost. Professional judgement is therefore applied, based upon known factors which effect the potential of features to support roosting bats, insofar as determining the need or scope of further surveys or inspections.

<u>Activity Surveys</u>

Night-time Bat Walkover/Vantage Point Surveys

2.13 Night-time Bat Walkover (NBW) surveys were undertaken in May, June and August 2024. On each occasion, surveyors were stationed at specific points within the survey area prior to sunset, and stationed on potential flight lines close to potential roost sources such as groups of buildings or woodland. Locations were predetermined by the results of the Daytime Bat Walkover (see Figure 1).



Figure 1. Stationed surveyor locations (SSL) during the Night-time Bat Walkover Surveys undertaken in May, June and August 2024.

2.14 The surveys were led by Rhodri Gruffydd in suitable weather conditions (see Table 1).

Table 1. Night-time Bat Walkover survey timings and weather conditions

Survey Date	Sunset Time	Start Time	End Time	Temp. (°C)		Cloud Cover (oktas)		Wind (Beaufort Scale)		Precipitation
				Start	End	Start	End	Start	End	
14/05/24	20:46	20:46	22:46	13	12	4	1	3	2	None
24/06/24	21:23	21:23	23:23	17	16	4	8	1	1	None
15/08/24	20:22	20:22	22:22	20	20	8	6	3	5	Intermittent light rain during survey

2.15 Surveyors remained in position to count, observe behaviour and make acoustic recordings of commuting (or foraging) bats for up to an hour after sunset. Any observations of bat activity such as feeding or commuting behaviour was noted, or identification of key flightlines (such

as height, direction of travel, numbers of bats and response to weather or other features on-site). Alternatively, if streams of commuting bats were noted elsewhere on-site, surveyors used back-tracking methods to move towards a roost, responding to live observations. Surveyors were equipped with BatLogger M/M2 bat detectors and Nightfox monocular/binocular cameras to assist with observations after sunset and allow any bat contacts to be recorded.

2.16 As part of the stationed observation, whilst surveyors are positioned across the survey area at the start of the survey, vantage point observations were undertaken, including notes on early emerging/high-flying bats such as noctule. Notes made on behaviour include flight height, numbers of bats and direction of travel.

2.17 Following 30 minutes of stationed observations, surveyors walked two separate transect routes. The survey aimed to cover all accessible areas, features and habitats at the Site and wider survey area. The transect route was designed to repeat certain areas and minimise temporal bias. The transect was walked at a moderate and consistent speed with qualitative observations of bat behaviour made by the surveyor.

2.18 Transect surveys are intended to gather data on the spatial distribution of bat activity across the Site, identifying areas of relative importance for bats, including key flight lines. In addition, direct observation of bats allows for qualitative assessments of how bats use the Site to be made, complementing quantitative data collected through remote monitoring.

Automated/Static Surveys

2.19 Three Wildlife Acoustics Songmeter (SM4) detectors were deployed monthly from April to August 2024 to provide five data-sets. The position of these Monitoring Locations (ML) are shown on Figure 2 below.



Figure 2. The position of each Monitoring Location (ML) surveyed during remote monitoring surveys from April to August.

2.20 The detectors were set up to automatically record ultrasonic signals for the period from half an hour before sunset to half an hour after sunrise each night, with each monitoring period spanning at least five consecutive nights.

2.21 Static detectors were deployed across the Site and wider survey area to provide a representative sample of all habitats in the survey area that could be impacted by the proposals. This included Hedgerows H1, H2 and H7.

2.22 Weather conditions were obtained for each night surveyed using historic weather data from the World Weather Online website, with weather observations taken from the nearest weather station in Buntingford. The five nights showing the most optimal weather conditions (in terms of temperature, precipitation and wind speed, see Table 3) were taken forward for analysis.

2.23 Recordings are triggered when a bat echolocation call is detected and will contain a variable number of call 'pulses'. Each file containing call

pulses by a bat is designated as a 'bat contact' for each species present. The maximum recording duration is 15 seconds after which time a new recording file, and thus a new bat contact, is generated if echolocation calls are still being detected. This means that periods of prolonged bat activity near a detector is represented as multiple bat contacts, rather than a single one.

Analysis of Data

Call Analysis

2.24 Bat calls were recorded using Elekon Batlogger M/M2 detectors. This detector automatically records ultrasonic signals with a one second delay between recordings. Recordings of bat contacts were subsequently analysed using BatExplorerPro software, with sonograms reviewed to confirm bat identification to genera, or where possible, species level.

2.25 Each of the recorded files, which contain a variable number of call 'pulses', was designated a 'bat contact'. At the point of contact, each sound file is assigned a GPS location.

2.26 For analysis of data recorded during static monitoring, quantitative analysis of bat activity was then undertaken by calculating the average bat contacts per hour on each night monitored, for each species.

2.27 Bat activity can show considerable inter-night variability and is dependent on a number of variables, including temperature, wind, and seasonality, amongst others. To account for this variability the median values for the average hourly bat contacts per night are reported, rather than a mean value which would misrepresent the average activity.

Limitations

2.28 It should be noted that the findings described herein for remote monitoring surveys are based on the bat activity recorded at the location immediate to each detector, and therefore only describe localised activity at the Site. Where possible, in line with best practice guidance static detectors have been placed c. 1.5m from any nearby vegetation however due to the potential for disturbance from the public and farm machinery, this has not always been possible. Where needed to be located within hedgerows, surrounding foliage has been removed to prevent interference from vegetation covering the microphone.

2.29 In addition, comparisons drawn on the number of detector activations by different species/genera can only give an indication of relative species abundance at the Site, as detectability varies between species.

2.30 It is acknowledged that the quantum of bat contacts recorded during a survey may not give a true reflection of the abundance of bats using

the Site. For example, a single bat foraging close to a detector may trigger several hundred activations in the course of one night. However, this activity level does provide a proxy for the level of use by bats, and therefore its relative importance.

2.31 During vantage point checks surveyors aimed to cover all on-site habitats, however due to the size of the Site this was not always possible. The majority of the Site, including areas of highest bat commuting potential were observed.

2.32 Light rain was present during most of the third night-time bat walkover survey. However, this does not appear to have had a significant effect on bat activity and presents only a minor limitation. Rain was present during five of the 25 nights during the static monitoring. This corresponded with reduced bat activity for one of these nights but does not appear to have had a significant effect on the others and, therefore, presents only a minor limitation and does not impact the overall aim of the survey to identify bat species and activity levels across the Site.

2.33 Due to technical issues with the static detectors and one detector being stolen during the June monitoring period, it was not possible to collect the full 25 nights of data for each monitoring location. The number of nights monitored for each monitoring location is shown in Table 2 below. The data presented in the results accounts for the difference in the number of nights monitored across the marked locations.

Table 2. Number of nights monitored for each static detector marked location

Marked Location	Month				
	April	May	June	July	August
ML1	5	5	5	5	1
ML2	5	5	5	5	5
ML3	5	2	0	5	3

3.0 Results

Daytime Bat Walkover

3.1 The majority of the Site comprises arable fields with limited opportunities for bats. However, potential flight-path and foraging habitat in the form of boundary hedgerows are present across the Site. The on-site woodland (W1) aslo has limited potential to provide roosting opportunities for bats. Therefore, the Site is assessed as having moderate suitability for bat activity. The wider survey area to the west and south of the Site (as shown in the Habitats Plan in Appendix A) is likewise dominated by arable land with navigational features and foraging habitat in the form of wooded copses, hedgerows, neutral grassland field margins and Thistley Vale Brook watercourse. In the surrounding landscape, small pockets of woodland are present within a 2km radius of the Site and further afield, including ancient and semi-natural woodlands.

Ground Level Tree Assessment (GLTA) – Trees

3.2 Trees to be removed (as shown in the Tree Retention and Removal Plan (BHA_5798_02) prepared by Barton Hyett Associates) were assessed, with no PRFs identified.

Activity Surveys

Night-time Bat Walkover

3.3 At least three species of bat were recorded during the stationary observations, comprising common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P. pygmaeus* and *Nyctalus/Eptesicus* sp. All of these observations were recorded during the third survey visit at stationed surveyor location (SSL) 2, c. 17-32 minutes after sunset. Considering the time after sunset, this suggests the presence of a nearby roost is a possibility. However, there was no other evidence to suggest that there is a roost within or in close proximity to the Site.

3.4 At least six species of bat were recorded at the Site during the transect surveys comprising common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle *Pipistrellus nathusii*, brown long-eared bat *Plecotus auritus*. Contacts were also recorded for *Myotis* sp., Nyctalus sp., *Nyctalus/Eptesicus* sp., and *Pipistrellus* sp which could not be identified to species level. The majority of contacts were recorded along H2, H4, H5 and H7, and the northern edge of W2. *Nyctalus* sp. and *Nyctalus/Eptesicus* sp. activity was concentrated near W2 and along H2. Myotis sp. activity was found within woodland W2 and along Thistley Vale Brook. Brown long-eared bat activity was limited to 10 contacts, along Thistley Vale Brook next to the A507 road and the western margin of W2.

3.5 The number of bat contacts recorded for each species are summarised in Table 3 below. The locations of each bat contact and the overall distribution of activity across the Site and wider survey area are illustrated in Figures 3 and 4.

Table 3. Summary of bat contacts recorded during transect surveys

Month	**Common pipistrelle**	**Soprano pipistrelle**	**Nathusius' pipistrelle**	**Pipistrellus species**	**Brown long-eared bat**	**Myotis species**	**Nyctalus species**	**Nyctalus/ Eptesicus species**
May	287	9	1	5	8	0	0	0
June	15	3	0	0	2	64	0	0
August	133	5	0	0	0	1	4	54
Total	435	17	1	5	10	65	4	54
Percentage of Total (%)	73.60	2.88	0.17	0.85	1.69	11.00	0.68	9.14



Figure 3. Locations of bat contacts recorded across all transect surveys

3.6 Figure 4 below provides an indicative illustration of 'hotspots' in bat activity recorded across all transect surveys undertaken at the Site. Common pipistrelle foraging and commuting activity is concentrated along H2 and H7, and the northern edge of W2. Nyctalus sp. activity is also concentrated along H2 and the northern edge of W2.



Figure 4. Indicative 'Utilisation Distribution' (UD) of all bat species/genera at the Site estimated from all transect data combined. The UD illustrates the relative probability of a bat in flight being present at a given point at the Site, with higher/central contours having a greater probability, and lower/peripheral contours having less probability.

Static/Automated Monitoring

3.7 The weather conditions experienced during the five nights where data was analysed are provided in Table 4 below.

3.8 There was rain during the first night of the April monitoring period which coincides with reduced bat activity for that night. There was rain on four other nights during the remote monitoring, however, there does not appear to be a significant effect on bat activity for these nights.

3.9 The temperature dropped to a minimum of 4°C on 28 April 2024, however, this does not appear to have resulted in a significant effect on bat activity for this night.

Table 4. Overnight weather conditions during remote monitoring

Survey Month	Dates Sampled	Temp. (°C)		Cloud Cover (%)		Wind (km/h)		Precipitation
		Min	Max	Min	Max	Min	Max	
Apr	27/04/24	7	8	100	100	7	26	Light rain most of the night with a period of heavy rain in the early morning
Apr	28/04/24	4	6	5	29	12	13	None
Apr	29/04/24	6	8	0	22	12	17	None
Apr	30/04/24	8	10	29	100	2	8	None
Apr	01/05/24	9	11	100	100	15	24	Intermittent light rain
May	24/05/24	8	11	13	41	3	9	None
May	25/05/24	10	12	83	100	7	10	Light rain for most of the night
May	26/05/24	8	12	28	49	15	18	None
May	27/05/24	7	10	13	100	10	12	None
May	28/05/24	11	14	27	100	19	22	Very light rain for some of the night
Jun	24/06/24	14	17	0	21	4	13	None
Jun	25/06/24	14	16	4	7	9	11	None
Jun	26/06/24	16	18	5	46	10	14	None
Jun	27/06/24	11	14	16	66	21	24	None
Jun	28/06/24	9	12	3	47	8	12	None
Jul	26/07/24	12	15	13	73	6	10	None
Jul	27/07/24	12	15	3	44	4	14	None
Jul	28/07/24	16	17	0	14	6	11	None
Jul	29/07/24	16	18	5	6	4	11	None
Jul	30/07/24	16	19	0	9	10	12	None
Aug	23/08/24	13	16	16	100	10	17	Moderate rain in the morning
Aug	24/08/24	10	13	6	21	14	18	None
Aug	25/08/24	14	15	34	46	20	23	None
Aug	26/08/24	14	17	7	34	11	15	None
Aug	27/08/24	16	17	15	46	6	11	None

3.10 The total number of bat contacts recorded across all monitoring locations and monitoring periods for each bat species/genera are provided in Figure 5 below.

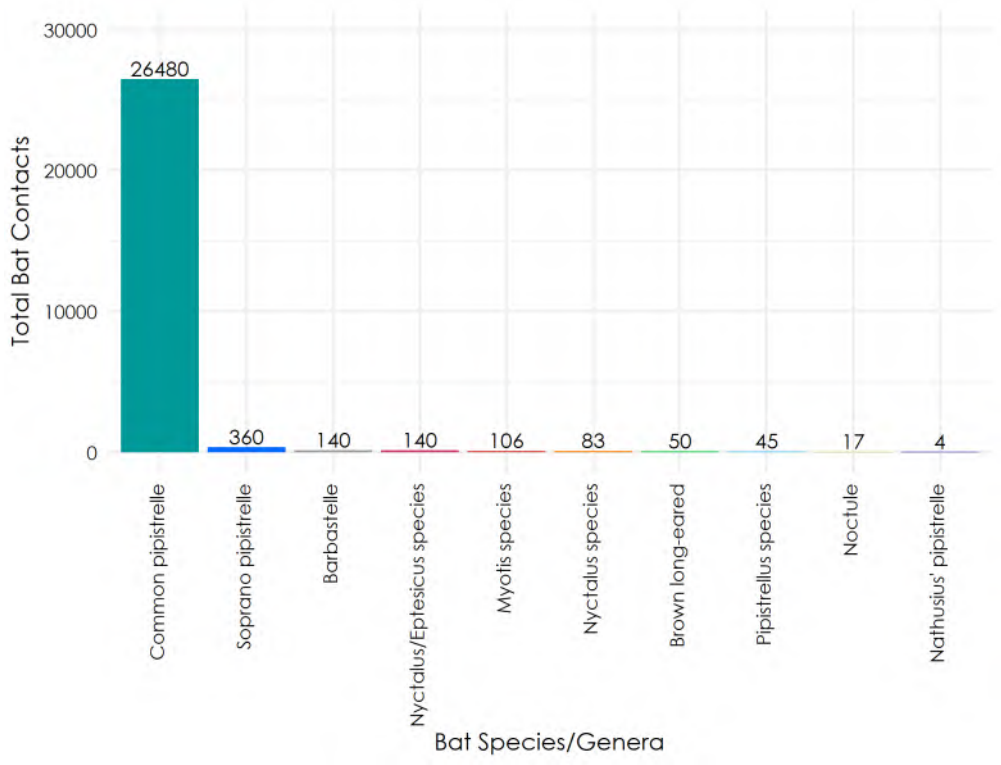


Figure 5. Total bat contacts by species/genera recorded across all remote monitoring periods and monitoring locations

3.11 A high number of common pipistrelle contacts were recorded alongside much lower numbers of soprano pipistrelle, Nathusius' pipistrelle, *Pipistrellus* sp., brown long-eared bat, noctule *Nyctalus noctule*, barbastelle *Barbastella barbastellus* and unidentified *Nyctalus/Eptesicus* sp., *Myotis* sp., and *Nyctalus* sp. bat contacts. Bat activity appears to be higher during the May and August monitoring periods at ML2, with very little activity during April. It was not possible to reliably compare activity across months for the other marked locations due to the full number of monitoring nights not being attained.

3.12 Figures 6a and b below show the variance in nightly activity levels for each of these bat species recorded on-site. More detailed data describing Figures 6a and b are provided in Table 5. The activity data in Figures 6a and b is presented as boxplots for each bat species, which show the inter-night variability in bat activity across the 25 nights monitored. Where the full number of monitoring nights has not been completed, the results correspond to the number of nights monitored for each marked location and not across the full 25 nights. The median value (middle line of the boxplot) is taken as the typical level of activity for that species on-site at the point monitored. The length of each coloured boxplot is the interquartile range which shows the variance in nightly activity around the median value. The ends of each whisker line define the minimum and maximum nightly activity values recorded at the monitoring location. Outlying values are nightly activity levels that are greatly different when compared to the distribution of the remaining

nightly activity levels. Outliers are illustrated as black points away from the boxplot. While important to note, these outliers do not represent the bat activity more commonly found at the Site for the species in question.



Figure 6a and b. Average bat contacts per hour per night for each bat species/genera recorded across all remote monitoring

3.13 For the majority of species, bat activity was higher at ML2. However, caution should be taken as the number of nights monitored is higher for ML2 compared to ML1 and ML3, and therefore may not fully represent the activity across the Site and wider survey area. Activity for soprano pipistrelle and *Nyctalus/Eptesicus* sp. was higher at ML3 despite fewer nights monitored, and there was little difference in noctule activity across the three marked locations. For common pipistrelle, the level of activity suggests foraging and/or commuting behaviour, which is consistent with observations during the night-time bat walkover surveys. There is large variation in common pipistrelle activity, with much higher activity in August compared to April.

3.14 For the rare barbastelle, activity is mostly limited to occasional passes with no clear pattern relating to time of night. There is more activity on one night in May at ML3 and one night in August at ML2 but nothing to suggest there is a roost nearby.

Table 5. Average bat contacts per hour per night recorded during remote monitoring surveys

ML	Species	Average bat contacts per hour per night				Total bat contacts	Number of nights monitored
		Minimum	Maximum	Median	IQ range		
ML1	Barbastelle	0	0.431	0.000	0.092	9	21
ML1	Brown long-eared	0	0.120	0.000	0.000	2	21
ML1	Common pipistrelle	0	7.554	1.134	1.559	313	21
ML1	Myotis species	0	0.120	0.000	0.000	3	21
ML1	Nathusius' pipistrelle	0	0.000	0.000	0.000	0	21
ML1	Noctule	0	0.225	0.000	0.000	5	21
ML1	Nyctalus species	0	0.396	0.105	0.120	22	21
ML1	Nyctalus/ Eptesicus species	0	0.323	0.099	0.113	19	21
ML1	Pipistrellus species	0	0.120	0.000	0.000	4	21
ML1	Soprano pipistrelle	0	0.240	0.000	0.000	7	21
ML2	Barbastelle	0	2.813	0.107	0.482	86	25
ML2	Brown long-eared	0	0.638	0.105	0.240	38	25
ML2	Common pipistrelle	0	270.501	54.260	148.847	19601	25
ML2	Myotis species	0	1.917	0.106	0.591	85	25
ML2	Nathusius' pipistrelle	0	0.361	0.000	0.000	4	25
ML2	Noctule	0	0.196	0.000	0.000	6	25
ML2	Nyctalus species	0	0.602	0.108	0.271	38	25

ML2	Nyctalus/ Eptesicus species	0	0.482	0.199	0.224	49	25
ML2	Pipistrellus species	0	1.082	0.000	0.113	21	25
ML2	Soprano pipistrelle	0	0.841	0.091	0.184	35	25
ML3	Barbastelle	0	4.875	0.000	0.000	45	15
ML3	Brown long-eared	0	0.794	0.000	0.000	10	15
ML3	Common pipistrelle	0	188.534	39.212	48.941	6566	15
ML3	Myotis species	0	0.495	0.105	0.155	18	15
ML3	Nathusius' pipistrelle	0	0.000	0.000	0.000	0	15
ML3	Noctule	0	0.338	0.000	0.000	6	15
ML3	Nyctalus species	0	0.493	0.097	0.261	23	15
ML3	Nyctalus/ Eptesicus species	0	4.011	0.213	0.230	72	15
ML3	Pipistrellus species	0	0.320	0.184	0.226	20	15
ML3	Soprano pipistrelle	0	24.840	0.391	1.070	318	15

4.0 Summary

4.1 The daytime bat walkover identified the Site and wider survey area as having moderate suitability for bat activity due to the presence of potential flight-paths and foraging habitat in the form of hedgerows bounding the Site and wooded copses, hedgerows, grassland field margins and Thistley Vale Brook within the wider survey area.

4.2 The GLTA identified no PRFs associated with trees to be removed.

4.3 Night-time bat walkover surveys found common pipistrelle, soprano pipistrelle and unidentified *Nyctalus/Eptesicus* sp. activity on-site. Common pipistrelle individuals were observed foraging and commuting, with the majority of activity associated with H2, H4, H5 and H7, and the northern edge of W2. There was no activity to suggest a nearby roost.

4.4 Static monitoring found at least six bat species to be present on-site, including the rarer barbastelle. Activity was significantly higher for common pipistrelle, consistent with the foraging and commuting behaviour observed during the night-time bat walkovers. Activity for all other species is at much lower levels and mostly associated with occasional passes. There are no patterns to suggest there are roosts on or very close to the Site.

4.5 As bat activity can change rapidly over time, the results within this appendix are considered to be valid for two years. After this period survey work will need to be updated.

Appendix H

Badger

1.0 Legislation

1.1 Badgers and their setts are protected under the Protection of Badgers Act 1992 which, in part, makes it an offence to:

- Kill, injure or take a badger
- Destroy or damage a badger sett or any part of it
- Obstruct access to, or any entrance of, a badger sett
- Disturb a badger whilst it is occupying a sett

1.2 Impacts to badgers and their setts should be avoided in the first instance by retaining setts and implementing an appropriate buffer distance to limit disturbance. Where this is not possible, a Natural England licensing system exists to permit certain works that would otherwise be illegal. This can include direct or direct impacts which may result in any of the above offences. Where a licence has been granted, permitted impacts to a badger sett can only be carried out between the months of July and November (inclusive) and following an agreed method statement.

2.0 Methods

2.1 A dedicated badger survey was conducted on 20 February 2024 by Alexandra Cole MCIEEM, using standard survey methods, searching the Site and immediately adjacent areas for field signs of badger and mapping any present such as:

- Feeding signs such as snuffle entrances made during foraging
- Hairs caught on vegetation or fences
- Latrines, usually positioned on territorial boundaries
- Foraging tracks through vegetation or under fences
- Badger setts

2.2 Further incidental evidence of badger was recorded during a site visit on 22 April 2024 by Rhodri Gruffydd.

2.3 When badger setts are found the number of entrances are recorded as well as the level of usage. Recording this information gives an indication of the type of sett by categorising it according to the criteria listed in Table 1 below (Harris *et al*. 1989, Cresswell *et al*. 1990, Wilson *et al*. 1997).

Table 1. Criteria used to determine sett type.

Sett Type
Main Setts - These usually have a large number of entrances with large spoil heaps, and the sett generally looks well used. There will be well-used paths to and from the sett and between sett entrances. Although normally the breeding sett is in continuous use, it is possible to find a main sett that has become disused due to excessive digging or some other reason; it should be recorded as a disused main sett. In the first survey, the average size of an active main sett was twelve entrances (including all categories of use).
Annexe setts - They are often close to a main sett, usually less than 150 metres away, and are usually connected to the main sett by one or more obvious well-worn paths.

They usually have several entrances, but may not be in use all the time even if the main sett is very active. In the first survey the average size was five entrances (including all categories of use).
Subsidiary setts - These often only have a few; four (including all categories of use) was the average number in the first survey. They are usually at least 50 metres from a main sett, and do not have an obvious path connecting with another sett. They are not continuously active.
Outlying setts - These usually have only one or two entrances, often have little spoil outside the entrance, have no obvious path connecting with another sett, and are only used sporadically. When not in use by badgers, they are often taken over by foxes or even rabbits. However, they can still be recognised as badger setts by the shape of the tunnel (not the actual entrance entrance), which is usually at least 250mm in diameter, and is rounded or a flattened oval shape. Fox and rabbit tunnels are smaller and often taller than broad.
Entrance Type
Well used entrances - These are clear of any debris or vegetation, are obviously in regular use, and may or may not have been excavated recently.
Partially used entrances - These are not in regular use and have debris such as leaves and twigs in the entrance, or have moss and/or other plants growing in or around the entrance. Partially used entrances could be in regular use after a minimal amount of clearance.
Disused entrances - These have not been in use for some time, are partially or completely blocked, and could not be used without a considerable amount of clearance. If the entrance has been disused for some time, all that may be visible is a depression in the ground where the entrance used to be, and the remains of the spoil heap, which may be covered in moss or plants.

Limitations

3.0 There were no specific limitations to the badger survey, which was conducted at an optimum time of year and in good conditions.

4.0 Results

4.1 No badger setts were identified on-site. A single latrine was identified along H1 in the north of the Site.

4.2 A partially active outlier badger sett was recorded in Woodland W2 on 22 April 2024, within a bank along the northern boundary. Two entrances were present, no paths leading to the entrances and no other evidence of badger.

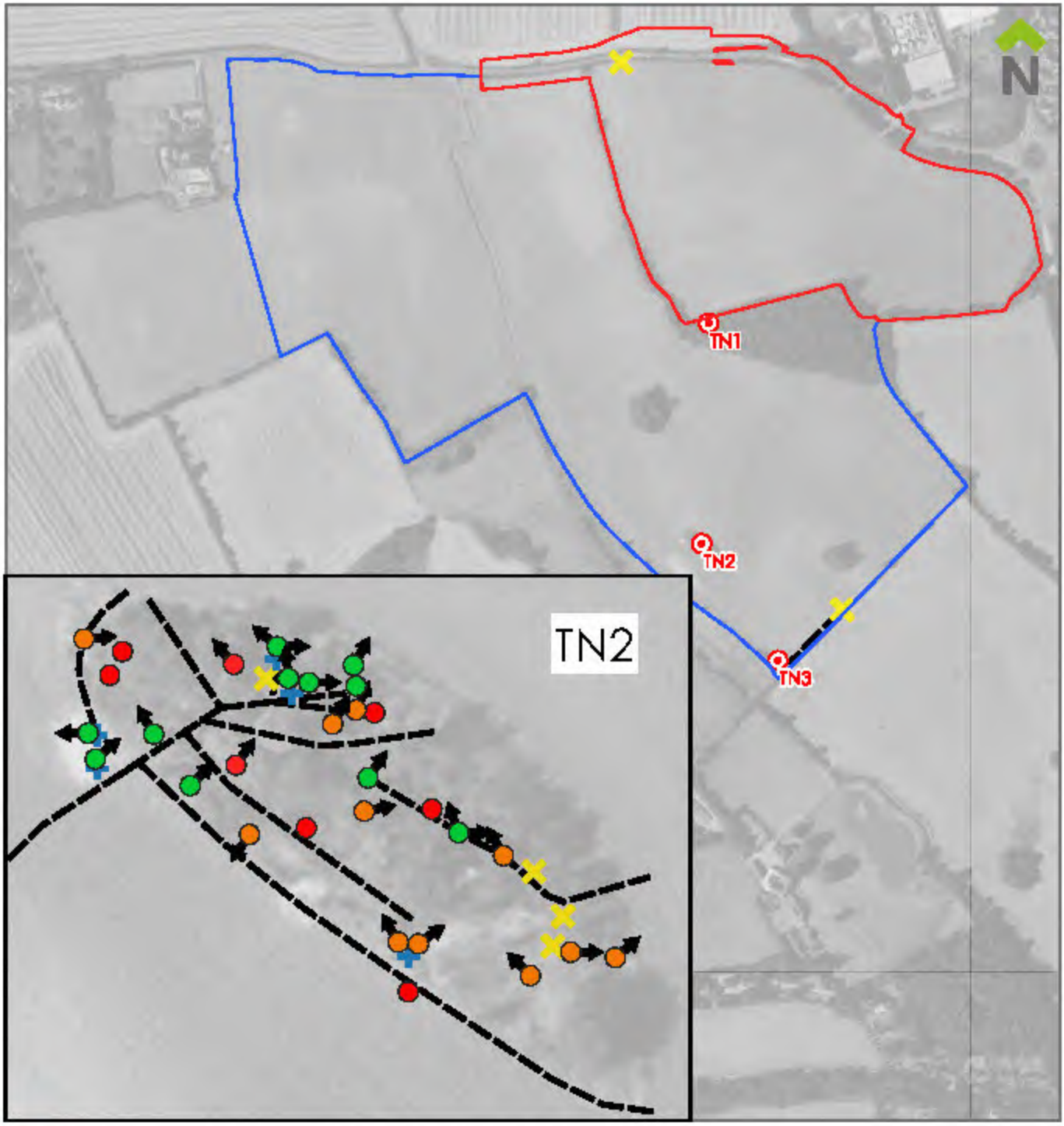
4.3 A main badger sett was identified within W4. A large number of active and partially active entrances were recorded, with the majority of active entrances in the north-west of the woodland and the majority of the partially active entrances in the south and south-east. Spoil heaps and bedding were recorded around a number of active entrances and one badger footprint found in the north-west. Three latrines were recorded in close proximity in the south-east, with a further latrine in the north. A network of badger paths connect the sett entrances in the north-east, with further paths linking these to the partially used entrances in the south-east. One path headed south-west out of the woodland into Field F2.

4.4 An outlier sett comprising a single active entrance was recorded along the field boundary within the southern corner of F2, c. 150m south-east of the main sett. See Table 2 for full survey results.

Table 2. Badger Survey Results

Sett No.	Grid Reference	Sett Type	Entrance Type	Notes
1	TL 35157 29209	Outlier	Partially used	A partially active outlier badger sett within W2, along the northern boundary. Two entrances present, no paths leading to the entrances.
2	TL 35153 28943	Main	Well used	Main badger sett within W4, comprising 11 active, 11 partially active and eight disused/collapsed entrances. Four latrines and a number of spoil heaps and badger paths were recorded.
3	TL 35240 28803	Outlier	Well used	A single outlier active badger sett entrance along the field boundary within the southern corner of F2. A single path linked the sett entrance to a latrine c. 100m north-east along the field boundary.

4.5 Badger activity identified at the Site is shown on the Badger Survey Plan (CSA/6815/108/B) below.



Site boundary

Survey area

Target note
TN1: active outlier badger sett with two entrances
TN2: active main badger sett
TN3: active outlier badger sett with single entrance

Badger Activity Signs

Path

Latrine

Spoil heap

Badger Sett Entrance Status

Active

Partially active

Disused/collapsed

*Arrow denotes tunnel direction

0 200 400 m

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Project	Land South of A507 and West of Buntingford	Date: June 2024	Drawing No.: CSA/6815/108
Drawing Title	Badger Survey Plan	Scale: Refer to scale	Rev: B
Client	Halam Land Management Limited	Drawn: RG	Checked: AC

Appendix I

Dormouse

1.0 Legislation

1.1 The dormouse is legally protected through inclusion under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is afforded further protection as a European Protected Species (EPS) under Regulation 43 of the Conservation of Habitats and species Regulations 2017 (as amended).

1.2 Collectively and in summary, this legislation makes it an offence to:

- Intentionally or deliberately kill, injure or capture dormice
- Intentionally, deliberately or recklessly disturb dormice in such a way as to be likely to significantly affect the ability of any significant group of dormice to survive, breed, or rear or nurture their young or the local distribution of or abundance of the species
- Intentionally or recklessly damage, destroy or obstruct access to places used by dormice for shelter or protection (whether occupied or not) or intentionally or recklessly disturb a dormouse whilst it is occupying such a place
- Damage or destroy a breeding site or resting place of a dormouse.

1.3 Where development is proposed that would result in an offence under the Regulations, an EPS statutory derogation licence (often termed 'EPS Mitigation Licence') will need to be secured from Natural England to permit an act that would otherwise be unlawful. Such a licence can only be granted following receipt of planning permission with all relevant conditions discharged, and where it has been demonstrated that specific statutory derogation tests have been met.

2.0 Methods

2.1 Dormouse nest tubes were installed at the site on 22 and 24 April 2024 by Rhodri Gruffydd. The intention of these surveys is to determine the presence or likely absence of dormice within suitable habitat across all areas of the Site that will be impacted by the proposals. A total of 100 dormouse nest tubes were distributed across the Site, along boundary vegetation, including hedgerows and woodland. The location of these nest tubes is shown on the Dormouse Survey Plan (CSA/6815/114).

2.2 Nest tubes are made from stiff, double-walled black plastic sheets or similar material, 25cm long with a 5cm x 5cm cross-section. A thin plywood tray is inserted into the tube with a short projection at one end and an end block at the other which seals the tube. The tubes are then tied in a suitable location along a horizontal branch in vegetation. Dormice are known to readily use these tubes to build their nests (Bright *et al.*, 2006).

2.3 Monthly checks were carried out between May and August 2024 in accordance with the Dormouse Conservation Handbook 2nd ed. (Bright *et al.*, 2006) and intended to demonstrate a minimum combined 'search

effort' score of 20, as based upon the indices of probability within Table 1 below. A search effort score of 20 is taken to be the minimum to adequately determine presence or likely absence of dormice within a survey area. Where 100 nest tubes are deployed, the below indices can be doubled, increasing the search effort score.

Table 1. Index of probability of finding dormice present in nest tubes in any one month

Month	Index of probability	Cumulative search effort score
April	1	1
May	4	5
June	2	7
July	2	9
August	5	14
September	7	21
October	2	23
November	2	25

2.4 Checks were undertaken by Carly Howes ACIEEM (Natural England Class Licence WML-CL10a – Registration Number 2017-28220-CLS-CLS), Rhodri Gruffydd and Revae Tilbury. Bird droppings and other material such as wood mouse nests were cleaned out if found, to maintain the potential of each tube to be used by dormice.

Limitations

3.0 There were no specific limitations to the dormouse surveys, which were conducted at an optimum time of year and in good conditions.

4.0 Results

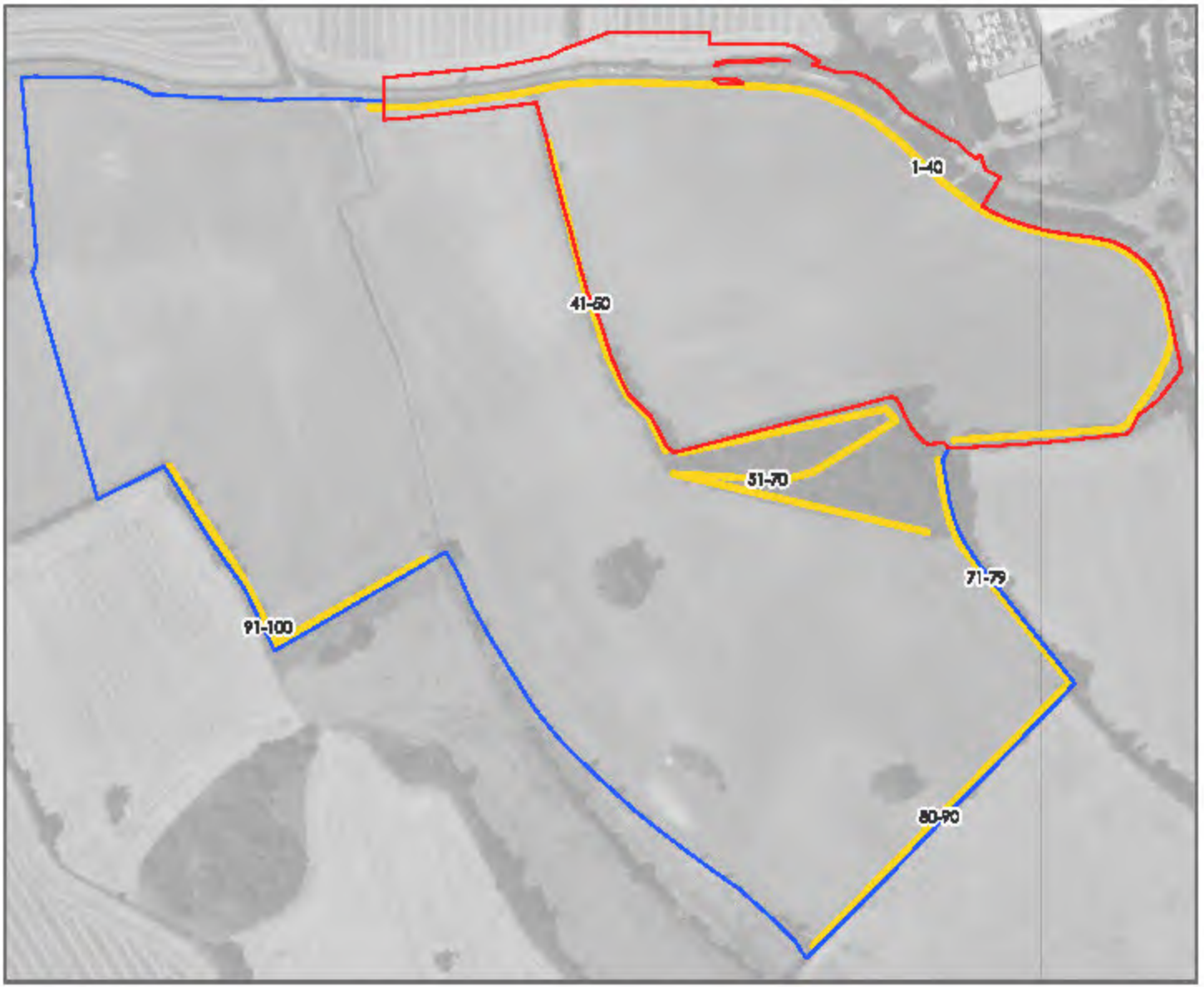
4.1 There is no evidence to suggest dormouse are using the Site for foraging, breeding or nesting. Dormouse are therefore considered likely absent from the Site. Full survey results are provided in the Table 2 below.

4.2 Numerous wood mouse *Apodemus sylvaticus* nests and caches were recorded within the dormouse nest tubes.

4.3 Full results of the surveys are included in Tables 2 and 3 below.

Table 2. Dormouse Survey Results

Set-up Date		
22/04/2024 & 24/04/2024		
Survey Date	**Search Effort Score**	**Results**
24/05/2024	4*2	No evidence of dormouse found. Individual wood mouse, wood mouse nest, cache and droppings identified.
24/06/2024	2*2	No evidence of dormouse found. Individual wood mouse and wood mouse nest identified.
26/07/2024	2*2	No evidence of dormouse found. Wood mouse nest and cache identified.
30/08/2024	5*2	No evidence of dormouse found. Wood mouse nest, cache and droppings identified.
TOTAL	26	



N

Site boundary

Survey area

Dormouse tube locations (and number)

0 150 300 m

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Project	Land South of A507 and West of Buntingford	Date	September 2024	Drawing No.	CSA/6815/114
Drawing Title	Dormouse Survey Plan	Scale	Refer to scale	Rev	-
Client	Hallam Land Management Limited	Drawn	RT	Checked	AC

Table 3. Dormouse survey results

Project Number and Name	6815 Land South of A507 and West of Buntingford
Date of Set-up	22/04/2024 and 24/04/2024

Tube Number	**First Survey Date/ Surveyor: RG**	**Second Survey Date/ Surveyor: CH**	**Third Survey Date/ Surveyor: CH & RG**	**Fourth Survey Date/ Surveyor: RG & RT**
	24/05/2024	**24/06/2024**	**26/07/2024**	**30/08/2024**
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	Not found	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	Wood mouse food cache	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	Old wood mouse nest - loose dried leaves	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-
21	-	Wood mouse nest - loose leaves	-	-
22	-	-	-	-
23	-	-	Wood mouse nest - loose leaves	Wood mouse food cache and droppings
24	-	-	-	Wood mouse droppings
25	-	-	-	-
26	-	-	-	Wood mouse food cache and droppings
27	-	-	-	Wood mouse food cache
28	-	Not found	Not found	Not found

29	Wood mouse nest - loose leaves, droppings	Not found	Not found	Not found
30	-	-	-	-
31	-	Not found	-	-
32	-	-	-	Wood mouse food cache
33	-	-	-	-
34	-	-	-	Wood mouse droppings
35	-	-	-	-
36	-	-	-	Wood mouse food cache and droppings
37	-	-	-	-
38	-	-	-	-
39	-	-	-	Wood mouse droppings
40	-	-	-	-
41	-	-	-	-
42	-	-	-	Wood mouse nest - loose leaves and food cache
43	-	-	-	Wood mouse food cache
44	-	-	-	-
45	-	Not found	-	-
46	Wood mouse cache and droppings	-	-	-
47	-	-	-	-
48	-	-	-	-
49	-	-	-	-
50	-	-	-	Wood mouse nest - loose leaves, droppings
51	-	-	-	Wood mouse droppings
52	-	-	-	Wood mouse food cache and droppings
53	-	-	-	-
54	-	-	-	Vandalised
55	-	-	-	Not found
56	-	-	-	-
57	-	-	-	Wood mouse food cache
58	-	-	-	Wood mouse food cache

59	-	-	-	-
60	-	-	-	Vandalised
61	-	-	-	Vandalised
62	-	-	-	-
63	-	-	-	Wood mouse droppings
64	-	-	-	-
65	-	-	-	-
66	-	-	-	-
67	-	-	-	-
68	-	-	-	-
69	-	-	-	-
70	-	-	-	-
71	-	-	-	-
72	Wood mouse nest - loose leaves, individual fled on approach	Wood mouse nest and wood mouse	-	-
73	-	-	-	Wood mouse food cache
74	-	-	-	Wood mouse food cache
75	-	-	-	-
76	-	-	-	-
77	-	-	-	-
78	-	-	-	-
79	-	-	-	-
80	-	-	-	Wood mouse droppings
81	-	-	-	Wood mouse droppings
82	-	-	-	-
83	-	-	-	Wood mouse droppings
84	-	-	-	Wood mouse nest - loose leaves, droppings
85	-	-	-	-
86	-	-	-	-
87	-	-	-	Wood mouse food cache and droppings
88	-	-	-	-
89	-	-	-	-
90	-	-	-	Wood mouse droppings
91	-	-	-	-
92	-	-	-	-
93	-	-	-	-
94	-	-	-	-

95	-	-	-	-
96	-	-	-	-
97	-	-	-	-
98	-	-	-	-
99	-	-	-	-
100	-	-	-	-

Appendix J

Riparian Mammals

1.0 Legislation

Water Vole

1.1 Water voles have full legal protection under the Wildlife & Countryside Act 1981 (as amended) and Countryside Rights of Way Act 2000. These regulations make it an offence to:

- Intentionally kill, injure or take water voles
- Possess or control live or dead water voles or derivatives
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection
- Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose
- Sell water voles or offer or expose for sale or transport for sale
- Publish or cause to be published any advertisement which conveys the buying or selling of water voles

1.2 Water voles are also a species of principal importance under the Natural Environment and Rural Communities (NERC) Act 2006, and local authorities and other public bodies therefore have a legal duty to take their conservation into account.

Otter

1.3 The European otter and its respective habitats are fully protected under Schedule 5 (Section 9) of the Wildlife and Countryside Act 1981 (as amended) and under Conservation of Habitats & Species Regulations 2017. These regulations make it an offence to:

- Intentionally or recklessly capture, kill, disturb or injure otters
- Intentionally or recklessly damage or destroy a breeding or resting place of an otter
- Obstruct access to their resting or sheltering places
- Possess, sell, control or transport live or dead otters, or parts of otters

1.4 In addition, the otter is listed as a species of principal importance under the NERC Act 2006 and a globally threatened species on the IUCN Red Data List. Special Areas of Conservation (SACs) can be designated on the basis on the presence of otters.

2.0 Methods

2.1 All watercourses and waterbodies within the Site and wider survey area, including the ditch along H7 and Thistley Vale Brook, were surveyed for otter and water vole on 13 March 2024 and 26 July 2024. The surveys were undertaken by Carly Howes ACIEEM and Rhodri Gruffydd.

2.2 Water vole field signs include droppings and latrines, feeding stations, footprints, runways, lawns, burrows and nests. The optimal period for water vole survey is late April to early October, with peaks of activity

typically in May and August. In-line with guidance in the Water Vole Mitigation Handbook (Dean *et al*., 2016), two survey visits for water vole were undertaken to account for variability in habitat suitability.

2.3 Otter field signs include spraints (conspicuous black faeces with or without mucus coating), footprints, feeding remains (fish or amphibian carcasses/bones) and slides (frequently used routes used to get into waterways). Occasionally 'couches' (resting places including 'natal couches' made in reeds to rest/raise cubs) or holts (dens in bank or pollarded trees/tree stumps) are found, although some of these features can be less diagnostic when identifying current presence of otter.

Limitations

3.0 Surveys were conducted at an optimum time of year for the location of the Site (south-east England) and in good conditions.

3.1 During the second survey visit it was not possible to access Thistley Vale Brook in some places due to dense vegetation. However, these overgrown areas provided less suitable habitat for water vole and, considering that the majority of the watercourse was surveyed, this is deemed only a minor limitation and not to affect the outcome of the survey.

4.0 Results

4.1 The ditch along H7 provides sub-optimal habitat for water vole. The ditch is heavily shaded by hedgerows, trees and scrub. During the first survey, the ditch held up to 10-25cm of water but was dry in places. The entire ditch was completely dry during the second survey visit. There is no aquatic marginal vegetation within the channel, which mostly comprises bare ground. There are dense patches of bramble *Rubus fruticosus* agg. and tall herb vegetation on the banks, including common nettle *Urtica dioica*, creeping thistle *Cirsium arvense*, and cleavers *Galium aparine*.

4.2 Thistley Vale Brook (running north to south through the centre of the survey area) is more suitable for water vole, with steep, earth banks suitable for burrowing. The channel bed has gravel and pebbles, becoming silted in places. The water level was c. 30cm deep during the first survey, falling to c. 5cm during the second survey. The channel is heavily shaded by bank-side and emergent vegetation including field maple *Acer campestre* and elm *Ulmus* sp. shrubs, bramble, willowherb *Epilobium* sp., common nettle, hogweed *Heracleum sphondylium*, wild teasel *Dipsacus fullonum* and reed canary-grass *Phalaris arundinacea*. This also provides foraging opportunities for water vole. The low water level of the brook and likely absence of crayfish means there is a lack of foraging opportunities for otter.

4.3 Four burrows were found within the banks of Thistley Vale Brook during the first survey. These burrows were of a size that could be used by water vole, however, no further signs were found during both survey visits. Old rat droppings were found along Thistley Vale Brook during the first survey and a number of mammal crossing points, mostly from deer. No signs were found along the ditch associated with H7.

4.4 A small tree is present along H7, however, this is too small to be used by otter for shelter. No signs of otter were found during the survey visits.

5.0 Summary

5.1 Thistley Vale Brook provides suitable habitat for water vole, however, no signs were identified during the two survey visits.

5.2 No signs of otter were identified and a lack of foraging opportunities means that the brook would likely only be used by otter to disperse between more suitable watercourses.

Appendix K

Birds

1.0 Legislation

1.1 All wild birds, their nests and eggs are protected under subsection 1(1) of the Wildlife and Countryside Act 1981 (as amended). It is an offence to kill or injure any wild bird, to take or destroy their eggs, or to take, damage or destroy their nests while in use or being built.

1.2 In addition, certain species of wild bird, listed within Schedule 1 of the Wildlife and Countryside Act, receive additional protection under subsection 1(5) of the Act. This makes it an offence to disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young. It is also an offence to disturb the dependent young of such a bird.

1.3 Consideration is also taken of Birds of Conservation Concern ('BoCC 5') (Stanbury *et al.*, 2021) which assigns bird species to a Red, Amber or Green list depending on factors such as their rarity, importance in an international context and severity of declines in population or range. Species on the Red list are of greatest conservation concern whilst those on the Green list do not fulfil any of the BoCC assessment criteria and are not currently of conservation interest. Full details can be found in Stanbury *et al.* (2021).

2.0 Methods

Breeding Birds

2.1 Breeding bird surveys were carried out by Kate Kibble MCIEEM over six visits between 27 March 2024 and 26 June 2024 to gain an understanding of the breeding bird assemblage at the Site and wider survey area. Surveys were conducted with the following aims:

- To determine the potential for breeding species of birds across the survey area;
- To review the rarity and conservation status of each species found;
- To review the likely breeding potential within the habitats present;
- To assess the impacts of the proposed developments with regards to the species/ likely species determined; and
- To recommend appropriate mitigation and protection measures where necessary.

2.2 Five of the six surveys commenced at/shortly after dawn, when birds are most active, and continued for approximately three to four hours during suitable weather conditions. One survey (06 May 2024) was conducted in the evening to target nocturnal and crepuscular species which may be overlooked during the morning visits. This survey commenced c. 1.5 hours before sunset and continued for c. 2 hours after sunset. Birds were detected by sound or sight, using a pair of 10 x 50 binoculars.

2.3 The survey area included all accessible areas of the Site, wider survey area and immediately adjacent visible land, as shown on the Breeding Bird Survey Plan (CSA/6815/113). On each survey the surveyor walked a slow route across the whole site which ensured that both species of open and boundary habitats would be detected. For morning surveys, alternative versions of the route were taken on each visit so that different parts of the Site would be surveyed at different parts of the morning, thus avoiding temporal bias associated with bird activity.

2.4 The survey methodology used considers the recommended mapping conventions given within the Bird Survey Guidelines published by the Bird Steering and Assessment Group (2024). All birds detected at the Site were recorded using standardised codes to map their distribution and behaviour, and to differentiate between individuals for the purposes of territory mapping (adapted from the standard Common Birds Census method). A full map of all species is created for each survey visit, with a consolidated map of priority species created for all survey visits combined.

2.5 Priority species are classified using the following hierarchy:

1) Species listed under Schedule 1 of the Wildlife and Countryside Act 1981(as amended);
2) Species listed under Section 41 of the Natural Environment and Rural Communities Act 2006;
3) Red & Amber listed by the Birds of Conservation Concern (Stanbury *et al.*, 2021).
4) Localised or highly specialised species regardless of their inclusion in any of the above criteria (e.g. wintering flocks of farmland waders);
5) Nationally- or locally-declining species regardless of inclusion above
6) Colonial roost sites containing more than one individual of any species; or,
7) Exceptional counts or aggregations of any species.

2.6 On each survey visit the following objectives were met:

- Identification of potential breeding species within the habitats present;
- Identification of all birds seen and heard;
- Breeding status of each bird seen and heard;
- Total numbers of birds, including juveniles recorded.

2.7 The criteria used during the 'Bird Atlas' surveys of 2007-2011 were used to ascertain the breeding status of birds at the Site (as given in Table 1 below).

Table 1. Categories of Breeding Bird Evidence

Breeding Status Categories	Evidence Criteria
Confirmed breeding:	• Distraction display or injury feigning • Used nests or eggshells found (occupied or laid within the survey period) • Recently fledged young or downy young • Adults entering or leaving a nest site in circumstances indicating occupied • Nest or an adult sitting on nest • Adults carrying food for young or faecal sacs • Nest containing eggs • Nest with young seen or heard
Probable breeding:	• Pairs observed in suitable nesting habitat in breeding season • Permanent territory presumed through registration or territorial behaviour (song etc.) on at least two different days, a week apart, at the same place • Display and courtship • Visiting probable nest site • Agitated behaviour or anxiety calls from adults • Building nest or excavating nest hole
Possible breeding:	• Species observed in breeding season in possible nesting habitat • Singing male(s) present or breeding calls heard in breeding season

Limitations

2.8 Only a proportion of individuals of each species will be detected on each visit, and some particularly secretive or low-density species, can be elusive and require several visits to detect. Furthermore, the importance of a site for birds can change depending on factors such as food availability, presence of roosting/nesting features and weather conditions.

Evaluation

2.9 The importance of the breeding bird assemblage at the Site was assessed using the criteria suggested by Fuller (1980) (see Table 2 below).

Table 2. Assessment criteria for breeding bird assemblage at a Site

Importance	Number of Breeding Species
Local	25-49
County	50-69
Regional	70-84
National	85+

<u>Wintering Birds</u>

2.10 A series of diurnal and nocturnal surveys for wintering birds were undertaken across the Site during the 2023/24 winter months.

2.11 The surveys were completed by James Latham MCIEEM and Kate Kibble MCIEEM, and the conduct of the fieldwork was commensurate with

good ornithological practice. The survey area included all accessible areas of the Site, wider survey area and immediately adjacent visible land, as shown on the Wintering Bird Survey Plan (CSA/6518/106). The purpose of the surveys was to assess the composition of the wintering bird community within the survey area, the likely population size of each species present and the species distribution within the survey area.

2.12 Survey work also focused on determining the presence/likely absence of any protected or notable species of National, Regional or Local conservation importance, and to determine whether any populations of such species are significant at a local or wider level. Data provided on the distribution of species within the survey area indicates the importance of parts of the site to each bird species and to birds in general.

Diurnal Wintering Bird Surveys

2.13 Three diurnal wintering bird survey visits were carried out between 28 November 2023 and 15 February 2024 to provide an assessment of the Site's importance for birds during the winter. During this time there is reduced territoriality and the formation of wide-ranging, mixed-species flocks that can cause significant variation in species diversity and bird numbers on a daily basis. In addition, weather factors, such as snow cover, can also result in the movement of birds to or from an area.

2.14 The survey methodology was based upon the approach for non-breeding walkover surveys set out in the Bird Survey Guidelines (Bird Survey & Assessment Steering Group. (2023)), and comprised an adapted version of the standard Common Birds Census method to:

- Identify all birds seen and heard, with locations of all birds mapped on a large-scale plan; and
- Record the total numbers of birds encountered.

2.15 On each survey, the surveyor walked a slow route across the whole Site, which ensured that both species of open and boundary habitats would be detected. Alternative versions of the route were taken on each visit so that different parts of the Site would be surveyed at different times of the day, thus avoiding temporal bias associated with bird activity or other factors such as increasing traffic noise. Surveys commenced took place throughout the day and lasted a duration of approximately four hours. Birds were detected by sound or sight, using a pair of 8 x 42 /10 x 50 binoculars.

2.16 All birds detected within the survey area were recorded using the British Trust for Ornithology's (BTO) standardised codes to map species distributions and behaviours, and to differentiate between individuals (where possible) for the purposes of mapping. Birds flying over the Site were recorded; however, any flight recordings that were not considered to be directly associated with the survey area or indicative of notable

behaviours (e.g. displaying/roosting) were not taken into consideration when assessing the nature conservation importance of the Site for wintering birds.

2.17 Particular consideration was given to priority species which were established using the following hierarchy:

1) Species listed under Schedule 1 of the Wildlife and Countryside Act 1981(as amended);
2) Species listed under Section 41 of the Natural Environment and Rural Communities Act 2006;
3) Red & Amber listed by the Birds of Conservation Concern (Stanbury *et al.*, 2021).
4) Localised or highly specialised species regardless of their inclusion in any of the above criteria (e.g. wintering flocks of farmland waders);
5) Nationally- or locally-declining species regardless of inclusion above
6) Colonial roost sites containing more than one individual of any species; or,
7) Exceptional counts or aggregations of any species.

Nocturnal Wintering Bird Surveys

2.18 A desk study identified that lapwing *Vanellus vanellus* and potentially golden plover *Pluvialis apricaria* have, on occasions, been recorded in relatively large numbers in the vicinity of the Site. Further to this, a flock of 12 golden plovers was recorded roosting/loafing within a large arable field approximately 600m to the north of the Site, shortly before dusk during the November 2023 wintering bird survey visit. Lapwing and golden plover tend roost/feed to in arable fields at night. In view of this, the diurnal wintering bird surveys were supplemented by three nocturnal bird surveys between December 2023 and February 2024. These nocturnal surveys were carried out as a precautionary measure, to determine whether either of these species use the Site on a nocturnal basis during the winter months.

2.19 The nocturnal surveys were carried out by James Latham MCIEEM and Kate Kibble MCIEEM on the following dates: 19 December 2023, 17 January 2024 and 14 February 2024. During each survey visit, observations of all arable fields within the Site and its immediate surroundings were made from a series of vantage point locations using a Pulsar Helion/Helion 2 Pro XP50 thermal imaging scope. The vantage point locations were selected to maximise the likelihood of detecting aggregations of farmland waders, whilst at the same time avoiding causing significant disturbance to these birds (if present). The survey effort was supplemented by the surveyors listening for the characteristic calls of lapwing and golden plover whilst undertaking the nocturnal observations and when moving between vantage points.

2.20 Each survey commenced at least one hour after sunset and lasted for a duration of up to four hours. Where possible, all birds encountered were identified to species, counted and their locations mapped using the BTO's standardised codes. Any additional behavioural observations (e.g. feeding, roosting, loafing, etc) were also recorded.

Limitations

2.21 Only a proportion of individuals of each species will be detected on each visit, and some particularly secretive or low-density species, can be elusive and require several visits to detect. Furthermore, the importance of a site for birds can change depending on factors such as food availability, presence of roosting/nesting features and weather conditions.

Evaluation

2.22 The importance of the wintering bird assemblage on the site was assessed using the criteria suggested by Fuller (1980) (see Table 3 below).

Table 3. Assessment criteria for the wintering bird assemblage at the site

Importance	Number of Wintering Bird Species
Local	25-54
County	55-84
Regional	85-114
National	115+

Barn Owl Inspection Survey

2.23 During wintering bird surveys, four mature trees were noted within the woodland in the centre of the Site (W2), which appeared to provide potentially suitable roosting and/or nesting opportunities for barn owl *Tyto alba*. An inspection survey of these trees was undertaken on 14 February 2024 by Kate Kibble (Natural England licence ref: WML-CL29-00269) and James Latham using a ladder, torch and endoscope, to investigate the suitability of potential nesting features and identify any evidence of current or previous occupation by barn owl, which may be present. A visual search of the tree and the ground surrounding it, was also completed to look for any field signs that could be indicative of occupation by Barn owl (e.g. feathers, pellets, droppings).

2.24 A small number of mature trees outside of (but in close proximity to) the Site's south-western boundary were also identified as warranting further inspection in relation to the possible presence of nesting Barn owls (owing to either the presence of potentially suitable cavities that could be used by nesting birds) though landowner permission was not granted to undertaken more detailed survey work of these trees.

3.0 Results

Breeding Birds

3.1 The weather conditions during the breeding bird surveys are summarised in Table 4 below.

Table 4. Survey timings and weather conditions for the breeding bird surveys

Date	Start time	End time	Temp (°C)		Cloud (Oktas)	Rain (mm)	Wind (Beaufort scale)	Visibility
			Start	End				
27/03/24	06:20	09:20	2	5	2/8-4/8	0	2	Excellent
12/04/24	06:15	09:40	8	13	7/8 -7/8	0	2-3 to 2	Excellent
26/04/24	05:45	09:10	1	7	2/8 -1/8	0	1	Excellent
06/05/24	18:50	22:15	12	9	5/8-1/8	0	2 - 1	Excellent
21/05/24	05:25	08:30	9	11	8/8	0	1	Excellent
26/06/26	04:50	08:45	15	21	0/8	0	0	Excellent

3.2 A total of 51 bird species were recorded on or adjacent to the Site during the surveys. Of these, 41 are considered to be breeding species (either confirmed, probable or possible breeders) on account of the behaviour observed or presence of suitable breeding habitat. The remaining 10 species were either migratory (e.g. fieldfare) or are not typically associated with habitats on-site (e.g. grey heron *Ardea cinerea*).

3.3 A total of 26 priority species were recorded within the Site and its surroundings, as summarised in Table 5 below.

Table 5. Priority bird species recorded breeding at the Site during the breeding bird surveys

Species	BoCC 2021 Red/Amber	Section 41	Sch1	Breeding Status
Corn bunting	Red	●		Probable
Dunnock	Amber	●		Probable
Fieldfare	Red		●*	Non-breeding
Greenfinch	Red			Probable
Grey partridge	Red	●		Possible
Herring gull	Red	●		Non-breeding
House sparrow	Red	●		Confirmed (adjacent to Site)
Kestrel	Amber			Confirmed (adjacent to Site)
Lesser black-backed gull	Amber			Non-breeding
Linnet	Red	●		Probable
Mallard	Amber			Probable
Meadow pipit	Amber			Non-breeding
Mistle thrush	Red			Possible
Red kite			●	Possible
Reed bunting	Amber	●		Confirmed
Skylark	Red	●		Probable
Song thrush	Amber	●		Probable
Starling	Red	●		Possible (probable adjacent to Site)
Stock dove	Amber			Probable
Swift	Red			Non-breeding

Whitethroat	Amber			Probable
Willow warbler	Amber			Possible
Woodpigeon	Amber			Probable
Wren	Amber			Confirmed
Yellowhammer	Red	●		Probable
Yellow wagtail	Red	●		Confirmed

Abbreviations:
BoCC Red: included on the Red List of Birds of Conservation Concern 5
BoCC Amber: included on the Amber List of Birds of Conservation Concern 5
Section 41: Listed as a species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act, 2006Sch1: Schedule 1 (Part 1) of the Wildlife and Countryside Act (1981, as amended)
Sch1: Schedule 1 (Part 1) of the Wildlife and Countryside Act (1981, as amended)
Notes:
*Although this species is afforded full legal protection during the breeding season due to its inclusion on Schedule 1 (Part 1) of the Wildlife and Countryside Act (1981, as amended), its typical breeding range does not encompass Hertfordshire.

Grey partridge

3.4 Two birds were observed foraging in the gateway at northern end of F2 on one visit. This species is possibly breeding on-site.

Raptors

Red Kite

3.5 Red kite *Milvus milvus* individuals were recorded on all surveys flying over the Site and wider landscape. Some calling behaviour was recorded but there was no particular association with woodland/trees on or near the Site. Therefore, nesting is possible but not confirmed.

Passerines

3.6 The Site and its surroundings were found to support a range of breeding and non-breeding passerines that are considered to be typical of farmland and urban fringe habitats. This included the following priority species: corn bunting *Emberiza calandra*; dunnock *Prunella modularis*; fieldfare *Turdus pilaris*; greenfinch *Chloris chloris*; house sparrow *Passer domesticus*; linnet *Linaria cannabina*; meadow pipit *Anthus pratensis*; reed bunting *Emberiza schoeniclus*; skylark *Alauda arvensis*; song thrush *Turdus philomelos*; starling *Sturnus vulgaris*; whitethroat *Curruca communis*; willow warbler *Phylloscopus trochilus*; wren *Troglodytes troglodytes*; yellowhammer *Emberiza citronella* and yellow wagtail *Motacilla flava*.

3.7 Of particular interest is 12 skylark breeding territories identified across the wider survey area, of which four are within the Site boundary; a corn bunting pair recorded along Thistley Vale Brook and a male along H6 during one visit; and multiple yellowhammer and yellow wagtail pairs around the margins of F3, probably breeding. The majority of other passerine breeding territories are associated with hedgerows and the woodland copses on-site.

Evaluation

3.8 The number of species recorded at the Site is consistent with a breeding bird assemblage of **Local** value, in accordance with Fuller (1980). No species were recorded in significant numbers to warrant individual valuation above Local level.

Wintering Birds

3.9 The full results of the diurnal and nocturnal wintering bird surveys are presented at the end of this Appendix in Table 10 with a summary of survey conditions in Tables 6 and 7 below. The Wintering Bird Survey Plan (CSA/6815/106) shows the location of notable sightings and activity observed.

Table 6. Survey timings and weather conditions for the diurnal wintering bird surveys

Date	Start time	End time	Temp (°C)		Cloud (Oktas)	Rain (mm)	Wind (Beaufort scale)	Visibility
			Start	End				
28/11/23	12:20	16:10	7.5	3.0	6/8 – 3/8	0	2 to 1-2	Excellent
20/12/23	09:55	12:55	8.0	9.5	7/8 – 7/8	0	4-5 to 3-4	Excellent
19/01/23	09:15	11:55	-2.0	2.5	0/8	0	1	Excellent
15/02/24	09:45	12:45	13.5	15.0	5/8	0	1-2	Excellent

Table 7. Survey timings and weather conditions for the nocturnal wintering bird surveys

Date	Start time	End time	Time of sunset	Temp (°C)		Cloud (Oktas)	Rain (mm)	Wind (Beaufort scale)	Fog/ Mist
				Start	End				
19/12/23	20:45	22:55	15:50	4	4	1/8 – 4/8	0	3	None
18/01/24	18:30	19:45	16:23	-0.5	-1.7	6/8 – 4/8	0	2	None
14/02/24	22:00	23:05	17:11	12	12	8/8	0	2-1	None

3.10 A total of 43 species were recorded during the winter bird surveys. Of these, 40 species were considered to be directly associated with the habitats within and/or immediately adjacent to the Site.

3.11 A total of 20 priority species were recorded within the Site and its surroundings, including four species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) as summarised in Table 8.

Table 8. Priority bird species recorded at the Site during the wintering bird surveys

Species	BoCC Red List	BoCC Amber List	Section 41	Sch 1	Other
Barn owl				●	
Black-headed gull		●			
Dunnock		●	●		
Fieldfare	●			●*	
Greenfinch	●				
Herring gull	●		●		
House sparrow	●		●		

Species	BoCC Red List	BoCC Amber List	Section 41	Sch 1	Other
Kestrel		●			
Linnet	●		●		
Red kite				●	
Redwing		●		●*	
Rook		●			
Skylark	●		●		
Song thrush		●	●		
Sparrowhawk		●			
Stock dove		●			
Tawny owl		●			
Woodpigeon		●			
Wren		●			
Yellowhammer	●		●		

Abbreviations:
BOCC Red List: Red List of Birds of Conservation Concern 5
BOCC Amber List: Amber List of Birds of Conservation Concern 5
Section 41: Listed as a priority species under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006
Sch1: Schedule 1 (Part 1) of the Wildlife and Countryside Act 1981
Notes:
* Although this species is afforded full legal protection during the breeding season due to its inclusion on Schedule 1 (Part 1) of the Wildlife and Countryside Act 1981, its typical breeding range does not encompass Hertfordshire.

Farmland Waders

3.12 The only farmland wader recorded during the 2023/24 winter bird surveys was lapwing. A total of 10 birds were recorded flying (commuting) over the survey area during the January 2024 survey visit, and none of these birds were considered to be associated with the Site. No further observations of this species were recorded during any of the other wintering bird surveys.

Raptors & Owls

3.13 A total of five priority species of raptor and owl were recorded during the winter bird surveys: kestrel *Falco tinnunculus*; red kite; sparrowhawk *Accipiter nisus*; barn owl; and tawny owl *Strix aluco*.

- A single kestrel was observed perching in scrub along the margins of the stream corridor adjacent to the survey area's northern boundary. No further sightings of this species were recorded.
- Red kites were observed within the survey area and its surroundings on each of the diurnal wintering bird survey visits, with a peak count of at least four birds recorded in January 2024. Most of the observations related to birds in flight, and generally involved birds commuting through or foraging over the Site and its surroundings. However, during the January 2024 survey visit, a pair of birds appeared to be engaging in a brief period of display/courtship flight. A pair of birds were also observed circling and calling over the Site's woodland habitat during the February 2024 survey visit. No nest sites that could have been used by nesting red kites in previous years were

recorded in the woodland or mature trees, and no evidence of nest building was observed. Whilst W2 appeared to offer potentially suitable roosting opportunities for this species, no evidence of any communal roost sites was recorded during the winter bird surveys.

- A single sparrowhawk was recorded flying over (foraging) the survey area in February 2024. During the same survey visit, a bird (possibly the same individual) was recorded being mobbed by carrion crows over arable land in the north of the survey area.
- A single barn owl was observed foraging along the stream corridor running through the centre of the survey area during the January 2024 nocturnal bird survey. Four trees with cavities which appear to provide potentially suitable opportunities for nesting (and roosting) barn owl were recorded within W2 (see below for further details).
- A single tawny owl was heard calling from mature trees outside and to the south-west of the survey area in November 2023.

Gulls

3.14 The only observations of gulls directly associated with the survey area and its surroundings involved a single herring gull *Larus argentatus* and a flock of approximately 35 black-headed gulls *Larus ridibundus* during the February 2024 survey visit. These birds were recorded in flight and appeared to be foraging over the Site and its surroundings, although feeding was not observed.

Passerines

3.15 The Site and its surroundings were found to support a range of wintering passerines that were considered to be typical of farmland and urban fringe habitats. This included the following priority species: dunnock; fieldfare; greenfinch; house sparrow; linnet; redwing *Turdus iliacus*; rook *Corvus frugilegus*; skylark; song thrush; wren; and yellowhammer.

3.16 Skylark was primarily recorded within the area of arable farmland in the north and west of the Site, with counts of three and six birds recorded in December 2023 and January 2024, respectively. During the February 2024 survey visit, up five to birds were recorded in song flight over these fields (and those adjacent), which appeared to be indicative of early-stage breeding activity. Further observations of calling birds were also recorded, which could also potentially indicate additional breeding territories.

3.17 The remaining priority passerine species were primarily associated with hedgerow/scrub and woodland habitats. In all cases, the species recorded were considered to be present at relatively low densities.

Evaluation

3.18 The number of species recorded at the Site is consistent with a wintering bird assemblage of **Local** value, in accordance with Fuller (1980). No

species were recorded in significant numbers to warrant individual valuation above Local value.

Barn Owl Inspection Survey

3.19 All four of the mature trees within the woodland that were subject to further ladder inspection to assess their potential suitability for nesting barn owl were found to contain features which could be used as nest sites by this species on account of their size and structure. None of the features contained any evidence to confirm current or recent occupation by barn owls; however, some of the cavities could not be comprehensively inspected on account of their extent, complexity, accessibility or height. Although located within a woodland, the trees were in close proximity to surrounding farmland habitats (where a barn owl has previously been recorded foraging during the nocturnal bird surveys). In view of these factors, the presence of nesting barn owl in these features cannot be discounted.

3.20 Evidence of stock dove nesting was found within a vertical branch cavity on one tree, with nesting material and an old clutch of eggs visible.

4.0 Summary

4.1 A total of 51 bird species were recorded within the Site and its surroundings during the breeding bird surveys. Of these, 26 species were considered to be of nature conservation importance. The breeding bird assemblage at the Site is assessed to be of ecological importance at the **Local** level.

4.2 A total of 40 bird species were recorded within the Site and its surroundings during the wintering bird surveys. Of these, 20 species were considered to be of some nature conservation importance. These comprised: The wintering bird assemblage at the Site is assessed to be of ecological importance at the **Local** level.

Table 9. Breeding Bird Survey Results

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
Blackbird *Turdus merula*	BoCC Green	Present	Present	Present	Present	Present	-	Probable	Common and widespread across the Site. Suitable breeding habitat present. Pairs observed.
Blackcap *Sylvia atricapilla*	BoCC Green	Present	Present	Present	Present	Present	Present	Probable	Recorded on all visits, with a several likely territories. Pair observed in woodland.
Blue tit *Cyanistes caeruleus*	BoCC Green	Present	Present	Present	Present	Present	Present	Confirmed	Common and widespread at the Site. Nesting confirmed within the on-site woodland and within tree at north end of H5
Buzzard *Buteo buteo*	BoCC Green	Present	-	Present	Present	-	-	Possible	Occasional sightings flying over the Site, or perched in woodland and hedgerow trees.
Canada goose *Branta canadensis*	-	Present	-	-	Present	-	-	Non-breeding	Predominantly recorded flying over the Site but up to c. 40 birds regularly seen around lake offsite to the south, and droppings within F2 confirm their use of the Site for foraging.
Carrion crow *Corvus corone*	BoCC Green	Present	Present	Present	Present	Present	Present	Confirmed	Commonly sighted on-site and flying overhead. Nesting confirmed within H5 and south boundary of F3.
Chaffinch *Fringilla coelebs*	BoCC Green	-	-	Present	-	-	-	Probable	Likely under-recorded. One male singing in on-site woodland on one occasion.
Chiffchaff *Phylloscopus collybita*	BoCC Green	Present	-	Present	-	Present	-	Probable	Occasional sightings across Site. Singing males present on-site and associated with business park to north.
Corn bunting *Emberiza calandra*	BoCC Red S41	-	-	Present	-	-	-	Probable	Birds recorded on a single visit only. A pair was present along the Thistley Vale Brook and a singing male was recorded along H6, but the species was not recorded on subsequent visits when breeding behaviour would likely be evident.

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
Dunnock *Prunella modularis*	BoCC Amber S41	Present	Present	Present	Present	Present	Present	Probable	Common and widespread across the Site with several likely territories present.
Fieldfare *Turdus pilaris*	BoCC Red	Present	-	-	-	-	-	Non-breeding	Winter migrant. Flock of five recorded flying overhead on the first survey only.
Goldfinch *Carduelis carduelis*	BoCC Green	Present	Present	Present	Present	Present	Present	Confirmed	Mostly flyover species only with some birds recorded within on-site hedgerows. Higher activity by foraging birds on the final survey with small flocks of <12 seen with juveniles.
Great spotted woodpecker *Dendrocopos major*	BoCC Green	Present	Present	Present	Present	-	Present	Probable	Frequently recorded in associated with the woodlands/tree groups.
Great tit *Parus major*	BoCC Green	Present	Present	Present	Present	Present	Present	Confirmed	Occasional sightings within hedgerows and woodland. Singing males present and family group observed on final survey.
Green woodpecker *Picus viridis*	BoCC Green	Present	-	-	-	-	-	Possible	One bird heard calling on woodland edge during first survey. No other sightings.
Greenfinch *Chloris chloris*	BoCC Red	Present	Present	-	-	-	Present	Probable	Occasional flyover. Singing birds recorded along Baldock Road. Likely breeding within nearby residential areas. Individuals and small groups <4 recorded on-site.
Grey heron *Ardea cinerea*	BoCC Green	Present	Present	-	-	-	-	Non-breeding	Flyover only.
Grey partridge *Perdix perdix*	BoCC Red S41	-	-	-	-	Present	-	Possible	Two birds foraging in gateway at north end of F2 on one visit.
Herring gull *Larus argentatus*	BoCC Red S41	Present	-	-	-	-	-	Non-breeding	Flyover only.

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
House sparrow *Passer domesticus*	BoCC Red S41	Present	Present	Present	-	Present	Present	Confirmed (adjacent)	Occasional presence on-site (F3) but largely associated with properties to the east and west of the Site. Seen carrying food.
Jackdaw *Corvus monedula*	BoCC Green	Present	Present	Present	-	Present	-	Confirmed	Frequently flying over the Site and associated with the woodland. Pairs present and nesting confirmed within a tree hollow within the woodland, as well as a second possible nest.
Jay *Garrulus glandarius*	BoCC Green	-	Present	-	-	-	-	Possible	Recorded once along H4. Likely under-recorded.
Kestrel *Falco tinnunculus*	BoCC Amber	Present	-	Present	-	-	-	Confirmed (adjacent)	Recorded hunting over F3/F2 and adjacent land during two surveys. Nesting confirmed within tree cavity adjacent to south of F3.
Lesser black-backed gull *Larus fuscus*	BoCC Amber	-	Present	Present	Present	Present	Present	Probable	Flyover only.
Lesser whitethroat *Curruca curruca*	BoCC Green	-	Present	-	-	Present	-	Non-breeding	One territory confirmed at north end of H5 where birds were recorded singing on two occasions, and a pair was seen delivering food to a nest.
Linnet *Linaria cannabina*	BoCC Red S41	-	-	Present	Present	Present	-	Confirmed	Regularly flying over the Site in small groups. Occasionally present within on-site habitats. One singing bird recorded on boundary of property adjacent to the west of the Site.
Long-tailed tit *Aegithalos caudatus*	BoCC Green	Present	-	-	-	-	Present	Confirmed	Infrequently detected but likely to breed on-site. Family group observed on woodland edge.
Magpie *Pica pica*	BoCC Green	Present	Present	-	Present	Present	-	Probable	Regularly sighted as individuals/pairs across the Site.
Mallard	BoCC Amber	Present	Present	Present	Present	Present	-	Probable	Occasional flyover and present at offsite lake to south. Single birds or pairs routinely seen on

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
Anas platyrhynchos									ponds within the woodland, but no breeding behaviour seen.
Meadow pipit ***Anthus pratensis***	BoCC Amber	Present	-	Present	-	-	-	Non-breeding	One bird recorded calling in F1 and F3 early in the season. Likely migrants and not nesting on-site.
Mistle thrush ***Turdus viscivorus***	BoCC Red	-	-	Present	-	-	-	Possible	Pair within woodland on one occasion.
Pheasant *Phasianus colchicus*	-	Present	Present	Present	-	-	-	Probable	Likely common and widespread locally. Males and females recorded on-site.
Pied wagtail *Motacilla alba*	BoCC Green	-	Present	-	-	-	-	Non-breeding	One bird flew overhead on one occasion.
Raven *Corvus corax*	BoCC Green	-	Present	-	-	-	-	Non-breeding	Two birds circling over F3 during one visit.
Red kite ***Milvus milvus***	Sch1	Present	Present	Present	Present	Present	Present	Possible	Individuals present on all surveys soaring over the Site and wider landscape. Some calling behaviour but no particular association recorded with woodland/trees on or near the Site. Nesting possible but not confirmed.
Red-legged Partridge *Alectoris rufa*	-	Present	-	-	-	-	-	Probable	A couple of birds recorded in F3 and F1 during the first survey, with one bird singing.
Reed bunting ***Emberiza schoeniclus***	BoCC Amber S41	Present	-	-	-	Present	Present	Confirmed	Male recorded in association with F2/Thistley Vale Brook, then recorded singing and seen with a very recently fledged juvenile in F3.
Robin *Erithacus rubecula*	BoCC Green	Present	Present	Present	Present	Present	-	Confirmed	Common and widespread at the Site. Family groups and recently fledged juveniles indicate breeding likely on-site.
Skylark ***Alauda arvensis***	BoCC Red S41	Present	Present	Present	Present	Present	Present	Probable	Multiple singing males recorded within all fields. Some territorial behaviour observed and small groups (<5). Four territories assigned per

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
									field based on repeated sightings of single males in those locations and confirmed observations of different individuals. Additional birds have been mapped where singing males were recorded on only one occasion.
Song thrush ***Turdus philomelos***	BoCC Amber S41	Present	-	-	Present	Present	Present	Possible (probable adjacent)	Regularly seen at the Site within hedgerows, though singing behaviour uncommon.
Starling ***Sturnus vulgaris***	BoCC Red S41	Present	Present	Present	Present	Present	Present	Probable	Flyover with birds generally only associated with farm buildings to the west of the Site.
Stock dove ***Columba oenas***	BoCC Amber	-	-	Present	Present	Present	-	Non-breeding	Likely breeding within tree hollows within the woodland (old nest found during tree inspection for barn owl in early 2024) but no breeding confirmed during the surveys. Likely also nesting in mature trees to the south of F3.
Swallow *Hirundo rustica*	BoCC Green	-	-	-	Present	-	-	Non-breeding	Small groups (<3) foraging over the west of F3 and associated with farm buildings/paddocks.
Swift ***Apus apus***	BoCC Red	Present	Present	-	-	Present	-	Possible	One bird foraging over F3 and F2 during dusk survey.
Treecreeper *Certhia familiaris*	BoCC Green	-	Present	-	-	Present	Present	Probable	Within woodland. Likely under-recorded.
Whitethroat ***Curruca communis***	BoCC Amber	-	Present	-	-	-	-	Possible	Birds mostly distributed in western half of the Site, in association with scrubby vegetation and hedgerows. Two territories recorded along the Thistley Vale Brook but three to four further territories possible around F2 and F3 where birds only recorded singing on single visits.
Willow warbler ***Phylloscopus trochilus***	BoCC Amber	Present	Present	Present	Present	Present	Present	Probable	One bird singing in scrub to south-east of F1 on one visit only.

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
Woodpigeon *Columba palumbus*	BoCC Amber	Present	Present	-	Present	Present	Present	Confirmed	Common and widespread. Present within all hedgerows and woodland. Multiple birds likely nesting though no nests confirmed. Some singing behaviour and large groups within woodland (30+). Flying over the Site almost continuously.
Wren *Troglodytes troglodytes*	BoCC Amber	Present	Present	Present	Present	Present	Present	Probable	Common and widespread with birds seen or heard within almost all areas of the Site. Family groups seen.
Yellow wagtail *Motacilla flava*	BoCC Red S41	-	-	Present	-	Present	Present	Confirmed	Found within hedgerows and farmland within F2/F3. Individuals occasionally seen within singing males along the Thistley Vale Brook and groups of up to 4 seen foraging within F3. Multiple birds (at least six) seen foraging in stubble field to south-west of F3 one a few occasions.
Yellowhammer *Emberiza citrinella*	BoCC Red S41	Present	Present	Present	Present	Present	-	Probable	First recorded in late April when a bird was alarm calling and circling over the northern half of F3, and a second bird flushed from further south flew far away to the south-east. On subsequent visits birds were recorded within both northern and southern parts of F3 and they are suspected to be two separate territories although the birds are highly mobile. A pair was seen with either food/nesting material towards the south of F3 confirming nesting. Common and widespread across the Site. Suitable breeding habitat present. Pairs observed.

Abbreviations:
BoCC Red: included on the Red List of Birds of Conservation Concern 5
BoCC Amber: included on the Amber List of Birds of Conservation Concern 5

BoCC Green: included on the Green List of Birds of Conservation Concern 5
Section 41: Listed as a species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act, 2006
Sch1: Schedule 1 (Part 1) of the Wildlife and Countryside Act (1981, as amended)

Table 10. Wintering Bird Survey Results

Species	Status	Diurnal surveys			Nocturnal surveys			Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	18/01/24	14/02/24	
Barn owl *Tyto alba*	BoCC Green Sch 1	-	-	-	-	-	Present	-	A single bird foraging along the stream corridor in the centre of the Site in January 2024.
Blackbird *Turdus merula*	BoCC Green	Present	Present	Present	Present	-	-	-	Small numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated peak count of four individuals in January 2024.
Black-headed gull *Chroicocephalus. ridibundus*	BoCC Amber	Present (Fly-over only)	-	-	Present	-	-	-	A single bird flying (commuting) over the Site shortly before dusk in November 2023. A Flock of approximately 35 birds were also recorded flying (foraging) over the Site in February 2024.
Blue tit *Cyanistes caeruleus*	BoCC Green	Present	Present	Present	Present	-	-	-	Small to moderate numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated peak count of at least 29 individuals in January 2024.
Buzzard *Buteo buteo*	BoCC Green	Present	-	Present	Present	-	-	-	Up to two birds flying over the Site and its surroundings in November 2023, January 2024 and February 2024.
Canada goose *Branta canadensis*	-	-	-	Present	-	Present	-	-	A total of 48 birds feeding and loafing within arable land on the Site during the December 2023 nocturnal survey. A total of 70 birds were also observed at an off-site waterbody, approximately 170 m to the south-west of the Site

Species	Status	Diurnal surveys			Nocturnal surveys				Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	18/01/24	14/02/24	
Carrion crow *Corvus corone*	BoCC Green	Present	Present (Fly-over only)	Present	Present	-	-	-	A peak count of 52 birds foraging on arable land in the north-western part of the Site in February 2024. Recorded throughout the Site and its surroundings in relatively small numbers (no more than six birds) on previous survey visits.
Chaffinch *Fringilla coelebs*	BoCC Green	-	Present	-	-	-	-	-	A single bird recorded within the Site's hedgerows in December 2024
Collared dove *Streptopelia decaocto*	BoCC Green	-	-	-	Present			-	A single bird singing adjacent to (but outwith) the Site's northern boundary in February 2024.
Dunnock *Prunella modularis*	BoCC Amber S41	Present	Present	Present	Present	-	-	-	Small numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated peak count of three individuals in February 2024.
Fieldfare *Turdus pilaris*	Sch1 BoCC Red	Present	Present	-	-	-	-	-	Small numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated total count of six individuals in November and December 2023.
Goldfinch *Carduelis carduelis*	BoCC Green	Present	Present	-	Present	-	-	-	Small numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated total count of two individuals in November 2023.
Great tit *Parus major*	BoCC Green	Present	Present	Present	Present	-	-	-	Small numbers of birds primarily associated with the hedgerows, scrub

Species	Status	Diurnal surveys			Nocturnal surveys				Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	18/01/24	14/02/24	
									and woodland habitats within the Site and its surroundings. An estimated peak count of 12 individuals in February 2024.
Great spotted woodpecker *Dendrocopos major*	BoCC Green	-	Present	-	Present	-	-	-	Single birds recorded in the Site's hedgerows and woodland in December 2023 and February 2024, respectively.
Greenfinch *Carduelis chloris*	BoCC Red	-	-	-	Present	-	-	-	Up to three individuals recorded within the Site and its surroundings in February 2024.
Green woodpecker *Picus viridis*	BoCC Green	-	-	-	-	-	-	-	A single bird was incidentally recorded calling from the woodland habitat in the centre of the Site during the nesting barn owl inspections in February 2024.
House sparrow *Passer domesticus*	BoCC Red S41	-	-	-	Present	-	-	-	At least two birds were heard calling from How Green Farm adjacent to (but outwith) the Site's north-western boundary in February 2024.
Herring gull *Larus argentatus*	BoCC Red S41	-	-	-	Present	-	-	-	A Single bird circling (foraging) over fields to the north of the Site in February 2024.
Jackdaw *Corvus monedula*	BoCC Green	Present (Fly-over only)	Present	-	Present	-	-	-	A flock of approximately 20 birds recorded within the area of woodland in the centre of the Site in December 2023. Counts of birds increased in February 2024, with at least 59 birds recorded in the Site's woodland and flying (commuting) through the Site, simultaneously.

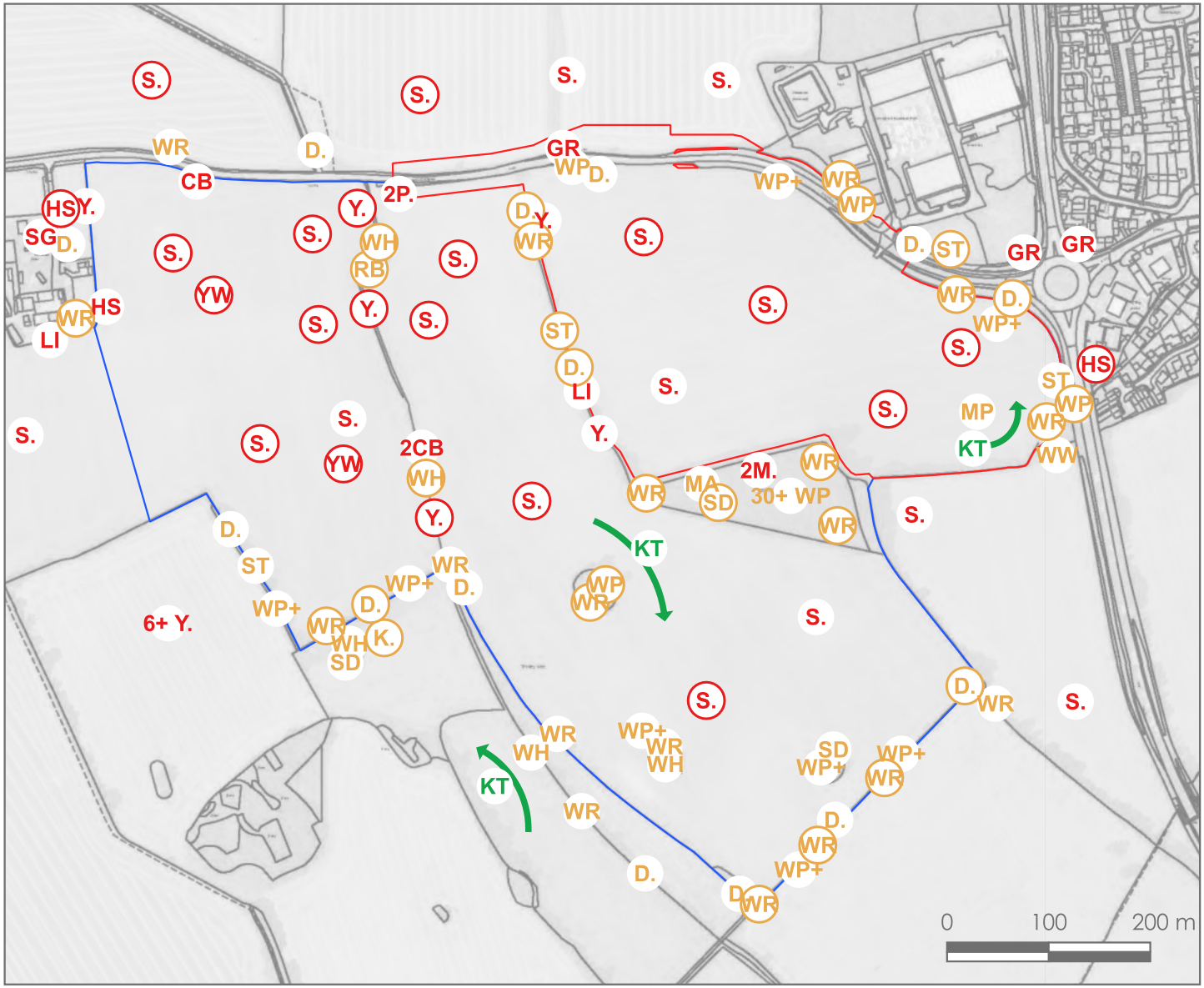
Species	Status	Diurnal surveys			Nocturnal surveys				Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	18/01/24	14/02/24	
Jay *Garrulus glandarius*	BoCC Green	Present	-	-	-	-	-	-	A single bird recorded from a section of hedgerow outwith the Site's south-western boundary in November 2023.
Kestrel *Falco tinnunculus*	BoCC Amber	Present	-	-	-	-	-	-	A single bird recorded within scrub at the northern end of the Site's stream corridor in November 2023.
Lapwing *Vanellus vanellus*	BoCC Red S41			Present (Fly-over only)	-	-	-	-	A total of 10 birds flying (commuting) over the Site in January 2024.
Lesser black-backed gull *Larus fuscus*	BoCC Amber	Present (Fly-over only)	Present (Fly-over only)	-	-	-	-	-	A single bird flying (commuting) over the Site shortly before dusk in November 2023., and two flying (commuting) over the Site in December 2023.
Linnet *Linaria cannabina*	BoCC Red S41	-	-	-	Present	-	-	-	A single bird was recorded flying (commuting) over the site in song in February 2024. A flack of three birds were also recorded calling from a section of hedgerow on the Site's western boundary in February 2024.
Long-tailed tit *Aegithalos caudatus*	BoCC Green	Present	Present	-	Present	-	-	-	Small to moderate numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated total count of at least 21 individuals (including a flock of at least 16 birds) in December 2023.
Magpie *Pica pica*	BoCC Green	Present	Present	Present	Present	-	-	-	Small numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated peak count of four individuals in January 2024.

Species	Status	Diurnal surveys			Nocturnal surveys				Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	18/01/24	14/02/24	
Meadow pipit ***Anthus pratensis***	BoCC Amber	Present (Fly-over only)	Present (Fly-over only)	-	-	-	-	-	Single birds flying (commuting) over the Site in November and December 2023.
Nuthatch *Sitta sitta*	BoCC Green	Present	-	-	Present	-	-	-	A single bird recorded within the woodland in the centre of the Site in November 2023 and February 2024.
Pheasant *Phasianus colchicus*	-	Present	-	-	Present	-	-	-	Single birds recorded within the Site and its surroundings in November 2023 and February 2024.
Red kite ***Milvus milvus***	Sch1 BoCC Green	Present	Present	Present	Present	-	-	-	Red kites were observed within the Site and its surroundings on each of the diurnal wintering bird survey visits, with a peak count of at least four birds recorded in January 2024. Birds were recorded circling and/or calling over the Site's woodland in January and February 2024, no nest platforms (from previous years that could be reused in 2024) or evidence of nest building was recorded.
Redwing ***Turdus iliacus***	BoCC Amber Sch1	Present	Present	-	Present	-	-	-	Small numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated total count of eight individuals in November 2023.
Robin *Erithacus rubecula*	BoCC Green	Present	Present	Present	Present	-	-	-	Small numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated peak total count of four individuals in November 2023.

Species	Status	Diurnal surveys			Nocturnal surveys				Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	18/01/24	14/02/24	
Rook **Corvus frugilegus**	BoCC Amber	-	-	-	Present	-	-	-	Rooks were only recorded within the Site during February 2024, with a flock of approximately 55 birds foraging on arable land in the north-western part of the Site. Approximately 20 birds (possibly the same individuals as above) were also recorded in flight (commuting) over the Site towards the area of woodland, with smaller numbers (flocks of no more than three birds) recorded sporadically in flight over the Site.
Skylark ***Alauda arvensis***	BoCC Red S41	-	Present (Fly-over only)	Present	Present	-	-	-	Three birds were recorded flying (commuting) over the Site in December 2023. Up to six individuals were also recorded within arable land in the west of the Site in January 2024. In February 2024, up five to birds were recorded in song flight over the arable fields within the Site and its surroundings, with further recordings of calling birds that could be indicative of additional breeding territories.
Song thrush ***Turdus philomelos***	BoCC Amber S41	Present	-	Present	-	-	-	-	Single birds recorded within the Site's hedgerows in November 2023 and January 2024.
Sparrowhawk ***Accipiter nisus***	BoCC Amber	-	-	-	Present	-	-	-	A bird was recorded flying over (foraging) the Site in February 2024. During the same survey visit, a bird (possibly the same individual) was recorded being mobbed by Carrion

Species	Status	Diurnal surveys			Nocturnal surveys				Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	18/01/24	14/02/24	
									crows over arable land in the north of the Site.
Starling ***Sturnus vulgaris***	BoCC Red S41	Present	-	-	Present	-	-	-	Flocks of nine birds and approximately 50 birds flying (commuting) over the Site in November 2023 and February 2024, respectively.
Stock dove ***Columba oenas***	BoCC Amber	Present	-	-	-	-	-	-	Two birds recorded in the vicinity of the woodland within the centre of the Site in November 2023.
Tawny owl ***Strix aluco***	BoCC Amber	Present	-	-	-	-	-	-	A single bird calling from mature trees outside of the Site's south-western boundary
Treecreeper *Certhia familiaris*	BoCC Green	-	-	-	Present	-	-	-	A single bird singing from the woodland within the centre of the Site.
Woodpigeon ***Columba palumbus***	BoCC Amber	Present	Present	Present	Present	-	-	-	A peak count of approximately 150 birds recorded within mature trees on the Site's eastern boundary in February 2024. Smaller flock sizes recorded during previous survey visits, generally not exceeding 18 birds.
Wren ***Troglodytes troglodytes***	BoCC Amber	Present	Present	Present	Present	-	-	-	Small numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated peak total count of five individuals in November 2023, January 2024 and February 2024.
Yellowhammer ***Emberiza citronella***	BoCC Red S41	-	Present	-	Present	-	-	-	A flock of 15 birds recorded in a section of hedgerow just beyond the Site's western boundary in December 2023. A

Species	Status	Diurnal surveys				Nocturnal surveys			Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	18/01/24	14/02/24	
									single bird was also recorded along the Site's stream corridor in February 2024.



Site boundary
Survey area

Likely territory/colony
X. Red-list species
X. Amber-list species

Registration (non-confirmed territory)
X. Red-list species
X. Amber-list species
X. Other notable species
Bird in flight

nX./X.+ Number of birds /multiple birds

Species List

Red-list species
CB - Corn bunting
GR - Greenfinch
P. - Grey partridge
HS - House sparrow
LI - Linnet
M. - Mistle thrush
S. - Skylark
SG - Starling
Y. - Yellowhammer
YW - Yellow wagtail

Amber-list species
D. - Dunnock
K. - Kestrel
MA - Mallard
MP - Meadow pipit
RB - Reed bunting
ST - Song thrush
SD - Stock dove
WH - Whitethroat
WW - Willow warbler
WP - Wood pigeon
WR - Wren

Other notable species
KT - Red kite

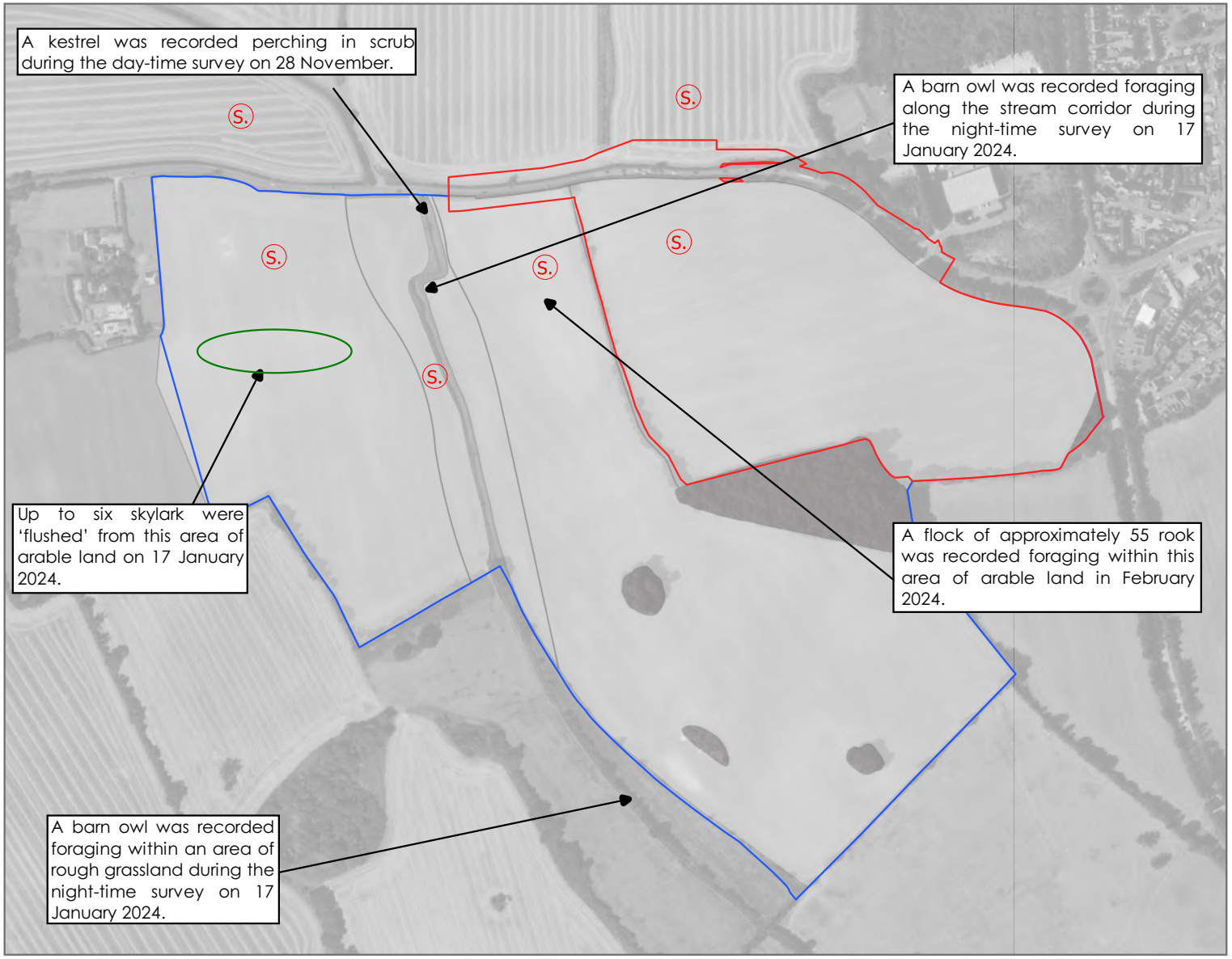
Only species included in Birds of Conservation Concern 5 (Stanbury et al, 2021), Section 41 of the NERC Act (2006) or Schedule 1 of the Wildlife and Countryside Act (1981) are considered 'notable' and included on this plan.

Locations are indicative. Circles denoting territory/colony do not show extent of territory only approximate location. Territories are presumed based on breeding evidence or multiple registrations of a species across visits.

Species flying over the Site only have been omitted (unless utilising the Site).

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Project	Land South of A507 and West of Buntingford	Date Sept. 2024	Drawing No. CSA/6815/113
Drawing Title	Breeding Bird Survey Plan	Scale Refer to scale	Rev -
Client	Hallam Land Management	Drawn KK	Checked RG



N

Site boundary

Survey area

2023/24 Winter Bird Surveys: Summary of Results (November 2023 to February 2024)

The hedgerow, scrub and woodland habitats within the Site and/or its immediate surroundings were found to support the following 'Priority Species' at relatively low densities:

BoCC5 - Red Listed Birds

FF - Fieldfare
GR – Greenfinch
HS - House sparrow
LI - Linnet
S. - Skylark
Y. - Yellowhammer

BoCC5 - Amber Listed Birds

D. - Dunnock
K. Kestrel
RE - Redwing
ST - Song thrush
SD - Stock dove
WP - Woodpigeon
WR - Wren

BoCC5 - Green Listed Birds

BO - Barn owl

S. Skylark in 'song flight' during the February 2024 survey visit

0 125 250 m

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Project	Land South of A507 and West of Buntingford	Date	June 2024	Drawing No.	CSA/6815/106
Drawing Title	Wintering Bird Survey Plan	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	LF	Checked	JL

Appendix L

Reptiles

1.0 Legislation

1.1 All native British reptile species are listed within Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are afforded protection against killing and injury under parts of sub-section 9(1) of the Act. In addition, all native British reptile species are adopted as Species of Principal Importance for the Conservation of Biodiversity in England in respect of Section 41 of the Natural Environment and Rural Communities Act 2006.

2.0 Methods

2.1 A total of 90 reptile refugia, comprising rectangles of roofing felt measuring 1.0 x 0.5m, were installed in areas of suitable habitat present in the wider survey area on 26 April 2024 by Rhodri Gruffydd. The location of these refugia is shown on the Reptile Survey Plan (CSA/6815/112).

2.2 Following an initial 2-week 'bedding-in' period for refugia, surveys were carried out on seven occasions during favourable weather conditions (e.g. intermittent or hazy sunshine, not too windy, sunny spells following wet or cloudy weather) between May and June 2024. The surveys were led by Rhodri Gruffydd and David Willis. Each survey visit comprised a slow walk of the survey area to visually and physically check refugia for the presence of reptiles. On each occasion a visual search was also carried out within areas of suitable habitat whilst walking between refugia locations.

2.3 The primary aim of the reptile survey was to establish the presence or likely absence of widespread reptile species within the survey area, rather than to estimate abundance or population size. To this end, seven survey checks, an effort generally considered 'reasonable effort' in establishing the presence or likely absence of reptiles at a Site, were carried out.

2.4 Given the inherent problems in detecting reptiles, greater survey effort and/or identification or marking of individuals would be required to establish the actual or relative abundance of reptile populations. However, as reptiles are confirmed to be present and mitigation action is required, an approximation of population size is useful in guiding reptile mitigation strategies and has therefore been reported below.

2.5 There are several published methods for broadly 'categorising' reptile population sizes in the UK, with the most commonly employed by ecological consultants being HGBI (1998), Froglife (1999) and/or Natural England (2011 [now rescinded]). These three approaches vary in their application, assumptions and limitations, and therefore outputs have been reported for all three methods for comparison below.

Limitations

2.6 The three metrics referenced below, HGBI (1998), Froglife (1999) and/or Natural England (2011; now rescinded), rely on varying proxies to calculate/estimate reptile populations. The HGBI categories are based on adult population densities, as opposed to peak counts. Moreover, the categorisation by HGBI is intended to inform capture effort for translocation exercises and, therefore, is not directly applicable to providing a population size class estimate, though it is widely applied within the industry for this purpose.

2.7 The Froglife method is based on peak adult counts where surveys have used refugia densities of 10 per hectare. Surveys carried out by CSA used densities of c. 88.89 per ha of suitable reptile habitat to maximise site coverage and opportunities to confirm the presence or likely absence of reptiles. Therefore, to enable comparison with the Froglife categories, peak counts have been divided by a factor of 8.89 so that they are proportionate to the Froglife survey effort of 10 refugia per ha.

2.8 Finally, the Natural England methods provide population class size estimates based upon a refugia density of 100 per ha and, in addition, goes on to consider habitat suitability. As with the Froglife method, survey results have been scaled to be proportionate to a survey effort of 100 refugia per ha. The consideration of peak counts and habitat suitability may be the most ecologically sound, or holistic, of the three indices. However, in light of the guidance having been rescinded, this metric cannot be exclusively relied upon.

2.9 There were no specific limitations to the reptile surveys, which were conducted at an optimum time of year and in good conditions.

3.0 Results

3.1 A peak count of 11 adult slow-worm were recorded within the survey area. No reptiles were recorded on-site. Full weather conditions and survey results are provided in Tables 1 and 2 below.

3.2 It should be noted that although the survey area is c. 41.95ha, suitable reptile habitat, comprising grassland field margins and woodland ride, account for c. 1.62ha within the Site. Within this area 90 artificial refugia were used to provide a survey refugia density of c. 55 refugia per ha.

3.3 The grassland field margin within the south of the survey area appears to be a hotspot for slow-worm. Here, the tall grassland verge provides foraging, sheltering, and basking opportunities for slow-worm. The population density of slow-worms in suitable habitat surveyed is 6.79 adults per ha.

Table 1. Reptile population size category estimates

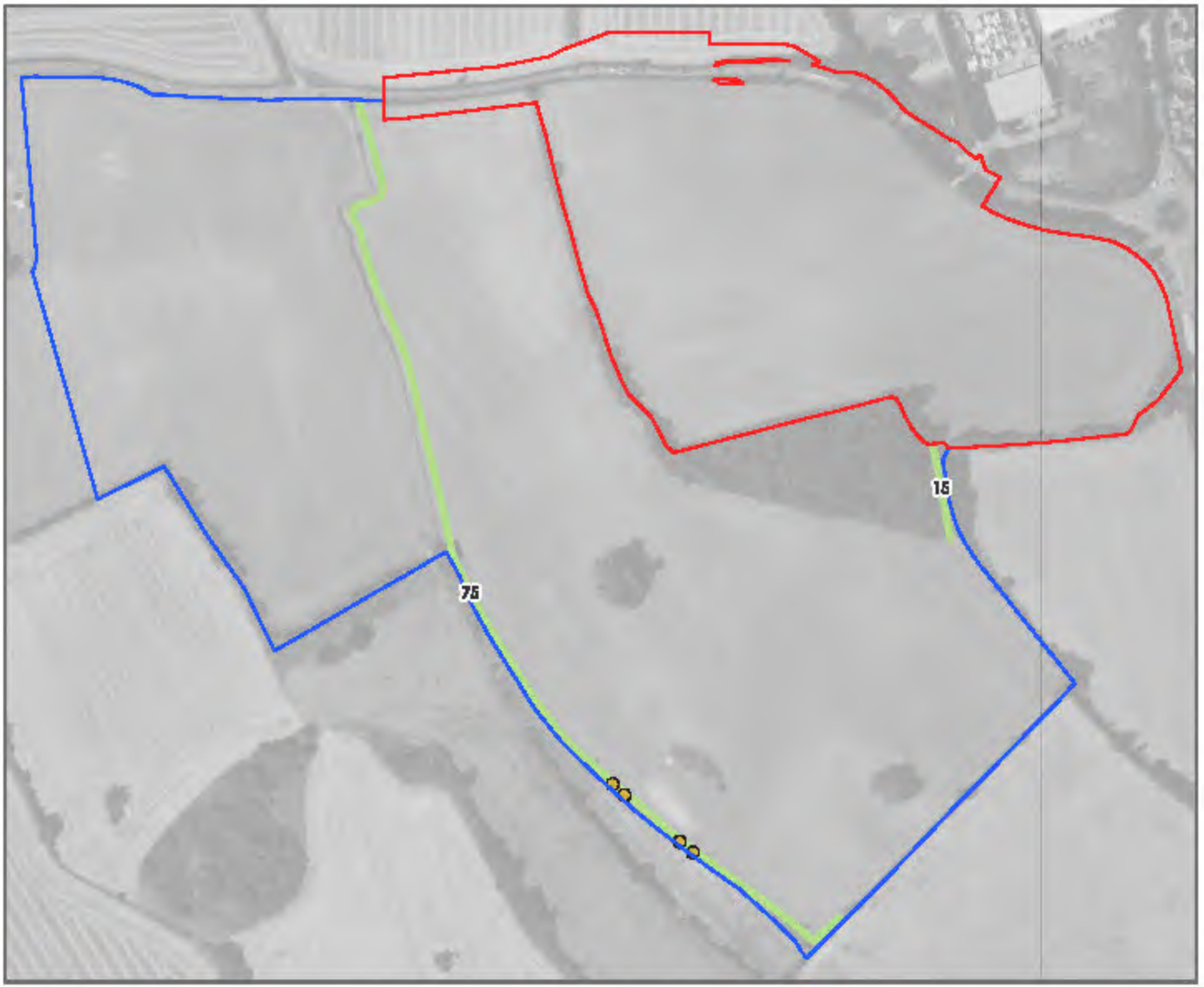
Method	Species		
	Slow worm	**Common lizard**	**Grass snake**
Adult peak count between May and June (2024)	11	0	0
HGBI (1998)	Low	N/A	N/A
Froglife (1999)	Low	N/A	N/A
Natural England (2011)*	Small	N/A	N/A

*Rescinded

3.4 It is acknowledged that the above metrics have their limitations. However, in consideration of this information, balanced against an ecological understanding of the survey area and findings, it is estimated that the survey area supports a 'low' population of slow-worm.

4.0 Conclusions

4.1 The survey area supports a 'low' population of slow-worm, only along the grassland field margin in the far south of the survey area. No reptiles were recorded in W2 adjacent to the Site or within the Site boundary.



N

Site boundary

Survey area

Reptile mat locations (and number)

Slow-worm locations

0 150 300 m

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Project	Land South of A507 and West of Buntingford	Date September 2024	Drawing No. CSA/6815/112
Drawing Title	Reptile Survey Plan	Scale Refer to scale	Rev -
Client	Hallam Land Management Limited	Drawn RT	Checked AC

Table 2. Reptile survey results

Job Name & No.	6815 Land South of A507, West of Buntingford						**Beaufort Scale:** 0. Calm. Vertical smoke. 1. Light air. Smoke drifts. 2. Light breeze. Leaves rustle. 3. Gentle breeze. Small twigs constantly move. 4. Moderate breeze. Small branches begin to move. 5. Fresh breeze. Small trees in leaf begin to sway.																	
Set-up Surveyor/ Project Manager	RG/AC																						
Set-Up Date	26/04/2024		**Total Number of Refugia**			90	**Precipitation:** [Type] No Rain / Light / Moderate / Heavy [Duration] Intermittent / Continuous																
			Weather					**Slow worm *Anguis fragilis***					**Common lizard *Zootoca vivipara***					**Grass snake *Natrix helvetica***					
Date	**Start/End Times**	**Surveyor**	Temp (°C)	Cloud Cover (Oktas; n/8)	Wind (Beaufort Scale)	Rain (Type & Duration)	**Area/ Field No.**	Adult Male (>230mm)	Adult Female (>230mm)	Unidentified Adult	Sub-adult	Newborn	Male	Female	Unidentified Adult	Sub-adult	Newborn	Male	Female	Unidentified Adult	Sub-adult	Newborn	**Other Notes**
Survey 1																							
10/05/2024	09:30-10:30	RG	16-17	2	2	n/a	Site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Survey 2																							
14/05/2024	19:34-20:07	LF	13-13	2-2	2-3	n/a	Site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Nothing found; Rain prior to survey; Lots of slugs/snails
Survey 3																							
17/05/2024	09:00-09:45	RG	15-16	4	1	n/a	Site	2	1	0	7	0	0	0	0	0	0	0	0	0	0	0	All found along verge to the far south
Survey 4																							
20/05/2024	10:30-11:15	RG	14-15	1	1	n/a	Site	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	Same as above; One vole under mat
Survey 5																							
24/05/2024	10:45-11:30	RG	15	5	2	n/a	Site	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	Same area
Survey 6																							
29/05/2024	09:45-10:30	RG	15	6-4	2-3	n/a	Site	4	1	0	5	0	0	0	0	0	0	0	0	0	0	0	One gravid female; One shrew edge W2; Damp - overnight rain
Survey 7																							
03/06/2024	16:30-17:15	DW	17	4	1	n/a	Site	3	8	0	1	0	0	0	0	0	0	0	0	0	0	0	Retrieval
								Total Adult			**Total Juvenile**		**Total Adult**			**Total Juvenile**		**Total Adult**			**Total Juvenile**	
								22			15		0			0		0			0	

Appendix M

Great Crested Newt

1.0 Legislation

1.1 Great crested newts *Triturus cristatus* are legally protected as European Protected Species (EPS) under Regulation 43 of the Conservation of Habitats and Species Regulations 2017. These Regulations make it an offence to:

- Deliberately capture, injure, kill or capture a great crested newt
- Deliberately disturb great crested newts, impairing their ability to survive, breed, reproduce or rear/nurture their young
- Damage or destroy a breeding site or resting place used by a great crested newt

1.2 Great crested newts are also fully protected under the Wildlife & Countryside Act 1981 (as amended), making it an offence to:

- Intentionally or recklessly disturb a great crested newt while it is occupying a structure or place of shelter or protection
- Intentionally or recklessly obstruct access to any structure or place of shelter or protection

1.3 Disturbance of great crested newts is covered by both the 2017 Regulations and the 1981 Act. Disturbance that impairs survival or successful reproduction would be covered by the Regulations, while less significant acts of disturbance may only be covered by the Act.

1.4 It is important to note that great crested newts and their habitats (such as breeding ponds) are protected throughout the year, regardless of whether or not newts are present at the time.

1.5 Great crested newts are also listed as a species of principal importance for the conservation of biodiversity in England, under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006. The S41 species list is used to guide decision-makers, including planning authorities, in implementing their duty under Section 40 of the NERC Act to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

<u>Licensing</u>

1.6 Where development is proposed that would result in an offence under the Habitats and Species Regulations, a statutory derogation licence may be granted by Natural England to permit an act that would otherwise be unlawful. To obtain an EPS licence for development, it must be demonstrated that the purpose of the act to be licensed is for:

- "preserving public health or public safety or other imperative reasons of overriding public interest including those of social or economic nature and beneficial consequences of primary importance for the environment" (Regulation 55(2)(e))

1.7 In addition, Natural England will not grant an EPS licence unless they are satisfied that:

- "There is no satisfactory alternative" (Regulation 55(9)(a))
- "The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range" (Regulation 55(9)(b))

2.0 Methods

Desk Study

2.1 In accordance with Natural England's Great Crested Newt Mitigation Guidelines (2001), a desktop search was undertaken in November 2023 to identify ponds within 500m of the Site which may have potential to support breeding great crested newts, using Ordnance Survey (OS) mapping, the MAGIC database and aerial photography. 500m is the generally accepted typical maximum dispersal range of this species, with great crested newt most likely to use terrestrial habitat within 250m of breeding ponds.

Habitat Suitability Index (HSI) Assessment

2.2 Where ponds were situated within an 250m radius and connected to the Site by traversable terrestrial habitats, access permission was requested to undertake a Habitat Suitability Index (HSI) assessment, using the standard approach set out by Oldham *et al*. (2000). These assessments were undertaken on 29 May 2024 by Rhodri Gruffydd (Natural England Class Licence WML-CL08 – Registration Number 2024-11869-CLS-CLS).

2.3 Despite access to Pond P6 being requested on multiple occasions, there was no response and, therefore, this pond was not surveyed.

Environmental DNA (eDNA) Sampling

2.4 Environmental DNA (eDNA) sampling was used to determine the presence/ likely absence of great crested newts from P1, P2 and P5. This method has been shown to be a highly effective in detecting the presence of great crested newts (Biggs *et al*., 2014).

2.5 As P1-P5 are all located in the same woodland copse (W2) and four of them scored 'poor' on the HSI assessment, a sample of ponds at either end of W2 were selected for eDNA sampling. P1 and P2 are small and in very close proximity to one another. Therefore, these two ponds were combined in one sample.

2.6 Water samples were collected from P1, P2 and P5 on 29 May 2024 by Rhodri Gruffydd (Natural England Class Licence WML-CL08 – Registration Number 2024-11869-CLS-CLS) following the recommended procedure. Appropriate biosecurity measures were taken to avoid cross contamination of great crested newt eDNA. Subsequently the samples were sent to ADAS for DNA analysis.

Limitations

2.7 Surveys were conducted at an optimum time of year and in good conditions. Specific limitations have been addressed in the relevant sections of this appendix.

3.0 Results

Desk Study

3.1 The desktop search for ponds and subsequent site visits identified 11 water bodies occurring within 500m of the Site. These ponds are identified on the Pond Plan (CSA/6755/101) in Appendix C. Six ponds are within the core 250m dispersal range with no barriers between them and the Site.

Habitat Suitability Index (HSI) Assessment

3.2 Due to habitats on Site not likely representing an important terrestrial habitat resource for great crested newt, only ponds within the 250m core dispersal range were assessed.

3.3 Full results of the surveys are included in Table 1 below.

Table 1. Results of the HSI assessment

Habitat Suitability Factors:		Pond Number and Grid Reference				
		1	2	3	4	5
		TL3526529219	**TL3525529220**	**TL3521929216**	**TL3523329204**	**TL3519029202**
Map location	Category	Zone A	Zone A	Zone A	Zone A	Zone A
	SI Value	1	1	1	1	1
Pond area in m^2	Category	<50m2	<50m2	50-100m2	225m2	500-700m2
	SI Value	0.05	0.05	0.1	0.45	1
Permanence / Desiccation	Category	Dries Annually	Dries Annually	Dries Annually	Dries Annually	Dries Annually
	SI Value	0.1	0.1	0.1	0.1	0.1
Water quality	Category	Poor	Poor	Poor	Poor	Poor
	SI Value	0.33	0.33	0.33	0.33	0.33
Percentage perimeter shade to at least 1m from shore	Category	96-100%	96-100%	96-100%	96-100%	96-100%
	SI Value	0.2	0.2	0.2	0.2	0.2
Waterfowl impact (excluding moorhen)	Category	Absent	Absent	Absent	Absent	Absent
	SI Value	1	1	1	1	1
Fish presence	Category	Absent	Absent	Absent	Absent	Absent
	SI Value	1	1	1	1	1
Number of ponds within 1km not separated by barriers	Category	>12	>12	>12	>12	>12
	SI Value	1	1	1	1	1
Terrestrial habitat	Category	Good	Good	Good	Good	Good
	SI Value	1	1	1	1	1
Percentage of pond surface occupied by aquatic vegetation (March – May)	Category	<1%	<1%	<1%	<1%	<1%
	SI Value	0.3	0.3	0.3	0.3	0.3
Product		0.000099	0.000099	0.1	0.000891	0.00198
HSI Score		0.39770726	0.39770726	0.426252088	0.495436239	0.536619585
HSI Suitability		**Poor**	**Poor**	**Poor**	**Poor**	**Below Average**

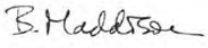
Disclaimer: The HSI Calculator is a tool to provide a general assessment of great crested newt Triturus cristatus habitat suitability in accordance with Oldham et al., 2000 and Brady, 2010. It is the responsibility of the user to check the accuracy of the outputs. The copyright holder accepts no responsibility for repercussions (financial and/or legal) resulting from inaccurate or incorrect outputs.

Environmental DNA (eDNA) Sampling

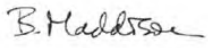
3.4 The eDNA test returned a negative result, indicating that no great crested newt DNA was found in P1, P2 or P5. The samples collected were in 'good'/'low sediment' condition and passed for inhibition and degradation controls.

3.5 The results of the eDNA test are shown in Figures 1a and 1b below.

Sample ID: ADAS-5398	Condition on Receipt: Good	Volume: Passed
Client Identifier: Pond 1 (W2), 6815	Description: pond water samples in preservative	
Date of Receipt: 04/06/2024	Material Tested: eDNA from pond water samples	

Determinant	Result	Method	Date of Analysis
Inhibition Control†	2 of 2	Real Time PCR	06/06/2024
Degradation Control§	Within Limits	Real Time PCR	06/06/2024
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	06/06/2024
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)#	4 of 4	Real Time PCR	As above for GCN
Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:		Signed:	
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	07/06/2024	Date of issue:	07/06/2024

Sample ID: ADAS-5397	Condition on Receipt: Low Sediment	Volume: Passed
Client Identifier: Pond 2 (W2), 6815	Description: pond water samples in preservative	
Date of Receipt: 04/06/2024	Material Tested: eDNA from pond water samples	

Determinant	Result	Method	Date of Analysis
Inhibition Control†	2 of 2	Real Time PCR	06/06/2024
Degradation Control§	Within Limits	Real Time PCR	06/06/2024
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	06/06/2024
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)#	4 of 4	Real Time PCR	As above for GCN
Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:		Signed:	
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	07/06/2024	Date of issue:	07/06/2024

Figures 1a and 1b. Results of eDNA test on P7 and P8 (Pond 1 in the figure), and P11 (Pond 2 in the figure)

4.0 Conclusions

4.1 It can be concluded that great crested newt are likely absent from P1, P2 and P5.

4.2 Considering that P6 is within 90m of the Site and was not surveyed, a precautionary approach should be taken where works are carried out in suitable terrestrial habitat for great crested newt, as detailed elsewhere in this report.

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