

Ecological Impact Assessment

October 2025

**Land off Echo Hill,
Royston**

Prepared by
CSA Environmental

On behalf of
Gladman Developments Ltd

Report No: CSA/7494/02

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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CONTENTS	Page
Executive Summary	1
1.0 Introduction	2
2.0 Legislation, Planning Policy & Standing Advice	4
Legislation	4
National Planning Policy	4
Local Planning Policy	4
Standing Advice	4
3.0 Methods	5
Desk Study	5
Field Surveys	6
Limitations	7
Evaluation and Assessment	7
4.0 Baseline Ecological Conditions	8
Nature Conservation Designations	8
Habitats and Flora	10
Fauna	14
Summary of Ecological Features	25
5.0 Assessment of Effects	26
The Proposed Development	26
Ecological Mitigation	26
Nature Conservation Designations	27
Habitats and Flora	29
Fauna	30
Summary of Effects	33
Enhancement	35
Monitoring	36
6.0 Conclusions	37
7.0 References	38
Appendices	
Appendix A: Habitats Plan	
Appendix B: Legislation, Planning Policy and Standing Advice	

Appendix C: Desk Study Information

Appendix D: Photographs

Appendix E: Habitats and Flora Species List

Appendix F: Evaluation and Assessment Methods

Appendix G: Hedgerows

Appendix H: Bats

Appendix I: Badgers

Appendix J: Birds

Appendix K: Reptiles

Appendix L: Invertebrates

EXECUTIVE SUMMARY

Outline planning consent is sought from North Hertfordshire Council for residential development at Land off Echo Hill, Royston. CSA Environmental was instructed by Gladman Developments Ltd to undertake an Ecological Impact Assessment (EclA) of the proposed development. To inform this assessment, a desktop study followed by a suite of targeted species and habitat surveys were undertaken.

No international statutory designations were identified within the search area. Mitigation measures in line with the Therfield Heath Mitigation Strategy have been set out for nearby Therfield Heath SSSI and LNR, comprising open space in excess of SANG standards, a monetary contribution to the management and stewardship of the SSSI and provision of new chalk grassland habitats (including horseshoe vetch) to encourage SSSI associated species such as the chalkhill blue butterfly. Safeguards during construction are also proposed in respect of the adjacent LWS.

The Site comprises two grassland fields, frequently reseeded with agricultural species, cut annually for hay. Wide field margins are present on the west and southern boundaries of the fields, supporting a more diverse assemblage of grassland flora. Native hedgerows are present on field boundaries which are largely retained alongside development excluding for access. Retained hedgerows will be subject to protection and enhancement measures. The development will facilitate restoration of chalk grassland swards, new thicket planting, SuDS features and a community orchard, increasing opportunities for a range of flora and fauna.

The Site supports bat population (foraging/dispersing), badger (no setts), birds and a small population of common lizard. Mitigation and safeguards have been set out herein for these species.

Ecological safeguards and mitigation, along with ecological enhancement measures should be secured at the detailed design stage via a suitably worded planning condition to ensure legal compliance and long-term nature conservation benefits.

1.0 INTRODUCTION

- 1.1 This report has been prepared by CSA Environmental on behalf of Gladman Developments Ltd. It sets out the findings of an Ecological Impact Assessment (EclA) of proposed development at Land off Echo Hill, Royston (hereafter 'the Site'). Residential development is proposed at the Site, for which planning permission will be sought.
- 1.2 The scope of this assessment has been determined with due 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. 8.90ha and is located around central grid reference TL 35378 39946, to the south of Royston. It consists of two neutral grassland fields bordered by native hedgerows and a single residential dwelling with an associated garden and driveway (see Habitats Plan in Appendix A).
- 1.4 An initial desk study and field survey, including a UK Habitat Classification survey were undertaken for the Site in February 2025 as part of a Preliminary Ecological Appraisal, the findings of which are presented herein. In addition, the following further survey work was undertaken between May and September 2025:
 - Botanical survey (June 2025)
 - Hedgerow survey (June 2025)
 - Bat surveys (May-September 2025)
 - Badger survey (June 2025)
 - Breeding bird surveys (May-July 2025)
 - Reptile surveys (June-July 2025)
 - Invertebrate survey (July 2025; September 2025)
- 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 North Herts 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/7494/03) 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 February 2025 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 (Zol).
- 3.4 Herts 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 20 February 2025 by Bethany Wilson ACIEEM, 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 To assist with classification of grassland habitats quadrat samples were taken during UKHab survey/dedicated botanical survey on 19 June 2025 by Jamie Woollam MCIEEM, FISC Level 5. Representative sample locations were identified within each grassland parcel, spread evenly to avoid habitat transitions or ecotones, following a 'W' shape through the parcel and a covering a minimum of three sampling locations. Both average (mean) species count per m² and peak species counts are reported for comparison.
- 3.13 Identification of habitat stands were made arbitrarily by the surveyor based upon obvious habitat structure, composition or other delineating feature (e.g. field or enclosure). Locations of sampling locations and photographs of samples are provided in Appendix E and D respectively.

3.14 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

3.15 Results of the UKHab survey are presented on the Habitats Plan in Appendix A. Appendix D provides photographs of the habitats at the Site and Appendix E 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

3.16 The following detailed field survey work was carried out between May and September 2025, with full methods and results provided in the relevant Appendices:

- Botanical Survey (Appendix A and E)
- Hedgerow Assessments (Appendix G)
- Bat Preliminary Roost Assessment - Structures (Appendix H)
- Bat Activity Surveys (Appendix H)
- Badger Survey (Appendix I)
- Bird Surveys (Appendix J)
- Reptile Surveys (Appendix K)
- Invertebrate Survey (Appendix L)

Limitations

3.17 There were no specific limitations to the desk study or field survey, which was conducted at an optimum time of year and in good conditions. Limitations to all other further surveys are addressed in the relevant appendices.

Evaluation and Assessment

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

4.0 BASELINE ECOLOGICAL CONDITIONS

Nature Conservation Designations

Statutory

- 4.1 There are no statutory designations covering any part of the Site.
- 4.2 No international statutory designations were identified within 10km of the Site. Two national statutory designations were identified within 3km of the Site. These are Therfield Heath SSSI (c. 60m north-west of the Site) and Holland Hall (Melbourn) Railway Cutting SSSI (c. 2.3km north-east of the Site). SSSI are administered and designated under national legislation, therefore they are considered as 'important' at the National level.
- 4.3 One local statutory designation was identified within 3km of the Site. This is Therfield Heath LNR (c. 60m west of the Site). LNR are administered at the county level, therefore they are considered as 'important' at the County level.
- 4.4 These statutory designations are described in Table 1 below.

Non-Statutory

- 4.5 Eight non-statutory designations were identified within 2km of the Site. The closest designation is Green Lane S. of Royston LWS, a green lane supporting calcareous grassland, which lies adjacent to the southern Site boundary. This and the remaining seven non-statutory designations are detailed in Table 1 below. Given these designations are based on county-wide criteria, they are 'important' at the 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		
Therfield Heath SSSI	c. 60m north-west of the Site	Therfield Heath comprises lowland calcareous grassland and lowland mixed deciduous woodland. It supports a wide range of butterflies including chalkhill blue <i>Lysandra coridon</i> .
Holland Hall (Melbourn) Railway Cutting SSSI	c. 2.3km north-east of the Site	This designation comprises lowland calcareous grassland in unfavourable, recovering condition.
Local Designations within 3km		
Therfield Heath LNR	c. 60m west of the Site	Therfield Heath LNR comprises a large colony of rare pasque flowers <i>Pulsatilla vulgaris</i> which bloom in early spring and calcareous grassland. This grassland comprises herbs including bastard toadflax <i>Comandra</i>

		<i>umbellata</i> , lesser meadow rue <i>Thalictrum minus</i> and spotted cat's-ear <i>Hypochaeris radicata</i> . Other typical chalk grassland flowers include horseshoe vetch <i>Hippocrepis comosa</i> , squinancywort <i>Cynanchica pyrenaica</i> , wild candytuft <i>Iberis amara</i> and five species of orchid. This Site supports various bird assemblages, butterfly and invertebrate species.
Non-Statutory Designations within 2km		
Green Lane S. of Royston LWS	Adjacent to southern boundary	A green Lane and adjoining field margins support calcareous grassland with a rich diversity of species including common knapweed <i>Centaurea nigra</i> , greater knapweed <i>C. scabiosa</i> , agrimony <i>Agrimonia eupatoria</i> , dwarf thistle <i>Cirsium acaule</i> , field scabious <i>Knautia arvensis</i> , common rest-harrow <i>Ononis repens</i> and knapweed broomrape <i>Orobanche elatior</i> .
Therfield Green Lane LWS	c. 0.6km south-west of the Site	A green lane supporting calcareous grassland and substantial hedges for part of its length. Species present include greater knapweed, common knapweed and devil's-bit Scabious <i>Succisa pratensis</i> .
Royston Chalk Pit LWS	c. 0.6km north-east of the Site	Chalk pit with a former lime kiln dominated by deciduous scrub, mainly beech <i>Fagus sylvatica</i> , sycamore <i>Acer pseudoplatanus</i> , ash <i>Fraxinus excelsior</i> and hybrid elm <i>Ulmus glabra x minor</i> . A chalky woodland flora is present, including wood false-brome <i>Brachypodium sylvaticum</i> , yellow archangel <i>Lamium galeobdolon</i> and sanicle <i>Sanicula europaea</i> . The designation overlaps a Herts and Middlesex Wildlife Trust (HMWT) managed nature reserve.
Shaftesbury Green LWS	c. 0.6km north-east of the Site	A remnant area of semi-improved calcareous grassland supporting upright brome <i>Bromus erecta</i> , agrimony, common knapweed, bird's-foot-trefoil <i>Lotus corniculatus</i> , quaking-grass <i>Briza media</i> and small scabious <i>Scabiosa columbaria</i> .
Therfield, South of Tumulus LWS	c. 1.1km west of the Site	Experimental chalk grassland plot supporting indicators of unimproved grassland. Species comprise agrimony, kidney vetch <i>Anthyllis vulneraria</i> , common knapweed, lady's bedstraw <i>Galium verum</i> , bird's-foot trefoil, wild marjoram <i>Origanum vulgare</i> , cowslip <i>Primula veris</i> and salad burnet <i>Sanguisorba minor</i> .
Fordhams Wood LWS	c. 1.7km west of the Site	Old lynchets with secondary woodland of sycamore, beech and ash, with a

		shrub layer predominantly of hawthorn <i>Crataegus monogyna</i> and elder <i>Sambucus nigra</i> .
Fox Covert Nature Reserve	c. 1.8km west of the Site	A small beech woodland set within the wider Therfield Heath landscape. This supports a variety of bird species and pasque flowers.

Abiotic Conditions

- 4.6 A review of Land Information System (LandIS) Soilscape Viewer mapping tool shows that the underlying soils of the Site are classified as Soilscape 3 “freely draining shallow lime-rich soils over chalk or limestone”. These soils provide suitable conditions for calcareous grassland and other lime-rich habitats.

Habitats and Flora

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

Irreplaceable Habitats

- 4.8 There is no ancient woodland, as shown on the Natural England Ancient Woodland Inventory, covering any part of the Site or immediately adjacent land. No trees on or adjacent to Site are listed on the Ancient Tree Inventory.

Notable Flora Records

- 4.9 The desk study identified 339 records of 85 notable plant species from within the search area. Those of potential relevance to the Site include calcareous grassland species, such as corn buttercup *Ranunculus arvensis*, pasqueflower *Pulsatilla vulgaris*, purple milk-vetch *Astragalus danicus*, basil thyme *Clinopodium acinos*, carline thistle *Carlina vulgaris*, chalk eyebright *Euphrasia pseudokernerii*, autumn gentian *Gentianella amarella*, common rock-rose *Helianthemum nummularium*, sainfoin *Onobrychis viciifolia*, spiny restharrow *Ononis spinosa* and hoary plantain *Plantago media*. The majority of these records are associated with Therfield Heath SSSI and are relevant given the proximity and calcareous soil type within the Site.
- 4.10 A single specimen of knapweed broomrape *Orobanche elatior* was recorded within the field margin of field F2, alongside other calcareous grassland indicator species. Broomrapes have scattered distributions across Britain, however knapweed broomrape is of ‘least concern’ within the Vascular Plant Red Data List (Stroh *et al.*, 2014).

Other neutral grassland (g3c)

- 4.11 The majority of the Site comprises grassland across two fields, which at the time of the survey in June 2025 was uniform in height (>50cm) and predominantly consisting of sown grass species.
- 4.12 The grasslands are understood to be managed with an annual hay-cut with no herbicide treatments. The most recent hay-cut took place in July 2025, with the majority of the sward reduced to c. 10cm in height. Field margins were left in F2 of c. 5-10m in width, these contained a higher abundance of calcareous indicator species.
- 4.13 Field F1 was last sown in 2023 with a fast-growing grass mix including agricultural cultivars of timothy *Phleum pratensis*, cock's-foot *Dactylis glomerata*, perennial rye grass *Lolium perenne*, meadow fescue *Schedonorus pratensis* and red fescue *Festuca rubra*. The smaller field, F2, was last set in 2019 with a similar composition of grasses.
- 4.14 Both fields comprised predominantly of grass species including those sown species as above, with other colonising species indicative of surrounding habitats and soil conditions: false oat-grass *Arrhenatherum elatius*, yellow oat-grass, soft brome *Bromus hordeaceus*, smooth meadow-grass *Poa pratensis*, crested dog's tail *Cynosurus cristatus*, Yorkshire fog *Holcus lanatus* and common bent *Agrostis capillaris*. A higher abundance of colonising species were present in F2 given longer time since sowing.
- 4.15 Herbaceous species were encountered occasionally or rarely within the sward, including greater knapweed *Centaurea scabiosa*, wild mignonette *Reseda lutea*, wild carrot *Daucus carota*, ox-eye daisy *Leucanthemum vulgare*, yarrow *Achillea millefolium*, bladder campion *Silene vulgaris*, common cat's-ear *Hypochaeris radicata* and field bindweed *Calystegia arvensis*. Again, a higher proportion of herbs were found in F2, particularly to the margins, given time following sowing. As noted above, some grass and herb species are indicative of local calcareous (chalk) soil conditions. Table 2 below sets out a summary of grassland quadrat survey data and condition.

Table 2. Summary of grassland quadrat and condition data

Field	Average (mean) species-richness (sp/m ²)	Peak species-richness (sp/m ²)	Condition
F1	10.6	12	Poor
F2	13	15	Good

- 4.16 Both grasslands exceed the threshold of up to 9sp/m² for agriculturally modified grassland as defined by UKHab, with a wider range of colonising species present than those sown. Whilst a small number of calcareous grassland indicators are present, the sward does not meet

the criteria required to represent this habitat type and is therefore classified as 'other neutral grassland'.

- 4.17 Notwithstanding the above, only field F2 represents a 'good' example of this habitat given the high frequency of false-oat grass, knapweed and other indicator species, with F1 retaining a greater abundance of agricultural species reflecting the shorter time since re-sowing.
- 4.18 Field F1 was found to be in 'Poor' condition following the Statutory Biodiversity Metric habitat condition assessment (Defra, 2024) as the current management/seed mixture does not represent a good example of its UKHab type. F2 was assessed to be in 'Good' condition, principally given the higher species richness.

Importance

- 4.19 The majority of the grassland is understood to be managed through an annual cut for silage/hay (c. July) and has a sward dominated by fast-growing cultivated grasses. The grassland falls short of the criteria for Local Wildlife Site selection, containing less than eight neutral grassland indicator species (F1 contains five, F2 contains seven) and less than twelve mixed grassland indicator species (F1 contains seven, F2 contains nine). See Appendix E for a full list of species.
- 4.20 Whilst smaller areas of higher species diversity are present along the field margins of F2, overall, the grassland is considered to fall short of the threshold for local ecological importance.

Suburban mosaic of developed and natural surface (u1d) and Developed land, sealed surface (u1b6)

- 4.21 A small residential garden and front lawn is located to the north of the Site, around the on-site residential dwelling. Modified grassland is present within the garden, which is lined with ornamental flower beds (846) and landscaped shrubs (847). Of particular note is the presence of c. seven orchid basal rosettes within the front garden grassland.
- 4.22 A driveway and small patio areas are present surrounding the residential dwelling within the north of the Site.
- 4.23 The suburban habitats present within the north of the Site are dominated by common and widespread species and are not considered to be of ecological importance above local level.

Buildings (u1b5)

- 4.24 There are two buildings present on-site along the northern boundary. These comprise a brick-built detached residential dwelling (Building B1) and a small wooden garden shed with a felt roof (Building B2). Further detailed descriptions in respect of bats are available within Appendix H.

- 4.25 The buildings were not identified to support fauna species and are therefore not considered to be of ecological importance above local level.

Native hedgerows (h2a)

- 4.26 Eight hedgerows were recorded on field boundaries within the Site, labelled H1-H8 on the Habitats Plan (Appendix A). The hedgerows comprise native woody species with evidence of a cutting regime from the Site side.
- 4.27 H1 is along the western boundary of the Site and has evidence it has been historically laid and managed. It is on a bank and c. 2m in height and 2.5m wide. Woody species recorded include sycamore *Acer pseudoplatanus*, hawthorn *Crataegus monogyna*, spindle *Euonymus europaeus*, ivy *Hedera helix*, blackthorn *Prunus spinosa*, oak *Quercus* sp., elder *Sambucus nigra* and bramble *Rubus fruticosus* agg. Ground flora recorded included cleavers *Galium aparine*, ribwort plantain *Plantago lanceolata*, clover *Trifolium* sp. and common nettle *Urtica dioica*. The ground flora is unmanaged.
- 4.28 H2, H4 and H5 are similar in composition and structure. Both of these hedgerows have been historically laid and are associated with a wire fence. The hedgerows comprise predominantly hawthorn and blackthorn, with a ground flora similar to H1 including dog-rose *Rosa canina* sp., oxeye daisy *Leucanthemum vulgare* and cow parsley *Anthriscus sylvestris*.
- 4.29 H3 is an overgrown hedgerow, c. 6m tall and c. 1m wide that includes a shallow bank. The species composition is similar to the above hedgerows, with additional species including holly *Ilex aquifolium*, bramble *Rubus*, sun spurge *Euphorbia helioscopia* and creeping thistle *Cirsium arvense*.
- 4.30 H6 is present on the northern boundary of the Site and is adjacent to residential gardens. This hedgerow is gappy and tall but managed from the Site side. Species recorded in H6 include hawthorn, blackthorn, ivy, periwinkle *Vinca* sp., and cow parsley *Anthriscus sylvestris*.
- 4.31 H7 and H8 are short stretches of beech *Fagus sylvatica* hedgerow on the eastern boundary and northern section of Site adjacent to residential gardens.
- 4.32 Following the Statutory Biodiversity Metric habitat condition assessment, six of the hedgerows (H1-H5 and H7) were found to be in 'Good' condition, with H6 and H8 found to be in 'Moderate' and 'Poor' condition, respectively.

Importance

- 4.33 The on-site hedgerows have intrinsic ecological value, in their connective function to habitats, as well as providing shelter and foraging for a range of fauna.
- 4.34 An assessment of hedgerows found no on-site hedgerows to be species-rich, falling below the required five woody species averaged per 30m sampling section. All hedgerows on-site meet the criteria for Habitat of Principal Importance 'Hedgerows' under Section 41 of the NERC Act (2006), comprising at least 80% native woody species. Five hedgerows (H1-H5) are considered as 'Important' hedgerows under the Hedgerow Regulations 1997.
- 4.35 The network of hedgerows at the Site is therefore assessed to be of ecological importance at the **Local** level.

Off-site Grassland

- 4.36 At the time of the survey, adjacent track verges to the west and south of the Site supported calcareous grassland species including bladder campion *Silene vulgaris*, yellow oat-grass, crosswort *Cruciata laevipes* and field scabious *Knautia arvensis*. These grasslands are partially within and the reason for designation of the Green Lane S. of Royston LWS.

Fauna

Bats

Desktop Study

- 4.37 A total of 105 bat records were identified within the search area, dating from 1977 to 2020. These include the following species: barbastelle *Barbastella barbastellus*, brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, serotine *Eptesicus serotinus*, soprano pipistrelle *P. pygmaeus* and Natterer's bat *M. nattereri*. A number of records were also provided for 'bat' *Chiroptera* sp., pipistrelle *Pipistrellus* sp. and long-eared *Plecotus* sp. but not identified to species level. The closest records are of unidentified bat species foraging/dispersing along the northern Site boundary. The majority of these records date between 2018 and 2020. One of these records was for anecdotal evidence of a bats within a garden immediately north of the Site in 2020. Other roost records were for brown long-eared bat, Daubenton's bat and Natterer's bat located at Royston Chalk Pits LWS, c. 0.6km north-east of the Site.
- 4.38 A review of European Protected Species licences available on the MAGIC website has identified one bat licence record for brown long-eared bat located c. 1km north-west of the Site from 2011. This is within a dispersible range of the Site. Woodlands and residential buildings in the wider landscape could offer roosting opportunities for multiple bat species.

Habitat Suitability

- 4.39 The Site provides linear features suitable for foraging and dispersal in the form of boundary hedgerows. Primarily, the Site comprises open, species-poor grasslands of limited suitability for bats.
- 4.40 Bats use the linear on-site features for foraging and navigation to and from suitable habitat within the wider landscape. The field margins with higher floral diversity, specifically along the eastern and southern boundaries may also provide foraging opportunities due to the greater habitat suitability for insects.

Roosting

- 4.41 Two buildings, labelled B1 and B2 on the Habitats Plan in Appendix A, were assessed for the potential suitability to support roosting bats. Building B1 was considered to have 'low' potential suitability for bats, with B2 having negligible potential. The full results of the building inspection are provided in Appendix F.
- 4.42 In line with current guidelines, a single dusk emergence survey was undertaken on B1 on 03 July 2025. No bats were seen to emerge from the building and bats and their roosts are therefore confirmed as likely absent from B1 and B2.

Bat Activity

- 4.43 At least four species of bat were recorded on-site during the three night-time bat walkovers between April and September 2025, including common pipistrelle, serotine, and brown long-eared bat as well as calls from *Nyctalus/Eptesicus* species.
- 4.44 Overall numbers of contacts were generally low, with the most activity recorded along the boundary hedgerows, specifically common pipistrelle along the northern boundary. Notably, brown long-eared bat was only recorded along the northern boundary, with serotine and *Nyctalus* species recorded within the north-east. No bats were recorded along the remaining hedgerows across the Site.
- 4.45 No roosts or evidence of roosts were identified during the surveys. The first bat contact in July and August was within the mean range for common pipistrelle emergence. This suggests a common pipistrelle roost may be within close proximity to Site.
- 4.46 Remote monitoring periods have been carried out over five consecutive nights each month within May to September 2025. At least eight bat species were recorded during the remote monitoring across the Site. These included common pipistrelle, soprano pipistrelle, noctule, barbastelle, serotine, Leisler's bat, *Nathusius'* pipistrelle and brown long-eared bat, alongside calls from *Myotis* species, *Pipistrellus* species, *Nyctalus* species and *Nyctalus/Eptesicus* species (Big Bat). Only 2,012

bat contacts were recorded across the monitoring periods, with the detectors consistently dominated by common pipistrelle (1,490 contacts) and other common species (see Table 3 below). Of the rarer bat species, there were 105 contacts for barbastelle bat (c. 5% of total), four call contacts for Nathusius' pipistrelle (c. 0.19% of total), two call registrations for Leisler's bat (c. 0.09% of total) and 80 serotine registrations (c. 3.9% of total).

Table 3. Number of bat calls recorded between May and September 2025, across the three monitoring locations.

Species Recorded	Monitoring Period (2025)				
	May	June	July	August	September
Common pipistrelle	529	144	279	78	460
Soprano pipistrelle	0	0	4	0	2
Noctule	0	3	3	7	4
Brown long-eared bat	0	4	11	33	18
Barbastelle	43	0	27	12	23
Nathusius' pipistrelle	0	0	0	0	4
Leisler's bat	0	0	0	0	2
Serotine	56	4	15	2	3
Myotis species	6	2	8	32	23
Pipistrellus species	1	4	3	2	2
Nyctalus species	48	6	23	10	42
Nyctalus/Eptesicus species	0	5	4	12	9
Total:	683	172	377	188	592

4.47 All barbastelle contacts were recorded outside of the normal emergence period for barbastelle, indicating that a barbastelle roost is not present on-site or in the immediate vicinity. Given this and the limited number of contacts recorded, it is likely that the Site does not provide a key roost/foraging dispersal corridor or habitat for barbastelle.

4.48 Full methods and results are provided in Appendix H.

Importance

4.49 The habitats on-site provide some limited opportunities for bats, restricted to linear features including the hedgerows and mature trees. Greater opportunities are afforded by the wider landscape; however,

these remain limited to 'small' areas of woodland and hedgerows such as Therfield Heath.

- 4.50 Following the UK Bat Mitigation Guidelines (2023), bat species using the Site fall into "widespread" (common pipistrelle, soprano pipistrelle and brown long-eared bat), "widespread in many geographies, but not as abundant in all" (noctule and *Myotis* species), and "Rarer or restricted distribution" (serotine, Leisler's bat, Nathusius pipistrelle). Barbastelle fall into the "Rarest Annex II species and very rare" category.
- 4.51 *Myotis* species bats fall into the categories of "widespread in many geographies, but not as abundant in all" (Daubenton's *Myotis daubentonii*, and Natterer's *Myotis nattereri*). 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.
- 4.52 Barbastelle are noted to be considered very rare (Table 5 below). However, the majority of their activity is associated with occasional passes and opportunistic use of the Site, with no pattern to suggest a summer roost nearby.

Table 4. Categorising Bats by Geographic Distribution and Rarity (adapted from Reason and Wray, 2023)

Rarity in South-Eastern (score assigned per species present)	Species known to occur in the same region as the Site	Species recorded on-site
Widespread in all geographies (1)	Common pipistrelle Soprano pipistrelle Brown long-eared	Common pipistrelle Soprano pipistrelle Brown long-eared
Widespread in many geographies, but not as abundant in all (2)	Daubenton's Natterer's Noctule	Daubenton's* Natterer's* Noctule
Rarer or restricted distribution (3)	Serotine Leisler's Nathusius' pipistrelle Whiskered Brandt's	Nathusius' pipistrelle Leisler's Serotine
Rarest Annex II species and very rare (4)	Barbastelle Alcathoe	Barbastelle
Total assemblage score/importance	32	22*
*Assumed present based on habitats present on-site and records returned within the desk study. Local importance score: ≤12 County importance score: 13-14 Regional importance score: 15-19 National importance score: ≥20		

- 4.53 Based on the UK Bat Mitigation Guidelines (2023), the Site scores 22 out of a maximum 32 points, suggesting the Site supports an assemblage of National Importance. However, bat activity is dominated by common pipistrelle (74%) and overall levels of activity across the Site are considered to be low, with a median of less than one bat registration per detector per hour (excluding common pipistrelle). This indicates that the majority of bat species use the Site infrequently, with bat activity observed to predominantly comprise commonly occurring species, restricted to hedgerow boundaries. This reflects the low-quality habitat present across most of the Site, with the managed grassland unlikely to support a significant assemblage of food resources for bats.
- 4.54 Based on the above, the bat assemblage using the Site for foraging and commuting is considered to fall short of regional or national importance and is confirmed to be of ecological importance at the **County** level only.

Badger

Desktop Study

- 4.55 The desk study identified 116 records of badger *Meles meles* from within the search area, dating from 1970 to 2023. Of these records, 105 are considered to be recent records dating post-2000. The closest record is within the north-east of the Site from 2020, for trail camera pictures of at least two individuals. The desk study identified a minimum of four badger sett records within the search area, the closest being c. 0.7km south-west of the Site.

Use of the Site and Survey Results

- 4.56 A dedicated badger survey was undertaken on 24 June 2025 which identified evidence of badger in the form of two latrines, associated with hedgerows H1 and H5, and exploratory digging associated with H1. A number of mammal pathways and push-throughs were also noted, again in association with H1 and H5. However, these cannot definitively be attributed to badger given evidence of rabbit and deer also recorded nearby. A badger was recorded in the north-east of the Site during a nocturnal bat survey.
- 4.57 No setts have been recorded at the Site to date.

Importance

- 4.58 No badger setts were located on-site. However, badgers make use of the Site for foraging and dispersal. Badgers are not of current conservation interest. However, given the legal protection afforded to this species under The Protection of Badgers Act 1992 further consideration of impacts and avoidance measures have been provided within the Assessment of Effects below on this basis only.

Dormouse

Desktop Study

- 4.59 No records of dormouse *Muscardinus avellanarius* were identified within the search area, 2km from the Site.

Habitat Suitability and Importance

- 4.60 The majority of the Site, being dominated by managed grassland is considered unsuitable habitat for dormouse which prefer complex habitat structures and woody species. The boundary hedgerows provide some limited opportunities, however these lack the dense vegetation required by dormice. Dormice have historically been present in Cambridgeshire, however due to fragmentation of suitable habitat this species is considered absent from the County except for in association with a 1993 reintroduction project at Brampton Wood (c. 33km north-west of the Site).
- 4.61 Overall, it is considered highly unlikely that dormice will utilise the Site and are not considered further within this report.

Riparian Mammals

Desktop Study

- 4.62 No records of water vole *Arvicola amphibius* or otter *Lutra lutra* were identified within the search area, within 2km of the Site.

Habitat Suitability and Importance

- 4.63 No watercourses have been identified within or adjacent to the Site. Therefore, given the absence of suitable habitat, water vole and otter are considered likely absent from the Site and adjacent habitats.

Other Mammals

Brown Hare

- 4.64 The desk study identified 96 records of brown hare *Lepus europaeus* within the search area, dating from 1977 to 2023. The closest records were identified within the Site boundary between 2018 and 2020.
- 4.65 The grassland and hedgerows present at the Site provide opportunities for brown hare to forage and disperse. The wider landscape to the south comprising arable and pastoral fields provides a large area of suitable habitat for brown hare, which are known to have large home ranges.
- 4.66 It is likely the southern portion of the Site closest to residential dwellings would be avoided by brown hare, with the open areas to the north of potentially greater interest to this species.

Hedgehog

- 4.67 A total of 33 records of hedgehog *Erinaceus europaeus* were identified within the search area, dating from 1985 to 2021. The closest record is

along the northern boundary in association with a residential garden in various years from 2004-2020.

- 4.68 No evidence of hedgehog was identified during the survey. On-site opportunities for hedgehog are provided by grassland and hedgerows which provide shelter and foraging opportunities. Within the wider landscape, nearby residential gardens situated provide further opportunities for this species.
- 4.69 Hedgehogs are listed as a species of principal importance under Section 41 of the Natural Environment and Rural Communities (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, hedgehogs are not considered to be an important ecological feature in the context of this assessment.

Harvest Mouse

- 4.70 HERC and CPERC provided four historic records of harvest mouse *Micromys minutus* within the search area, dating from 1974 to 1985. However no current records dating post-2000 of harvest mouse were provided.
- 4.71 Hedgerows and associated field margins provide year-round opportunities for this species. However, cutting of the grassland to a short sward that dominates the Site reduces its suitability and potential importance for this species.
- 4.72 No evidence of harvest mouse was observed during the surveys. Given that the Site is managed through cutting, it is considered that it is not of significant importance to harvest mice and they are unlikely to be present. As such, harvest mouse have not been assessed any further in this context.

Birds

Desktop Study

- 4.73 A total of 7,219 records of 109 bird species were identified within the search area, dating from 1981 to 2020. Those of potential relevance to the Site include barn owl *Tyto alba*, great grey shrike *Lanius excubitor*, redwing *Turdus iliacus*, red kite *Milvus milvus*, skylark *Alauda arvensis*, yellowhammer *Emberiza citronella*, lapwing *Vanellus vanellus* and sparrow hawk *Accipiter nisus*. A large number of the records provided are in association with Therfield Heath SSSI c. 60m west of the Site.
- 4.74 Records of recent sightings have been provided that overlap with the Site, in particular along the residential boundary to the north. This includes records of foraging barn owl, and flying red kite and fieldfare *Turdus pilaris*. Other notable sightings of Local BAP species include house

sparrow, reed bunting, yellowhammer, grey partridge *Perdix perdix*, lapwing and song thrush *Turdus philomelos*. Peak counts of up to eight individuals were included within the data set for these species.

Habitat Suitability

- 4.75 The hedgerows, grassland and habitats adjacent to the Site provide nesting opportunities for a range of garden and farmland birds, including ground nesting species such as skylark.

Use of the Site

- 4.76 Breeding bird surveys have been undertaken at the Site between May and July 2025. A total of 29 bird species were recorded on or adjacent to the Site during the surveys. Breeding activity was either confirmed or probable/possible for 25 bird species, of which 11 are notable bird species (either NERC Section 41 Species of Principal Importance (SoPI), Birds of Conservation Concern (BoCC) Amber or Red Listed, Local Biodiversity Action Plan (BAP) species or on Schedule 1 of the Wildlife and Countryside Act.
- 4.77 The notable bird species included dunnock *Prunella modularis*, grey partridge, linnet *Linaria cannabina*, skylark, song thrush *Turdus philomelos*, starling, stock dove *Columba oenas*, whitethroat *Sylvia communis*, wood pigeon *Columba palumbus*, wren *Troglodytes troglodytes* and yellowhammer. One skylark and one yellowhammer breeding territories were recorded.
- 4.78 During the Site walkover, a total of three scattered barn owl pellets were recorded along the base of Hedgerow H3. Desk study records indicate that barn owl use the Site for foraging. However, during the nocturnal bat and breeding bird survey no barn owl were recorded. No nesting or breeding opportunities for barn owl were recorded.
- 4.79 Methods and detailed results of the breeding bird surveys are provided in Appendix J.

Importance

- 4.80 When assessed using the criteria suggested by Fuller (1980), the breeding bird assemblage on the Site is considered to be of **Local** ecological importance.
- 4.81 All wild birds are protected from killing and injury, and their nests and eggs are protected from damage and destruction, under the Wildlife and Countryside Act 1981 (as amended). Accordingly, further consideration of impacts and avoidance measures have been provided within the Assessment of Effects below in this legal context.

Reptiles

Desktop Study

- 4.82 A total of six records of two reptile species were identified within the search area including common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis*. These records date from 1902 to 2020 with four of these records being considered current dating post-2000.
- 4.83 Surveys undertaken by FPCR in 2018 recorded a peak count of five common lizard associated with the boundaries of both fields within the Site (FPCR, 2018).

Habitat Suitability

- 4.84 Grassland and hedgerows within the Site provide opportunities for reptiles to forage, bask and seek refuge, particularly in longer grassland sward areas adjacent to hedgerows. Furthermore, the Site is well connected by hedgerows to surrounding suitable habitats i.e. gardens, woodland and Therfield Heath SSSI (which is known to support a population of common lizard).
- 4.85 Cutting of the grassland in July 2025 reduced the suitability of the Site for reptiles, with the remaining suitable habitat limited to the uncut field margins. It is understood this management occurs annually and therefore the suitability of the Site and potential distribution for reptiles will be influenced by this regularly.

Survey Results

- 4.86 Reptile surveys were undertaken between June and July 2025. Common lizard were recorded within the field margins of F2, with a peak count of five adult common lizard recorded. Of these, gravid female lizards were also recorded, indicating that the Site supports a breeding common lizard population.
- 4.87 In consideration of current and redacted guidelines, together with ecological understanding of the Site, a "low" population class size of common lizard is considered to be present at the Site. No other reptile species were recorded at the Site during the surveys.
- 4.88 See Appendix K for detailed results of the reptile surveys undertaken.

Importance

- 4.89 A low population of common lizard has been recorded at the Site. As such the importance of the Site for reptiles is considered to be of **Local** ecological importance.

Amphibians

Desktop Study

- 4.90 A total of six records of two amphibian species were identified within the search area, including great crested newt *Triturus cristatus* and common toad *Bufo bufo*. These records date from 1981 to 2020 with five records being dated post-2000. The closest of these records is of a common toad recorded along the northern boundary of the Site.
- 4.91 Three records of great crested newt were identified within the search area. All of these records were from the same location, c. 0.8km south-east of the Site in 2017.
- 4.92 A review of European Protected Species licences available on the MAGIC website has identified one great crested newt licence located c. 1.8km north-east of the Site from 2014.
- 4.93 Despite spending much of their annual lifecycle within the terrestrial environment, great crested newts 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 site survey however, one pond, P1, appears to be present within a dispersible range of the Site based on OS mapping. This pond is located within a residential garden adjacent to the Site.

Survey Results

- 4.94 No breeding opportunities for amphibians were identified within the Site. One pond, P1, was recorded within dispersal distance of the Site. Pond P1 is a very small ornamental garden pond within a residential garden to the north of the Site. No access was provided to survey this pond; however, given its very small size (c. max 2m x 2m) and ornamental nature, it is considered very unlikely to support an amphibian population.
- 4.95 Tall grassland and hedgerows on-site provide some terrestrial opportunities for amphibians.
- 4.96 Given the lack of suitable breeding opportunities and absence of great crested newt within the average dispersal range (250-500m), it is considered likely that great crested newt are absent from the Site.

Importance

- 4.97 The Site does not provide any aquatic habitat for great crested newt or other amphibians, although terrestrial opportunities are available. However, the Site is separated from any potential suitable aquatic habitats (i.e. ponds or other suitable waterbodies) that could support great crested newt. Accordingly, the importance of the Site for amphibians falls below the threshold for local ecological importance, and the risk of legal infringement (in relation to great crested newt) is considered de-minimis. Significant effects upon amphibians are

therefore not considered further in this assessment. Enhancements in relation to common toad are proposed later within this report.

Invertebrates

Desktop Study

- 4.98 A total of 4,232 records of 235 invertebrate species were identified within the search area dating from 1800 to 2023. Of these records, 3,411 were considered current dating post-2000. Within the search area the following NERC S41 SoPI were identified; five banded digger moth *Cerceris quinquefasciata*, wall butterfly *Lasiommata megera*, small blue butterfly *Cupido minimus*, white-letter hairstreak *Satyrium w-album*, chalk-hill lace-wing moth *Epermenia insecurella*, horehound long-horn moth *Nemophora fasciella*, dingy skipper butterfly *Erynnis ages*, grizzled skipper butterfly *Pyrgus malvae* and small heath butterfly *Conenonympha pamphilus*. Additionally, several records of NERC S41 SoPI moths were identified within 100m of the Site. A record for Roman snail *Helix pomatia* was also identified within the search area, from the other side of Royston.
- 4.99 This Site is not located within an Important Invertebrate Area (IIA), however it is located c. 60m east of Therfield Heath SSSI which is known to have large populations of invertebrates, with particular butterfly interest.
- 4.100 A full review of the invertebrate desk study records is provided within Appendix L.

Use of the Site

- 4.101 The majority of the grassland habitat at the Site is managed for hay production. It predominantly comprises fast-growing palatable grasses that provides limited diversity and opportunities for invertebrates. The flower-rich field margins and hedgerows provide a more diverse habitat, with varied nectar and prey resource.
- 4.102 An invertebrate scoping survey was undertaken of the Site in July 2025. The survey identified that the field margin grassland and hedgerows have the highest potential for invertebrate species. Invertebrate specimen collection also took place in July 2025, which recorded 71 species, the majority of which were common and widespread. Two NERC S41 SoPI were recorded, including small heath butterfly and cinnabar moth (a 'research only' species in relation to ragwort). Whilst not recorded there is potential for two other NEC S41 SoPI; horehound longhorn moth and five-banded digger wasp, as the Site supports the correct food resources within hedgerows and long-sward grassland. Further results are provided in Appendix L.
- 4.103 A dedicated survey for roman snails was undertaken on 25 September 2025 with no evidence of roman snails recorded.

Importance

- 4.104 The majority of the invertebrate assemblage recorded at the Site comprises common and widespread species. Invertebrate interest is primarily associated with the grassland field margins and hedgerows, which have a higher species richness – including some calcareous species. However, these habitats are limited in extent and are not considered large or diverse enough to support an assemblage of local ecological importance.
- 4.105 Enhancements are proposed below that will increase invertebrate resources at the Site, which will have a beneficial effect on the diversity and abundance of invertebrate species.

Summary of Ecological Features

- 4.106 Table 5 below summarises all important ecological features identified within the respective zones of influence, together with the geographic context of their importance:

Table 5. Summary of important ecological features and their geographic context

Ecological Feature	Geographic Context of Importance and/or Protection Status
Therfield Heath SSSI	National
Holland Hall (Melbourn) Railway Cutting SSSI	National
Therfield Heath LNR	County
Green Lane S. of Royston LWS	County
Six No. LWS	County
Native hedgerows (h2a)	Local
Bats	County Protected (Wildlife and Countryside Act, 1981 [as amended]; The Conservation of Habitats and Species Regulations, 2010 [as amended])
Badger	Protected (Badger Act, 1992)
Breeding Birds	Local Protected (Wildlife and Countryside Act, 1981 [as amended])
Reptiles	Local Protected (Wildlife and Countryside Act, 1981 [as amended])

5.0 ASSESSMENT OF EFFECTS

The Proposed Development

- 5.1 Planning permission is sought for residential development at the Site. The following impact assessment is based on the Development Framework Plan prepared by Icení Projects Ltd on behalf of Gladman Developments Ltd.
- 5.2 The construction phase of the proposed development will comprise the following:
- Removal of 8.85ha of other neutral grassland
 - Removal of sections of hedgerow from H5 (c. 60m) and H6 (c. 30m)
 - Construction of up to 84 residential dwellings
 - Construction of associated gardens, parking, access infrastructure and play area
 - The establishment of Public Open Space (POS) totalling c. 5.89ha, including open parkland, a community orchard and allotments concentrated at the west of the Site, as well as recreation routes around the periphery of residential areas
 - Establishment of Sustainable Urban Drainage Systems (SUDS) including a large attenuation basin set within new parkland to the west of the developed area
- 5.3 The operational phase of the proposed development will comprise the following:
- Occupation of new residential dwellings
 - Increase in human activity, including use of vehicles and presence of domestic pets
 - Increased artificial lighting and anthropogenic noise

Ecological Mitigation

- 5.4 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).
- 5.5 In addition to mitigation by design, the following overarching ecological mitigation measures are proposed and referenced where applicable through this section.
- 5.6 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.

5.7 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. 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 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)
- Updated ecological surveys, where necessary, to identify shifts in the baseline ecological condition in order that revised impact avoidance and mitigation measures can be adopted as required

5.8 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. The LEMP will set out measures for the establishment and long-term management of newly created and retained habitats to maximise benefits for biodiversity.

Nature Conservation Designations

Therfield Heath SSSI and Therfield Heath LNR

5.9 The citation features of Therfield Heath SSSI are vulnerable to recreational impacts, which include trampling and nutrient enrichment of grassland (through dog littering). New residential development in close proximity to the SSSI is likely to contribute additional visitor pressure that could have a significant adverse effect on citation features.

5.10 The Site falls within the acknowledged inner Zone of Influence for recreational pressures (1.9km) identified within the Therfield Heath SSSI Mitigation Strategy (North Herts Council, 2022). Therefore, in the absence of mitigation, the development proposals could result in an indirect adverse effect on the SSSI, significant to the **Local** level.

Mitigation Measures

5.11 The Therfield Heath SSSI Mitigation Strategy sets out mitigation measures for new housing development to limit additional pressure on the SSSI. This includes appropriate open space provisions and proportionate financial contributions to the provision of SSSI access management measures.

5.12 To accord with the Therfield Heath SSSI mitigation strategy the following is proposed to avoid or minimise adverse effects upon the SSSI:

- Minimum of 5.89ha of open space and green infrastructure, which is significantly in excess of Natural England's recommended Suitable Alternative Natural Greenspace (SANG) requirement of 8ha/1000 population. This will include a community orchard, circular walking routes, amenity grassland, and restoration of calcareous grassland.
- An appropriate monetary contribution to deliver management and stewardship of Therfield Heath SSSI be provided to via a s106 agreement, in combination with contributions from other projects or plans.

5.13 It is acknowledged that Natural England require that the latter monetary contribution will need to be agreed prior to the determination of the application.

5.14 In addition to the above, restored chalk grassland at the Site, including in open spaces, butterfly banks and SuDS features, will be seeded with horseshoe vetch, the larval foodplant of chalkhill blue butterfly. This plant along with other nectar sources will seed to encourage populations of this and other invertebrate species associated with the SSSI.

Residual Effects

5.15 Subject to the implementation of measures in accordance with the Therfield Heath SSSI Mitigation Strategy, no adverse residual effects are anticipated on the SSSI.

Holland Hall (Melbourn) Railway Cutting SSSI

5.16 The Site lies c. 2.3km south-west of Holland Hall (Melbourn) Railway Cutting SSSI and is designated due to its lowland calcareous grassland. The designation was found to be in 'unfavourable – recovering' by Natural England in 2011, with additional grassland management and rabbit control recommended.

5.17 Given the distance, no direct adverse effects are anticipated. The Site is outside of the Natural England IRZ for this designation, and therefore indirect recreational impacts are not anticipated. It is not considered further within this report.

Green Lane S. of Royston LWS

5.18 Green Lane S. of Royston LWS present adjacent to the southern boundary of the Site. The LWS is designated for calcareous grassland with a rich diversity of species. The floral interest of the LWS is primarily associated with its boundaries, with an existing track (modified grassland, dirt or sealed surface) present within its centre.

5.19 No direct effects are anticipated as a result of the proposed development. In the occupation phase, indirect adverse effects could

result from increased recreational use of the Briary Lane. Existing recreational use of the LWS is limited to a central track (which is of limited floral diversity) and it is anticipated that increased recreational use will be confined to the existing trackways. Therefore, potential impacts upon this LWS are not expected to be significant at the local level.

- 5.20 Sufficient well-designed open space is provided within the development proposals that are anticipated to reduce recreational use of the LWS further.

Other LWSs

- 5.21 The remaining local wildlife sites within the surrounding area are all acknowledged to be sensitive to a range of factors, including potential recreational pressure (i.e. trampling of grassland flora and woodland understorey) and an increase in cat predation (on birds and other wildlife).
- 5.22 Given the distance, no direct or indirect adverse effects are anticipated. These designations are not considered further within this report. However, the measures listed above are also anticipated to relieve any potential pressures in respect of these designations.

Habitats and Flora

Native Hedgerows (H2a)

- 5.23 The majority of the existing on-site hedgerows will be retained and/or enhanced alongside the development proposals. To necessitate site access infrastructure, c. 60m of H5 and c. 30m of H6 is proposed for removal.
- 5.24 The retained hedgerows will be vulnerable to damage during construction from passing construction traffic and ground compaction.

Mitigation Measures

- 5.25 Development proposals will include the creation of new native hedgerows and enhancements to existing hedgerows to increase condition and species richness. This will include infill planting within hedgerow gaps to maintain and enhance *ecological connectivity*.
- 5.26 Retained hedgerows and mature trees will be protected in line with standard arboricultural practice (BS5837:2012). An appropriately worded planning condition would secure these measures.

Residual Effects

- 5.27 Subject to the implementation of above mitigation, no significant adverse effects are anticipated.

Fauna

Bats

- 5.28 Bats make use of the Site for foraging, navigating along hedgerows. 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).
- 5.29 The bat assemblage at the Site is dominated by widespread bat species (i.e. 74% of total calls are attributable to common pipistrelle). Low levels of rarer bat species have been recorded, such as 5% of total bat calls being attributable to barbastelle. Hedgerows at the Site offer foraging and dispersal opportunities, with the eastern and northern boundaries identified to support the highest number of bat calls. The development proposals will result in the removal of c. 60m of H5 and c. 30m of H6. Furthermore, new artificial lighting in retained habitats during the construction and operational phases may lead to adverse disturbance impacts on bats and other nocturnal wildlife, resulting in reduced use and diversity in these areas.
- 5.30 Overall, given the impacts to hedgerows on-site and in the absence of mitigation, the scheme would likely result in an adverse effect on the local bat population significant at the **Local** level.

Mitigation

- 5.31 Creation of green corridors, structural landscaping and Informal Open Space across the Site, will provide enhancement of habitats available to bats at the Site. This will include more species-rich grassland, ponds, traditional orchard and wetland (SuDS) features. This will include strengthening of existing bat dispersal corridors on the west and east of the Site.
- 5.32 To ensure ecological functionality of retained hedgerows and boundary habitats for bats a sensitive external lighting scheme will be prepared. The future lighting scheme will be developed in consultation with a bat ecologist to avoid/minimise light spill onto retained and created habitat. This is to maintain dark corridors for bats and other nocturnal wildlife. This would be secured via control of detailed lighting designs and/or a suitably worded planning condition.
- 5.33 In addition to mitigation, enhancement measures will include integrated roosting features into new building/structures across the Site.
- 5.34 These measures would be secured by an appropriately worded planning condition.

Residual Effects

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

Badger

- 5.36 Badgers are protected under the Protection of Badgers Act (1992). Killing or injury of a badger, or interference with a sett is prohibited.
- 5.37 No badger setts and signs were recorded on Site. It is likely that the Site is being used by badger for foraging or dispersal and there is therefore a risk individuals could fall into any open excavations arising from the construction.
- 5.38 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 Measures

- 5.39 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 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 for any new sett excavation during prolonged remediation, construction or landscaping works.

Residual Effects

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

Breeding Birds

- 5.41 All wild birds are protected from killing and injury, and their nests and eggs are protected from damage and destruction, under the Wildlife and Countryside Act 1981 (as amended). Therefore, any clearance of nesting habitat or features required to facilitate the development should avoid the period between March and August (inclusive) when nesting birds are most likely to be present. If this is not possible, habitat will need to be checked for nesting birds by a suitably qualified ecologist prior to clearance with works only proceeding if no nesting evidence or behaviour are observed.
- 5.42 The Site supports a range of breeding birds that is typical of farmland and garden fringe habitats. The proposed development will result in the loss of grassland/farmland bird habitat, which will lead to the loss one skylark territory. The proposals will also result in the removal of moderate quality barn owl foraging habitat, of which is higher quality opportunities are also available in the wider surroundings.

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

Mitigation Measures

- 5.44 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.
- 5.45 The design of the open space is expected to offer benefits to the assemblage of birds recorded, 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 and wildflowers 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 to be left until late winter to provide over wintering seed forage.
- 5.46 The design of the open space includes the retention of the majority of hedgerows and a proposed orchard with structural planting, to 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. The long-sward grassland proposed within the open space will maintain foraging opportunities for barn owl.
- 5.47 Despite the proposals increasing the foraging resource for skylark, disturbance within the open space by recreation will result in a reduction of opportunities for breeding skylark. Offsite contributions to a local third-party (expected to be brokered through a third party) to deliver a minimum of two skylark plots to be secured by a suitably worded planning condition.

Residual Effects

- 5.48 Subject to the above mitigation, no significant adverse effects are anticipated.

Reptiles

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

- 5.50 Long sward grassland on the field margins of Field F2 and hedgerows bases provide suitable habitat a low/small population of common lizard, that is well connected to adjacent off-site suitable habitats. The proposed development will result in the loss of part of this habitat, and lower quality grassland habitat.
- 5.51 In the absence of mitigation, the development could result in potential offences being caused in respect of protective legislation for reptiles, and a reduction in the local resource available for reptiles. In the absence of mitigation an adverse ecological impact significant at the **Local** level is predicted.

Mitigation Measures

- 5.52 In order to mitigate adverse impacts upon reptiles a **Reptile Mitigation Strategy** using the following principals is required:
- Preparation of a suitable 'receptor area' with reptile basking, foraging and refuge opportunities within Field F2. This will include the erection of reptile proof fencing around the boundaries of the receptor area.
 - Erection of reptile proof fencing around the existing reptile habitat 'donor areas' that will be lost as part of the development, with refugia placed along the interior of the fence.
 - Capture and translocation of reptiles from the donor area into the prepared 'receptor area' for a period of between 30-90 days (subject to review of capture rates) during suitable weather conditions between March and September, in accordance with HGBI guidance (1998)
 - Supervised clearance of vegetation within donor areas after capture period is complete
- 5.53 Following completion of reptile capture, and in order to maintain opportunities at the Site for reptiles, the creation of a structurally and botanically diverse habitat will be required within open spaces to ensure opportunities for reptiles are maintained.
- 5.54 The **Reptile Mitigation Strategy** would be secured via an appropriately worded planning condition, and subject to appropriate scheme design.

Residual Effects

- 5.55 With the implementation of the above mitigation measures, no significant adverse residual effects are anticipated.

Summary of Effects

- 5.56 Table 6 below summarises the assessment of potential impacts on each important ecological feature, proposed mitigation and the assessed residual effects.

Table 6. Summary of effects

Important Ecological Feature	Potential Impacts and Effects	Avoidance & Mitigation Measures	Mechanism by which Measures are Secured	Residual Effects
Therfield Heath SSSI	Increased recreational pressure Local, adverse	Developer funding of management actions via commuted sum Provision of POS and recreational opportunities within the Site	Section 106	No significant effect
Holland Hall (Melbourn) Railway Cutting SSSI	None anticipated	-	-	-
Therfield Heath LNR	Increased recreational pressure Local, adverse	Developer funding of management actions via commuted sum	Section 106	No significant effect
Green Lane S. of Royston LWS	Increased recreational pressure Local, adverse	Provision of POS and recreational opportunities within the Site	Section 106	No significant effect
Six No. LWS	None anticipated	-	-	-
Native hedgerows (h2a)	Removal of sections of hedgerow for vehicular and pedestrian access	Strengthening of boundary vegetation, management of POS for biodiversity gain	LEMP secured through Planning Condition	No significant effects
Bats	Potential development edge effects from artificial lighting causing disturbance of foraging bats Local, adverse	New habitat creation, management of POS for biodiversity gain, sensitive lighting strategy	LEMP and Lighting Strategy secured through Planning Condition	No significant effect
Badger	Potential legal infringements	Precautionary badger survey; Impact avoidance measures under CEMP	CEMP secured through Planning Condition	No legal infringements OR significant adverse effect
Breeding Birds	Potential damage or destruction of nests and eggs	Sensitive timing of works/nest checks by ecologist	CEMP secured through Planning Condition	No legal infringements OR significant

Important Ecological Feature	Potential Impacts and Effects	Avoidance & Mitigation Measures	Mechanism by which Measures are Secured	Residual Effects
	Loss of habitat for specialised farmland and garden bird species Local, adverse	Third-party breeding bird contributions (skylark)		adverse effect
Reptiles	Potential legal infringements Local, adverse	Reptile Mitigation Strategy	Planning Condition and control of detailed design	No legal infringement [†]

Enhancement

- 5.57 The Illustrative Landscape Strategy Plan (Iceni, 2025; Drawing Ref: 537_DL05) includes landscape planting enhancements that will make positive contributions to on-site biodiversity. This includes the creation of calcareous grassland, wildlife-friendly formal planting, design of SuDS features to benefit biodiversity and new hedgerow/thicket planting.
- 5.58 New habitat creation will provide opportunities for species confirmed to be present on-site at baseline, such as nesting birds, bats, reptiles and invertebrates. 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, however as an indicative guide:
- Inclusion of plant species of known wildlife value within the landscaping scheme, including night-scented varieties to benefit bats. This should include the following species/features to increase opportunities for invertebrates:
 - Inclusion of blackthorn, black horehound and elm within hedgerow enhancement and structural planting.
 - Inclusion of common bird's-foot trefoil *Lotus corniculatus* and horseshoe vetch *Hippocrepis comosa* (chalkhill blue butterfly), kidney vetch *Anthyllis vulneraria* within the wildflower meadow areas. The wildflower meadows should be managed to create a diversity in sward heights and floral resources, with tall grassland left uncut through the summer months.
 - Creation of seasonally wet areas within SuDS basins.
 - Creation of butterfly banks (exposed chalk banks sown with chalk grassland seed mix, including horseshoe vetch)
 - Installation of bee bricks into new dwellings

- Provision of new bat roosting opportunities: At least 20 no. bat boxes will be erected on mature trees or new builds. These will be a purpose-built, durable and long-lasting variety such as available from Schwegler or Habibat. Where possible, these will be incorporated into the fabric of new builds.
- Provision of new bird nesting opportunities: At least 20 no. bird nesting boxes will be provided in new/retained planting to benefit generalist bird species.
- Provision of hedgehog gaps: Hedgehogs have been scoped out of detailed assessment and no specific mitigation is proposed, however it is important that opportunities for hedgehogs to move through the landscape are preserved. Although not strictly an 'enhancement' measure, provision of hedgehog-friendly gravel boards or equivalent, providing a minimum 5 x 5 inch gap, will be used to maintain permeability for hedgehogs 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.

Monitoring

- 5.59 Monitoring regimes will be determined as necessary by the **Reptile Mitigation Strategy** and habitat creation secured for the purposes of significant BNG on-site (this will be implemented as part of relevant HMMPs).

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, with 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 Development Framework Plan demonstrates 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, badgers and reptiles.
 - 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 a graphical Ecological Enhancement Plan, setting out the number, type and position of enhancement features.
 - 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.
 - Reptile Mitigation Strategy: to set out the approach of mitigation and protection of the common lizard population on-site.
- 6.4 Measures to minimise impacts and avoid negative effects on Therfield Heath SSSI have been set out herein, with a monetary contribution to be secured for the management and stewardship the SSSI. In addition, landscaping at the Site including chalk grassland restoration and butterfly banks sown with horseshoe vetch will be established to encourage chalkhill blue butterfly and other species associated with the SSSI.
- 6.5 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.

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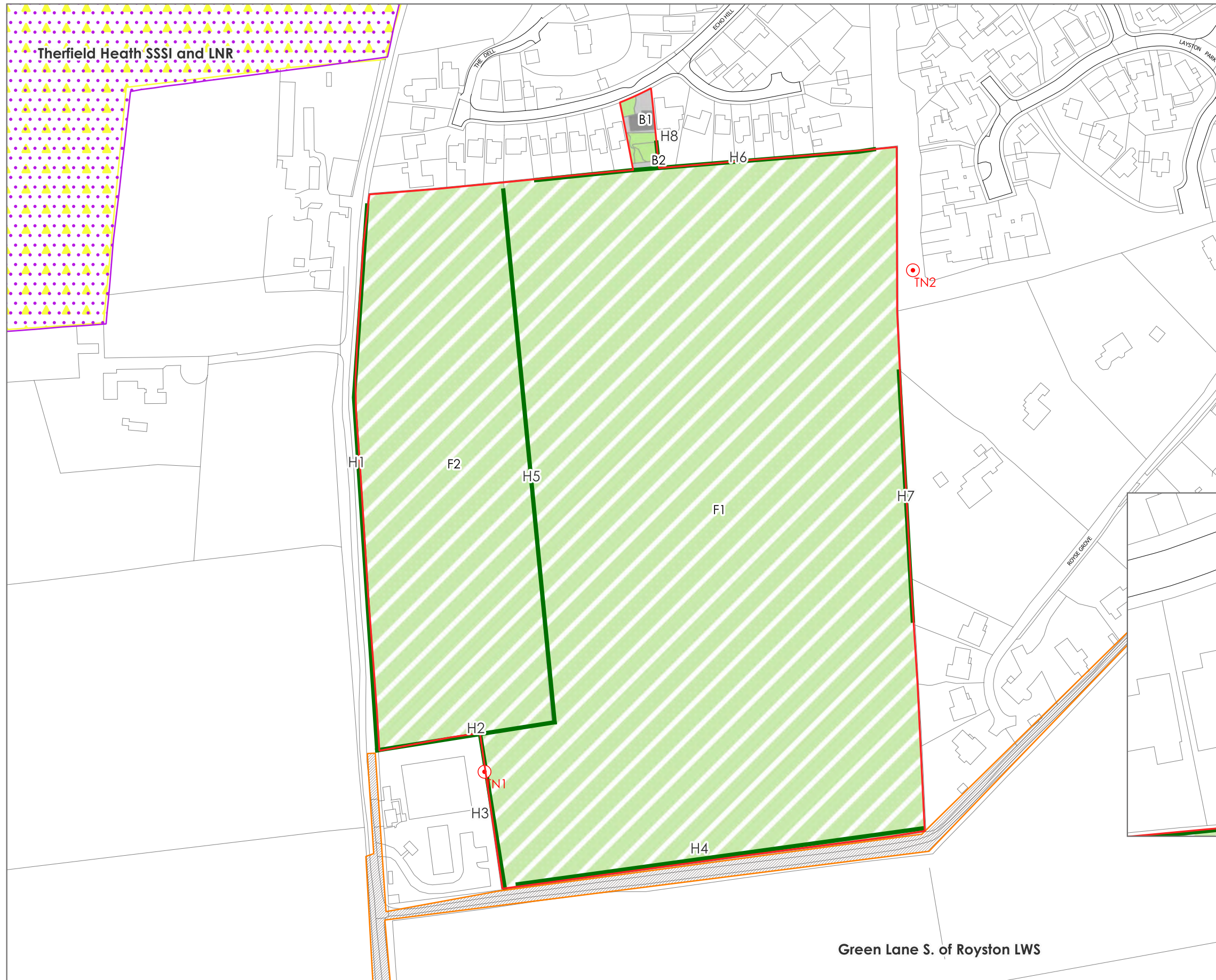
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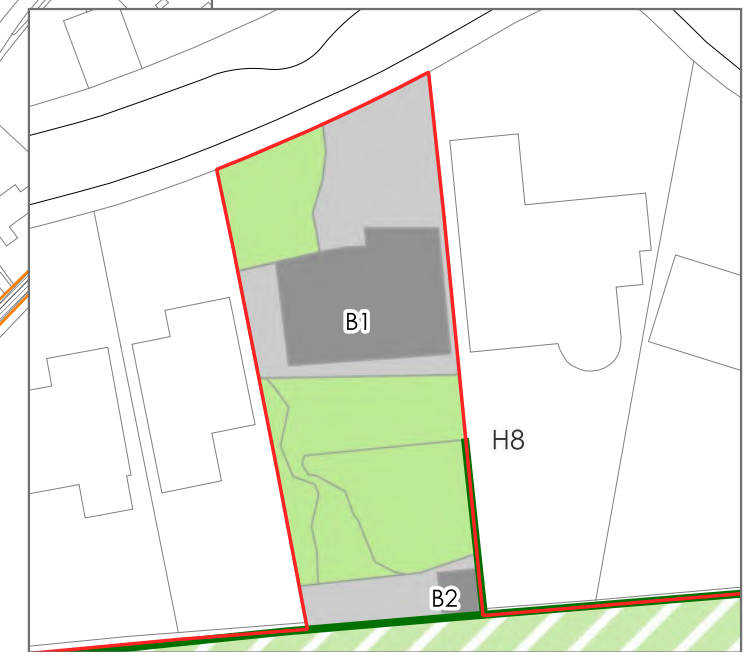
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Appendix A

Habitats Plan



- Site boundary
- Other neutral grassland (g3c)
- Suburban mosaic of developed and natural surface (u1d)
- Developed land, sealed surface (u1b6)
- Buildings (u1b5)
- Native hedgerows (h2a)
- Target notes:
TN1 - Barn owl pellets
TN2 - Offsite trees with bat roosting potential
- Therfield Heath SSSI
- Therfield Heath LNR
- Green Lane S. of Royston LWS



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Project	Land off Echo Hill, Royston	Date	October 2025	Drawing No.	CSA/7494/108
Drawing Title	Habitats Plan	Scale	1:2000 at A3	Rev	A
Client	Gladman Developments Ltd	Drawn	FS/RT	Checked	BW

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

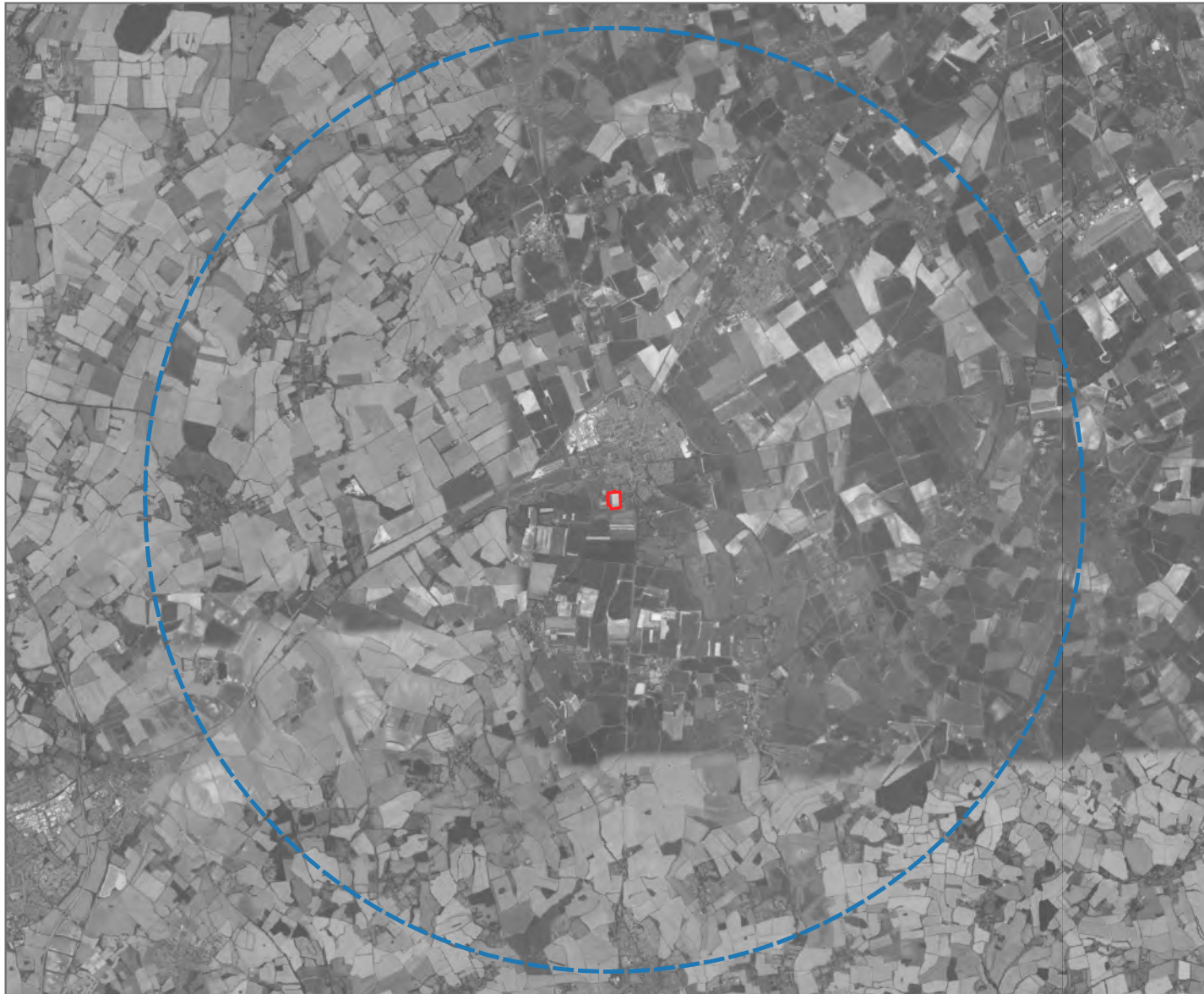
Policy	Summary
North Herts Local Plan 2011-2031	
Policy SP12: Green infrastructure,	a) Protect, identify, manage and where possible enhance a strategic multi-functional network of green infrastructure;

Policy	Summary
landscape and biodiversity	b) Consider and respect landscape character, scenic beauty and locally sensitive features, particularly in relation to the Chilterns Area of Outstanding Natural Beauty; c) Protect, enhance and manage designated sites in accordance with the following hierarchy of designations and features: • Internationally designated sites • Nationally designated sites • Locally designated sites; • Non-designated sites that include important habitats and species d) Protect, enhance and manage biodiversity networks including wildlife corridors, ancient woodlands and hedgerows, wetland and riverine habitats, Local Geological Sites, protected species, priority species and habitats, and non-designated sites of ecological value and ensure measurable net gains for biodiversity; and e) Protect other open spaces and support provision of new and improved open space.
Policy NE4: Biodiversity and geological sites	Planning permission will only be granted for development proposals that appropriately protect, enhance and manage biodiversity in accordance with the hierarchy and status of designations and features listed in Policy SP12. All development should deliver measurable net gains for biodiversity and geodiversity, contribute to ecological networks and the water environment, and/or restore degraded or isolated habitats where possible. Applicants should, having regard to the status of any affected site(s) or feature(s): a) Submit an ecological survey that is commensurate to the scale and location of the development and the likely impact on biodiversity, the legal protection or other status of the site; b) Demonstrate that adverse effects can be avoided and / or satisfactorily minimised having regard to the hierarchy of protection below: • locating on an alternative site with a less harmful impact; • providing adequate mitigation measures; or • as a last resort compensated for. The acceptability of approach(es) to avoidance, mitigation and compensation will be commensurate with the status of the asset(s) likely to be affected by the application; Compensation is unlikely to be an appropriate solution for proposals affecting nationally or internationally designated sites other than in the most exceptional circumstances. c) Include appropriate measures to manage construction impacts by demonstrating how existing wildlife habitats supporting protected or priority species will be retained, safeguarded and managed during construction;

Policy	Summary
	d) Integrate appropriate buffers of complimentary habitat for designated sites and other connective features, wildlife habitats, priority habitats and species into the ecological mitigation and design. The appropriateness of any buffers will be considered having regard to the status of the relevant habitat. 12 metres of complimentary habitat should be provided around wildlife sites (locally designated sites and above), trees and hedgerows. It may be necessary to exceed this distance for fragile habitats such as ancient woodland or to provide appropriate root protection for mature trees; and e) Provide a long-term management and monitoring plan including mitigation measures as necessary. Local Geological Sites are ratified by the Herts & Middlesex Wildlife Trust (HMWT) and are afforded the same protection as Local Wildlife Sites.

Appendix C

Desk Study Information



-  Site boundary
-  10km buffer
-  Special Protection Areas (SPA)
-  Ramsar
-  Special Areas of Conservation (SAC)

*No designations identified within search area



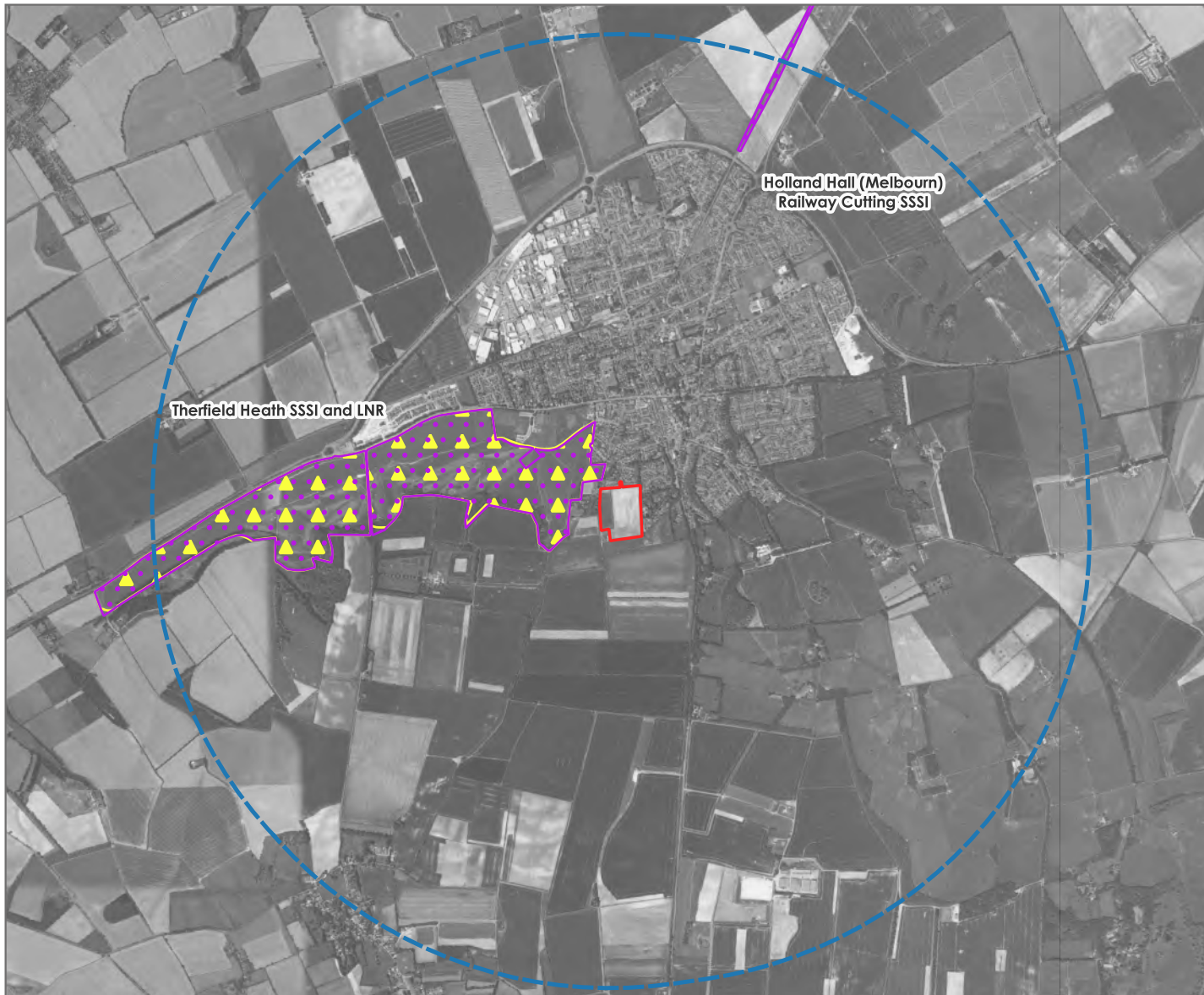
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Project	Land off Echo Hill, Royston	Date	February 2025	Drawing No.	CSA/7494/100
Drawing Title	International Statutory Designations	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RB	Checked	JW



- Site boundary
- 3km buffer
- Sites of Special Scientific Interest (SSSI)
- Local Nature Reserve (LNR)
- National Nature Reserves (NNR)



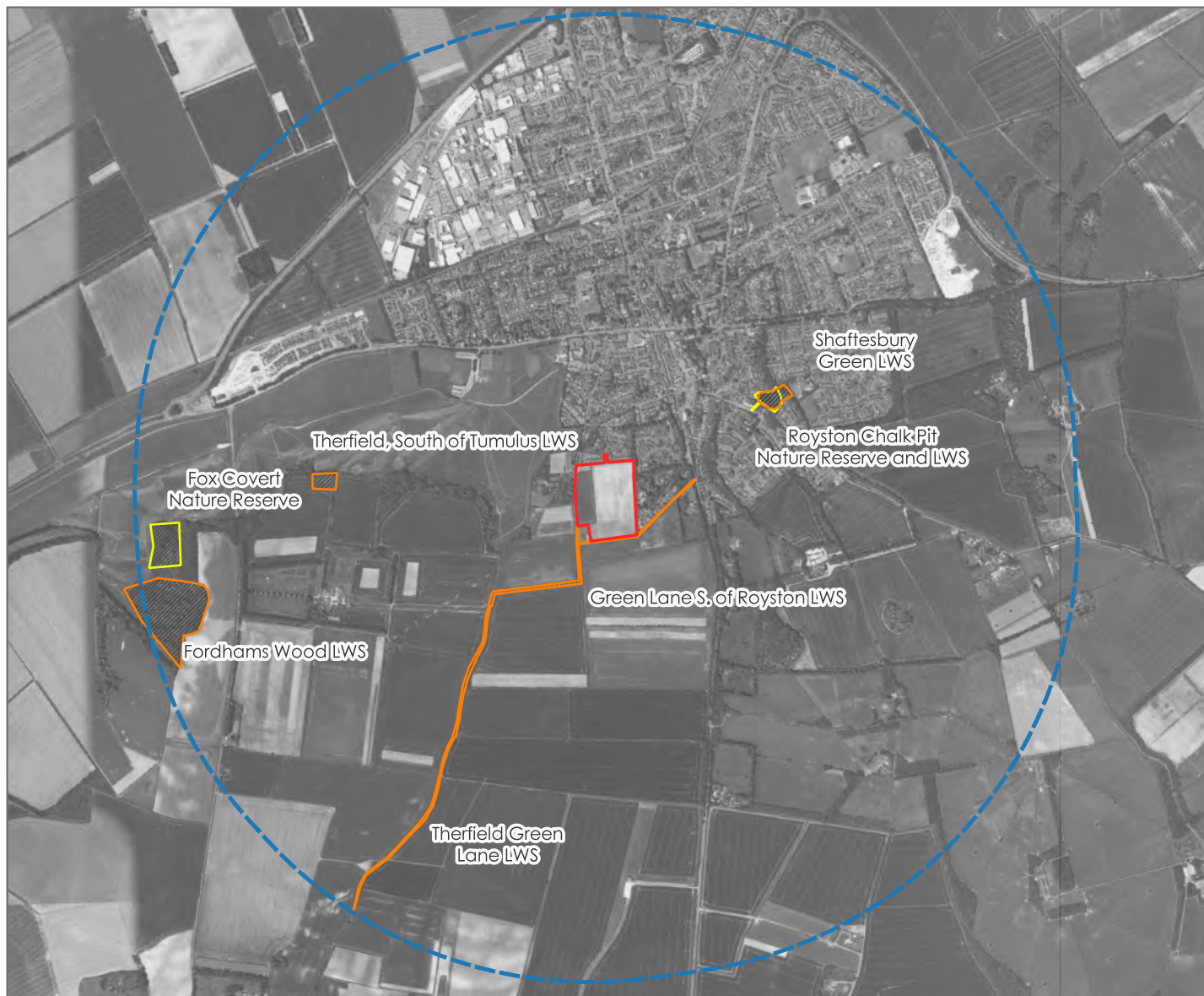
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Project	Land off Echo Hill, Royston	Date	February 2025	Drawing No.	CSA/7494/101
Drawing Title	National and Local Statutory Designations	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RB	Checked	JW



- Site boundary
- 2km buffer
- Local Wildlife Sites (LWS)
- Nature Reserves



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Project	Land off Echo Hill, Royston	Date	February 2025	Drawing No.	CSA/7494/102
Drawing Title	Non-Statutory Designations	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RB	Checked	JW



- Site boundary
- 1km buffer
- Deciduous woodland
- Lowland calcareous grassland
- No main habitat but additional habitats present
- Traditional orchard



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Project	Land off Echo Hill, Royston	Date	February 2025	Drawing No.	CSA/7494/103
Drawing Title	Priority Habitats	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RB	Checked	JW



 Site boundary

 2km buffer

*No designations identified within search area

0 500 1,000 m


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Project	Land off Echo Hill, Royston	Date	February 2025	Drawing No.	CSA/7494/104
Drawing Title	Ancient Woodland	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RB	Checked	JW



- Site boundary
- 2km buffer
- Granted EPS applications - Great crested newt
- Granted EPS applications - Bat



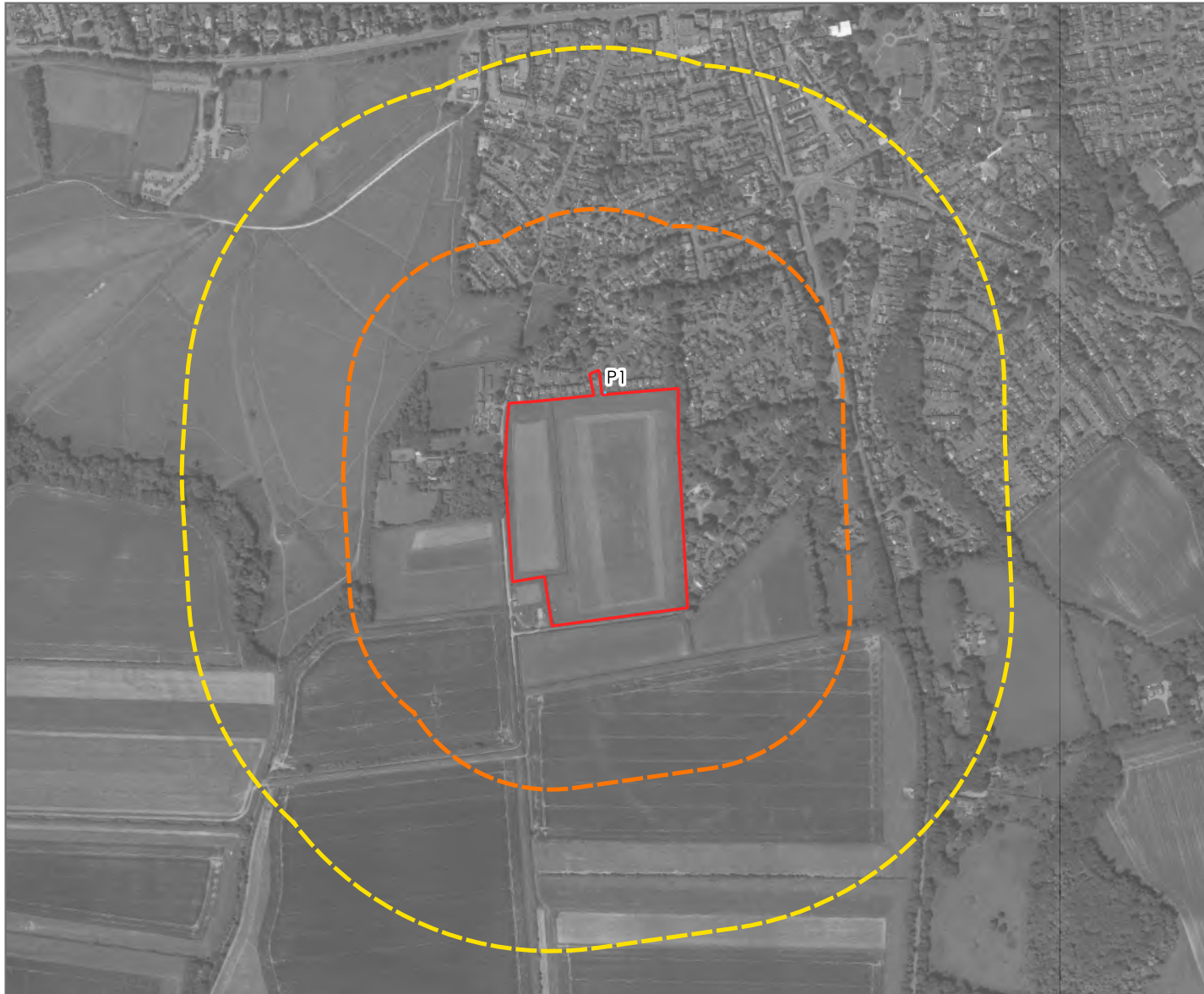
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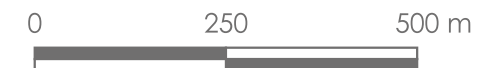
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Project	Land off Echo Hill, Royston	Date	February 2025	Drawing No.	CSA/7494/105
Drawing Title	Granted EPS Applications	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RB	Checked	JW



-  Site boundary
-  250m Pond Buffer
-  500m Pond Buffer
-  Ponds (with reference number)



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Project	Land off Echo Hill, Royston	Date	February 2025	Drawing No.	CSA/7494/106
Drawing Title	Pond Plan	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RB	Checked	JW



-  Site boundary
-  1km buffer
-  Great Crested Newt class survey licence returns



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Project	Land off Echo Hill, Royston	Date	February 2025	Drawing No.	CSA/7494/107
Drawing Title	Great Crested Newt class survey licence returns	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RB	Checked	JW

Appendix D

Photographs



Photograph 1. F1 from the southern boundary of the Site.



Photograph 2. F1 showing the tussocky edge of the field



Photograph 3. F2 looking towards the southern boundary of the Site.



Photograph 4. H1 along the western boundary of the Site.



Photograph 5. H2 along the south-west boundary of the Site.



Photograph 6. H3 along the western boundary of the Site.



Photograph 7. H4 along the southern boundary of the Site.



Photograph 8. H5 along the centre of the Site.



Photograph 9. H6 along the northern boundary of the Site.



Photograph 10. Northern elevation of B1.



Photograph 11. Southern elevation of B1 and vegetated garden.



Photograph 12. Green Lane S.of Royston LWS, adjacent to the southern boundary of the Site.

Appendix E

Habitats and Flora Species List

Table 1. Habitat Polygons					
Site Name	Land off Echo Hill, Royston				
Survey Date and Surveyor(s)	20/02/2025; Bethany Wilson ACIEEM FISC Level 4 and Rosie Billington; 19/06/2025: Jamie Woollam CEcol MCIEEM (FISC Level 5)				
Scientific Name	Common Name	Other Neutral grassland (g3c):F1	Other Neutral grassland (g3c): F2	Suburban mosaic of developed and natural surface (u1 d)	Offsite Calcareous grassland (g2)
Bryophytes					
<i>Rhytiadelphus squarrosus</i>	Springy turf-moss			X	
Ferns					
Herb Species					
<i>Achillea millefolium</i>	Yarrow	X	X		
<i>Agrimony eupatoria</i>	Common agrimony		X		X
<i>Anthriscus sylvestris</i>	Cow parsley		X		X
<i>Artemisia vulgaris</i>	Mugwort	X			X
<i>Ballota nigra</i>	Black horehound	X			
<i>Bellis perennis</i>	Daisy			X	
<i>Betonica officinalis</i>	Betony	X			
<i>Bryonia sp.</i>	Bryony				X
<i>Calystegia arvensis</i>	Field bindweed	X			
<i>Calystegia sepium</i>	Hedge bindweed				X
<i>Capsella bursa-pastoris</i>	Shepherd's-purse	X			
<i>Centaurea nigra</i>	Common knapweed*, **	X	X		X
<i>Centaurea scabiosa</i>	Greater knapweed	X	X		X
<i>Cerastium sp.</i>	Common mouse-ear		X	X	
<i>Cirsium arvense</i>	Creeping thistle	X	X		
<i>Cirsium vulgare</i>	Spear thistle	X	X		X
<i>Conium maculatum</i>	Hemlock	X			
<i>Cotoneaster sp.</i>	Cotoneaster			X	
<i>Cruciata laevipes</i>	Crosswort				X
<i>Daucus carota</i>	Wild carrot	X	X		
<i>Epilobium sp.</i>	Willowherb	X		X	
<i>Galium album</i>	Hedge bedstraw	X			
<i>Galium aparine</i>	Cleavers		X		
<i>Geranium molle</i>	Dove's-foot crane's-bill	X	X		
<i>Geum urbanum</i>	Wood avens			X	X
<i>Glechoma hederacea</i>	Ground-ivy	X	X	X	
<i>Helleborus sp.</i>	Hellebore			X	
<i>Helminthotheca echioides</i>	Bristly oxtongue	X			
<i>Heracleum sphondylium</i>	Hogweed	X			X
<i>Hypericum perforatum</i>	Perforate St John's-wort		X		X
<i>Hypochaeris radicata</i>	Common cat's-ear		X		
<i>Knautia arvensis</i>	Field scabious*, **		X		X
<i>Knautia sp.</i>	Scabious**	X			
<i>Lamium sp.</i>	Dead-nettle		X		
<i>Lavandula angustifolia</i>	Lavender			X	
<i>Leontodon hispidus</i>	Rough hawkbit				X
<i>Leucanthemum vulgare</i>	Oxeye daisy*, **	X	X		
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil				X
<i>Narcissus sp.</i>	Daffodil			X	
<i>Orbanche elatior</i>	Knapweed broomrape**		X		
<i>Pentaglottis sempervirens</i>	Green alkanet			X	
<i>Picris sp.</i>	Hawkweed	X			
<i>Plantago lanceolata</i>	Ribwort plantain	X	X		
<i>Potentilla reptans</i>	Creeping cinquefoil			X	
<i>Primula veris</i>	Cowslip*, **	X			
<i>Prunella vulgaris</i>	Selfheal	X	X	X	
<i>Ranunculus acris</i>	Meadow buttercup*, **		X		
<i>Ranunculus repens</i>	Creeping buttercup		X		
<i>Reseda lutea</i>	Wild mignonette	X			
<i>Rumex acetosa</i>	Common sorrel			X	
<i>Salvia rosmarinus</i>	Rosemary			X	
<i>Senecio jacobaea</i>	Common ragwort	X	X	X	
<i>Silene latifolia</i>	White campion		X		
<i>Silene vulgaris</i>	Bladder campion				X
<i>Taraxacum agg.</i>	Dandelion		X	X	
<i>Tragopogon pratensis agg.</i>	Goat's-beard				X
<i>Trifolium pratense</i>	Red clover				X
<i>Trifolium repens</i>	White clover		X	X	
<i>Tulipa liliaceae</i>	Tulip			X	
<i>Urtica dioica</i>	Common nettle		X	X	X
<i>Veronica chamaedrys</i>	Germander speedwell	X	X		
<i>Vicia sativa</i>	Common vetch				X
<i>Viola sp.</i>	Pansy			X	
Sedges and Rushes					
<i>Carex pendula</i>	Pendulous sedge			X	
Grasses					
<i>Agrostis capillaris</i>	Common bent*, **	X	X		
<i>Alopecurus pratensis</i>	Meadow foxtail	X	X		
<i>Anisantha sterilis</i>	Barren brome		X		
<i>Arrhenatherum elatius</i>	False oat-grass	X	X		X
<i>Brachypodium sylvaticum</i>	False brome				X
<i>Bromus hordeaceus</i>	Soft-brome		X		
<i>Cynosurus cristatus</i>	Crested dog's-tail*, **		X		
<i>Dactylis glomerata</i>	Cock's-foot	X	X	X	X
<i>Elytrigia repens</i>	Common couch		X		
<i>Festuca rubra</i>	Red fescue	X	X	X	X
<i>Holcus lanatus</i>	Yorkshire-fog		X		
<i>Hordeum secalinum</i>	Meadow barley		X		
<i>Lolium perenne</i>	Perennial rye-grass	X	X	X	X
<i>Lolium pratense</i>	Meadow fescue*, **	X	X		
<i>Phleum pratense</i>	Timothy	X	X		
<i>Poa pratensis</i>	Smooth meadow-grass		X		

Scientific Name	Common Name				
		Other Neutral grassland (g3c):F1	Other Neutral grassland (g3c): F2	Suburban mosaic of developed and natural surface (u1 d)	Offsite Calcareous grassland (g2)
<i>Trisetum flavescens</i>	Yellow oat-grass	X	X		X
Woody Species					
Coniferous					
<i>Thuja plicata</i>	Western red cedar				
Broadleaved					
<i>Acer pseudoplatanus</i>	Sycamore				X
<i>Crataegus monogyna</i>	Hawthorn				X
<i>Evonymus europaeus</i>	Spindle			X	
<i>Hedera helix</i>	Ivy		X		
<i>Ilex aquifolium</i>	Holly			X	
<i>Ligustrum sp.</i>	Privet				X
<i>Prunus avium</i>	Cherry			X	
<i>Prunus spinosa</i>	Blackthorn		X		X
<i>Rosa canina sp.</i>	Dog-rose				X
<i>Rubus fruticosus agg.</i>	Bramble		X		
<i>Sambucus nigra</i>	Elder				X
<i>Ulmus sp.</i>	Elm				X

Hertfordshire Local Wildlife Site Selection Criteria - Plant Indicator Species of Old Grassland: * Neutral Grassland, ** Mixed Grassland.

Site Name	Land off Echo Hill, Royston								
Survey Date and Surveyor(s)	19/06/2025 Jamie Woollam CEcol MCIEEM (FISC Level 5)								
Scientific Name	Common Name	Field F1					Field F2		
		QA	QB	QC	QD	QE	QA	QB	QC
Approximate Grid Reference		TL 35344 39798	TL 35473 39867	TL 35378 39946	TL 35461 40022	TL 35363 40071	TL 35256 40073	TL 35308 39984	TL 35268 39881
<i>Achillea millefolium</i>	Yarrow				R	R			
<i>Agrostis capillaris</i>	Common bent	R	R	R		R	R	R	O
<i>Arrhenatherum elatius</i>	False oat-grass	F	R	R		R	A	F	R
<i>Bromus hordeaceus</i>	Soft-brome						R		
<i>Calystegia arvensis</i>	Field bindweed		R		R				
<i>Centaurea nigra</i>	Common knapweed	R				R			
<i>Centaurea scabiosa</i>	Greater knapweed	O				R	R		F
	Crested dog's-tail							F	R
<i>Dactylis glomerata</i>	Cock's-foot	F	F	F	F	F	O	O	
<i>Daucus carota</i>	Wild carrot		R	R	R				R
<i>Festuca rubra</i>	Red fescue	F	O	O	O	O	F	O	F
<i>Galium album</i>	Hedge bedstraw	R				R			
<i>Holcus lanatus</i>	Yorkshire-fog						O		R
<i>Hypericum perforatum</i>	Perforate St John's-wort								R
<i>Knautia arvensis</i>	Field scabious						R		R
<i>Leucanthemum vulgare</i>	Oxeye daisy	O						O	F
<i>Lolium perenne</i>	Perennial rye-grass	R	R	O	O	O	R		
<i>Lolium pratense</i>	Meadow fescue		R	R	R		O	O	O
<i>Phleum pratense</i>	Timothy	F	F	F	F	F	R	F	R
<i>Poa pratensis</i>	Smooth meadow-grass						O	R	R
<i>Prunella vulgaris</i>	Selfheal	O							
<i>Reseda lutea</i>	Wild mignonette		R	R	R				
<i>Silene latifolia</i>	White campion							R	R
<i>Trisetum flavescens</i>	Yellow oat-grass	O	R	R	R		R	O	O
Quadrat Average per Field		10.6					13		
Total Number per Quadrat		12	11	10	10	10	13	11	15
Quadrat Average Per Field (removing undesirable species)		10.6					13		
Total Number per Quadrat (removing undesirable species)		12	11	10	10	10	13	11	15



- Site boundary
- Quadrats: F1
- Quadrats: F2



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Project	Land off Echo Hill, Royston	Date	September 2025	Drawing No.	CSA/7494/114
Drawing Title	Quadrats Plan	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RT	Checked	BW

Appendix F

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 G

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 19 and 24 June 2025 by Jamie Woollam MCIEEM and Bethany Wilson ACIEEM respectively, 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 H8, and the location of each hedgerow is shown on the Habitats Plan (CSA/7494/108).

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.

Statutory Biodiversity Metric Condition Assessment

- 2.7 The Statutory Biodiversity Metric condition assessment criteria for hedgerows uses a series of ten attributes, representing key physical characteristics to determine whether a hedgerow is in favourable condition.
- 2.8 Each attribute is assigned to one of five functional groups (A-E), as indicated below, and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria.
- 2.9 The hedgerow condition assessment generates a weighting (score) ranging from 1-3 which is used in the Statutory Biodiversity Metric. The scores places each hedgerow in a category of 'Good', 'Moderate' or 'Poor' condition.

Attributes

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

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

* Additional group, applicable to hedgerows with trees only

Limitations

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

3.0 Results

- 3.1 Hedgerow numbers are shown on the Habitats Plan (CSA/7494/108) in Appendix A. Full survey results are shown in Tables 1 and 2 below and species lists for each hedgerow are available in Appendix E (Table 2).

Table 1. Hedgerow Survey Results Overview

Number	Length (m)	Important Hedgerow? (As defined by 'Hedgerow Regs')	Species Rich? (5 or more woody species along selected 30m section?)	Condition: 'Good', 'Moderate' or 'Poor'? (As defined by the Statutory Biodiversity Metric Condition Assessment)
H1	270	✓	×	Good
H2	90	✓	×	Good
H3	75	✓	×	Good
H4	200	✓	×	Good
H5	265	✓	×	Good
H6	170	×	×	Moderate
H7	120	×	×	Good
H8	30	×	×	Poor

Table 1. Hedgerow Survey Results (H1 - H8)

Date of Survey	19/06/2025 & 24/06/2025							
Surveyor(s)	Jamie Woolam CÉcol MCIEEM & Bethany Wilson ACIEEM							
General Hedgerow Information								
Hedgerow length (m)	H1	H2	H3	H4	H5	H6	H7	H8
	270	90	75	200	265	170	120	30
Average height along length of hedgerow (m)	2	3	5	2	3	4	4	3
Average width at widest point of hedgerow (m)	2	2	2	3	2	2	4	1.5
Is woody component of hedgerow <5m at base?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of 30m sections for specified sampling technique	3	1	1	2	3	2	2	1
Average number of native woody species (following specified sampling technique)	<5	<5	<5	<5	<5	<5	<5	<5
Number of native woody species (along total length)	8	4	3	7	5	3	1	1
Species-rich hedgerow? (5 or more native woody species in 30m section)	No	No	No	No	No	No	No	No

Table 2. Assessment of Important Hedgerows (H1 - H8)

Application of Regulations								
H1H2H3H4H5H6H7H8								
Does the hedgerow lie within, or mark the boundary to, a private garden?	No	No	No	No	No	Yes	Yes	Yes
Regulation 4: Criteria for determining "Important Hedgerows"								
Has the hedgerow existed for 30 years or more? (Consider age of trees/coppice and review aerial photography or historic mapping.)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
If so, does it meet one or more of the criteria listed in Part II of Schedule 1, listed below?	Yes	Yes	Yes	Yes	Yes	Yes	No	No
As such, is it an Important Hedgerow?	Yes	Yes	Yes	Yes	Yes	No	No	No
Schedule 1: Additional Criteria for Determining "Important Hedgerows"- Part II, Criteria								
Archaeology and history								
Has a desk-based assessment of historic/archaeological significance been undertaken?	No	No	No	No	No	No	No	No
If so, has the hedgerow been considered 'important' under these criteria?	-	-	-	-	-	-	-	-
Wildlife and Landscape								
Does the hedgerow 'contain' any of the following species, or are there records of these species (within the last five or ten years for animals or plants, respectively) with no subsequent negative records?:	Yes	Yes	Yes	Yes	Yes	Yes	No	No
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	Yes	No	No	No	No	No
	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	No	No	No	No	No	No	No	No
Does the hedgerow include at least 7 woody species? (Subject to specified sampling technique)	No	No	No	No	No	No	No	No
Does the hedgerow include 6 woody species and support at least 3 additional features, or 5 woody species and at least 4 of the following additional features, as set out below?:	No	No	No	No	No	No	No	No
Bank or wall which supports the hedge along half its length?	Yes	No	Yes	No	No	No	No	No
Gaps <10% aggregate length of hedgerows?	Yes	Yes	Yes	Yes	Yes	No	No	No
One standard tree per 50m?	No	No	No	No	No	No	No	No
At least three woodland (ground flora) species within 3m of the hedgerow?	No	No	No	No	No	No	No	No
Ditch along at least half hedgerow length?	No	No	No	No	No	No	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.)	Yes	No	No	Yes	No	Yes	No	No
Parallel hedgerow within 15m?	Yes	No	No	Yes	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?								
Is the hedgerow adjacent to a bridleway or footpath?	Yes	No	No	Yes	No	No	No	No
Is the hedgerow adjacent to a bridleway or footpath and include at least four woody species and two additional features?	No	No	No	No	No	No	No	No
Schedule 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								
Beech <i>Fagus sylvatica</i>							✓	✓
Blackthorn <i>Prunus spinosa</i>	✓	✓		✓	✓	✓		
Dog-rose <i>Rosa canina</i> sp.				✓	✓			
Elder <i>Sambucus nigra</i>	✓	✓			✓			
Elm <i>Ulmus</i> species			✓					
Field-rose <i>Rosa arvensis</i>	✓							
Hawthorn <i>Crataegus monogyna</i>	✓			✓	✓	✓		
Holly <i>Ilex aquifolium</i>	✓		✓	✓	✓			
Oak, pedunculate <i>Quercus robur</i>	✓							
Plum <i>Prunus domestica</i> ^{^**}		✓	✓	✓		✓		
Privet, wild <i>Ligustrum vulgare</i>				✓				
Spindle <i>Euonymus europaeus</i>	✓							
Sycamore <i>Acer pseudoplatanus</i> ^{**}	✓	✓		✓				

Table 3. Statutory Biodiversity Metric Condition Assessment of Hedgerows (H1 - H8)

Hedgerow Condition Assessment	H1	H2	H3	H4	H5	H6	H7	H8
Hedgerow Type	Native hedgerow - associated with bank or ditch	Native hedgerow	Native hedgerow - associated with bank or ditch	Native hedgerow	Native hedgerow	Native hedgerow	Native hedgerow	Native hedgerow

A1. Height >1.5m average along length	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
A2. Width >1.5m average along length	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail
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	Fail	Pass	Fail
B2. Gap - hedge canopy continuity. Gaps make up <10% of total length; and no canopy gaps >5m	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Pass
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	Pass	Pass	Pass	Pass	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)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail
D1. Invasive & neophyte species. >90% of hedgerow and undisturbed ground vegetation is free of invasive non-native plant species and recently introduced species [i.e. <10% invasives]	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
D2. Current damage. >90% of hedgerow or undisturbed ground is free of damage caused by human activities [i.e. pollution, manure, rubble, poor management]	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Fail
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.	-	-	-	-	-	-	-	-
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.	-	-	-	-	-	-	-	-
Condition								
Poor, Moderate or Good	Good	Good	Good	Good	Good	Moderate	Good	Poor

Table 1. Hedgerow Survey Results (H1 - H8)

Date of Survey	19/06/2025 & 24/06/2025							
Surveyor(s)	Jamie Woolam CÉcol MCIEEM & Bethany Wilson ACIEEM							
General Hedgerow Information								
Hedgerow length (m)	H1	H2	H3	H4	H5	H6	H7	H8
	270	90	75	200	265	170	120	30
Average height along length of hedgerow (m)	2	3	5	2	3	4	4	3
Average width at widest point of hedgerow (m)	2	2	2	3	2	2	4	1.5
Is woody component of hedgerow <5m at base?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of 30m sections for specified sampling technique	3	1	1	2	3	2	2	1
Average number of native woody species (following specified sampling technique)	<5	<5	<5	<5	<5	<5	<5	<5
Number of native woody species (along total length)	8	4	3	7	5	3	1	1
Species-rich hedgerow? (5 or more native woody species in 30m section)	No	No	No	No	No	No	No	No

Table 2. Assessment of Important Hedgerows (H1 - H8)

Application of Regulations								
H1H2H3H4H5H6H7H8								
Does the hedgerow lie within, or mark the boundary to, a private garden?	No	No	No	No	No	Yes	Yes	Yes
Regulation 4: Criteria for determining "Important Hedgerows"								
Has the hedgerow existed for 30 years or more? (Consider age of trees/coppice and review aerial photography or historic mapping.)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
If so, does it meet one or more of the criteria listed in Part II of Schedule 1, listed below?	Yes	Yes	Yes	Yes	Yes	Yes	No	No
As such, is it an Important Hedgerow?	Yes	Yes	Yes	Yes	Yes	No	No	No
Schedule 1: Additional Criteria for Determining "Important Hedgerows"- Part II, Criteria								
Archaeology and history								
Has a desk-based assessment of historic/archaeological significance been undertaken?	No	No	No	No	No	No	No	No
If so, has the hedgerow been considered 'important' under these criteria?	-	-	-	-	-	-	-	-
Wildlife and Landscape								
Does the hedgerow 'contain' any of the following species, or are there records of these species (within the last five or ten years for animals or plants, respectively) with no subsequent negative records?:	Yes	Yes	Yes	Yes	Yes	Yes	No	No
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	Yes	No	No	No	No	No
	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	No	No	No	No	No	No	No	No
Does the hedgerow include at least 7 woody species? (Subject to specified sampling technique)	No	No	No	No	No	No	No	No
Does the hedgerow include 6 woody species and support at least 3 additional features, or 5 woody species and at least 4 of the following additional features, as set out below?:	No	No	No	No	No	No	No	No
Bank or wall which supports the hedge along half its length?	Yes	No	Yes	No	No	No	No	No
Gaps <10% aggregate length of hedgerows?	Yes	Yes	Yes	Yes	Yes	No	No	No
One standard tree per 50m?	No	No	No	No	No	No	No	No
At least three woodland (ground flora) species within 3m of the hedgerow?	No	No	No	No	No	No	No	No
Ditch along at least half hedgerow length?	No	No	No	No	No	No	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.)	Yes	No	No	Yes	No	Yes	No	No
Parallel hedgerow within 15m?	Yes	No	No	Yes	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?								
Is the hedgerow adjacent to a bridleway or footpath?	Yes	No	No	Yes	No	No	No	No
Is the hedgerow adjacent to a bridleway or footpath and include at least four woody species and two additional features?	No	No	No	No	No	No	No	No
Schedule 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								
Beech <i>Fagus sylvatica</i>							✓	✓
Blackthorn <i>Prunus spinosa</i>	✓	✓		✓	✓	✓		
Dog-rose <i>Rosa canina</i> sp.				✓	✓			
Elder <i>Sambucus nigra</i>	✓	✓			✓			
Elm <i>Ulmus</i> species			✓					
Field-rose <i>Rosa arvensis</i>	✓							
Hawthorn <i>Crataegus monogyna</i>	✓			✓	✓	✓		
Holly <i>Ilex aquifolium</i>	✓		✓	✓	✓			
Oak, pedunculate <i>Quercus robur</i>	✓							
Plum <i>Prunus domestica</i> ^{^**}		✓	✓	✓		✓		
Privet, wild <i>Ligustrum vulgare</i>				✓				
Spindle <i>Euonymus europaeus</i>	✓							
Sycamore <i>Acer pseudo-platanus</i> ^{**}	✓	✓		✓				

Table 3. Statutory Biodiversity Metric Condition Assessment of Hedgerows (H1 - H8)

Hedgerow Condition Assessment	H1	H2	H3	H4	H5	H6	H7	H8
Hedgerow Type	Native hedgerow - associated with bank or ditch	Native hedgerow	Native hedgerow - associated with bank or ditch	Native hedgerow	Native hedgerow	Native hedgerow	Native hedgerow	Native hedgerow

A1. Height >1.5m average along length	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
A2. Width >1.5m average along length	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail
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	Fail	Pass	Fail
B2. Gap - hedge canopy continuity. Gaps make up <10% of total length; and no canopy gaps >5m	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Pass
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	Pass	Pass	Pass	Pass	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)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail
D1. Invasive & neophyte species. >90% of hedgerow and undisturbed ground vegetation is free of invasive non-native plant species and recently introduced species [i.e. <10% invasives]	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
D2. Current damage. >90% of hedgerow or undisturbed ground is free of damage caused by human activities [i.e. pollution, manure, rubble, poor management]	Pass	Pass	Pass	Pass	Pass	Fail	Pass	Fail
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.	-	-	-	-	-	-	-	-
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.	-	-	-	-	-	-	-	-
Condition								
Poor, Moderate or Good	Good	Good	Good	Good	Good	Moderate	Good	Poor

Appendix H

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

 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).

Preliminary Roost Assessment (PRA) - Structures

2.2 A detailed external and internal inspection of the building on-site was completed on 20 February 2025, using high-powered torches, binoculars, ladder and endoscope as appropriate. The survey was carried out by Bethany Wilson ACIEEM and Rosie Billington.

-  2.3 External inspection focused on identifying potential bat access points to the interior of each structure and any external features that could potentially be used by crevice-dwelling species. Particular attention was given to windowsills, windowpanes, weatherboarding, and pitch/ridge tiles; as evidence is typically found in these locations.
-  2.4 The internal inspection involved a systematic search for bats or any evidence of their activity, in particular droppings and/or feeding remains within the building/loft spaces of the building.
- 2.5 A description of the structures was made, including construction, condition (in respect of roosting, rather than building or structural integrity) and age (where known).
-  2.6 The aim of this inspection is to record 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 structures to support bats whilst in hibernation.

Assessing 'Potential' of Building to Support Roosting Bats

-  All structures were assigned to one of five categories in respect of their 'potential' to support roosting bats, or the confirmation of any bat roosts identified. 'Potential' in this context is taken to be the broad suitability of features to support roosting bats, based upon the nature, condition or structure of such features, in the absence of confirmed evidence of roosting.
- 2.8 Assigning the following categories is intended to determine the effort of any further targeted survey or inspections which are necessary to prove presence or likely absence of roosting bats, rather than to assign importance to such features.
-  The following categories are assigned to structures and/or trees herein, Either:
- **High** – A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/ stable hibernation site.
 - **Moderate** – A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation made at this stage is irrespective of species conservation status, which is established after presence is confirmed).

- **Low** – A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity and not a classic/cool hibernation site, but could be used by individual hibernating bats).
- **Negligible** – No obvious habitat features on site likely to be used by roosting bats. However, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.
- **None** – No habitat features on site likely to be used by any roosting bats at any time of year (i.e. a complete absence of crevices/ suitable shelter at all ground/ underground levels).

2.10 These categories above are allocated irrespective of the presence of a roost. If a roost is confirmed to be present then the categorisation still stands (because other roosts may be present but undiscovered) but 'confirmed roost' should be added, e.g. Low – confirmed roost; Medium – confirmed roost; High - confirmed roost.

2.11 The potential of a structure to support roosting bats is often influenced by its age and construction, 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 affect the potential of features to support roosting bats, insofar as determining the need or scope of further surveys or inspections. Consideration has also been given to the potential of a feature to support hibernating bats and any further works needed to confirm this.

Roost Surveys

2.12 One dusk emergence survey was undertaken on 03 July 2025 to confirm the presence/likely absence of roosting bats in association with the on-site building (B1 on Habitats Plan in Appendix A). In addition, the surveys aim to determine the character of any identified roosts, namely species present, number of roost bats and roost type (i.e. day, night feeding, maternity and transitory).

2.13 The dusk emergence survey was undertaken from 15 minutes before to 1.5 hours after British Summer Time (BST) sunset (1 hour 45 minutes total), with due consideration for the BCT good practice guidelines. The survey was carried out by Bethany Wilson ACIEEM and Laura Farrar ACIEEM Natural England Class Licence WLM-A34 - CL17, Registration Number 2020-44517-CLS-CLS) in suitable weather conditions (see Table

Table 1. Bat roost 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	
03/07/25	21:23	21:08	22:53	19	18	1	0	1	2	None

2.14 During the survey, the surveyors watched for any bats leaving or entering parts of the building and using key flight lines. Surveyors were equipped with Batlogger M2 detectors which allowed for recording and analysis of bat contacts. A note was made of all bat passes, along with the time, species and any information regarding behaviour, including direction of flight, and activity e.g. foraging/commuting.

2.15 To assist surveyors and allow for reliable observations of the building for the duration of the survey, Night Vision Aids (NVA) were used to film any bats emerging from B1. Night Vision Aids comprised two Canon XA 10 camcorders, each illuminated by a 96 LED infrared illuminator lamp and two Nightfox XB5 infrared torches used to provide additional IR illuminance.

2.16 Night Vision Aids were deployed around the building to ensure that all aspects were recorded. A still shot from each NVA was taken at the end of the survey to provide evidence of the camera coverage/field of view at the darkest point of the survey and appropriate level of illuminance, as required in line with best practice guidance.

2.17 The positions of the Night Vision Aids around the building during the survey are illustrated on the Emergence Survey Plan (CSA/7494/115) at the end of this report.

Activity Surveys

Night-time Bat Walkover/Vantage Point Surveys

2.18 Night-time Bat Walkover (NBW) surveys were undertaken in May, July, and September 2025. 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.



Stationed Surveyor Locations ◇ SSL1 ◇ SSL2

Figure 1. Stationed surveyor locations (SSL) during the Night-time Bat Walkover Surveys undertaken in May, July and September 2025.

2.19 The surveys were led by Rosie Billington, Revae Tilbury and Daniel Willits in suitable weather conditions (see Table 2).

Table 2. 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	
22/05/25	20:58	20:58	22:58	11	7	1	1	0	0	None
10/07/25	21:18	21:18	23:18	21	18	2	1	2	3	None
17/09/25	19:10	19:10	21:10	18	17	8	8	4	3	None

2.20 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.

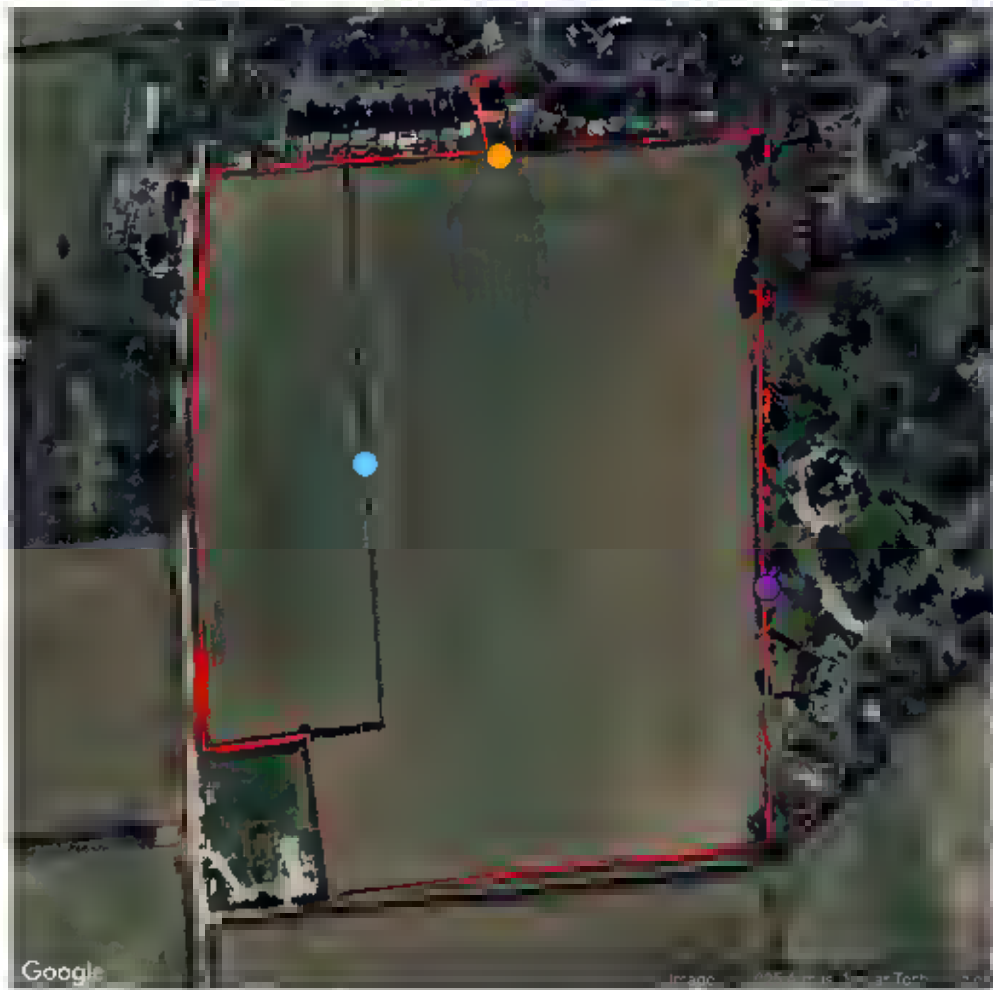
2.21 As part of the stationed observation, whilst surveyors are positioned across the Site at the start of the survey, vantage point observations were undertaken, including notes on early emerging/high-flying bats such as noctule. Notes made on behaviour include flight height, numbers of bats and direction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

2.22 Following 30 minutes of stationed observations, surveyors walked a single transect route, which aimed to cover all accessible areas, features and habitats at the Site. Each transect route was repeated at least once during each survey to minimise temporal bias and walked at a moderate and consistent speed with qualitative observations of bat behaviour made by the surveyor.

2.23 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

2.24 Three Wildlife Acoustics Songmeter Mini Bat 2 detectors were deployed monthly from May to September 2025 to provide fifteen data-sets. The position of these Monitoring Locations (ML) are shown on Figure 2 below.



Monitoring Locations ● ML1 ● ML2 ● ML3

Figure 2. The position of each Monitoring Location (ML) surveyed during remote monitoring surveys in May, June, July, August, and September 2025.

- 2.25 The detectors were setup 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.
- 2.26 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 the hedgerows and the grassland fields.
- 2.27 Weather conditions were obtained for each night surveyed using historic weather data from the World Weather Online website, with weather observations taken from Stansted (Lat: 51.8833 | Long: 0.2333) weather station. The five nights showing the most optimal weather conditions (in terms of temperature, precipitation and wind speed, see Table 4) were taken forward for analysis.

- 2.29** 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

- 2.30** 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.
- 2.31** 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.
- 2.32** 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.
- 2.32** 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.

Reviewing Video Footage

- 2.33** Analysis of Night Vision Aid footage was carried out using VLC Media Player and Canon Utility software at a review speed of no more than 1.5x to avoid skipping of frames and any emergencies. A still shot from each Night Vision Aid was taken at the end of the survey to provide evidence of the camera coverage/field of view at the darkest point of the survey and appropriate level of illuminance, as required in line with best practice guidance (see the end of this report).

Limitations

- 2.34** 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.

 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.

 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.

3.0 Results

 The Site comprises two neutral grassland fields bounded by external and internal hedgerows. Adjacent habitats include residential areas, arable fields, woodland, and grassland. Notably, Therfield Heath SSSI and LNR (designated for grassland and woodland habitats) is located c. 60m west of the Site.

Preliminary Roost Assessment (PRA) – Structures

 Building B1 comprises a two storey-residential house comprising a single pitched clay tile roof with two gable ends. Two mesh covered vents are present on the apex of the roof. The exterior of the roof and walls are in good condition with very limited cracks, missing tiles or potential access points within the walls. Wooden soffits around the roof are generally in good condition and tightly sealed, however, where gaps appear these are exposed and highly cobwebbed.

 The windows are well sealed, except for a single minor crack within the concrete along the southern elevation of the house. This may lead to a small moderately exposed crevice. Two dormer windows are present along the northern elevation, with wooden barge boards, soffits and lead flashing. Small gaps are present between the wooden soffits and the lead flashing on both of these dormer windows.

 Internally, the loft void is in frequent use as storage. As such, it is well sealed, maintained and clean. A covered water tank is present on the eastern elevation. The western chimney breast has recently been repointed with no features suitable for roosting bats identified. No light ingress or features suitable for bats to access were present within the roof void (with the apex vents sealed from the outside). Evidence of old wasp activity was observed.

 The building was classified as having 'Low' potential to support roosting bats.

 Building B2 was a garden shed of wooden construction with a bitumen felt lined roof. This building was well-sealed and did not have features suitable for roosting bats. Building B2 therefore is classified as 'Negligible' to support

Roost Surveys

Emergence Survey 1: 03 July 2025

 No bats of any species were seen to emerge during the survey.

 The calls of two bat species were recorded during the survey: common pipistrelle *Pipistrellus pipistrellus*, and soprano pipistrelle *P. pygmaeus*. Activity was largely associated with brief passes, with most bats noted flying between adjacent gardens and houses.

Activity Surveys

Night-time Bat Walkover

 Stationed surveyor location (SSL) 1 is located at the north-eastern corner of F1. This vantage point is focusing on the navigational pathways along H6, the edge of the offsite woodland to the east, and the grassland field. Only two bats were observed at SSL1 during the night-time bat walkover surveys. One pipistrelle was seen flying over the houses north of the Site at 21:29 (31 minutes after sunset), during the May survey, at the very end of the stationary observation period. The second observation was of a common pipistrelle flying from the Site north into the gardens north of the Site at 19:29 (19 minutes after sunset), during the September survey.

B.10 SSL2 is located on the corner of H2 and H5 within F1. This vantage point is focusing on navigational pathways along these two hedgerows as well as activity within the grassland field. No bat activity was recorded during any of the Night-time bat walkover surveys at SSL2, possibly due to the area being around the top of a hill, and consequently being quite windy.

B.11 At least four species of bat were recorded across the site during the walked transect surveys, comprising common pipistrelle, nyctalus bat *Nyctalus* sp., serotine *Eptesicus serotinus* and brown long-eared *Plecotus auritus*. All of these species were recorded during the May survey, while in both the July and the September surveys, only common pipistrelle were recorded. The majority of contacts were recorded along H1 within F2, or within the northern third of F1.

B.12 The walked transect surveys also recorded low levels of bat activity, although it increased over the course of the year - with May having the fewest contacts and September having the most.

- B.13 It should be noted that while barbastelle calls were recorded during static monitoring surveys (see below), no barbastelles were encountered during the night-time bat walkover surveys.
- B.14 The number of bat contacts recorded for each species are summarised in Table 3 below. The locations of each bat contact and the overall distribution of activity across the Site are illustrated in Figures 3 and 4.

Table 3. Summary of bat contacts recorded during transect surveys

Month	Common pipistrelle	Brown long-eared	Nyctalus species	Serotine
July	1	1	2	2
August	12	0	0	0
September	34	0	0	0
Total	47	1	2	2
Percentage of Total (%)	90.38	1.92	3.85	3.85



Figure 3. Locations of bat contacts recorded across all night-time bat walkover surveys

- 3.15 Figure 4 below provides an indicative illustration of 'hotspots' in bat activity recorded across all transect surveys undertaken at the Site.



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

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

Table 4. Overnight weather conditions during remote monitoring

Survey Month	Dates Sampled	Temp. (°C)		Cloud Cover (%)		Wind (km/h)		Precipitation
		Min	Max	Min	Max	Min	Max	
May	16/05/25	8	10	73	88	16	23	None
May	17/05/25	7	12	11	100	11	14	None
May	18/05/25	6	11	11	67	8	11	None
May	19/05/25	6	13	0	7	9	12	None
May	20/05/25	11	15	50	100	4	10	None
June	25/06/25	16	19	36	88	7	17	None

June	26/06/25	12	18	31	100	8	22	None
June	27/06/25	17	21	9	82	18	23	None
June	28/06/25	15	21	5	16	10	14	None
June	29/06/25	15	22	4	26	7	15	None
July	24/07/25	13	16	21	53	5	12	None
July	25/07/25	15	19	8	20	8	11	None
July	26/07/25	13	17	12	77	9	12	None
July	27/07/25	12	14	14	83	10	15	None
July	28/07/25	12	18	35	65	8	12	None
Aug	28/08/25	14	15	21	100	10	23	Intermittent light and very light rain
Aug	29/08/25	12	16	13	19	12	13	None
Aug	30/08/25	18	18	81	100	26	32	Very light rain at 00:00
Aug	31/08/25	14	16	2	33	17	21	None
Aug	01/09/25	12	15	11	29	12	17	None
Sept	18/09/25	15	18	22	49	15	19	None
Sept	19/09/25	15	17	8	26	9	12	None
Sept	20/09/25	11	14	38	96	26	30	None
Sept	21/09/25	7	11	52	81	17	19	None
Sept	22/09/25	7	8	7	70	6	11	None

B.17 Monitoring Location (ML) 1 is located within the section of H6 which backs onto the residential property within the Site. ML2 is located within the middle section of H5 and faces out to F2 while ML3 is located in F1 at the southern end of H7 adjacent to offsite residential buildings. The monitoring locations were chosen to cover all of the habitat types found at the Site, including both grassland fields, hedgerows, and residential garden. ML1 was also chosen to cover the area where access is set to come through.

B.18 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.

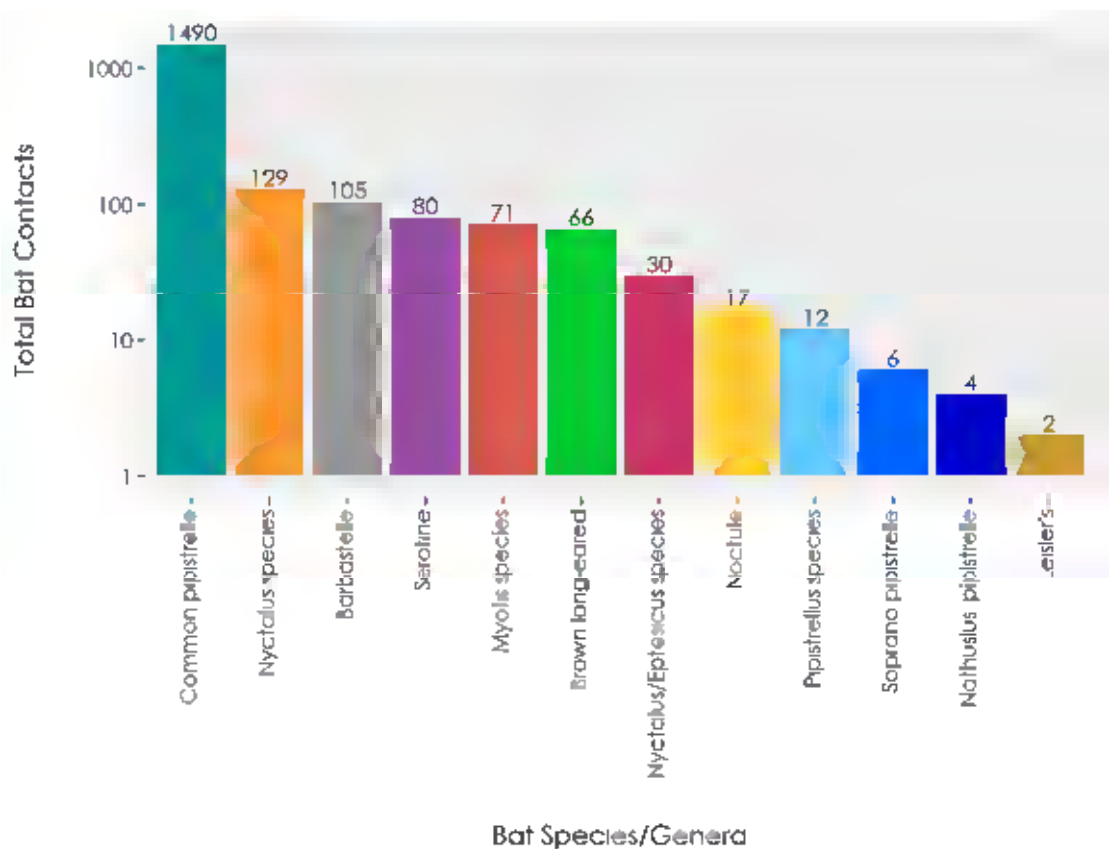


Figure 5. Total bat contacts by species/genera recorded across all remote monitoring periods and monitoring locations across the Site

5.19 Markedly higher pass numbers of common pipistrelle were recorded than any other bat species. Lower levels of *Nyctalus* species, barbastelle *Barbastella barbastellus*, serotine, *Myotis* species, and brown long-eared activity were also recorded alongside very low numbers of soprano pipistrelle and Nathusius' pipistrelle *Pipistrellus nathusii*. Other bats mentioned within the table that were recorded in very low numbers have not been listed as such here as they fall into categories which were recorded in higher numbers (for example, noctule and Leisler's bats are both *Nyctalus* bats).

5.20 Of particular note are the 'rarest' and 'rarer' bat recorded at the Site: barbastelle, serotine, Leisler's bat, and Nathusius' pipistrelle. Whilst barbastelle and serotine were the third and fourth most recorded species, activity levels were very low and contact timings suggested no roosts were present within or within close proximity to the Site. In addition to the two confirmed Leisler's contacts, an unknown proportion of the *Nyctalus* calls may also be attributed to the species. However, similarly as for barbastelle and serotine, there isn't any indication in the timings of calls that a roost is present near to the Site. For Nathusius' pipistrelle, only four contacts were recorded across all monitoring locations and periods, so it is likely activity at the Site is only associated with occasional migratory passes.

Figures 6 and 7 below show the variance in nightly activity levels for each of the bat species recorded on-site. More detailed data describing Figures 6 and 7 are provided in Table 5. The activity data in Figure 5 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.

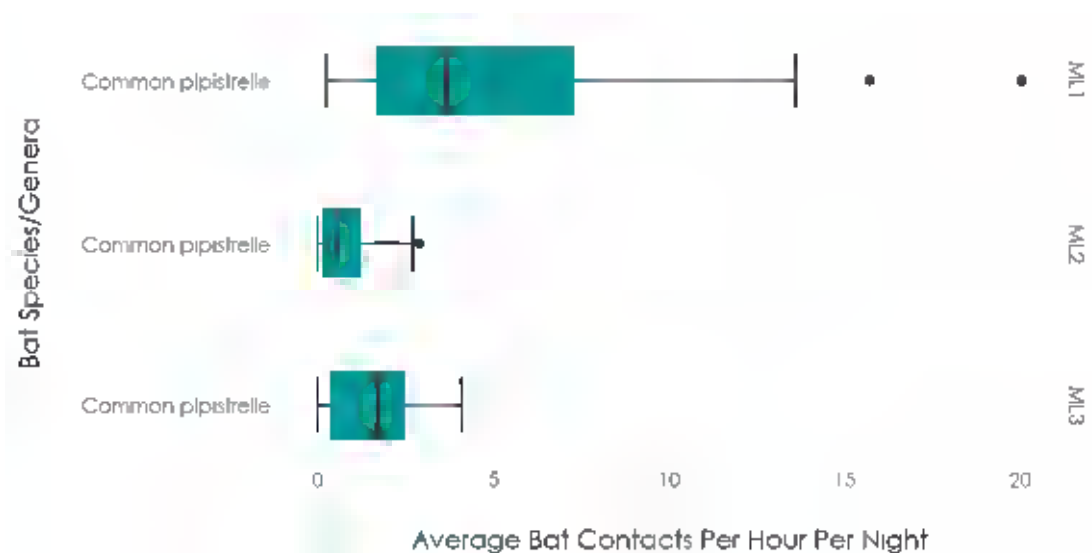


Figure 6. Average bat contacts per hour per night for common pipistrelle recorded across all remote monitoring

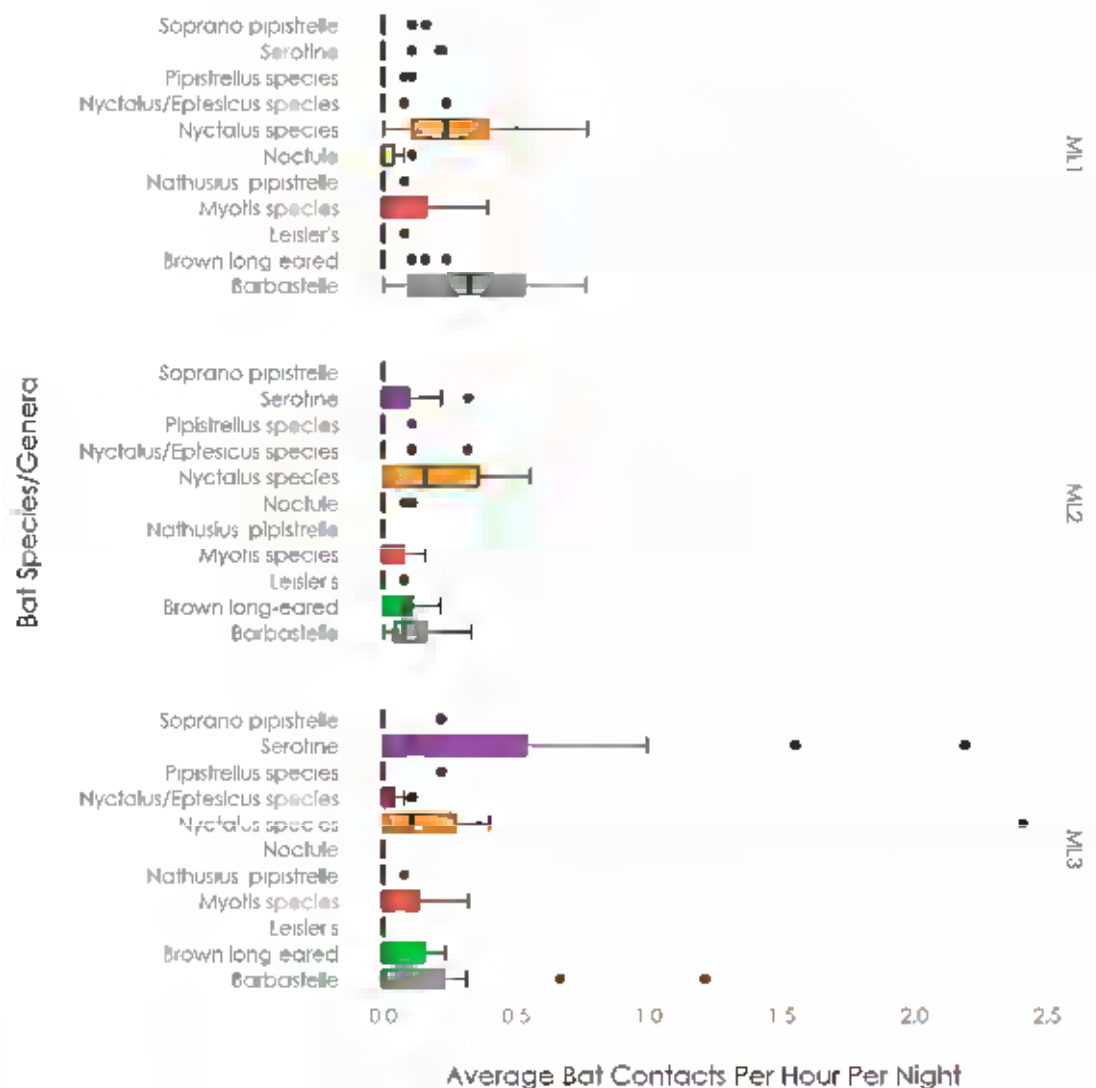


Figure 7. Average bat contacts per hour per night for each bat species/genera besides common pipistrelle recorded across all remote monitoring

22 Bat activity appears to be slightly higher at ML1 than the other two monitoring locations for common pipistrelle, while contacts of other species look to be more evenly distributed across the Site. Overall activity at the Site is very low, with contacts per hour falling well below one per hour for all species besides common pipistrelle (which also falls below one per hour at ML2).

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

ML	Species	Average bat contacts per hour per night				Total bat contacts	Number of nights monitored
		Minimum	Maximum	Median	IQ range		
ML1	Barbastelle	0.000	0.763	0.324	0.441	46	25
ML1	Brown long-eared	0.000	0.239	0.000	0.000	6	25
ML1	Common pipistrelle	0.236	20.048	3.676	5.608	915	25

ML1	Leisler's	0.000	0.080	0.000	0.000	1	25
ML1	<i>Myotis</i> species	0.000	0.392	0.000	0.163	18	25
ML1	Nathusius' pipistrelle	0.000	0.080	0.000	0.000	3	25
ML1	Noctule	0.000	0.108	0.000	0.039	4	25
ML1	<i>Nyctalus</i> species	0.000	0.767	0.235	0.286	43	25
ML1	<i>Nyctalus/ Eptesicus</i> species	0.000	0.236	0.000	0.000	4	25
ML1	Pipistrellus species	0.000	0.108	0.000	0.000	3	25
ML1	Serotine	0.000	0.221	0.000	0.000	5	25
ML1	Soprano pipistrelle	0.000	0.159	0.000	0.000	4	25
ML2	Barbastelle	0.000	0.331	0.079	0.123	18	25
ML2	Brown long-eared	0.000	0.216	0.078	0.108	11	25
ML2	Common pipistrelle	0.000	2.879	0.542	1.021	125	25
ML2	Leisler's	0.000	0.080	0.000	0.000	1	25
ML2	<i>Myotis</i> species	0.000	0.157	0.000	0.079	7	25
ML2	Nathusius' pipistrelle	0.000	0.000	0.000	0.000	0	25
ML2	Noctule	0.000	0.108	0.000	0.000	3	25
ML2	<i>Nyctalus</i> species	0.000	0.554	0.156	0.359	31	25
ML2	<i>Nyctalus/ Eptesicus</i> species	0.000	0.317	0.000	0.000	5	25
ML2	Pipistrellus species	0.000	0.110	0.000	0.000	1	25
ML2	Serotine	0.000	0.321	0.000	0.095	9	25
ML2	Soprano pipistrelle	0.000	0.000	0.000	0.000	0	25
ML3	Barbastelle	0.000	1.213	0.000	0.228	29	25
ML3	Brown long-eared	0.000	0.234	0.000	0.158	12	25
ML3	Common pipistrelle	0.000	4.097	1.720	2.063	228	25
ML3	Leisler's	0.000	0.000	0.000	0.000	0	25
ML3	<i>Myotis</i> species	0.000	0.321	0.000	0.133	12	25
ML3	Nathusius' pipistrelle	0.000	0.078	0.000	0.000	1	25
ML3	Noctule	0.000	0.000	0.000	0.000	0	25
ML3	<i>Nyctalus</i> species	0.000	2.410	0.108	0.273	39	25
ML3	<i>Nyctalus/ Eptesicus</i> species	0.000	0.109	0.000	0.039	4	25

ML3	Pipistrellus species	0.000	0.219	0.000	0.000	2	25
ML3	Serotine	0.000	2.191	0.108	0.540	60	25
ML3	Soprano pipistrelle	0.000	0.217	0.000	0.000	2	25

4.0 Summary

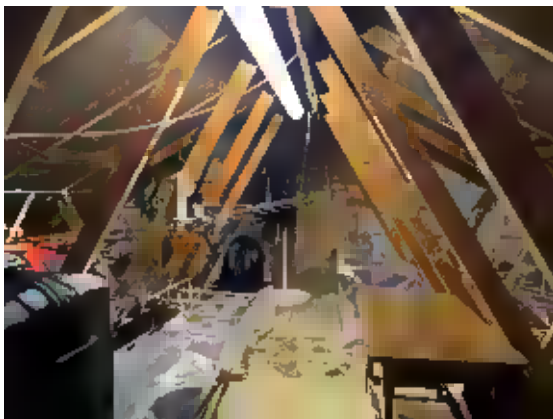
- 4.1 Overall, the Site is considered to have limited interest for bats. Activity identified largely includes commuting, with some foraging behaviour, mostly associated with the boundary hedgerows. None of the timings or patterns within the results suggest any roosts are located on or adjacent to the Site. The assemblage of bats using the Site comprises primarily common pipistrelle, with fewer contacts of bats with a higher conservation interest (such as barbastelle and serotine), occasionally using the Site.



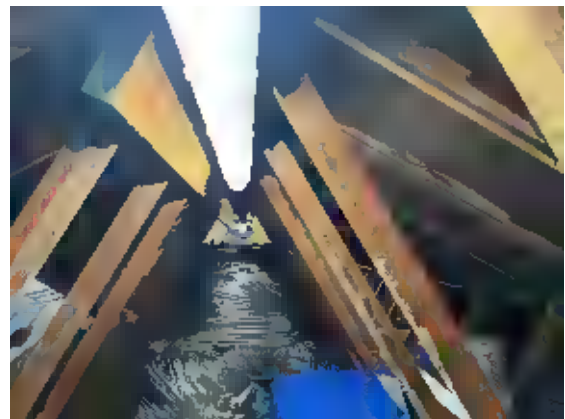
Photograph 1. Northern elevation of B1.



Photograph 2. Southern elevation of B1.



Photograph 3. Western end of the internal loft void.



Photograph 4. Eastern end of the internal loft void.



Photograph 5. Showing the slight lift in the wooden soffit.



Photograph 6. Showing the intact dormer windows including the lead flashing and barge board. Showing the slightly lifting soffit.



Photograph 7: Darkest Shot from Location A - looking north at the southern aspect of B1.



Photograph 8: Darkest Shot from Location B – looking south-west at the northern aspect of B1.



- Site boundary
- Building (B1)
- Surveyor/camera locations
- Sight lines



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Project	Land off Echo Hill, Royston	Date	October 2025	Drawing No.	CSA/7494/115
Drawing Title	Emergence Survey Plan	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RT	Checked	BW

Appendix I

Badgers

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 24 June 2025 by Bethany Wilson ACIEEM and Eleanor Koss, 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. Table description.

Sett Type
Main Setts - These usually have a large number of entrances with large spoil heaps, and the sett generally looks well used. There will be well-used paths to and from the sett and between sett entrances. Although normally the breeding sett is in continuous use, it is possible to find a main sett that has become disused due to excessive digging or some other reason; it should be recorded as a disused main sett. In the first survey, the average size of an active main sett was twelve entrances (including all categories of use).
Annexe setts - They are often close to a main sett, usually less than 150 metres away, and are usually connected to the main sett by one or more obvious well-worn paths. They usually have several entrances, but may not be in use all the time even if the main sett is very active. In the first survey the average size was five entrances (including all categories of use).

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

Limitations

- 3.0 The badger survey was conducted at a sub-optimal time of year: summer, where vegetation can sometime hide sett entrances. However, as the Site is not very densely vegetated, this is not considered likely to have affected survey outcomes.

4.0 Results

- 4.1 No badger setts were found onsite. Evidence of badgers recorded during the survey include a latrine and some exploratory digging found along H1 at the western Site boundary, and a second latrine along H5. These signs were all found within F2, leading towards/away from the adjacent offsite woodland to the west. Mammal paths and push-throughs were also found nearby within H1 and H5. However, given that evidence of deer and rabbits were also found during the survey, these cannot be definitively attributed to badger activity.
- 4.2 Based on the above, it is likely that there is a badger sett nearby in the surrounding landscape, while the Site is used for foraging and commuting.
- 4.3 Badger activity identified at the Site is shown on the Badger Survey Plan (CSA/7494/113) below.



- Site boundary
- Latrine
- Exploratory digging
- Mammal path/push-through



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Project	Land off Echo Hill, Royston	Date	September 2025	Drawing No.	CSA/7494/113
Drawing Title	Badger Survey Plan	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RT	Checked	BW

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 Skopeo Ltd over six visits between 03 May and 12 July 2025 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 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. Birds were detected by sound or sight, using a pair of binoculars.

- 2.3 Of the survey visits, five were dawn surveys (when birds are most active), while one (survey visit 3) was a dusk survey, with the aim of identifying any nocturnal birds at the Site. Each dawn survey commenced between 10 minutes before and 20 minutes after dawn and continued for approximately one and 3/4 hours during suitable weather conditions. The dusk survey commenced approximately 1 and 1/4 hours before sunset and continued for two hours during suitable weather conditions.
- 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 (2022). 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 Notable species created for all survey visits combined.
- 2.5 Notable 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+

3.0 Results

Breeding Birds

- 3.1 The weather conditions during the breeding bird surveys are summarised in Table 3 below.

Table 3. 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	
03/05/25	05:45	07:30	10	11	6	2	1	1	None
14/05/25	05:30	07:18	6	8	0	0	2	2	None
05/06/25	20:00	22:00	14	14	7	8	3	3	None
17/06/25	04:45	06:30	13	13	2	1	2	2	None
30/06/25	04:45	06:30	17	17	0	0	2	2	None
12/07/25	04:45	06:35	15	16	0	0	1	1	None

- 3.2 A total of 29 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 5. The Breeding Bird Survey Plan (CSA/7494/111) shows a consolidated map from the six survey visits, highlighting potential territories for priority species and other sightings of notable species interacting with the Site.
- 3.3 Of these, 25 species were recorded to have a breeding status of either 'confirmed', 'probable' or 'possible' and are thus considered as breeding species. The remaining four 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 14 notable species were observed during the breeding bird surveys, as summarised in Table 4 below. Of these, 11 were recorded to have a breeding status of either 'confirmed', 'probable' or 'possible' and are thus considered as breeding species.

Table 4. Priority bird species recorded at the Site during the breeding bird surveys

Species	BoCC 2021 Red/Amber	Section 41	Sch1	Herts LBAP	Breeding Status
Dunnock	Amber	•			Confirmed
Grey partridge	Red	•			Possible
Linnet	Red	•			Probable
Red kite			•		Non-breeding
Rook	Amber				Non-breeding
Skylark	Red				Confirmed
Song thrush	Amber	•		•	Confirmed
Starling	Red	•			Possible
Stock dove	Amber				Confirmed
Swift	Red				Non-breeding
Whitethroat	Amber				Confirmed
Wood pigeon	Amber				Confirmed
Wren	Amber				Confirmed
Yellowhammer	Red	•			Confirmed

Abbreviations:

BOCC Red List: Red List of Birds of Conservation Concern 5

Section 41: Listed as a priority species under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

Sch1: Schedule 1 (Part 1) of the Wildlife and Countryside Act 1981

- 3.5 A single skylark territory was identified within the southern part of field F1, as well as one yellowhammer territory within the west of the Site. A peak count of four linnet were recorded. Other significant sightings were of birds flushed from the Site, which included starling and grey partridge. In addition, red kite, swift, and rook were all seen as fly-overs.
- 3.6 No large flocks of birds were recorded at the Site; the only sightings of groups larger than two were of up to 16 wood pigeon.

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

Species	BoCC 2021 Red/Amber	Section 41	Sch1	Herts LBAP	Breeding Status
Blackbird					Possible
Blackcap					Possible
Blue tit					Possible
Carrion crow					Possible
Chiffchaff					Possible
Dunnock	Amber	•			Confirmed
Goldfinch					Possible
Great tit					Possible
Grey heron					Non-breeding
Grey partridge	Red	•			Possible
Jackdaw					Possible
Lesser whitethroat					Possible
Linnet	Red	•			Probable <i>Peak count four individuals</i>
Magpie					Possible
Pheasant					Possible
Red kite			•		Non-breeding
Red-legged partridge					Possible
Robin					Possible
Rook	Amber				Non-breeding
Skylark	Red				Confirmed
Song thrush	Amber	•		•	Confirmed
Starling	Red	•			Possible
Stock dove	Amber				Confirmed
Swallow					Possible
Swift	Red				Non-breeding
Whitethroat	Amber				Confirmed
Wood pigeon	Amber				Confirmed
Wren	Amber				Confirmed
Yellowhammer	Red	•			Confirmed

Abbreviations:

BOCC Red List: Red List of Birds of Conservation Concern 5

Section 41: Listed as a priority species under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

Sch1: Schedule 1 (Part 1) of the Wildlife and Countryside Act 1981

Herts LBAP: A 50-year vision for the wildlife and natural habitats of Hertfordshire – A Local Biodiversity Action Plan (Hertfordshire Environment Forum, 2006)



- Site boundary
- Territories/singing
- Calling
- Individuals
- Number of individuals
- Flight lines

Species List:

- Red-list species:

 - LI - Linnet
 - P. - Grey partridge
 - S. - Skylark
 - SG - Starling
 - Y. - Yellowhammer
- Amber-list species:

 - D. - Dunnock
 - ST - Song thrush
 - SD - Stock dove
 - WH - Whitethroat
 - WP - Wood pigeon
 - WR - Wren

Additionally, the following species were observed flying over the Site:

- SI - Swift
- RO - Rook
- KT - Red kite**

**Schedule 1 species (WCA 1981)

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

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



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Project	Land off Echo Hill, Royston	Date	October 2025	Drawing No.	CSA/7494/111
Drawing Title	Breeding Bird Survey Plan	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RT	Checked	BW

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 28 May 2025 by Revae Tilbury. The location of these refugia is shown on the Reptile Survey Plan (CSA/7494/109).
- 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 June and July 2025. 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.
- 2.4 Given the inherent problems in detecting reptiles, greater survey effort and/or identification or marking of individuals would be required to establish the actual or relative abundance of reptile populations. However, as reptiles are confirmed to be present and mitigation action is required, an approximation of population size is useful in guiding reptile mitigation strategies and has therefore been reported below.
- 2.5 There are several published methods for broadly 'categorising' reptile population sizes in the UK, with the most commonly employed by ecological consultants being HGBI (1998), Froglife (1999) and/or Natural England (2011 [now rescinded]). These three approaches vary in their application, assumptions and limitations, and therefore outputs have been reported for all three methods for comparison below.

Limitations

- 2.6 The three metrics referenced below, HGBI (1998), Froglife (1999) and/or Natural England (2011; now rescinded), rely on varying proxies to calculate/estimate reptile populations. The HGBI categories are based on adult population densities, as opposed to peak counts. Moreover, the categorisation by HGBI is intended to inform capture effort for translocation exercises and, therefore, is not directly applicable to providing a population size class estimate, though it is widely applied within the industry for this purpose.
- 2.7 The Froglife method is based on peak adult counts where surveys have used refugia densities of 10 per hectare. Surveys carried out by CSA used densities of c. 10.3 per ha of suitable reptile habitat to maximise site coverage and opportunities to confirm the presence or likely absence of reptiles.
- 2.8 Finally, the Natural England methods provide population class size estimates based upon a refugia density of 100 per ha and, in addition, goes on to consider habitat suitability. As with the Froglife method, survey results have been scaled to be proportionate to a survey effort of 100 refugia per ha. The consideration of peak counts and habitat suitability may be the most ecologically sound, or holistic, of the three indices. However, in light of the guidance having been rescinded, this metric cannot be exclusively relied upon.
- 3.0 Between surveys four and five, the reptile refugia within the centre of Field F1 were removed to allow a harvest cut to take place. The reptile refugia within the north of Field F2 were also moved for this cut, but were placed along the north-east field boundary, so they continued to be checked. Although this is a limitation to the survey, it is not considered a significant constraint to the overall aim given that reptiles were recorded at the Site. The remainder of the refugia remained in situ for the duration of the survey.
- 4.0 There were no further limitations to the reptile surveys, which were conducted during the accepted seasonal period and conditions.

5.0 Results

- 5.1 During the surveys, common lizards were recorded, with a peak count of five individuals. No other reptiles were recorded at the Site. A summary of population size estimates using various methodologies is provided in Table 1 below. Full survey results are given in Table 2 at the end of this appendix.
- 5.2 All reptiles recorded during the surveys were within the smaller western field ('F2' on Habitats Plan in Appendix A). The highest count of common lizards were recorded along the northern boundary, with seven of the nine individuals recorded there. All the common lizards recorded across all surveys were adults, with four of the nine being gravid females.

- 5.3 The vast majority (8.7ha) of the Site comprises suitable reptile habitat including grassland and hedgerow bases. However, in summer each year a haycut reduces the suitability of the majority of the Site. A total of 90 artificial refugia were used to provide a survey refugia density of 10.3 refugia per hectare.

Table 1. Reptile population size category estimates

Method	Species		
	Slow worm	Common lizard	Grass snake
Peak count between June and July 2025	0	5	0
HGBI (1998)	-	Low	-
Froglife (1999)	-	Low	-
Natural England (2011)*	-	Medium	-

*Rescinded

- 5.4 It is acknowledged that the above metrics have their limitations. In consideration of this information and the extent of suitable habitat present at the Site (which was reduced due to management) balanced against previous survey results, it is estimated that the Site supports a 'low' population of common lizard.

Table 2: Reptile survey results

Job Name & No.	Land off Echo Hill, Royston 7494						Beaufort Scale: 0. Calm. Vertical smoke. 1. Light air. Smoke drifts. 2. Light breeze. Leaves rustle. 3. Gentle breeze. Small twigs constantly move. 4. Moderate breeze. Small branches begin to move. 5. Fresh breeze. Small trees in leaf begin to sway.																	
Set-up Surveyor/ Project Manager	Revae Tilbury/Bethany Wilson						Precipitation: [Type] No Rain / Light / Moderate / Heavy [Duration] Intermittent / Continuous																	
Set-Up Date	28/05/2025		Total Number of Refugia			91																		
			Weather				Area/ Field No.	Slow worm <i>Anguis fragilis</i>					Common lizard <i>Zootoca vivipara</i>					Grass snake <i>Natrix helvetica</i>					Other Notes	
Date	Start/End Times	Surveyor	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																								
13/06/2025	08:00 - 09:15	RB	19	0	1	None	F1	None found					None found					None found						
							F2	None found					None found					None found						
Survey 2																								
17/06/2025	08:45 - 09:40	RT	19:20	2	1	None	F1	None found					None found					None found						
							F2	None found						1				None found						
Survey 3																								
20/06/2025	08:20 - 09:00	DJW	20	5	2-3	None	F1	None found					None found					None found						
							F2	None found							1			None found						
Survey 4																								
24/06/2025	09:50 - 11:20	BW/EK	16-18	8-6	3-2	None	F1	None found					None found					None found					Rained overnight before survey	
							F2	None found					None found					None found						
Survey 5																								
30/06/2025	07:05 - 08:15	LF	19:20	0	0-1	None	F1	None found					None found					None found					Some mats lost to grass cutting, rest in middle of field moved; Sun came out c. 40 mins into survey	
							F2	None found					None found					None found						
Survey 6																								
07/07/2025	13:05 - 13:45	RT	18	7-6	3-2	None	F1	None found					None found					None found					All females common lizards identified were gravid	
							F2	None found					1	3	1			None found						
Survey 7																								
10/07/2025	08:15 - 09:00	RT/EK	19-21	0	1	None	F1	None found					None found					None found					The female common lizard found was gravid	
							F2	None found						1	1			None found						
								Total Adult			Total Juvenile		Total Adult			Total Juvenile		Total Adult		Total Juvenile				
								0			0		9			0		0		0				



- Site boundary
- Reptile refugia locations (and number)
- Common lizard

Table summarising all reptiles recorded at the Site during reptile surveys

Ref	Survey	Date	Type	Age	Gender	Count
A	2	17/06/2025	Common lizard	Adult	Female	1
B	3	20/06/2025	Common lizard	Adult	Unidentified	1
C	6	07/07/2025	Common lizard	Adult	Unidentified	1
D	6	07/07/2025	Common lizard	Adult	Female	1
E	6	07/07/2025	Common lizard	Adult	Female	1
F	6	07/07/2025	Common lizard	Adult	Male	1
G	6	07/07/2025	Common lizard	Adult	Female	1
H	7	10/07/2025	Common lizard	Adult	Female	1
I	7	10/07/2025	Common lizard	Adult	Unidentified	1

Please note that the 14 refugia in F1 and the five in F2 that were placed within the grasslands were moved between surveys four and five to allow a harvest cut. The refugia from F1 were removed, while those from F2 were moved to along the north-east field boundary.



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Project	Land off Echo Hill, Royston	Date	September 2025	Drawing No.	CSA/7494/112
Drawing Title	Reptile Survey Plan	Scale	Refer to scale	Rev	-
Client	Gladman Developments Ltd	Drawn	RT	Checked	BW

Appendix L

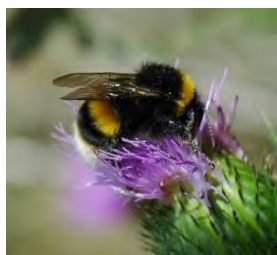
Invertebrates



LAND AT ECHO HILL, ROYSTON

INVERTEBRATE SURVEY SCOPING REPORT

SEPTEMBER 2025



Adrian Knowles BSc (Hons) FRES MCIEEM
Consultant Entomologist

Title of Report: Land at Echo Hill, Royston
Invertebrate Survey Scoping Report

Produced for: CSA Environmental, Dixies Barns, High Street, Ashwell,
Hertfordshire, SG7 5NT

Client Representative: Bethany Wilson BSc (Hons) MSc ACIEEM, Senior Ecologist

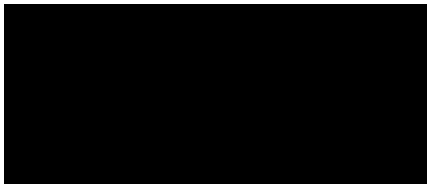
Author of Report: Adrian Knowles BSc (Hons) FRES MCIEEM, Consultant
Entomologist

Report Status: Final

Date of Issue: 1st September 2025

This report has been compiled in accordance with BS 42020:2013 Biodiversity – Code of practice for planning and development, as has any survey work to which it relates.

The information, advice and opinions provided here have been prepared in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. I confirm that the views expressed are my true and professional *bona fide* opinions.



Adrian Knowles BSc (Hons) FRES MCIEEM
Consultant Entomologist

Contents

1. EXECUTIVE SUMMARY	1
2. INTRODUCTION	4
2.1 General Introduction	4
2.2 Location	4
2.3 Summary Description	4
2.4 Outline of Proposals	4
2.5 Objectives of the Assessment.....	4
2.6 Field Survey.....	5
3. RESULTS	6
3.1 Data Search.....	6
3.2 Site Description.....	10
3.3 Invertebrate Survey Results	13
3.4 Summary of Site Features	15
4. DISCUSSION	16
4.1 Introduction.....	16
4.2 Species of Conservation Concern	16
4.3 Habitat Review.....	19
4.4 Limitations	20
4.5 Impact Assessment	20
5. RECOMMENDATIONS.....	21
5.1 Habitat Improvements.....	Error! Bookmark not defined.

MAP 1 – Site location

TABLE 1 – Survey data from 25th July 2025

LAND AT ECHO HILL, ROYSTON

INVERTEBRATE SURVEY SCOPING REPORT

1. EXECUTIVE SUMMARY

- 1.1 This report has been produced by Adrian Knowles, Consultant Entomologist, for CSA Environmental Ltd. It presents the results of a scoping exercise to assess the likely invertebrate value of two grass fields on the southern side of Royston, Hertfordshire. It also provides a review of those species of conservation concern that have been recorded within a 2-kilometre radius of the site, from data provided by the Hertfordshire Environmental Records Centre. A brief field survey collected data on the invertebrates currently using the grasslands. This information can then be used, if appropriate, to generate a series of recommendations for mitigation/compensation measures.
- 1.2 It is understood that the land is currently the subject of proposals to construct a residential development with some recreational green space and the retention and enhancement of some areas of grassland as landscape/wildlife features. Sustainable drainage scheme (SuDS) features will provide some small-scale habitat diversification.
- 1.3 The site was visited on 25th July 2025. It currently comprises two grass fields, the centres of which have been resown with a limited range of palatable grasses to allow for a hay crop. However, variably wide headlands support a more diverse and natural flora, including species associated with calcareous grassland, such as Mignonette, Bladder Campion, Greater Knapweed and Field Scabious. Active sampling of invertebrates present lasted for approximately three hours.
- 1.4 Because of the close proximity of Therfield Heath Site of Special Scientific Interest, numerous species of conservation concern have been highlighted by the data search (covering a two-kilometre radius from the site). The data search revealed the recent (post-1980) presence of nine Species of Principal Importance in England (SPIE), as defined by Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. These are often referred to as "Section 41 Priority Species". Although these species receive no direct legal protection, the NERC Act places an obligation on local authorities to have regard to their conservation and this is most obviously brought to bear through their planning control functions.
- 1.5 These nine SPIE from the data search are:
 - Five-banded Digger Wasp *Cerceris quinquefasciata*
 - Wall butterfly *Lasiommata megera*
 - Small Blue Butterfly *Cupido minimus*
 - White-letter Hairstreak butterfly *Satyrrium w-album*

- Chalk-hill Lance-wing moth *Epermenia insecurella*
 - Horehound Long-horn moth *Nemophora fasciella*
 - Dingy Skipper butterfly *Erynnis tages*
 - Grizzled Skipper butterfly *Pyrgus malvae*
 - Small Heath butterfly *Coenonympha pamphilus*
- 1.6 In addition, a long list of “research only” SPIE moths have been recorded close to the site. These are generally common and widespread species but ones that are exhibiting significant population declines, with the SPIE status given in order to encourage research into the causes of these declines.
- 1.7 The data search yielded a record of the Roman Snail *Helix potamia*, from grassland on the other side of Royston town centre. Whilst it is not a SPIE, they are protected under Schedule 5 of the Wildlife & Countryside Act (as amended) and it is illegal to intentionally kill, handle or possess this species without a licence from Natural England.
- 1.8 The field survey yielded 71 species. Several of these have rather out-dated national statuses. Two SPIE were noted during the survey: the Small Heath butterfly and the “research only” Cinnabar moth (as caterpillars on ragwort plants). The likely presence of a third, the Five-banded digger Wasp, can be inferred by the capture during the survey of its brood-parasite wasp *Hedychrum niemelai*. It is thought that the Five-banded Digger Wasp would not be nesting within the site but might use the flower-rich field margins as hunting grounds for its prey.
- 1.9 The central parts of both fields are deemed to be of modest value for invertebrates, on account of their species-poor and grass-dominated composition. Whilst some butterflies with grass-feeding caterpillars would utilise these parts of the site, their ability to flourish would be inhibited by the cropping of the grass in the summer.
- 1.10 The flower-rich margins of the fields provide a good, varied nectar resource and prey foraging area for invertebrates.
- 1.11 The hedgerows present have a varied composition and are likely to support a typical range of species that feed on the fruits and foliage of trees and shrubs.
- 1.12 It is recommended that an appropriate survey be carried out in order to determine the presence or likely absence of the Roman Snail within the hedgerows and grass margins of both fields.
- 1.13 Hedgerow enhancement planting should include Blackthorn bushes, for the benefit of the Blackthorn Gelechia moth.
- 1.14 Within reason, the stands of Black Horehound within the hedgerows should be retained, for the benefit of the Horehound Long-horn moth.
- 1.15 Wildflower meadow creation should include Common Bird’s-foot-trefoil and, if possible, Horseshoe Vetch if areas of short sward are to be maintained.

- 1.16 Some areas of tall grassland should be left uncut throughout the summer months. Some cutting, at an appropriate time of year, will be beneficial in order to maintain a species-rich sward.

2. INTRODUCTION

2.1 General Introduction

- 2.1.1 This report has been prepared by Adrian Knowles, Consultant Entomologist, for CSA Environmental of Ashwell, Hertfordshire. It presents the results of a scoping exercise to assess the likely invertebrate value of two grass fields on the southern side of Royston, Hertfordshire. It includes the results of several hours of invertebrate sampling during the habitat assessment visit in order to help gauge the current value of the site for invertebrates. A data search with the Hertfordshire Environmental Records Centre yielded records of several species of conservation concern and these are also appraised within the report.

2.2 Location

- 2.2.1 The study area comprises approximately 8.9 hectares of land centred on Ordnance Survey grid reference TL353399. The boundary of the site is shown in Map 1. The surrounding landscape is largely a patchwork of arable land, permanent grassland and urban developments. The large calcareous grassland Therfield Heath SSSI lies roughly 200 metres to the west at its closest point and is the source of many of the significant species recorded identified in the data search.

2.3 Summary Description

- 2.3.1 The site comprises two grass fields, the centres of which have been resown with a limited range of palatable grasses as a hay crop. However, variably wide headlands support a more diverse and natural flora, including species associated with calcareous grassland. The two fields are separated by a broad-leaved hedge, with further hedges on the western and southern boundaries.

2.4 Outline of Proposals

- 2.4.1 Reference has been made to drawing 537_DL05 dated June 2025, from Icen Projects Ltd. It is understood that the land is currently the subject of proposals to construct a residential development with some recreational green space and the retention and enhancement of some areas of grassland as landscape/wildlife features. Sustainable drainage scheme (SuDS) features will provide some small-scale habitat diversification.

2.5 Objectives of the Assessment

- 2.5.1 The primary aim of the assessment was to gauge the value of the site for invertebrates, especially those associated with flower-rich calcareous grassland.
- 2.5.2 In addition, the known habitat requirements of nationally significant species that were highlighted within a data search have been compared with the current site conditions, to try

and determine if any such species might be a material consideration for the project. This information can then inform the planning application process.

- 2.5.3 A third objective was to undertake a brief survey of the invertebrates present, to begin to better understand the actual invertebrate fauna.

2.6 Field Survey

- 2.6.1 A site visit was made on 25th July 2025 by Adrian Knowles BSc FRES MCIEEM, lasting approximately three hours. Invertebrate survey work comprised sweeping tall vegetation with a rigid-framed sweep net, beating lower branches of trees and bushes into a beating tray and the collection of individual flying insects using a hand net. See Appendix 1 for a competency statement for the surveyor.

3. RESULTS

3.1 Data Search

- 3.1.1 A biological data request was made to the Hertfordshire Environmental Records Centre (HERC) covering a two-kilometre radius from the centre of the site. Of particular interest are those invertebrates listed as Species of Principal Importance in England (SPIE) within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. These are often referred to as “Section 41 Priority Species”. Although these species receive no direct legal protection, the NERC Act places an obligation on local authorities to have regard to their conservation and this is most obviously brought to bear through their planning control functions. Whilst datasets may not include records for the site itself, if suitable habitats for these significant species are present within the site and there is a nearby record of that species, this might indicate that further survey is required.
- 3.1.2 The following is an annotated list of all those species of conservation concern identified within the data search, giving indications of their habitat requirements, where known. Section 4.3, below, then discusses the likelihood of these species occurring on site, given the habitat conditions present.
- 3.1.3 In addition to these SPIE, a few species with legal protection or Nationally Scarce/Rare statuses are also included. National statuses stated are as per the Natural England/UKCEH “Pantheon” software (<https://pantheon.brc.ac.uk/>) and these may vary from the statuses implied from the HERC data, usually as the result of incorporating up to date review data within Pantheon.
- 3.1.4 Only post-1980 records are considered. Aquatic species have been excluded. Where statuses are given in square brackets, it is widely felt that the status is in need of review. This might mean that the species is now rarer than when it was assessed, but many species have become significantly more widespread, so no longer merit any national status or one of less significance.
- 3.1.5 Bees and Wasps (Hymenoptera)
Several species highlighted by the data search are now rather more widely distributed than their ‘Nationally Scarce’ or ‘Nationally Rare’ statuses suggest. This includes the following species, although it is highlighted here because of its SPIE status.

Cerceris quinquefasciata Five-banded Digger Wasp (SPIE; [Nationally Rare, RDB3]).

This solitary nesting digger wasp collects a range of common weevils as food for its larvae, which develop in underground nest cells. It underwent a prolonged decline across known sites in southern England during the 20th Century but has shown some signs of recovery across East Anglia and south-east England in recent years, so may no longer merit its Red Data Book status of Nationally Rare. Royston currently lies at the north-western edge of its known range and only one record of this wasp is known locally, from Therfield Heath in 2016.

3.1.6 Flies (Diptera)

Relatively few notable flies have been recorded within the vicinity of the site.

Rhipidia uniseriata (Nationally Rare, RDB3)

The larvae of this rare crane fly are associated with decaying wood and rot holes in broadleaved trees. It was recorded on Therfield Heath in 1993.

3.1.7 Butterflies (Lepidoptera)

Coenonympha pamphilus Small Heath (SPIE, Nationally Vulnerable)

This butterfly has larvae that feed on short, fine grasses in meadows and larger tracts of grassland. It has been recorded repeatedly within Therfield Heath and is also known from several other sites within close proximity of the study site.

Cupido minimus Small Blue (SPIE)

The caterpillars of this very small butterfly only feed on Kidney Vetch plants in calcareous grassland. It is notable that this butterfly has seemingly never been recorded on Therfield Heath. The only record seems to be from a garden in Echo Hill in 2018, very close to the site. However, this record is likely to be, at best, a vagrant individual from a more distant population or possibly a misidentification.

Erynnis tages Dingy Skipper (SPIE)

The caterpillars of this butterfly feed on Common Bird's-foot-trefoil and Horseshoe Vetch growing on heaths, downland, coastal grasslands and some brownfield sites. It remains widespread across England and Wales, despite its SPIE listing. Within the study area, it has only ever been recorded from Therfield Heath, and there possibly not since 1994.

Lasiommata megera Wall butterfly (SPIE, Nationally Endangered)

This is a much-declined species of short, open grassland, with its caterpillars feeding on grasses. In England it has disappeared from many inland counties over the last twenty years.

The only local records come from Therfield Heath, where it was recorded up to 1995. Its current status is unknown but the HERC data list it as “Herts absent” *i.e.*, likely to be extinct in the county.

Polyommatus bellargus Adonis Butterfly (Nationally Vulnerable)

This is a characteristic butterfly of short chalk grassland turf, where its caterpillars feed on Horseshoe Vetch. The HERC data search documentation gives a local status of “extinct”, but the accompanying data include a record of 20 adults from 2020 to the west of Therfield Heath.

Polyommatus coridon Chalk Hill Blue (Nationally Vulnerable)

This is another characteristic butterfly of short chalk grassland turf, with its caterpillars also feeding on Horseshoe Vetch. A large number was recorded on Therfield Heath in 2013 although, curiously, this is the only record for the search area.

Pyrgus malvae Grizzled Skipper (SPIE, Nationally Vulnerable)

The caterpillars of this butterfly feed on various herbs within the Rose family, such as Agrimony and Creeping Cinquefoil. It occurs in woodland rides, calcareous grassland and occasionally other open habitats. It is widespread but declining in England. Within the study area it has only been recorded from Therfield Heath, with no records since 1985.

Satyrrium w-album White-letter Hairstreak (SPIE; Nationally Vulnerable)

The caterpillars of this butterfly feed on elms, making the species highly vulnerable on account of the widespread loss of these trees to Dutch Elm Disease. The data search revealed only one record from within the area of search: a 2013 observation along the Icknield Way to the south-west of the site.

3.1.8 Moths (Lepidoptera)

Epermenia insecurella Chalk-hill Lance-wing (SPIE, proposed Nationally Vulnerable)

The larvae of this micro-moth feed on Bastard-toadflax growing on heaths and calcareous grassland. The only two local records come from Therfield Heath in 1987 and 1999.

Gelechia scotinella Blackthorn Gelechia (proposed RDB2)

This micro-moth has long been a scarce species in Britain, only known from mature hedgerows and scrubland in parts of Worcestershire, Hertfordshire and Essex. In recent years it has also been recorded in Norfolk and Suffolk, which may reflect greater recording effort rather than a true resurgence in its population. Its caterpillars feed on Blackthorn, which

is a ubiquitous shrub across lowland Britain, so the reason for this moth's rarity is obscure. It has only been recorded once within the data search area, from Therfield Heath in 2015.

Nemophora fasciella Horehound Long-horn (SPIE)

As its name suggests, this moth is associated with horehound plants, with the caterpillars feeding on Black Horehound. It has only been found once within the search area, being recorded from Therfield Heath (Pen Hills) in 2011.

Stigmella filipendulae Dropwort Dot (proposed Nationally Rare)

Previously considered to be a micro-moth exclusively feeding on Dropwort (a chalk grassland plant), it has now been synonymised with *S. ulmariae*, which occurs on the much more widespread Meadowsweet in damp grassland. In 2011, larval mines in the leaves of Dropwort were noted on Therfield Heath.

Numerous moths were accorded SPIE status only to encourage research into their populations. They generally remain widespread species. The data searches include the following species from within two kilometres of the site.

<i>Acronicta psi</i>	Grey Dagger
<i>Acronicta rumicis</i>	Knot Grass
<i>Agrochola lychnidis</i>	Beaded Chestnut
<i>Allophyes oxyacanthae</i>	Green-brindled Crescent
<i>Amphipoea oculaea</i>	Ear Moth
<i>Amphipyra tragopoginis</i>	Mouse Moth
<i>Anchoscelis litura</i>	Brown-spot Pinion
<i>Apamea anceps</i>	Large Nutmeg
<i>Apamea remissa</i>	Dusky Brocade
<i>Aporophyla lutulenta</i>	Deep-brown Dart
<i>Arctia caja</i>	Garden Tiger
<i>Asteroscopus sphinx</i>	Sprawler
<i>Atethmia centrugo</i>	Centre-barred Sallow
<i>Caradrina morpheus</i>	Mottled Rustic
<i>Ceramica pisi</i>	Broom Moth
<i>Chiasmia clathrata</i>	Latticed Heath
<i>Cirrhia gilvago</i>	Dusky-lemon Sallow
<i>Cirrhia icteritia</i>	Sallow
<i>Diarsia rubi</i>	Small Square-spot
<i>Ecliptopera silaceata</i>	Small Phoenix
<i>Ennomos fuscantaria</i>	Dusky Thorn
<i>Ennomos quercinaria</i>	August Thorn
<i>Eulithis mellinata</i>	Spinach
<i>Euxoa nigricans</i>	Garden Dart
<i>Helotropha leucostigma</i>	Crescent
<i>Hemistola chrysoprasaria</i>	Small Emerald
<i>Hepialus humuli</i>	Ghost Moth
<i>Hoplodrina blanda</i>	Rustic
<i>Hydraecia micacea</i>	Rosy Rustic

<i>Leucania comma</i>	Shoulder-striped Wainscot
<i>Litoligia literosa</i>	Rosy Minor
<i>Lycia hirtaria</i>	Brindled Beauty
<i>Malacosoma neustria</i>	Lackey
<i>Melanthia procellata</i>	Pretty Chalk Carpet
<i>Orthosia gracilis</i>	Powdered Quaker
<i>Rhizedra lutosa</i>	Large Wainscot
<i>Scopula marginepunctata</i>	Mullein Wave
<i>Scotopteryx chenopodiata</i>	Shaded Broad-bar
<i>Spilosoma lubricipeda</i>	White Ermine
<i>Spilosoma luteum</i>	Buff Ermine
<i>Tholera cespitis</i>	Hedge Rustic
<i>Timandra comae</i>	Blood-vein
<i>Tyria jacobaeae</i>	Cinnabar
<i>Watsonalla binaria</i>	Oak Hook-tip

Because of their widespread distribution, these “research only” moths are not considered further in this report.

3.1.9 Snails (Mollusca)

Helix pomatia Roman Snail (Nationally Scarce; Legally protected)

It is thought that this large snail was introduced to Britain by the Romans but it may subsequently have been artificially cultured in the Middle Ages as a source of food. They are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and it is illegal to intentionally kill, handle or possess this species without a licence from Natural England. It inhabits chalk grassland and scrub, where there is loose soil within which it can burrow to pass the winter. The only local record comes from 2012, at an established chalk grassland site at what was formerly called The Greneway School, now known as the King James Academy. This lies approximately 1.8 kilometres to the north-east of the study site, on the other side of Royston town centre.

3.1.10 Beetles (Coleoptera)

Numerous Nationally Scarce beetles were identified by the data search. Several of these are associated with either dead wood habitats or short sward/bare ground grassland conditions, which do not feature strongly within the site. As such, no beetle species is thought worthy of particular mention.

3.2 Site Description

- 3.2.1 The survey site comprises two grasslands, largely bounded by broad-leaved hedgerows. The main bodies of both fields have been re-sown with palatable grasses, such as Timothy (*Phleum* sp.), Cock's-foot (*Dactylis glomerata*), Red Fescue (*Festuca rubra*) and Crested Dog's-tail (*Cynosurus cristatus*), with some False Oat-grass (*Arrhenatherum elatius*).

3.2.2 Within the main swards, herbs are rather scarce but typically comprise scattered plants of Ox-eye Daisy (*Leucanthemum vulgare*), Wild Carrot (*Daucus carota*), Bristly Ox-tongue (*Helminthotheca echioides*), Yarrow (*Achillea millefolium*), Smooth Hawk's-beard (*Crepis capillaris*) and Field Scabious (*Knautia arvensis*).



Figure 1. Western margin of the narrower, western field, looking south.



Figure 2. The wide southern headland of the western field. This margin is particularly flower-rich and grass-poor.

- 3.2.3 The narrower western field has flower-rich margins on the western, southern and eastern sides (see Figs. 1 and 2). Typical species include Agrimony (*Agrimonia eupatoria*), Black Knapweed (*Centaurea nigra* agg.), Field Scabious, Wild Carrot, Creeping Thistle (*Cirsium arvense*), Common Toadflax (*Linaria vulgaris*), Cowslips (*Primula veris*) and Common Ragwort (*Jacobaea vulgaris*).
- 3.2.4 Within the larger eastern field, a large part of the sward remained uncut at the time of the survey (Fig. 3). The southern margin comprises 4-5 metres of uncut grassland, within which Greater Knapweed (*Centaurea scabiosa*) was occasional.



Figure 3. within the eastern field, the broad southern boundary (to the right) and a significant part of the main sward (pale, straw-coloured sward in middle distance) remained uncut.

- 3.2.5 The grass margin on the western edge of the eastern field (*i.e.*, to the east of the hedgerow dividing the two fields) (Fig. 4) is more grass-dominated than the margins of the western field but includes Common Bird's-foot-trefoil (*Lotus corniculatus*), Bladder Campion (*Silene vulgaris*) and occasional Field Scabious but only rare Wild Carrot.
- 3.2.6 The bounding hedgerows comprise a mix of broad-leaved trees and shrubs, including Cherry Plum (*Prunus cerasifera*), Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Holly (*Ilex aquifolium*), Wild Privet (*Ligustrum vulgare*), Bramble (*Rubus fruticosus* agg.), Ash (*Fraxinus excelsior*), Elder (*Sambucus nigra*) and Sycamore (*Acer pseudoplatanus*). Hazel (*Corylus avellana*) and elms (*Ulmus* spp.) are both rare.



Figure 4. The more grass-dominated western edge of the eastern field.

3.2.7 Black horehound (*Ballota nigra*) was found throughout the hedgerow complex, but most abundantly along the northern boundary with the houses of Echo Hill and the eastern boundary of the covered reservoir, just outside the south-west corner of the site. This northern hedge comprises mainly Cherry Plant bushes and probably actually stands within the gardens of Echo Hill rather than the site itself.

3.3 **Invertebrate Survey Results**

3.3.1 The survey was conducted during warm and partly sunny conditions, with a temperature of approximately 25 Celsius. Table 1 provides summary details of the 71 species recorded during the brief survey on 25th July 2025. Information on feeding habits and habitat preferences are from the Pantheon software being developed by Natural England and the UKCEH. Overall, this shows an assemblage of mainly common and widespread species, of no great conservation concern, with several species no longer meriting their currently published national statuses. However, eight species are singled out for clarification, below.

3.3.2 **Beetles** (Coleoptera)

Hippodamia variegata Adonis Ladybird ([Nationally Scarce])

This small ladybird is now more widespread than previously thought, so it probably no longer merits its current national status. It is a beetle of short, dry grassland and sparsely vegetated turf, including some brownfield sites.

3.3.3 Bugs (Hemiptera)

Lygus pratensis ([Nationally Rare, RDB3])

This mirid bug used to be a rarity, restricted to heathlands and other habitats in the far south-east of England, hence its published status of RDB3 (Nationally Rare). However, in recent years its range has expanded dramatically and now extends northwards to Yorkshire. As such, it probably no longer merits any conservation status. It occurs in a wide variety of habitats.

3.3.4 Bees and Wasps (Hymenoptera)

Andrena alfenella ([Nationally Rare, RDB3])

This solitary-nesting mining bee has a rather limited distribution, being confined to southern England south of a line connecting the Severn Estuary to The Wash. However, within that area it is reasonably widely recorded so probably does not merit its Nationally Rare status. It favours dry, well drained soils and in particular chalk grassland, but it also occasionally occurs on heaths, dunes and cliffs.

Hedychrum niemelai ([Nationally Rare, RDB3])

This ruby-tailed wasp is a cleptoparasite, laying its eggs within the subterranean nests of the Five-banded Wasp *Cerceris quinquefasciata*. This latter species is a SPIE and although it was not, itself, recorded during the survey, it is likely to be present not too far away and has been recorded on Therfield Heath in 2016. The *Hedychrum* was caught on the very western edge of the site, closest to the Heath. This is an interesting proof that *Cerceris quinquefasciata* is still present in the area, despite the lack of very recent records.

Hylaeus signatus ([Nationally Scarce])

This solitary bee can nest in a very wide variety of locations, both natural and man-made (e.g. mortar joints in walls). It is now widespread though rather localised in southern Britain, often seen on flowers of Mignonette (in calcareous grasslands) and Weld (other habitats).

Heriades truncorum ([Nationally Rare, Insufficiently Known])

This solitary bee was thought to be a rarity, restricted to the heaths of Surrey, hence its original inclusion in the British Red Data Book. However, over the last 30 years it has spread significantly in the south-east of England and East Anglia. It certainly no longer merits its current status and appears to still be spreading. It collects pollen from yellow-flowered members of the Daisy family, especially ragworts.

3.3.5 Moths (Lepidoptera)

Tyria jacobaeae Cinnabar (SPIE – research only)

As a SPIE (research only), this moth has already been mentioned in section 3.1.8, above. It is no surprise that its caterpillars were noted on some of the Common Ragwort plants growing here.

3.3.6 Butterflies (Lepidoptera)

Coenonympha pamphilus Small Heath (SPIE, Nationally Vulnerable)

This butterfly has already been mentioned in the data search analysis (section 3.1.7, above). Several were seen flying around the site, which is of no great surprise given the likely large population on the adjacent Therfield Heath.

3.4 Summary of Site Features

1. The two fields mainly comprise a grass-dominated sward, with few herbs.
2. The margins of the fields are flower-rich, with a range of species capable of providing a nectar resource for a prolonged period over the summer.
3. The fields are bounded by broad-leaved hedges of mixed composition.
4. The brief field survey on 25th July recorded 71 species. Most of these are common and widespread, with several that were formerly considered to be Nationally Scarce or Nationally Rare but have now spread significantly.
5. Two SPIE were noted during the survey: the Small Heath butterfly and the “research only” Cinnabar moth (as caterpillars on ragwort plants).
6. The larval food plant of a third SPIE, the Horehound Longhorn moth *Nemophora fasciella*, is quite widespread within the site’s hedgerows, although the moth was not noted during the brief site visit.

4. DISCUSSION

4.1 Introduction

4.1.1 The Natural Environment and Rural Communities Act 2006 (NERC Act) imposes an obligation on all public bodies to have regard to the conservation of biodiversity, particularly of those species and habitats identified as being of 'principal importance'. Section 41 of the Act requires a list to be published that identifies such species and habitats, and for England these are now referred to as Species and Habitats of Principal Importance in England (referred to here as SPIE and HPIE, respectively), with species also popularly called "Section 41 Priority Species".

4.1.2 The data search revealed the nearby presence of nine SPIE with post-1980 records:

1. Five-banded Digger Wasp *Cerceris quinquefasciata*
2. Small Heath butterfly *Coenonympha pamphilus*
3. Small Blue butterfly *Cupido minimus*
4. Dingy Skipper butterfly *Erynnis tages*
5. Wall butterfly *Lasiommata megera*
6. Grizzled Skipper *Pyrgus malvae*
7. White-letter Hairstreak *Satyrium w-album*
8. Chalk-hill Lance-wing moth *Epermenia insecurella*
9. Horehound Long-horn moth *Nemophora fasciella*

4.1.3 Only one of these, the Small Heath butterfly, was recorded during the survey. The nearby presence of a second, the Five-banded Digger Wasp, can be inferred from the capture of its cleptoparasite *Hedychrum niemelai*, during the survey. One "research only" SPIE moth was observed: caterpillars of the Cinnabar moth.

4.2 Species of Conservation Concern

4.2.1 As well as these SPIE listed above, Section 3.1, above, summarised the most significant species that were highlighted in a two-kilometre radius data search. This list includes Nationally Scarce or Rare species that are not SPIE but which might be considered to be of conservation concern. The following section reviews the species and discusses the likelihood of them occurring within the site.

4.2.2 Also included in this discussion are species of note that were recorded during the brief survey carried out on 25th July 2025.

4.2.3 Bees, Wasps and Ants (Hymenoptera)

Cerceris quinquefasciata Five-banded Digger Wasp (listed in data search)

It is likely that there is a nearby breeding population of this wasp. This can be inferred by the fact that its brood cleptoparasite, *Hedychrum niemelai*, was recorded during the survey.

There are no obvious areas of nesting habitat for the *Cerceris* within the study site, but the areas of tall, flower-rich grassland around the field margins ought to provide good hunting habitat. For this reason, the presence of this wasp is flagged as a material concern for this project, although it is accepted that there is a very much larger grassland resource immediately adjacent to the site, in the form of Therfield Heath.

4.2.4 Flies (Diptera)

Rhipidia uniseriata (listed in data search)

This crane-fly's dependence on rot holes and decaying wood as breeding habitat mean that this species is not a material consideration for this project, on the assumption that the few road-side trees will not be felled.

4.2.5 Butterflies (Lepidoptera)

Coenonympha pamphilus Small Heath (listed in data search and recorded on site)

This butterfly was recorded during the field survey and is therefore a material consideration for this project.

Cupido minimus Small Blue (listed in data search)

The caterpillars of this butterfly feed on Kidney Vetch, which does not grow within the site. As such, it is not a material consideration for this project.

Erynnis tages Dingy Skipper (listed in data search)

The caterpillars of this butterfly feed on Horseshoe Vetch, which does not grow within the site, and also Common Bird's-foot-trefoil, which is very rare in the sward. There are no very recent records for Therfield Heath and this butterfly may no longer occur there. As such, it is not a material consideration for this project.

Lasiommata megera Wall butterfly (listed in data search)

It is quite likely that this butterfly is locally extinct and therefore not requiring further consideration.

Polyommatus bellargus Adonis Butterfly (listed in data search)

The caterpillars of this butterfly feed on Horseshoe Vetch, which does not grow within the site. As such, it is not a material consideration for this project.

Polyommatus coridon Chalk Hill Blue (listed in data search)

The caterpillars of this butterfly feed on Horseshoe Vetch, which does not grow within the site. As such, it is not a material consideration for this project.

Pyrgus malvae Grizzled Skipper (listed in data search)

Whilst some of the known food plants of this caterpillar do occur on site (e.g., Agrimony), they are rare and unlikely to be able to support a population in isolation. This butterfly has not been recorded at Therfield Heath since 1985 and is likely to be extinct, locally. As such, this species is not a material consideration for this project.

Satyrion w-album White-letter Hairstreak (listed in data search)

There is very little elm in the site's hedgerows (only 2-3 trees noted in the southern boundary of the eastern field, so this species will not be present here as a breeding population. The only known local record comes from 2013, so it is possible that there is no stable breeding population in the near vicinity of the site. The presence of this butterfly is therefore not a material consideration for this project.

4.2.6 Moths (Lepidoptera)

Epermenia insecurella Chalk-hill Lance-wing (listed in data search)

The larval food plant, Bastard Toadflax, does not grow within the site, so this species is not a material concern for this project.

Gelechia scotinella Blackthorn Gelechia (listed in data search)

This is a rare moth but one that may be spreading. Its rarity is curious, given the abundance of its foodplant, Blackthorn, across most of Britain. Although not a SPIE, its current rarity suggests that it would be good practice to consider its ecological requirements further.

Nemophora fasciella Horehound Long-horn (listed in data search)

The larval food plant, Black Horehound, occurs quite widely around the site, particularly along the northern boundary with the houses of Echo Hill, where the plants are arguably growing both sides of the ownership divide. It also grows on the eastern side of the covered reservoir boundary and as plants dotted around elsewhere. Although the moth was not seen during the survey, this abundance of food plants means that the potential presence of this SPIE is a material consideration for this project.

Stigmella filipendulae Dropwort Dot (listed in data search)

Neither foodplant for this moth was seen during the survey, so this species is not a material concern for the project.

4.2.7 Snails (Mollusca)

There are no records for this snail on Therfield Heath, which has probably received an above-average amount of attention from naturalists over the years. This can be interpreted as “likely absent”. However, it would be risky to assume that the same applies to the green lanes, such as the Icknield Way and the Local Wildlife Site lane that runs along the southern boundary of the site. Being an essentially nocturnal species that buries itself into loose soil during the winter, it might be easy to overlook in scrub/hedge and long grassland habitats. Coming across the shells of dead animals is the most likely way they might become apparent to casual observers during the day.

The legal protection afforded to this snail is similar to that for reptiles, so that in the same way that precautionary surveys are generally carried out for these animals, it would be prudent to conduct a specific search for Roman Snails, even though they are not listed as a SPIE.

4.3 Habitat Review

4.3.1 The central swards of both fields are grass-dominated, with few herbs. Grass-rich swards would potentially benefit the caterpillars of butterflies such as Small Heath (SPIE) and Meadow Brown, but the extent to which that potential can be realised depends on the cutting regime. Swards cut for hay or silage will be removing this food resource at the peak time for butterfly activity. It may be for this reason that a large part of the large eastern field was left uncut through the summer, as butterfly habitat.

4.3.2 The flower-rich field margins provide a good nectar resource and foraging habitat for many invertebrates and may also provide cover for molluscs, such as the Roman Snail. In evaluating this grassland resource and the potential impact of its loss or size reduction, one needs to bear in mind the close juxtaposition of the Therfield Heath SSSI. This is a very extensive area of grassland on base-rich soils and should have sufficiently stable management to ensure the populations of the most significant species of conservation concern to be found there.

4.4 Summary of Species of Interest

- The SPIE wasp *Cerceris quinquefasciata* (Five-banded Digger Wasp) may utilise areas of tall grassland as hunting grounds within which to catch prey for its larvae. It is unlikely to be nesting within the site.

- The Small Heath butterfly (SPIE) is present within the site, with the grassland resource having the potential to support a population.
- The “research only” SPIE Cinnabar moth is also present.
- The SPIE *Nemophora fasciella* Horehound Long-horn has a plentiful food supply within the site’s hedgerows, although the moth was not seen during the brief survey of 25th July.

4.5 Limitations

4.5.1 Inevitably, a single site visit will not record all of the species using the site. Natural England advice recommends repeat visits over a longer period of time. However, a single site visit is still sufficient to get a feel for the likely biodiversity to be found at a site.

4.6 Impact Assessment

- 4.6.1 Draft designs for the site suggest the following impacts, both negative and positive, may result from the proposals.
1. Some loss of species-poor and species-rich grassland directly under the footprint of the proposed residential developments and associated roads/paths (negative);
 2. Creation of species-rich grassland within areas that are currently species-poor (positive);
 3. Creation of open space grassland on meadowland (likely to be a negative impact with high recreational pressure);
 4. Creation of seasonally wet SuDS wetland areas, increasing habitat diversity (positive impact);
 5. Minor loss of hedgerow for road access through hedge dividing the two fields (minor negative);
 6. Improvement to boundary hedgerows as visual screens (potentially positive).

5. RECOMMENDATIONS

5.1 Additional Surveys

- 5.1.1 A survey for Roman Snails should be carried out in the autumn. Such surveys typically comprise hand searching (useful for areas known to be at risk from direct physical disturbance) and night-time torchlight surveys. These surveys should be started one hour after sunset on warm, damp evenings. Particular attention should be given to the grassland within 5 metres from the base of each hedgerow. Two such survey visits are recommended.

5.2 Habitat Improvements

- 5.2.1 Planting to increase the robustness of hedgerows should include Blackthorn, for the benefit of the Blackthorn Gelechia moth.
- 5.2.2 Within reason, the stands of Black Horehound within the hedgerows should be retained, for the benefit of *Nemophora fasciella* (the Horehound Long-horn moth).
- 5.2.3 Wildflower meadow creation should include Common Bird's-foot-trefoil and, if possible, Horseshoe Vetch if areas of short sward are to be maintained.
- 5.2.4 Some areas of tall grassland should be left uncut throughout the summer months.

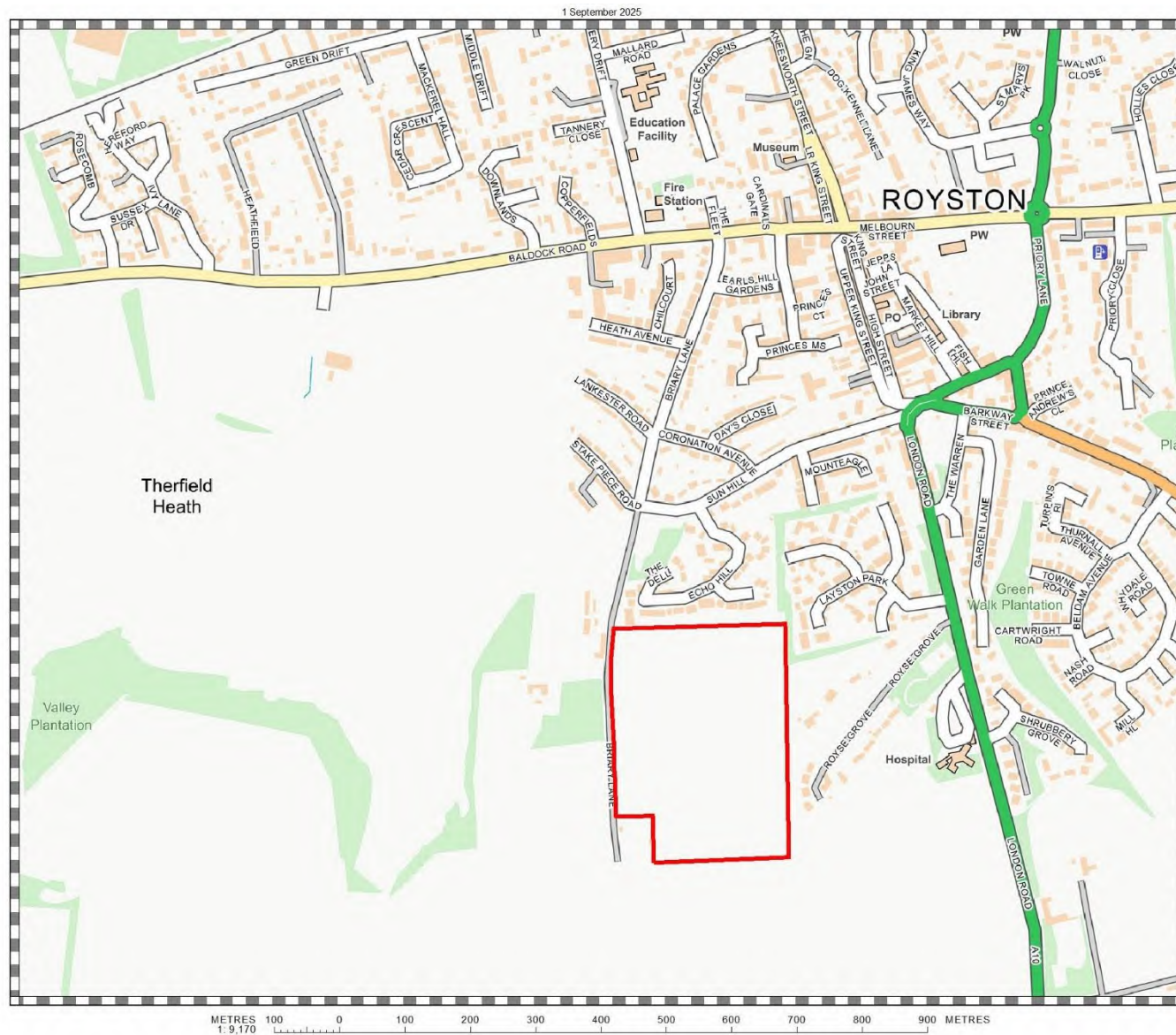
APPENDIX 1 – COMPETENCY STATEMENT

Adrian Knowles BSc FRES MCIEEM

Adrian started his ecological career in 1987 with Hampshire County Council, undertaking specialist botanical surveys of key habitats in connection with their Heritage Sites policy. A brief stint as a college lecturer covering nature conservation management was followed by nearly thirty years' experience with the Essex Wildlife Trust and its consultancy subsidiary, Essex Ecology Services Ltd. (EECOS, now known as Essex Ecology). During this time, he co-authored the Local Wildlife Site (LoWS) selection criteria for Essex and was involved with undertaking LoWS surveys, at least in part, in all 14 local authorities in the county.

Whilst with EECOS he undertook numerous Preliminary Ecological Appraisals. He also gained experience of a wide range of more detailed species surveys and mitigation work, including the construction of artificial Badger setts and relocating Badgers from setts requiring closure. Regular work has included Great Crested Newt surveys under a Class 1 licence and also occasional translocation exercises, under licence. He also holds a Class 1 licence allowing him to undertake Dormouse surveys and is also a regular volunteer with the Essex and Suffolk Dormouse Group as co-ordinator for two National Dormouse Monitoring Project sites.

He has been County Recorder for Aculeate Hymenoptera (bees, wasps and ants) within the Suffolk Naturalists' Society (SNS) since 2001 and in 2011 was accepted as a Fellow of the Royal Entomological Society in recognition of his work with this insect group. This has developed into a wider interest in invertebrates, undertaking numerous surveys, including brownfield sites, reedbeds and grassland habitats and he has become skilled in the use of the 'Pantheon' software being developed by the UKCEH and Natural England. He is also the SNS Recorder for terrestrial bugs (as from 2022). In 2024 he was made Essex County Recorder for Homopteran bugs.



MAP 1 Survey Site Boundary

Boundary illustration is approximate

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TABLE 1 – SURVEY DATA FROM 25TH July 2025

Order	Family	Species	Conservation status	Larval feeding guild	Adult feeding guild	Habitat
Araneae	Araneidae	Agalenatea redii				
(Spiders)		Larinioides cornutus		predator	predator	acid & sedge peats
		Zygiella atrica		predator	predator	arboreal
	Dictynidae	Nigma walckenaeri		predator	predator	arboreal
	Linyphiidae	Microlinyphia pusilla		predator	predator	tall sward & scrub
	Lycosidae	Alopecosa pulverulenta		predator	predator	tall sward & scrub; upland
	Miturgidae	Cheiracanthium erraticum		predator	predator	tall sward & scrub
	Philodromidae	Philodromus cespitum		predator	predator	arboreal
	Pisauridae	Pisaura mirabilis		predator	predator	tall sward & scrub
	Theridiidae	Enoplognatha latimana		predator	predator	tall sward & scrub
	Thomisidae	Misumena vatia		predator	predator	tall sward & scrub
		Xysticus cristatus		predator	predator	
Coleoptera	Cantharidae	Rhagonycha fulva		predator	predator	tall sward & scrub
(Beetles)	Chrysomelidae	Cryptocephalus pusillus			herbivore	arboreal
	Coccinellidae	Coccinella septempunctata				
		Hippodamia variegata	[Nationally Scarce]	predator	predator	tall sward & scrub
		Propylea quattuordecimpunctata				
		Tytthaspis sedecimpunctata		saprophagous	saprophagous	tall sward & scrub
	Curculionidae	Sitona lineatus		herbivore	herbivore	tall sward & scrub
	Oedemeridae	Oedemera lurida		predator	predator	tall sward & scrub
Diptera	Sciomyzidae	Limnia unguicornis		parasitoid	saprophagous	acid & sedge peats; marshland; running water
(Flies)	Syrphidae	Chrysotoxum bicinctum		predator	nectivore	tall sward & scrub
		Eumerus strigatus		herbivore	nectivore	tall sward & scrub
		Helophilus pendulus		saprophagous	nectivore	acid & sedge peats
		Scaeva pyrastris		predator	nectivore	tall sward & scrub

		<i>Sphaerophoria scripta</i>		predator	nectivore	tall sward & scrub
		<i>Syrirta pipiens</i>		saprophagous	nectivore	tall sward & scrub
		<i>Syrphus torvus</i>		predator	nectivore	
		<i>Xanthogramma pedissequum</i> s.s.				
	Tachinidae	<i>Eriothrix rufomaculata</i>				
Hemiptera	Issidae	<i>Issus coleoptratus</i>		herbivore	herbivore	arboreal
(Bugs)	Miridae	<i>Lygus pratensis</i>	[Nationally Rare, RDB 3]			
		<i>Notostira elongata</i>		herbivore	herbivore	tall sward & scrub
		<i>Phytocoris varipes</i>		herbivore	herbivore	tall sward & scrub
		<i>Plagiognathus arbustorum</i>		herbivore	herbivore	tall sward & scrub
		<i>Stenodema laevigata</i>		herbivore	herbivore	tall sward & scrub
	Pentatomidae	<i>Aelia acuminata</i>		herbivore	herbivore	tall sward & scrub
		<i>Palomena prasina</i>		herbivore	herbivore	tall sward & scrub
	Scutelleridae	<i>Eurygaster testudinaria</i>		herbivore	herbivore	tall sward & scrub
Hymenoptera	Andrenidae	<i>Andrena alfenella</i>	[Nationally Rare, RDB 3]	nectivore	nectivore	short sward & bare ground
(Bees, Wasps &	Apidae	<i>Anthophora furcata</i>		nectivore	nectivore	decaying wood
Ants)		<i>Apis mellifera</i>				
		<i>Bombus hortorum</i>		nectivore	nectivore	tall sward & scrub
		<i>Bombus lapidarius</i>		nectivore	nectivore	tall sward & scrub
		<i>Bombus pascuorum</i>		nectivore	nectivore	tall sward & scrub
		<i>Bombus terrestris</i>		nectivore	nectivore	tall sward & scrub
		<i>Bombus vestalis</i>		nectivore	nectivore	short sward & bare ground
	Chrysididae	<i>Hedychrum niemelai</i>	[Nationally Rare, RDB 3]		nectivore	short sward & bare ground
	Colletidae	<i>Hylaeus signatus</i>	[Nationally Scarce]	nectivore	nectivore	short sward & bare ground
	Crabronidae	<i>Cerceris rybyensis</i>		parasitoid	nectivore	short sward & bare ground
	Formicidae	<i>Lasius niger</i>				short sward & bare ground
	Halictidae	<i>Lasioglossum calceatum</i>		nectivore	nectivore	short sward & bare ground
		<i>Lasioglossum fulvicorne</i>		nectivore	nectivore	short sward & bare ground

	Megachilidae	Heriades truncorum	[Nationally Rare, Insufficiently Known]	nectivore	nectivore	decaying wood
		Osmia spinulosa		nectivore	nectivore	short sward & bare ground
	Pompilidae	Arachnospila anceps		predator		tall sward & scrub
		Priocnemis pusilla		parasitoid	nectivore	short sward & bare ground; tall sward & scrub
Lepidoptera	Erebidae	Tyria jacobaeae	SPIE - research only	herbivore	nectivore	tall sward & scrub
(Butterflies &	Lycaenidae	Aricia agestis		herbivore	nectivore	short sward & bare ground
Moths)		Celastrina argiolus		herbivore	nectivore	arboreal
		Polyommatus icarus		herbivore	nectivore	short sward & bare ground
	Noctuidae	Calophasia lunula	[Nationally Rare, RDB 3]	herbivore	nectivore	short sward & bare ground
	Nymphalidae	Aglais io		herbivore	nectivore	tall sward & scrub
		Coenonympha pamphilus	SPIE; Nationally Vulnerable	herbivore	nectivore	short sward & bare ground
		Melanargia galathea		herbivore	nectivore	tall sward & scrub
		Pyronia tithonus		herbivore	nectivore	tall sward & scrub
	Pieridae	Pieris rapae		herbivore	nectivore	
Orthoptera	Acrididae	Chorthippus brunneus		herbivore	herbivore	tall sward & scrub
(Grasshoppers &		Chorthippus parallelus		herbivore	herbivore	tall sward & scrub
Bush-crickets)	Phaneropteridae	Leptophyes punctatissima		herbivore	herbivore	tall sward & scrub
Isopoda	Porcellionidae	Porcellio scaber				
(Woodlice)						



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