

Land off Brook Meadows, Tiptree,
Colchester

Ecological Appraisal

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Executive Summary

- i) **Introduction.** Aspect Ecology was commissioned by Kler Group in January 2020 to undertake an Ecological Appraisal in respect of proposed development at Land off Brook Meadows, Tiptree, Colchester.
- ii) **Proposals.** The proposals are for residential development of the site, including associated landscaping and access infrastructure.
- iii) **Surveys.** The site was surveyed in February and May 2020 based on standard extended Phase 1 methodology, with further Phase 2 botanical survey work undertaken in June 2020. In addition, a general appraisal of faunal species was undertaken to record the potential presence of any protected, rare or notable species, with specific surveys conducted in respect of bats, Dormouse, Badger, Great Crested Newts, reptiles, and breeding birds.
- iv) **Ecological Designations.** The site itself is not subject to any statutory ecological designations. The nearest European-level statutory designation is Abberton Reservoir Special Protection Area (SPA) / Ramsar, located approximately 4.8km to the east of the site. The nearest National-level statutory designation is Tiptree Heath Site of Special Scientific Interest (SSSI), located approximately 870m north of the site. Part of the non-statutory designation Inworth Grange Pits Local Wildlife Site (LWS) spans the site. Subject to appropriate mitigation and compensation measures, it is considered that the proposed reduction in part of the LWS would not represent an overriding constraint to the development proposals. All other ecological designations in the surrounding area are physically well separated from the site and are therefore unlikely to be adversely affected by the proposals.
- v) **Habitats.** At the time of survey, the site comprised two rough grassland fields dominated by encroaching scrub, with associated boundary hedgerows, ditches, and small areas of ruderal and hardstanding. Two pockets of woodland are located at the western boundary, with a wet flush and stream also present at the centre of the site. Features of ecological importance include the grassland, woodland, hedgerows and stream, which are of local-level value. The proposals would result in a reduction in the extent of grassland habitat within the site, with proportionate compensation measures proposed. The remaining habitats within the site are either retained or not considered to form important ecological features and their loss to the proposals is of negligible significance.
- vi) **Protected Species.** The site offers opportunities for protected species including bats, Dormouse, Badger, Great Crested Newt, reptiles, Barn Owl and nesting birds, with survey work undertaken at the site confirming the presence of bats, reptiles, Barn Owl and nesting birds. Appropriate mitigation measures, centred on the careful timing of works, will therefore be implemented to safeguard such species / species groups during site clearance. Long-term opportunities will be maintained, if not enhanced, under the proposals through new landscape planting and provision of nest / roost boxes.
- vii) **Enhancements.** The proposals present the opportunity to secure a number of biodiversity net gains, including grassland restoration and enhancement, woodland enhancement, wetland habitat creation, native mixed scrub and tree planting, new roosting opportunities for bats, and more diverse nesting habitats for birds.
- viii) **Summary.** In summary, the proposals have sought to minimise impacts on biodiversity and subject to the implementation of appropriate avoidance, mitigation and compensation measures, it is considered unlikely that the proposals will result in significant harm. On the contrary, the proposals will deliver a significant biodiversity net gain.

1 Introduction

1.1 Background and Proposals

1.1.1 Aspect Ecology was commissioned by Kler Group in January 2020 to undertake an Ecological Appraisal in respect of proposed development at Land Off Brook Meadows, Tiptree, Colchester, centred at grid reference TL 88889 16098 (see Plan 5786/ECO1), hereafter 'the site'.

1.1.2 The proposals are for residential development of the site, including associated landscaping and access infrastructure.

1.2 Site Overview

1.2.1 The site is located in Tiptree within an urban-edge context. The site is bound to the north by arable and existing residential development, beyond which lies further open countryside, with residential dwellings bounding the site to the east beyond which lies the town of Tiptree. To the south the site is bound by residential gardens and arable, and to the west the site is bound by Inworth Grange Pits Local Wildlife Site. The wider landscape to the south and west comprises further open countryside and agricultural land.

1.2.2 The site itself largely comprises two infrequently managed rough grassland fields, formerly under arable (strawberry) production, dominated by encroaching developing scrub, with associated boundary hedgerows, ditches, and small areas of ruderal and hardstanding. Two pockets of woodland are located at the western boundary, with a wet flush and stream also present.

1.3 Purpose of the Report

1.3.1 This report documents the methods and findings of the baseline ecology surveys and desktop study carried out in order to establish the existing ecological interest of the site, and subsequently provides an appraisal of the likely ecological effects of the proposals. The importance of the habitats and species present is evaluated. Where necessary, avoidance, mitigation and compensation measures are proposed so as to safeguard any significant existing ecological interest within the site and where appropriate, opportunities for ecological enhancement are identified with reference to national conservation priorities and local Biodiversity Action Plans (BAPs).

2 Methodology

2.1 Desktop Study

- 2.1.1 In order to compile background information on the site and its immediate surroundings the Essex Wildlife Trust was contacted in December 2019, with data requested on the basis of a search radius of 2km.
- 2.1.2 Information on statutory designations was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC) database, which utilises data provided by Natural England, with an extended search radius (25km). In addition, the MAGIC database was searched to identify the known presence of any Priority Habitats within or adjacent the site. Relevant information is reproduced on Plan 5786/ECO2, where appropriate.
- 2.1.3 Essex Wildlife Trust and Essex Ecology Services (ecological consultancy of Essex Wildlife Trust) were contacted, to request further specific details of the Inworth Grange Pits LWS designation, as they were involved in a review of its boundary in 2015, albeit no field notes, survey plans or photographs were able to be provided.
- 2.1.4 Ecological information submitted to inform residential development (Bloor Homes) of land adjacent to the site in 2019 (Ref: 192025) was also reviewed to inform the development proposals, and to establish the likelihood of faunal species presence within bounding / adjacent habitats.
- 2.1.5 In addition, the Woodland Trust database was searched for any records of ancient, veteran or notable trees within or adjacent to the site.

2.2 Habitat Survey

Phase 1 Habitat Survey

- 2.2.1 The site was surveyed in February and May 2020 in order to ascertain the general ecological value of the land contained within the boundaries of the site and to identify the main habitats and ecological features present (see Plan 5786/ECO3).
- 2.2.2 The site was surveyed based on standard Phase 1 Habitat Survey methodology¹, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail through Phase 2 surveys. This method was extended, in line with the Guidelines for Preliminary Ecological Appraisal² to record details on the actual or potential presence of any notable or protected species or habitats.
- 2.2.3 Using the above method, the site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified. The nomenclature used for plant species is based on the Botanical Society for the British Isles (BSBI) Checklist.

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

² Chartered Institute for Ecology and Environmental Management (CIEEM) (2013) 'Guidelines for Preliminary Ecological Appraisal.'

National Vegetation Classification (NVC) Survey

- 2.2.4 The on-site grassland was subject to an NVC survey on the 3rd June 2020, in accordance with standard methodology³, using five 2m x 2m quadrats to record the species present and cover values using the Domin scale at four separate locations within the site. The sample locations were chosen to provide representative coverage of the grassland as a whole and also to target locations where more notable species (e.g. Green-winged Orchid) had been recorded during the Phase 1 survey, with a view to determining the community types of the potentially more valuable areas of grassland. In each location five quadrats were placed within stands of homogenous vegetation, i.e. avoiding localised patches of ruderal vegetation or disturbed ground, but with the precise quadrat locations otherwise selected at random (see Plan 5786/ECO3a for the locations of quadrats).
- 2.2.5 The data collected was entered into the Modular Analysis of Vegetation Information System (MAVIS) computer program designed by Simon Smart from the Centre for Ecology and Hydrology, which produces a percentage 'goodness of fit' for a range of grassland community types; the results from which were reviewed, along with the general species inventory, against British Plant Communities Volume 3: Grasslands and Montane Communities, to determine the likely grassland communities present.

2.3 Faunal Surveys

- 2.3.1 General faunal activity, such as mammals or birds observed visually or by call during the course of the surveys was recorded. Specific attention was also paid to the potential presence of any protected, rare or notable species, and specific consideration was given to bats, Badger, Dormouse, Great Crested Newt, reptiles and breeding birds, as described below.

Bats⁴

Visual Inspection Surveys

- 2.3.2 **Trees.** Trees were assessed for their suitability to support roosting bats based on the presence of features such as holes, cracks, splits or loose bark. Suitability for roosting bats was rated based on relevant guidance⁵ as:

- Negligible;
- Low;
- Moderate; or
- High.

- 2.3.3 Any potential roost features identified were also inspected for any signs indicating possible use by bats, e.g. staining, scratch marks, bat droppings, etc.

Activity Surveys

- 2.3.4 Walked transect surveys were undertaken monthly between April and August 2020 to ascertain the level of usage of the site by foraging or commuting bats. This survey method involves walking planned transect routes with key listening points (see Plan 5786/ECO4),

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

⁴ Surveys based on: English Nature (2004) 'Bat Mitigation Guidelines' and Collins, J. (ed.) (2016) 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).' Bat Conservation Trust

⁵ Collins, J. (ed.) (2016) 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).' Bat Conservation Trust

specifically covering habitats/features with particular potential for commuting or foraging bats. Echometer EM3 or Anabat Scout handheld bat detectors were employed alongside BatBox Duet detectors to aid identification of any bats observed. Each transect was walked from approximately 15 minutes prior to sunset, for 2-3 hours, with a minimum 3-minute stop at each listening point. This methodology was repeated for 1.5 - 2 hours prior to sunrise to complete the dawn survey.

2.3.5 This survey work was carried out during suitable weather conditions, as set out in Table 2.1 below.

Table 2.1. Walked transect survey details.

Date	Start & end times & time of sunset	Transect / location	Equipment used	Weather
08/04/2020 (Dusk)	Start time: 19:38 End time: 21:43 Sunset: 19:43	Transect A	Echo Meter EM3 and BatBox Duet.	Dry conditions, 10% cloud, BF2, 16°C
Comments: The survey was undertaken by 2 surveyors under direction of licence holder 2017-28514-CLS-CLS.				
04/05/2020 (Dusk)	Start time: 20:22 End time: 22:27 Sunset: 20:27	Transect A	Echo Meter EM3 and BatBox Duet.	Dry conditions, 70% cloud, BF3-5, 9°C
Comments: The survey was undertaken by 2 surveyors under direction of licence holder 2017-28514-CLS-CLS.				
26/06/2020 (Dusk)	Start time: 21:20 End time: 23:20 Sunset: 21:25	Transect A	Anabat Scout and BatBox Duet.	Dry conditions, 70% cloud, BF4, 22°C
Comments: The survey was undertaken by 2 surveyors under direction of licence holder 2017-28514-CLS-CLS.				
16/07/2020 (Dusk)	Start time: 21:03 End time: 23:08 Sunset: 21:08	Transect A	Anabat Scout and BatBox Duet.	Dry conditions, 100% cloud, BF1, 18°C
Comments: The survey was undertaken by 2 surveyors under direction of licence holder 2017-28514-CLS-CLS.				
11/08/2020 (Dusk)	Start time: 20:22 End time: 22:27 Sunset: 20:27	Transect A	Anabat Scout and BatBox Duet.	Dry conditions, 20% cloud, BF1, 26°C
Comments: The survey was undertaken by 2 surveyors under direction of licence holder 2017-28514-CLS-CLS.				
12/08/2020 (Dawn)	Start time: 03:38 End time: 05:43 Sunset: 05:38	Transect A	Anabat Scout and BatBox Duet.	Dry conditions, 90% cloud, BF1, 18°C
Comments: The survey was undertaken by 2 surveyors under direction of licence holder 2017-28514-CLS-CLS.				

BF0 = calm, BF12 = hurricane force

2.3.6 Automated static detector surveys were also carried out during which Song Meter 2 (SM2) detectors were positioned at two locations within the site from the 15th to 22nd April, 12th to 19th May, 17th to 24th June, 10th to 16th July, and 12th to 18th August 2020. Detector 1 was situated at the centre of the site within an area of dense scrub and detector 2 was located at the south-eastern corner of the site within an area of dense scrub (see Plan 5786/ECO5). The detectors were set to switch on approximately 30 minutes before sunset and switch off approximately 30 minutes after sunrise. The weather conditions during the static detector surveys are provided in Table 2.2 below.

Table 2.2. Automated detector survey details.

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°)	Cloud Cover (%)	Precipitation
15/04/2020	2	9	5	Dry
12/05/2020	4	11	5	Dry
17/06/2020	2	14	90	Dry
10/07/2020	4	12	70	Dry
12/08/2020	3	22	20	Dry

BFO = calm, BF12 = hurricane force

Analysis of Bat Survey Recordings

- 2.3.7 All bat calls were analysed using Analook W v4.4a to verify the species recorded during the survey work. Where recordings could not be reliably attributed to species (such as for *Myotis* species) or where overlaps between otherwise distinguishable species occur (such as in *Pipistrelle* bat calls around 40kHz or 50kHz) calls were identified to genus level; in the case of calls which could not be distinguished between *Nyctalus* sp. and *Serotine*, these have been labelled as 'unidentified big bat' species.

Badger (*Meles meles*)⁶

- 2.3.8 A detailed Badger survey was carried out in February 2020. The survey comprised two main elements. The first element involved searching for evidence of Badger setts. For any setts that were encountered, each sett entrance was noted and mapped. The following information was recorded:

- Number and location of well used / active entrances; these are clear from any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently;
- Number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance; and
- Number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of the spoil heap.

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

Dormouse (*Muscardinus avellanarius*)⁷

- 2.3.10 Surveys were undertaken to establish the presence / absence of Dormouse within the site between March and August 2020. Survey work followed the methodology set out within best practice guidance⁷, whereby nesting tubes are attached to branches of trees and shrubs and checked on a regular basis for signs of use by Dormouse.

⁶ Based on: Mammal Society (1989) 'Occasional Publication No. 9 – Surveying Badgers'

⁷ Based on: English Nature (2003) 'Surveying dormice using nest tubes: Results and experiences from the South West Dormouse Project', English Nature (2006) 'The Dormouse Conservation Handbook', 2nd Edition, English Nature Research Report No. 524; and Natural England (2011) 'Interim Natural England Advice Note – Dormouse surveys for mitigation licensing – best practice and common misconceptions', WML-537 (12/11)

- 2.3.11 The guidance employs an indexation system to define survey effort, based on the number of tubes deployed and months over which these are in place and are checked for signs of use. Months in which use of nest tubes by Dormouse is more likely afford a higher number of points than months when there is a lower likelihood of use. The guidance recommends that determination of absence of Dormouse from a site should be based on a survey effort score of at least 20 points.
- 2.3.12 Accordingly, a total of 100 Dormouse nest tubes were deployed within the site, with 40 positioned within hedgerows, 40 within the areas of dense scrub at the north and south-west of the site, and 20 within the two pockets of woodland at the west of the site (see Plan 5786/ECO6).

Great Crested Newt (*Triturus cristatus*)

Habitat Suitability Index (HSI)

- 2.3.13 As a first step in identifying the potential presence of Great Crested Newt at the site, a Habitat Suitability Index (HSI) study was undertaken of all relevant water bodies within 250m⁸ of the site boundary (based on a review of Ordnance Survey mapping and satellite imagery). Guidance set out within Natural England's Method Statement template, to be used when applying for a Great Crested Newt development licence, states that surveys of ponds within 500m of the site boundary are only required when '(a) data indicates that the pond(s) has potential to support a large Great Crested Newt population, (b) the footprint contains particularly favourable habitat, (c) the development would have a substantial negative effect on that habitat and (d) there is an absence of dispersal barriers.' Given that in this instance, none of the four points listed above are applicable to the site, it is considered that survey of ponds within 500m of the site boundary is not required, and that survey of ponds within 250m represents adequate survey effort.
- 2.3.14 An HSI study is used to assess the potential of water bodies to support Great Crested Newt. It is undertaken by attributing a score to a number of factors that can affect the presence or absence of this species. Ten factors are utilised in an HSI assessment, as described below:
- *S11 Location*. The location of the water body within Great Britain;
 - *S12 Pond area*. The size of the water body;
 - *S13 Permanence*. How often the water body dries out;
 - *S14 Water Quality*. The water quality, based primarily on invertebrate diversity;
 - *S15 Shade*. The percentage of the perimeter of the water body that is shaded;
 - *S16 Fowl*. The presence or absence of water fowl;
 - *S17 Fish*. The presence or absence of fish;
 - *S18 Pond Count*. The number of water bodies within 1km of the surveyed water body (not counting those on the far side of major barriers such as roads);
 - *S19 Terrestrial*. The quality of terrestrial habitat surrounding the water body; and
 - *S10 Macrophytes*. The percentage cover of the surface area of the water body covered by macrophytes (aquatic plants).

⁸ 250m is the typical maximum migratory range of this species, see English Nature (2004) 'An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt *Triturus cristatus*'. English Nature Research Report 576

- 2.3.15 The overall suitability of the water body is then determined by entering these figures into an equation devised by Oldham et al. (2000)⁹. The suitability of water bodies is classed into one of five categories, either 'poor', 'below average', 'average', 'good' or 'excellent'.
- 2.3.16 This HSI study was undertaken in line with the guidelines developed by Oldham et al. and subsequently adapted by ARG UK (2010)¹⁰. A suitably experienced ecologist undertook the assessment in line with these guidelines, with the study also supplemented by desktop research where appropriate.

Environmental DNA (eDNA)

- 2.3.17 An eDNA survey was undertaken on 27th May 2020 to determine the presence / absence of Great Crested Newt within fifteen off-site ponds (see Plan 5786/ECO7). Water samples were collected in line with the procedure outlined in the methods manual prepared for DEFRA by Biggs *et al.* (2014)¹¹. The survey was undertaken within the acceptable seasonal window set out by Natural England (15th April to 30th June)¹² and samples were collected by suitably licensed Aspect Ecology staff. The water samples were sent for laboratory analysis which was conducted by 'Fera' and also followed the procedure set out by Biggs *et al.* (2014)¹¹.

Reptiles¹³

- 2.3.18 Given the presence of potentially suitable reptile habitat within the site, a specific survey was undertaken to establish the presence / absence of common reptile species between April and May 2020.
- 2.3.19 A total of 260 50x50cm sheets of thick roofing felt were placed within suitable areas across the site to act as artificial refugia (see Plan 5786/ECO8), which represents a density of 24 refugia per hectare and is in excess of the minimum requirements. The refugia, or 'tins', provide shelter and heat up more quickly than their surroundings in the morning and can remain warmer than their surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask under and raise their body temperature, which allows them to forage earlier and later in the day. Therefore, checking the refugia at appropriate times of the day (morning and evening) enables the presence/absence of common reptiles to be determined.
- 2.3.20 The refugia remained undisturbed for approximately 1-2 weeks to allow reptiles to find and start using them. Following this initial bedding-in period, refugia were checked at appropriate times of the day on seven occasions during suitable weather conditions, as set out below in Table 2.3.

⁹ Oldham RS, Keeble J, Swan MJS & Jeffcote M (2000) 'Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*)'. Herpetological Journal 10 (4), 143-155

¹⁰ Amphibian & Reptile Groups of the UK (2010) 'ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index'

¹¹ Biggs J., Ewald N., Valentini A., Gaboriaud C., Griffiths R.A., Foster J., Wilkinson J., Arnett A., Williams P. and Dunn F. (2014). 'Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA'. Freshwater Habitats Trust, Oxford.

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

¹³ Surveys based on: Froglife Advice Sheet 10 (1999) 'Reptile Survey - an introduction to planning, conducting and interpreting surveys for snake and lizard conservation.'

Table 2.3. Reptile survey dates and weather conditions.

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°)	Cloud Cover (%)	Precipitation
08/04/2020	2	18	30	Dry
15/04/2020	0	11	5	Dry
21/04/2020	2	11	0	Dry
28/04/2020	1	8	90	Light-Moderate Rain
04/05/2020	2	14	14	Dry
12/05/2020	2	11	0	Dry
19/05/2020	1	16	0	Dry

BF0 = calm, BF12 = hurricane force

2.3.21 In addition, reptiles basking in the open or partial cover were actively searched for in suitable locations across the site through direct observation. Existing natural objects (e.g. logs and rocks) and artificial refugia (e.g. debris, tyres, etc.) were also searched, where present, for reptiles or evidence of reptiles (e.g. sloughed skin).

Breeding Birds¹⁴

2.3.22 The use of the site by breeding birds will be assessed over three survey visits (on separate days) in April, May and June 2020. Birds present within the site were recorded using a method modified from the British Trust for Ornithology's (BTO's) Common Bird Census technique.

2.3.23 This involved walking a route over the site and recording all 'registrations' of birds either seen or heard. The sightings or 'registrations' were recorded on a site plan using standard BTO codes for each bird species and appropriate abbreviations.

2.3.24 This survey methodology has the advantage over other survey methods of mapping each registration to a specific point within the site and this therefore illustrates those areas containing the highest density and diversity of bird species. The dates of each survey, together with a summary of the weather conditions are given in Table 2.4 below.

Table 2.4. Breeding bird survey dates and weather conditions.

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°)	Cloud Cover (%)	Precipitation (0-5)
06/04/2019	3	12	60	Dry
02/05/2019	4	7	60	Dry
07/06/2019	3	12	80	Dry

2.4 Survey Constraints and Limitations

2.4.1 All of the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent during different seasons. The Phase 1 habitat survey was undertaken within the optimal season therefore allowing a robust assessment of habitats and botanical interest across the site.

2.4.2 Attention was paid to the presence of any invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). However, the detectability of such species

¹⁴ Surveys based on methodology within: Baille *et al.* RA (2010) 'Breeding Birds in the Wider Countryside: their conservation status', BTO Research Report No. 385, BTO, Thetford.

varies due to a number of factors, e.g. time of year, site management, etc., and hence the absence of invasive species should not be assumed even if no such species were detected during the Phase 1 survey.

- 2.4.3 A recognised limitation of the bat activity surveys is that bat detectors can only provide an index of activity rather than absolute numbers of bats. Therefore, the results of the bat activity surveys should only be considered indicative of the amount of use bats make of an area rather than the abundance of bats. In addition, some bat species, e.g. Brown Long-eared Bat, are difficult to detect due to their quiet echolocation calls.
- 2.4.4 During the manual bat activity surveys, the detector failed to record in April 2020 and as such, in-field identification of bats was relied upon for the assessment of this survey.
- 2.4.5 Densely vegetated habitats within the site have the potential to reduce the detectability of field signs for faunal species such as Badger. A detailed survey was able to be completed and, whilst dense scrub vegetation is present within the site, it is considered that the survey results do provide an accurate baseline to assess the potential for impacts on Badger under the development proposals.

2.5 Ecological Evaluation Methodology

- 2.5.1 The evaluation of ecological features and resources is based on professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018)¹⁵, which involves identifying ‘important ecological features’ within a defined geographical context (i.e. international, national, regional, county, district, local or site importance). For full details refer to Appendix 5786/1.

2.6 National Policy Approach to Biodiversity in the Planning System

- 2.6.1 The National Planning Policy Framework (NPPF)¹⁶ describes the Government’s national policies on ‘conserving and enhancing the natural environment’ (Chapter 15). NPPF is accompanied by Planning Practice Guidance on ‘Biodiversity, ecosystems and green infrastructure’ and ODPM Circular 06/2005¹⁷.
- 2.6.2 NPPF takes forward the Government’s strategic objective to halt overall biodiversity loss¹⁸, as set out at Paragraph 170, which states that planning policies and decisions should contribute to and enhance the natural and local environment by:

‘minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures’

- 2.6.3 The approach to dealing with biodiversity in the context of planning applications is set out at Paragraph 175:

‘When determining planning applications, local planning authorities should apply the following principles:

¹⁵ CIEEM (2018) ‘Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine’ ver. 1.1, Chartered Institute of Ecology and Environmental Management, Winchester

¹⁶ Ministry of Housing, Communities & Local Government (2019) ‘National Planning Policy Framework’

¹⁷ ODPM (2006) ‘Circular 06/2005: Planning for Biodiversity and Geological Conservation – A Guide to Good Practice’

¹⁸ DEFRA (2011) ‘Biodiversity 2020: A strategy for England’s wildlife and ecosystem services’

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

2.6.4 The above approach encapsulates the ‘mitigation hierarchy’ described in British Standard BS 42020:2019¹⁹, which involves the following step-wise process:

- **Avoidance** – avoiding adverse effects through good design;
- **Mitigation** – where it is unavoidable, mitigation measures should be employed to minimise adverse effects;
- **Compensation** – where residual effects remain after mitigation it may be necessary to provide compensation to offset any harm; and
- **Enhancement** – planning decisions often present the opportunity to deliver benefits for biodiversity, which can also be explored alongside the above measures to resolve potential adverse effects.

2.6.5 The measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development (BS 42020:2019, section 5.5).

2.7 Local Policy

2.7.1 Planning policy at the local level of relevance to the site is set out within Colchester Borough Council Core Strategy (adopted in 2008). In addition to this, an emerging Local Plan is currently being prepared which is currently in the consultation period. The following policies from these documents are of relevance to ecology:

Colchester Borough Council Core Strategy (adopted in 2008)

Policy ENV1 - Environment

¹⁹ British Standards Institution (2013) ‘Biodiversity – Code of practice for planning and development’, BS 42020:2019

2.7.2 Policy ENV1 aims to protect and enhance Colchester's biodiversity, and states that development should demonstrably:

- Protect and enhance sites of international, national, regional and local importance;
- Protect and enhance the networks of strategic green links between the rural hinterland, river corridors, and key green spaces and areas of accessible open space that contribute to the green infrastructure across the Borough.
- Protect, conserve or enhance interests of natural assets
- Protect habitats and species, and conserve and enhance the biodiversity of the Borough; and
- Provide any necessary mitigating or compensatory measures.

Colchester Borough Council Emerging Local Plan (submitted 2017)

Policy ENV1 - Environment

2.7.3 Emerging Policy ENV1 refers to the protection of Colchester's natural environment, and states that development will only be supported where it:

- Is supported with appropriate ecological surveys where necessary;
- Where there is reason to suspect the presence of protected species (and impact to), or Species / Habitats of Principal importance, applications should be accompanied by an ecological survey assessing their presence and, if present, the proposal must be sensitive to, and make provision for their needs;
- Will conserve or enhance the biodiversity value of greenfield and brownfield sites and minimise fragmentation of habitats;
- Maximise opportunities for the preservation, restoration, enhancement and connection of natural habitats in accordance with the UK and Essex Biodiversity Action Plans or future replacements; and
- Incorporates beneficial biodiversity conservation features and habitat creation where appropriate.

2.7.4 Emerging Policy ENV1 also states that:

- Plans or projects which may have a likely significant effect on a European site which have not been screened or considered in the Borough's Habitat Regulations Assessment or Appropriate Assessment, will be required to prepare a separate HRA screening and if necessary to complete a separate appropriate assessment to ensure compliance with the Habitat Regulations 2010; and
- Proposals for development that would cause direct or indirect adverse harm to nationally designated sites or other designated areas, protected species, Habitats and Species or Principle Importance or result in the loss of irreplaceable habitats, such as ancient woodland, Important Hedgerows and veteran trees, will not be permitted unless:
 - They cannot be located on alternative sites that would cause less harm;
 - The benefits of the development clearly outweigh the impacts on the features of the site and the wider network of natural habitats; and
 - Satisfactory mitigation and compensation measures are provided.

3 Ecological Designations

3.1 Statutory Designations

Description

European-level Statutory Designations

- 3.1.1 The European-level statutory designations of ecological importance that occur within the local area are shown on Plan 5786/ECO2. The nearest European-level statutory designation is Abberton Reservoir Special Protection Area (SPA) / Ramsar site located approximately 4.8km to the east of the site. The SPA/ Ramsar is designated on the basis of its large, shallow freshwater storage reservoir, which supports overwintering populations of European importance of the Annex 1 species Golden Plover *Pluvialis apricaria* along with Gadwall *Anas strepera*, Shoveler *Anas clypeata*, Teal *Anas crecca* and breeding season populations of Cormorant *Phalacrocorax carbo*. The next nearest European-level designation is Essex Estuaries Special Area of Conservation (SAC) and Colne Estuary (Mid Essex Coast Phase 2) SPA and Ramsar site. The nearest point of these designations is located approximately 6.5km south-east of the site. The SAC comprises a large estuarine site and is designated for the following Annex 1 habitats: Estuaries, Mudflats and sandflats not covered by seawater at low tide; Salicornia and other annuals colonising mud and sand; *Spartina* swards (*Spartinion maritimae*); Atlantic salt meadows; and Mediterranean and thermos-Atlantic *halophilous* scrubs. The SPA comprises the Colne Estuary and is designated for supporting overwintering populations of the Annex 1 species Avocet *Recurvirostra avosetta*, Golden Plover and Hen Harrier *Circus cyaneus* along with a breeding population of the Annex 1 species Little Tern *Sterna albifrons*.
- 3.1.2 A number of other European designations are present further afield, including Blackwater Estuary SPA and (6.5km) Ramsar and Dengie SPA and Ramsar (12.6km).
- 3.1.3 The site falls within the recreational 'Zone of Influence' of the Essex Estuaries SAC, Blackwater Estuary SPA and Ramsar, and Dengie SPA and Ramsar, as identified in the Essex Coast Recreational disturbance Avoidance & Mitigation Strategy (RAMS) prepared by Essex County Council Place Services.

National Statutory Designations

- 3.1.4 The national-level statutory designations of ecological importance that occur within the local area are shown on Plan 5786/ECO2. The nearest national-level statutory designation is Tiptree Heath Site of Special Scientific Interest (SSSI), which is located approximately 0.9km south of the site. The SSSI is the largest surviving fragment of Heathland in the County which supports a number of plants rare in Essex, including Heath Spotted Orchid *Dactylorhiza maculata ssp. ericetorum*. The next nearest national designation is Tiptree Parish Field Local Nature Reserve (LNR), which is located 2.1km east of the site. The LNR is designated on the basis of its mosaic of habitats including acid grassland, rough grassland and recent Oak *Quercus* sp. woodland.
- 3.1.5 Natural England has developed Impact Risk Zones (IRZs) as an initial tool to help assess the risk of development adversely affecting SSSIs, taking into account the type and scale of development. The proposed residential development location within the site falls within the IRZs of Tiptree Heath SSSI which relates to residential development with an increase of 100 units or more and as such, highlights the need for the LPA to consult with Natural England.

Evaluation

- 3.1.6 The site itself is not subject to any statutory ecological designations. All statutory ecological designations in the surrounding area are physically well separated from the site by existing development such that no direct effects, such as damage or land-take, will occur under the proposals. In relation to the European-level designations, detailed information regarding the potential of the proposals to affect relevant designations through recreational impacts, and any associated mitigation / safeguarding measures are presented within the shadow Habitats Regulations Assessment (sHRA) that accompanies this Ecological Appraisal. In summary, the sHRA concludes with certainty that detrimental effects on European designations, both alone and in-combination with other plans and projects, will be mitigated, such that, taking into account the designations' conservation objectives, the proposals will have no adverse effects on the integrity of the European-level designations.
- 3.1.7 Regarding Tiptree Heath SSSI, it is noted that although heathland habitats and species can be susceptible to recreational impacts such as damage from fire-setting and scrambling, the SSSI is actively managed as a nature reserve and therefore is designed to accommodate visitors. Furthermore, there is no indication that the condition of the SSSI has been adversely affected by recreational pressure. The SSSI is currently described as being in 'unfavourable – recovering' condition, with the unfavourable status due to a historic lack of appropriate management, which is being addressed through restoration works, including the removal of scrub and reintroduction of grazing to certain parcels. As such, it is unlikely that the proposals would result in any significant impact on the SSSI. The proposals incorporate a substantial amount of open space, which exceeds local policy requirements and will therefore provide sufficient recreational opportunities for the new residents, which further reduces any potential risk to the SSSI. For similar reasons, no adverse recreational impacts are anticipated with respect to Tiptree Parish Field LNR, which is located further afield (2.1km).

3.2 Non-statutory Designations

Description

- 3.2.1 The non-statutory designations of nature conservation interest that occur within the local area are shown on Plan 5786/ECO2. The nearest non-statutory designation is Inworth Grange Pits Local Wildlife Site (LWS), the bulk of which lies off-site to the west but was extended in 2015 to include the site. The LWS is designated on the basis of its mosaic of habitats, which in turn supports a variety of Orchid species, including a significant population of the Red Listed Green-winged Orchid *Orchis morio*. The wider designation also supports a good assemblage of breeding birds, the most noteworthy being Pochard *Aythya ferina*, Lapwing *Vanellus vanellus*, Little Ringed Plover *Charadrius dubius*, Cuckoo *Cuculus canorus*, Skylark *Alauda arvensis*, Song Thrush *Turdus philomelos*, Cetti's Warbler *Cettia cetti*, Willow Warbler *Phylloscopus trochilus* and Linnet *Linaria cannabina*. The next nearest non-statutory designation is Tiptree Church LWS, which is located approximately 440m east of the site. The LWS is designated on the basis of its mosaic of acid and neutral botanical communities.
- 3.2.2 At the time of survey in February and May 2020, the Inworth Grange Pits LWS designation that falls within the site was well used for dog walking, with trampled paths and dog faeces throughout.

Evaluation

- 3.2.3 The part of Inworth Grange Pits LWS that lies within the site is identified as supporting a good variety of Orchid species, with a '*significant population of Green-winged Orchids*' identified within the citation. The LWS citation (see Appendix 5786/2) identifies the Orchid populations as being vulnerable to inappropriate management or lack of management, and lists the dominating scrub encroachment as being a particular threat. As such, due to the infrequent nature of the site's vegetation management and domination of encroaching scrub across the site, the extent and diversity of grassland habitat is likely to have considerably decreased since the citation was updated in 2015 and indeed this is evidenced by the 2020 survey findings (see Chapter 4). Nonetheless the LWS is a key consideration within Policy ENV1 of Colchester Borough Council's Core Strategy and as such, potential effects on the LWS as a result of the development proposals are set out below.
- 3.2.4 *Direct Effects.* Approximately half of the LWS designation that falls within the site would be permanently lost as a result of the development proposals; this represents approximately 6.17 ha of the designation, which accounts for 16.4% of its total area and is therefore not considered likely to represent a significant impact on the overall ecological function of the designation, particularly as the LWS functioned as a whole prior to it being extended to include the site in 2015. The location of the development proposals within the site has been carefully designed to cause the least potential impact to the remaining 83% of the LWS, by being located at the furthest distance from it and predominantly comprising the areas of densest developing scrub, which is identified as a threat to the designation. The development's location within the site will also avoid any habitat fragmentation or isolation for the remaining areas of the LWS. In order to compensate for the reduction in size of the rough grassland with developing undesirable scrub within the LWS, a number of ecological enhancements will be delivered for the retained habitats within the site, in addition to the creation of new high quality / ecologically beneficial habitats under the proposals. It is anticipated that the retained and enhanced, and newly created habitats, will provide a sufficiently high ecological and amenity value, such that once established this will mitigate for the relatively loss of habitat under the proposals. This is demonstrated through the Biodiversity Net Gain Assessment metric calculation submitted as part of the planning application, which demonstrates a 20% net gain in biodiversity as a result of the development proposals (see Appendix 5786/5), which represents a clear benefit of the scheme.
- 3.2.5 Long-term conservation management will be put in place so as to encourage the ecological interest of the retained and enhanced, and newly created habitat. Further, a grassland translocation exercise is proposed, to move areas identified as supporting increased botanical interest away from the development footprint to retained areas of the site, with information on this detailed in Chapter 6.
- 3.2.6 *Indirect Effects.* The retained parts of the LWS within the site will adjoin the proposed areas of new residential development and therefore the potential for these to be indirectly affected by both construction and operational activities exists. In terms of construction effects, minor impacts may be experienced through factors such as dust deposition, however, such factors would only be temporary in effect whilst works are ongoing, and are also readily preventable through general construction safeguards. Such safeguards are described in Chapter 6 below which will ensure that the retained areas of the LWS are fully safeguarded.
- 3.2.7 In terms of operational activities, an increase in predation of faunal groups, such as birds, by domestic cats could occur under the proposals. The LWS citation identifies a number of breeding birds as present within the designation albeit, given that the designation currently

bounds residential development, does not list cat predation as of particular concern and in any event such effects are unlikely to affect local populations²⁰. Overall connectivity of the LWS to other key wildlife sites will remain unaffected by the proposals.

3.2.8 Subject to the mitigation, compensation and enhancement measures proposed in Chapter 6 the LWS designation as a whole, the majority of which lies beyond the site boundary, will not be compromised but strengthened in several key respects, through new native species planting, and providing net gains in bat roosting and bird nesting opportunities, for example. The development proposals provide the unique opportunity to maintain and enhance features of the LWS within the site, which would otherwise continue to decline in value due to a lack of management, in particular the grassland which continues to suffer from extensive scrub encroachment.

3.2.9 All other non-statutory designations in the surrounding area are well separated from the site by existing development and given the nature and scale of the proposals, these designations are also unlikely to be affected.

3.3 Priority Habitats, Ancient Woodland and Notable Trees

Description

3.3.1 There are no records of any notable or veteran trees within or adjacent to the site. An area identified in MAGIC as the Priority Habitat 'Deciduous Woodland' is located 115m west of the site, with an area identified with 'low confidence' as comprising Open Mosaic Habitats on Previously Developed Land being present adjacent to the western boundary (off-site). As these habitats would not be directly affected by the proposals, they do not pose a constraint to the proposals. No areas identified as ancient woodland and no veteran or ancient trees are known to be present within or adjacent to the site.

Evaluation

3.3.2 Subject to the implementation of appropriate mitigation measures (as discussed below in Chapter 6) it is unlikely that any Priority Habitats will be significantly affected by the proposals.

3.4 Summary

3.4.1 In summary, the site itself is not subject to any statutory ecological designations, although the site falls within part of the non-statutory Inworth Grange Pits LWS designation. Subject to the implementation of appropriate mitigation, compensation and enhancement measures detailed below in Chapter 6 and within the sHRA, it is considered unlikely that any such designations will be significantly adversely affected by the proposals.

²⁰ <https://ww2.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/gardening-for-wildlife/animal-deterrents/cats-and-garden-birds/are-cats-causing-bird-declines>

4 Habitats and Ecological Features

4.1 Background Records

- 4.1.1 Records of a number of Orchid species from within and immediately adjacent to the site are included within the information returned from the records centre, including the Red Listed Green-winged Orchid, and other species such as Southern Marsh-orchid *Dactylorhiza praetermissa*, Bee Orchid *Ophrys apifera*, Common Spotted-orchid *Dactylorhiza fuchsii* and the non-native Tongue-orchid *Serapias lingua* dating between 2015 and 2018.
- 4.1.2 Evidence for the presence of a number of these species within the site was recorded during the survey work undertaken, as described in section 4.4 below.

4.2 Overview

4.2.1 The habitats and ecological features present within the site are described below and evaluated in terms of whether they constitute an important ecological feature and their level of importance, taking into account the status of habitat types and the presence of rare plant communities or individual plant species of elevated interest. The likely effects of the proposals on the habitats and ecological features are then assessed. The value of habitats for the fauna they may support is considered separately in Chapter 5 below.

4.2.2 The following habitats / ecological features were identified within / adjacent to the site:

- Rough Grassland with Developing Scrub;
- Hedgerows;
- Dense Scrub;
- Woodland;
- Tall Ruderal;
- Wet Flush;
- Ditches;
- Stream;
- Hardstanding; and
- Invasive Species.

4.2.3 The locations of these habitat types and features are illustrated on Plan 5786/ECO3 and described in detail below.

4.3 Priority Habitats

4.3.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of habitats which are of principal importance for conservation in England. This list is largely derived from the 'Priority Habitats' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as Priority Habitats under the subsequent country-level biodiversity strategies.

4.3.2 Of the habitats within the site, hedgerows are considered to qualify as Priority Habitat and therefore constitute important ecological features. This is discussed further in the relevant habitat sections below.

4.4 Rough Grassland with Developing Scrub

Phase 1 Habitat Survey Description

- 4.4.1 At the time of survey, the site was recorded to be dominated by two infrequently managed rough grassland fields, with extensive developing scrub, as described below.
- 4.4.2 The majority of this habitat was recorded to comprise rough grassland, with a tussocky sward of between 5 - 30cm in height, with extensive areas of developing scrub present. Evidence of rabbit grazing is present throughout, with patches of bare ground present where this is more evident. Frequent use of the site by dog walkers and pedestrians has created informal trodden paths through the site, with evidence of dog fouling being abundant. Species present within the grassland sward include Cock's-foot *Dactylis glomerata*, Yorkshire-fog *Holcus lanatus*, Fescue *Festuca* sp., Perennial Rye-grass *Lolium perenne*, Crested Dog's-tail *Cynosurus cristatus*, Bent *Agrostis* sp., Soft-rush *Juncus effusus*, Dandelion *Taraxacum officinale* agg., Common Cat's-ear *Hypochaeris radicata*, Red Campion *Silene dioica*, Ribwort Plantain *Plantago lanceolata*, Dove's-foot Crane's-bill *Geranium Molle*, Selfheal *Prunella vulgaris*, Sheep's Sorrel *Rumex acetosella*, Field Wood-rush *Luzula campestris*, Creeping Buttercup *Ranunculus repens*, Daisy *Bellis perennis*, Round-leaved St John's-wort *Hypericum nummularium*, White Clover *Trifolium repens*, Strawberry *Fragaria × ananassa*, Common Centaury *Centaureum erythraea*, Cow Parsley *Anthriscus sylvestris*, Spear Thistle *Cirsium vulgare*, Common Knapweed *Centaurea nigra*, Red Valerian *Centranthus ruber*, Yarrow *Achillea millefolium*, Common Sorrel *Rumex acetosa*, Creeping Thistle *Cirsium arvense*, Broad-leaved Dock *Rumex obtusifolius*, Common Nettle *Urtica dioica*, Common Ragwort *Senecio jacobaea*, Three-cornered Garlic *Allium triquetrum*, Willowherb *Epilobium* sp., Bramble *Rubus fruticosus*, Goat Willow *Salix caprea*, Silver Birch *Betula pendula*, and Oak *Quercus* sp. scrub. The grassland field was recorded to be damp in places, with such areas recorded to support denser areas of Willow scrub. Green-winged Orchid was recorded in a number of locations within the site (maximum count of 250-300 plants in May 2020), with a single Adder's Tongue *Ophioglossum vulgatum* also recorded.

Phase 1 Habitat Survey Evaluation

- 4.4.3 The grassland supports a relatively long list of plant species, however there is variation in the sward with certain areas appearing relatively species-poor (e.g. the southern-most triangular parcel) and other areas at least moderately species-rich (e.g. the northern half of the main field), with several notable species present such as Green-winged Orchid (England Red List, 'Vulnerable'²¹); albeit this species is in fact widespread across England. A number of indicator species of Priority Habitat grassland are present (e.g. Common Centaury, Sheep's Sorrel, Common Knapweed and Green-winged Orchid), however these are not sufficiently abundant for the grassland to qualify as a Priority Habitat. Nonetheless, the wildflower indicator species are sufficiently abundant for small parts of the grassland to be recognised as good-quality semi-improved grassland of moderate species-richness²².
- 4.4.4 However, it is apparent the grassland is of recent origin, having been arable land used for strawberry cultivation up until at least the year 2000 and therefore subject to agricultural improvement. Furthermore, the grassland is suffering from extensive scrub encroachment, which considerably reduces the grassland interest and in the absence of intervention and sympathetic management it is highly likely that the grassland will continue to decline in

²¹ Stroh, P.A. *et al.* (2014) A Vascular Plant Red List for England. Botanical Society of Britain and Ireland. A. *morio* classed as VU based on 32% decline in area of occupancy

²² Natural England (2010) 'Higher Level Stewardship – Farm Environment Plan (FEP) Manual', 3rd Edition

value over time and ultimately interest features such as the Green-winged Orchid populations will inevitably be lost.

4.4.5 Grassland habitats are not uncommon in the local area and higher quality areas of grassland are present in the surrounding area, including the nearby statutory designations. Nonetheless, given that the grassland within the site supports interest features of the LWS designation, it is considered to represent an important ecological feature and in the absence of proportionate compensation measures, the reduction in approximately half of this habitat within the site could therefore be of ecological significance at the local level.

4.4.6 Subject to the measures proposed at Chapter 6, and as demonstrated through the Biodiversity Net Gain Assessment metric calculation which accompanies this Ecological Appraisal (see Appendix 5786/5), a 20% net gain in biodiversity is predicted as a result of the development proposals, which represents a clear net benefit of the scheme. This will be achieved through retaining and enhancing areas of grassland within the site through positive ecological management and, as such, the proposals are considered to be ecologically beneficial at the local level.

National Vegetation Classification (NVC) Survey and Evaluation

4.4.7 A National Vegetation Classification (NVC) survey was undertaken in June 2020 to identify grassland community types and provide an objective measure of the relative importance of the on-site grassland communities. Four locations referred to as A-D on Plan 5786/ECO3a, were surveyed. Please see Appendix 5786/3 for the tabulated survey data and output of the MAVIS computer programme.

4.4.8 **Area A (southern land parcel):** The results generated from the MAVIS computer program, using the June 2020 survey information, identified grassland community types MG1c and MG1a as the closest matches at 42.12% and 38.66% respectively.

4.4.9 MG1 is a mesotrophic grassland community which is widespread in lowland areas of England and of lower botanical interest, and is indicative of neglected agricultural and industrial habitats.

4.4.10 **Area B (west):** The results generated from the MAVIS computer program, using the June 2020 survey information, identified grassland community types OV23a and OV23 as the closest matches at 31.02% and 29.85% respectively.

4.4.11 OV23 is an open grassland community which occurs widely throughout lowland Britain and is typically found on verges, recreational areas and waste ground, and is of lower botanical interest.

4.4.12 **Area C (north):** The results generated from the MAVIS computer program, using the June 2020 survey information, identified grassland community types MG11a and MG10b as the closest matches at 46.80% and 43.03% respectively.

4.4.13 MG11 is a mesotrophic grassland community, typical of grass-dominated inundation communities. The sample / quadrat positions are located at the highest elevation within the site and are not particularly damp, as such this classification appears to not be representative of the underlying habitat / grassland community present. This indicates that a distinct grassland community is not necessarily present, which is suggestive of it comprising lower botanical interest.

4.4.14 **Area D (east):** The results generated from the MAVIS computer program, using the June 2020 survey information, identified grassland community types MG1c and MG1a as the closest matches at 39.25% and 38.60% respectively.

4.4.15 As identified for area A above, MG1 is a mesotrophic grassland community which is widespread in lowland areas of England and of lower botanical interest, and is indicative of neglected agricultural and industrial habitats.

4.4.16 None of the areas sampled exhibit a strong match for any specific National Vegetation Classification community type, which appears consistent with the site's former agricultural usage / arable cultivation and that the grassland is of relatively recent origin, with no ongoing management. The grassland communities present, as identified by MAVIS, are all of lower botanical interest and relatively widespread throughout England.

4.5 Hedgerows

Description

4.5.1 Five hedgerows are present within the site, which are described in more detail in Table 4.1 below.

Table 4.1. Hedgerow descriptions.

No.	H	W	Woody species	Avg. per 30m*	Ground flora & climbers	Associated features	Comments (including structure / management)	Likely to qualify#
H1	6-8m	6-8m	Blackthorn <i>Prunus spinosa</i> (D), <u>Hawthorn</u> <i>Crataegus monogyna</i> <u>Ash</u> <i>Fraxinus excelsior</i> , <u>Oak</u> , <u>Wych Elm</u> <i>Ulmus glabra</i> , <u>Willow</u> , <u>Gorse</u> <i>Ulex europaeus</i>	<4	Dog-rose <i>Rosa canina</i> , Honeysuckle <i>Lonicera periclymenum</i> , Ivy <i>Hedera helix</i> , Lords-and-Ladies <i>Arum maculatum</i> , Daffodil	<10% gaps, standard trees	Generally dense, unmanaged	N
H2	3-4m	1m	<u>Blackthorn</u> , <u>English Elm</u> <i>Ulmus procera</i> , <u>Wild Privet</u> <i>Ligustrum vulgare</i>	<3	Honeysuckle, Bramble, Ivy	Gappy towards the south, damp ditch at base	Box-cut management (not recent)	N
H3	3-4m	1m	<u>Elm</u> , <u>Blackthorn</u>	2	Bramble	<10% gaps, damp ditch at base	Box-cut management (not recent)	N
H4	2m	1m	<u>Wild Privet</u> , <u>English Elm</u> , <u>Blackthorn</u>	<3	Bramble	<10% gaps	Box-cut management (recent)	N
H5	6-8m	2-4m	<u>Wild Privet</u> , <u>Hazel</u> <i>Corylus avellana</i> , <u>Hawthorn</u> , <u>Ash</u> , <u>Gorse</u> , <u>Yew</u> <i>Taxus baccata</i>	<4	Bramble	<10% gaps, Standard Trees	Unmanaged	N

Woody species (as listed under Schedule 3 of the Hedgerows Regulations 1997) and woodland ground flora species (as listed under Schedule 2 of the Hedgerows Regulations 1997) underlined, y = young, sm = semi-mature, m = mature, pv = possible veteran, B = bank, W = wall, br = bridleway, f/p = footpath, b/w = byway, (D) = dominant species

* estimated average number of woody species (as listed under Schedule 3 of the Hedgerows Regulations 1997) in any one 30m stretch

likely to qualify – as 'important' under the wildlife and landscape criteria of the Hedgerows Regulations 1997

Evaluation

- 4.5.2 From a preliminary appraisal, none of the hedgerows are considered to be species-rich²³ and none are likely to qualify as ecologically 'important' under the Hedgerows Regulations 1997, based on the number of woody species and associated features.
- 4.5.3 All of the hedgerows are likely to qualify as a Priority Habitat based on the standard definition²⁴, which includes all hedgerows (>20m long and <5m wide) consisting predominantly (≥80%) of at least one native woody species. It has been estimated that approximately 84% of countryside hedgerows in GB qualify as a Priority Habitat under this definition²⁴. On this basis, all hedgerows within the site constitute important ecological features, although given the relatively limited network present, are only of importance at the local level.
- 4.5.4 The proposals incorporate the retention of all the hedgerows within the site, with the only minor losses occurring to a small section of hedgerow for construction of an access road and footpath connections. Retained hedgerows will be protected during the construction phase of the proposals as per the recommendations included at Chapter 6 below. Furthermore, the proposals incorporate new planting which will link with and strengthen the existing / retained hedgerows, which will aim to enhance the value of these features for biodiversity.

4.6 Dense Scrub

Description

- 4.6.1 Areas of dense scrub are present at the boundaries of the site. At the time of survey, several areas of scrub were recorded at the centre of the grassland fields, including one which covers a raised concrete, 20th century water reservoir (decommissioned by the 1950s). The scrub largely comprises Hawthorn, Blackthorn and Dog-rose, with occasional Cherry *Prunus* sp., Elder *Sambucus nigra*, Gorse, associated with common non-woody species such as Spear Thistle, Alexanders *Smyrnum olusatrum*, with occasional Wood Sage *Teucrium scorodonia*, Lords-and-Ladies and Variegated Yellow Archangel *Lamiastrum galeobdolon* (an invasive species, see 4.14 below).

Evaluation

- 4.6.2 The dense scrub habitat within the site is limited in its extent and comprises botanical species which are common and widespread within the local and national context; as such, it does not constitute an important ecological feature. Its removal under the proposals is therefore of negligible ecological significance. The potential for this habitat to support protected faunal species is discussed in Chapter 5 below.

4.7 Woodland

Description

- 4.7.1 Two pockets of woodland are located adjacent to the western boundary of the site, labelled **W1** and **W2** on Plan 5786/ECO3. Woodland W1 is dominated by Oak, forming a closed canopy. The understorey comprises a number of species, including Elder, Hawthorn, Dog-rose, Holly *Ilex aquifolium*, and Oak saplings, whilst Common Nettle, Lords-and-Ladies, Bramble, Wood Avens *Geum urbanum*, Bracken *Pteridium aquilinum*, Ground-ivy *Glechoma*

²³ i.e. five or more native woody species within a 30m length (or four or more in Northern England) – FEP Manual

²⁴ Based on: Biodiversity Reporting and Information Group (2011) 'UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions', ed. Ant Maddock

hederacea, Bluebell *Hyacinthoides non-scripta* and leaf litter are present in the ground layer, which is otherwise rather sparse.

- 4.7.2 Woodland W2 is also a broadleaved woodland with a closed canopy, dominated by Oak. The understorey is limited, with Elder and Willow scrub dominating, whilst the ground layer largely comprises Bramble and leaf litter, with occasional Lords-and-Ladies, Common Nettle, Lesser Celandine *Ranunculus ficaria*, Creeping Buttercup *Ranunculus repens* and Honeysuckle.

Evaluation

- 4.7.3 The woodland habitat supports a limited diversity of common and widespread species, and lacks a diverse understorey or ground flora, which are limited in extent. The woodlands are not identified as a Priority Habitat and in their current condition are unlikely to qualify as such. Nonetheless, given that the woodlands form part of the LWS designation they are considered to represent important ecological features within this context and will be fully retained under the proposals and measures to safeguard the woodlands are detailed below in Chapter 6. Following implementation of such measures, it is considered that this habitat will be fully safeguarded, and indeed enhanced, under the proposals. The potential for this habitat to support protected faunal species is discussed in Chapter 5 below.

4.8 Wet Flush

Description

- 4.8.1 An area of wet flush is present within centre of the site, as shown on Plan 5786/ECO3. This habitat comprises species such as Soft-rush, Bulrush *Typha latifolia*, Willowherb sp., Creeping Buttercup and Goat Willow.

Evaluation

- 4.8.2 Overall, the wet flush is small in its extent and supports a low diversity of common and widespread species and does not form a Priority Habitat. As such, this habitat does not constitute an important ecological feature and its loss to the proposals is therefore of negligible ecological significance. Nonetheless, new wetland habitat is to be created under the proposals in association with the surface water drainage strategy.

4.9 Tall Ruderal

- 4.9.1 Two areas of tall ruderal are present at the boundaries of the site, as shown on Plan 5786/ECO3. The tall ruderal is varied in height and comprises a limited number of species, including Common Nettle, Creeping Thistle, Spear Thistle, Cow Parsley, Common Evening Primrose *Oenothera biennis* and Broad-leaved Dock.

Evaluation

- 4.9.2 The tall ruderal habitat comprises botanical species which are common and widespread within the local and national context, and therefore does not constitute an important ecological feature. As such, its removal is of negligible ecological significance. The potential for this habitat to support protected faunal species such as reptiles is discussed in Chapter 5.

4.10 Ditches

Description

- 4.10.1 Two ditches are present within the site, as shown on Plan 5786/ECO3. A wet ditch runs from north-west to south-west along the northern boundary of the site. From bank-to-bank, the wet ditch is approximately 2m in width, and comprises earth banks with terrestrial vegetation, species of which are largely associated with the adjacent habitats, such as Common Nettle, Cleavers, Broad-leaved Dock, and Cow Parsley. The water flow was recorded to be gentle at the time of the survey, which varied between 20 – 30cm in depth.
- 4.10.2 A dry ditch runs from the north to the south of the site along the eastern boundary. The dry ditch is approximately 1m from bank-to-bank in width, and 1m in depth. The ditch comprises earth banks with terrestrial vegetation which is largely associated with the neighbouring grassland habitat.

Evaluation

- 4.10.3 The two ditches include botanical species which are common and widespread within the local and national context, and do not represent Priority Habitats. Nonetheless, given that the ditches connect with interest features of the LWS designation, they are considered to represent important ecological features within this context. Both ditches will be retained under the proposals, with measures to safeguard them detailed below in Chapter 6. Following implementation of such measures, it is considered that this habitat will be fully safeguarded under the proposals.

4.11 Stream

Description

- 4.11.1 A stream runs from the north-western corner of the site through the centre of the woodlands and dividing the grassland fields. From bank-to-bank, the stream is 1.5-2m in width, and comprises earth banks with terrestrial vegetation, species of which are largely associated with the adjacent grassland habitat. The water flow was recorded to be gentle at the time of the survey, which varied between 20 – 30cm in depth.

Evaluation

- 4.11.2 The on-site stream forms part of the Inworth Grange Pits LWS and interacts with habitats within the designation and surrounding area, such that it is considered to represent an important ecological feature within this context. The stream will be retained under the proposals, with measures to safeguard it detailed below in Chapter 6. Following implementation of such measures, it is considered that this habitat will be fully safeguarded under the proposals.

4.12 Hardstanding

Description

- 4.12.1 A small area of hardstanding is present at the south-eastern corner of the site. The hardstanding comprises tarmac and was recorded to be largely devoid of vegetation at the time of the survey.

Evaluation

- 4.12.2 This relatively small area of habitat does not support any botanical species; as such it does not represent an ecological feature and its loss to the proposals is of negligible ecological significance.

4.13 Invasive Species

Description

- 4.13.1 Japanese Knotweed *Fallopia japonica* and Three-cornered Garlic were recorded at the south-eastern corner of the site (shown on Plan 5786/ECO3) and Variegated Yellow Archangel was recorded within the dense scrub. These species are listed under Schedule 9 Part II of the Wildlife and Countryside Act 1981 (as amended).
- 4.13.2 At the time of survey, the invasive species identified did not appear to have been subject to recent positive management or control.

Evaluation

- 4.13.3 Japanese Knotweed, Three-cornered Garlic and Variegated Yellow Archangel and listed on Schedule 9 Part 2 of the Wildlife and Countryside Act 1981 (as amended) and it is an offence to cause them to grow in the wild. It should be noted that this species can spread rapidly, and early control measures are recommended. The presence of these species is considered to be detrimental to habitats within the site, and also at the local level.
- 4.13.4 Further discussion of this issue along with a number of recommendations for removing and managing these species are included at Chapter 6.

4.14 Habitat Evaluation Summary

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

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

Habitat	Level of Importance
Rough Grassland with Developing Scrub (Part of LWS)	Local
Hedgerows (Priority Habitat)	Local
Woodland (Part of LWS)	Local
Ditches (Part of LWS)	Local
Stream (Part of LWS)	Local

- 4.14.2 Other habitats present within the site include dense scrub, ruderal, wet flush, and hardstanding. However, these habitats do not form important ecological features.

5 Faunal Use of the Site

5.1 Overview

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

5.2 Priority Species

5.2.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of species which are of principal importance for conservation in England. This list is largely derived from the 'Priority Species' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as Priority Species under the subsequent country-level biodiversity strategies.

5.2.2 During the survey work undertaken, no Priority Species were recorded within the site. This is discussed further below.

5.3 Bats

5.3.1 **Legislation.** All British bats are classed as European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended) and are also listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). As such, both bats and their roosts (breeding sites and resting places) receive full protection under the legislation (see Appendix 5786/4 for detailed provisions). If proposed development work is likely to result in an offence a licence may need to be obtained from Natural England which would be subject to appropriate measures to safeguard bats. Given all bats are protected species, they are considered to represent important ecological features. A number of bat species are also considered S41 Priority Species.

5.3.2 **Background Records.** No specific records of bats from within or adjacent to the site were returned from the desktop study. Information received from the LRC returned only two records of Soprano Pipistrelle *Pipistrellus pygmaeus*, both of which were located 230m north-east of the site in 2008. Results submitted to inform the Bloor Homes residential development proposals to the south of the site (Ref: 192025) confirmed the presence of common and widespread bat species within that application site.

5.3.3 Survey Results

Roosting

Trees

5.3.4 The on-site pockets of woodland comprise semi-mature trees, of which a number were assessed as having bat roosting potential during the tree inspection survey, based on the presence of potential roost features, such as cavities, rot holes, etc.

Dusk and Dawn Surveys

Activity surveys (foraging /commuting)

- 5.3.5 The hedgerows, woodland and areas of dense scrub within the site offer potential opportunities for foraging bats as they are likely to support a reasonable biomass of invertebrate prey. In addition, these habitats form linear corridors that could act as navigational aids for commuting bats and provide connectivity to similar off-site habitats in the surrounding area, including the additional area of Inworth Grange Pits LWS to the west of the site. As such, bat activity surveys were undertaken at the site between April to August 2020.
- 5.3.6 **Manual walked transect surveys.** The detailed manual walked transect survey results are included at Appendix 5786/6, illustrated on Plan 5786/ECO4, and are summarised below.
- 5.3.7 As detailed at Appendix 5786/6, during the dusk and dawn surveys undertaken during 2020, Common Pipistrelle *Pipistrellus pipistrellus* was the most commonly recorded species, accounting for approximately 58% (n=287) of all bat registrations across all survey visits. The next most commonly recorded species was Soprano Pipistrelle, which accounted for approximately 32% (n=159) of all registrations across all months. The remainder of the registrations were attributed to *Pipistrellus* sp., big bat species *Nyctalus* / *Eptesicus* sp., *Myotis* sp., and Long-eared Bat *Plecotus* sp. (likely Brown Long-eared Bat).
- 5.3.8 Activity within the site peaked on the survey undertaken on 16th July 2020, with a total of 142 registrations recorded, approximately 73% of which were Common Pipistrelle. Nevertheless, bat activity across the majority of the transect was recorded to be low - moderate, with increased bat activity recorded at the woodland edge of W1 between listening points 8 and 9, and in the southern grassland field and at the woodland edge of W2 between listening points 5 and 6.
- 5.3.9 **Remote Detector Surveys.** A total of ten bat species (or species groups) were recorded over the course of all the remote detector surveys, namely Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle *Pipistrellus nathusii*, *Pipistrellus* sp., Noctule *Nyctalus noctula*, Serotine *Eptesicus serotinus*, unidentified big bat, *Myotis* sp., Barbastelle *Barbastella barbastellus* and Long-eared bat *Plecotus* sp.
- 5.3.10 The detailed remote detector survey results are included at Appendix 5786/7 and illustrated on Plan 5786/ECO5. A discussion of activity levels for each remote detector location is set out below.

Remote Detector Location SD1

- 5.3.11 In general, relatively low levels of bat activity were recorded at location SD1, with a total of 2,360 registrations across all five months. The majority of these registrations were attributed to Soprano Pipistrelle, accounting for 49% (n=1,147) of all registrations, with the next most frequently recorded species being Common Pipistrelle (n=407) and big bat species (n=398), accounting for approximately 17% of all registrations each. The less frequently recorded species included Nathusius' Pipistrelle with a total of 7 registrations across all five months, Serotine with a total of 2 registrations across all five months, and Barbastelle with a single registration across all five months.
- 5.3.12 Activity peaked in May, where an average of 9.90 Soprano Pipistrelle passes were recorded per hour and 4.21 unidentified big bat species passes per hour. In contrast, in August the total average number of bat registrations per hour was 0.40.

Remote Detector Location SD2

5.3.13 Compared to location SD1, lower levels of bat activity were recorded at location SD2, with a total of 687 registrations across all months. The majority of these registrations were attributed to unidentified big bat species, accounting for approximately 36% (n=249) of all registrations, with the next most frequently recorded species being Common Pipistrelle accounting for approximately 30% of all registrations. The least frequently recorded species at this location was Serotine, with only a single registration across all five months.

5.3.14 Activity peaked in May, where an average of 2.80 unidentified big bat species passes were recorded per hour. In contrast, in June the total average number of bat registrations per hour was 0.15 and no bat passes were recorded in April.

5.3.15 **Evaluation**

Roosting

5.3.16 Several trees within the pockets of woodland are suitable for roosting bats. However, the woodlands are to be fully retained (and enhanced) under the proposals, therefore no impacts on roosting bats are anticipated. On the contrary, the proposals will deliver a net gain for bats in terms of roosting opportunities (see Chapter 6).

Foraging / Commuting

5.3.17 As noted above, the hedgerows, woodland and scrub within the site offer foraging / commuting habitat for bats and indeed foraging and commuting bats were recorded during the activity surveys, including relatively frequent passes from Soprano Pipistrelle, Common Pipistrelle and big bat species, and infrequent passes from other species including *Myotis* species and Long-eared species. This combination of habitat types occurs relatively frequently in the surrounding area and taking this into account, together with the relatively low levels of activity and range of species recorded during the survey work, the site is considered to be of no more than local level value to bats.

5.3.18 Areas at the west of the site adjacent to woodland W1 and at the south-west of the site adjacent to woodland W2, where the highest levels of bat activity were recorded, will be retained and enhanced under the proposals. Areas where low activity levels were recorded within the site, largely being the boundary hedgerows and dense scrub, will be retained, with the exception of some small losses to allow access to the site. The dense scrub at the centre of the site, where low levels of bat activity was recorded, will be removed under the proposals. New tree, hedgerow and shrub planting, and an ecologically enhanced area at the south-west of the site, will be integrated into the proposed layout to improve connectivity and increase the foraging potential of the site for bats. Accordingly, subject to the implementation of the recommendations outlined at Chapter 6 below, along with other ecological enhancements, it is considered that the conservation status of local bat populations will be fully safeguarded under the scheme.

5.4 **Badger**

5.4.1 **Legislation.** Badger receive legislative protection under the Protection of Badgers Act 1992 (see Appendix 5786/4 for detailed provisions), and as such should be assessed as an important ecological feature. The legislation aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is in fact common over most of Britain. It is the duty of planning authorities to consider the conservation and welfare impacts of development upon Badger and issue permissions accordingly.

5.4.2 Licences can be obtained from Natural England for development activities that would otherwise be unlawful under the legislation. Guidance on the types of activity that should be licensed is laid out in the relevant best practice guidance.^{25, 26}

5.4.3 **Background Records.** Information from the LRC did not return any records for Badger within the surrounding area.

5.4.4 **Survey Results and Evaluation.** No evidence of any Badger setts or Badger foraging / commuting behaviour was recorded within the site during the specific Badger survey, having paid particular attention to the hedgerows, scrub and the woodland. As such, it is unlikely that Badger rely on the site. Nonetheless, the site is located within and adjacent to rural / agricultural habitats such that it is likely Badger are present within the surrounding landscape and, as such, precautionary measures are outlined in Chapter 6, to ensure that Badgers are fully safeguarded should they enter the site during construction.

5.5 Dormouse

5.5.1 **Legislation.** Dormouse is fully protected under the Wildlife and Countryside Act 1981 (as amended) and is a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended). Such legislation affords protection to individuals of the species and their breeding sites and places of rest (see Appendix 5786/4 for detailed provisions). Dormouse is also a S41 Priority Species. On this basis, Dormouse is considered to form an important ecological feature.

5.5.2 **Background Records.** No specific records of Dormouse were returned from the desktop study from within or immediately adjacent to the study area. A large number of records of Dormouse were returned from the LRC, the most recent being located approximately 1km south-west of the site in 2009. Results submitted to inform residential development proposals to the south of the site (Ref: 192025) established that Dormouse are not present in habitats adjoining the site.

5.5.3 **Survey Results and Evaluation.** The site provides opportunities for Dormouse, particularly in the form of areas of woodland and hedgerows. Areas of dense scrub within the site are considered to provide sub-optimal Dormouse habitat and are not connected to high-quality habitat for this species. The majority of the site, however, is dominated by rough grassland with developing scrub which is considered to be unsuitable for Dormouse. Specific Dormouse presence / absence survey work was undertaken in 2020 (see Plan 5786/ECO6), the results of which did not record any evidence of Dormouse within the site. As such, Dormouse are considered likely to be absent from the site, and this species is not considered further.

5.6 Other Mammals

5.6.1 **Legislation.** Water Vole is fully protected under the Wildlife and Countryside Act 1981 (as amended). Water Vole is also a S41 Priority Species. As such, this species is considered to represent an important ecological feature. The legislation affords protection to individuals of the species and their breeding sites and places of shelter (see Appendix 5786/4 for detailed provisions). There is no provision under the Act for licensing what would otherwise be offences for the purpose of development. Such activities must be covered by the defence in the Act that permits otherwise illegal actions if they are the incidental result of a lawful operation and could not reasonably be avoided.

²⁵ English Nature (2002) 'Badgers and Development'

²⁶ Natural England (2011) 'Badgers and Development: A Guide to Best Practice and Licensing', Interim Guidance Document

- 5.6.2 If, despite all reasonable efforts, properly authorised development will adversely affect Water Vole and there are no alternative habitats nearby, Natural England may issue a licence to trap and translocate Water Vole for the purpose of conservation. To issue such a licence, Natural England would need to be assured there is no reasonable alternative to the development and that there are no other practical solutions that would allow Water Vole to be retained at the same location. NE would also require assurance that the actions would make a positive contribution to Water Vole conservation.
- 5.6.3 Otter is fully protected under the Wildlife and Countryside Act 1981 (as amended) and is a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended). Such legislation affords protection to individuals of the species and their breeding sites and places of rest (see Appendix 5786/2 for detailed provisions). Otter is also a S41 Priority Species. On this basis, Otter is considered to represent an important ecological feature.
- 5.6.4 A number of other UK mammal species do not receive direct legislative protection relevant to development activities but may receive protection against acts of cruelty (e.g. under the Wild Mammals (Protection) Act 1996). In addition, a number of these mammal species are S41 Priority Species and should be assessed as important ecological features.
- 5.6.5 **Background Records.** No records for Otter or Water Vole were returned within close proximity to the site. A number of records of Hedgehog *Erinaceus europaeus* (Priority Species) were returned from the LRC, several of which were from within the site, dated 2018.
- 5.6.6 **Survey Results and Evaluation.** No evidence of any other protected, rare or notable mammal species was recorded within the site. Other mammal species likely to utilise the site, such as Fox *Vulpes vulpes*, remain common in both a local and national context, and as mentioned above do not receive specific legislative protection in a development context. As such, these species are not a material planning consideration and the loss of potential opportunities for these species to the proposals is of negligible significance.
- 5.6.7 The desktop study returned background records of Hedgehog within the site and the surrounding area. Hedgehog is a Priority Species, albeit this species remains common and widespread in England. The site offers potential opportunities for this species, particularly in the form of areas of dense scrub, hedgerows and woodland. These areas are retained under the proposals and in any event, abundant similar opportunities are present within the local area and there is no evidence to suggest the proposals will significantly affect local populations of this species. However, it is recommended that precautionary safeguards are put in place to minimise the risk of harm to Hedgehog in the event this species is present, and that opportunities for this species are incorporated into the development proposals, as detailed in Chapter 6 below.

5.7 Amphibians

- 5.7.1 **Legislation.** All British amphibian species receive a degree of protection under the Wildlife and Countryside Act 1981 (as amended). Great Crested Newt is protected under the Act and is also classed as a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended). As such, both Great Crested Newt and habitats utilised by this species are afforded protection (see Appendix 5786/4 for detailed provisions). Great Crested Newt is also a S41 Priority Species, as are Common Toad *Bufo bufo*, Natterjack Toad *Epidalea calamita*, and Pool Frog *Pelophylax lessonae*. As such, these species should be assessed as important ecological features.

5.7.2 Background Records. No records of Great Crested Newt from within or adjacent to the site were returned from the LRC. A number of records of Smooth Newt *Lissotiron vulgaris* were returned, the closest of which was approximately 1km south-west of the site in 2006. A single record of Common Toad was returned, located 1.2km south-west of the site in 2009. Results submitted to inform residential development proposals to the south of the site (Ref: 192025) included surveys of ponds identified within 250m of the site. No evidence of Great Crested Newt presence was recorded within any of the ponds surveyed.

5.7.3 Survey Results. A total of fifteen offsite ponds have been identified within close proximity to the site. An initial appraisal of those ponds which were accessible at the time of the extended Phase 1 habitat survey, was made using the HSI system to identify potential suitability to support Great Crested Newt, see Table 5.5, below.

Table 5.5. HSI survey results.

Pond	Suitability Indices										HSI Score	Suitability
	SI 1 Location	SI 2 Pond Area	SI 3 Pond Drying	SI 4 Water Quality	SI 5 Shade	SI 6 Water Fowl	SI 7 Fish	SI 8 Ponds	SI 9 Terrestrial Habitat	SI 10 Macrophytes		
Offsite Ponds												
P1	1	0.6	0.9	0.67	0.8	0.67	0.01	1	1	0.3	0.47	Poor
P2	1	0.8	0.9	0.67	0.8	0.67	0.01	1	1	0.3	0.49	Poor
P3	1	0.3	0.1	0.33	1	1	1	1	1	0.3	0.56	Below Average
P4	1	0.8	0.9	0.67	0.8	0.67	0.01	1	1	0.3	0.49	Poor
P5	1	0.5	0.5	0.33	0.2	1	1	1	0.67	0.3	0.57	Below Average
P6	1	0.8	0.5	0.33	0.2	0.1	0.67	1	0.67	0.3	0.45	Poor
P7	1	0.8	0.1	0.3	0.2	0.01	0.67	1	1	0.3	0.32	Poor
P9	1	0.1	0.5	0.33	0.6	1	0.67	1	0.67	0.5	0.54	Below Average
P10	1	0.6	0.9	0.67	0.8	0.67	0.01	1	1	0.3	0.47	Poor
P11	1	0.2	0.1	0.3	0.2	0.01	0.67	1	1	0.3	0.27	Poor
P12	1	0.2	0.9	0.67	0.2	0.67	0.67	1	1	0.3	0.59	Below Average
P13	1	0.8	0.9	0.67	0.8	0.67	0.01	1	1	0.3	0.40	Poor
P14	1	0.5	0.9	0.67	1	0.67	0.01	1	1	0.3	0.48	Poor
P15	Dry											

5.7.4 In summary, of the fourteen ponds confirmed to hold water eight were recorded to provide 'Poor' suitability, with four recorded to provide 'Below Average' suitability. Due to the proximity of these ponds to the site and the potentially suitable terrestrial habitat within the site, an eDNA survey of ponds P1-P14 was attempted on the 27th May 2020. During this survey, ponds P4, P5, P7, and P11 were found to be dry and as such no eDNA survey was able to be undertaken and it can reasonably be assumed that Great Crested Newt are absent. The results of the remaining ponds' eDNA surveys did not identify the presence of Great Crested Newt DNA within the water samples and as such, GCN are considered to be absent.

5.7.5 Evaluation and Assessment of Likely Effects. Given that the results submitted to inform residential development proposals to the south of the site (Ref: 192025) found no Great Crested Newts present in 2019, and the generally low suitability of these waterbodies identified during the HSI assessment, with five ponds found to be dry during the eDNA survey and all remaining ponds within 250m of the site returning a negative eDNA result, the risk of GCN presence within the footprint of the proposals is considered to be negligible. As such, it is considered unlikely that, should Great Crested Newts be present in the wider surroundings they would disperse to the terrestrial habitats within the site. Other amphibian species such as Common Frog or Common Toad do make use of the site, with both species identified during the reptile presence / absence survey work, however it is considered that the habitats are unlikely to be of particular importance in a local context with abundant similar terrestrial opportunities present within the local area and no evidence to suggest the proposals will significantly affect local populations of these species. As such, neither Great Crested Newt nor any other amphibian species represent a constraint to the proposals.

5.8 Reptiles

5.8.1 Legislation. All six species of British reptile are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), which protects individuals against intentional killing or injury. Sand Lizard *Lacerta agilis* and Smooth Snake *Coronella austriaca* receive additional protection under the Conservation of Habitats and Species Regulations 2017 (as amended); refer to Appendix 5786/4 for detailed provisions. All six reptile species are also S41 Priority Species. As such, all reptile species should be assessed as important ecological features.

5.8.2 Background Records. Information returned from the LRC returned several records of Grass Snake *Natrix natrix*, the most recent being 1.2km south of the site in 2018. Few records of Common Lizard were returned, the most recent being 1.2km south of the site in 2018.

5.8.3 Survey Results. Specific survey work for reptiles was undertaken at the site, the results of which are summarised in Table 5.6 below and illustrated on Plan 5786/7.

Table 5.6. Reptile survey results summary.

Visit	Date	Common Lizard		Slow Worm		Grass Snake		Other Species
		Adult	Juv.	Adult	Juv.	Adult	Juv.	
1	08/04/2020	1	0	0	0	0	0	Pygmy Shrew, Field Vole
2	15/04/2020	0	0	0	0	0	0	Common Toad, Pygmy Shrew, Field Vole
3	21/04/2020	0	0	0	0	0	0	Common Toad, Field Vole
4	28/04/2020	0	0	0	0	0	0	Common Toad, Pygmy Shrew, Field Vole
5	04/05/2020	3	0	0	0	0	0	Common Toad, Common Frog, Pygmy Shrew
6	12/05/2020	3	1	0	0	0	0	Common Frog, Field Vole
7	19/05/2020	4	0	0	0	0	0	Common Frog
Peak Count		4		0		0		

5.8.4 Evaluation and Assessment of Likely Effects. A peak count of four Common Lizard was recorded during the survey work at the site, with the majority of animals recorded at the boundaries of the rough grassland and at the south-western corner of the site (transects G, H, L, N, O, R and J – see Plan 5786/ECO8). The area of suitable reptile habitat at the site measures 10.9ha and therefore the peak count equates to a population of 0.37 Common Lizard per hectare, which would be classified as a low population under the standard

guidance²⁷. As such, it is considered that the population of reptiles supported by the site is of importance at the local level only.

- 5.8.5 The majority of Common Lizards were recorded within areas of suitable habitat which are outside of the development footprint, which will therefore be retained under the proposals. However, a small number of Common Lizards were identified within the proposed development footprint and as such, a number of mitigation measures in respect of reptiles are proposed in order to safeguard any reptiles that may be present within the site at the time of the development works, as detailed in Chapter 6 below.

5.9 Birds

- 5.9.1 **Legislation.** All wild birds and their nests receive protection under Section 1 of the Wildlife and Countryside Act 1981 (as amended) in respect of killing and injury, and their nests, whilst being built or in use, cannot be taken, damaged or destroyed. Species included on Schedule 1 of the Act receive greater protection and are subject to special penalties (see Appendix 5786/4 for detailed provisions).

- 5.9.2 **Conservation Status.** The conservation importance of British bird species is categorised based on a number of criteria including the level of threat to a species' population status²⁸. Species are listed as Green, Amber or Red. Red Listed species are considered to be of the highest conservation concern being either globally threatened and or experiencing a high/rapid level of population decline (>50% over the past 25 years). A number of birds are also S41 Priority Species. Red and Amber listed species and priority species should be assessed as important ecological features.

- 5.9.3 **Background Records.** Information from the data search included records for several bird species in the vicinity of the site, including House Sparrow *Passer domesticus*, Lapwing *Vanellus vanellus*, Cuckoo *Cuculus canorus*, Reed Bunting *Emberiza schoeniclus*, Turtle Dove *Streptopelia turtur*, Yellowhammer *Emberiza citrinella*, Spotted Flycatcher *Muscicapa striata*, Ring Ouzel *Turdus torquatus* and Bittern *Botaurus stellaris*. None of the records originate from within the site itself.

- 5.9.4 **Survey Results.** The site offers a range of opportunities for bird species, particularly in the form of hedgerows, woodland, dense scrub and rough grassland with developing scrub, which offer foraging areas and potential nesting opportunities for a range of bird species.

- 5.9.5 A summary of observations for each species during the breeding bird survey work undertaken to date is included in Table 5.7 below, whilst the distribution of each species is shown on Plan 5786/ECO9.

Table 5.7. Breeding bird survey results summary.

Species (and British Trust for Ornithology species code)	RSPB listed	Est. no. pairs*	Notes
Canada goose (CG) <i>Branta canadensis</i>	Feral	0	Often flying over (from adjacent pits).
Greylag goose (GJ) <i>Anser anser</i>	Feral	0	Often flying over (from adjacent pits).
Mute swan (MS) <i>Cygnus olor</i>		0	On the adjacent pits.

²⁷ Herpetofauna Groups of Britain and Ireland (1998) 'Evaluating local mitigation/translocation programmes: Maintaining Best Practice and lawful standards'

²⁸ Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) 'Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man' British Birds 108, pp.708-746

Species (and British Trust for Ornithology species code)	RSPB listed	Est. no. pairs*	Notes
Mallard (MA) <i>Anas platyrhynchos</i>	Amber	0	Often flying over (from adjacent pits).
Tufted duck (TU) <i>Aythya fuligula</i>		0	On the adjacent pits.
Pheasant (PH) <i>Phasianus colchicus</i>	Feral	3	
Red-legged partridge (RL) <i>Alectoris rufa</i>	Feral	1	
Great crested grebe (GG) <i>Podiceps cristatus</i>		0	On the adjacent pits.
Coot (CO) <i>Fulica atra</i>		0	On the adjacent pits.
Moorhen (MH) <i>Gallinula chloropus</i>		0	On the adjacent pits.
Black-headed gull (BH) <i>C. ridibundus</i>	Amber	0	Recorded flying over.
Woodpigeon (WP) <i>Columba palumbus</i>		9	
Collared dove (CD) <i>Streptopelia decaocto</i>		0	Associated with adjacent housing.
Barn owl (BO) <i>Tyto alba</i>	Sch. 1	0	Hunting within the grassland.
Green woodpecker (G.) <i>Picus viridis</i>		1	
Great spotted woodpecker (GS) <i>Dendrocopos major</i>		1	
Kestrel (K.) <i>Falco tinnunculus</i>	Amber	0	Hunting over the grassland.
Magpie (MG) <i>Pica pica</i>		0	One present in June.
Jackdaw (JD) <i>Corvus monedula</i>		0	Recorded flying over.
Carrion crow (C.) <i>Corvus corone</i>		0-1	
Blue tit (BT) <i>Cyanistes caeruleus</i>		6	
Great tit (GT) <i>Parus major</i>		4	
Skylark (S.) <i>Alauda arvensis</i>	Red	1	
Long-tailed tit (LT) <i>Aegithalos caudatus</i>		1	
Chiffchaff (CC) <i>Phylloscopus collybita</i>		3	
Willow warbler (WW) <i>P. trochilus</i>	Amber	0	A territory on the adjacent pits.
Blackcap (BC) <i>Sylvia atricapilla</i>		2-3	
Lesser whitethroat (LW) <i>Sylvia curruca</i>		0-1	
Whitethroat (WH) <i>Sylvia communis</i>		2	
Reed warbler (RW) <i>Acrocephalus scirpeus</i>		0	A territory on the adjacent pits.
Wren (WR) <i>Troglodytes troglodytes</i>		6	
Blackbird (B.) <i>Turdus merula</i>		2	
Song thrush (ST) <i>Turdus philomelos</i>	Red	1	
Robin (R.) <i>Erithacus rubecula</i>		6	
Dunnock (D.) <i>Prunella modularis</i>	Amber	3-4	
House sparrow (HS) <i>Passer domesticus</i>	Red	0	Associated with adjacent housing.
Chaffinch (CH) <i>Fringilla coelebs</i>		1	
Greenfinch (GR) <i>Chloris chloris</i>		0	Noted in adjacent gardens.
Goldfinch (GO) <i>Carduelis carduelis</i>		0	Recorded flying over.
Bullfinch (BF) <i>Pyrrhula pyrrhula</i>	Amber	0-2	
Reed bunting (RB) <i>Emberiza schoeniclus</i>	Red	1	

* A "0" indicates the species was recorded, but not breeding

5.9.6 In addition to the breeding bird survey results, several species of bird were observed within the site during the Phase 1 survey including: Magpie *Pica pica*, Carrion Crow *Corvus corone*, Mallard *Anas platyrhynchos*, Dunnock *Prunella modularis*, Greylag *Anser anser*, Robin *Erithacus Rubecula*, Wren *Troglodytes troglodytes*, Blue Tit *Cyanistes caeruleus* and Great Tit *Parus major*.

5.9.7 A single Barn Owl was observed foraging largely within the rough grassland and developing scrub during the Breeding Bird Survey, and during subsequent Phase 2 faunal surveys at the site. No nesting opportunities are currently available to Barn Owl within the site.

5.9.8 **Evaluation.** The majority of the birds recorded at the site are not listed as having any special conservation status, although Barn Owl is protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), and Skylark, Song Thrush, House Sparrow, and Reed Bunting were also recorded at the site and are included on the Red list, as a result of declines in UK breeding populations, and are also Priority Species. However, the types of habitat present within the site are relatively common in the surrounding area and there is no evidence to suggest the site is of elevated value at a local level for these species. The proposals will result in the loss of small sections of hedgerow to facilitate site access and this could potentially affect any nesting or breeding birds that may be present at the time of works. A proportion of the rough grassland and developing scrub will also be lost under the proposals, albeit it is considered that a significant area, in the context of the site, will be retained and subject to enhancement, and new nesting opportunities for Barn Owl and other birds will be created, as described below in Chapter 6. A number of safeguards in respect of nesting and breeding birds are proposed, also described in Chapter 6 below.

5.10 Invertebrates

5.10.1 **Legislation.** A number of invertebrate species are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). In addition, Large Blue Butterfly *Maculinea arion*, Fisher's Estuarine Moth *Gortyna borellii lunata* and Lesser Whirlpool Ram's-horn Snail *Anisus vorticulus* receive protection under the Conservation of Habitats and Species Regulations 2017 (as amended); refer to Appendix 5786/4 for detailed provisions. A number of invertebrates are also S41 Priority Species. Where such species are present, they should be assessed as important ecological features.

5.10.2 **Background Records.** Information returned from the LRC include a large number of records for Small Heath, several of which were located within the site as recent as 2015. Three records of Cinnabar *Tyria jacobaeae* were also returned from the LRC, the closes being 150m South-west of the site in 2011.

5.10.3 **Survey Results and Evaluation.** No evidence for the presence of any protected, rare or notable invertebrate species was recorded within the site. At the time of survey, the site was dominated by rough grassland and developing scrub, with some variable vegetation structure and frequent patches of tussocks combined with short turf, however this is likely to support only a limited diversity of invertebrates. The site has areas of scrub but otherwise contains relatively few micro-habitats that would typically indicate elevated potential for invertebrates²⁹, such as a variable topography with areas of vertical exposed soil, areas of species-rich semi-natural vegetation; free-draining light soils; walls with friable mortar or fibrous dung. The LWS designation citation does not identify the presence of an important invertebrate assemblage, albeit approximately half of the site will be retained and subject to positive ecological management, such that invertebrates are likely to benefit from the proposals. Accordingly, given the habitat composition of the site and lack of adjacent sites designated for significant invertebrate interest, it is considered unlikely that the proposals will result in significant harm to any protected, rare or notable invertebrate populations.

²⁹ Natural England (2010) 'Higher Level Stewardship – Farm Environment Plan (FEP) Manual', 3rd Edition

5.11 Summary

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

Table 5.7. Evaluation summary of fauna forming important ecological features.

Species / Group	Supported by or associated with the site	Level of Importance
Bats – Roosting	Potential habitat in the form of trees	Local (if present)
Bats – Foraging / Commuting	Confirmed presence on site	Local
Dormouse	Likely absent	-
Great Crested Newt	Likely absent	-
Reptiles	Confirmed presence on site	Local
Birds	Confirmed presence on site	Local

5.11.2 Other fauna supported by the site include non-priority species of mammals, amphibians and invertebrates. However, these species do not form important ecological features.

6 Mitigation Measures and Biodiversity Net Gains

6.1 Mitigation

6.1.1 Based on the habitats, ecological features and associated fauna identified within / adjacent to the site, it is proposed that the following mitigation measures (**MM1 – 9**) are implemented under the proposals. Further, detailed mitigation strategies or method statements can be secured via suitably-worded planning conditions, as recommended by relevant best practice guidance (BS 42020:2019).

Hedgerows and Trees

6.1.2 **MM1 – Hedgerow and Tree Protection.** All hedgerows and trees to be retained within the proposed development shall be protected during construction in line with standard arboriculturalist best practice (BS5837:2012) or as otherwise directed by a suitably competent arboriculturalist. This will involve the use of protective fencing or other methods appropriate to safeguard the root protection areas of retained trees / hedgerows.

Grassland Plants

6.1.3 **MM2 – Notable Plant Translocation.** In order to safeguard notable plant species, such as Green-winged Orchid, a representative proportion of turfs (at least 1m²) containing orchid populations will be translocated from the development footprint to retained areas of the site. This work will take place ideally during autumn / early winter when plants are dormant (or alternatively at other times of year with increased aftercare) and will be supervised by a suitably qualified and experienced ecologist.

6.1.4 The receptor area where the turfs will be placed will be described on an interpretation board which will be installed to explain the botanical interest of the area to local residents. The grassland will be managed by way of mowing or strimming with the cuttings subsequently removed. The sward should be cut to a short height with regular cuts in spring through to early May followed by further cuts from mid to late July through to mid October.

Watercourses

6.1.5 **MM3 – Pollution Prevention.** In order to safeguard the stream and ditches within the site against any potential run-off or pollution events during construction, the following safeguards will be implemented:

- Storage areas for chemicals, fuels, etc. will be sited well away from the stream and wet ditch (minimum 10m), and stored on an impervious base within an oil-tight bund with no drainage outlet. Spill kits with sand, earth or commercial products approved for the stored materials shall be kept close to storage areas for use in case of spillages;
- Where possible, and with prior agreement of the sewage undertaker, silty water should be disposed of to the foul sewer or via another suitable form of disposal, e.g. tanker off-site;
- Water washing of vehicles, particularly those carrying fresh concrete and cement, mixing plant, etc. will be carried out in a contained area as far from the stream and wet ditch as practicable (minimum 10m), to avoid contamination; and
- Refuelling of plant will take place in a designated area, on an impermeable surface, away from the stream and wet ditch (minimum 10m).

- 6.1.6 Post-development, the drainage system for the development will ensure the stream and ditches are not subject to adverse changes in surface water run-off or quality. On the contrary, the removal of agricultural run-off from the land will likely be beneficial in terms of water quality.

Bats

- 6.1.7 **MM4 – Sensitive Lighting.** Light-spill onto retained and newly created habitat, in particular the retained hedgerows, woodland and scrub will be minimised in accordance with good practice guidance³⁰ to reduce potential impacts on light-sensitive bats (and other nocturnal fauna). This may be achieved through the implementation of a sensitively designed lighting strategy, with consideration given to the following key factors:

- **Light exclusion zones** – ideally no lighting should be used in areas likely to be used by bats. Light exclusion zones or ‘dark buffers’ may be used to provide interconnected areas free of artificial illumination to allow bats to move around the site;
- **Appropriate luminaire specifications** – consideration should be given to the type of luminaires used, in particular luminaries should lack UV elements and metal halide and fluorescent sources should be avoided in preference for LED luminaries. A warm white spectrum (ideally <2,700K) should be adopted to reduce the blue light component;
- **Light barriers / screening** – new planting (e.g. hedgerows and trees) or fences, walls and buildings can be strategically positioned to reduce light spill;
- **Spacing and height of lighting units** – increasing spacing between lighting units will minimise the area illuminated and allow bats to fly in the dark refuges between lights. Reducing the height of lighting will also help decrease the volume of illuminated space and give bats a chance to fly over lighting units (providing the light does not spill above the vertical plane). Low level lighting options should be considered for any parking areas and pedestrian / cycle routes, e.g. bollard lighting, handrail lighting or LED footpath lighting;
- **Light intensity** – light intensity (i.e. lux levels) should be kept as low as possible to reduce the overall amount and spread of illumination;
- **Directionality** – to avoid light spill lighting should be directed only to where it is needed. Particular attention should be paid to avoid the upward spread of light so as to minimise trespass and sky glow;
- **Dimming and part-night lighting** – lighting control management systems can be used, which involves switching off/dimming lights for periods during the night, for example when human activity is generally low (e.g. 12.30 – 5.30am). The use of such control systems may be particularly beneficial during the active bat season (April to October). Motion sensors can also be used to limit the time lighting is operational.

Badger

- 6.1.8 **MM5 – Badger Update Survey.** Given that no evidence of Badgers has been recorded within or adjacent to the site it is considered that Badgers do not currently pose a constraint to

³⁰ Bat Conservation Trust and Institute of Lighting Professionals (2018) ‘Guidance Note 08/18: Bats and artificial lighting in the UK’; Stone, E.L. (2013) ‘Bats and lighting: Overview of current evidence and mitigation guidance.’; ILP (2011) ‘Guidance notes for the reduction of obtrusive light’ Institution of Lighting Professionals, GN01:2011.

development. Nonetheless, Badgers are dynamic animals and levels of Badger activity can rapidly change at a site, with new setts being created at any time. It is therefore recommended that an update survey is carried out prior to commencement of site works in order to confirm the current status of Badgers at the site.

General Faunal Safeguards

6.1.9 **MM6 – Faunal Safeguards.** In order to safeguard Badger, Hedgehogs and other small mammals should they enter the site during construction works, the following measures will be implemented:

- A watching brief should be maintained for Badger, Hedgehog and other small mammals throughout any clearance works;
- Any piles of material already present on site, particularly vegetation/leaves, etc. and any areas of dense scrub or hedgerows, shall be dismantled/removed by hand and checked for Hedgehog prior to the use of any machinery/disposal;
- Any trenches left open overnight should be provided with a means of escape, e.g. gently graded ramp or a roughened plank, in order to allow animals to escape should they enter the trench. This is particularly important if the trench fills with water.
- Any material to be disposed of by burning, particularly waste from vegetation clearance and tree works, should not be left piled on site for more than 24 hours in order to minimise the risk of Hedgehogs occupying the pile. If this cannot be avoided, material should be stored within a container such as a skip to prevent animals from gaining access. Any material which has been stored on the ground overnight should be moved prior to burning to allow a thorough check for any animals which may have been occupying the pile;
- Any temporarily exposed open pipes or open drains should be blanked off at the end of each working day so as to prevent Badgers or Hedgehogs gaining access as may happen when contractors are off-site;
- In the event that an injured Hedgehog is found, the animal should be wrapped carefully in a towel, the British Hedgehog Preservation Society (BHPS) phoned (01584 890 801) and the Hedgehog taken to a local vet immediately;
- To maintain connectivity throughout the site for Hedgehog and to allow access to suitable foraging habitat contained within residential gardens, small holes (13cmx13cm) should be created within garden fences or under gates.

Reptiles

6.1.10 **MM7 – Destructive Search.** In order to minimise the risk of harm to reptiles, a destructive search is proposed. The destructive search will involve cutting the grassland within the development footprint to a short height (~15cm) so as to encourage reptiles to disperse to suitable areas of retained / nearby habitat, whilst also allowing for a fingertip search of the area. This exercise shall be carried out under the supervision of a competent ecologist during the active reptile season where practicable (generally March / April to September / October, depending on prevailing weather). Any potential refuge features, e.g. piles of rubble, heavy logs, brash piles, will be fingertip-searched by an ecologist prior to being carefully disassembled. Any reptiles encountered during the habitat manipulation exercise will be carefully rescued by the supervising ecologist and relocated to suitable nearby habitat.

Nesting Birds

- 6.1.11 **MM8 – Timing of Works.** To avoid a potential offence under the relevant legislation, no clearance of suitable vegetation should be undertaken during the bird-nesting season (1st March to 31st August inclusive). If this is not practicable, any potential nesting habitat to be removed should first be checked by a competent ecologist in order to determine the location of any active nests. Any active nests identified would then need to be cordoned off (minimum 5m buffer) and protected until the end of the nesting season or until the birds have fledged. These checking surveys would need to be carried out no more than three days in advance of vegetation clearance.

Invasive Species

- 6.1.12 **MM9 – Invasive Species Safeguards.** Japanese Knotweed, Three-cornered Garlic and Variegated Yellow Archangel, which are listed on Schedule 9 Part II of the Wildlife and Countryside Act 1981, were recorded within the site. It is an offence to cause to grow in the wild, any plant listed on the schedule. As such, all relevant precautions should be taken when carrying out actions that could potentially spread these plants. The government has set out guidance on what can be considered ‘causing to grow in the wild’ within a response to the Schedule 9 review which states:

“We would expect that where plants listed in Schedule 9 are grown in private gardens, amenity areas etc., reasonable measures will be taken to confine them to the cultivated area so as to prevent their spreading to the wider environment and beyond the landowner’s control. It is our view that any failure to do so, which in turn results in the plant spreading to the wild, could be considered as ‘causing to grow in the wild’ and as such would constitute an offence...Additionally, negligent or reckless behaviour such as inappropriate disposal of garden waste, where this results in Schedule 9 species becoming established in the wild would also constitute an offence.”

- 6.1.13 As such, it is recommended that appropriate safeguards be put in place to prevent the spread of the Schedule 9 species during the proposed development works. Such measures would likely involve herbicide application and / or excavation and removal of any material within the site itself (which should then be disposed of appropriately to prevent colonisation of off-site areas).

6.2 Biodiversity Net Gains

- 6.2.1 The National Planning Policy Framework (NPPF) encourages new developments to maximise the opportunities for biodiversity through incorporation of enhancement measures. The proposals present the opportunity to deliver ecological enhancements at the site for the benefit of local biodiversity, thereby making a positive contribution towards the broad objectives of national conservation priorities and the local Biodiversity Action Plan (BAP).
- 6.2.2 This is demonstrated through the Biodiversity Net Gain Assessment metric calculation submitted as part of the planning application, which demonstrates a 20% net gain in biodiversity as a result of the development proposals, which represents a clear net benefit of the scheme. The recommendations and enhancements provided to achieve this and other net gains are summarised below and are considered appropriate given the context of the site and the scale and nature of the proposals.

Habitat Creation and Management

- 6.2.3 **EE1 – New Planting.** It is recommended that where practicable, new planting within the site be comprised of native species of local provenance, including trees and shrubs appropriate to the local area. Suitable species for inclusion within the planting could include native trees such as Oak, Birch *Betula pendula* and Field Maple *Acer campestre*, whilst native shrub species of particular benefit would likely include fruit and nut bearing species which would provide additional food for wildlife, such as Blackthorn, Hawthorn, Crab Apple *Malus sylvestris*, Hazel and Elder. Where non-native species are proposed, these should include species of value to wildlife, such as varieties listed on the RHS' 'Plants for Pollinators' database, providing a nectar source for bees and other pollinating insects.
- 6.2.4 **EE2 – Grassland Management / Restoration.** It is proposed that the retained areas of rough grassland with developing scrub are subject to ecologically directed management, to remove the current threats to botanical diversity and elevate them to a favourable grassland condition. In addition, outside of retained areas of grassland, consideration should be given to the laying of wildflower turfs, within new amenity areas, comprising locally appropriate native species, to establish a greater continuity of wildflower grassland. This would ensure rapid establishment of these habitats and reduce the timeframe for delivering ecological benefit.
- 6.2.5 **EE3 – New Pond.** A new pond will be created as part of the proposals in conjunction with the surface water drainage proposals, which will be designed to be of value to wildlife and include elements such as sinuous margins (to create a variety of conditions and micro-climates which would encourage a broad range of invertebrates to colonise), gently sloping margins (which are favoured by amphibians) and conditions to allow abundant marginal and aquatic vegetation to develop. Creation of such habitat conditions will provide opportunities for a range of wildlife, including amphibians and aquatic invertebrates, while also helping to attenuate surface water run-off.

Bats

- 6.2.6 **EE4 - Bat Boxes.** A number of bat boxes will be incorporated within the proposed development. The provision of bat boxes will provide new roosting opportunities for bats in the area, such as Soprano Pipistrelle, a national Priority Species. So as to maximise their potential use, the bat boxes should ideally be situated on suitable retained trees, erected as high up as possible and sited in sheltered wind-free areas that are exposed to the sun for part of the day, facing a south-east, south or south-westerly direction. In addition, where

architectural design allows, a number of integrated bat boxes / roost features should be incorporated into a proportion of the new build. The precise number and locations of boxes / roost features should be determined by a competent ecologist, post-planning once the relevant final development design details have been approved.

Hedgehog

- 6.2.7 **EE5a – Hedgehog Nest Domes.** It is recommended that Hedgehog nest domes be installed within sheltered areas, such as the existing or newly created hedgerows to provide suitable nesting and hibernation sites for this species. The Hedgehog nest domes should be positioned out of direct sunlight, in areas of dense vegetation.
- 6.2.8 **EE5b – Garden Fence Cut-outs.** To maintain connectivity throughout the site for Hedgehog and to allow access to suitable foraging habitat contained within residential gardens, small holes (minimum 13cmx13cm) should be created within garden fences or under gates.

Birds

- 6.2.9 **EE6 - Bird Boxes.** Two Barn Owl boxes and a number of broad appeal standard bird nesting boxes are to be incorporated within the proposed development, thereby increasing nesting opportunities for birds at the site. Ideally, the bird boxes will have greater potential for use if sited on suitable, retained trees, situated as high up as possible. The precise number and locations of boxes should be determined by a competent ecologist, post-planning once the relevant final development design details have been approved.

Invertebrates

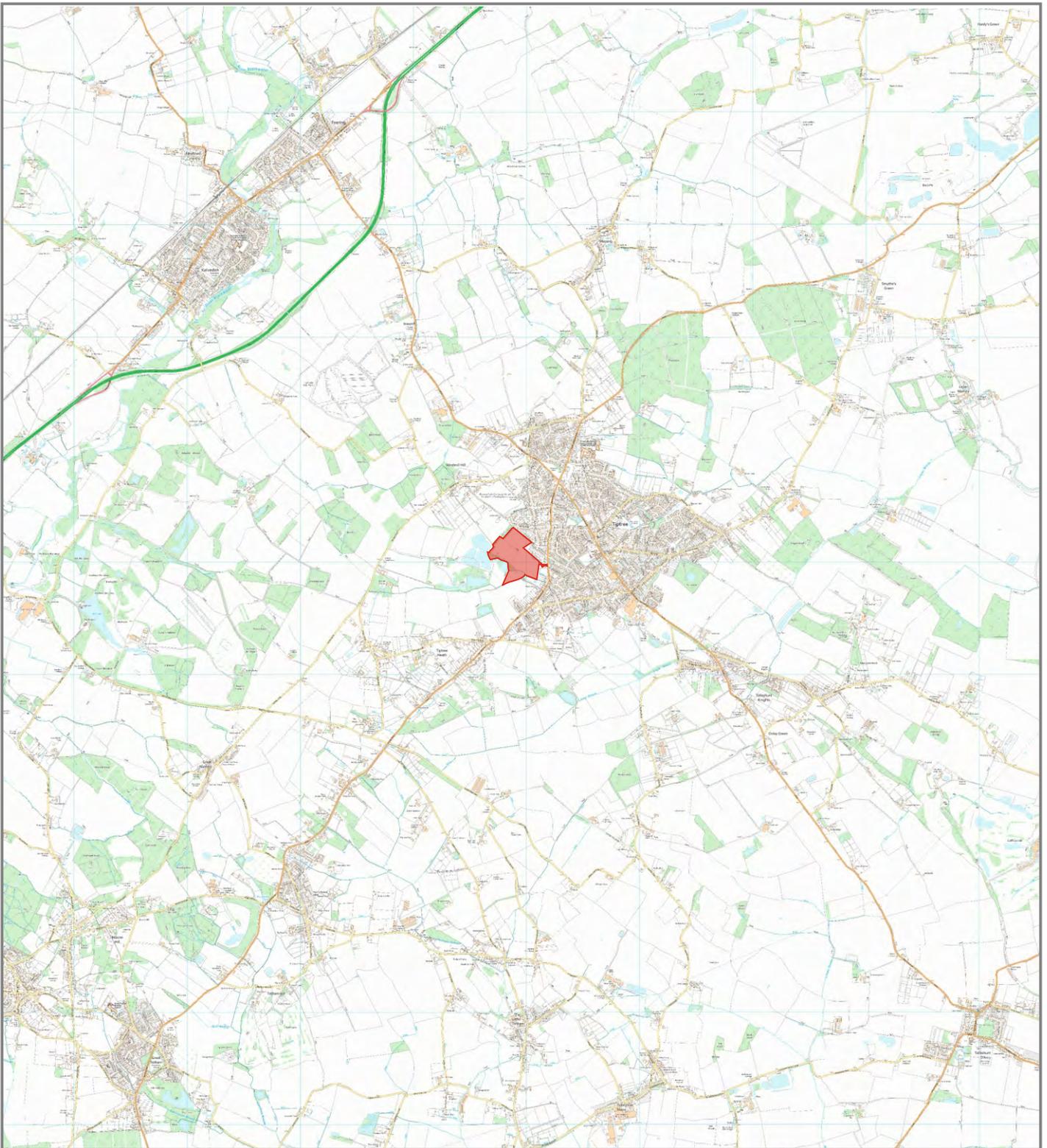
- 6.2.10 **EE7 – Habitat Piles.** A proportion of any deadwood arising from vegetation clearance works should be retained within the site in a number of wood piles located within areas of new planting, new wetland habitats or areas of wildflower grassland in order to provide potential habitat opportunities for invertebrate species, which in turn could provide a prey source for a range of other wildlife. In addition, the provision and management of new native landscape planting will likely provide additional opportunities for invertebrates at the site in the long term.
- 6.2.11 **EE8 – Nectar Source.** The wildflower mix will include various Bents *Agrostis* spp. and Hawkweeds (*Hieracium/Hypochoeris*), which will provide a larval food source and adult nectar source, respectively, for Wall butterfly (Priority Species).
- 6.2.12 **EE9 – Bee Bricks.** It is recommended that a number of bee bricks be incorporated within the proposed development thereby increasing nesting opportunities for declining populations of non-swarming solitary bee populations. Ideally, bee bricks should be located within suitable south-facing walls (where architectural design allows), located at least 1m off the ground. The bricks should be unobstructed by vegetation, though within close vicinity of nectar and pollen sources.

7 Conclusions

- 7.1 Aspect Ecology has carried out an Ecological Appraisal of the proposed development, based on the results of a desktop study, Phase 1 habitat survey and a number of detailed protected species surveys.
- 7.2 The site falls within the Zone of Influence of a number of European-level designations, with information to inform a Habitats Regulations Assessment set out within a separate shadow HRA, concluding with certainty that detrimental effects on European designations, both alone and in-combination with other plans and projects, will be mitigated, such that, taking into account the designations' conservation objectives, the proposals will have no adverse effects on the integrity of the European-level designations or their qualifying features.
- 7.3 The available information confirms no statutory nature conservation designations are present within the site; however, part of the non-statutory Inworth Grange Pits LWS falls within the site boundary, and as such will be reduced in size as a result of the development proposals. This will be compensated by the restoration and creation of new, high quality habitat within the site and positive ecological management of retained areas of the LWS as a direct result of the proposals. Subject to the implementation of mitigation measures, it is considered that this designation will be appropriately safeguarded under the proposals. All other statutory and non-statutory nature conservation designations are well separated from the site, such that they are considered unlikely to be adversely affected by the proposals.
- 7.4 The Phase 1 habitat survey and NVC survey have established that the site is dominated by habitats that are not of inherent ecological importance, notwithstanding the LWS designation, whilst the proposals have sought to retain those features identified to be of value as far as practicable. Where it has not been practicable to avoid loss of habitats, new habitat creation / restoration has been proposed to offset losses, in conjunction with the landscape proposals.
- 7.5 The habitats within the site support several protected species, including species protected under both national and European legislation. Accordingly, a number of mitigation measures have been proposed to minimise the risk of harm to protected species, with compensatory measures proposed, where appropriate, in order to maintain the conservation status of local populations. Revised ecological safeguarding / mitigation strategies would be proposed, where necessary, following completion of the remaining survey work.
- 7.6 In conclusion, the proposals have sought to minimise impacts and subject to the implementation of appropriate avoidance, mitigation and compensation measures, it is considered unlikely that the proposals will result in significant harm to biodiversity. On the contrary, the opportunity exists to provide a number of biodiversity net gains as part of the proposals.

Plan 5786/ECO1:

Site Location



Key:

 Site Location

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Land off Brook Meadows, Tiptree,
 Colchester

PROJECT

Site Location

TITLE

5786/ECO1

DRAWING
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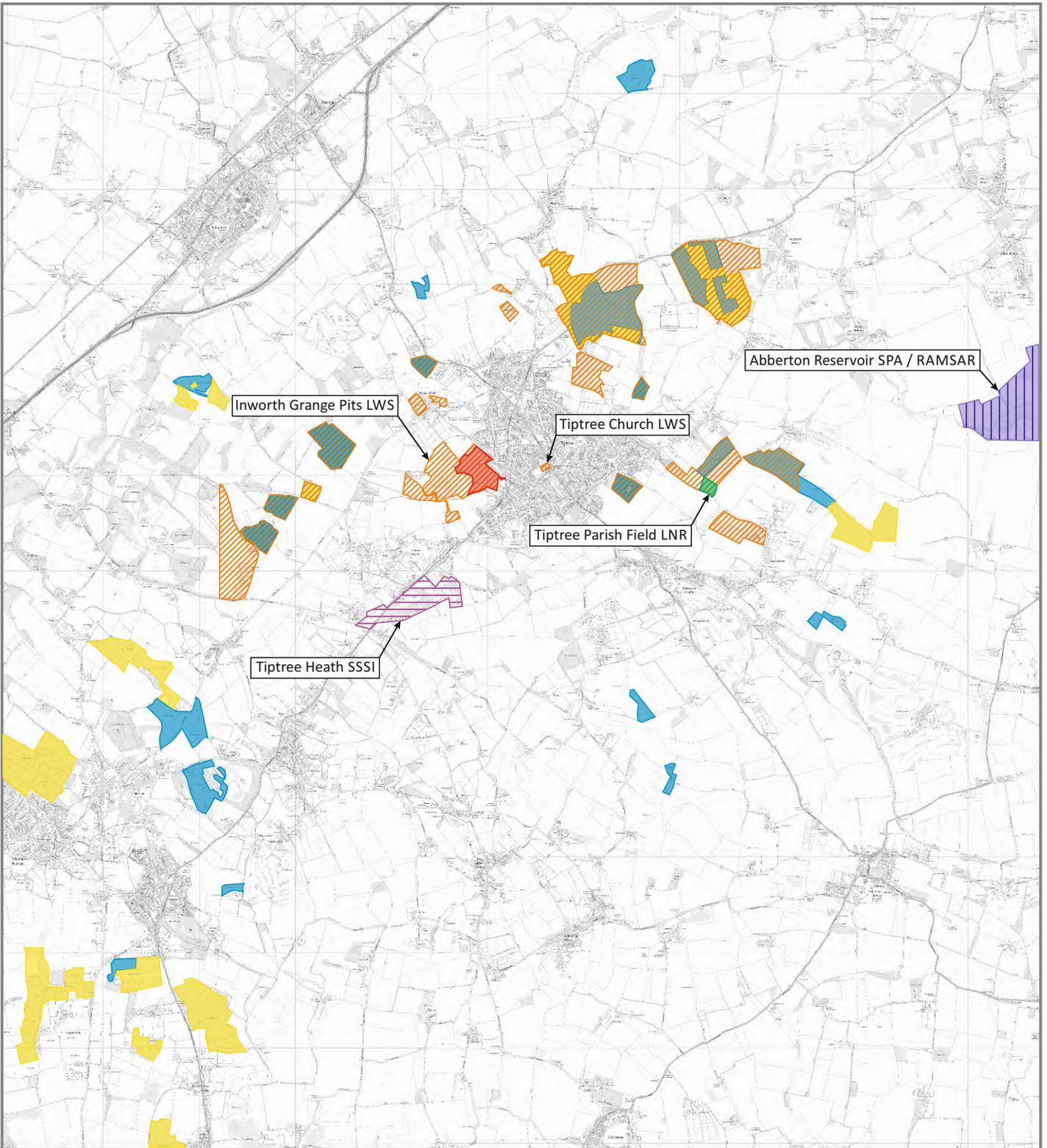
November 2020

DATE



Plan 5786/ECO2:

Ecological Designations



Key:

-  Site Location
-  RAMSAR
-  Special Protection Area (SPA)
-  Site of Special Scientific Interest (SSSI)
-  Local Nature Reserve (LNR)
-  Local Wildlife Site (LWS)
-  Ancient & Semi-Natural Woodland (ASW)
-  Ancient Replanted Woodland (ARW)

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Ecological Designations

5786/ECO2

November 2020

PROJECT
 TITLE
 DRAWING NO.
 REV.
 DATE



Plan 5786/ECO3:

Habitats and Ecological Features



- Key:
- Site Boundary
 - Rough Grassland with Scrub
 - Woodland
 - Dense Scrub
 - Scattered Scrub
 - Tall Ruderal
 - Wet Flush
 - Spoil
 - Hedgerow
 - Wet Ditch
 - Dry Ditch
 - Fence
 - Hardstanding
 - Tree Key
 - Japanese Knotweed



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Land off Brook Meadows, Tiptree,
 Colchester
 Habitats and Ecological Features

5786/ECO3



November 2020

PROJECT	
TITLE	
DRAWING NO.	
REV	C
DATE	

Plan 5786/ECO3a:

NVC Quadrat Locations



Key:

- Site Boundary
- ☆ Quadrats



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Land off Brook Meadows, Tiptree, Colchester	PROJECT
NVC Quadrat Locations	TITLE
5786/ECO3a	DRAWING NO.
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November 2020	DATE



Plan 5786/ECO4:

Manual Walked Activity Survey Results



- Key:**
- Site Boundary
 - Species Observed**
 - Common Pipistrelle
 - Soprano Pipistrelle
 - 'Big Bat' Species*
 - Transect Route**
 - Negligible Bat Activity (Bat Activity Index 0)
 - Low Bat Activity (Bat Activity Index 0.01 - 0.5)
 - Moderate Bat Activity (Bat Activity Index 0.51 - 1.0)
 - High Bat Activity (Bat Activity Index >1)
 - Listening Point**
 - Negligible Bat Activity (Bat Activity Index 0)
 - Low Bat Activity (Bat Activity Index 0.01 - 0.5)
 - Moderate Bat Activity (Bat Activity Index 0.51 - 1.0)
 - High Bat Activity (Bat Activity Index >1)

* 'Big Bat' species comprise Noctule, Leisler's Bat or Serotine



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Land off Brook Meadows, Tiptree, Colchester	PROJECT
Manual Walked Activity Survey Results	TITLE
5786/ECO4	DRAWING NO.
November 2020	DATE

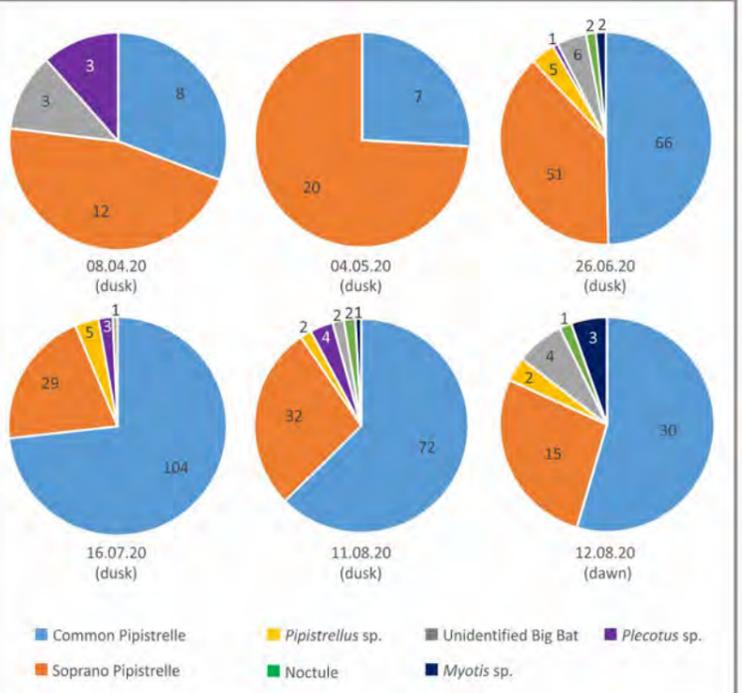
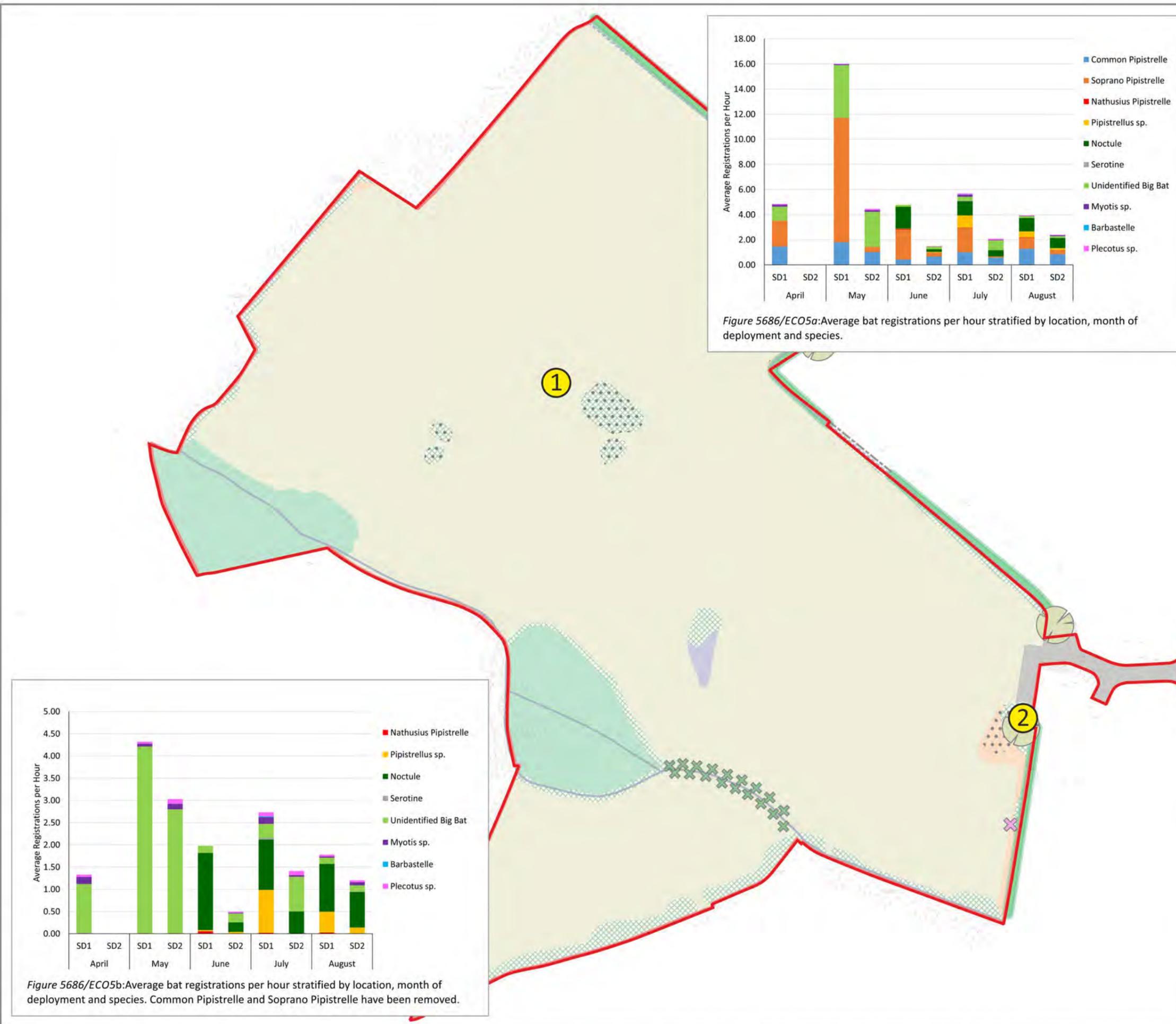


Figure 5786/ECO4: Number of bat registrations recorded per manual activity survey visit stratified by species.

Plan 5786/ECO5:

Automated Bat Activity Survey Results



Key:
 Site Boundary
 Automated Detector Location

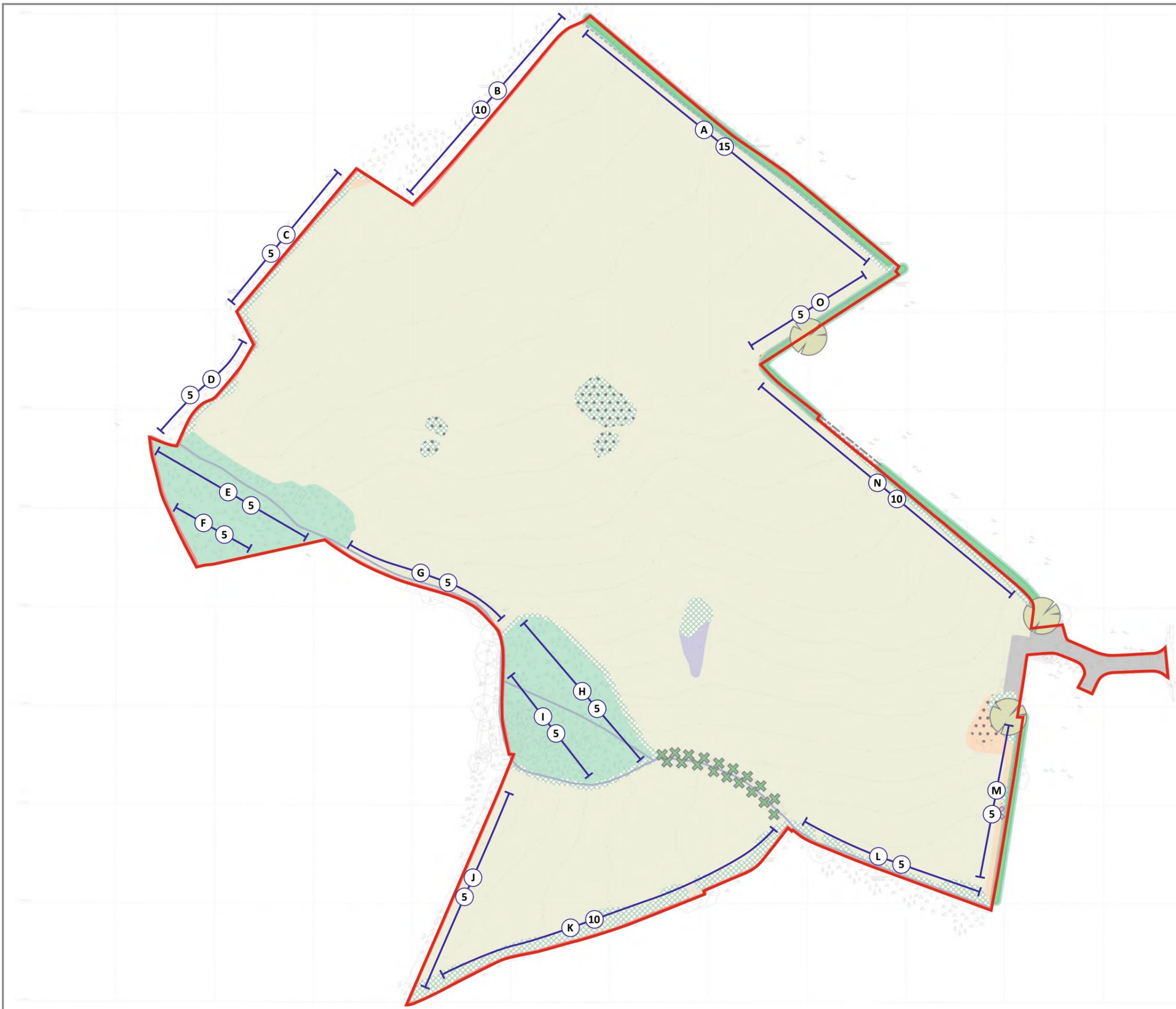
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Land off Brook Meadows, Tiptree, Colchester
 Automated Bat Activity Survey Results
 5786/ECO5
 November 2020

PROJECT
 TITLE
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 REV.
 DATE

Plan 5786/ECO6:

Dormouse Survey Results



Key:
 Site Boundary
 Dormouse Transect

*No Dormouse recorded



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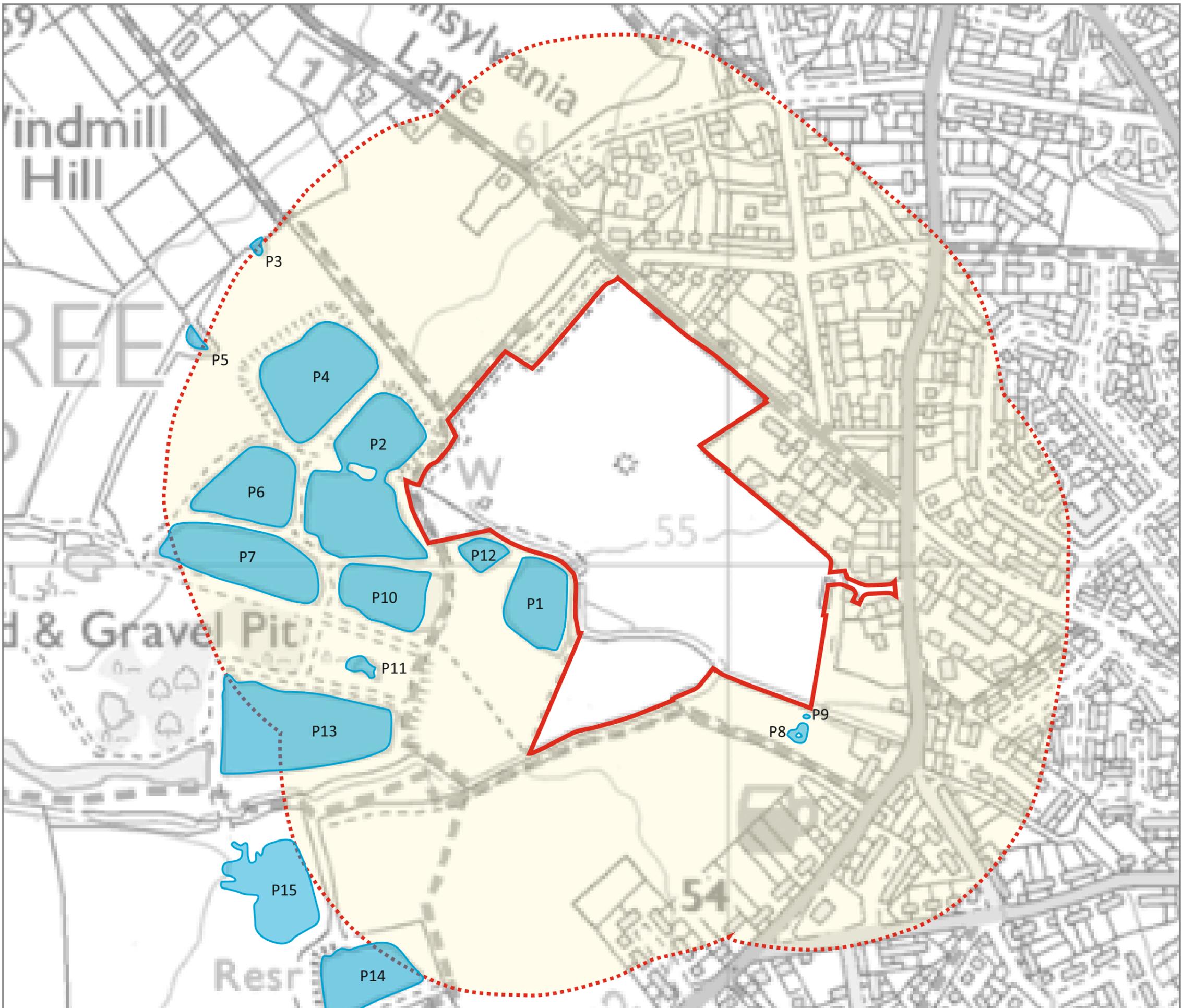
Land off Brook Meadows, Tiptree, Colchester
 Dormouse Survey

PROJECT	5786/ECO6
TITLE	Dormouse Survey
DRAWING NO.	B
REV.	November 2020
DATE	



Plan 5786/ECO7:

Pond Location Plan



- Key:
-  Site Boundary
 -  250m Site Buffer
 -  Pond within 250m of the Site

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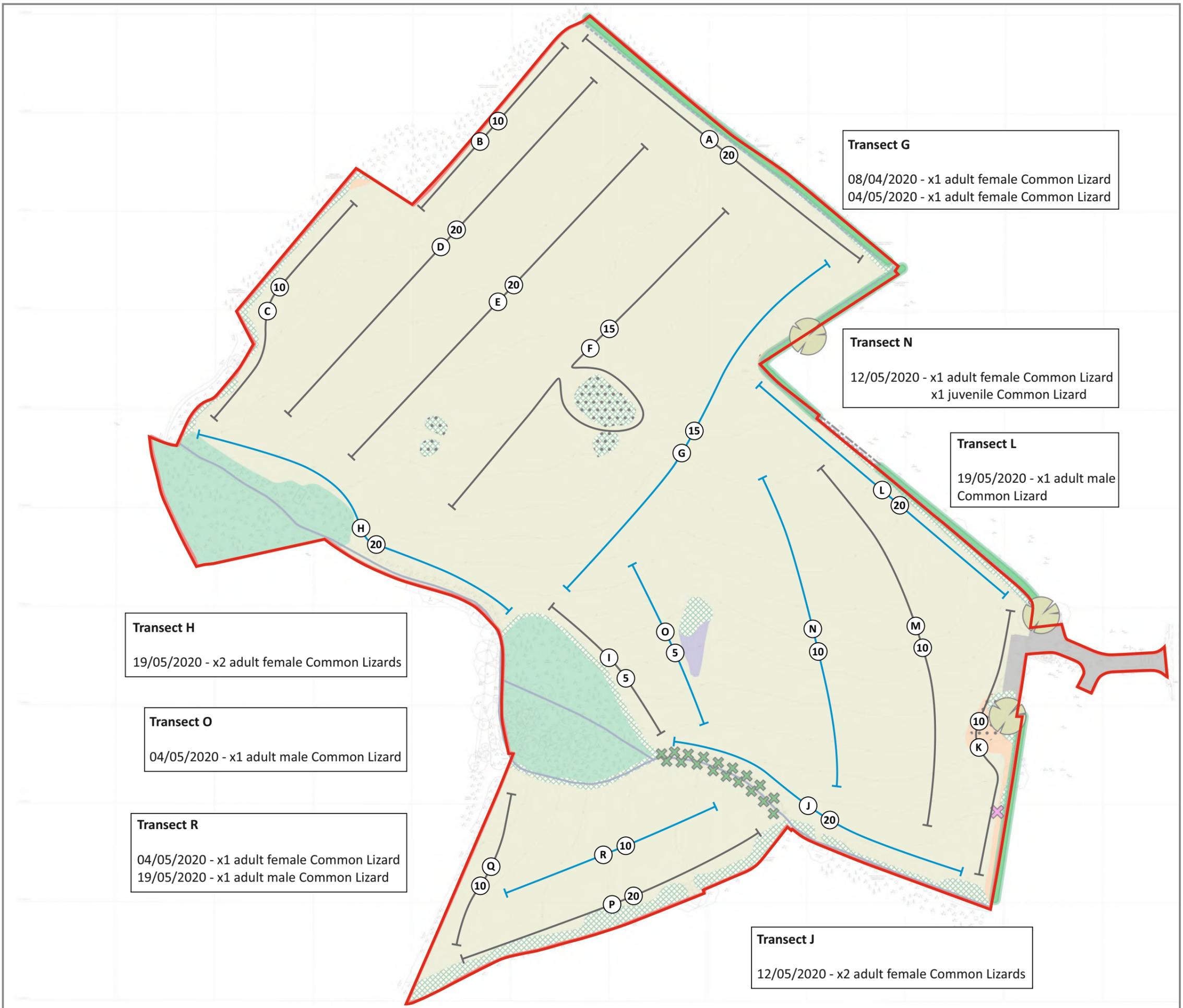
Land off Brook Meadows, Tiptree, Colchester	PROJECT
Pond Plan	TITLE
5786/ECO7	DRAWING NO.
B	REV.
November 2020	DATE



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Plan 5786/ECO8:

Reptile Survey Results



- Key:**
-  Site Boundary
 -  Reptile Transect
 -  Reptile Transect - Common Lizard Present

Transect G
 08/04/2020 - x1 adult female Common Lizard
 04/05/2020 - x1 adult female Common Lizard

Transect N
 12/05/2020 - x1 adult female Common Lizard
 x1 juvenile Common Lizard

Transect L
 19/05/2020 - x1 adult male Common Lizard

Transect H
 19/05/2020 - x2 adult female Common Lizards

Transect O
 04/05/2020 - x1 adult male Common Lizard

Transect R
 04/05/2020 - x1 adult female Common Lizard
 19/05/2020 - x1 adult male Common Lizard

Transect J
 12/05/2020 - x2 adult female Common Lizards



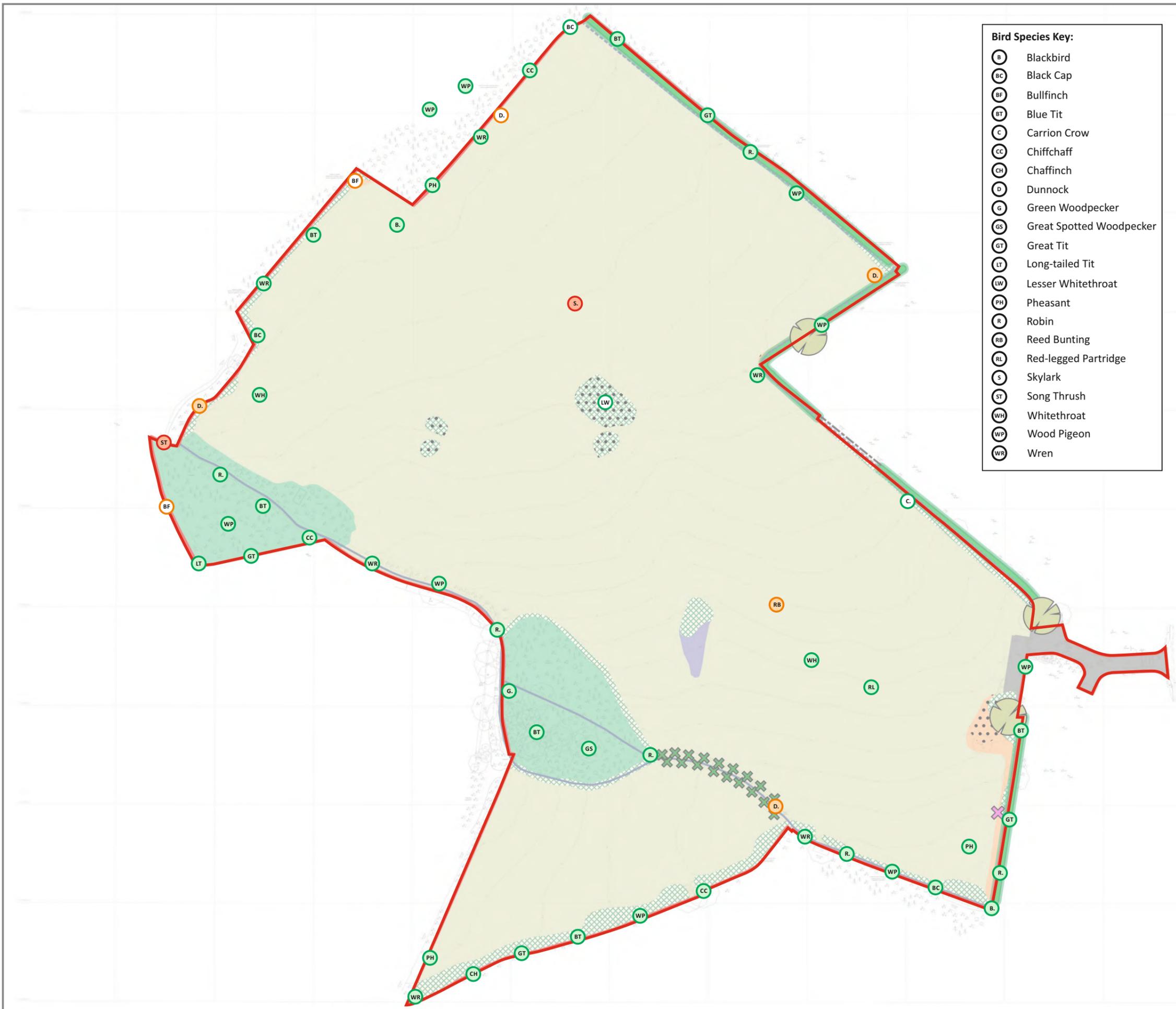
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Land off Brook Meadows, Tiptree, Colchester	PROJECT
Reptile Survey	TITLE
5786/ECO8	DRAWING NO.
November 2020	DATE



Plan 5786/ECO9:

Breeding Bird Survey Results



Bird Species Key:

B	Blackbird
BC	Black Cap
BF	Bullfinch
BT	Blue Tit
C	Carrion Crow
CC	Chiffchaff
CH	Chaffinch
D	Dunnock
G	Green Woodpecker
GS	Great Spotted Woodpecker
GT	Great Tit
LT	Long-tailed Tit
LW	Lesser Whitethroat
PH	Pheasant
R	Robin
RB	Reed Bunting
RL	Red-legged Partridge
S	Skylark
ST	Song Thrush
WH	Whitethroat
WP	Wood Pigeon
WR	Wren

Key:

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



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Land off Brook Meadows, Tiptree, Colchester	PROJECT
Breeding Bird Survey	TITLE
5786/ECO9	DRAWING NO.
B	REV.
November 2020	DATE



Appendix 5786/1:

Evaluation Methodology

Evaluation Methodology

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

Importance of Ecological Features

2. Ecological features within the site/study area have been evaluated in terms of whether they qualify as 'important ecological features'. In this regard, CIEEM guidance states that *"it is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable"*.
3. Various characteristics contribute to the importance of ecological features, including:

- Naturalness;
- Animal or plant species, sub-species or varieties that are rare or uncommon, either internationally, nationally or more locally, including those that may be seasonally transient;
- Ecosystems and their component parts, which provide the habitats required by important species, populations and/or assemblages;
- Endemic species or locally distinct sub-populations of a species;
- Habitat diversity;
- Habitat connectivity and/or synergistic associations;
- Habitats and species in decline;
- Rich assemblages of plants and animals;
- Large populations of species or concentrations of species considered uncommon or threatened in a wider context;
- Plant communities (and their associated animals) that are considered to be typical of valued natural/semi-natural vegetation types, including examples of naturally species-poor communities; and
- Species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.

4. As an objective starting point for identifying important ecological features, European, national and local governments have identified sites, habitats and species which form a key focus for biodiversity conservation in the UK, supported by policy and legislation. These are summarised by CIEEM guidance as follows:

Designated Sites

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

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

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

Biodiversity Lists

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

Red Listed, Rare, Legally Protected Species

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

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

Assigning Level of Importance

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

Designated Sites

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

Habitats

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

Species

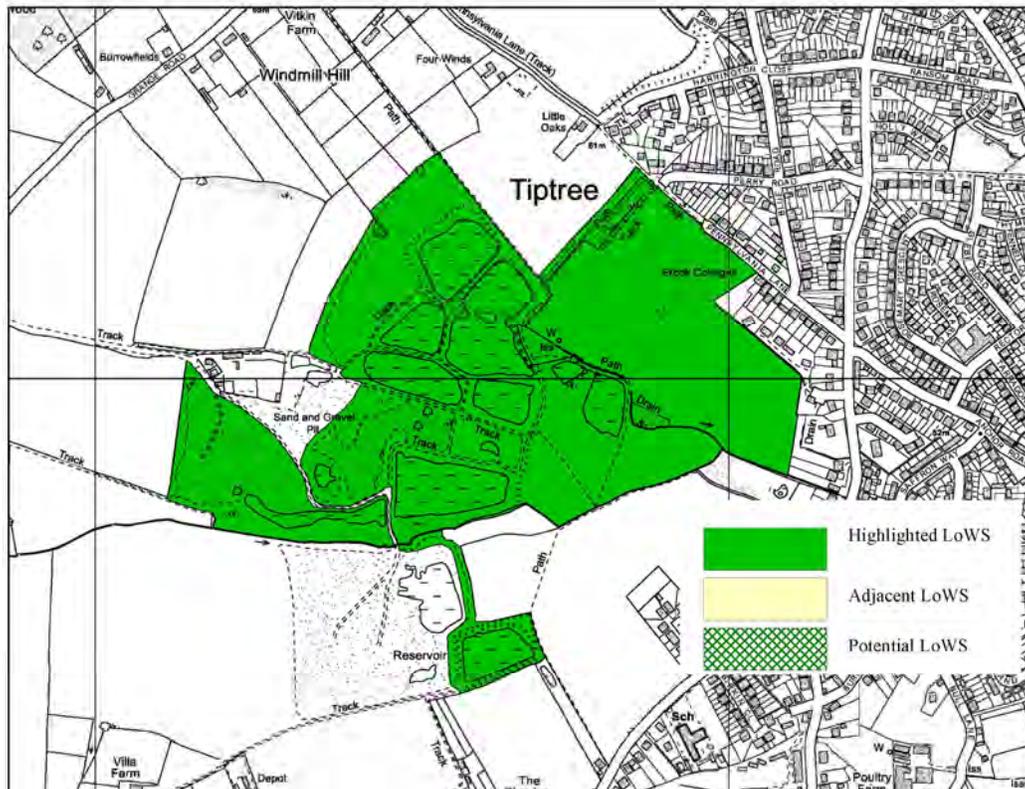
14. Deciding the importance of species populations should make use of existing criteria where available. For example, there are established criteria for defining nationally and internationally important populations of waterfowl. The scale within which importance is determined could also relate to a particular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

Appendix 5786/2:

Inworth Grange Pits LWS Citation

LOCAL WILDLIFE SITES COLCHESTER DISTRICT

Co10 Inworth Grange Pits, Tiptree (37.6 ha) TL 885159



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This complex site is focussed on the now disused parts of Tiptree Quarry, comprising wet woodland, ponds, reedbeds and acid grassland, together with an old strawberry field to the east and some smaller meadows.

The quarry part of the site is made up of a series of lagoons, some containing deeper standing water, some shallower with broad fringes of Common Reed (*Phragmites australis*), emergent willow (*Salix* sp.) scrub and floating mats of pondweed (*Potamogeton* sp.), and some with different aged stands of wet willow woodland. Emergent and marginal plants species include Bulrush (*Typha latifolia*), Gipsywort (*Lycopus europaeus*), Soft-rush (*Juncus effusus*) and Water-plantain (*Alisma plantago-aquatica*) with the Essex Red Data List species Common Spike-rush (*Eleocharis palustris*). The fringes of the larger lagoons are now mostly shaded by willows.

Between the lagoons, the topography is varied with banks of exposed substrate, hummocks and hollows, which should provide good conditions for invertebrates. In the northwest part of the site is an extensive area landscaped to produce acid grassland, including an enclosure with introduced Heather (*Calluna vulgaris*). Other open parts support sparse swards and rough grassland, depending on their age and soil profile. Acid grassland species include Sheep's Sorrel (*Rumex acetosella*), Wood Sage (*Teucrium scorodonia*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Common Cudweed (*Filago vulgaris*), Common Centaury (*Centaureum erythraea*), Red Bartsia (*Odontites vernus*), Creeping Cinquefoil (*Potentilla reptans*) and parsley-piert (*Aphanes* sp.).

In places there is scattered scrub, with Bramble (*Rubus fruticosus* agg.), Gorse (*Ulex europaeus*), birch (*Betula* sp.) and Broom (*Cytisus scoparius*) amongst young Pedunculate Oaks (*Quercus robur*). There are some small areas of young oak woodland, planted in the 20th Century, and also scattered older oaks predating the quarry.

The former strawberry field to the east and the meadows to the south support unimproved grassland, albeit of recent origin. Six species of orchid have been recorded across this area including a significant population of Green-winged Orchid (*Orchis morio*) with smaller numbers of Bee Orchid (*Ophrys apifera*), Southern Marsh Orchid (*Dactylorhiza praetermissa*), Pyramidal Orchid (*Anacamptis pyramidalis*), Common Spotted Orchid (*Dactylorhiza fuchsii*) and Common Twayblade (*Neottia ovata*). The sward is dominated by Yorkshire-fog (*Holcus lanatus*) and bent (*Agrostis* sp.) and dense growth of willows. Other species in the meadows include Hope Trefoil (*Trifolium campestre*), Smooth Tare (*Vicia tetrasperma*), Fleabane (*Pulicaria dysenterica*) and Common Centaury (*Centaureum erythraea*).

The site also supports a good assemblage of breeding birds including in recent years more noteworthy species such as Pochard, Lapwing, Little Ringed Plover, Cuckoo, Skylark, Song Thrush, Cetti's Warbler, Willow Warbler and Linnet.

Ownership and Access

The site is in private ownership. Restoration activity still occurs in some areas and access is restricted to public footpaths along the southern and eastern edges of the quarry. The meadows have no public rights of way but are heavily used by local residents.

Habitats of Principal Importance in England

Open Mosaic Habitats on Previously Developed Land

Selection Criteria

HC3 – Other Priority Woodland Habitat Types on Non-ancient Sites

HC11 – Other Neutral Grasslands

HC13 – Heathland and Acid Grassland

HC27 – Post-industrial Sites

HC28 – Small-component Mosaics

SC1 – Vascular Plants

Rationale

Much of this site could be classed as post-industrial and it includes a wide range of features that are likely to be of significant benefit to invertebrates, although there is a lack of records to confirm this at present. Within the post-industrial area there are also clear examples of acid grassland and wet woodland communities that would meet HPIE descriptions. The meadows outside of the quarry area are essentially unimproved, despite a recent origin and their conservation value is sufficient to justify their selection, but here the Other Neutral Grasslands criterion is primarily used to define the extent of the habitat that is supporting the significant Green-winged Orchid population.

Condition Statement

Mostly favourable.

Management Issues

The field and its orchid populations are vulnerable to inappropriate management or the lack of it. Willow has become dominant over large parts of the field, although it has been cut during this review period. The field has also been proposed as a site for housing development. The habitats in the quarry part of the site will decline naturally as succession takes place and so

management will be necessary to slow this process if the diversity of habitats and species is to be maintained.

Review Schedule

Site Selected: 2008

Reviewed: 2015 (extended)

Appendix 5786/3:

NVC Survey Results

NVC Survey Results for Habitat Area A

Table 1. Raw Species Data (Area A)

Species		Coverage in quadrat (Domin scale)					Constancy
Common Name	Latin Name	Q1	Q2	Q3	Q4	Q5	
Squirreltail Fescue	<i>Vulpia bromoides</i>	3	3	2	3	4	5
Yorkshire-fog	<i>Holcus lanatus</i>	2	5	5	4	6	5
Creeping Buttercup	<i>Ranunculus repens</i>	5	6	5	5	5	5
Creeping Thistle	<i>Cirsium arvense</i>	2	1	2	2	3	5
Rough Meadow-grass	<i>Poa trivialis</i>	3	6	4	7	6	5
Soft Brome	<i>Bromus hordeaceus</i>	3	5	4	4	5	5
False Oat-grass	<i>Arrhenatherum elatius</i>	8	4	3	-	2	4
Oak sp. sapling	<i>Quercus sp.</i>	1	1	1	1	-	4
Cock's-foot	<i>Dactylis glomerata</i>	-	2	1	-	3	3
Marsh Thistle	<i>Cirsium palustre</i>	1	-	-	1	-	2
Field Forget-me-not	<i>Myosotis arvensis</i>	1	-	2	-	-	2
Willow sp. sapling	<i>Salix sp.</i>	-	2	1	-	-	2
Bramble	<i>Rubus fruticosus agg.</i>	4	-	-	-	-	1
Field Maple	<i>Acer campestre</i>	-	1	-	-	-	1
Hop Trefoil	<i>Trifolium campestre</i>	-	-	1	-	-	1
Dandelion	<i>Taraxacum officinale</i>	-	-	-	-	1	1
Selfheal	<i>Prunella vulgaris</i>	-	-	-	-	2	1
Great Willowherb	<i>Epilobium hirsutum</i>	-	-	-	-	1	1
Cat's-ear	<i>Hypochaeris radicata</i>	-	-	-	-	2	1
Cut-leaved Crane's-bill	<i>Geranium dissectum</i>	-	-	-	1	-	1
Common Sorrel	<i>Rumex acetosa</i>	-	-	-	1	-	1
Crested Dog's-tail	<i>Cynosurus cristatus</i>	-	-	-	2	-	1
Total Species per Quadrat		11	11	12	11	12	

Table 2. MAVIS Output Showing Top 5 Matches (Area A)

NVC Community	Match (%)
MG1c	42.12
MG1a	38.66
MG9b	37.51
MG9	37.34
MG1b	36.02

NVC Survey Results for Habitat Area B

Table 1. Raw Species Data (Area B)

Species		Coverage in quadrat (Domin scale)					Constancy
Common Name	Latin Name	Q1	Q2	Q3	Q4	Q5	
Squirreltail Fescue	<i>Vulpia bromoides</i>	8	8	8	8	8	5
Soft Brome	<i>Bromus hordeaceus</i>	5	5	4	3	5	5
Sheep's Sorrel	<i>Rumex acetosells</i>	5	5	6	5	5	5
Cat's-ear	<i>Hypochaeris radicata</i>	3	3	3	2	1	5
Dandelion	<i>Taraxacum officinale</i>	1	2	2	3	1	5
Creeping Thistle	<i>Cirsium arvense</i>	2	3	2	1	4	5
Smooth Hawk's-beard	<i>Crepis capillaris</i>	1	2	2	1	1	5
Common Ragwort	<i>Senecio jacobaea</i>	1	2	1	1	1	5
Cut-leaved Crane's-bill	<i>Geranium dissectum</i>	2	1	2	2	-	4
Perforate St John's-wort	<i>Hypericum perforatum</i>	1	2	1	1	-	4
Yorkshire-fog	<i>Holcus lanatus</i>	4	-	2	2	-	3
Lesser Trefoil	<i>Trifolium dubium</i>	-	3	1	1	-	3
Barren Strawberry	<i>Potentilla sterilis</i>	3	-	-	2	-	2
Common Cudweed	<i>Filago vulgaris</i>	-	1	1	-	-	2
False Oat-grass	<i>Arrhenatherum elatius</i> agg.	-	-	-	-	2	1
Cock's-foot	<i>Dactylus glomerata</i>	-	-	-	-	2	1
Field Bindweed	<i>Convolvulus arvensis</i>	1	-	-	-	-	1
Thistle sp.	<i>Cirsium/Carduus</i> sp.	-	-	1	-	-	1
Bramble	<i>Rubus fruticosus</i> agg.	-	-	-	-	5	1
Prickly Sow-thistle	<i>Sonchus asper</i>	-	-	-	-	1	1
Selfheal	<i>Prunella vulgaris</i>	-	-	-	-	1	1
Oak sapling	<i>Quercus</i> sp.	1	-	-	-	-	1
Total Species per Quadrat		14	12	14	13	13	

Table 2. MAVIS Output Showing Top 5 Matches (Area B)

NVC Community	Match (%)
OV23a	31.02
OV23	29.85
SD7a	29.64
W23b	29.32
SD7c	29.06

NVC Survey Results for Habitat Area C

Table 1. Raw Species Data (Area C)

Species		Coverage in quadrat (Domin scale)					Constancy
Common Name	Latin Name	Q1	Q2	Q3	Q4	Q5	
Creeping Bent	<i>Agrostis stolonifera</i>	7	7	4	7	7	5
Yorkshire-fog	<i>Holcus lanatus</i>	4	3	4	5	7	5
Red Fescue	<i>Festuca rubra</i>	4	4	5	3	4	5
Creeping Thistle	<i>Cirsium arvense</i>	3	2	4	5	3	5
Rough Meadow-grass	<i>Poa trivialis</i>	3	4	3	3	4	5
Soft Brome	<i>Bromus hordeaceus</i>	3	3	4	5	3	5
Squirreltail Fescue	<i>Vulpia bromoides</i>	2	2	6	5	-	4
Dandelion	<i>Taraxacum officinale</i>	1	2	1	-	2	4
Clustered Dock	<i>Rumex conglomeratus</i>	2	-	-	-	1	2
Creeping Buttercup	<i>Ranunculus repens</i>	1	-	1	-	-	2
Cock's-foot	<i>Dactylis glomerata</i>	2	3	-	-	-	2
False Oat-grass	<i>Arrhenatherum elatius</i>	-	-	4	-	-	1
Willow sp. sapling	<i>Salix sp.</i>	-	-	-	-	1	1
Cat's-ear	<i>Hypochaeris radicata</i>	-	-	1	-	-	1
Common Ragwort	<i>Senecio jacobaea</i>	-	1	-	-	-	1
Total Species per Quadrat		11	10	11	7	9	

Table 2. MAVIS Output Showing Top 5 Matches (Area C)

NVC Community	Match (%)
MG11a	46.80
MG10b	43.03
MG13	41.99
MG10a	41.58
MG7B	40.98

NVC Survey Results for Habitat Area D

Table 1. Raw Species Data (Area D)

Species		Coverage in quadrat (Domin scale)					Constancy
Common Name	Latin Name	Q1	Q2	Q3	Q4	Q5	
Squirreltail Fescue	<i>Vulpia bromoides</i>	6	5	4	4	3	5
Soft Brome	<i>Bromus hordeaceus</i>	5	6	8	5	2	5
Cat's-ear	<i>Hypochaeris radicata</i>	1	3	3	2	1	5
False Oat-grass	<i>Arrhenatherum elatius</i> agg.	7	4	4	8	9	5
Yorkshire-fog	<i>Holcus lanatus</i>	5	5	5	-	2	4
Oak sapling	<i>Quercus</i> sp.	1	-	1	1	1	4
Dandelion	<i>Taraxacum officinale</i>	-	2	2	3	-	3
Creeping Thistle	<i>Cirsium arvense</i>	1	3	3	-	-	3
Creeping Buttercup	<i>Ranunculus repens</i>	2	-	3	-	-	2
Common Ragwort	<i>Senecio jacobaea</i>	1	-	2	-	-	2
Barren Strawberry	<i>Potentilla sterilis</i>	3	-	-	-	2	2
Field Forget-me-not	<i>Myosotis arvensis</i>	-	-	1	-	1	2
Willow sp. sapling	<i>Salix</i> sp.	-	-	2	-	2	2
Cut-leaved Crane's-bill	<i>Geranium dissectum</i>	-	2	-	-	-	1
Field Bindweed	<i>Convolvulus arvensis</i>	-	-	-	-	2	1
Thistle sp.	<i>Cirsium/Carduus</i> sp.	-	-	-	-	1	1
Bramble	<i>Rubus fruticosus</i> agg.	1	-	-	-	-	1
Ribwort Plantain	<i>Plantago lanceolata</i>	-	-	-	-	3	1
Rough Meadow-grass	<i>Poa trivialis</i>	-	-	3	-	-	1
Great Willowherb	<i>Epilobium hirsutum</i>	-	-	1	-	-	1
Common Sorrel	<i>Rumex acetosa</i>	-	-	-	-	3	1
Total Species per Quadrat		11	8	14	6	13	

Table 2. MAVIS Output Showing Top 5 Matches (Area D)

NVC Community	Match (%)
MG1c	39.25
MG1a	38.60
MG1	37.57
MG1b	35.82
OV24b	33.66

Appendix 5786/4:

Legislation Summary

LEGISLATION SUMMARY

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

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

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

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

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

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

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

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

Appendix 5786/5:

Biodiversity Net Gain Assessment

Technical Briefing Note

Project: Land off Brook Meadows, Tiptree, Colchester
(1005786)

Biodiversity Net Gain Assessment Using the DEFRA Biodiversity Metric 2.0

November 2020

1. Introduction

- 1.1. Aspect Ecology has been instructed by Kler Group to undertake a Biodiversity Net Gain Assessment (BNGA) in relation to Land off Brook Meadows, Tiptree, Colchester, hereafter referred to as the 'site'.
- 1.2. Aspect Ecology has prepared an Ecological Appraisal of the site, to inform the planning application. The information presented in the Ecological Appraisal (November 2020) and the Concept Masterplan has been input into the most up to date version of the DEFRA Biodiversity Metric 2.0 Biodiversity Impact Assessment Calculator (as of the 13th November 2020). This enables the change in 'Biodiversity Units' for 'Habitats' pre- and post-development to be measured and provides indicative 'Biodiversity Compensation' values. It should be noted that due to the proposals being submitted as an outline application in illustrative form, and therefore likely to be subject to change throughout the planning process, the results of this BIA exercise should be treated as indicative and have been prepared on a precautionary / conservative basis. Furthermore, due to the illustrative nature of the Concept Masterplan, 70% of the built development area has been assumed to be attributed to buildings and hardstanding, with the remaining 30% recognised as private gardens.
- 1.3. An assessment of the hedgerow units has not been completed at this stage, as the proposals are not sufficiently detailed to display more than indicative hedgerow locations / extents associated with curtilages of the new dwellings. This is entirely acceptable for this stage of the planning application. Due to the size of the site and limited extent of the existing hedgerow network present, any minor reductions in hedgerow length could be readily mitigated / compensated on-site under the proposals.
- 1.4. This briefing note provides a summary of the results of the DEFRA Biodiversity Metric 2.0 Biodiversity Impact Assessment Calculator and justifies the choice of habitat definitions, distinctiveness, target habitat condition and temporal factors where appropriate.

2. Biodiversity Net Gain Assessment

- 2.1. This section references, justifies and discusses the habitat categories and their condition chosen from the drop-down menus of the DEFRA Biodiversity Metric 2.0 Biodiversity Impact Assessment Calculator (see attached extracts). The 'Ref no.' refers to column B of the Biodiversity Impact Assessment Calculator for ease of reference.

Existing Site Habitats (Pre-development)

- 2.2. **Ref no. 1 - 'Grassland – Other neutral grassland' – condition 'Poor'**. The majority of this habitat was recorded to comprise infrequently managed rough grassland with a tussocky sward of between 5 - 30cm in height, with extensive areas of developing scrub present at the time of survey. Evidence of rabbit grazing is present throughout, with patches of bare ground present where this is more evident. Frequent use of the site by dog walkers and pedestrians has created informal trodden paths through the site. A small area of wet flush is present at the centre of this area, as described within the Ecological Appraisal. A small number of indicator species of higher quality grassland are present, however these are not sufficiently abundant for the grassland to qualify as a Priority Habitat in its current condition, therefore it has been assigned to 'other neutral grassland' as the most appropriate category. 'Poor' condition has been selected due to >15% cover of undesirable species, in particular encroaching scrub.
- 2.3. **Ref no. 2 - 'Grassland – Other neutral grassland' – condition 'Poor'**. This is the same as the grassland habitat described above but has been split out as this area (0.42ha) is being enhanced to mixed scrub.
- 2.4. **Ref no. 3 - 'Woodland and forest - Other woodland; broadleaved' - condition 'Fairly Poor'**. This habitat comprises two woodland pockets that support a limited diversity of common and widespread species. The woodland pockets are lacking in canopy species diversity and age range, and do not have diverse understorey or ground flora, hence 'fairly poor' condition has been selected.
- 2.5. **Ref no. 4 - 'Heathland and Shrub – Mixed scrub' – condition 'Fairly Poor'**. This habitat largely comprises Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa* and Dog-rose with occasional Wild Cherry *Prunus avium*, Elder *Sambucus nigra*, and Gorse *Ulex europaeus*. The scrub is relatively even-aged and not a high-diversity type, therefore 'fairly poor' condition has been selected.
- 2.6. **Ref no. 5 – 'Sparsely vegetated land – ruderal / ephemeral' – condition 'Poor'**. This habitat is dominated by Common Nettle *Urtica dioica*, Cow Parsley *Anthriscus sylvestris*, Common Evening-primrose *Oenothera biennis* and Broad-leaved Dock *Rumex obtusifolius*. This habitat comprises botanical species which are common and widespread within the local and national context and is of relatively low biodiversity value, hence 'Poor' condition has been selected.
- 2.7. **Ref no. 6 – 'Urban – Developed land; sealed service' – condition 'N/A Other'**. This habitat comprises an area of tarmac which is recorded to be in a relatively good state of repair and is largely devoid of vegetation. As such, this habitat's condition is not relevant to the assessment.

Habitat Creation (Post-development)

- 2.8. For all of the created habitats, the DEFRA 2.0 metric automatically assigns the timeframe associated with achieving the targeted condition, which cannot be amended as part of the assessment. As such, these timescales are considered to represent a reasonable and realistic estimation of time to achieve the stated condition.
- 2.9. **'Urban – Developed land; sealed surface' – condition 'N/A - Other'**. This habitat represents the buildings and hardstanding which would provide no measurable benefit to biodiversity. As such, the condition is assigned as 'N/A - Other'.
- 2.10. **'Urban – Vegetated garden' – condition 'Poor'**. This habitat would be located within the private curtilage of the individual properties. As the management of these habitats will be at the discretion of the occupants, and not for the benefit of biodiversity, the target condition is considered to be 'Poor' and achievable within 1 year.
- 2.11. **'Urban – Amenity grassland' – condition 'Poor'**. This habitat will be located within some of the areas of public open space at the boundaries of the site. As a conservative estimate this habitat is anticipated to achieve a 'Poor' condition in 1 year. In reality, this habitat can be managed to create a more diverse habitat and better condition, however the 'Poor' condition has been selected to ensure a conservative assessment is provided at this stage.
- 2.12. **'Lakes – Ponds (Non-Priority Habitat)' – condition 'Fairly Good'**. This habitat will be created and managed to achieve a 'Fairly Good' condition within approximately 4 years, and will provide beneficial habitat conditions for a number of botanical and faunal species. The pond will be set within semi-natural habitat, and will comprise a marginal fringe of emergent vegetation and a range of submerged and floating plants. The pond will have naturally fluctuating water levels. The pond will be managed to limit / control the establishment of invasive plants. Furthermore, subject further safeguarding measures be implemented, such as the erection of fences around the banks of this habitat to prevent access for dogs, and protection of the pond from artificial drainage, it is considered that a 'good' condition is achievable in 5 years.

Habitat Enhancement (Post-development)

- 2.13. **'Grassland – Lowland Meadows' – condition change 'Lower Distinctiveness Habitat – Good'**. The enhancement of the retained areas of grassland to create lowland meadow will be of particular benefit to biodiversity, and will be located within the areas of open public space. This habitat is anticipated to achieve a 'Good' condition within approximately 15 years through the implementation of appropriate management and will provide a habitat for a wide range of botanical and faunal species. The objective will be to create species-rich grassland with indicator species at high frequency with wildflower and sedges above 30%, undesirable species below 5%, bare ground below 10%, and cover of scrub below 5%.
- 2.14. **'Heathland and Shrub – Mixed Scrub' – condition change 'Poor – Good'**. This habitat has been allocated to areas of new landscape planting throughout the development and will be planted as mixed scrub habitat. At least three woody species will be included within this habitat, which will be managed in such a way to ensure that no one species comprises more than 75% of the cover. Native shrub species of particular benefit would likely include fruit and nut bearing species which would provide additional food for wildlife, such as Blackthorn *Prunus spinosa*, Bramble *Rubus fruticosus* agg., Hawthorn *Crataegus monogyna*, Crab Apple

Malus sylvestris, Hazel *Corylus avellana* and Elder *Sambucus nigra*. The scrub habitat will be of varying age and will comprise a mixture of seedlings, saplings, young shrubs and mature shrubs, and will have a number of tall herbs within a well-developed edge. The scrub habitat is anticipated to provide potential foraging opportunities for a number of faunal species in the local area in addition to providing habitat links to the existing wider landscape. This habitat is estimated to achieve a 'Good' condition within approximately 10 years.

- 2.15. **'Woodland and Forest - Other woodland; broadleaved' - condition change 'Fairly Poor – Good'**. New native planting will reinforce the retained pockets of woodland at the western boundary of the site, and will increase the woody habitat cover. Species planted will be native and locally appropriate and include Silver Birch, English Oak *Quercus robur*, Alder *Alnus glutinosa*, Field Maple *Acer campestre* and Wild Cherry, with understorey comprising Holly, Dog-rose, Guelder-rose *Viburnum opulus*, Wild Privet *Ligustrum vulgare*, Hazel *Corylus avellana*, Hawthorn, Elder and Blackthorn. The enhancement of the woodland will contribute to the increased ecological value of the site, and will provide direct benefits to faunal species, through increasing the habitat suitability as a foraging resource and enhancing the connectivity through the site. This habitat is estimated to achieve a 'Good' condition within approximately 25 years.

Habitat Biodiversity Net Gain Assessment Score

- 2.16. With the condition of the existing habitats currently present within the site and with the habitats to be enhanced and created as part of the proposals (as justified above) input into the DEFRA 2.0 metric, the total net % change for the proposals is **+20.06%** which represents a total net unit change of **+9.76 Habitat Units**.

3. Discussion

- 3.1. In summary, the DEFRA 2.0 Biodiversity Impact Assessment Calculator indicates that the development will result in a **20.06% biodiversity net gain**.
- 3.2. A number of faunal enhancements are proposed under the scheme, which are anticipated to provide further net gains for biodiversity, in addition to that detailed above.
- 3.3. Such faunal enhancements include the provision of bat boxes which will provide new roosting opportunities for a number of national Priority Species of bat in the area; the provision of bird nesting boxes will increase nesting opportunities for birds at the site; the implementation of garden fence cut-outs which will maintain the permeability of the site, and the provision of Hedgehog domes will benefit Hedgehog *Erinaceus europaeus* (Priority Species) and a number of other small mammals in the long-term; the placement of a number of habitat piles sourced from vegetation clearance works will provide habitat opportunities for a variety of invertebrates, which in turn could provide a prey source for a range of other wildlife; and the provision of nectar sources through plantation of wildflowers, including various Bents *Agrostis* spp. and Hawkweeds (*Hieracium* / *Hypochoeris*), which will particularly benefit Wall butterfly *Lasiommata megera* (Priority Species). However, it is not possible to quantify faunal ecological enhancements with the DEFRA 2.0 Biodiversity Impact Assessment Calculator.
- 3.4. It will also be possible to increase the net gain of biodiversity units through the inclusion of hedgerow planting within the finalised / detailed proposal plans, which will demonstrate further increases in ecologically beneficial habitats within the site.

Enclosed:

Biodiversity Impact Assessment Calculator (DEFRA V2.0) Extracts

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Tiptree

Headline Results

[Return to results menu](#)

On-site baseline	<i>Habitat units</i>	48.68
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	<i>Habitat units</i>	58.44
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site baseline	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement & succession)	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	<i>Habitat units</i>	9.76
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	<i>Habitat units</i>	20.06%
	<i>Hedgerow units</i>	0.00%
	<i>River units</i>	0.00%

Tiptree
A-1 Site Habitat Baseline

Condense / Show Columns Condense / Show Rows

Main Menu Instructions

Ref	Habitats and areas			Habitat distinctiveness	Habitat condition	Ecological connectivity	Strategic significance	Suggested action to address habitat losses	Ecological baseline Total habitat units
	Broad Habitat	Habitat type	Area (hectares)	Distinctiveness	Condition	Ecological connectivity	Strategic significance		
1	Grassland	Grassland - Other neutral grassland	9.47	Medium	Poor	N/A	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	37.88
2	Grassland	Grassland - Other neutral grassland	0.42	Medium	Poor	N/A	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	1.68
3	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.8	Medium	Fairly Poor	N/A	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	4.80
4	Heathland and shrub	Heathland and shrub - Mixed scrub	0.69	Medium	Fairly Poor	N/A	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required	4.14
5	Sparse vegetated land	Sparse vegetated land - Ruderal/Ephemeral	0.09	Low	Poor	N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required	0.18
6	Urban	Urban - Developed land; sealed surface	0.2	V.Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00
7									
8									
9									
10									
11									
Total site area ha			11.67					Total Site baseline	48.68

Retention category biodiversity value										Bespoke compensation agreed for unacceptable losses	Comments	
Area retained	Area enhanced	Area succession	Baseline units retained	Baseline units enhanced	Baseline units succession	Area lost	Units lost	Assessor comments	Reviewer comments			
	3		0.00	12.00	0.00	6.47	25.88	3ha being retained and enhanced to lowland meadow				
	0.42		0.00	1.68	0.00	0.00	0.00	0.42ha being retained and enhanced to mixed scrub				
	0.8		0.00	4.80	0.00	0.00	0.00	0.8ha being retained and enhanced				
			0.00	0.00	0.00	0.69	4.14					
			0.00	0.00	0.00	0.09	0.18					
			0.00	0.00	0.00	0.20	0.00					
0.00	4.22	0.00	0.00	18.48	0.00	7.45	30.20					

Tiptree
A-2 Site Habitat Creation

Condense / Show Columns

Condense / Show Rows

Main Menu

Instructions

Post development/ post intervention habitats										
Proposed habitat	Area (hectares)	Distinctiveness	Condition	Ecological	Strategic significance	Temporal multiplier	Difficulty	Habitat units delivered	Comments	
				Ecological connectivity	Strategic significance	Time to target condition/years	Difficulty of creation category		Assessor comments	Reviewer comments
Urban - Developed land; sealed surface	4.87	V.Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	0	Low	0.00	Housing, roads, etc.	
Urban - Vegetated garden	1.38	Low	Poor	N/A	Area/compensation not in local strategy/ no local strategy	1	Low	2.66	Residential gardens	
Urban - Amenity grassland	0.5	Low	Poor	N/A	Area/compensation not in local strategy/ no local strategy	1	Low	0.97	Amenity grasland within POS	
Lakes - Ponds (Non- Priority Habitat)	0.7	High	Fairly Good	N/A	Area/compensation not in local strategy/ no local strategy	4	Low	9.11	Drainage pond in SE of site	
Totals	7.45							12.73		

Appendix 5786/6:

Bat Manual Activity Survey Results

Appendix 5786/6: Total bat registrations per survey session recorded throughout manual activity surveys. See Plan 5786/ECO4 for transect location and distribution of recorded activity.

Survey Date	Species													
	Common Pipistrelle		Soprano Pipistrelle		<i>Pipistrellus</i> sp.		<i>Myotis</i> sp.		Unidentified Big Bat		Noctule		<i>Plecotus</i> sp.	
	Registrations	Percentage	Registrations	Percentage	Registrations	Percentage	Registrations	Percentage	Registrations	Percentage	Registrations	Percentage	Registrations	Percentage
08.04.20 (dusk)	8	31%	12	46%	0	0%	3	12%	3	12%	0	0%	0	0%
04.05.20 (dusk)	7	26%	20	74%	0	0%	0	0%	0	0%	0	0%	0	0%
26.06.20 (dusk)	66	50%	51	38%	5	4%	1	1%	6	5%	2	2%	2	2%
16.07.20 (dusk)	104	73%	29	20%	5	4%	3	2%	1	1%	0	0%	0	0%
11.08.20 (dusk)	72	63%	32	28%	2	2%	4	3%	2	2%	2	2%	1	1%
12.08.20 (dawn)	30	55%	15	27%	2	4%	0	0%	4	7%	1	2%	3	5%

Appendix 5786/7:

Bat Automated Activity Survey Results

Appendix 5786/7: Total bat registrations per survey session recorded throughout automated activity surveys at positions SD1 and SD2. See Plan 5786/ECO5 for detector locations.

Detector Location	Species	Total Number of Registrations					Total Registrations	Average Registrations per hour					% Detector Total (% Overall Total)
		April	May	June	July	August		April	May	June	July	August	
SD1	Common Pipistrelle	111	117	32	54	93	407	1.46	1.80	0.43	1.00	1.28	17.25 (13.36)
	Soprano Pipistrelle	156	644	178	105	64	1147	2.05	9.90	2.38	1.95	0.88	48.60 (37.64)
	Nathusius Pipistrelle	0	0	4	1	2	7	0.00	0.00	0.05	0.02	0.03	0.30 (0.23)
	<i>Pipistrellus</i> sp.	0	0	2	52	34	88	0.00	0.00	0.03	0.97	0.47	3.73 (2.89)
	Noctule	0	0	130	61	78	269	0.00	0.00	1.74	1.13	1.08	11.40 (8.83)
	Serotine	0	0	0	2	0	2	0.00	0.00	0.00	0.04	0.00	0.08 (0.07)
	Unidentified Big Bat	85	274	12	17	10	398	1.12	4.21	0.16	0.32	0.14	16.86 (13.06)
	<i>Myotis</i> sp.	12	4	0	8	2	26	0.16	0.06	0.00	0.15	0.03	1.10 (0.85)
	Barbastelle	0	0	0	1	0	1	0.00	0.00	0.00	0.02	0.00	0.04 (0.03)
	<i>Plecotus</i> sp.	4	3	0	5	3	15	0.05	0.05	0.00	0.09	0.04	0.64 (0.49)
Total:	368	1042	358	306	286	2360						(77.45)	
SD2	Common Pipistrelle	0	66	49	31	61	207	0.00	1.01	0.65	0.58	0.84	30.13 (6.79)
	Soprano Pipistrelle	0	27	25	5	26	83	0.00	0.42	0.33	0.09	0.36	12.08 (2.72)
	Nathusius Pipistrelle	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00 (0.00)
	<i>Pipistrellus</i> sp.	0	0	3	0	10	13	0.00	0.00	0.04	0.00	0.14	1.89 (0.43)
	Noctule	0	0	16	27	58	101	0.00	0.00	0.21	0.50	0.80	14.70 (3.31)
	Serotine	0	0	0	0	1	1	0.00	0.00	0.00	0.00	0.01	0.15 (0.03)
	Unidentified Big Bat	0	182	15	42	10	249	0.00	2.80	0.20	0.78	0.14	36.24 (8.17)
	<i>Myotis</i> sp.	0	8	1	2	5	16	0.00	0.12	0.01	0.04	0.07	2.33 (0.53)
	Barbastelle	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00 (0.00)
	<i>Plecotus</i> sp.	0	7	2	5	3	17	0.00	0.11	0.03	0.09	0.04	2.47 (0.56)
Total:	0	290	111	112	174	687						(22.55)	
OVERALL TOTAL:	368	1332	469	418	460	3047							

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