

Ecological Impact Assessment

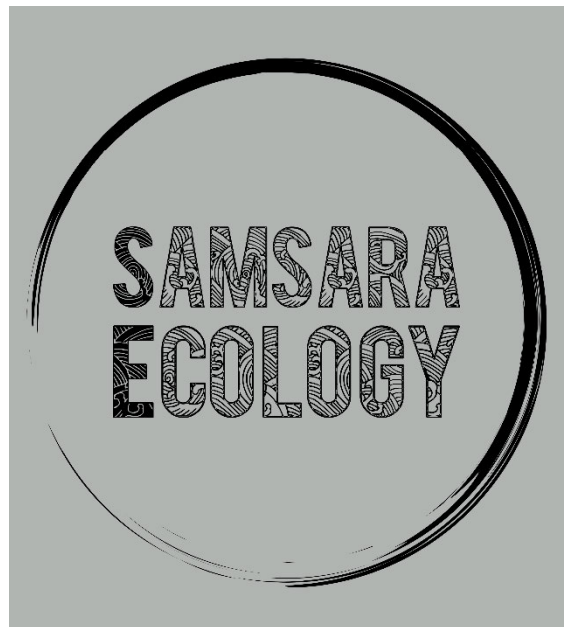
Canfield Moat

Andy Smith

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Canfield Moat, Little Canfield

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It is important that planning decisions are based on up-to-date ecological reports and survey data. However, it is difficult to set a specific timeframe over which reports, or survey data should be considered valid, as this will vary in different circumstances. In some cases, there will be specific guidance on this (such as for the age of data which may be used to support an EPS licence application). In circumstances where such advice does not already exist, CIEEM provides general advice in its Advice Note on the Lifespan of Ecological Reports and Surveys¹, which should be referred to if this report is not submitted within 12 months of the first production.

¹ [REDACTED]

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Purpose of Report					
<p>The Ecological Impact Assessment (EclA) was written to identify the important ecological features and determine the impact of the proposed development before mitigation measures are applied. Mitigation measures to minimise the anticipated impacts have been discussed, and the residual impact has been presented.</p> <p>Enhancement measures are also given to meet the aims and objectives set out within national policies for biodiversity net gain.</p>					
Method					
<p>The report is written in accordance with CIEEM's Guidelines for Ecological Impact Assessment (EclA) and includes</p> <ul style="list-style-type: none"> • An updated desk study. • A summary of baseline conditions. • An impact Assessment • Recommendations for habitat and species enhancement 					
Description of the Scheme					
<p>The Client is submitting a planning application for the construction of residential properties within the grounds. Two of the new properties will be within the footprint of existing buildings. The proposed works will not affect the main house and a small cottage.</p>					
Important Ecological Features Identified	Impact before Mitigation	Avoidance Possible	Mitigation Required	Compensation Required	Residual Impact
Great crested newts	<ul style="list-style-type: none"> • An extremely low risk that great crested newts may be harmed, injured, or killed when widening existing access in hedgerows. 	•	•		• Neutral
Reptiles	<ul style="list-style-type: none"> • Reptiles may pass through the works area during construction and may be 	•	•		• Neutral



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	harmed, injured or killed if suitable shelter is created.				
Nesting birds	<ul style="list-style-type: none"> Birds and their nests, eggs or dependent young being harmed, injured, or killed when trees are felled or hedges are cut back. 	•	•		• Neutral
Hibernating bat	<ul style="list-style-type: none"> One building with low suitability to support hibernating bat(s). 	•	•	•	• Neutral
Foraging and commuting bats	<ul style="list-style-type: none"> Commuting and foraging routes may be impacted due to poor lighting design during construction and operation. 	•	•		• Neutral
Hedgehog	<ul style="list-style-type: none"> Hedgehogs may be disturbed, injured, or killed during the construction works of the proposed development. New fences will block access to the gardens and prevent hedgehogs from foraging or commuting around the habitats. 	•	•	•	• Neutral

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1 Introduction

- 1.1.1 Samsara Ecology Ltd was commissioned by Andy Smith (the Client) in July 2022 to undertake an Ecological Impact Assessment (EclA) of Canfield Moat, High Cross Lane West, Little Canfield, Dunmow, Essex, CM6 1TD (the Site) [Ordnance Survey (OS) grid reference TL 59439 20932].
- 1.1.2 An EclA has two particular uses as defined in CIEEM guidelines²:
- providing the ecological component of Environmental Impact Assessment (EIA) required under EIA Regulations
 - demonstrating how a project accords with relevant planning policy and legislation where an EIA is not required.
- 1.1.3 The level of detail required in an EclA is determined by the scale and complexity of a development. It will be proportional to the magnitude of potential impacts on the baseline ecology.
- 1.1.4 The Site is 3.8 ha and comprises a residential property within manicured grounds bounded on all sides by tree lines and hedgerows. A small woodland copse makes up the northeast corner of the Site. The Site boundaries are presented in Figure 1.

Figure 1 - The Site's Boundaries



² CIEEM (2018), Guideline for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine, Winchester

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- 1.1.5 The Client is submitting a planning application for the construction of residential properties within the grounds.
- 1.1.6 A Preliminary Ecological Appraisal (PEA) survey was undertaken in August 2020, and further surveys for badgers and bats were undertaken in August and September 2022. There were no significant changes to the habitats or buildings within the Site between the 2020 and 2022 surveys.

1.2 Purpose of the Report

- 1.2.1 This report has been written in accordance with the Chartered Institute for Ecological and Environmental Management's (CIEEM) guidelines for ecological report writing³ and aims to:
- Identify and describe all potentially significant ecological effects associated with the proposed development.
 - Set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects.
 - Provide an assessment of the significance of any residual effects.
 - Identify appropriate enhancement measures to achieve a net gain in biodiversity in accordance with local and national policies.
 - Set out the requirements for post-construction monitoring (if applicable)
- 1.2.2 All relevant planning policies and legislation are presented in **Appendix 1**.

1.3 Suitably Qualified Ecologist (SQE)

- 1.3.1 The report has been written by Hayley Farnell, BSc, MSc (hons), an SQE with over 18 years of professional experience in environmental consultancy. Hayley is a full member of the Chartered Institute of Ecological and Environmental Management (CIEEM) and holds a Class 2 survey licence for bats [Licence Number: 2015 -15896-CLS-CLS] and a Class 1 survey licence for great crested newts [Licence Number: 2017-27675-CLS-CLS].

³ CIEEM (2017) Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.

2 Methodology

2.1 Scope of the Assessment

2.1.1 Zones of Influence

2.1.1 The 'zone of influence' (Zol) for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example, where there are ecological or hydrological links beyond the site boundaries.

2.1.2 The zone of influence will vary between different ecological features depending on their sensitivity to environmental change.

2.1.2 Types of Features Considered

2.1.3 The ecological features considered in the assessment are those which are considered to be ecologically important and potentially affected by the project. These are:

- Locally, nationally and internally designated sites for habitat and wildlife conservation.
 - Local Nature Reserves (LNR)
 - Ramsar Sites
 - Special Area of Conservation (SAC)
 - Special Protection Area (SPA)
 - Sites of Special Scientific Interest (SSSI)
 - National Nature Reserves (NNR)
 - Locally designated wildlife sites
 - Metropolitan Sites of Importance (London)
- Habitats and Species of Principal Importance (HPI and SPI).
 - Those listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
- Protected species.
 - Birds listed under Schedule 1 of the Wildlife and Countryside Act.
 - Species listed under Schedule 5 (animals) or Schedule 8 (plants) of the Wildlife and Countryside Act.
 - Species listed under Schedule 2 (animals) or Schedule 5 (plants) of the Habitat Regulations 2010 (European Protected Species EPS).
 - Badgers as protected by the Protection of Badgers Act 1992.

2.1.4 These are referred to as 'Important Ecological Features' throughout this assessment. Refer to **Appendix 1** for full details of the legislation protecting species and habitats.

2.1.3 Consultation

2.1.5 No consultations are required for this Ecological Impact Assessment.

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2.2 Desk Study

- 2.2.1 The local biological records centre (Essex Field Club) was contacted for records on local, national, and internationally designated wildlife conservation sites, notable habitats, and protected species within 1 km of the Site boundaries.
- 2.2.2 Information regarding the location of Protected Species Licences (PSL) granted by Natural England within 1 km of the Site has been obtained using the tools within the Multi-Agency Geographical Information Centre (MAGIC)⁴.
- 2.2.3 Aerial mapping has been used to provide the context of surrounding habitats.
- 2.2.4 This level of desk study is considered to be proportionate to the proposed development.

2.3 Baseline Surveys

2.3.1 Preliminary Ecological Appraisal

Habitat Survey

- 2.3.1 The habitats have been classified and mapped in accordance with the UK habitat classification system⁵. The classifications used within this system are those used within the biodiversity metric 3.1 published by Natural England⁶.
- 2.3.2 The habitat survey was carried out within the Site's boundaries on the 25th of August 2020. A walkover to update the habitat survey was undertaken on the 22nd of August, 2022.

Suitable Habitat Assessments for Notable and Protected Species

- 2.3.3 In addition to the habitat survey, initial assessments have been undertaken to identify if the Site's habitats are suitable to support Species of Principal Importance (SPI) or other notable or legally protected species.
- 2.3.4 During the survey, the surveyor searched for and recorded suitable features within the Site's habitats which can be used for breeding, foraging and/or create links to suitable habitats within the wider landscape for wildlife, in particular:
- Terrestrial Invertebrate
 - Great Crested Newt (GCN) (*Triturus cristatus*)
 - Reptiles
 - Nesting birds and/or other notable or protected bird species
 - Bats
 - Water vole (*Arvicola amphibius*)
 - Otter (*Lutra lutra*)

⁴ [Accessed 17/10/2022]

⁵ Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020). The *UK Habitat Classification User Manual 1.1* at <http://www.ukhab.org>

⁶ Stephen Panks, Nick White, Amanda Newsome, Jack Potter, Matt Heydon, Edward Mayhew, Maria Alvarez, Trudy Russell, Sarah J. Scott, Max Heaver, Sarah H. Scott, Jo Treweek, Bill butcher and Dave Stone. (2021). Biodiversity Metric 3.1: auditing and accounting for biodiversity value. User guide Natural England
A – Natural England, B – Imperial College, University of London, C – Environment Agency, D – Department for Environment, Food and Rural Affairs

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- Dormouse (*Muscardinus avellanarius*)
- Badger (*Meles meles*)
- Hedgehog (*Erinaceus europaeus*)

- 2.3.5 Although evidence of the presence of protected or notable species may be found during the initial survey (i.e., droppings, species in situ, nests, dens, or feeding remains, etc.), it is not guaranteed. Therefore, further surveys are recommended where suitable habitats are identified, and there is a requirement to establish the presence or likely absence of such species in order to complete an impact assessment.
- 2.3.6 In some cases, a worst-case scenario will be established to identify potential impacts from the proposed development where there are suitable habitats to support protected or notable species.
- 2.3.7 The field survey for all species was carried out within the Site's boundaries, and this area has been extended beyond the boundaries for great crested newt, badger, water vole, otter and hedgehog when there is likely impact to them from the proposed development and where access outside the Site boundaries was available.
- 2.3.8 Details of the methodologies of initial surveys undertaken and habitat requirements for each of the species listed are presented in **Appendix 2** and summarised in Table 1 below.

Table 1 – Summary of Habitats and Survey Areas

Ecological Feature	Legal Status	Typical Suitable Habitats ^a	Survey Area ^b
Terrestrial invertebrate	<ul style="list-style-type: none"> • Approximately 400 species are SPI 	<ul style="list-style-type: none"> • Grassland • Woodland Rides • Woodland Edges • Ponds • Riverbanks • Hedgerows 	Within the Sites boundaries.
Great crested newt	<ul style="list-style-type: none"> • EPS • WCA 1981 Sch 2 	<ul style="list-style-type: none"> • Ponds • Rough grassland • Scrub • Hedgerows • Woodland • Rubble or Stockpiles 	Within the Sites boundaries and up to 500 m beyond.
Reptiles	<ul style="list-style-type: none"> • WCA 1981 Sch 2 and Sch 5 	<ul style="list-style-type: none"> • Rough grassland • Woodland edges • Embankments • Scrub • Hedgerows • Heathland 	Within the Sites boundaries.
Birds	<ul style="list-style-type: none"> • WCA 1981 Sch 5, and some are listed in Sch 1 	<ul style="list-style-type: none"> • Buildings • Brownfield sites • Trees • Woodland • Grassland • Amenity and residential open space 	Within the Sites boundaries.

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Ecological Feature	Legal Status	Typical Suitable Habitats ^a	Survey Area ^b
		<ul style="list-style-type: none"> Rivers Estuaries Costal Heathland Arable Pasture 	
Bats	<ul style="list-style-type: none"> EPS WCA 1981 Sch 2 	<p>Roosting</p> <ul style="list-style-type: none"> Built structures. Trees <p>Foraging and Commuting</p> <ul style="list-style-type: none"> Woodland Hedgerows Pasture Grassland Arable Rivers, streams, and ponds 	Within the Sites boundaries.
Water vole	<ul style="list-style-type: none"> WCA 1981 Sch 2 	<ul style="list-style-type: none"> Rivers Streams Ditches Ponds Lakes 	Within the Site's boundaries and up to 50 m beyond.
Otter	<ul style="list-style-type: none"> EPS WCA 1981 Sections 9 and 11 	<ul style="list-style-type: none"> Clean rivers 	Within the Site's boundaries and up to 50 m beyond.
Dormouse	<ul style="list-style-type: none"> EPS WCA 1981 Sch 5 	<ul style="list-style-type: none"> Hedgerows connections with woodlands and foraging resources to 	Within the Site's boundaries and up to 1 km beyond.
Badger	<ul style="list-style-type: none"> Protection of Badgers Act 1992 	<ul style="list-style-type: none"> Embankments Woodlands Grassland Hedgerows Scrub Arable 	Within the Site's boundaries and up to 30 m beyond
Hedgehog	<ul style="list-style-type: none"> SPI 	<ul style="list-style-type: none"> Grassland Gardens Woodland Pasture Arable 	Within the Site's boundaries and up to 500 m beyond.
<p>Notes:</p> <p>a – These are a list of the typical habitats these faunas are known to use. The surveyor has also checked for evidence of the species within the Site. So, there may be incidents when the animals are found in different habitats to those listed.</p>			

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Ecological Feature	Legal Status	Typical Suitable Habitats ^a	Survey Area ^b
<p>b – The search for the areas beyond the Site's boundaries has only been conducted where suitable habitats are present for the species within the Site and where access is available.</p> <p>SPI – Species of Principal Importance</p> <p>EPS – European Protected Species</p> <p>WCA – the Wildlife and Countryside Act 1981</p>			

2.4 Further Surveys

2.4.1 The Preliminary Ecological Assessment (PEA) survey identified the need for further surveys for bats and badgers.

2.4.2 Bats presence/absence surveys

2.4.2 One of the buildings (B4) to be affected by the proposed development was identified as having moderate suitability to support roosting bats.

2.4.3 In accordance with the survey guidelines, the presence or likely absence of bats was identified using emergence/re-entry survey methods. Two dusk surveys were undertaken in August and September 2022.

2.4.4 Emergence surveys begin 15 minutes before sunset and continue for up to two hours. During this time, the structure is observed by surveyors equipped with handheld bat detectors that record bat calls for later analysis. The surveyors make notes if bats are seen to emerge or re-enter the structure, which identifies the time and location of the activity.

2.4.5 The surveyors were also equipped with reflectance IR cameras (Canon XA11, Sony Handycam Nightshot). These are set up to capture 30fps, and infra-red torches allow the cameras to capture images in low light.

2.4.6 Bat calls are analysed following the surveys using sound analysis software to identify the species of bats recorded. The video from the cameras was watched back at 1.5x speed, except when a surveyor noted an emergence, wherein 5 minutes of footage was observed at normal speed around the time noted.

2.4.7 The structure was observed from three locations, as presented in Figure 1, and the details are given in Table 2.

Figure 2 - Surveyor Locations

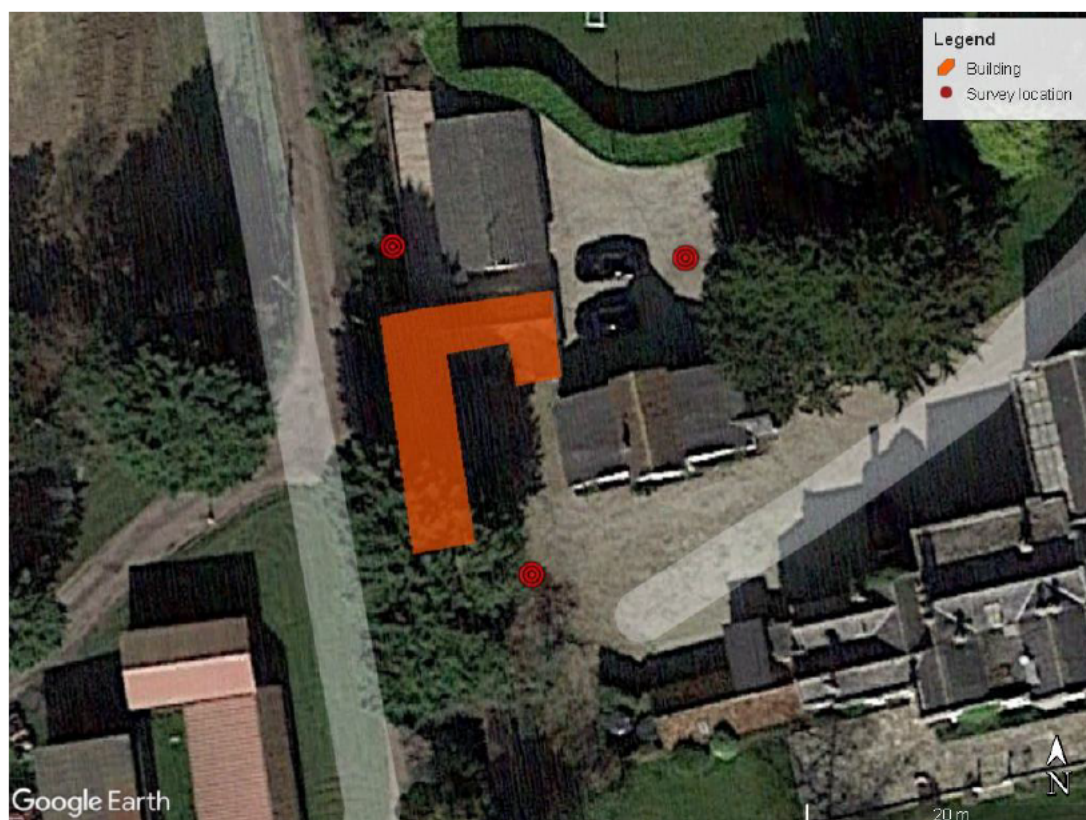


Table 2 – Surveyor Details

Surveyor Name	Licence holder	Equipment Used
Brooke Waites	Yes	Elekon Batlogger M and Canon XA11
Lynden Reed	Yes	Elekon Batlogger M2 and Sony handycam
Leigh-Ann Barran	No	EM2 Pro and Sony Handycam

2.4.8 BCT has recently published an interim guidance note⁷ relaxing the requirement for dawn surveys. The note superseded the 2016 guidelines and was written in consultation with Natural England and leading experts. The note cites recent publications that '*create questions about the efficacy of dawn surveys for determining the presence or likely absence of bats and the value of these over dusk surveys for this specific purpose*'. One main concern is that a recent review of empirical data shows that bats will often return to roosts before dawn surveys commence, and hence roosts can be missed during this type of survey

2.4.9 The surveyors are equipped with cameras with night vision capability, allowing a clear view of the structures in low light levels. In accordance with the interim guidance note, and due to being aided by suitable Night Vision Aids (NVA), only dusk surveys have been undertaken for this project.

⁷ Bat Conservation Trust, May 2022. Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys.

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2.4.3 Badger survey

- 2.4.10 The entrance holes of the badger sett found during the PEA were monitored for 21 days using a combination of wildlife camera traps and 'sticky traps' (small lengths of bamboo wrapped in sellotape with the sticky surface facing out).
- 2.4.11 The cameras were checked three times during the 21 days to ensure they were in working order and to download footage.
- 2.4.12 The 'sticky traps' were wedged tightly into the mouth of the sett entrances, wide enough for a rabbit to pass through easily but too narrow for a badger to pass without knocking out or brushing past. The 'sticky traps' would easily be moved by badgers and would not block access to the sett. The sellotape is put on facing out to catch any hairs of animals that push or brush past the sticks.

2.5 Assessment

- 2.5.1 The impact assessment has been undertaken to determine the significance of an impact and/or effect of a proposed development on an Important Ecological Feature.
- 2.5.2 The following definition for the terms 'impact' and 'effect' are given in the CIEEM guidelines²:

Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow.

Effect – Outcome to an ecological feature from an impact. For example, the effects on a dormouse population from the loss of a hedgerow.

Determining Significance

- 2.5.3 For the purpose of EclA, a significant effect is:

*"an effect that either supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general"*³

- 2.5.4 In determining the significance for this assessment, consideration is given to the conservation status of the habitat or species. For which the CIEEM guidelines³ present the following descriptions:

Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area

Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area."

Geographical Contexts

- 2.5.5 The following geographic contexts are used in this assessment for the importance of features and scale of effects:
- International and European.
 - National.
 - Regional.

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- Metropolitan, County, vice-county or other local authority-wide area.
- Local (up to 2 km from Site boundary).
- Site (within the Site's boundaries)

Describing Ecological Impacts and Effects

2.5.6 The following characteristics are referred to when describing the ecological impacts and effects (where relevant):

- Positive – A change that improves the quality of the environment.
- Negative – A change which reduces the quality of the environment.
- Extent - The spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions
- Magnitude – The size, amount, intensity and volume.
- Duration – As defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes.
- Frequency and Timing - The number of times an activity occurs, which will influence the resulting effect
- Reversibility - An irreversible effect is one from which recovery is not possible within a reasonable timescale, or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.

Avoidance, Mitigation, Compensation and Enhancement

2.5.7 Appropriate measures required to avoid, mitigate, and/or compensate for each of the impacts and/or effects identified for the Important Ecological Features will be described in the assessment.

2.5.8 Enhancement measures will also be discussed in accordance with net gain for biodiversity policies set out in the 25-year environmental plan⁸ and the National Planning Policy Framework (NPPF)⁹ (see Appendix 1).

2.6 Limitations to the Surveys and Assessment

2.6.1 Any ecology assessment must be considered a 'snapshot' of the site conditions at the time of the survey. Ecological constraints will change over time, and therefore the findings of this report are valid for a period of one year, after which the report should be reviewed to assess whether the survey should be updated.

2.6.2 No constraints were such that they affect the overall conclusions and recommendations made herein.

⁸ Defra (2019), A Green Future: Our 25 Year Plan to Improve the Environment, HM Government

⁹ MHCLG (2021), National Planning Policy Framework, HM Government

3 Baseline Ecological Conditions

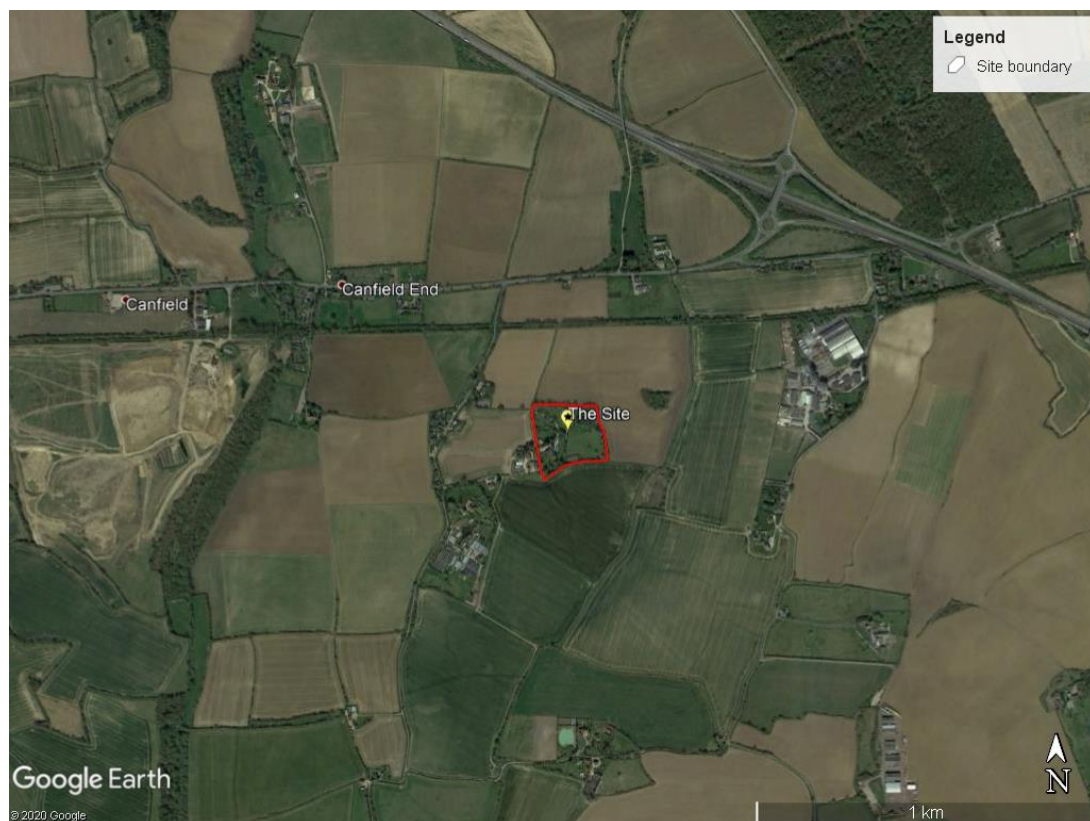
3.1 Desk Study

- 3.1.1 There is a site designated as a local nature reserve which is also an Essex local wildlife site called Flitch Way, located within 1 km of the Site. It is a corridor of habitats managed for wildlife and is located 0.4 km north of the Site. The habitats or species for which this Site is designated will not be impacted by the proposed development.
- 3.1.2 No protected species licences have been granted by Natural England within 1 km of the Site. The closest bat licence granted in 2014 for the destruction of a resting place of common pipistrelle, natterer's and brown long-eared bats is located 1.1 km northwest of the Site. The closest great crested newt licence, also granted in 2014 for the destruction of a resting place, is located 1.2 km southwest.

3.2 Habitats

- 3.2.1 The Site is located in a rural setting, with the landscape dominated by arable fields with woodland blocks scattered throughout. The A120 runs east-west across the landscape approximately 0.8 km northeast of the Site. The Site is shown in the context of the surrounding habitats in Figure 4.

Figure 3 - The Surrounding Habitats



- 3.2.2 The Site's habitats comprise manicured lawns (managed grassland), a small broadleaved woodland copse, residential properties, driveways, and outbuildings. Remnants of a former moat have created a pond in the southwest corner of the Site.

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- 3.2.3 The grassland is frequently mown with the sward dominated by red clover and fescue grasses. The grassland is fairly species-poor with abundant lesser trefoil and occasional common cat's ear, shinning cranesbill, creeping cinquefoil, and common vetch.
- 3.2.4 The woodland has very little diversity in terms of structure, and the only ground flora at the time of the survey was lesser celandine, garlic mustard and nettles. Trees included cherry, willow, beech, hawthorn, silver birch, hazel, and field maple.
- 3.2.5 There is a 'secret garden' in the centre of the Site, of which the lawn is of similar composition to the other grassland. This area is bounded on all sides by hedgerows, three of which are laural and the fourth being comprised of hazel, field maple, dogwood, blackthorn, sycamore, elder and yew. There is also one apple tree growing in this area.
- 3.2.6 A group of fruit trees (pear, plum, apple and cherry) are found near the entrance of the Site, and the driveway is lined with large mature trees, including London planes, horse chestnut, willow, and apple. The baseline data search shows this corner of the Site as a traditional orchard (priority habitat inventory). It is not maintained as an orchard, i.e., trees are not grafted or pruned, and the grassland is mown frequently. It is therefore considered a group of small fruit trees set in managed grassland.
- 3.2.7 A list of flora recorded onsite during the survey is presented in **Appendix 3**. It should be noted that this is not an exhaustive list, as different plants can germinate in different seasons throughout the year. The Arboricultural report should be referred to for a full list of tree species.
- 3.2.8 Photographs of the Site are presented in **Appendix 4**, and the habitat map is in **Appendix 5**.

3.3 Species

- 3.3.1 Species for which there are potentially suitable habitats within the Site or study area (see Table 1) are discussed in this chapter and include:
- Great crested newt
 - Reptile
 - Nesting birds
 - Bats
 - Badger
 - Hedgehog
- 3.3.2 Species for which suitable habitats are not present within the Site or wider study area have been scoped out and are not discussed further in this report.

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3.3.2 Great crested newts

- 3.3.3 No records of great crested newts (*Triturus cristatus*) were returned in the data search
- 3.3.4 The habitats on the banks of the pond in the southwest corner of the Site are suitable for great crested newts. However, the grassland beyond this offers little shelter and is frequently disturbed by mowing. The hedgerows and woodland copse also offer opportunities for sheltering, hibernation and foraging for great crested newts.
- 3.3.5 The pond on the Site is part of a larger water body that was formerly a moat. The Habitat Suitability Score (HSI) of the pond is calculated to be 0.69 (Average).
- 3.3.6 The Site is considered to be of importance for great crested newts at a site level

3.3.3 Reptiles

- 3.3.7 No records of reptiles were returned in the data search.
- 3.3.8 The Site's habitats provide limited suitability for foraging or sheltering reptiles, although some may use the boundary vegetation or woodland habitats. It is considered unlikely that the habitats support a significant number of reptiles.
- 3.3.9 The Site is considered to be of very low importance for reptiles at a site level.



3.3.4 Nesting Birds

- 3.3.10 The baseline data search returned 59 records of birds made up of 31 species. Of these records, blackbirds (*Turdus merula*), collared doves (*Streptopelia decaocto*), dunnocks (*Prunella modularis*), great tits (*Parus major*), house sparrow (*Passer domesticus*), pied wagtail (*Motacilla alba*), robin (*Erithacus rubecula*), song thrush (*Turdus philomelos*), starlings (*Sturnus vulgaris*) and wren (*Troglodytes troglodytes*) are likely to use the habitats within this Site for nesting.
- 3.3.11 Habitats suitable for use by nesting birds include outbuildings, trees, woodland, hedgerows and boundary vegetation.
- 3.3.12 The habitats to be affected by the proposed development are likely to support typical garden birds such as sparrows, tits and blackbirds. The potential value of the nesting is considered to be important at a site level.




3.3.5 Bats

- 3.3.13 The baseline data search returned 37 records of bats made up of 5 species. The most recent records being from 2021 for a grounded common pipistrelle (*Pipistrellus pipistrellus*) located 1 km southwest of the Site.
- 3.3.14 Structures onsite and their suitability to support roosting and/or hibernating bats are described in Table 3.

Table 3 – Structures Onsite

ID	Description	Features and suitability	Photograph
B1	<p>The main house is a two-storey building of brick construction with a slate-tiled pitched roof. A parapet runs around the entire house.</p> <p>The roof contains a void which has small access doors out onto the roof. The roof tiles are lined with sarking in some places and bitumen 1f felt in others. The spaces are approximately 2 m high from the floor to the ridge beam.</p>	<p>Access into the roof space is likely via the edges of the small access doors.</p> <p>Approximately 40 droppings of varying ages were found in one spot, along with lacewing remains. Droppings and feeding remains are typical of brown long-eared bats.</p> <p>The building is categorised as of high suitability to support roosting bats.</p> <p>The building is considered to be of negligible value for hibernating bats.</p>	
B2	<p>A single-storey brick extension is attached to the western edge of the house. It has a pitched peg-tiled roof which contains a void.</p>	<p>There are gaps under the clay peg tiles and at the top of the walls under the eaves.</p> <p>Bat droppings, of size and shape typically associated with pipistrelle bats, were found on the windows and under the eaves to the rear of the building.</p> <p>The building is categorised as of high</p>	



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ID	Description	Features and suitability	Photograph
		<p>suitability to support roosting bats.</p> <p>The building is considered to be of negligible value for hibernating bats.</p>	
B3	<p>A timber-framed, single-storey shed with a clay peg tile roof. There is no void under the roof, and the tiles are lined with a breathable roof membrane.</p> <p>The rear wall comprises weatherboards, and the other three are rendered plywood.</p>	<p>There were no features identified on this building or evidence found within it.</p> <p>The building is considered to be of negligible value for roosting or hibernating bats.</p>	
B4	<p>A group of storage sheds with concrete and brick walls. There are no voids within the roofs of the sheds. The clay peg tiles are lined in some places with bitumen felt.</p>	<p>Access into the buildings would be via gaps at the eaves or under the tiles.</p> <p>There is access to the space between the bitumen felt and roof tiles via the natural curve of the tiles.</p>	

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ID	Description	Features and suitability	Photograph
		<p>The buildings are considered to be of moderate suitability to support roosting bats. Individual hibernating bats could also use it.</p>	
B5	<p>A single-storey building constructed of breeze block which has been rendered and painted.</p> <p>The roof is pitched and comprised of tightly fitted clay tiles.</p> <p>Contains a shallow, inaccessible void between the ceiling and the roof ridge.</p>	<p>There were no features identified on this building or evidence found within it.</p> <p>The building is considered to be of negligible value for roosting or hibernating bats.</p>	
B6	<p>Timber sheds with weatherboarded walls and a plywood roof covered in roofing felt.</p> <p>The building is of fairly recent construction and is frequently occupied by the grounds team.</p>	<p>There were no features identified on this building or evidence found within it.</p> <p>The building is considered to be of negligible value for roosting or hibernating bats.</p>	

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ID	Description	Features and suitability	Photograph
B7	<p>A residential cottage with white rendered walls. The roof is covered in clay peg tiles in the centre of the building, with slate tiles on either side.</p> <p>The roof void was not accessible during the survey.</p>	<p>There are gaps under the clay roof tiles, allowing access into the roof space and/or spaces between the roof tiles and lining.</p> <p>The building is categorised as of high suitability to support roosting bats.</p> <p>The building is considered to be of negligible value for hibernating bats.</p>	
B8	<p>A brick pool house with a pitched clay tiled roof.</p>	<p>There were no features identified on this building or evidence found within it.</p> <p>The building is considered to be of negligible value for roosting or hibernating bats.</p>	

3.3.15 Some of the larger trees along the driveway have features which may be suitable to support roosting bats, and it is likely that trees within the woodland copse and along boundary lines also contain features which would be suitable for use by bats. None of these trees will be affected by the proposed development, so no further surveys are recommended.

3.3.16 The only building suitable for supporting roosting bats that will be affected by the proposed development is B4. Further surveys were recommended for this building in the form of two emergence/re-entry surveys to be conducted between May and September.

Survey Details

3.3.17 The date, times, and weather conditions during each survey are presented in Table 4.

Table 4 – Survey Details

Structure ID	Date	Time	Start			Finish			
			Temp °C	Wind ^a	Rain	Time	Temp °C	Wind ^a	Rain
B4	03/08/2022	20:30	24	1	0	22:15	21	1	0
B4	07/09/2022	19:15	18	1	0	21:00	17	1	0

^a Beaufort scale

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Survey Results

- 3.3.18 No bats emerged or re-entered the building during the survey, so the structure is not considered to support roosting bats.
- 3.3.19 Activity during both surveys was fairly moderate, comprising mainly common and soprano pipistrelles. The earliest bat pass was recorded 15 minutes after sunset, suggesting a roost nearby the building being surveyed. It's considered likely that the main residential building (B1) supports bat roosts but will not be impacted by the proposed development.
- 3.3.20 Habitats on the Site were of moderate suitability to support foraging and commuting bats. Activity is likely to be around the site's boundaries in the woodland copse or around the edges. The site's habitats are likely to make up part of the wider home range of bats.
- 3.3.21 The Site is considered to be important to a local level for foraging and commuting bats.

3.3.6 Badger

- 3.3.22 There were 10 records for badger (*Meles meles*) returned in the baseline data search. The most recent records are from 2016. No details of the type of records have been provided.
- 3.3.23 Six entrance holes to a badger sett and well-worn paths leading to and from the wider habitats to the north and east of the Site were found during the PEA. A single badger hair was found in detritus at the bottom of one of the entrance holes.
- 3.3.24 Another woodland copse is located in the field approximately 150 m east of the Site, and there is bramble and dense scrub along the site's eastern boundary. It's likely badgers are within the area and have setts within the woodlands and under dense vegetation.
- 3.3.25 The sett was monitored between the 22nd of August and the 13th of September 2022. No badgers were recorded on the cameras either coming to and from the sett or walking along worn paths. There was footage of rabbits, rodents, and deer. None of the 'sticky traps' caught badger hairs or were pulled/dislodged from the entrance holes.
- 3.3.26 It's considered unlikely that badgers will be affected by the proposed development as the sett appears to be abandoned and badgers absent from the Site.
- 3.3.27 The impact on badgers is scoped out of further assessment.

3.3.7 Hedgehog

- 3.3.28 The baseline data search returned 7 records of hedgehogs (*Erinaceus europaeus*), the most recent record being from 2012.
- 3.3.29 The Site's habitats provide opportunities for foraging, breeding, and sheltering hedgehogs. The Site is considered to be important to a site level for hedgehogs.

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3.4 Important Ecological Features

3.4.1 The following features were assessed as important and are included in this assessment:

Table 5 – Important Ecological Features

Feature	Qualifier	Significance
Great crested newts	A pond in the southwest corner of the Site has an HSI score of 0.69 (average). Managed grassland habitats and courtyards/driveways around the buildings unsuitable to support amphibians. Hedgerows and woodland copse have some suitability to support sheltering and foraging newts.	Site importance.
Reptiles	Some limited suitability to support sheltering and foraging reptiles.	Low importance at a site level
Population of birds	Hedgerows and trees provide suitable habitats for nesting birds.	Site importance
Foraging and commuting bats	Hedgerows and woodland copse are likely to provide suitable habitats for use by foraging and commuting bats.	Local importance
Hedgehog	The Site's habitats provide opportunities for foraging, breeding and sheltering hedgehogs.	Site importance

4 Assessment

4.1 Description of the Proposed Development

- 4.1.1 The Client is submitting a planning application to construct new residential properties, convert B4 and B6 and demolish and replace B5. Most of the trees will be retained with the removal of a small number of category 'U' trees near the entrance and an apple tree from the 'secret garden'.
- 4.1.2 New trees will be planted with the development, mainly around the new buildings in the southeast corner.



4.2 Assessment of Effects

4.2.1 Great Crested Newts

Construction

Potential Impact and Effect

- 4.2.1 There is an extremely low risk that widening access to the 'secret garden' or work near hedgerows may result in great crested newts being harmed, injured, or killed.
- 4.2.2 The chance of an offence is highly unlikely, and a precautionary method of work will be the most proportional mitigation.

Avoidance Measures

- 4.2.3 Vegetation in the development area should be kept short before the start of works to prevent grassland from becoming suitable for sheltering or foraging newts.
- 4.2.4 All construction materials should be stored on pallets on hard standing or within containers/storage rooms. Any arisings and rubbish created should be removed from the site at the end of the day or kept in skips.

Mitigation Measures

- 4.2.5 If the hedgerows to the 'secret garden' need to be widened around existing gaps, this should be done between April and November under the supervision of an ecologist. In the unlikely event that a great crested newt is found, works in the area will stop until a licence is obtained from Natural England.
- 4.2.6 Sensitive timings regarding nesting birds should also be taken into consideration when planning to do any work to hedgerows (see section 4.2.3)

Significance of Residual Effects

- 4.2.7 The proposed works will not have a significant residual effect on great crested newts.

Operation

Potential Impact and Effect

- 4.2.8 No further significant impacts on reptiles are anticipated during the development operation.

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4.2.2 Reptiles

Construction

Potential Impact and Effect

- 4.2.9 Reptiles may pass through the works area during the works and may be harmed, injured or killed if a suitable shelter is created.

Avoidance Measures

- 4.2.10 Vegetation in the development area should be kept short before the start of works to encourage reptiles to stay within the woodlands or under boundary vegetation.

Mitigation Measures

- 4.2.11 Vegetation in the development area should be kept short before the start of works to prevent grassland from becoming suitable for sheltering or reptiles.
- 4.2.12 All construction materials should be stored on pallets on hard standing or within containers/storage rooms. Any arisings and rubbish created should be removed from the site at the end of the day or kept in skips.

Significance of Residual Effects

- 4.2.13 There is unlikely to be a significant residual effect during construction if mitigation measures are applied according to the abovementioned methodologies.

Operation

Potential Impact and Effect

- 4.2.14 No further significant impacts on reptiles are anticipated during the development operation.

4.2.3 Birds

Construction

Potential Impact and Effect

- 4.2.15 During construction, any cutting back of hedgerows or felling trees may result in birds and their nests, eggs or dependent young being harmed, injured, or killed.

Avoidance Measures

- 4.2.16 Works involving the loss or cutting back of habitats where birds could nest should be undertaken outside the main breeding season (generally taken to run from March to August inclusive¹⁰).

¹⁰ This is a general guide only. Different species may nest at different times, and prevailing weather conditions may limit or expand the breeding season. Some species, such as pigeons and owls, can breed throughout the year in suitable conditions.

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Mitigation Measures

- 4.2.17 If sensitive timings are not possible, a check for nesting birds should be undertaken immediately prior to the works by a suitably experienced ecologist. If the latter approach is taken and nesting is encountered, there is a risk of delay since an 'exclusion zone' may need to be set up around nests until the young have fledged.

Significance of Residual Effects

- 4.2.18 There is unlikely to be an impact on nesting birds during construction following the application of avoidance or mitigation measures.
- 4.2.19 The boundary vegetation will be retained, and the loss of hedges to widen existing accesses will be minimal; therefore, compensation will not be required for nesting birds.

Operation

Potential Impact and Effect

- 4.2.20 No further significant impacts on nesting birds are anticipated during the operation of the development.

Residual Effects

- 4.2.21 The application of sensitive timings or supervised works will likely result in a negligible impact on nesting birds.

4.2.4 Hibernating bats

Construction

Potential Impact and Effect

- 4.2.22 There is a very low risk that a hibernating bat will be disturbed, injured, or killed during the demolition of B5. Sensitive timed works and compensation are considered proportional to avoid an impact.

Avoidance Measures

- 4.2.23 The building should be demolished outside the main hibernating period, which runs between November and the end of February.

Compensation

- 4.2.24 A bat box suitable for hibernating bats should be attached to a retained mature tree close to B5. The box should face north and have a clear 'drop zone' at least 2 m below the entrance.

Significance of Residual Effects

- 4.2.25 There will not be a significant residual effect if sensitive timings and compensation are applied.

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Operation

Potential Impact and Effect

4.2.26 No further significant impacts on reptiles are anticipated during the development operation.

4.2.5 Foraging and Commuting bats

Construction

Potential Impact and Effect

4.2.27 Boundary vegetation may be lit during construction, creating a barrier to foraging and commuting bats.

Avoidance Measures

4.2.28 Boundaries should not be lit during construction works. Lighting should be limited to working hours only and be turned off at least an hour before dusk.

Mitigation Measures

4.2.29 If some areas, such as material stores or temporary offices, are required to be lit for security, then consideration should be given to using motion-sensitive lighting on short-timers (<1 minute).

4.2.30 It is also recommended that any areas that have to be lit for security should be located away from the Site's boundaries. Any security lighting should be directed at the area required and baffled (if possible) to reduce light spill.

Significance of Residual Effects

4.2.31 Impacts on foraging and commuting routes can be minimised through the correct and sensitive use of lighting during construction.

Operation

Potential Impact and Effect

4.2.32 There is a potential for foraging and commuting routes to be lost or disturbed due to poorly designed lighting schemes.

Avoidance Measures

4.2.33 The lighting scheme should be designed to avoid the boundary vegetation and the rear parts of the gardens being lit directly or indirectly by light spill. A dark corridor should be created around the edge of the Site to allow bats to continue to commute and forage through the Site.

Mitigation Measures

4.2.34 To allow bats to forage around the gardens of the new residential properties, it is recommended that the permanent lighting for the development be designed according

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to the guidance set out in the Institute for Lighting Professionals (ILP) note on bats and artificial lighting. This includes advice such as:

- Using luminaires that lack UV elements when manufactured.
- Using LED luminaires where possible.
- Adopting a warm white spectrum (ideally <2700 kelvin).
- Using luminaires which feature a peak wavelength higher than 550 nm.
- Setting any external security lighting on motion detectors and short (1 min) timers.
- Recessing internal luminaires where installed in proximity to windows to reduce glare and light spill.

4.2.35 Landscaping should include native night-scented plants such as:

- Cherry pie (*Heliotropium arborescens*)
- Evening primrose (*Oenothera biennis*)
- Honeysuckle (*Lonicera periclymenum*)
- Night-scented catchfly (*Silene noctiflora*)
- Night-scented stock (*Matthiola bicornis*)
- Nottingham catchfly (*Silene nutans*)
- Soapwort (*Sapnoria officinalis*)
- Sweet rocket (*Hesperis matronalis*)
- Tobacco plant (*Nicotiana glauca*)
- White jasmine (*Jasminum officinale*)

Residual Effects

4.2.36 If sensitive lighting designs are applied, bats should continue to use the Site during construction and operation.

4.2.37 The residual impact following avoidance and mitigation can be negligible.

4.2.6 Hedgehog**Construction****Potential Impact and Effect**

4.2.38 Hedgehogs may be disturbed, injured, or killed during the construction works of the proposed development.

Avoidance Measures

4.2.39 All excavations should be covered at night or when not in use to prevent hedgehogs from being trapped during construction. Any arisings from the vegetation clearance should be removed carefully by hand to check for sheltering hedgehogs. The animals should be left to move away on their own accord if found.

4.2.40 Removing any arising from vegetation clearance should be undertaken before the hibernation period for hedgehogs (typically between October and March).

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Mitigation Measures

4.2.41 All construction materials should be kept off the ground on pallets or stored away to prevent them from becoming suitable for use by sheltering or hibernating hedgehogs.

Significance of Residual Effects

4.2.42 The risk to hedgehogs during construction will be minimised by applying good practices and site maintenance during the works.

Operation

Potential Impact and Effect


4.2.43 New fences will block access to the gardens and prevent hedgehogs from foraging or commuting around the habitats.

Compensation Measures

4.2.44 Compensation will be in the form of creating access to the gardens of new houses by cutting small holes (approximately 130 mm x 130 mm) in inconspicuous areas of the bottom of the fences (typically in the baseboards or kick panels). Access to and from the wider landscape should be created by cutting the holes in the fences, which will guide hedgehogs to and from the boundary vegetation. Holes should not be cut into fences that will direct hedgehogs to roads.

4.2.45 A plate can be attached to prevent the hole from getting blocked or stretched. Examples of holes in different types of boundary features are presented in Table 6.

Table 6 – Examples of Hedgehog Holes

Description	Dimensions	Image
<p>A plate can be attached to surround the hole and protect it from being blocked up or stretched.</p> <p>The hole will be too small for most pets to pass through.</p>	<p>130 mm x 130 mm</p>	 <p>Photo Courtesy of Hedgehog Street</p>

Residual Effects

4.2.46 If good practice is applied during construction and mitigation is included with the development, the impact should be negligible for hedgehogs.

4.3 Legal and Policy Consequences

4.3.1 No protected species licence will be required to undertake the construction of the Proposed Development.

5 Enhancements

5.1.1 In accordance with local and national policies, new developments should include opportunities for ecological enhancement. The enhancements to be included within the proposed development include:

- A planting scheme
- 1 Hibernaculum
- 3 Integrated swift and 2 integrated bird boxes
- 5 Bird boxes attached to trees
- 2 Integrated bat boxes
- 3 Bat boxes attached to trees
- 2 Hedgehog domes

5.1.2 Planting

5.1.2 Gardens should be seeded with a wildflower mix to improve the diversity of plants. There are limited opportunities to improve the species diversity of these habitats as they are frequently under pressure from mowing and general maintenance. However, some improvement can be gained if more species-rich seed mixes are used, including flowering plants that are more tolerant of frequent disturbance. An example of this would be an EL1F mixture¹¹ which includes:

- Lady's Bedstraw *Galium verum*
- Rough Hawkbit *Leontodon hispidus*
- Oxeye Daisy *Leucanthemum vulgare*
- Birdsfoot Trefoil *Lotus corniculatus*
- Cowslip *Primula veris*
- Selfheal *Prunella vulgaris*
- Meadow Buttercup *Ranunculus acris*
- Wild Red Clover *Trifolium pratense*

5.1.3 If the gardens are turfed, it is best to prepare them for seeding by creating gaps across the grass with exposed soil for the seed to germinate. This can be achieved by mechanically harrowing or raking, aiming to expose up to 50% bare soil.

5.1.4 The mechanical disturbance needs to be severe to work (40-50% destruction), as grass can rapidly recover and grow. Disturbance and seeding are best applied when grass growth declines, as in autumn. In spring, grass growth and recovery are too rapid and shade out seedlings.

5.1.5 Once ground preparation has been completed, the seed can be sown by surface broadcasting. Rolling is not usually needed for autumn applications as the weather will settle the seed into the soil.

5.1.6 Yellow rattle established in a sward will often help other sown seeds establish by leaving gaps at the end of each growing season as the annual yellow rattle plants die away.

¹¹ [Redacted] [Accessed 19/10/2022]

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5.1.7 Ornamental shrubs included within the landscape design should be of native or European origin, such as:

- Common holly *Ilex aquifolium*
- Common box *Buxus sempervirens*
- Guelder rose *Viburnum opulus*.
- Sweet briar *Rosa rubiginosa*
- Strawberry tree *Arbutus unedo*
- Fly honeysuckle *Lonicera xylosteum*
- Common bilberry *Vaccinium myrtillus*

5.1.8 A wildlife corridor will be created down the centre of the Site by planting new trees, which should be of native origin and can include:

- Alder *Alnus glutinosa*
- Bird cherry *Prunus padus*
- Crab apple *Malus sylvestris*
- Elder *Sambucus nigra*
- Field maple *Acer campestre*
- Goat willow *Salix caprea*
- Silver birch *Betula pendula*
- Hazel *Corylus avellana*
- Rowan *Sorbus aucuparia*
- Wild cherry *Prunus avium*

5.1.9 The single species hedgerows bordering the 'secret garden' should be enhanced by creating gaps which then are filled with native or species of European origin. Hedgerow plants can include:

- Blackthorn *Prunus spinosa*
- Dog rose *Rosa canina*
- Dogwood *Cornus sanguinea*
- Hawthorn *Crataegus monogyna*
- Holly *Ilex aquifolium*

5.1.10 If possible, a non-amenity area or road verges should be seeded with wildflower mixes and only cut twice a year. The Site is on lime-rich loamy, and clayey soils with impeded drainage¹². Therefore, the seed mixture most suited to this is either an EM2¹³ (standard general-purpose meadow mixture) or EM4¹⁴ (meadow mixture for clay soils).

5.1.11 Successful wildflower creation requires good preparation of the habitat, and the following steps should be applied:

- Remove all weeds from the area to be seeded either via repeated cultivation or the application of herbicide.
- Dig or plough the soil to bury the surface vegetation.
- Harrow or rake the soil to produce a medium tilth.

¹² [Redacted] [Accessed 19/10/2022]

¹³ [Redacted] /3 [Accessed 19/10/2022]

[Redacted]
[Accessed 19/10/2022]

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- Finally, roll or tread to create a firm surface.

- 5.1.12 Seeds can be sown any time of the year, but Spring or Autumn are the optimum periods. Seeds can be sown by machine or scattered by hand. The seeds should then be rolled or tread into the soil.
- 5.1.13 Most meadow wildflowers will not usually flower in the first growing season, and there may be a flush of annual weed growth during this time. The weeds should be controlled by topping or mowing. The mowing should be frequent during the first growing season to a height of 40-60 mm and all arisings removed. Spot digging should be carried out to remove any perennial weeds, such as docks.
- 5.1.14 In the following years, the cutting regime should not be as frequent, and the grassland should not be cut at all between spring and late July/August. After flowering has finished in July or August, the sward should be cut using a scythe, petrol strimmer, or tractor mower to approximately 50 mm, and all arisings should be removed.
- 5.1.15 Including native species planting and wildflower seeds would positively impact the development to a site level.

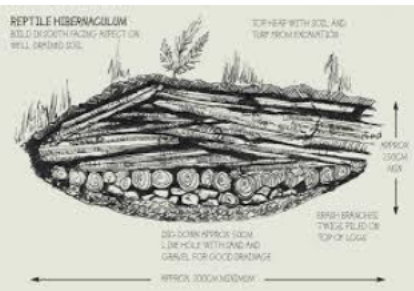
5.1.3 Species

- 5.1.16 Enhancements for species are in the form of new habitat creation, allowing animals to shelter, breed and/or hibernate within the Site.

Reptiles

- 5.1.17 A hibernaculum should be included in the final design of the development. It could be located on the northern edge of the woodland copse. A description of a hibernaculum is presented in Table 7.

Table 7 – Example of Hibernaculum



Description	How to build	Example Image
<p>Hibernacula are underground chambers that amphibians and reptiles use throughout the winter to protect themselves from the cold.</p>	<p>Dig a hole about 50cm deep and 1.5 metres across in a sunny spot.</p> <p>Fill with logs, branches, bricks, and rocks, leaving plenty of gaps in between.</p> <p>Insert entrance tubes (drainpipes) at ground level into the hole.</p> <p>Cover the pile with soil (to about 50cm high).</p>	 <p>Image Courtesy of ARG</p>

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Nesting birds

- 5.1.18 Up to 10 bird boxes should be included in the development's final design. These boxes should be suitable for use by a range of species and should be included within the designs of the new buildings as well as attached to trees.
- 5.1.19 A group of at least three boxes adapted for use by swifts should be integrated into a north or west-facing façade of the new proposed stable and garage block. Two boxes suitable for use by small garden birds should be integrated into the facades of the two buildings on either side of the entrance.
- 5.1.20 The remaining five boxes should be suitable for attaching to trees and should be attached to trees within the woodland and along the access road within the Site. Examples of suitable boxes are presented in Table 8.

Table 8 – Examples of Bird Boxes


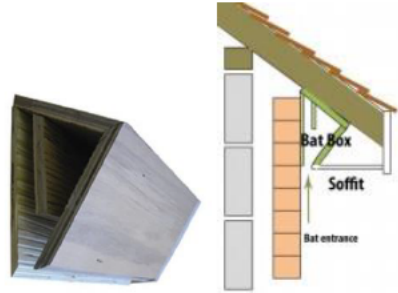
Description of Box	Example Dimensions	Example Image
<p>A nesting box designed to be integrated into brick facades. The frontage can be matched to the brickwork of the house, and various designs are available for use by:</p> <ul style="list-style-type: none"> • House sparrows • Starlings • Swifts • Tits 	<p>The size will vary according to the target species.</p>	 <p>Photo Courtesy of Bird Brick Houses Ltd</p>
<p>A single-chambered box manufactured from WoodStone® with an entrance hole which is suitable for passerine birds such as tits, sparrows, nuthatches, and flycatchers.</p> <p>The box can be integrated or attached to brickwork or attached to trees.</p>	<p>Width: 200 mm Height: 310 mm Length: 200 mm Weight: 6.9 kg</p>	 <p>Photo Courtesy of Vivara pro</p>

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Bats

5.1.21 Up to 5 boxes should be included in the development's final design. At least 2 of these boxes should be integrated into the facades or behind fascia boards of the new houses, and 3 should be attached to mature trees within the Site or on the edge of the woodland copse. Examples of the type of boxes which can be used are presented in Table 9.

Table 9 – Examples of Bat Boxes

Description of Box	Example Dimensions	Example Image
<p>A single chamber box with a specially designed internal panel or feature which allows bats to hang upside down in the roost.</p> <p>It is recommended that boxes have open bottoms to allow droppings to fall out and not build up in the cavity.</p> <p>The box will provide a space within the façade for bats to roost but will prevent them from accessing the cavity walls.</p> <p>Boxes can have bespoke facings which allow them to match the wall in which they are integrated, including timber.</p>	<p>Width: 215 mm Height: 440 mm Depth: 102 mm Weight: 9 kg</p>	 <p>Photo courtesy of Habibat</p>
<p>A soffit bat box can be cut to length (if required) and will fit behind soffit boxes creating a suitable roost space for bats.</p> <p>The entrance is formed by cutting away a 20mm slot in the back of the soffit board against the external wall, and a specially designed plate is then screwed through into the bat box to secure it.</p> <p>The ends of the box are sealed to only allow bats access to the box and not the rest of the soffits.</p> <p>This box is virtually invisible and does not require any maintenance.</p>	<p>The standard length of 300 mm with a 20 mm entrance slot.</p>	 <p>Photos courtesy of Wildcare</p>


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Description of Box	Example Dimensions	Example Image
<p>This type of box is of a suitable design for use by bat species which typically roost in woodland environments. It has two entrances at the rear and front and a domed top to allow bats to roost in clusters. Due to the open bottom, the box does not require cleaning or maintenance, and the design is effective against small predators and excludes drafts.</p>	<p>Height: 360 mm Diameter: 160 mm Weight: 4.3 kg</p>	 <p>Photo courtesy of Schwegler</p>

Hedgehogs

5.1.22 An opportunity can be created to allow hedgehogs to shelter and breed on the Site by providing hedgehog domes. An example of which is presented in Table 10.

Table 10 – Example of Hedgehog Enhancement

Description	Dimensions	Image
<p>A hedgehog dome will provide a safe place to hibernate or shelter. It can be constructed of natural materials such as wicker or long-lasting materials such as Woodcrete®.</p> <p>The shelter should provide insulation against extreme weather conditions.</p>	<p>Diameter: 480 mm Weight: 17.5 kg</p>	 <p>Photo courtesy of Schwegler</p>

6 Long Term Management

- 6.1.1 The vegetation will need to be managed as prescribed in Section 5.1.2. The long-term management of this area will be the responsibility of those responsible for ground maintenance.
- 6.1.2 The hibernaculum is underground and does not require long-term management.
- 6.1.3 The bird boxes will be integrated into the facades of the houses and cannot be accessed to clear out. Birds will likely clear any old nesting material out before creating new nests.
- 6.1.4 Bird boxes attached to trees can be cleaned out annually between October and March.
- 6.1.5 The style of bat box recommended for installation within this development is made from long-lasting material and has an open bottom to allow droppings to fall out. The box will last for up to 25 years. If the boxes need to be removed or changed at any time, then advice should be sought from a licensed bat ecologist.
- 6.1.6 Hedgehog domes should be left alone to prevent hedgehogs from being disturbed. Hedgehogs will clear out old bedding themselves as and when necessary. Signs should be installed above hedgehog holes in fences to prevent them from being blocked

7 Conclusions

- 7.1.1 In October 2022, Samsara Ecology completed an EclA for Canfield Moat, Little Canfield. The assessment identified five important ecological features which may be affected by the proposed development if mitigation measures are not applied.
- 7.1.2 Removing trees and widening existing access gaps in hedgerows may impact nesting birds. Sensitively timed or supervised works have been recommended to mitigate any potential impacts.
- 7.1.3 Precautionary methods of practice and good site maintenance will prevent any offences regarding great crested newts and reptiles. Hedgehogs will be protected by covering excavations at night.
- 7.1.4 Compensation measures will be required for hedgehogs to offset residual effects anticipated following the application of the mitigation measures.
- 7.1.5 Sensitively timed works have been recommended for the demolition of B5 to avoid any risk of harm to hibernating bats.
- 7.1.6 The overall residual impact of the proposed development is anticipated to be negligible for great crested newts, reptiles, nesting birds, bats and hedgehogs following the application of mitigation and compensation.
- 7.1.7 Enhancement opportunities have been recommended for reptiles, nesting birds, bats and hedgehogs in accordance with national policies for biodiversity net gain (See Appendix 1).

Appendix 1 Legislation and Policy

Many active pieces of legislation aim to protect the UK's wildlife and habitats. These are summarised in Table 11

Table 11 – Summary of Primary Legislation in the UK

Legislation or Species	Description
The Wildlife and Countryside Act (WCA) 1981	<p>The WCA is the primary piece of legislation relating to nature conservation in Great Britain. The Act is supplemented by provisions in the CRoW Act 2000 and the NERC Act 2006. It provides for the notification and confirmation of Sites of Special Scientific Interest by Natural England. It also sets out, in schedules, important and invasive species which are legally protected or require active management.</p> <p>The WCA consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the conservation of wild birds (Birds Directive) in Great Britain (NB Council Directive 79/409/EEC has now been replaced by Directive 2009/147/EC of the European Parliament and of the Council of 30th November 2009 on the conservation of wild birds (codified version)).</p>
The Conservation of Habitats and Species Regulations 2017	<p>The Conservation of Habitats and Species Regulations 2017 consolidates the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations came into force on 30th November 2017 and extend to England and Wales (including the adjacent territorial sea) and, to a limited extent, in Scotland (reserved matters) and Northern Ireland (excepted matters).</p> <p>The draft Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 were laid before Parliament on 28th January 2019. The draft Regulations ensure that the habitat and species protection and standards derived from EU law will continue to apply after the UK has left the European Union. This draft came into force on the exit day (31st January 2020).</p>
The Countryside and Rights of Way (CRoW) Act 2000	<p>The CRoW applies to England and Wales only, received Royal Assent on 30th November 2000, with the provisions it contains being brought into force in incremental steps over subsequent years. Containing five Parts and 16 Schedules, the Act provides for public access on foot to certain types of land, amends the law relating to public rights of way, increases measures for the management and protection for Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation, and provides for better management of Areas of Outstanding Natural Beauty (AONB). The Act is compliant with the provisions of the European Convention on Human Rights, requiring consultation where the rights of the individual may be affected by these measures.</p>
Natural Environment & Rural Communities (NERC) Act 2006	<p>The NERC places a duty on authorities to have due regard for biodiversity and nature conservation during the course of their operations.</p> <p>The NERC Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list replaces the UK Biodiversity Action Plans (UKBAP) and</p>

Legislation or Species	Description
	<p>has been drawn up in consultation with Natural England, as required by the Act.</p> <p>The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act, to have regard to the conservation of biodiversity in England when carrying out their normal functions.</p> <p>Fifty-six habitats of principal importance (HPI) are included on the S41 list. These are all the habitats in England that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. Of most relevance to the Site, they include ponds, open mosaic habitats on previously developed land and lowland heathland.</p> <p>There are 943 species of principal importance (SPI) included on the S41 list. These are the species found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework.</p>
Non-native species	<p>Certain non-native plants and animals are recognised as invasive. The WCA makes it an offence to:</p> <ul style="list-style-type: none"> • Release or allow to escape into the wild any animal which is not ordinarily resident in Great Britain and is not a regular visitor to Great Britain in a wild state or is listed in Schedule 9 to the Act. • Plant or otherwise cause to grow in the wild any plant listed in Schedule 9 to the Act. • Sell, offer or expose for sale, or possess or transport for the purposes of sale, non-native species that are listed in Schedule 9. <p>Species control agreements and orders can be made by environmental authorities to ensure that landowners take action on invasive non-native species. The NERC Act allows the Secretary of State to issue or approve codes of practice on invasive species. The codes alone cannot be used to prosecute but must be taken into account by a court in any case in which they appear to the court to be relevant.</p>
Great Crested Newts	<p>Great crested newts are protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 making them a protected species. The Regulations state that:</p> <p>(1) A person who—</p> <ol style="list-style-type: none"> (a) deliberately captures, injures or kills any wild animal of a European-protected species (b) deliberately disturbs wild animals of any such species (c) deliberately takes or destroys the eggs of such an animal (d) damages or destroys a breeding site or resting place of such an animal is guilty of an offence. <p>(2) For the purposes of paragraph (1)(b), disturbance of animals includes, in particular, any disturbance which is likely—</p> <ol style="list-style-type: none"> (a) to impair their ability— <ol style="list-style-type: none"> (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate, or (b) to affect significantly the local distribution or abundance of the species to which they belong.

Appendices

Legislation or Species	Description
	<p>Offences under the Habitats Regulations can be licensed by Natural England for a number of purposes, including 'imperative reasons of overriding public interest', which can include development. Licences can only be issued where full survey data is available, where there is no satisfactory alternative and where the action authorised will not adversely affect the favourable conservation status of the species involved.</p>
Reptiles	<p>All UK native reptile species are protected by law. The Wildlife & Countryside Act 1981 (and later amendments) provides the legal framework for this protection which makes it an offence to intentionally (or recklessly, in Scottish law) kill or injure a reptile.</p> <p>Sand lizard and smooth snake and their places of shelter have the greatest level of legal protection under Schedule 2 of the Conservation of Habitats and Species Regulations.</p>
Nesting Birds	<p>All wild bird nests are protected under The Wildlife and Countryside Act 1981 (as amended), making it an offence to:</p> <ul style="list-style-type: none"> • Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions). • Disturb any bird species listed under Schedule 1 to the Act or its dependent young while it is nesting. • Nests of the golden eagle, white-tailed eagle and osprey are protected year-round.
Bats	<p>All species of bat in Britain are protected species under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, and the Wildlife and Countryside Act 1981, as amended by the Countryside & Rights of Way Act 2000. These pieces of legislation combine to give substantial protection to bats and their habitats, making it an offence to:</p> <ul style="list-style-type: none"> • Deliberately capture, injure or kill a bat. • Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats. • Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time). • Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat. • Intentionally or recklessly obstruct access to a bat roost. <p>The Natural Environment & Rural Communities (NERC) Act 2006 places a duty on authorities to have due regard for biodiversity and nature conservation during the course of their operations.</p>
Water vole	<p>The water vole is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 and is a priority conservation species making it an offence to:</p> <ul style="list-style-type: none"> • intentionally capture, kill or injure water voles • damage, destroy or block access to their places of shelter or protection (on purpose or by not taking enough care) • disturb them in a place of shelter or protection (on purpose or by not taking enough care) • possess, sell, control or transport live or dead water voles or parts of them (not water voles bred in captivity)
Otters	<p>The Eurasian otter is the only native UK otter species. It's a protected species under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and is also protected under sections 9 and 11 of the Wildlife and Countryside Act 1981, making it an offence to:</p>

Appendices

Legislation or Species	Description
	<ul style="list-style-type: none"> • capture, kill, disturb or injure otters (on purpose or by not taking enough care) • damage or destroy a breeding or resting place (deliberately or by not taking enough care) • obstruct access to their resting or sheltering places (deliberately or by not taking enough care) • possess, sell, control or transport live or dead otters, or parts of otters
Hazel Dormice	<p>Hazel dormice, their breeding sites and resting places are fully protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and under Schedule 5 of the Wildlife and Countryside Act 1981, making it an offence to:</p> <ul style="list-style-type: none"> • deliberately capture, injure or kill hazel dormice • damage or destroy a dormouse resting place or breeding site • deliberately or recklessly disturb a hazel dormouse while it's in a structure or place of shelter or protection • block access to structures or places of shelter or protection • possess, sell, control or transport live or dead hazel dormice, or parts of hazel dormice
Badgers	<p>Badgers are protected, and so are the setts (burrows) they live in. Under the Protection of Badgers Act 1992, in England and Wales (the law is different in Scotland), it is an offence to:</p> <ul style="list-style-type: none"> • Wilfully kill, injure or take a badger (or attempt to do so). • Cruelly ill-treat a badger. • Dig for a badger. • Intentionally or recklessly damage or destroy a badger sett or obstruct access to it. • Cause a dog to enter a badger sett. • Disturb a badger when it is occupying a sett.
Hedgehogs	<p>Hedgehogs are protected, in England, Scotland and Wales, under the Wildlife and Countryside Act 1981, Schedule 6 and in Northern Ireland under the Wildlife (NI) Order 1985, Schedules 6&7. This means they are protected from being killed or taken by certain methods under Section 11(1) of the Wildlife and Countryside Act 1981.</p> <p>Hedgehogs are also Species of Principal Importance (SPI) included on the S41 list (See NERC above).</p>

Policy

National Planning Policy Framework (NPPF) (Revised – July 2021)

Chapter 15 of the National Planning Policy Framework (NPPF) aims at conserving and enhancing the natural environment and states that planning policies and decisions should contribute to and enhance the natural and local environment. In terms of biodiversity, this should be achieved by:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils,
- recognising the intrinsic character and beauty of the countryside, and wider benefits from natural capital and ecosystem services, and
- minimising impacts on and providing net gains for biodiversity by establishing coherent ecological networks that are more resilient to current and future pressures.

The NPPF states that to protect and enhance biodiversity, [local] plans should:

- identify and safeguard components of wildlife-rich habitats and wider ecological networks, and
- promote the conservation and enhancement of priority habitats and ecological networks and the protection and recovery of priority species.

The NPPF states that when determining planning applications, local planning authorities should refuse applications that:

- cause significant harm to biodiversity which cannot be avoided, adequately mitigated or, as a last resort, compensated for,
- plan to develop on land within or outside of a Site of Special Scientific Interest (SSSI) and which is likely to have an adverse effect on it (either individually or in combination with other developments) and/or
- result in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) unless there are wholly exceptional reasons and where a suitable compensation strategy exists.

The local planning authority should support developments whose primary objective is to conserve or enhance biodiversity, 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.

HM Government – 25-Year Environment Plan

The 25-year plan to improve the environment sets out what the government intends to do to increase biodiversity, reduce climate change and secure ecosystem services. It aims to deliver cleaner air and water, protect threatened species and provide richer wildlife habitats.

Appendix 2 Preliminary Species Survey Methodologies

Terrestrial Invertebrates

Approximately 400 terrestrial invertebrates are Species of Principal Importance within the UK (see Table 11).

Ecological ranges and requirements can vary greatly for different invertebrates from a micro to macro scale. Habitats need to provide resources to support the entire lifecycle within a species' range, e.g., some butterflies require a matrix of grasses and flowers for developing larvae and nectar-filled flowers to feed the adults. A diverse variety of terrestrial invertebrates are found in areas that contain ecotones. These are defined as "a region of transition between two biological communities," i.e., a woodland edge, where a grassland meets a hedgerow or other mosaics of habitats. Other indicators for potentially important invertebrate sites include those with less common habitats, such as heathland or dead wood.

The preliminary survey will identify suitable habitats, ecological ecotones, and/or connectivity to suitable habitats within the wider landscape to support a diverse range of terrestrial invertebrates.

The survey was carried out within the Sites' boundaries.

Great Crested Newts (GCN)

Great Crested Newts (GCN) *Triturus cristatus* require aquatic habitats for breeding and terrestrial habitats for foraging, sheltering and hibernation. Breeding occurs in the spring (typically between March and June), with much of the newt's lifecycle spent within the terrestrial habitats. Juvenile newts normally take 2 to 4 years to reach sexual maturity and so spend most of their time in terrestrial habitats.

GCN are known to travel up to 500 m from breeding ponds and require terrestrial habitats that allow them to shelter from excessive heat, dryness, and predators whilst foraging prey species. GCN hibernate during the winter months underground or under a structure that protects against frost, flooding, and predators. This is typically logs, vegetation piles, rocks/stones, etc. Optimal habitats generally include grassland, scrub, woodland, hedgerows, and waste ground with some green connections to ponds, within approximately 500 m.

Natural England provides a risk matrix that uses the distance of ponds from a site and the area of a proposed development site to determine if an offence is likely. The distance bands used in the matrix are:

- Pond Onsite
- Land within 100 m from ponds
- Land within 100-250 m from ponds
- Land >250 m from ponds

Aerial and OS mapping will be used to identify the ponds' presence and location within 500 m of the Site. Natural England's risk matrix will then be used to identify if an offence is likely and at what distance to the Site. For the purpose of this exercise, all ponds identified are assumed to be breeding ponds.

Any ponds within the distance bands in which an offence is likely, and for which there is access will be subject to a Habitat Suitability Index (HSI) assessment.

The assessment involves putting parameters about the pond's habitats (size of the pond, percentage of vegetation cover, water quality, etc. into a calculator to get an HSI value. The calculated HSI for a pond provides a score between 0 and 1. The pond's HSI can then be

compared to the ranges of pond suitability, as shown in Table 12. An inference can then be made between the HSI of the pond and the likelihood of great crested newt presence.

Table 12 – Habitat Suitability Scores

HSI Score	Classification
<0.5	Poor
0.5-0.59	Below Average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

Reptiles

Britain has four relatively widespread native species of reptiles: adder *Vipera berus*, grass snake *Natrix helvetica*, slow worm *Anguis fragilis*, and common lizard *Zootoca vivipara*. All of these species are protected from intentional killing or injury (but their habitat is not specially protected).

These species can be found in a broad range of habitats, including grassland, open woodland, grassy scrub and, in the case of grass snakes, wetland. Reptiles require open areas to bask, sheltered areas to hide from excessive heat and predators and protected areas for hibernation. A typical habitat considered suitable for reptiles will comprise a matrix of structures that allow for some or all the reptiles' requirements, i.e., grassland with patches of scrub.

The habitats within the Site's boundaries were assessed for their suitability to support reptiles.

Nesting Birds

All birds and their active nests are protected in the UK (including feral pigeon). Some species are included on Schedule 1 of the WCA 1981 and are afforded greater protection.

Birds will create nests in a variety of habitats depending on the species. Most require sheltered areas such as vegetation or voids and crevices within human-made structures. Others will nest on flat surfaces, whilst some prefer specific habitats such as barn swallow *Hirundo rustica* or barn owl *Tyto alba*.

The habitats within the Site's boundaries were investigated for the presence of active or old nests. An appraisal was also made of habitats' suitability to support nesting birds and which species or group are most likely to be found within the Site's habitats.

Bats

A preliminary survey for bats identifies if there are habitats and/or structures present within the Site which have suitable features that can be used for roosting, foraging and/or commuting bats. An assessment was made as to whether a development will directly or indirectly impact a roost.

Preliminary Roost Appraisal

A Preliminary Roost Appraisal (PRA) for bats was undertaken in accordance with the Bat Conservation Trust's bat survey guidelines. The PRA was undertaken on all buildings and trees within the Sites boundaries.

The PRA identified the type and number of features within the structures which are suitable for use by roosting bats. A suitable feature will be a sheltered void or crevice in which individual bats can roost or in which several bats can gather. The structures have been categorised in accordance with the criteria set out within the guidelines and recreated in Table 13 for reference.

Table 13 – Bat Roost Suitability Categories

Suitability Categorisation	Description of Roosting habitat
Negligible	Negligible habitat features onsite likely to be used by roosting bats.
Low	<p>A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions, and/or suitable surrounding habitat to be used regularly or by larger numbers of bats (i.e., unlikely to be suitable for maternity or hibernation).</p> <p>A tree of sufficient size and age to contain PRFs but none seen from the ground or features seen with only very limited roosting potential.</p>
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but is unlikely to support a roost of high conservation status.
High	A structure or tree 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. Likely to be used as maternity or hibernation roosts.

Evidence, such as bats in situ, droppings, and staining from urine or oils from the bat's fur, has also been searched for during the preliminary survey. However, during a preliminary survey, bats can roost in areas inaccessible, such as between roof tiles and the lining. Therefore, this evidence may not always be found.

The number of further surveys and timings (if required) are based on the categorisation of the suitability of a structure to support roosting bats.

Foraging and Commuting

In accordance with the guidelines, the Site's habitats were evaluated for their suitability to be used for foraging and commuting bats. The categorisations are based on the criteria set out in the guidance and recreated in Table 14.

Table 14 – Bat Foraging and Commuting Suitability Categories

Suitability Categorisation	Commuting and Foraging Habitats
Negligible	Negligible habitat features onsite likely to be used by commuting or foraging bats.
Low	Habitat that could be used by small numbers of commuting bats, such as a gappy hedgerow or un-vegetated stream, but isolated, i.e., not very well connected to the surrounding landscape by another habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats, such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	Continuous habitat connected with the wider landscape that could be used by bats for commuting, such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that bats could use for foraging, such as trees, scrub, grassland, or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats, such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats, such as broadleaved woodland, tree-lined watercourses, and grazed parkland. The site is close to and connected to known roosts.

The preliminary bat surveys were carried out within the Sites boundaries, except in instances where the proposed development will adversely affect neighbouring structures. In this case, these structures were also assessed where access was possible.

Water voles and Otters

Water voles and otters require riverine habitats to support breeding, foraging, and sheltering.

The water vole lives along rivers, streams, and ditches, around ponds and lakes, and in marshes, reedbeds and areas of wet moorland. The otter requires clean rivers with an abundant source of food and plenty of vegetation to hide their secluded holts.

Evidence of water vole will be investigated and include the presence of burrows along the banks, feeding remains and droppings. The survey area included the length of the suitable habitat within the Site's boundaries and up to 50 m outside of the boundaries if access was possible.

Evidence of otter will include the presence of holts, footprints, or spraints. The survey area included the length of the river within the Site's boundaries and up to 50 m beyond if access was available.

Dormice

Dormice live in deciduous woodland, hedgerows, and dense scrub and spend most of the spring and summer up in the branches, rarely coming down to the ground. It eats buds, hazelnuts, berries, and insects. Hazel dormice build nests out of grasses, stripped honeysuckle bark and fresh hazel leaves, in which the female will give birth to up to seven young. They hibernate during the winter months, either on the ground (under logs, leaves, in grass tussocks and at the base of trees) or just beneath the ground, where the temperature is more constant.

The habitats within the Site's boundaries and connectivity to suitable habitats in the wider landscape have been evaluated to determine the Site's suitability to support dormice.

Badgers

Badgers are found across the UK, with the highest numbers in southern England. The ideal badger habitat is a mixture of woodland and open country.

The species lives in a network of underground burrows and tunnels known as a sett. Each badger territory will include a main sett and several smaller outlying setts. The main sett is the group's headquarters, where they spend most of their time and rear their young. Outlying setts are smaller and provide a safe place to retreat if needed when badgers are out foraging. Setts tend to be located in the shelter of woodland, with the badgers emerging at night to forage in fields and meadows.

Though not as common as urban foxes, badgers can also survive in towns and cities, providing there is suitable cover in which to dig their setts and nearby gardens and parks where they can hunt for food.

The presence of setts has been investigated during the survey within the Site and up to 30 m from the Site's boundaries (where access was available). In addition, evidence of badgers has been searched for, including foraging holes, latrines, scratch posts and hairs.

Hedgehogs

Hedgehogs travel around one mile every night through parks and gardens, foraging for food and looking for mates. Grassland, hedgerows, and shrub are considered to provide suitable foraging habitat. Compost, log piles, and hedgerows are suitable for nesting and hibernating hedgehogs.


The habitats within the Site's boundaries and connectivity to suitable habitats in the wider landscape have been assessed for their suitability to support hedgehogs.

Appendix3 Raw Data

Table 15 - Grassland Flora

Common name	Scientific name	DAFOR
Bird's-foot trefoil	<i>Lotus corniculatus</i>	O
Cock's foot	<i>Dactylis glomerata</i>	O
Common cats-ear	<i>Hypochaeris radicata</i>	O
Common hogweed	<i>Heracleum sphondylium</i>	O
Common mallow	<i>Malva neglecta</i>	O
Common nettle	<i>Urtica dioica</i>	O
Common ragwort	<i>Senecio jacobaea</i>	O
Common vetch	<i>Vicia sativa</i>	O
Creeping bent	<i>Agrostis stolonifera</i>	O
Creeping buttercup	<i>Ranunculus repens</i>	O
Creeping cinquefoil	<i>Potentilla reptans</i>	O
Daisy	<i>Bellis perennis</i>	O
Dandelion	<i>Taraxacum</i>	O
Ivy	<i>Hedera helix</i>	O
Ladies bedstraw	<i>Galium verum</i>	O
Lesser Celandine	<i>Ficaria verna</i>	O
Lesser trefoil	<i>Trifolium dubium</i>	A
Red clover	<i>Trifolium pratense</i>	D
Red fescue	<i>Festuca rubra</i>	D
Selfheal	<i>Prunella vulgaris</i>	O
Shining cranesbill	<i>Geranium lucidum</i>	O
Yarrow	<i>Achillea millefolium</i>	O
DAFOR: Dominant, Abundant, Frequent, Occasional, Rare (in the survey area)		

Appendix 4 Photographs

	
<p>Photo 1 – Gravel Driveway</p>	<p>Photo 2 – Pond and Amenity Grassland</p>
	
<p>Photo 3 - Pond</p>	<p>Photo 4 – Secret Garden</p>
	
<p>Photo 5 – Grassland in the Area of the 'Courtyard' Building will be Constructed</p>	<p>Photo 6- Woodland Copse</p>
	
<p>Photo 7 – Badger Sett</p>	<p>Photo 8 – Small Fruit Trees in Northwest Corner</p>







Appendix 5 Map






Canfield Moat, Essex

Habitat Map

Habitats

-  Managed grassland
-  Woodland copse
-  Hardstanding
-  Pond
-  Building
-  Trees

Linear feature

-  Fence
-  Species poor hedge
-  Treeline



Client: Andy Smith

Reference: 221019 057 Habitat Ext

Date: 20/10/2022

0 25 50 75 100 m



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