

Ecological Impact Assessment

February 2025

**Land North of A507
and West of Buntingford**

Prepared by
CSA Environmental

On behalf of
Hallam Land Management Limited

Report No: CSA/6755/02

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

Residential led development is proposed at Land North of A507 and West of Buntingford, Hertfordshire for which outline planning permission is sought.

CSA Environmental was instructed by Hallam Land Management Limited to undertake an Ecological Impact Assessment (EclA) 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. Habitats of greater interest include a central ditch with associated grassland margins and a small, wooded copse.

Habitat creation is proposed to include 'Buntingford Park', to comprise structural tree planting, grasslands, hedgerow and other boundary planting, SuDS, wetland features and ponds, 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 (EclA) of proposed development at Land North of A507 and West of Buntingford, Hertfordshire (hereafter 'the Site'). Residential led development 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. 50.12ha and consists of three arable fields, a central ditch with associated grassland, a small, wooded copse and boundary hedgerows (see Habitats Plan in Appendix A). The Site is located around central grid reference TL 3511 2995, to the west of Buntingford. The landscape surrounding the Site is dominated by arable fields and associated ditches and hedgerows, with residential and commercial land within Buntingford to the east.
- 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:
 - Badger Survey (February 2024)
 - Wintering Bird Surveys (December 2023 – February 2024)
 - Detailed Botanical Surveys (May 2024)
 - Bat Ground Level Tree Assessment (September 2024)
 - Bat Activity Surveys (April – August 2024)
 - Water Vole & Otter Surveys (March & July 2024)
 - Breeding Bird Surveys (March – June 2024)
 - Reptile Surveys (April – June 2024)
 - Great Crested Newt Surveys (May 2024)
- 1.5 This EclA 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 EclA 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/D) 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 EclA 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):
 - 10m²/0.001ha (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)
- Riparian Mammals (Appendix I)
- Birds (Appendix J)
- Reptiles (Appendix K)
- Great Crested Newts (Appendix L)

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 of the Site, respectively.

Non-Statutory

- 4.2 Eight 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		
Corneybury Farm Area LWS	c. 0.9km north-east	Building and environs important for protected species. Supports Natterer's and brown long-eared bat maternity roosts.
Porters Close LWS	c. 1.0km east	Building and environs important for protected species. Supports a pipistrelle sp. maternity roost.
Throcking Churchyard LWS	c. 1.3km 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 <i>Lotus corniculatus</i> , common knapweed <i>Centaurea nigra</i> , cowslip <i>Primula veris</i> and common sorrel <i>Rumex acetosa</i> .
Downhall Ley (Buntingford) LWS	c. 1.5km south-east	Building and environs important for protected species. Supports a pipistrelle sp. bat roost and Leisler's maternity roost.
Boldero's Wood LWS	c. 1.6km north-west	Ancient semi-natural woodland. The ground flora is not diverse but includes several woodland indicators, including bluebell <i>Hyacinthoides non-scripta</i> , dog's mercury <i>Mercurialis perennis</i> and enchanter's nightshade <i>Circaea lutetiana</i> . The margin is partly bordered by hedges and ditches.

Foxglade & Perryden, Aspenden LWS	c. 1.7km south	Building and environs important for protected species. Supports pipistrelle sp. and brown long-eared bat roosts.
Steward's Ley LWS	c. 1.8km north-west	Ancient semi-natural woodland. The ground flora is not especially diverse but supports several woodland indicators, including bluebell, dog's mercury and enchanter's nightshade.
Wakeley Spring Green Lane (part) LWS	c. 1.8km 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.

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 two closest areas of ancient woodland as described on the ancient woodland inventory are Bolderos Wood and Stewards Ley, located c.1.6km and c. 1.8km north-west of the Site respectively.
- 4.6 A small (c. 0.05ha) wooded copse is present in the centre of the Site, along the on-site ditch. This copse is shown on historic six-inch Ordnance Survey (OS) maps dating to 1888-1915, indicating that it is old and potentially ancient in origin. However, botanical and arboricultural surveys undertaken in 2024 have confirmed ground flora and other evidence is not indicative of ancient woodland.
- 4.7 No trees on or adjacent to Site are listed on the Ancient Tree Inventory.

Notable Flora Records

- 4.8 The HERC provided 60 records of 24 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*.
- 4.9 Other species of note include ten 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 *Lamium galeobdolon* ssp. *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 invasive non-native invasive species were identified during the UKHab survey or subsequent visits to the Site.

- 4.10 The Hertfordshire Ecological Network Map provided for the Site and surrounding area does not identify any habitats of ecological significance and is therefore identified as being suitable for habitat creation, with suggested target habitats of neutral grassland and broad-leaved woodland along the eastern Site boundary.

Arable and horticulture (c1)

- 4.11 The Site is dominated by a total of three arable fields (F1-F3). Field F1 had been sown with a winter crop at the time of survey, with fields F2 and F3 ploughed but not sown. Field margins across the Site are very narrow, up to a maximum of c. 1.5m wide, and supporting common arable plant species. Grasses include perennial rye-grass *Lolium perenne*, annual meadow-grass *Poa annua*, false oat-grass *Arrhenatherum elatius* 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., and common field speedwell *Veronica persica*.



Photograph 1. Field F1 sown with a winter crop, with narrow field margins. Looking east to H6.

- 4.12 To the north of F1, adjacent to the northern boundary and H6 is a small area of scrub (below the MMU) dominated by bramble *Rubus fruticosus* agg. with elder *Sambucus nigra*. Additionally, a post and rail fence runs

along the eastern boundary of the Site, adjacent to the A10, with discrete patches of self-seeded rose *Rosa* sp.



Photograph 2. Field F3, recently ploughed with very narrow field margins. Looking south with off-site woodland to east.

Importance

- 4.13 Taken together, the narrow arable field margins and areas of scrub are indicative of the arable habitats which dominate the wider landscape. Given their limited extent and absence of rare or notable arable plants, these habitats fall short of the criteria for ecological importance and are scoped out of further assessment.

Lowland mixed deciduous woodland (w1f)

- 4.14 Woodland W1 comprises a small (c. 0.05ha) wooded copse which is located in the centre of the Site, on the ditch which divides F1 from F2 and F3. The copse is shown on historic maps dating to 1888-1915, indicating that it is old and potentially ancient in origin.
- 4.15 Ground flora within the copse at the time of survey was limited to common nettle *Urtica dioica*, cleavers *Galium aparine*, perennial ryegrass *Lolium perenne* and ground ivy *Glechoma hederacea*. Lords-and-ladies *Arum maculatum* and lesser celandine *Ficaria verna* were also present during later surveys undertaken in February. An increase in ground flora species was noted during the botanical/Habitat Condition Assessment in May. However, overall species diversity remained low, with ground flora dominated by grass and ruderal species.



Photograph 3. Woodland W1 with mature trees and lower growing blackthorn, hawthorn and elder.

- 4.16 Mature trees within the canopy include ash *Fraxinus excelsior*, including an individual with a large limb tear out and field maple *Acer campestre*. Understory species include blackthorn *Prunus spinosa*, hawthorn *Crataegus monogyna* and elder. Field maple is included on the Hertfordshire ancient woodland vascular plants list.



Photograph 4. Woodland W1 with mature trees, deadwood and limited ground flora.

Importance

- 4.17 Woodland W1 does not appear on the ancient woodland inventory. Similarly, whilst W1 is shown on OS six-inch Maps dating between 1888-1915, it does not appear on first edition one inch to one mile OS maps. Given this and the fact that the woodland is <1ha and does not support more than 10 ancient woodland indicator species, it falls short of the threshold for consideration under the Hertfordshire Local Wildlife Sites selection criteria.
- 4.18 Lowland mixed deciduous woodland is listed as a habitat of Principal Importance under Section 41 (S41) of the NERC Act (2006). W1 is therefore of ecological importance at the **Local** level.

Other broadleaved woodland, plantation (w1g 29)

- 4.19 A narrow belt of plantation woodland (W2) divides F2 and F3. Aerial imagery and the age of trees suggests that the woodland was planted between 2018 and 2020. The woodland comprises two rows of tree planting c. 7m in width, surrounded by post and wire fencing extending the total area to c. 9m wide. This narrows to a single row of planting c. 4m wide to the north, leading to W1.



Photograph 5. Woodland W2 with rows of native planting.

- 4.20 Trees planted comprise native species including dogwood *Cornus* sp., hawthorn, wild privet *Ligustrum vulgare*, hazel *Corylus avellana*, cherry *Prunus* sp., rose and guelder-rose *Viburnum opulus*. The woodland does not comprise a diverse structure, with all trees of a similar age and no defined understorey or feature such as deadwood. Ground flora is very

sparse, comprising ephemeral species only including spear thistle *Cirsium vulgare* and willowherb *Epilobium* sp.

Importance

- 4.21 Woodland W2 is limited in extent, age and structural diversity, having been planted within the last four to six years. However, it comprises a range of native woody species and provides some limited habitat opportunities for a range of species. W2 is therefore of intrinsic ecological importance, significant at the **Local** level.

Other neutral grassland (g3c)

- 4.22 A narrow strip of other neutral grassland c. 3m wide runs along the length of the on-site ditch (D1). At the time of survey, the sward was relatively short, c. 20cm with species dominated by common grasses indicative of higher nutrients and low levels of management including false oat-grass *Arrhenatherum odoratum* and common couch *Elytrigia repens*. Diversity of grass and herb species remains low, as per the arable field margins and includes species indicative of sub-optimal conditions for grassland; cow parsley, creeping thistle, spear thistle, common nettle and creeping buttercup *Ranunculus repens*.



Photograph 6. Grassland associated with on-site ditch (dry).

Importance

- 4.23 The grassland which runs along the central ditch is indicative of habitat common in the local area and likely to occur in the wider landscape. Given its limited extent and absence of rare or notable species, this

habitat falls short of the criteria for ecological importance and is scoped out of further assessment.

Mixed scrub (h3h)

- 4.24 A small (c. 0.01ha) area of dense bramble scrub with blackthorn and elder is located on the central ditch (D1), south of H2. The scrub shows evidence of previous management by flailing to prevent encroachment on the ditch/adjacent arable field.

Importance

- 4.25 The scrub adjacent to the central ditch is indicative of habitat common in the local area and likely to occur in the wider landscape. Given its limited extent and absence of rare or notable species, this habitat falls short of the criteria for ecological importance and is scoped out of further assessment.

Watercourses (r1)

- 4.26 A central ditch (D1) divides the Site between F1 in the north and, fields F2 and F3 to the south.



Photograph 7. Central ditch with adjacent scrub and grassland margin. Water depth varies along length of ditch.

- 4.27 The ditch is associated with hedgerows H2 and H3 and flows in an easterly direction, where it is culverted under the adjacent A10 on the eastern Site boundary. It is dry in places but held water at a depth of between c. 5-10cm at the time of survey. The western section of the ditch is mostly dry along H2, with a wetter section towards the western Site boundary. At the eastern end of H2, the ditch turns south, with sparse

vegetation comprising dense mixed scrub until it meets W1 where it turns east to run along H3, which follows the southern boundary of the ditch towards the culvert on the eastern Site boundary.

- 4.28 Aquatic vegetation including willowherb. and hard rush *Juncus inflexus* are present within the watercourse, in addition to encroaching vegetation from the adjacent grassland margins.

Importance

- 4.29 The on-site wet ditch is of intrinsic ecological importance and represents an important resource for fauna. This habitat is therefore of ecological importance at a **Local** level.

Hedgerows (h2a)

- 4.30 A total of six hedgerows are present across the Site labelled H1-H6 on the Habitats Plan (CSA/6755/102/C) and described in Appendix H. Hedgerows across the Site are subject to varying management and with the exception of H5 and H6 in the south of the Site, all hedgerows are defunct with large gaps along their length. The majority of hedgerows are also associated with a wet ditch, although the extent of water held within ditches changes across the Site. 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 8. Hedgerow H2 comprises hawthorn with semi-mature oak, field maple and elm trees.

- 4.31 On-site hedgerows are native and comprise hawthorn with a number of semi-mature trees including oak *Quercus* sp., field maple, ash and elm

Ulmus sp. Other species found within the on-site hedgerows include hazel, ivy *Hedera helix*, blackthorn, dog-rose *Rosa canina* sp., bramble and elder.

Importance

- 4.32 An assessment of on-site hedgerows found hedgerows H4 and H6 to be species-rich. 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.

Off-site – Other broadleaved woodland (w1g)

- 4.33 An area of off-site woodland is located to the south-east of F3. The woodland comprises scrub and a number of semi-mature trees including field maple, ash and oak with elder, hazel, dog-rose, willow *Salix* sp., hawthorn, bramble, ivy and spindle *Euonymus europaeus*.
- 4.34 Aerial imagery shows the woodland to form a narrow belt along the edge of the Site boundary, c. 15-20m wide and bounding a mosaic of habitats including scrub and grassland to the east of the Site and north of the off-site business park.



Photograph 9. Off-site woodland along eastern boundary of F3.

Importance

- 4.35 The woodland east of F3 falls outside of the Site boundary and therefore has not been subject to detailed surveys. However, woodland is of intrinsic ecological importance and therefore is assessed to be of **Local** ecological importance.

Fauna

Bats

Desk Study

- 4.36 A total of 518 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.
- 4.37 The closest records to the Site are of common pipistrelle, within 100m of the eastern Site boundary, from aural bat detector records dating from 2014. Records of other species are c. 0.8km or further from the Site. There are 65 records that describe roosting or possible roosting bats, dating between 1976 and 2014, with 24 of these records considered historical (pre-2000). All bat roost records are c. 1km 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, brown long-eared bat, pipistrelle sp. and Leisler's.

Use of the Site

- 4.38 The on-site arable habitats provide some sub-optimal opportunities for foraging bats. However, hedgerows, in particular those with associated mature trees, and the central ditch (D1) provide greater opportunities including navigational features and foraging opportunities for bats. The wooded copse (W1) also has the potential to provide roosting opportunities for bats. 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 to the east and south of the Site, running adjacent to the south-western boundary of the Site and providing navigational features and foraging opportunities for bats.

Preliminary Roost Assessment – Trees

- 4.39 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

- 4.40 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 five species were identified during activity surveys, including common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat and barbastelle. Additional bat species were present which fall within the genera of *Myotis* 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. Methods and detailed results of the bat activity survey are provided in Appendix G.

Importance

- 4.41 The habitats on-site provide some limited opportunities for bats, restricted to linear features including the on-site ditch (D1) and hedgerows, and the wooded copse (W1). Greater opportunities are afforded by 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.
- 4.42 *Myotis* species bats fall into the categories of "widespread in many geographies, but not as abundant in all" (Daubenton's and Natterer's) and "rare or restricted distribution" (Brandt's and whiskered bats). It should be noted that bat contacts attributable to *Myotis* 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.
- 4.43 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.
- 4.44 Based on the above, the bat assemblage using the Site for foraging and commuting is of **Local** ecological importance.

Badger

Desk Study

- 4.45 The HERC have provided 31 records of badger *Meles meles* from within the search area, dating from 1970 to 2021. The closest records are c. 0.6km south-east of the Site associated with the A10 road, with one record a roadkill. The closest record of a sett dates from 1985 and is located c. 1.4km north-east of the Site. The most recent record of a sett

dates from 2013 and is located c. 1.9km south-east of the Site in association with a new residential development.

Use of the Site

- 4.46 A total of nine mammal holes were identified within H6 in the north of the Site, including three collapsed holes. All holes were confirmed as rabbit although a single badger hair was identified by one of the holes during the UKHab survey. However, two badger sett entrances were identified in the off-site wooded belt to the south-east of the Site. Badger footprints were also identified along the eastern half of the public footpath, north of the off-site woodland, on 15 February 2024 during the wintering bird survey. No further evidence (e.g. latrines) of badger was identified on-site, although mammal push throughs were evident within hedgerows and vegetation along Site boundaries. Methods and detailed results of the badger survey are provided in Appendix H.
- 4.47 Hedgerows along Site boundaries and the central wooded copse (W1) provide opportunities for badger to dig setts on-Site, with arable habitats providing some limited foraging opportunities for badger.

Importance

- 4.48 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

- 4.49 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

- 4.50 Hedgerows and the woodland on-site provide some habitat for dormice but are limited in their suitability due to a lack of species and structural diversity required to provide suitable foraging habitat for this species. The Site also lacks connectivity to suitable habitat in the surrounding area. Given the lack of suitable habitat both on and adjacent to the Site, dormice are likely absent from the Site and are not considered further in this report.

Riparian Mammals

Desk Study

- 4.51 No records of water vole *Arvicola amphibius* were identified within the search area. One historical record of otter *Lutra lutra* was identified within the search area, dating from 1991. This record was given to a grid reference accuracy of 2km and therefore the exact location could not be determined.

Use of the Site

- 4.52 An on-site ditch (D1) runs through the centre of the Site and Thistley Vale Brook is located to the east and south of the Site, running adjacent to the south-western boundary of the Site. In the wider landscape, the River Rib (c. 0.7km east of the Site) has the potential to support water vole and otter and is connected to the north of the Site via ditches. No evidence of water vole or otter was identified in association with the on-site ditch or Thistley Vale Brook during the initial PEA survey, or riparian mammal survey visits undertaken in March and August 2024.
- 4.53 The banks on the north of the on-site ditch provide some suitable habitat for burrowing by water vole. However, the ditch is heavily shaded and choked with tall ruderal/scrub which reduces the suitability of the ditch for water vole. The stretch of Thistley Vale Brook adjacent to the Site is more shaded and choked by bankside and channel vegetation than the stretch of watercourse to the north, reducing its suitability for water vole. However, some opportunities exist for foraging and burrows on the banksides. Overall, the on-site ditch and Thistley Vale Brook provide low suitability to support a water vole population but may be used by transient individuals for dispersal.
- 4.54 On-site, D1 lacks the potential to support any substantial food sources or opportunities for shelter/holts as required by otter. In the wider landscape Thistley Vale Brook could be used by otter for dispersal but is unlikely to provide significant foraging opportunities, with the watercourse only suitable to support small numbers of amphibians and small fish. Adjacent habitats do not provide suitable opportunities for holts. Both the on-site ditch and Thistley Vale Brook are of low suitability to support otter, with the potential for use by transient individuals only. Methods and detailed results of the riparian mammal survey are provided in Appendix I.

Importance

- 4.55 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 was found during the surveys, water vole and otter are considered likely absent from the Site and are not considered further within this report.

Other Mammals

Brown Hare

- 4.56 Twenty-four 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. One record dating from 1984 was located on-site, within F1 in the north.
- 4.57 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. A single brown hare was seen off-site to the west of F1 during the PEA survey. Brown hare have also been identified during the wintering bird surveys.
- 4.58 Brown hare occupy large home ranges and the c. 47.59ha 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.
- 4.59 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

- 4.60 Thirty records of hedgehog *Erinaceus europaeus* were identified within the search area, dating from 1966 to 2021, with five records considered historical. The closest record is c. 0.1km east of the Site, within a residential garden.
- 4.61 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.
- 4.62 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

- 4.63 No records of harvest mouse *Micromys minutus* were identified within the search area. However, populations of harvest mouse are known to be present within the wider area, with Hertfordshire falling within the current distribution range for this species.

- 4.64 No evidence of harvest mouse was recorded during the surveys. 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 mice are considered likely absent from the Site and are not considered further within this report.

Birds

Desk Study

- 4.65 A total of 9,394 records of 86 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.
- 4.66 Records for the breeding season include several further 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 oedicephalus*, red kite *Milvus milvus*, hobby *Falco Subbuteo* and barn owl *Tyto alba*.
- 4.67 Notable desk study records for the winter 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 citrinella*.

Use of the Site

- 4.68 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 49 species were recorded within the Site and its immediate surroundings, of which 35 were confirmed as breeding on-site. This included 17 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: bullfinch *Pyrrhula pyrrhula*; corn bunting; dunnoek *Prunella modularis*; greenfinch *Chloris chloris*; grey partridge *Perdix perdix*; house sparrow *Passer domesticus*; linnet *Linaria cannabina*; reed bunting *Emberiza schoeniclus*; skylark; song thrush *Turdus philomelos*; stock dove *Columba oenas*; whitethroat *Curruca communis*; willow warbler; woodpigeon *Columba palumbus*; wren *Troglodytes troglodytes*; yellowhammer and yellow wagtail.
- 4.69 Eight skylark breeding territories were identified within the three fields on-site, in addition to two corn bunting territories recorded in the northern

half of F1 and along H2; and at least five yellowhammer territories around the margins of F2.

- 4.70 Two grey partridge possible pairs were recorded in the northern half of F1 on the first survey visit; however, this species was not recorded on any of the five subsequent survey visits.
- 4.71 Red kite were confirmed as not breeding on-site. However, a possible nest site is located off-site, more than 400m north-west of the Site.
- 4.72 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 34 species were recorded within the Site and its immediate surroundings. This included 22 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: common gull *Larus canus*; dunnoek; fieldfare *Turdus pilaris*; golden plover; greenfinch; grey partridge; herring gull *Larus argentatus*; lapwing; linnet *Linaria cannabina*; meadow pipit; mistle thrush *Turdus viscivorus*; red kite; redwing *Turdus iliacus*; rook *Corvus frugilegus*; skylark; snipe *Gallinago gallinago*; song thrush; sparrowhawk *Accipiter nisus*; woodpigeon; wren and yellowhammer.
- 4.73 The only priority farmland wader species recorded within the Site was snipe, with two birds flushed from an arable field in November 2023. Small numbers of golden plover were also found to be present within the Site's immediate surroundings, but not the Site itself, during winter bird surveys in November and December 2023. A peak count of 16 birds was recorded within an area of arable land to the north and north-west of the Site during the nocturnal bird survey during the December 2023 survey visit. The survey findings indicate that golden plover are using this area of arable land for feeding, roosting and loafing. A single lapwing was also recorded flying (commuting) over the Site during the January 2024 survey visit. The bird did not appear to be associated directly with the Site and no further observations of this species were recorded.
- 4.74 Three priority raptor species recorded during the winter 2023/24 surveys: red kite; kestrel; and sparrowhawk. Up to two red kite were observed commuting and/or foraging over the Site and its surroundings on all survey visits. No communal roost sites were recorded, given the general absence of woodland habitat within the Site and its immediate surroundings. Two kestrel and a single sparrowhawk were observed flying through the Site and its surroundings during the February 2024 survey visit; however, no further sightings of these species were recorded.
- 4.75 Two grey partridge were recorded in arable land in the centre of the Site during the nocturnal and diurnal surveys in February 2024. No further

observations of this species were recorded in any of the other survey visits. The only priority species of gull associated with the Site during the surveys were a single herring gull and three common gull in February 2024. These birds were recorded in flight (foraging) over the Site and its surroundings.

- 4.76 The most notable passerine sighting related to a flock of approximately 20 skylark that was recorded within an area of arable land in the north of the Site during the November 2023 survey visit. The remaining passerine species were primarily associated with the hedgerow and scrub habitats along the Site's field boundaries, and were considered to be present at relatively low densities.
- 4.77 Methods and detailed results of the breeding and winter bird surveys are provided in Appendix J.

Importance

- 4.78 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

- 4.79 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, 0.9km south-east of the Site within an arable field margin.

Use of the Site

- 4.80 The majority of the Site, being under arable cultivation, provides limited foraging and refuge habitats for reptiles. However, hedgerows and grassland along the on-site ditch provide suitable basking, foraging and refuge opportunities.
- 4.81 Reptile surveys undertaken within suitable habitats on-site in May and June 2024 found no reptiles or evidence of reptiles on-site. Methods and detailed results of the survey are provided in Appendix K.

Importance

- 4.82 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. However, no reptiles or evidence of reptiles were found during the survey. Therefore,

reptiles are considered likely absent from the Site and not considered further within this report.

Amphibians

Desk Study

- 4.83 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 located c. 0.6km north-west of the Site and is associated with a 'Great Crested Newt Class Survey Licence Return'. Suitable habitat, in the form of roadside verge grassland potentially connects this location to the Site. The remaining 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

- 4.84 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 potential breeding ponds were identified on-site during the survey, although 10 appear to be present within a dispersible range of the Site, based on OS mapping.
- 4.85 The majority of the Site, being dominated by arable habitat, provides suboptimal opportunities for amphibians during their terrestrial phase, with no suitable waterbodies for breeding amphibians present on-site. However, field margins, the wooded copse and hedgerows which cross the Site provide suitable dispersal corridors, foraging and hibernation opportunities for any GCN which may be present within ponds in the surrounding area. Shallow and slow-moving water within the on-site ditch may also provide some limited suitable habitat for GCN dispersing across the Site but is unlikely to provide significant opportunities for breeding.
- 4.86 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 (HSI) Assessment was undertaken of five ponds (P7-11) within the core 250m dispersal range. P1 was not accessible to survey. All ponds scored 'poor' or 'below average'. Environmental DNA (eDNA) sampling was carried out on P7, P8 and P11, with tests returning a negative result, indicating likely absence of GCN within the ponds surveyed. Methods and detailed results of the survey are provided in Appendix L.

Importance

- 4.87 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 Pond 1 is within close proximity to the Site and not accessible to survey, along with the 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

- 4.88 A total of 122 records of 23 invertebrate species were identified within the search area. Those of potential relevance to the Site include 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

- 4.89 The arable habitats which dominate the Site are unlikely to support a locally important assemblage of invertebrates. Field margins, the wooded copse 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

- 4.90 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

- 4.91 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

- 4.92 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 (8 No. LWSs)	County
Lowland mixed deciduous woodland (w1f)	Local
Other broadleaved woodland, plantation (w1g 29)	Local
Watercourses (r1)	Local
Hedgerows (h2a)	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])
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 up to 600 dwellings (C3), elderly accommodation (C3), Mixed Use Local Centre (including flexible use E, F and Sui Generis), First School, informal and formal open space, associated works and infrastructure including a new access from the A507 and pedestrian bridge over the A10, 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 (HLM082-021) 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 H2 (c. 0.09m) and H5 (c. 0.09m) for vehicular and pedestrian accesses
- Construction of up to 600 residential dwellings
- Construction of elderly accommodation for up to 60 persons
- Construction of a first school (2ha)
- Construction of associated gardens, parking, access infrastructure, pump station and play areas (LEAP and NEAP)
- The establishment of 'Buntingford Park' totalling 22.95ha, including playing fields, Informal Open Space, proposed structural planting and existing vegetation concentrated at the west of the Site, as well as recreational routes around areas of open space and the exterior of development parcels
- Establishment of Sustainable Drainage Systems (SuDS) including attenuation basins set within Informal Open Space to the east of the developed area

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

- Occupation of new residential dwellings
- Occupation of a first school
- Increase in human activity, including use of vehicles and presence of domestic pets
- 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 wooded copse (W1), ditch (D1) and hedgerows (H1-H5). These existing habitats are to be incorporated into green corridors within 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 running north to south through the centre of the Site, new hedgerow planting along the western Site boundary and a central green corridor along existing hedgerow H3 and ditch D1. 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. 0.18m of hedgerow to allow access to the Site. However, the Illustrative Masterplan includes a total of c. 0.91km of new hedgerow planting, which in combination with enhancement of retained hedgerows represents a c. 74.05% 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 (8No.)

- 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, no pathways of impact are identified from the proposed commercial/employment development to the LWSs and therefore no significant adverse effects predicted.

Lowland mixed deciduous woodland (w1f)

- 5.15 Woodland W1 is to be retained as part of the proposed development. The woodland falls partially within the on-site green corridor and proposed first school site, buffered by an area of open space. Whilst retained, the woodland will be subject to recreational pressure (i.e. trampling of woodland understorey, dog fouling, littering etc.).

- 5.16 In the absence of mitigation, the retained woodland 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 W1, 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 areas, wetland boardwalks, walking and cycling routes. The proposed walking/cycling route passes the northern boundary of the woodland but does not run through the woodland. In addition to this, interpretation boards/signage and information leaflets will be provided to educate and inform new residents on the importance of the habitats within 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 woodland 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.

Other broadleaved woodland, plantation (w1g 29)

- 5.23 The scheme would result in the direct loss of woodland W2. This woodland is a recent (c. four to eight years old) plantation woodland with limited structural diversity, although it is acknowledged to contribute to habitat connectivity across the Site and provide opportunities for a range of species.
- 5.24 Overall, the scheme is anticipated to result in direct loss of W2, resulting in an adverse effect, significant at the **Local** level.

Mitigation

- 5.25 As set out above, Buntingford Park forms part of the development proposals and includes areas of Informal Open Space including c. 1.44ha of new structural planting to comprise native, species-rich woodland copse planting with a focus on species of local provenance and subject to appropriate on-going management. The aim of this enhancement and management work is to increase connectivity and green corridors across the Site, contributing to biodiversity and would be secured by an appropriately worded planning condition, with management set out within a LEMP.

Residual Effects

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

Watercourses (r1)

- 5.27 A central ditch (D1) divides the Site between F1 in the north and, fields F2 and F3 to the south. Proposals include the retention and protection of D1. However, generated surface water runoff from the development will be discharged to the existing drainage ditches within the site, with flows attenuated on-site via SuDS features.
- 5.28 Both the construction and operational phases of the proposed development pose a risk to D1 due to the potential for pollution from surface water run-off which may contain sediment and chemical pollutants. Conversely, development would result in the cessation of some agricultural inputs from the Site and its potential associated adverse effects on the watercourse.
- 5.29 In the absence of any additional controls upon run-off from the Site during construction, and treatment of surface water in occupation, the retained ditch will be vulnerable to damage, resulting in an adverse effect significant at the **Local** level.

Mitigation

- 5.30 Standard pollution control measures would be implemented during construction and would be set out in detail within the proposed CEMP document, secured by condition.
- 5.31 The scheme includes a surface water treatment train through the proposed SuDS system, which will limit the risk of adverse effects upon water quality during occupation of dwellings.
- 5.32 SuDS basins and the wider surface water treatment train would be subject to ongoing maintenance and management as set out in more detail within the proposed LEMP, secured by condition.

Residual Effects

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

Hedgerows (h2a)

- 5.34 The scheme would result in the direct loss of 0.83km of hedgerow, across hedgerows H2, H5 and H6. The severance of these hedgerows 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.
- 5.35 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

- 5.36 Retained hedgerows and mature trees will be protected in line with standard arboricultural practice (BS5837:2012).
- 5.37 To compensate for the severance of hedgerows, retained hedgerows will be 'gapped up' with new shrub and tree planting. 0.91km of new hedgerows will also be planted across the Site. Planting will comprise native species of local provenance, with new hedgerows proposed to be species-rich (>7 species per 30m).
- 5.38 This habitat creation would be secured by an appropriately worded planning condition and control of detailed landscape design.

Residual Effects

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

Bats

- 5.40 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).
- 5.41 The on-site arable habitats provide some sub-optimal opportunities for foraging bats. However, hedgerows, in particular those with associated mature trees, and the central ditch (D1) provide greater opportunities including navigational features and foraging opportunities for bats. The wooded copse (W1) also has the potential to provide roosting opportunities for bats.
- 5.42 The proposed development will result in severance and the loss of hedgerows for Site access, resulting in a reduction of foraging opportunities and connectivity across the Site.

- 5.43 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.
- 5.44 Overall, given the impacts to hedgerows and woodland 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

- 5.45 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, Informal Open Space and provision of wildlife ponds across the Site, will provide enhancement of habitats available to bats at the Site.
- 5.46 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.
- 5.47 In addition to any mitigation required, enhancement measures will include integrated roosting features into new building/structures across the Site.
- 5.48 These measures would be secured by an appropriately worded planning condition.

Residual Effects

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

Badger

- 5.50 Badgers are protected under the Protection of Badgers Act (1992). Killing or injury of a badger, or interference with a sett is prohibited.
- 5.51 Evidence of badger dispersing across the Site has been identified, with an off-site badger sett present to the south-east of the Site. However, no badger setts were identified on-site. The off-site badger sett entrances will be retained.
- 5.52 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.
- 5.53 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

- 5.54 No badger setts are present on-site and the off-site badger sett will be retained. The off-site sett is located c. 12m from the Site boundary, beyond a tree line. Retained trees will be protected in line with standard arboricultural practice (BS5837:2012) which will further buffer the off-site sett from damage/disturbance during construction and from the development during operation. All identified setts can therefore be retained during and following the development, with no requirement for a mitigation licence from Natural England.
- 5.55 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.
- 5.56 These measures would be secured by an appropriately worded planning condition.
- 5.57 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

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

Brown Hare

- 5.59 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.

- 5.60 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

- 5.61 Surveys have confirmed the Site supports a range of breeding birds that is typical of farmland and urban fringe habitats. A total of 49 species were recorded within the Site and its immediate surroundings, including 17 priority species breeding within the Site.
- 5.62 The development proposals would result in the permanent loss of all arable land (47.59ha) within the Site. Whilst the proposed residential areas and school site would account for 16.32ha of this land-take, a further 23.88ha of arable land would be subject to soft landscaping works to deliver the provision of Informal Open Space.
- 5.63 It is likely that the proposed development will lead to the permanent loss of at least five of the eight skylark breeding territories. There will also be a temporary loss of the remaining three territories situated in F2 in the south-west of the Site.
- 5.64 The majority of breeding territories for other species are associated with hedgerows and woodland on or adjacent to the Site, and will largely be retained.
- 5.65 Overall, in the absence of mitigation, the scheme would result in an adverse effect on breeding birds, significant at the **Local** level.

Mitigation

- 5.66 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.
- 5.67 The design of the Informal Open Space includes the retention of the existing copse, and the majority of existing hedgerows within the Site. 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 a series of linear structural planting (collectively comprising 1.5ha in area) within the Informal Open Space. The new structural planting would form a corridor through the centre of the Site, 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.

- 5.68 The area of Informal Open Space on-site will not be sufficient to mitigate the loss of the five 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, 10 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

- 5.69 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.
- 5.70 With the implementation of the above mitigation measures, no residual effects on breeding birds are anticipated.

Wintering Birds

- 5.71 Surveys have confirmed the Site supports a range of wintering birds that is typical of farmland and urban fringe habitats. A total of 34 species were recorded within the Site and its immediate surroundings, including 22 priority species.
- 5.72 The development proposals would result in the permanent loss of all arable land (47.59ha) within the Site. Whilst the proposed residential areas and school site would account for 16.32ha of this land-take, a further 23.88ha of arable land would be subject to soft landscaping works to deliver the provision of Informal Open Space.
- 5.73 As shown on the Framework Plan, the Informal Open Space would be located in the western half of the Site, between the proposed areas of built development in the east, and the adjacent areas of arable farmland immediately out with the Site's western boundary. These areas

of arable farmland have been found to support small numbers of golden plover on occasion during the 2023/24 wintering bird surveys. Given its location and extent, the Informal Open Space is considered likely to buffer these areas of farmland from increased levels of noise and visual disturbance that would likely arise as a result of the proposed built development. In particular, the Informal Open Space proposals would not introduce any new public rights of way into the adjacent areas of farmland which have been found to be used by wintering golden plover.

- 5.74 It is likely that skylark and grey partridge will be displaced from the Site as a wintering species, owing to their close association with arable habitats. However, given that: (a) a relatively small numbers of birds were recorded within the Site on just one occasion 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.
- 5.75 Overall, in the absence of mitigation, the scheme would result in an adverse effect on wintering birds, significant at the **Local** level.

Mitigation

- 5.76 The detailed design of the proposed Informal Open Space will include a range of habitat creation/enhancement measures that would offset the permanent loss of arable land on the Site's wintering bird assemblage.
- 5.77 The Informal Open Space proposals include the provision of additional wetland habitats through the creation of a series of Sustainable Drainage System (SuDS) basins, as well as mosaic of wildlife ponds. Detailed design of SUDS basin would include a range of microhabitats for snipe (and other wetland birds), which were recorded sporadically, and in low numbers, on arable land within the Site during the 2023/24 winter bird surveys. This would include 'muddy' berms and margins in combination with grass/rush 'tussocks' and stands of reeds, which would offer a combination of suitable substrate and cover for feeding and roosting snipe.
- 5.78 A sensitive lighting design would also be implemented within the Informal Open Space to avoid illuminating adjacent land. As a result, these arable areas would be expected to continue to function as an undisturbed refuge for small numbers of feeding and roosting golden plover.
- 5.79 The design of the Informal Open Space as described above would also be expected to offer benefits to the assemblage of wintering passerines. 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, and yellowhammer) with an abundant winter foraging resource. 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.

- 5.80 The design of the Informal Open Space includes the retention of the existing copse, and the majority of existing hedgerows within the Site. 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 a series of linear structural planting (collectively comprising 1.5ha in area) within the Informal Open Space. The new structural planting would form a corridor through the centre of the Site, 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 roosting resources for birds in winter, particularly thrushes (such as fieldfare, redwing, mistle thrush and song thrush). These species were recorded over-wintering 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.

Residual Effects

- 5.81 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 wintering bird assemblage.
- 5.82 With the implementation of the above mitigation measures, no residual effects on wintering birds are anticipated.

Nesting Birds

- 5.83 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

- 5.84 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

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

Great Crested Newt

- 5.86 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.
- 5.87 No ponds are present on-site. However, a total of 10 are present within dispersal range of the Site. Furthermore, GCN are known to be present in the wider area. Dedicated surveys found GCN to be likely absent from the ponds surveyed within the core 250m dispersal range. However, P1 in close proximity to the Site was not accessible to survey. Whilst aquatic habitats on-site are limited to the on-site ditch which provides sub-optimal suitability for GCN, there remains a small possibility 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.
- 5.88 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

- 5.89 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.

5.90 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.

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

Residual Effects

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

Residual Effects

5.93 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	-	-	-
Lowland mixed deciduous woodland	Local, adverse	Provision of Informal Open Space inc. walking/ cycling routes, signage and provision of dog waste bins	LEMP and detailed design secured through Planning Condition	No significant effect

Other broadleaved woodland, plantation	Local, adverse	New structural planting	LEMP and detailed design secured through Planning Condition	No significant effect
Watercourses	Local, adverse	SuDS strategy	CEMP/LEMP and detailed drainage design secured through Planning Condition	No significant effect
Hedgerows	Local, adverse	Compensatory hedgerow and tree planting, strengthening of boundary vegetation	Detailed design secured through Planning Condition	No significant effect
Bats	Local, adverse	Creation of green corridors, new hedgerow/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
Great Crested Newt	Potential offences caused	Precautionary working methods, habitat creation, management of habitats on-site	Legal requirement/ planning condition	No legal infringement

Enhancement

- 5.94 Extensive 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.

5.95 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- a large area of the western portion of the Site will be landscaped to form an area of open grassland and linear wooded habitat running north-south. This habitat will be further enhanced through inclusion of wildlife ponds excavated in appropriate locations and allowed to naturally colonise, with low nutrient/chalk arisings used to form invertebrate banks.
- Structural planting across the site will be 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 north-east of the site to comprise wet grassland and areas of permanent water.
- Integrated ecological niches: dwellings across the scheme will integrate features to benefit birds (swift 'S-bricks'), bats (bat boxes) and invertebrates (bee-bricks) at a suggested rate of 1 feature per 5 dwellings. The final quantum and locations of these niches will be determined at the detailed design stage and set out within the LEMP.
- Creation of log piles: Timber generated from tree clearance works at the Site will be used to make log piles for wildlife benefit. These will be sited within boundary vegetation where they will be least disturbed. New material can be added as required following any future management works.
- Provision of hedgehog gaps: hedgehog have been scoped out of detailed assessment and no specific mitigation is proposed. However, it is important that opportunities for hedgehog and other small mammals to move through the landscape are preserved. Although not strictly an 'enhancement' measure, provision of hedgehog friendly gravel boards or equivalent, providing a minimum 13x13cm gap, will be used to maintain permeability for hedgehog and other small mammals across the development and associated gardens. The number and location of hedgehog gaps will be determined at the detailed design stage and set out within the LEMP.

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, 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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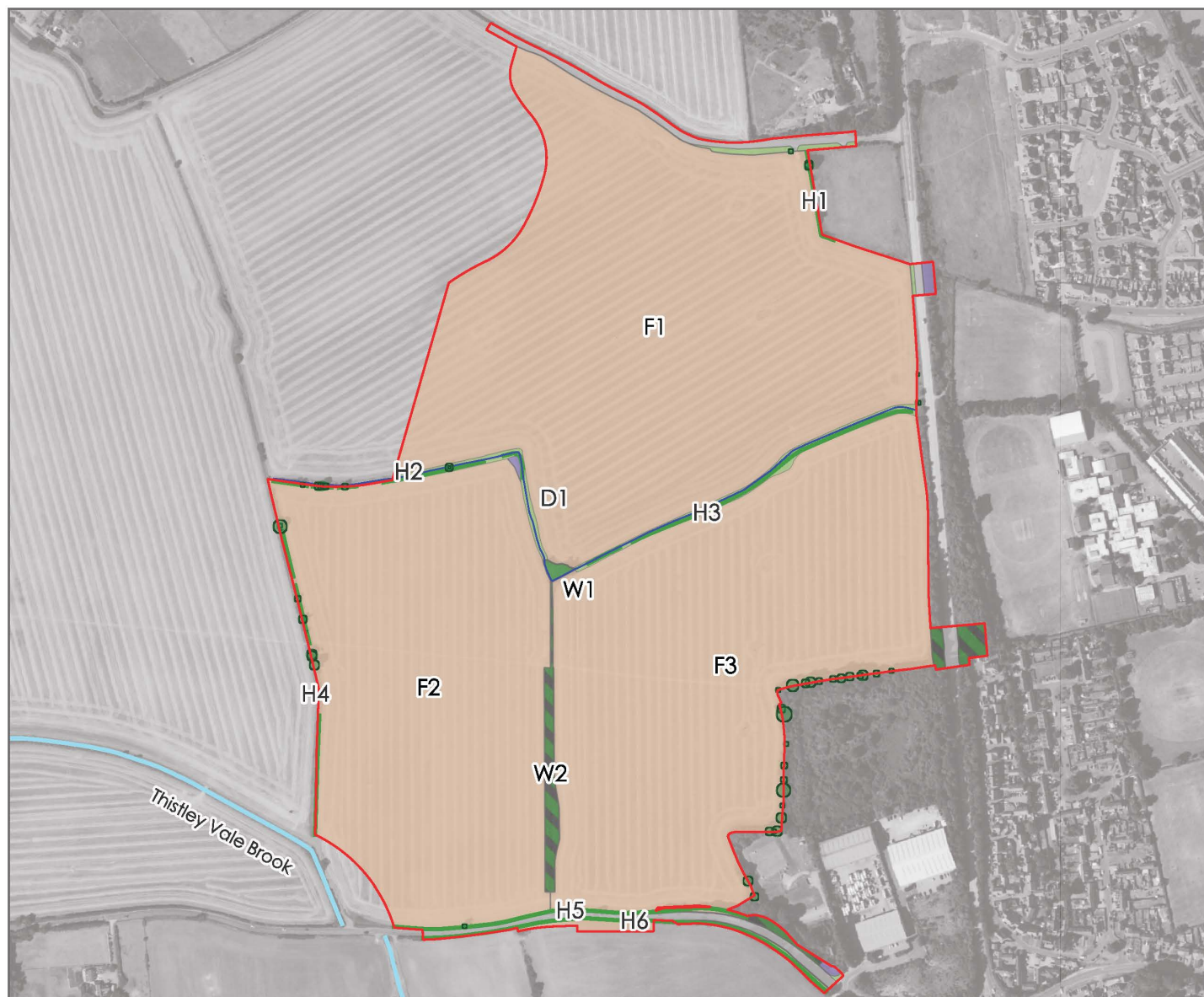
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Appendix A

Habitats Plan & Habitat Summary Table



- Site boundary
- Arable and horticulture (c1)
- Other neutral grassland (g3c)
- Other woodland-broadleaved (w1g)
- Developed land, sealed surface (u1b)
- Lowland mixed deciduous woodland (w1f)
- Mixed scrub (h3h)
- Hedgerows (h2a)
- Ditch (r1)
- Thistley Vale Brook
- Trees



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Project	Land North of A507 and West of Buntingford	Date	May 2024	Drawing No.	CSA/6755/102
Drawing Title	Habitats Plan	Scale	Refer to scale	Rev	C
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC

Table 1. UK Habitat Classification Summary Table

Habitat Parcel Number	Habitat Type	Habitat Code(s)	Description
F1	Arable and horticulture	c1	Arable cropland, sown with winter crop. Very narrow field margins, up to c. 1.5m wide supporting common arable grass and herb species, including those indicative of sub-optimal conditions for grasslands including creeping thistle, common nettle and cow parsley.
F2	Arable and horticulture	c1	Arable cropland, ploughed but not sown. Very narrow field margins, up to c. 1.5m wide supporting common arable grass and herb species, including those indicative of sub-optimal conditions for grasslands including creeping thistle, common nettle and cow parsley.
F3	Arable and horticulture	c1	Arable cropland, ploughed but not sown. Very narrow field margins, up to c. 1.5m wide supporting common arable grass and herb species, including those indicative of sub-optimal conditions for grasslands including creeping thistle, common nettle and cow parsley.
W1	Lowland mixed deciduous woodland	w1f	Wooded copse, shown on historic maps dating from 1888-1915. Woody species include ash, field maple, blackthorn, hawthorn and elder. Ground flora was very sparse at the time of survey, with limited species recorded. Field maple is included on the Hertfordshire ancient woodland vascular plants list.
W2	Other broadleaved woodland, plantation	w1g 29	Narrow belt of plantation woodland, planted between c. 2018 and 2020. Comprises native woody species, with very sparse ground flora comprising ephemeral species including spear thistle and willowherb.
-	Other neutral grassland	g3c	Narrow, c. 3m wide strip of grassland adjacent to on-site ditch (D1). Comprises short (c. 20cm) sward dominated by common grasses. Herb species include those indicative of sub-optimal conditions for grasslands including cow parsley, creeping thistle, spear thistle, common nettle and creeping buttercup.
-	Mixed scrub	h3h	Dense bramble scrub with blackthorn and elder, adjacent to on-site ditch (D1). Managed to prevent encroachment on ditch/arable fields.

Habitat Parcel Number	Habitat Type	Habitat Code(s)	Description
D1	Watercourses	r1	Central ditch divides F1 to north and F2/F3 in the south. Runs along hedgerows H5 and H2. Dry in places, holds water at a depth of c. 5-10cm where wet.
H1	Hedgerows	h2a	Hedgerow along northern boundary of F1.
H2	Hedgerows	h2a	Hedgerow divides F1 and F2 to the west, associated with D1.
H3	Hedgerows	h2a	Hedgerow divides F1 and F2 to the east, associated with D1.
H4	Hedgerows	h2a	Hedgerow bounds western edge of F2.
H5	Hedgerows	h2a	Hedgerow along southern boundary of F2 and F3.

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

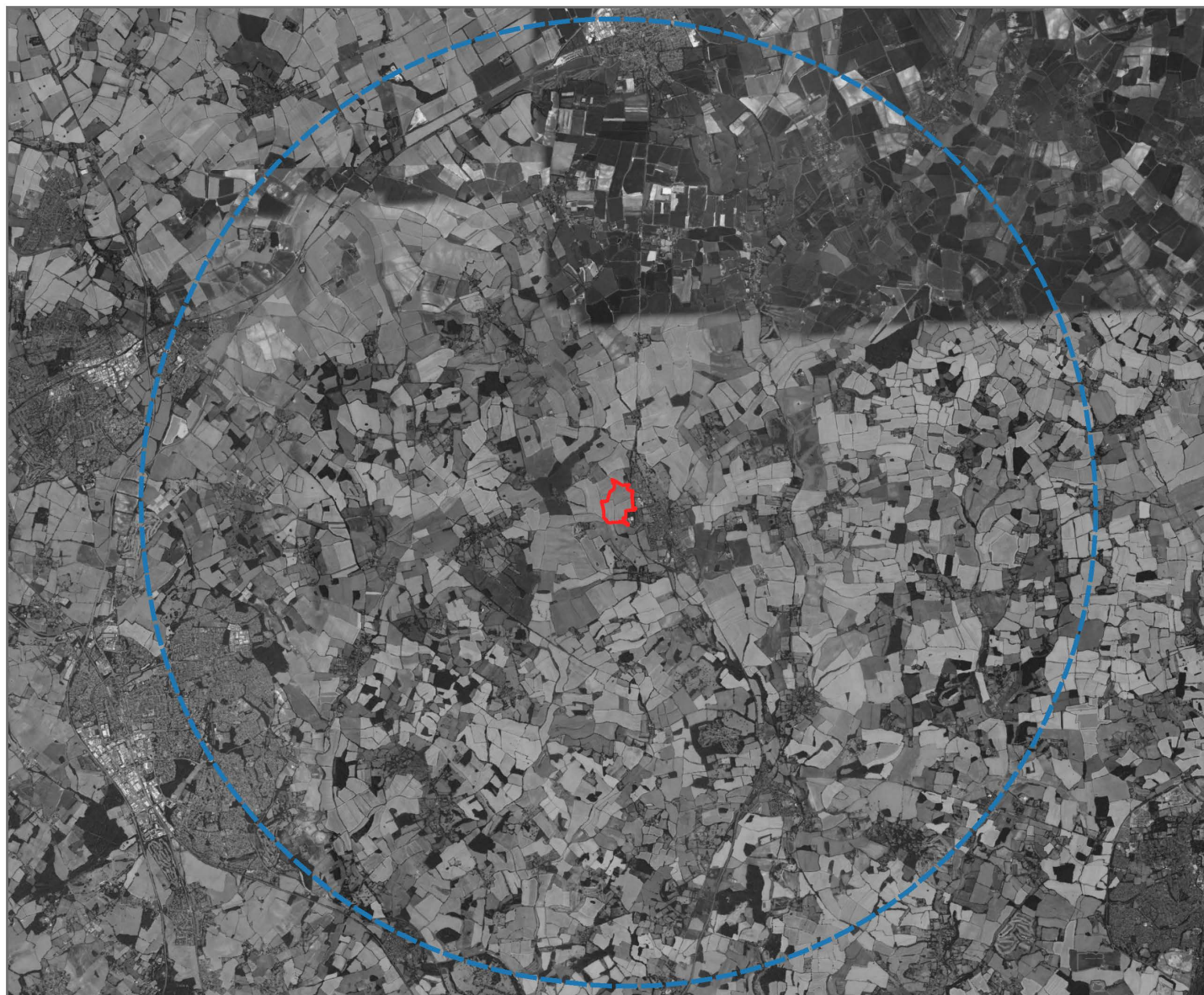
Desk Study Information



 Site boundary

 10km buffer

*No International Statutory Designations identified within search area.



0 2.5 5 km

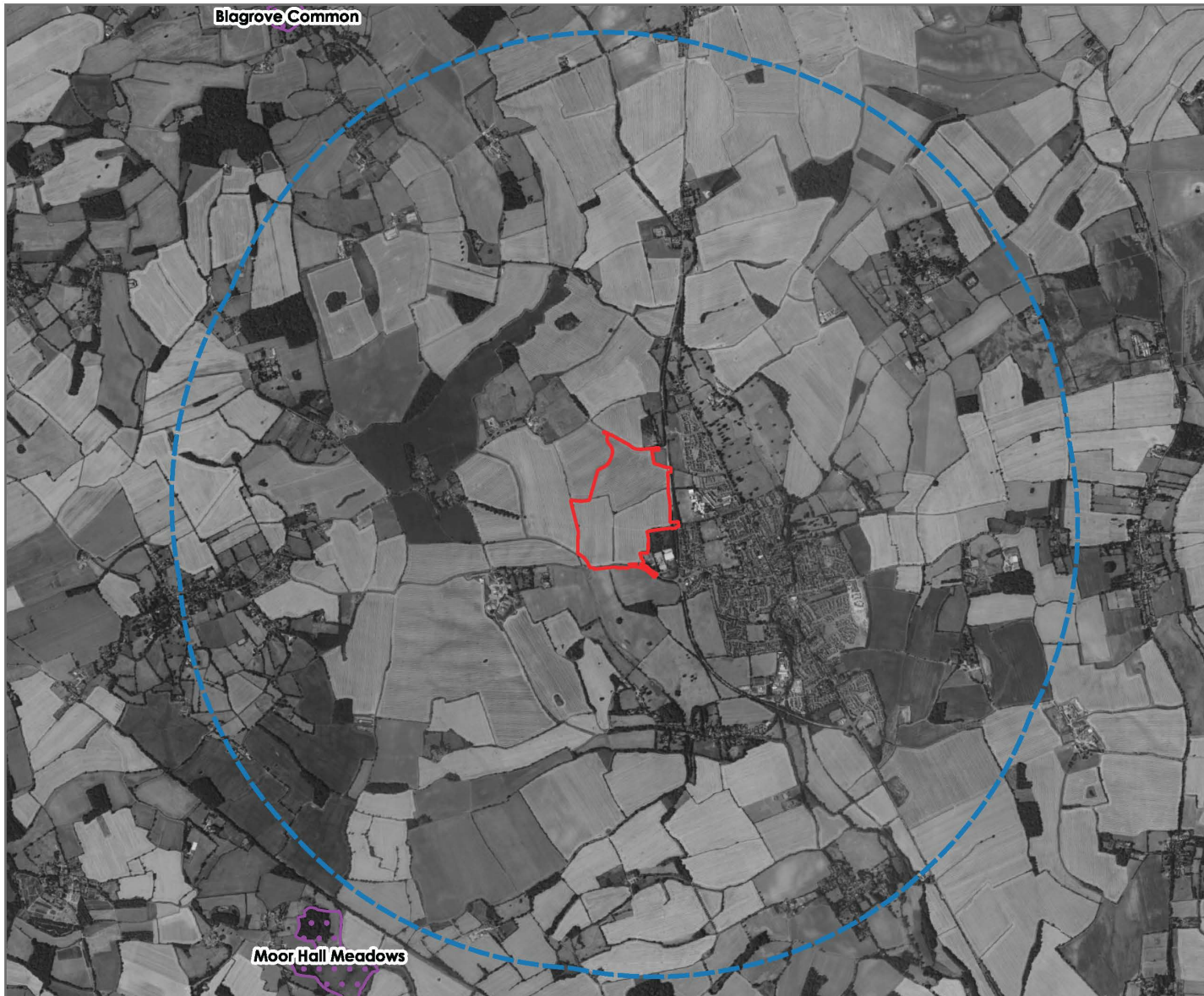

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Project	Land North of A507 and West of Buntingford	Date	May 2024	Drawing No.	CSA/6755/104
Drawing Title	International Statutory Designations	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RB	Checked	AC



-  Site boundary
-  3km buffer
-  Sites of Special Scientific Interest
-  Local Nature Reserves
-  National Nature Reserves

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

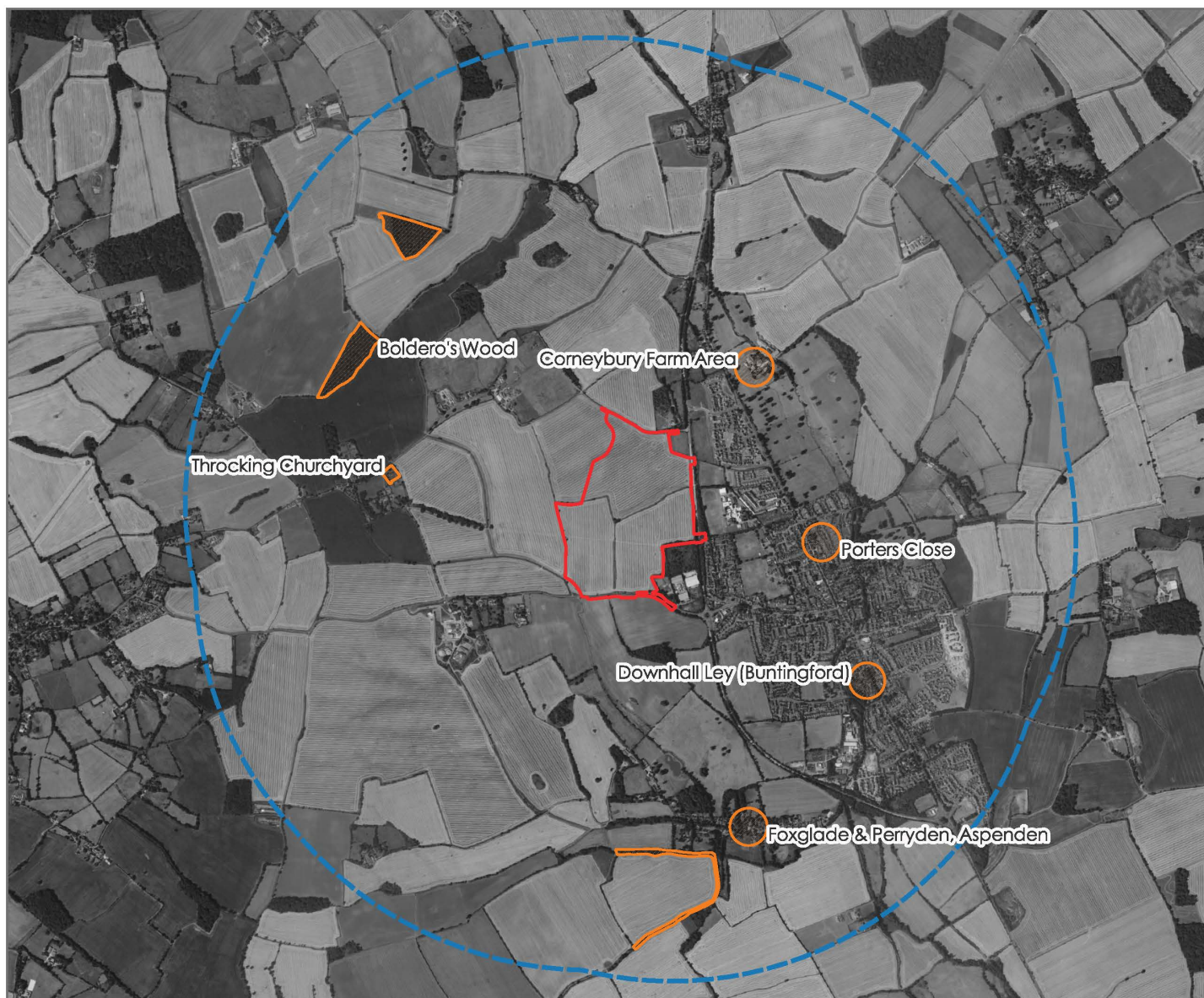


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Project	Land North of A507 and West of Buntingford	Date	May 2024	Drawing No.	CSA/6755/105
Drawing Title	National/Local Statutory Designations	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RB	Checked	AC



- Site boundary
- 2km buffer
- Local Wildlife Sites



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Project	Land North of A507 and West of Buntingford	Date	May 2024	Drawing No.	CSA/6755/103
Drawing Title	Non-Statutory Designations	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RB	Checked	AC



- Site boundary
- 1km buffer
- Deciduous woodland
- Traditional orchard
- Coastal and floodplain grazing marsh
- No main habitat but additional habitat exists
- Chalk river - high certainty
- Chalk river - low certainty



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Project	Land North of A507 and West of Buntingford	Date	May 2024	Drawing No.	CSA/6755/101
Drawing Title	Priority Habitats	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RB	Checked	AC



- Site boundary
- 1km buffer
- Ancient woodland

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



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Project	Land North of A507 and West of Buntingford	Date	May 2024	Drawing No.	CSA/6755/107
Drawing Title	Ancient Woodland	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RB	Checked	AC



-  Site boundary
-  500m pond buffer
-  250m pond buffer
-  Pond (with reference number)



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Project	Land North of A507 and West of Buntingford	Date	May 2024	Drawing No.	CSA/6755/100
Drawing Title	Pond Plan	Scale	Refer to scale	Rev	C
Client	Hallam Land Management Limited	Drawn	RB	Checked	AC

Appendix D

Habitats and Flora Species List

Table 1. Habitat Polygons

Site Name	Land North of A507 and West of Buntingford					
Survey Date and Surveyor(s)	06/12/2023, 20/02/2024, 15/05/2024 Alexandra Cole					
Scientific Name	Common Name	Habitat Parcel Number/Habitat Type				
		F1-F3 (c1)	W1 (w1f)	W2 (w1g 29)	Grassland (g3c)	Mixed scrub (h3h)
Herb Species						
Alliaria petiolata	Garlic mustard		X			
Anthriscus sylvestris^	Cow parsley^	X	X		X	
Arctium minus	Lesser burdock		X			
Arctium sp.	Burdock	X			X	
Arum maculatum	Lords-and-ladies		X			
Cirsium arvense^	Creeping thistle^	X			X	
Cirsium vulgare^	Spear thistle^	X		X	X	
Conium maculatum	Hemlock		X			
Epilobium sp.	Willowherb			X		
Ficaria verna	Lesser celandine		X			
Galium aparine	Cleavers	X	X		X	
Geranium molle	Dove's-foot crane's-bill	X			X	
Geranium robertianum	Herb Robert				X	
Glechoma hederacea	Ground-ivy	X	X		X	
Helminthotheca echioides	Bristly oxtongue	X			X	
Heracleum sphondylium	Hogweed	X	X		X	
Lamium album	White dead-nettle	X	X		X	
Lapsana sp.	Nipplewort	X			X	
Ranunculus repens^	Creeping buttercup^	X			X	
Senecio jacobaea	Common ragwort	X	X		X	
Senecio vulgaris	Groundsel	X	X		X	
Silene dioica	Red campion		X			
Solanum nigrum	Black nightshade				X	
Urtica dioica^	Common nettle^	X	X		X	
Veronica persica	Common field-speedwell	X			X	
Grasses						
Anisantha sterilis	Barren brome		X			
Arrhenatherum elatius	False oat-grass	X			X	
Brachypodium sylvaticum	False brome				X	
Elytrigia repens	Common couch	X			X	
Festuca rubra	Red fescue				X	
Holcus lanatus	Yorkshire-fog	X			X	
Lolium perenne	Perennial rye-grass	X	X		X	
Poa annua	Annual meadow-grass	X			X	
Woody Species						
Broadleaved						
Acer campestre*	Field maple*		X	X		
Alnus glutinosa	Common alder			X		
Cornus sp.	Dogwood			X		
Corylus avellana	Hazel*			X		
Crataegus monogyna	Hawthorn		X	X		
Fraxinus excelsior	Ash		X			
Hedera helix	Ivy		X			
Ilex aquifolium	Holly*			X		
Ligustrum vulgare	Wild privet			X		
Prunus sp.	Cherry			X		
Prunus spinosa	Blackthorn					X
Quercus sp.	Oak			X		
Rosa canina sp.	Dog-rose			X		
Rubus fruticosus agg.	Bramble	X				X
Sambucus nigra	Elder		X			X
Viburnum opulus	Guelder-rose*			X		

* = Hertfordshire ancient woodland vascular plants list

^ = Species indicative of suboptimal condition for grassland habitats

Table 2. Linear Habitats

Site Name	Land North of A507 and West of Buntingford						
Survey Date and Surveyor(s)	06/12/2023, 20/02/2024, 29/05/2024 Alexandra Cole, Rhodri Gruffydd						
Scientific Name	Common Name	Habitat Parcel Number/Habitat Type					
		H1 (h2a)	H2 (h2a)	H3 (h2a)	H4 (h2a)	H5 (h2a)	H6 (h2a)
Herb Species							
Alliaria petiolata	Garlic mustard	X	X	X		X	
Anthriscus sylvestris	Cow parsley	X	X	X	X	X	X
Arctium minus	Lesser burdock	X	X	X	X		
Artemisia vulgaris	Mugwort						X
Centaurea nigra	Common knapweed					X	
Cirsium arvense	Creeping thistle	X	X	X	X	X	X
Cirsium vulgare	Spear thistle				X	X	X
Conium maculatum	Hemlock	X			X	X	
Epilobium sp.	Willowherb	X	X	X			
Galium album	Hedge bedstraw				X	X	
Galium aparine	Cleavers	X	X	X	X	X	X
Geranium dissectum	Cut-leaved crane's-bill				X	X	
Geranium pyrenaicum	Hedgerow crane's-bill					X	
Geranium robertianum	Herb Robert		X		X		
Geum urbanum	Wood avens				X	X	
Glechoma hederacea	Ground-ivy	X	X	X	X	X	X
Helminthotheca echioides	Bristly ox-tongue				X		
Heracleum sphondylium	Hogweed	X	X	X	X	X	X
Humulus lupulus	Hop	X	X				
Hypericum sp.	St John's-wort		X			X	
Lamium album	White dead-nettle	X	X			X	
Lapsana sp.	Nipplewort				X		
Mercurialis perennis	Dog's mercury					X	
Myosotis arvensis	Field forget-me-not					X	
Myosotis sp.	Forget-me-not	X					
Rumex sp.	Dock		X	X	X		
Senecio vulgaris	Groundsel	X					
Solanum dulcamara	Bittersweet		X		X		
Sonchus asper	Prickly sowthistle	X			X		X
Stachys sylvatica	Hedge woundwort					X	
Stellaria holostea	Greater stitchwort					X	
Tamus communis	Black bryony		X				
Taraxacum officinale agg.	Dandelion		X				
Urtica dioica	Common nettle	X	X	X	X	X	X
Veronica chamaedrys	Germander speedwell					X	
Grasses							
Anisantha sterilis	Barren brome	X	X	X	X	X	X
Arrhenatherum elatius	False oat-grass		X	X	X	X	X
Brachypodium sylvaticum	False brome		X			X	
Bromus hordeaceus	Soft-brome	X	X		X		
Dactylis glomerata	Cock's-foot	X				X	
Elytrigia repens	Common couch					X	
Lolium perenne	Perennial rye-grass	X					
Poa annua	Annual meadow-grass				X		
Poa trivialis	Rough meadow-grass	X	X	X	X	X	X
Woody Species							
Broadleaved							
Acer campestre*	Field maple*	X	X	X	X	X	X
Cornus sp.	Dogwood		X	X		X	X
Corylus avellana*	Hazel*		X	X		X	X
Crataegus monogyna	Hawthorn	X	X	X	X	X	X
Euonymus europaeus	Spindle					X	
Fraxinus excelsior	Ash	X			X	X	X
Hedera helix	Ivy	X			X	X	X
Juglans regia	Walnut						X
Ligustrum vulgare	Wild privet					X	
Prunus avium	Cherry						X
Prunus spinosa	Blackthorn	X	X	X	X	X	X
Prunus sp.	Prunus sp.				X		X
Quercus robur	Pedunculate oak			X		X	
Quercus sp.	Oak		X		X		
Rhamnus cathartica	Buckthorn	X					
Rosa canina sp.	Dog-rose	X	X	X	X	X	X
Rosa sp.	Rose sp.	X			X	X	
Rubus fruticosus agg.	Bramble	X	X	X	X	X	X
Sambucus nigra	Elder	X	X	X	X	X	
Tilia x europaea	Common lime						X
Ulmus sp.	Elm		X	X	X	X	X
Viburnum lantana	Wayfaring-tree					X	X
Viburnum opulus	Gelder-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 (EclA). For clarity, the evaluation and assessment process adopted within this EclA 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 29 May 2024 by Rhodri Gruffydd (FISC Level 3), encompassing all hedgerows within and bounding the Site.

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 H6, and the location of each hedgerow is shown on the Habitats Plan (CSA/6755/102/C).

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 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 The survey was undertaken at the end of the optimum time of year. However, it was still possible to identify the ground-flora and is not considered to change the outcome of the survey.

3.0 Results

- 3.1 Full hedgerow descriptions are provided in Section 4.0 of the EcIA report (CSA/6755/02/C). Hedgerow numbers are shown on the Habitats Plan (CSA/6755/102/C) in Appendix A. Full survey results are shown in Tables 1-4 below and species lists for each hedgerow are available in Appendix D (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	110	✓	×	Good
H2	310	✓	×	Good
H3	410	✓	×	Good
H4	400	✓	✓	Moderate
H5	400	✓	×	Moderate
H6	645	✓	✓	Moderate

Table 2. Hedgerow Survey Results (H1 - H6)

Date of Survey	29/05/2024
Surveyor(s)	Rhodri Gruffydd (FISC Level 3)

General Hedgerow Information	H1	H2	H3	H4	H5	H6
Hedgerow length (m)	110	310	410	400	400	645
Average height along length of hedgerow (m)	2.5	2.5	2	2.5	2	2
Average width at widest point of hedgerow (m)	2	2	1.5	2	2.5	3
Is woody component of hedgerow <5m at base?	Yes	Yes	Yes	Yes	Yes	Yes
Number of 30m sections for specified sampling technique	2	3	3	3	3	3
Average number of native woody species (following specified sampling technique)	4	3	4	5.3	4.7	6.7
Number of native woody species (along total length)	7	7	9	9	13	14
Species-rich hedgerow? (5 or more native woody species in 30m section)	No	No	No	Yes	No	Yes

Table 3. Assessment of Important Hedgerows (H1 - H6)

Application of Regulations	H1	H2	H3	H4	H5	H6
Does the hedgerow lie within, or mark the boundary to, a private garden?	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
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
As such, is it an Important Hedgerow ?	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
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
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
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
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
Does the hedgerow include at least 7 woody species? (Subject to specified sampling technique)	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	No	No
Bank or wall which supports the hedge along half its length?	No	No	No	No	No	No
Gaps <10% aggregate length of hedgerows?	No	No	No	Yes	Yes	Yes
One standard tree per 50m?	Yes	No	No	Yes	No	No
At least three woodland (ground flora) species within 3m of the hedgerow?	No	No	No	No	Yes	No
Ditch along at least half hedgerow length?	Yes	Yes	Yes	Yes	No	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
Parallel hedgerow within 15m?	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
Is the hedgerow adjacent to a bridleway or footpath?	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
Schedule 2: Woodland Species (ground flora)	0	2	0	2	3	0
Dog's mercury <i>Mercurialis perennis</i>					✓	
Herb-robert <i>Geranium robertianum</i>		✓		✓		
Wood avens/Herb bennet <i>Geum urbanum</i>				✓	✓	
Wood false-brome <i>Brachypodium sylvaticum</i>		✓			✓	
Schedule 3: Woody Species (including species native in the UK and archaeophytes)^A ^A Species only found in Hedgerow Regulations ^{**} Species only found in Hedgerow Survey Handbook	7	7	9	9	13	14
Ash <i>Fraxinus excelsior</i>	✓			✓	✓	✓
Blackthorn <i>Prunus spinosa</i>	✓	✓	✓	✓	✓	✓
Buckthorn <i>Rhamnus cathartica</i>	✓					
Cherry, wild <i>Prunus avium</i> *						✓
Dog-rose <i>Rosa canina</i> sp.	✓	✓	✓	✓	✓	✓
Dogwood <i>Cornus sanguinea</i>		✓	✓		✓	✓
Elder <i>Sambucus nigra</i>	✓	✓	✓	✓	✓	
Elm <i>Ulmus</i> species			✓	✓	✓	✓
Guelder rose <i>Viburnum opulus</i>						✓
Hawthorn <i>Crataegus monogyna</i>	✓	✓	✓	✓	✓	✓
Hazel <i>Corylus avellana</i>		✓	✓		✓	✓
Holly <i>Ilex aquifolium</i>						✓
Lime, common <i>Tilia x europaea</i> **						✓
Maple, field <i>Acer campestre</i>	✓	✓	✓	✓	✓	✓
Oak, pedunculate <i>Quercus robur</i>			✓	✓	✓	
Plum <i>Prunus domestica</i> ^**				✓		
Privet, wild <i>Ligustrum vulgare</i>					✓	
Spindle <i>Euonymus europaeus</i>					✓	
Walnut <i>Juglans regia</i> *						✓
Wayfaring-tree <i>Viburnum lantana</i>					✓	✓

Table 4. The Statutory Biodiversity Metric Condition Assessment of Hedgerows (H1 - H6)

Hedgerow Condition Assessment	H1	H2	H3	H4	H5	H6
Hedgerow Type	Native hedgerow with trees - associated with bank/ditch	Native hedgerow - associated with bank/ditch	Native hedgerow - associated with bank/ditch	Native species-rich hedgerow with trees - associated with bank/ditch	Native hedgerow	Native species-rich hedgerow
A1. Height >1.5m average along length	Pass	Pass	Pass	Pass	Pass	Pass
A2. Width >1.5m average along length	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	Pass	Pass	Pass	Pass	Pass
B2. Gap - hedge canopy continuity. Gaps make up <10% of total length; and no canopy gaps >5m	Fail	Fail	Fail	Pass	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	Pass	Pass	Pass	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
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
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	Fail	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	-	-
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	-	-
Condition						
Poor, Moderate or Good	Good	Good	Good	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 committed 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).

Ground Level Tree Assessment (GLTA) - Trees

- 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 subject to removal in association with 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.

Activity Surveys

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 Site 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	
01/05/24	20:25	20:25	22:40	17	14	4	1	1	0	None
24/06/24	21:23	21:23	23:23	20	19	0	0	0	0	None
15/08/24	20:22	20:22	22:22	21	20	7	8	5	4	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 Site 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 for the first half of the transect before meeting and walking the second half together. The survey aimed to cover all accessible areas, features and habitats at the Site. 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 Two 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 to provide a representative sample of all habitats in the survey area that could be impacted by the proposals. This included Hedgerows H3 and H5.
- 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, 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 no bat activity for one of these nights but does not impact the overall aim of the survey to identify bat species and activity levels across the Site.

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 hedgerows and neutral grassland field margins are present across the Site and therefore the Site is assessed as having moderate suitability for bat activity. There is further suitable habitat adjacent to the south-east of the Site, comprising broadleaved woodland, and Thistley Vale Brook is within c. 15m south-west of the Site.

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.
- 3.3 No PRFs were identified in any trees within groups G10, G13, G14, G25, G26, G27 and H51. Trees along the A507 road to the south-east of G13 were also assessed, however, it was not possible to fully access this tree block. An update survey will need to be carried out prior to trees being removed when access is possible.

Activity Surveys

Night-time Bat Walkover

- 3.4 At least two species of bat were recorded during the stationary observations, comprising common pipistrelle *Pipistrellus pipistrellus* and *Nyctalus/Eptesicus* sp. A *Nyctalus/Eptesicus* sp. individual was recorded at stationed surveyor location (SSL) 1, c. 27 minutes after sunset. Considering the time after sunset, the presence of a nearby roost is unlikely for this species group. One or two common pipistrelle individuals were recorded c. 23-25 minutes after sunset at SSL2, suggesting the

presence of a nearby roost is a possibility, however, there was no other evidence to suggest that there is a roost close to the Site. These bats flew from south-east of the Site, comprising woodland and residential areas in Buntingford.

- 3.5 At least two species of bat were recorded at the Site during the transect surveys, comprising common pipistrelle and *Nyctalus/Eptesicus* sp. The majority of contacts were recorded along the off-site woodland edge within the south-east of the Site, around Woodland W1 and along Hedgerow H2. *Nyctalus/Eptesicus* sp. activity was concentrated around Woodland W1 and along Woodland W2.
- 3.6 The number of bat contacts recorded for each species are summarised in Table 2 below. The locations of each bat contact and the overall distribution of activity across the Site are illustrated in Figures 3 and 4.

Table 2. Summary of bat contacts recorded during transect surveys

Month	Common pipistrelle	<i>Nyctalus/Eptesicus</i> species
May	268	0
June	27	0
August	145	20
Total	440	20
Percentage of Total (%)	95.65	4.35



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

- 3.7 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 Hedgerow H2, Woodland W1 and the woodland edge in the south-east of the Site. Commuting activity is also present along the A10 within the east of the Site and along Hedgerow H5 to the south.



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

- 3.8 The weather conditions experienced during the five nights where data was analysed are provided in Table 3 below.
- 3.9 There was rain all night during the first night of the April monitoring period which coincides with a lack of 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.
- 3.10 The temperature dropped to a minimum of 4°C on 28 April 2024 and this coincides with reduced bat activity, with only noctule and *Nyctalus* sp. recorded.

Table 3. 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	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
Aug	28/08/24	13	19	7	73	9	12	Very light rain at the start of the night

3.11 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.

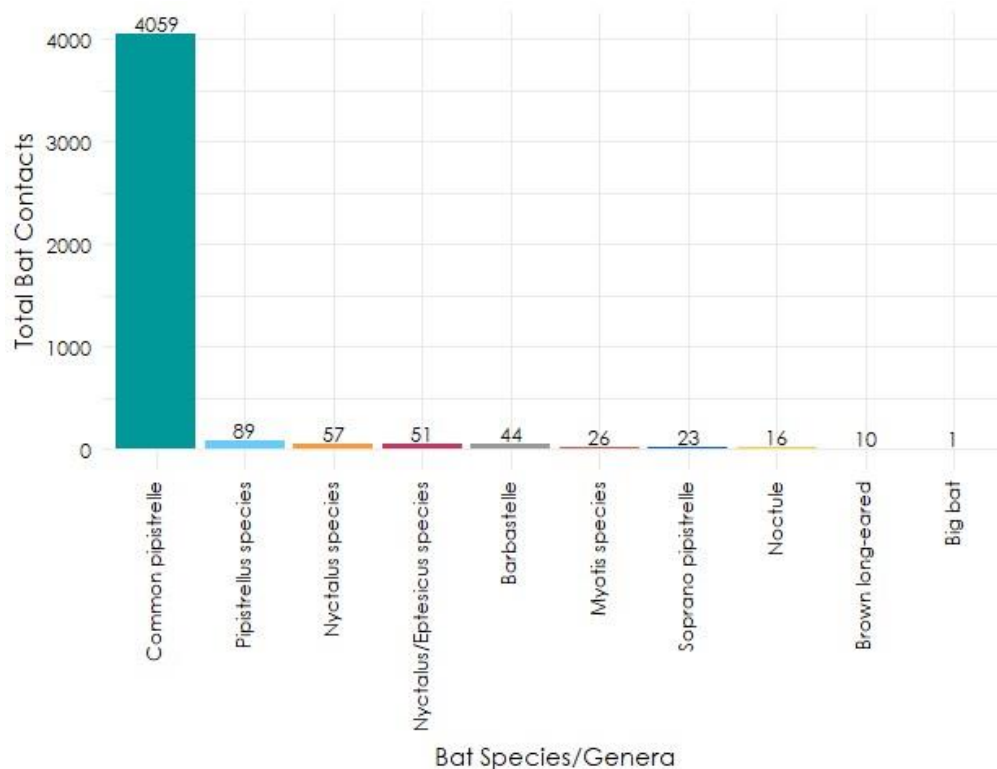


Figure 5. Total bat contacts by species/genera recorded across all remote monitoring periods and monitoring locations

- 3.12 A higher number of common pipistrelle passes were recorded alongside much lower numbers of unidentified *Nyctalus/Eptesicus* sp., barbastelle *Barbastella barbastellus*, *Myotis* sp., soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula* and brown long-eared bat *Plecotus auritus*. Bat activity appears to be higher during the April and July monitoring periods, although, the majority of the April activity attributable to a single night of monitoring at ML1.
- 3.13 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 4. 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. 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.

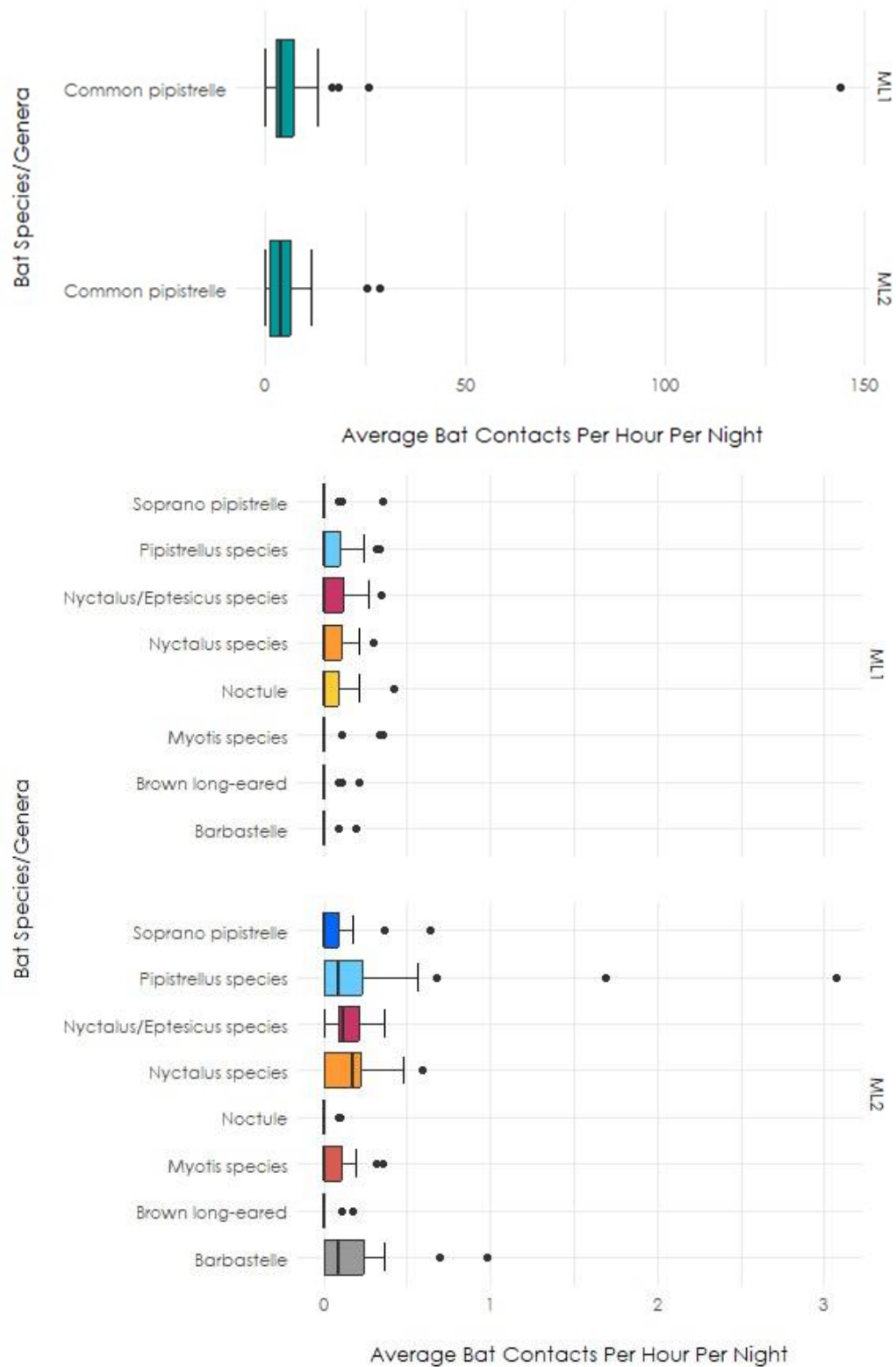


Figure 6a and b. Average bat contacts per hour per night for each bat species/genera recorded across all remote monitoring

- 3.14 For the majority of species, bat activity was higher at ML2. However, activity for common pipistrelle, noctule and brown long-eared bat was higher at ML1. 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 a single outlier of very high activity corresponding to 01 May 2024 throughout the evening at ML1.

- 3.15 For the rare barbastelle, activity is mostly limited to occasional passes with no clear pattern relating to time of night.

Table 4. 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	0.198	0.000	0.000	3	25
ML1	Big bat	0	0.099	0.000	0.000	1	25
ML1	Brown long-eared bat	0	0.215	0.000	0.000	7	25
ML1	Common pipistrelle	0	144.068	3.731	4.544	2740	25
ML1	Myotis species	0	0.357	0.000	0.000	8	25
ML1	Noctule	0	0.424	0.000	0.089	12	25
ML1	Nyctalus species	0	0.294	0.000	0.106	15	25
ML1	Nyctalus/ Eptesicus species	0	0.342	0.000	0.120	17	25
ML1	Pipistrellus species	0	0.340	0.000	0.099	16	25
ML1	Soprano pipistrelle	0	0.355	0.000	0.000	7	25
ML2	Barbastelle	0	0.982	0.091	0.240	41	25
ML2	Big bat	0	0.000	0.000	0.000	0	25
ML2	Brown long-eared bat	0	0.179	0.000	0.000	3	25
ML2	Common pipistrelle	0	28.738	3.677	5.170	1319	25
ML2	Myotis species	0	0.359	0.000	0.107	18	25
ML2	Noctule	0	0.099	0.000	0.000	4	25
ML2	Nyctalus species	0	0.591	0.177	0.227	42	25
ML2	Nyctalus/ Eptesicus species	0	0.361	0.120	0.122	34	25
ML2	Pipistrellus species	0	3.075	0.091	0.228	73	25
ML2	Soprano pipistrelle	0	0.636	0.000	0.091	16	25

4.0 Summary

- 4.1 The daytime bat walkover identified the Site as having moderate suitability for bat activity due to the presence of potential flight-paths and foraging habitat in the form of hedgerows and neutral grassland field margins.
- 4.2 The GLTA identified no PRFs associated with trees to be removed. However, some trees along the A507 were not fully surveyed and require further inspection when access is possible.
- 4.3 Night-time bat walkover surveys found common pipistrelle and unidentified *Nyctalus/Eptesicus* sp. activity on-site. Common pipistrelle individuals were observed foraging and commuting, with the majority of activity associated with W1, H2 and the woodland edge to the south-east of the Site.
- 4.4 Static monitoring found at least six bat species to be present on-site, including the rarer barbastelle, representing 50% of the species known to be present within Hertfordshire. 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.
- 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 indirect 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 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.
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.
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.

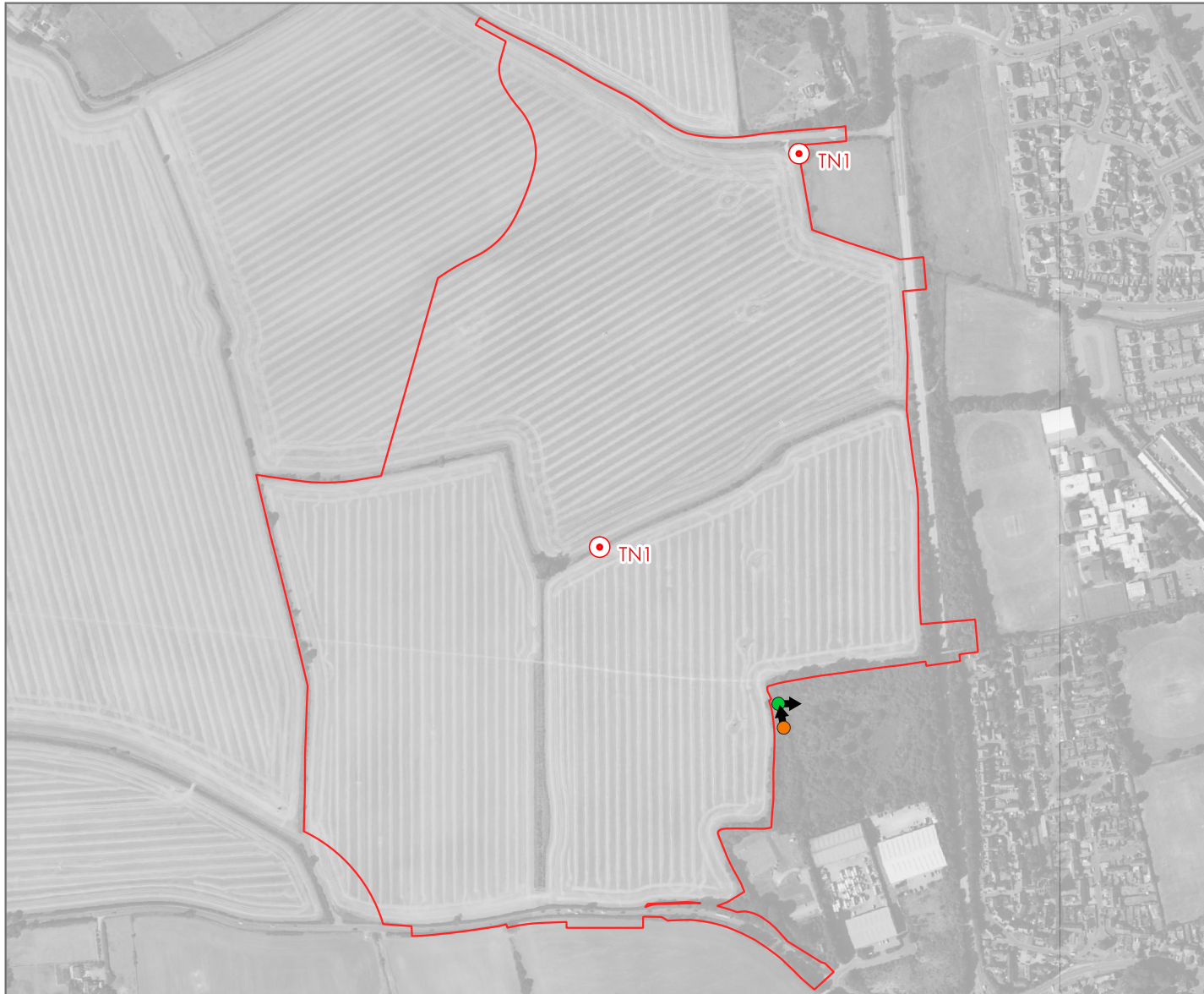
4.0 Results

- 4.1 No badger setts were identified on-site. However, a total of nine rabbit holes were identified within H6 in the north of the Site, with further rabbit holes in the bank of D1. Additionally, on 15 February 2024 during the wintering bird survey badger footprints were identified along the eastern half of the public footpath, north of the off-site woodland. No further evidence (e.g. latrines) of badger was identified on-site, although mammal push throughs were evident within hedgerows and vegetation along Site boundaries.
- 4.2 Two badger sett entrances were identified within the off-site wooded belt to the south-east of the Site. Given the location of the setts, off-site, it was not possible to fully classify the sett type. See Table 2 for full survey results.

Table 2. Badger Survey Results

Sett No.	Grid Reference	Sett Type	Entrance Type	Notes
1	TL 35315 29757	Annex/ Subsidiary	Partially used	Off-site single hole badger sett in bank, with tunnel heading away from site into bank
2	TL 35319 29730	Annex/ Subsidiary	Well used	Off-site single hole badger sett with large spoil mount, tunnel heading north into/along bank

- 4.3 Badger activity identified at the Site is shown on the Badger Survey Plan (CSA/6755/108/B) below.



- Site boundary
 - Target note
TN1: multiple rabbit burrows
 - Active annex/subsidiary badger sett
 - Partially active annex/subsidiary badger sett
- *Arrow denotes tunnel direction



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Project	Land North of A507 and West of Buntingford	Date	May 2024	Drawing No.	CSA/6755/108
Drawing Title	Badger Survey Plan	Scale	Refer to scale	Rev	B
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC

Appendix I

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 on the Site boundaries, including the on-site ditch (D1), an off-site ditch associated with H4 (D2) and Thistley Vale Brook c. 15m south-east of the Site, were surveyed for otter and water vole on 13 March 2024 and 26 July 2024. The surveys were undertaken by Carly Howes ACIEM 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 There were no specific limitations to the surveys, which were conducted at an optimum time of year for the location of the Site (south-east England) and in good conditions.

4.0 Results

- 4.1 The on-site ditch (D1) provides sub-optimal habitat for water vole. The ditch is heavily shaded by hedgerows, trees and scrub. During the first survey, the ditch was almost dry within the western half, while the eastern half held water, with a shallow water level (c. 3cm) downstream of an inflow pipe from F3. The entire ditch was dry during the second survey. There is very limited aquatic marginal vegetation within the channel, with only willowherb *Epilobium* sp. Other tall herb vegetation includes common nettle *Urtica dioica*, creeping thistle *Cirsium arvense*, and bristly ox-tongue *Helminthotheca echioides*. There are some dense patches of bramble *Rubus fruticosus* agg.
- 4.2 The off-site ditch to the west of the Site (D2), associated with H4, has earth banks with bare ground on the western bank in the north from recent vegetation clearance. There is an inflow pipe at the northern end, taking run-off from the fields. The ditch is linked to Thistley Vale Brook via a culvert beneath a vehicle track when the water level exceeds the ditch capacity. The ditch had a low water level with a slow to moderate flow during the first survey and was almost dry in the second survey.
- 4.3 Thistley Vale Brook (north of the A507 road and c. 15m south-east of the Site) is more suitable for water vole, with steep, earth banks suitable for burrowing. However, vegetation and a hedgerow present at the top of the eastern bank provide heavy shading. The channel bed has gravel and pebbles, becoming more silted at the southern end near the road. The water level was c. 40cm deep during the first survey, falling to c. 2-5cm in the second survey. The channel is shaded by the hedgerow and vegetation including willowherb, common nettle, hogweed *Heracleum*

sphondylium, with a small patch of reed canary-grass *Phalaris arundinacea* providing some 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.

- 4.4 No signs of water vole or otter were identified during the surveys. One small burrow was found on the eastern bank of the brook; however, this was too small for water vole. A single ash *Fraxinus excelsior* tree with rot within H4 and adjacent to D2 provides space for otter to shelter, although no evidence of otter was found.

5.0 Summary

- 5.1 Although the water courses surveyed provide some suitable habitat for water vole, the majority of the watercourses were sub-optimal, and 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 J

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 James Latham MCIEEM over six visits between 24 March 2024 and 26 June 2024 to gain an understanding of the breeding bird assemblage at the site. 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. A single survey (06 June 2024) was conducted in the evening to target nocturnal and crepuscular species which may be overlooked during the morning visits. This survey commenced c. 2.5 hours before sunset and continued for c. 1.25 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 and immediately adjacent land visible from the Site. 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 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 5th Birds of Conservation Concern Review (Stanbury *et al*, 2021).
 - 4) Localised or highly specialised species regardless of inclusion above (e.g. crossbill in coniferous woodland);
 - 5) Nationally- or locally-declining species regardless of inclusion above
 - 6) Colonial nests or 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+

Wintering Birds

- 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 comprised the Site (as

shown on the Wintering Bird Survey Plan, CSA/6755/106/B), plus adjacent areas of land which could be viewed from the Site boundaries. 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 Four 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 winter 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 took place throughout the day, and lasted a duration of approximately four hours. Birds were detected by sound or sight, using a pair of 8x42 or 10x42 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 were not taken into

consideration when assessing the nature conservation importance of the Site for wintering birds (e.g. high-flying gulls commuting overhead).

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. flocks of wintering farmland waders)
- 5) Nationally- or locally-declining species of their inclusion in any of the above criteria
- 6) Colonial roost sites containing more than one individual of any species
- 7) Exceptional counts or aggregations of any species

Nocturnal Wintering Bird Surveys

2.18 The desk study identified that lapwing *Vanellus vanellus* and potentially golden plover *Pluvialis apricaria* have, on occasion, been recorded in relatively large numbers in the vicinity of the Site. Further to this, a flock of 12 golden plover was recorded roosting/loafing within a large arable field, adjacent to (but just outwith) the Site shortly before dusk during the November 2023 wintering bird survey visit (see paragraph 3.6 for further details). Lapwing and golden plover tend to gather in arable fields at night. In view of this, the diurnal wintering bird surveys were supplemented by nocturnal bird surveys in December 2023, January 2024 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 species and 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+

3.0 Results

Breeding Birds

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

Table 4. Weather conditions for breeding bird surveys

Date	Start time	End time	Temp (°C)		Cloud (Oktas)		Wind (Beaufort scale)		Precipitation
			Start	End	Start	End	Start	End	
24/03/24	06:15	09:15	6	10	3	4	2	4	None
12/04/24	06:10	09:30	9.5	15	5	6	1	3	None
26/04/24	05:40	09:30	1	15	1	3	0	1	None
20/05/24	04:45	09:00	9	15	8	6	1	3	None
06/06/24	18:45	22:30	15	12	3	2	0	1	None
26/06/24	04:39	09:05	13	20	0	2	0	1	None

- 3.2 A total of 49 species were recorded on or adjacent to the survey area during the surveys. The full results of the breeding bird survey are presented at the end of this report in Table 9. The Breeding Bird Survey Plan (CSA/6755/113) shows a consolidated map from the six survey visits,

highlighting suspected territories for priority species and other notable sightings.

- 3.3 Of these, 35 species were recorded to have a breeding status of either 'confirmed', 'probable' or 'possible' and are thus considered as breeding species on account of the behaviour observed or presence of suitable breeding habitat. The remaining 14 species were either recorded flying over the Site only, or there is no suitable breeding habitat to support these species.
- 3.4 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
Bullfinch	Amber	•		Possible
Corn bunting	Red	•		Probable
Dunnock	Amber	•		Probable
Fieldfare	Red		•*	Non-breeding
Greenfinch	Red			Probable
Grey partridge	Red	•		Probable
House sparrow	Red	•		Possible
Lesser black-backed gull	Amber			Non-breeding
Linnet	Red	•		Probable
Meadow pipit	Amber			Non-breeding
Peregrine falcon			•	Non-breeding
Red kite			•	Probable (off-site)
Reed bunting	Amber	•		Probable
Rook	Amber			Non-breeding
Skylark	Red	•		Probable
Song thrush	Amber	•		Probable
Sparrowhawk	Amber			Non-breeding
Starling	Red	•		Non-breeding
Stock dove	Amber			Possible
Swift	Red			Non-breeding
Whitethroat	Amber			Probable
Willow warbler	Amber			Probable
Woodpigeon	Amber			Probable
Wren	Amber			Probable
Yellowhammer	Red	•		Probable
Yellow wagtail	Red	•		Probable

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, 2006

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

- 3.5 Two possible pairs recorded in the northern half of Field F1 on the first survey visit; however, this species was not recorded on any of the five subsequent survey visits.

Raptors

Red kite

- 3.6 This species was not found to be breeding within the Site. However, a possible nest site is located off-site, more than 400m north-west of the Site.

Passerines

- 3.7 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: bullfinch *Pyrrhula pyrrhula*; 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*; rook *Corvus fugilegus*; 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*.
- 3.8 Of particular interest is eight skylark breeding territories identified across the on-site three fields; at least two corn bunting breeding pairs/territories recorded in the northern half of F1 and along H2; and at least five yellowhammer breeding pairs/territories around the margins of F2. The majority of other passerine breeding territories are associated with hedgerows and the off-site woodland to the south-east.

Evaluation

- 3.9 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 value.

Wintering Birds

- 3.10 The full results of the wintering bird survey 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/6755/106/B) 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	12:30	16:15	7.5	3.0	1/8 – 4/8	0	0-1	Excellent
20/12/23	09:45	13:15	8.0	9.5	7/8 – 7/8	0	4-5 to 3-4	Excellent
19/01/24	09:00	12:30	-2.0	2.5	0/8	0	1	Excellent
15/02/24	09:30	12:30	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	Sunset	Temp (°C)		Cloud (Oktas)	Rain (mm)	Wind (Beaufort scale)	Fog/ Mist
				Start	End				
19/12/23	18:55	20:45	15:50	6.0	4.0	1/8 – 4/8	0	3	None
18/01/24	19:45	21:50	16:23	-1.7	-3.0	2/8 – 0/8	0	2-1	None
14/02/24	19:55	22:00	17:11	12.0	12.0	8/8	0	2	None

- 3.11 A total of 37 species were recorded during the winter bird surveys. Of these, 34 species were considered to be directly associated with the habitats within and/or immediately adjacent to the Site.
- 3.12 A total of 22 priority species were recorded within the Site and its surroundings, 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
Common gull		•			
Duncock		•	•		
Fieldfare	•			•*	
Golden plover					•
Greenfinch	•				
Grey partridge	•		•		
Herring gull	•		•		
Kestrel		•			
Lapwing	•		•		
Linnet	•		•		
Meadow pipit		•			
Mistle thrush	•				
Red kite				•	
Redwing		•		•*	
Rook		•			
Skylark	•		•		
Snipe		•			
Song thrush		•	•		
Sparrowhawk		•			
Woodpigeon		•			
Wren		•			
Yellowhammer	•		•		

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, 2006
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.

Farmland Waders

- 3.13 Three priority species of farmland wader were recorded during the wintering bird surveys: golden plover, lapwing and snipe *Gallinago gallinago*.

Golden Plover

- 3.14 During the November 2023 survey visit, a flock of 12 golden plover was recorded within an area of arable land, c. 100m to the north of (and outwith) the Site. The birds appeared to be engaging in feeding and loafing/roosting behaviours.
- 3.15 No further observations of this species were recorded during the remaining diurnal winter bird survey visits; however, golden plover were encountered during the nocturnal surveys in December 2023 and January 2024. During the December nocturnal survey visit, a flock of 10 birds was observed feeding, roosting and loafing at the same location as the birds encountered in November 2023. In parallel with this observation, a flock of six birds was also recorded feeding in arable land c. 175m to the north-west (and outwith) of the Site. During the January 2024 nocturnal survey, golden plover were heard calling whilst in flight over the Site; however, no birds were recorded within any farmland habitats.

Lapwing

- 3.16 A single bird was recorded commuting over the Site during the January 2024 survey visit. The bird did not appear to be associated directly with the Site and no further observations of this species were recorded.

Snipe

- 3.17 Two birds were 'flushed' from an area of recently tilled arable land in the centre of the Site during the November 2023 diurnal wintering bird survey visit. However, no further observations of this species were recorded during the remainder of the winter bird surveys.

Grey partridge

- 3.18 Two birds were recorded in arable land in the centre of the Site during the nocturnal and diurnal surveys in February 2024. No further observations of this species were recorded in any of the other survey visits.

Raptors

- 3.19 Three priority raptor species were recorded during the winter bird surveys: kestrel *Falco tinnunculus*; red kite *Milvus milvus*; and sparrowhawk *Accipiter nisus*.

Kestrel

- 3.20 Two birds were observed in flight (commuting) heading south over the Site's northern boundary in February 2024; however, no further recordings of this species were made during any of the other survey visits.

Red kite

- 3.21 Red kite were observed on all surveys, with up to two birds observed on each of the diurnal wintering bird survey visits. All observations related to birds in flight, either commuting through or foraging over the Site and its surroundings. The habitats within the Site and its immediate surroundings were considered to offer limited roosting opportunities for this species, (given the general absence of mature woodland), and no evidence of any communal roost sites was recorded during the winter bird surveys.

Sparrowhawk

- 3.22 A single bird was observed in flight (commuting/foraging) through farmland adjacent to (but outside of) the Site's north-western boundary in February 2024; however, no further recordings of this species were made during any of the other survey visits.

Gulls

Common gull

- 3.23 Three birds were observed flying (foraging) over farmland outside of the Site's north-western boundary in February 2023. No further observations of this species were recorded during any of the other survey visits.

Herring gull

- 3.24 A single bird was observed in flight (foraging) over farmland just outside of the Site's south-western boundary. No further observations of this species were recorded during any of the other survey visits.

Passerines

- 3.25 The Site and its surroundings were found to support a range of wintering passerines that are considered to be typical of farmland and urban fringe habitats. This included the following priority species: dunnoek; fieldfare; greenfinch; linnet; meadow pipit; mistle thrush *Turdus viscivorus*; redwing *Turdus iliacus*; rook; skylark; song thrush; wren and yellowhammer.
- 3.26 The most notable passerine sighting related to a flock of approximately 20 skylark that were recorded within an area of arable land adjacent to

the Site's northern boundary. The remaining passerine species were primarily associated with the hedgerow and scrub habitats along the Site's field boundaries, and were considered to be present at relatively low densities.

Evaluation

- 3.27 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.

4.0 Summary

- 4.1 A total of 49 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 34 bird species were recorded within the Site and its surroundings during the winter bird surveys. Of these, 22 species were considered to be of nature conservation importance. 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 <i>Turdus merula</i>	BoCC Green	Present	-	Present	Present	Present	Present	Probable	
Blackcap <i>Sylvia atricapilla</i>	BoCC Green	Present	Present	Present	Present	-	Present	Probable	
Blue tit <i>Cyanistes caeruleus</i>	BoCC Green	Present	Present	Present	Present	-	Present	Confirmed	
Bullfinch <i>Pyrrhula pyrrhula</i>	BoCC Amber S41	Present	-	-	-	-	Present	Possible	One and two birds recorded on Visits 1 and 6, respectively; however, insufficient information to determine the presence of any likely breeding pairs/territories.
Buzzard <i>Buteo buteo</i>	BoCC Green	-	Present	Present	Present	-	-	Probable	Pair of birds calling/displaying from scrub to the west of site. One bird observed carrying nesting material. Probable nest site.
Canada goose <i>Branta canadensis</i>	-	-	-	-	-	Present	-	Non-breeding	
Carrion crow <i>Corvus corone</i>	BoCC Green	Present	Present	Present	Present	Present	-	Confirmed	
Chaffinch <i>Fringilla coelebs</i>	BoCC Green	Present	-	-	-	-	-	Possible	
Chiffchaff <i>Phylloscopus collybita</i>	BoCC Green	Present	Present	Present	Present	-	Present	Probable	
Collared dove <i>Streptopelia decaocto</i>	BoCC Green	-	Present	-	-	-	-	Possible	
Corn bunting <i>Emberiza calandra</i>	BoCC Red S41	-	Present	Present	Present	Present	Present	Probable	At least two breeding pairs/territories within the red-line boundary, plus a further three breeding pairs/territories in adjacent farmland

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
									(outside of the red-line boundary) (see species mapping for further details).
Dunnock <i>Prunella modularis</i>	BoCC Amber S41	Present.	Present	Present	Present	Present	Present	Probable	At least six breeding territories/pairs recorded within the survey area (primarily within the hedgerows/scrub located on the site's red-line boundaries - see species mapping for locations).
Feral pigeon <i>Columba livia</i>	BoCC Green	-	Present	-	-	-	Present	Non-breeding	
Fieldfare <i>Turdus pilaris</i>	BoCC Red	Present	-	-	-	-	-	Non-breeding	14 birds recorded 'on passage' during Visit 1.
Goldfinch <i>Carduelis carduelis</i>	BoCC Green	Present	Present	Present	Present	Present	Present	Probable	
Great spotted woodpecker <i>Dendrocopos major</i>	BoCC Green	Present	-	-	-	-	-	Possible	
Great tit <i>Parus major</i>	BoCC Green	Present	Present	Present	Present	-	Present	Confirmed	
Green woodpecker <i>Picus viridis</i>	BoCC Green	-	Present	-	-	-	-	Non-breeding	
Greenfinch <i>Chloris chloris</i>	BoCC Red	Present	Present	Present	Present	Present	Present	Probable	At least three breeding territories/pairs recorded within the survey area (primarily within the hedgerows/scrub located on the site's south-eastern red-line boundaries - see species mapping for locations).
Grey heron <i>Ardea cinerea</i>	BoCC Green	-	Present	-	-	-	-	Non-breeding	

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
Grey partridge <i>Perdix perdix</i>	BoCC Red S41	Present	-	-	-	-	-	Probable	Two possible pairs of birds recorded on Visit 1 in the northern half of the survey area; however, this species was not recorded on any of the five subsequent survey visits.
House sparrow <i>Passer domesticus</i>	BoCC Red S41	Present	-	Present	-	-	-	Possible	Single birds recorded adjacent to (but outside of) the northern red-line boundary on Visits 1 and 3. Small colony of nesting birds may have been present at the property to the north of the survey area.
Jay <i>Garrulus glandarius</i>	BoCC Green	-	Present	-	-	-	-	Non-breeding	
Lesser black-backed gull <i>Larus fuscus</i>	BoCC Amber	Present	-	-	-	-	-	Non-breeding	Fly-over only. Not considered to have bred within the survey area.
Lesser whitethroat <i>Curruca curruca</i>	BoCC Green	-	-	Present	-	Present	Present	Possible	
Linnet <i>Linaria cannabina</i>	BoCC Red S41	Present	Present	Present	Present	-	-	Probable	Small numbers of breeding birds at two locations within the survey area (see species mapping for locations). Additional breeding pairs adjacent to (but outside of) the site's red-line boundaries cannot be discounted.
Long-tailed tit <i>Aegithalos caudatus</i>	BoCC Green	-	Present	Present	-	-	-	Probable	
Magpie <i>Pica pica</i>	BoCC Green	Present	Present	Present	Present	-	Present	Probable	
Meadow pipit <i>Anthus pratensis</i>	BoCC Amber	Present	Present	-	-	-	-	Non-breeding	Not considered to have bred within the survey area. Sightings considered to relate to birds 'on passage'.

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
Pied wagtail <i>Motacilla alba</i>	BoCC Green	-	-	-	-	-	Present	Possible	
Raven <i>Corvus corax</i>	BoCC Green	-	Present	-	Present	-	-	Non-breeding	
Red kite <i>Milvus milvus</i>	Sch1	Present	Present	Present	Present	-	Present	Non-breeding (on site) / Probable(of f-site)	Not considered to have bred within the red-line boundary or its immediate surroundings. However, a newly-fledged juvenile bird was recorded calling persistently from a stand of mature trees more than 400m to the north-west of the Site on 26/06/24 (Visit 6) and 28/06/24. Two adult birds were also in attendance. These recordings appear to be indicative of a possible nest site in this location.
Red-legged Partridge <i>Alectoris rufa</i>	-	-	-	-	Present	-	-	Possible	
Reed bunting <i>Emberiza schoeniclus</i>	BoCC Amber S41	-	-	Present	-	Present	Present	Probable	At least one breeding territory/pair recorded within a hedgerow located on the western red-line boundary (see species mapping for location).
Robin <i>Erithacus rubecula</i>	BoCC Green	Present	Present	Present	Present	Present	Present	Probable	
Rook <i>Corvus frugilegus</i>	BoCC Amber	-	Present	Present	-	-	-	Non-breeding	Fly-over/foraging birds only. No rookeries identified within the survey area.
Skylark <i>Alauda arvensis</i>	BoCC Red S41	Present	Present	Present	Present	Present	Present	Probable	Approximately eight breeding pairs within the red-line boundary (see species mapping for likely distribution of breeding pairs).
Song thrush <i>Turdus philomelos</i>	BoCC Amber S41	Present	Present	Present	Present	Present	Present	Probable	At least two breeding territories/pairs recorded (see species mapping for location). A third territory within the west of the survey area

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
									cannot be completely discounted, but seems unlikely given that the distance between the registrations exceeds 300 metres.
Sparrowhawk <i>Accipiter nisus</i>	BoCC Amber	-	-	-	-	Present	-	Non-breeding	Fly-over only. Not considered to have bred within the survey area.
Starling <i>Sturnus vulgaris</i>	BoCC Red S41	-	Present	-	-	Present	-	Non-breeding	Not considered to have bred within the survey area; however, post-breeding flocks recorded during Visit 5. Starling likely breeding in wider area (e.g., buildings within Buntingford).
Stock dove <i>Columba oenas</i>	BoCC Amber	-	-	-	-	-	Present	Possible	Two birds took flight from arable land to the north of the red-line boundary - unlikely to have bred on site.
Swallow <i>Hirundo rustica</i>	BoCC Green	-	Present	Present	Present	-	-	Non-breeding	
Swift <i>Apus apus</i>	BoCC Red	-	-	-	-	Present	-	Non-breeding	Fly-over only. Not considered to have bred within the survey area.
Whitethroat <i>Curruca communis</i>	BoCC Amber	-	-	Present	Present	Present	Present	Probable	At least three breeding territories/pairs recorded within the survey area (primarily within the hedgerows located on the site's red-line boundaries - see species mapping for locations).
Willow warbler <i>Phylloscopus trochilus</i>	BoCC Amber	-	Present	Present	Present	Present	-	Probable	At least one breeding territory/pair recorded within scrub to the east of the red-line boundary (see species mapping for location).
Woodpigeon <i>Columba palumbus</i>	BoCC Amber	Present	Present	Present	Present	Present	Present	Probable	At least six breeding territories/pairs recorded within the survey area (primarily within the hedgerows/scrub located on the site's red-line boundaries - see species mapping for locations).
Wren	BoCC Amber	Present	Present	Present	Present	Present	Present	Probable	At least eight breeding territories/pairs recorded within the survey area (primarily

Species	Status	24/03/24	12/04/24	26/04/24	20/05/24	06/06/24	26/06/24	Breeding category	Comments
Troglodytes troglodytes									within the hedgerows/scrub located on the site's red-line boundaries - see species mapping for locations).
Yellow wagtail Motacilla flava	BoCC Red S41	-	-	Present	Present	Present	Present	Probable	At least one territory within the red-line boundary, plus a further three breeding pairs/territories in adjacent farmland (outside of the red-line boundary) (see species mapping for further details).
Yellowhammer Emberiza citrinella	BoCC Red S41	Present	Present	Present	Present	Present	Present	Probable	At least five breeding territories/pairs recorded within the survey area (primarily within the hedgerows located on the site's red-line boundaries - see species mapping for locations).

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	17/01/24	14/02/24	
Blackbird <i>Turdus merula</i>	BoCC Green	Present	Present	Present	Present	-	-	-	Small numbers of birds (estimated peak count of eight individuals in January 2024) primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings
Blue tit <i>Cyanistes caeruleus</i>	BoCC Green	Present	Present	Present	Present	-	-	-	Small numbers of birds (estimated peak count of four individuals in January and February 2024) primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings
Buzzard <i>Buteo buteo</i>	BoCC Green	Present	Present	-	Present	-	Present	-	Up to three birds recorded commuting/foraging over the Site and its surroundings in November and December 2023. A single bird was also recorded roosting in scrub on the Site's eastern boundary in January 2024.
Carriion crow <i>Corvus corone</i>	BoCC Green	Present	Present	Present	Present	-	-	-	Recorded throughout the Site and its surroundings in relatively small numbers on all survey visits. An estimated peak count of 17 individuals in November 2023.
Chaffinch <i>Fringilla coelebs</i>	BoCC Green	-	1	-	-	-	-	-	A single bird commuting over the Site in December 2023.
Common gull <i>Larus canus</i>	BoCC Amber	-	-	-	Present	-	-	-	Three birds flying (foraging) over farmland outside of the Site's north-western boundary in February 2023
Dunnock <i>Prunella modularis</i>	BoCC Amber S41	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 five birds in January 2024.
Fieldfare <i>Turdus pilaris</i>	Sch1 BoCC Red	Present	Present	Present	Present	-	-	Present	Single birds recorded on most day-time survey visits, and primarily associated with the hedgerow, scrub and woodland habitats within the Site and its surroundings. In February 2024, a mixed flock of approximately 90 Fieldfares and Redwings was flying (commuting) through the Site to land on trees in nearby farmland.

Species	Status	Diurnal Surveys				Nocturnal Surveys			Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	17/01/24	14/02/24	
									A count of five birds was also recorded from arable land outside of the north-western Site boundary during the February 2024 nocturnal survey visit.
Golden plover <i>Pluvialis apricaria</i>	BoCC Green	Present	Present	-	-	Present	Present (fly-over only)	-	Counts of 12 birds (diurnal) and 16 birds (nocturnal) recorded in adjacent arable farmland to the north and north-west of the Site boundary in November 2023 and December 2024, respectively. The birds were engaged in a combination of feeding, roosting and loafing behaviours. In addition, birds were also heard calling (but not seen) whilst in flight over the Site during the January 2024 nocturnal survey.
Goldfinch <i>Carduelis carduelis</i>	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 peak count of 13 birds in November 2023.
Great tit <i>Parus major</i>	BoCC Green	Present	Present	Present	Present	-	-	-	Low numbers of birds primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. An estimated peak count of seven birds recorded in February 2024.
Green woodpecker <i>Picus viridis</i>	BoCC Green	Present	-	-	-	-	-	-	A single bird recorded within an area of scrub and mature trees adjacent to the Site's eastern boundary in November 2023.
Greenfinch <i>Chloris chloris</i>	BoCC Red	-	Present	-	Present	-	-	-	A Single bird was recorded in flight (commuting) over the Site in December 2024. A calling bird was also recorded in scrub adjacent to the Site's south-eastern boundary in February 2024.
Grey partridge <i>Perdix perdix</i>	BoCC Red S41	-	-	-	Present	-	-	Present	Two birds were recorded in arable land in the centre of the Site during the nocturnal and diurnal surveys in February 2024.

Species	Status	Diurnal Surveys				Nocturnal Surveys			Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	17/01/24	14/02/24	
Herring gull <i>Larus argentatus</i>	BoCC Red S41	-	-	-	Present	-	-	-	A single bird flying (foraging) over farmland just outside of the Site's south-western boundary.
Jackdaw <i>Corvus monedula</i>	BoCC Green	-	Present	-	Present (fly-over only)	-	-	-	Small flocks of birds recorded flying (commuting) over the Site and its surroundings in December 2023 (an estimated count of 12 individuals).
Kestrel <i>Falco tinnunculus</i>	BoCC Amber	-	-	-	Present	-	-	-	Two birds flying (commuting) over the Site's northern boundary in February 2024.
Lapwing <i>Vanellus vanellus</i>	BoCC Red S41	-	-	Present	-	-	-	-	A single bird flying (commuting) over the Site in January 2024.
Lesser black-backed gull <i>Larus fuscus</i>	BoCC Amber	Present (fly-over only)	-	-	-	-	-	-	A single bird flying (commuting) over the Site in November 2023.
Linnet <i>Linaria cannabina</i>	BoCC Red S41	Present	-	-	-	-	-	-	A single bird flying (commuting) through the Site and calling in November 2023.
Long-tailed tit <i>Aegithalos caudatus</i>	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 peak count of eight birds in December 2023.
Magpie <i>Pica pica</i>	BoCC Green	-	Present	-	Present	-	-	-	A count of five birds recorded in February 2024.
Meadow pipit <i>Anthus pratensis</i>	BoCC Amber	Present	Present	-	Present	-	-	-	Two birds recorded flying through the Site in November 2023, with two birds recorded within the Site's arable fields in December 2023. A single bird was recorded flying (commuting) over arable land adjacent to (but outside of) the Site's north-western boundary in February 2024.
Mistle thrush <i>Turdus viscivorus</i>	BoCC Red	-	-	Present	-	-	-	-	A single bird recorded within scrub along the Site's eastern boundary 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	17/01/24	14/02/24	
Pied wagtail <i>Motacilla alba</i>	BoCC Green	Present (fly-over only)	-	-	-	-	-	-	A single bird recorded in flight (commuting) over the Site in November 2023.
Red kite <i>Milvus milvus</i>	BoCC Green Sch1	Present	Present	Present	Present	-	-	-	Up to two birds recorded in flight (commuting/foraging) over the Site and its surroundings on all survey visits.
Redwing <i>Turdus iliacus</i>	BoCC Amber Sch1	Present	Present	Present	Present	-	-	-	On the majority of visits, counts of up to 11 birds were primarily associated with the hedgerows, scrub and woodland habitats within the Site and its surroundings. In February 2024, a mixed flock of approximately 90 Redwings and Fieldfares was flying (commuting) through the Site to land on trees in nearby farmland.
Robin <i>Erithacus rubecula</i>	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 six birds in February 2024.
Rook <i>Corvus frugilegus</i>	BoCC Amber	-	-	-	Present	-	-	-	A flock of five birds foraging in an arable field to the in the northern part of the Site.
Skylark <i>Alda arvensis</i>	BoCC Red S41	Present	-	Present	Present	-	-	-	Counts of 20 birds and two birds within an area of arable land in the north of the Site in November 2023 and January 2024, respectively. In February 2024, at least 15 birds engaged in 'song-flight' over the Site and its surroundings (with additional birds calling) which is likely to be indicative of the early stages of breeding activity.
Snipe <i>Gallinago gallinago</i>	BoCC Amber	Present	-	-	-	-	-	-	Two birds 'flushed' from an area of arable (ploughed) land in the centre of the Site in November 2023.
Song thrush <i>Turdus philomelos</i>	BoCC Amber S41	-	Present	-	Present	-	-	-	Counts of two and three birds associated with the hedgerows, scrub and woodland within the Site and its surroundings in December 2023 and February 2024, respectively.

Species	Status	Diurnal Surveys				Nocturnal Surveys			Comments
		28/11/23	20/12/23	18/01/24	15/02/24	19/12/23	17/01/24	14/02/24	
Sparrowhawk <i>Accipiter nisus</i>	BoCC Amber	-	-	-	Present	-	-	-	A single bird flying (commuting/foraging) through farmland adjacent to (but outside of) the Site's north-western boundary.
Stock dove <i>Columba oenas</i>	BoCC Amber	-	-	-	Present (fly-over only)	-	-	-	Two birds flying over (but not directly associated with) the Site.
Woodpigeon <i>Columba palumbus</i>	BoCC Amber	Present	Present	-	Present	-	-	-	Estimated counts of 17, 32 and 12 birds from the Site and its surroundings in November 2023, December 2023 and February 2024, respectively.
Wren <i>Troglodytes troglodytes</i>	BoCC Amber	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 birds in February 2024.
Yellowhammer <i>Emberiza citrinella</i>	BoCC Red S41	Present	-	-	-	-	-	-	A single bird recorded within a section of hedgerow in the centre of the Site in November 2023.

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)



Small numbers of golden plover were recorded within this area of arable land, as follows:

- A flock of at least 12 feeding/roosting/loafing birds during day-time/dusk surveys on 28 November 2023
- A flock of at least 10 feeding/roosting/loafing birds during night-time surveys on 19 December 2023.

A day-time flock of approximately 20 skylark was 'flushed' from this area of arable land on 28 November 2023.

A night-time feeding flock of at least six golden plover was recorded feeding within this area of arable land on 19 November 2023.

Two snipe were 'flushed' from this area of arable land during day-time surveys on 28 November 2023.

Two grey partridge were recorded during the nocturnal and diurnal surveys in February 2024.

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
LI - Linnet
M. - Mistle thrush
P. Grey partridge
S. - Skylark
Y. - Yellowhammer

BoCC5 - Amber Listed Birds

D. - Dunnock
MP - Meadow pipit
RE - Redwing
SN - Snipe
ST - Song thrush
WP - Woodpigeon
WR - Wren

BoCC5 - Green Listed Birds

GP - Golden plover

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

0 125 250 m



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Appendix K

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 at the Site on 26 April 2024 by Rhodri Gruffydd. The location of these refugia is shown on the Reptile Survey Plan (CSA/6755/112).
- 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 Site 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.

Limitations

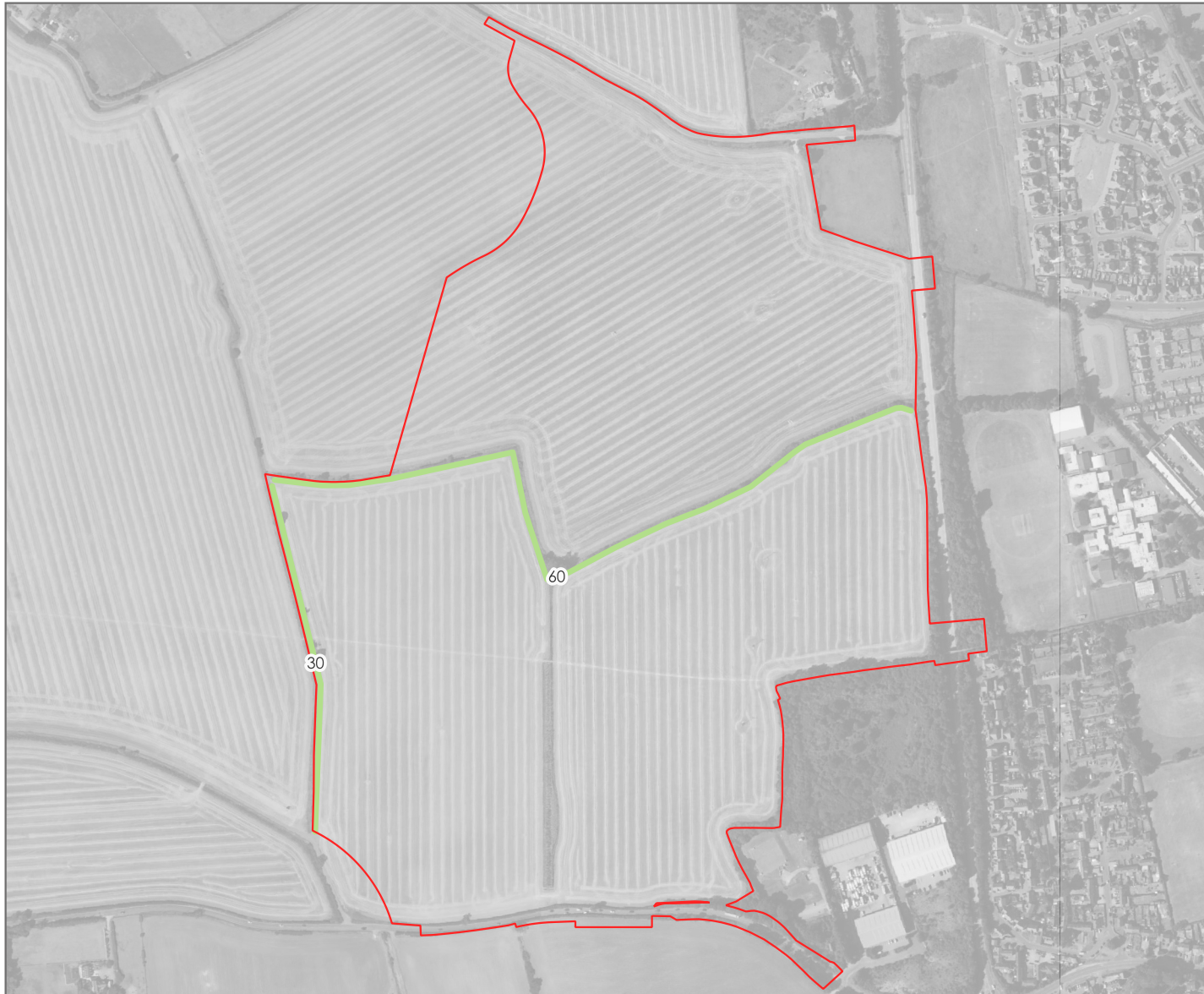
- 3.0 There were no specific limitations to the reptile surveys, which were conducted at an optimum time of year and in good conditions.

4.0 Results

- 4.1 No reptiles were found during the surveys. Full weather conditions and results are provided in Table 1 below.
- 4.2 It should be noted that although the Site is c. 50.12ha, suitable reptile habitat, comprising grassland field margins, account for c. 0.71ha within the Site. The number of artificial refugia were used to provide a survey refugia density of 127 refugia per ha.

5.0 Conclusions

- 5.1 Reptiles are deemed likely absent from the Site and are not considered a constraint to clearing the Site.



- Site boundary
- Reptile mat locations (and number)



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Project	Land North of A507 and West of Buntingford	Date	September 2024	Drawing No.	CSA/6755/112
Drawing Title	Reptile Survey Plan	Scale	Refer to scale	Rev	-
Client	Hallam Land Management Limited	Drawn	RG	Checked	AC

Job Name & No.	6755 Land North 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.																	Other Notes
Set-up Surveyor/ Project Manager	RG/AC						Precipitation: [Type] No Rain / Light / Moderate / Heavy [Duration] Intermittent / Continuous																	
Set-Up Date	26/04/2024		Total Number of Refugia			90																		
Date	Start/End Times	Surveyor	Weather				Area/ Field No.	Slow worm <i>Anguis fragilis</i>					Common lizard <i>Zootoca vivipara</i>					Grass snake <i>Natrix helvetica</i>						
			Temp (°C)	Cloud Cover (Okta; n/8)	Wind (Beaufort Scale)	Rain (Type & Duration)		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		
Survey 1																								
10/05/2024	08:15/09:15	RG	15-16	2	1	None		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Survey 2																								
14/05/2024	19:30/20:15	RG	13	7	3	None		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Survey 3																								
17/05/2024	09:45/10:30	RG	16-17	3	1	None		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Survey 4																								
20/05/2024	09:45/10:15	RG	13-14	4-1	3-1	None		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	little windy on west side, sunny spells	
Survey 5																								
24/05/2024	11:30/12:00	RG	15-16	5	3	None		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	voles under mats	
Survey 6																								
29/05/2024	08:45/09:30	RG	14	6	3-2	None		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	damp - overnight rain	
Survey 7																								
03/06/2024	15:00/16:00	DW	18	6	1	None		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
								Total Adult			Total Juvenile		Total Adult			Total Juvenile		Total Adult			Total Juvenile			
								0			0		0			0		0			0			

Appendix L

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.

Licensing

- 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 a 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 Due to the limited suitability of habitats on-site, which likely do not represent an important terrestrial habitat resource for great crested newt, only ponds within the 250m core dispersal range were assessed, along with Pond P11.

Environmental DNA (eDNA) Sampling

2.4 Environmental DNA (eDNA) sampling was used to determine the presence/likely absence of great crested newts from ponds P7, P8 and P11. 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 ponds P7-P11 are all located in the same off-site woodland copse and scored 'below average' or 'poor' on the HSI assessment, a sample of ponds at either end of the woodland were selected for eDNA sampling. Although P11 is outside the 250m radius from the Site boundary, it is connected by suitable terrestrial habitat to the other ponds and forms part of the same pond network, it is therefore included. Ponds P1 and P2 are small and in close proximity to one another. Therefore, these two ponds were combined in a single sample.

- 2.6 Water samples were collected from ponds P7, P8 and P11 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. Access to Pond P1 was requested on multiple occasions. However, no response was received and, therefore, this pond was not surveyed.

3.0 Results

Desk Study

- 3.1 The desktop search for ponds and subsequent site visits identified 10 water bodies occurring within 500m of the Site. These ponds are identified on the Pond Plan (CSA/6755/100) in Appendix C. Three ponds are within the core 250m dispersal range with no barriers between these ponds and the Site.

Habitat Suitability Index (HSI) Assessment

- 3.2 Ponds P7-10 were confirmed as having 'poor' habitat suitability, with P11 'below average'. Full results of the surveys are included in Table 1 below.

Environmental DNA (eDNA) Sampling

- 3.3 The eDNA test returned a negative result, indicating that no great crested newt DNA was found in Ponds P7, P8 or P11. The samples collected were in 'good'/'low sediment' condition and passed for inhibition and degradation controls. See full eDNA results from ADAS below.

4.0 Conclusions

- 4.1 It can be concluded that great crested newt are likely absent from Ponds P7, P8 and P11.
- 4.2 Considering that P1 is within 10m 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.



- Site boundary
- 500m pond buffer
- 250m pond buffer
- Pond (with reference number)



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Project	Land North of A507 and West of Buntingford	Date	May 2024	Drawing No.	CSA/6755/100
Drawing Title	Pond Plan	Scale	Refer to scale	Rev	C
Client	Hallam Land Management Limited	Drawn	RB	Checked	AC

Table 1. Habitat Suitability Index Assessment

Habitat Suitability Factors		Pond Number and Grid Reference				
		7	8	9	10	11
		TL 35265 29219	TL 35255 29220	TL 35219 29216	TL 35233 29204	TL 35190 29202
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		0.40	0.40	0.43	0.50	0.54
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.

Client: Rhodri Gruffydd,
CSA Environmental



ADAS
Spring Lodge
172 Chester Road
Helsby
WA6 0AR

Tel: 01159 229249
Email: Helen.Rees@adas.co.uk

www.adas.uk

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

eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.

** If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

[†] Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

[§] No degradation is expected within time frame of kit preparation, sample collection and analysis.

[#] Additional positive controls (10⁻¹, 10⁻², 10⁻³ ng/μL) are also routinely run, results not shown here.

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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

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Appendix 1: Interpretation of results

Sample Condition

Upon sample receipt we score your samples according to quality: good, low sediment, medium sediment, high sediment, white precipitate, and presence of algae.

There are three reasons as to why sediment should be avoided:

1. It is possible for DNA to persist within the sediment for longer than it would if it was floating in the water which could lead to a false positive result i.e. in this case GCN not recently present but present a long time ago
2. In some cases sediment can cause inhibition of the PCR analysis used to detect GCN eDNA within samples which could lead to an indeterminate result.
3. In some cases sediment can interfere with the DNA extraction procedure resulting in poor recovery of the eDNA which in turn can lead to an indeterminate result.

Algae can make the DNA extraction more difficult to perform so if it can be avoided then this is helpful.

Sometimes samples contain a white precipitate which we have found makes the recovery of eDNA very difficult. This precipitate can be present in such high amounts that it interferes with the eDNA extraction process meaning that we cannot recover the degradation control (nor most likely the eDNA itself) at sufficient levels for the control to be within the acceptable limits for the assay, therefore we have to classify these type of samples as indeterminate.

What do my results mean?

A positive result means that great crested newts are present in the water or have been present in the water in the recent past (eDNA degrades over around 7-21 days).

A negative result means that DNA from the great crested newt has not been detected in your sample.

On occasion an inconclusive result will be issued. This occurs where the DNA from the great crested newt has not been detected but the controls have indicated that either: the sample has been degraded and/or the eDNA was not fully extracted (poor recovery); or the PCR inhibited in some way. This may be due to the water chemistry or may be due to the presence of high levels of sediment in samples which can interfere with the DNA extraction process. A re-test could be performed but a fresh sample would need to be obtained. We have successfully performed re-tests on samples which have had high sediment content on the first collection and low sediment content (through improved sample collection) on the re-test. If water chemistry was the cause of the indeterminate then a re-test would most likely also return an inconclusive result.

The results will be recorded as indeterminate if the GCN result is negative and the degradation result is recorded as:

1. evidence of decay - meaning that the degradation control was outside of accepted limits
2. evidence of degradation or residual inhibition - meaning that the degradation control was outside of accepted limits but that this could have been due to inhibitors not being removed sufficiently by the dilution of inhibited samples (according to the technical advice note)



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