Hallam Land Management

Calcott Hall Farm, Brentwood

PRELIMINARY ECOLOGICAL APPRAISAL

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CONTENTS

TABLES

PHOTOGRAPHS

FIGURES

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1.0 NON TECHNICAL SUMMARY

1.1 The site consists of arable land, a conifer plantation, and some areas of species poor semi-improved grassland, all of which have a negligible value for wildlife. More valuable habitats include woodland, waterbodies, hedgerows and ditches. New habitat creation proposals detailed in the Capacity Plan (FPCR Drawing 8363-L-01_E) aim to increase the diversity of habitats present and provide structural diversity, with scrub, trees, and informal and formal grassland areas.

1.2 There are no ecological constraints to development in terms of any adverse effects on statutory sites with only one site of international importance for nature conservation being within 15km of it. This is Epping Forest SAC, the Zone of Influence of which is considered to be outside of the development site boundary. Furthermore, there are no statutory sites of national or local nature conservation importance within 2km or 1km respectively of the site.

1.3 The (non-statutory) High Wood LWS is on-site, and Weald Country Park LWS is immediately to the west of the site. The latter is designed and managed for accessibility by the general public and it is considered that the proposed development is unlikely to adversely affect the Country Park. The High Wood LWS is not currently formally open to the public, but is easily accessible and is currently well used and unmanaged. The Capacity Plan illustrates that the proposed development would ensure the retention of High Wood in its entirety, and allows for its enhancement by buffering the woodland from development and proposing the creation of formal paths through it, thereby diverting the general public from the more sensitive areas. The latest LWS review has stated that the woodland is in need of management. It is considered that the new development will provide an opportunity for the woodland to be managed in such a way as to increase its value for nature conservation by implementing active management, keeping the general public away from more sensitive areas, as well as being a recreational resource for the local community through the provision of measures such as well sign-posted paths and interpretation boards.

1.4 If a planning application were to be prepared there would be a need to assess the site for the presence of a number of protected species/groups, including bats, birds, great crested newts (GCN), reptiles, and dormice. The results of these surveys would inform a detailed management plan, and provision of specific species-driven mitigation which would be incorporated into the developments green infrastructure.

1.5 The Capacity Plan shows that additional boundary planting will be provided to create a buffer and wildlife corridor around the site, including, as stated above, around High Wood LWS. Green space will be designed in order to provide both a resource for the general public and value for nature conservation. A robust long-term management plan will be put in place in order to balance the GIs recreational use with its value for biodiversity.

1.6 Where possible planting schemes will use native species with an emphasis on species bearing nectar, berries, fruit and nuts, to enhance the foraging opportunities for local fauna.

1.7 Further opportunities to enhance the development include the provision of bat and bird boxes, dead wood habitat, particularly for stag beetles, and insect houses.

1.8 Having regard to the ecological evidence gathered and the potential opportunities for enhancement discussed, including the provision of the proposed green space, and the implementation of a robust management plan, the proposed development as illustrated within the capacity plan will provide a natural resource for the local community to enjoy, whilst providing a net gain for biodiversity, and will therefore accord with the policies of the emerging Local Plan and the National Planning Policy Framework

2.0 INTRODUCTION

2.1 This report has been produced by FPCR Environment and Design Ltd on behalf of Hallam Land Management and provides an assessment of possible ecological constraints to development on land at Calcott Hall Farm, Brentwood, Essex.

2.2 The site consists of seven arable field compartments separated by hedgerows. There are also blocks of broad-leaved and plantation woodland, some ponds, and some small areas of semi-improved grassland present within the site. The site measures approximately 47.6ha in total and is centred on grid reference TQ 580 946. The towns of Brentwood and Pilgrims Hatch are located to the south-east, north and north-east of the site respectively. Weald Road forms the southern site boundary with land under arable cultivation and pasture beyond. The eastern boundary is formed by the main A12 road and its associated buffer planting; fields and buildings associated with Calcott Hall Farm; and the Larkins playing field. Ongar Road, and its residential dwellings and gardens form the northern boundary, whilst the western boundary is formed by Sandpit Lane with the Weald Park Country Park and Local Wildlife Site (LWS) beyond it.

2.3 An initial investigation was made to determine habitats and species present within a defined boundary, in this case the site and immediate surrounds, and to make an initial assessment of the ecological value and any potential ecological constraints to future development. Additional objectives were, where appropriate, to identify the need for more detailed species specific surveys and to consider opportunities for ecological mitigation and enhancements within any future development design.

2.4 The Capacity Plan proposes a development that will include new housing and community facilities including a primary school, with associated infrastructure and landscaping.

3.0 METHODOLOGY

Desktop Survey

3.1 The Multi-Agency Government Information for the Countryside (MAGIC) website (www.magic.gov.uk) has been reviewed for the presence of any statutory designated sites of international (Special Area of Conservation (SAC), Special Protection Area (SPA) or Ramsar Sites)), national (Sites of Special Scientific Interest, (SSSI)) or local nature conservation importance (Local Nature Reserves (LNR)) within 15km, 2km and 1km of the study area, respectively.

3.2 Both the Essex Wildlife Trust (EWT) and the Essex Field Club (EFC) were consulted for species information and non-statutory LWS within 1km of the study area.

3.3 Further inspection, using colour 1:25,000 OS base maps and aerial photographs from Bing (http://www.bing.com/maps), was also undertaken in order to provide additional context and identify any features of potential importance for nature conservation in the wider landscape.

Habitats

3.4 The site boundary is shown on Figure 2. This area was surveyed on 15th January 2019 using the extended Phase 1 Habitat Survey technique as recommended by Natural England[1]. This involved a systematic walk over of the survey area to classify the broad habitat types present and mark them on a survey map. Target notes (Tn) were used to record features or habitats of particular interest, as well as any sightings or evidence of protected or notable species.

Hedgerows

3.5 Hedgerows were surveyed using the Hedgerow Evaluation and Grading System (HEGS)[2]. The aim of the assessment is to allow the rapid recording and ecological appraisal of hedgerows within any given site in the UK, and to allow the grading of the individual hedges present, in order to identify those which are likely to be of greatest significance for wildlife. This method of assessment includes noting down: canopy species composition; associated ground flora and climbers; structure of the hedgerow including height, width and gaps; and associated features including number and species of mature trees and the presence of banks, ditches and grass verges.

3.6 Using the HEGS methodology each hedgerow can then be given a grade. These grades are used to assign a nature conservation value to each hedgerow as follows:

- Grade -1, 1, 1+ High to Very High Value
- Grade -2, 2, 2+ Moderately High to High Value
- Grade -3, 3, 3+ Moderate Value

[1] JNCC. (1990). *Handbook for Phase 1 habitat survey – a technique for environmental audit.* Peterborough: JNCC

[2] Clements, D. & Toft, R. (1992). *Hedgerow Evaluation and Grading System (HEGS) – a methodology for the ecological survey, evaluation and grading of hedgerows*. Countryside Planning and Management

- Grade -4, 4, 4+ Low Value

Hedgerows graded -2 or above are suggested as being a nature conservation priority.

3.7 The hedgerows were also assessed against the wildlife and landscape criteria of the Hedgerow Regulations 1997 (Statutory Instrument No: 1160)[3]. Each hedgerow is evaluated to ascertain whether it qualifies as an 'important' hedgerow under the Regulations by determining both the average number of woody native species present within 30m survey sections and the number of hedgerow associated features present. Hedgerows may also qualify as 'Important' under the archaeological criteria of the Regulations, but this has not been assessed within this report.

3.8 All hedgerows were also assessed to ascertain whether they qualified as a Habitat of Principal Importance under section 41 of the Natural Environment & Rural Communities (NERC) Act, 2006[4], i.e. they consisted of 80% or more native species.

Fauna

3.9 During the survey, observations, identification and signs of any species protected under Part 1 of the Wildlife and Countryside Act 1981 (as amended), the Protection of Badgers Act 1992 and the Conservation of Habitats and Species Regulations 2017, were noted. In addition, habitats with the potential to support such species were noted and assessed for their suitability.

3.10 Throughout the survey consideration was also given to the existence and use of the survey area by other protected species or locally notable fauna, such as Species of Principal Importance under the NERC Act 2006, Birds of Conservation Concern (BoCC), Local Biodiversity Action Plan Species (LBAP) or Red Data Book (RDB) species.

Badger

3.11 Evidence indicating the presence of badgers was sought with the identification of signs which might indicate a presence within the study area, including:

- Setts (main, annexe, subsidiary and outlier);
- Latrines;
- Prints and track-ways;
- Hairs caught on rough wood and fencing; and
- Snuffle holes, scratching posts and general feeding activity.

Bats

Tree Assessment

3.12 The tree assessments were undertaken from ground level on 15th January 2019 by a suitably experienced ecologist from FPCR. During the survey, Potential Roosting Features (PRF) for bats

[3] *The Hedgerow Regulations 1997 – Statutory Instrument 1997 No. 1160.* [Online]. London: HMSO. Available at: http://www.legislation.gov.uk/uksi/1997/1160/contents/made [Accessed 01/02/2014].

[4] *The Natural Environment and Rural Communities Act 2006.* [Online]. London:HMSO Available at: http://www.legislation.gov.uk/ukpga/2006/16/contents [Accessed 01/02/2014]

such as the following were sought (Based on P16, British Standard 8596:2015 Surveying for bats in trees and woodland, October 2015):

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar;
- Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems;
- Woodpecker holes;
- Cracks/splits in stems or branches (horizontal and vertical);
- Partially detached, or loose bark plates;
- Cankers (caused by localised bark death) in which cavities have developed;
- Other hollows or cavities, including butt rots;
- Compression of forks with occluded bark, forming potential cavities;
- Crossing stems or branches with suitable roosting space between;
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk);
- Bat or bird boxes; and
- Other suitable places of rest or shelter.

3.13 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings and its location in respect to other features may enhance or reduce the potential value.

3.14 Based on the above, trees were classified into general bat roost potential groups based on the presence of these features. Table 1 (below) broadly classifies the potential categories as accurately as possible as well as discussing the relevance of the features. This table is based upon Table 4.1 and Chapter 6 in Bat Surveys for Professional Ecologists: Good Practice Guidelines[5].

3.15 Although the British Standard 8596:2015 document groups trees with moderate and high potential, these have been separated below (as per Table 4.1 in The Bat Conservation Trust Guidelines) to allow more specific survey criteria to be applied.

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

Table 1: Classification and Survey Requirements for Bats in Trees

Classification of Tree	**Description of** Category and Associated Features **(based on** Potential Roosting Features **listed above)**	**Likely Further Survey work / Actions**
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	A Natural England derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers **and** / **or** nocturnal survey during appropriate period (May to August) should be used to inform on the licence. Replacement roost sites commensurate with status of roost to be provided. Works to be undertaken under supervision in accordance with the approved good practice method statement provided within the licence. **However,** where confirmed roost site(s) are not affected by works, work under a precautionary good practice method statement may be possible.
High Potential	A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	A combination of aerial assessment by roped access bat workers **and** / **or** nocturnal survey during appropriate period (May to August). Following additional assessments, trees may be upgraded or downgraded based on findings. After completion of survey work, a precautionary working method statement is likely to be required. If roost sites are confirmed a licence from Natural England will be required.

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey work / Actions
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	A combination of aerial assessment by roped access bat workers **and** /**or** nocturnal survey during appropriate period (May to August). Following additional assessments, trees may be upgraded or downgraded based on findings. After completion of survey work, a precautionary working method statement may be required. If a roost site/s is confirmed a licence from Natural England will be required.
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be required.
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

* The Conservation of Habitats & Species Regulations 2010 (as amended) affords protection to "breeding sites" and "resting places" of bats. The EU Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, February 2007 states that these are places "where there is a reasonably high probability that the species concerned will return".

Building Assessment

3.16 External aspects of buildings within the study area were examined to determine any potential access points and roost sites on 15th January 2019. Structural features with the potential for use by roosting bats were recorded and suitable access points such as small gaps under eaves/soffit boards, raised or missing ridge tiles and gaps at gable ends were sought. Evidence that potential access points were used by bats was also sought. Such evidence includes staining from urine and/or fur and the presence of bat droppings in and around features. Indicators that potential access points had not recently been used included the presence of heavy cob-webbing and general detritus around these points.

3.17 Internal access was not possible (see limitations/constraints).

Herpetofauna

3.18 Any water bodies found within the site were noted and described to assess their potential to support an amphibian population, including great crested newts *Triturus cristatus* (GCN). All ponds were assessed using a Habitat Suitability Index (HSI) (Oldham et al. 2006)[6]. The HSI for GCN incorporated ten suitability indices, all of which are factors known to affect this species; these are as follows:

- Geographic location;
- Pond area;
- Pond drying;
- Water quality;
- Shade;
- Presence of water-fowl;
- Presence of fish;
- Number of linked ponds;
- Terrestrial habitat; and
- Macrophytic coverage.

3.19 A score is assigned according to the most appropriate criteria level set within each attribute and a total score calculated of between 0 and 1. Pond suitability is then determined according to the following scale:

Table 2: Habitat Suitability Index Scores and Pond Suitability

HSI Score	Pond Suitability
<0.5	Poor
0.5 - 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

3.20 Terrestrial habitats were evaluated for their potential to support both amphibians and reptiles following guidance set out within the Herpetofauna Workers Manual[7]. These include aquatic habitats, south facing banks and field margins, transitional areas between long and short vegetation, and other areas which provide basking and/or sheltering opportunities.

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

7 Gent, T., & Gibson, S. [Eds.]. (2003) *Herpetofauna Workers Manual.* Peterborough: Joint Nature Conservation Committee.

Limitations

3.21 The species data collated for the desk study is derived from records submitted by members of the public and from specialist volunteer group surveys. It does not represent a definitive list of species that occur in the local area, and the absence of records does not necessarily imply absence of such species.

3.22 The extended Phase 1 habitat survey was completed outside of the optimal time of year. However, given the paucity of the majority of habitats recorded and the presence of only very common and widespread species and habitats, it is not likely that the seasonality of the survey has prevented appropriate characterisation of habitats or a broad assessment of the site's ecological value. Where habitats are perceived to be of greater value for biodiversity (i.e. the woodland, waterbodies and hedgerows), further survey at an appropriate time of year is recommended.

3.23 In the case of the building inspection, internal access was not possible, however given the potential and features observed, this is not considered to be a constraint to determination of the level of bat potential.

4.0 RESULTS

Desktop Survey

Statutory Designations

4.1 According to the MAGIC website there is one designated site of international importance for nature conservation located within 15km of the site boundary. This is Epping Forest SAC which is situated approximately 13.5km to the north-west. Epping Forest is an extensive area of broadleaved deciduous woodland, interspersed with dry grassland, steppe, heath and marshland habitats. The site is designated as an SAC primarily for its Atlantic acidophilous beech forest type habitat, found at the north-eastern part of its range. These woodlands in turn support important populations of a range of vulnerable and rare species, including the moss *Zygodon forsteri*. Further Annex I listed habitats are also present as qualifying features for the SAC, including Northern Atlantic wet heath and European dry heath, but are not primary reasons for the SAC designation.

4.2 A past history of management by pollarding and the resulting large numbers of veteran trees, support a rich assemblage of fungi and dead-wood invertebrates, including stag beetle *Lucanus cervus*. The widespread and frequent records of stag beetle, an Annex II listed species, are an additional, primary reason for the SAC designation. Epping Forest is also an important site for a number of other species associated with decaying timber, and supports many Red Data Book and Nationally Scarce invertebrates.

Statutory Sites of National Conservation Value

4.3 There are no nationally important statutory designated sites, such as SSSIs, located within 2km of the site, and, according to the MAGIC website, residential development within the site would not fall within impact risk zones (IRZ) of any SSSIs.

Non-statutory Designations

4.4 A data search undertaken through the EFC and EWT identified nine non-statutory designated LWSs within a 1km radius of the site boundary, including one situated within the site itself. These are detailed in *Table 3*, with their locations mapped on *Figure 1: Consultation Plan*.

Table 3: Non-statutory Designated Sites within 1km

Local Wildlife Site	Distance	Bearing	LWS Selection Criteria and Rationale
High Wood	On-site	On-site	Ancient woodland, lowland mixed deciduous woodland on non-native sites. Rationale: *Its structure and composition supports documentary evidence that this is an ancient woodland. The seemingly more recent areas provide an integral habitat extension to the ancient parts.*
Weald Country Park	0.09km	West	Ancient woodland sites, lowland mixed deciduous woodland on non-ancient sites, wood-pasture and parkland, habitat extension mosaics, accessible natural greenspace. Rationale: *Some justification that Langton's Wood is ancient woodland. Much of the remaining woodland has matured to the point where it can be considered to meet the definition of UK BAP Priority Habitat. The small blocks of wood that do not meet this standard provide additional habitat diversity within a large tract of publically accessible woodland. Only pure blocks of conifer woodland have been excluded. The old, grazed parkland (east of the park) retains all the features that make this particular habitat mosaic of great value to invertebrates. Areas of grassland of lower conservation value (north of the lakes) are of value within the context of the site, comprising a mosaic of publically accessible natural greenspace.*
Honeypot Lane Meadows	0.20km	South-east	Other neutral grasslands, accessible to the general public. Rationale: *Represents a significant block of unintensively managed species-rich grassland with good public access over much of it. The matrix of such grasslands with thick, old hedgerows is becoming a rare sight in the modern landscape.*
St Charles Nature Reserve	0.34km	East	Lowland mixed deciduous woodland on non-ancient site. Rationale: *Survives as a remnant of old woodland now in a predominantly urban environment. Small sites such as this one, particularly when secluded and undisturbed, provide a valuable haven for wildlife.*
Marconi Gardens	0.64km	North-east	Neutral soil grassland, accessible natural greenspace. Rationale: *The sward characteristics have changed considerably since the site was first identified 20 years ago. Management will be needed to maintain its botanical interest but it is still a valuable local resource and an important natural*

			greenspace for nearby residents.
Shenfield Meadow	0.66km	East	Neutral grasslands, heathland and acid grasslands, accessible natural greenspace. Rationale: *Represents a relatively large contiguous block of species-rich grassland, a scarce and declining habitat in the county. Public access to the Merrymeade section is an important local resource.*
La Plata Grove	0.85km	South	Lowland mixed deciduous woodland, accessible natural greenspace. Rationale: *Partly accessible to the public, the woodland is located close to the centre of Brentwood, and supports a sizable population of a threatened Essex plant (soft shield-fern* Polystichum setiferum*)*
Hall Wood	0.88km	East	Ancient Woodland Rationale: *Included in Essex Ancient Woodland Inventory and has a structure and composition which supports this status.*
Vicarage Wood	0.96km	South	Ancient woodland Rationale*: Its structure and composition supports documentary evidence that it is an ancient woodland.*

Protected Species

4.5 Records of protected or otherwise notable taxa provided by the Essex Wildlife Trust, Essex Recorders and Essex Field Club, within 1km of the site boundary, are listed in *Table 4* below. Locations of these records are also presented in *Figure 1: Consultation Plan*.

4.6 Records have been provided from the last ten years, however, the whole set of data was analysed to establish the requirement for further surveys. In the case of bird species, only those species included on the BoCC Amber or Red lists, or on the Wildlife and Countryside Act Schedule 1 were included, unless otherwise considered a notable species.

Table 4: Protected and Notable Species Records

Species	Dates	Relevant Legislation	Approximate Location Relative to Site
Reptiles and Amphibians			
Great-crested newt *Triturus cristatus*	2010-2018	HabsDirA2, NERC41, WCA5	Multiple records, nearest located approximately 0.25km W
Common toad *Bufo bufo*	2010-2018	UKBAP	Multiple records, nearest located approximately 0.58km SW
Grass snake *Natrix helvetica*	2013	HabsDirA2, NERC41, WCA5	Two records, nearest located approximately 0.12km W

Species	Dates	Relevant Legislation	Approximate Location Relative to Site
Adder *Vipera berus*	2012	HabsDirA2, NERC41, WCA5	Single record, located approximately 0.21km E
Birds			
Mediterranean gull *Ichthyaetus melanocephalus*	2009	BoCC4:Amber	Single record, located approximately 0.89km W
Red kite *Milvus milvus*	2017	WCA1	Single record, located approximately 0.8km NE
Invertebrates			
Stag beetle *Lucanus cervus*	2015	WCA5	Single record, located approximately 0.13km NE
White-letter hairstreak *Satyrium w-album*	2014	WCA9	Two records, nearest located approximately 0.95km S
Mammals (Bats)			
Nathusius' pipistrelle *Pipistrellus nathusii*	2014	HabsDirA2, WCA5	Single record, located approximately 0.99km W
Unidentified bat *Chiroptera sp.*	2012	HabsDirA2, WCA5	Single record, located approximately 0.32km E
Daubenton's bat *Myotis daubentonii*	2014	HabsDirA2, WCA5	Single record, located approximately 0.99km W
Natterer's bat *Myotis nattereri*	2009-2011	HabsDirA2, WCA5	Multiple records, nearest located approximately 0.72 SW
Noctule *Nyctalus noctula*	2010-2011	HabsDirA2, WCA5, NERC41	Multiple records, nearest located approximately 0.65km W
Common pipistrelle *Pipistrellus pipistrellus*	2011-2017	HabsDirA2, WCA5	Multiple records, nearest located approximately 0.27km N
Soprano pipistrelle *Pipistrellus pygmaeus*	2014	HabsDirA2, WCA5, NERC41	Single record, located approximately 0.99km W
Brown long-eared bats *Plecotus auritus*	2009-2011	HabsDirA2, WCA5, NERC41	Two records, nearest located approximately 0.73km SW

Key: NERC41 – Section 41 of the Natural Environment and Rural Communities Act 2006; HabsDirA2 – Habitats Directive Annex II species, HRegs – The Conservation of Habitats and Species Regulations 2017; UKBAP – UK Biodiversity Action Plan Species; LBAP – Local Biodiversity Action Plan; WCA1/ WCA5/ WCA8 / WCA9 – species listed on Schedule 1, Schedule 5, Schedule 8 and Schedule 9 of the Wildlife and Countryside Act 1981 respectively; UKRL – UK Red List (nt – Near Threatened, vu – Vulnerable); BoCC4:Red/ BoCC4:Amber – Species of High or Medium Conservation Concern respectively

Field Survey

Habitats

4.7 Figure 2 illustrates the habitats on site which consisted of arable field compartments and parcels of both plantation and natural / semi-natural woodland, separated by hedgerows and ditches. There was a series of waterbodies within the site boundary.

Woodland

4.8 Four woodland compartments were located within the site, including High Wood LWS (W1), designated as ancient woodland.

4.9 W1 contained a number of mature native trees, with species including pedunculate oak *Quercus robur*, hornbeam *Carpinus betulus*, Scots pine *Pinus sylvestris* and downy birch *Betula pubescens.* The understory was composed of sparse shrubs and scrub vegetation including holly *Ilex aquifolium*, hazel *Corylus avellana*, rowan *Sorbus aucuparia* and elder *Sambucus nigra*, whilst non-native species cherry laurel *Prunus laurocerasus* and a *Rhododendron* sp. were also recorded. The woodland was interspersed with a network of informal tracks which link to the adjacent, off-site Larkin's playing field and Ongar Road. Dry ditches throughout the woodland supported limited ground flora including bramble *Rubus fruticosus* agg., bracken *Pteridium aquilinum*, ground-ivy *Glechoma hedera*, wood sage *Teucrium scorodonia* and false brome *Brachypodium sylvaticum.*

4.10 Although cited as ancient woodland, much of the tree canopy, particularly along the eastern and western edges, was composed of immature and semi-mature silver birch *Betula pendula* and cherry species *Prunus* sp.

Photograph 1: View of Western End of High Wood (W1)

4.11 Woodland W2 is a small compartment comprising scattered mature trees, with a ditch containing running water in the centre. The canopy contained a variety of native tree species including pedunculate oak, silver birch *Betula pendula*, cherry *Prunus avium*, beech *Fagus sylvatica* and poplar *Populus* sp., whilst the sparse understorey comprised isolated shrub species including elder and holly. Scrub and tall ruderal vegetation dominated the ground flora, including occasional to frequent distributions of bramble, hemlock *Conium maculatum*, common nettle *Urtica dioica*, creeping thistle *Cirsium arvense* and bracken. Other less frequent ground flora included wood dock *Rumex sanguineus* and foxglove *Digitalis purpurea.*

4.12 W3 encompassed waterbodies P4, P5, & P6, as well as connecting ditches linking these waterbodies together. This habitat supported a high woody diversity comprising semi-mature and mature native species including pedunculate oak, beech, cherry, silver birch and Scots pine, with

further alder *Alnus glutinosa* and willow *Salix* sp. associated with the waterbody banks. The understorey was composed of sporadic areas of scrub and shrubs including bramble, holly, elder, and yew *Taraxacum baccata* tree saplings. Ground flora composition varied throughout the woodland with stands of bracken present as well as rare to occasional distributions of species such as foxglove, red campion *Silene dioica*, cuckoopint *Arum maculatum*, wood dock and false brome.

4.13 The north-eastern extent of W3 has been used to store construction machinery and supplies, and hedge bindweed *Calystegia sepium* and the introduced species greater periwinkle *Vinca major* were identified colonising in the area (TN4). Along the southern boundary of W3, a number of log piles consisting of the natural deadwood from the woodland canopy (TN5) were present.

4.14 W4 was composed of scattered trees around waterbody P6, as well as a connecting woodland belt on a sloping bank along the western boundary of the site. This habitat was made up of mature native tree species including ash *Fraxinus excelsior*, pedunculate oak, silver birch, cherry, sycamore *Acer pseudoplantanus* and beech with a sparse understorey supporting hazel, hawthorn *Crataegus mongyna*, holly and elder trees. The ground flora was considerably sparse with isolated bramble scrub and bracken stands identified.

Plantation Woodland

4.15 A single field compartment in the centre of the site was planted with a variety of conifer species of different ages. There were occasional white poplar *Populus alba* and elder saplings around the exterior. Ground flora communities varied in composition, with tall ruderal and disturbed ground species including annual meadow-grass *Poa annua*, creeping thistle *Cirsium arvense*, common nettle, creeping buttercup *Ranunculus repens* and pineappleweed *Matricaria discoidea* present.

Photograph 2: Conifer Plantation

4.16 The topographical layout of this woodland has resulted in the drainage of water through the conifer plantation, into the large waterbodies to its east. As a result, ground flora communities on the eastern boundary supported typical inundation species including frequent distributions of rosebay willowherb *Epilobium angustifolium*, hard rush *Juncus inflexus*, soft rush *Juncus effusus*, common sedge *Carex nigra* and pendulous sedge *Carex pendula*.

Scrub

4.17 Isolated patches of scrub were identified around the site, associated with woodland and pond habitats, and associated with the tall ruderal vegetation in the south-western corner. These habitats were dominated by bramble with occasional rose *Rosa* sp., species distributed throughout. Denser bramble scrub was recorded off-site along the southern boundary.

Trees

4.18 Mature trees were mainly restricted to hedgerows and the woodland compartments. Scattered native trees varying in age from sapling to mature species were recorded along the south-western boundary of the site. Tree species identified included pedunculate oak, silver birch, sycamore, beech, and Scots pine, with elder and holly also recorded. Some of the trees recorded were of sufficient size and girth to be considered to be of veteran status. A separate arboricultural survey of the site has been undertaken, and the veteran trees will be detailed within the accompanying report.

4.19 Adjacent to the north-western site boundary, in residential gardens, there were three mature pedunculate oaks trees overhanging the site (TN1).

Semi-improved Grassland

4.20 A small strip of semi-improved grassland was recorded between the plantation woodland and woodland W3, in the centre of the site. This habitat supported limited grass species diversity and was composed of common species including frequent to abundant perennial rye-grass *Lolium perenne*, rough meadow grass *Poa trivialis* and false oat-grass *Arrhenatherum elatius*, with occasional distributions of cock's-foot *Dactylis glomerata*, common couch *Elymus repens*, creeping bent *Agrostis stolonifera* and red fescue *Festuca rubra*. Herb diversity was equally limited with occasional distributions of typical grassland species including common mouse-ear *Cerastium fontanum*, shepherd's purse *Capsella bursa-pastoris*, broad-leaved dock *Rumex obtusifolium*, creeping buttercup and common vetch *Vicia sativa*.

4.21 An area on the eastern periphery of this grassland (TN6) acted as a natural drainage area into waterbody P3. As a result this area supported a damper grassland character including occasional to frequent distributions of common sedge, hard rush, marsh thistle *Cirsium palustre*, pendulous sedge and soft rush.

4.22 A small strip of semi-improved grassland was located on the south-western boundary of the site, which formed a habitat mosaic with surrounding tall ruderal and scrub vegetation. This habitat supported a moderate grass species diversity, including frequent to abundant distributions of red fescue, rough meadow grass, creeping bent and false oat-grass with occasional tussocks of cock's-foot grass and an equally diverse herbaceous layer comprising of typical grassland

species including common vetch, smooth tare *Vicia terasperma*, common mouse ear, and creeping buttercup.

Bracken

4.23 Bracken was found in some areas of the woodland compartments, and along some of the ditches on-site, most notably along D11 at the southern end of the site.

Tall Ruderal

4.24 Tall ruderal habitats were mostly restricted to the boundaries of the site, and areas around on-site waterbodies and ditches. Species included frequent to abundant common nettle, hemlock, teasel *Dipsacus fullonum*, creeping thistle and spear thistle *Cirsium vulgare*.

Standing Water

4.25 A total of seven waterbodies were identified within the site boundary, with ponds P2-P6 interconnected through a series of ditches. All the waterbodies supported mature native tree species around their peripheries, including alder, silver birch, pedunculate oak and willow species. Dense stands of bramble scrub were also recorded around the waterbodies.

4.26 Vegetation communities around the ponds varied with location, with the woodland ponds (P2-P6) supporting occasional stands of bracken, as well as limited inundation species including remote sedge *Carex remota*, rosebay willowherb, common reed *Phragmites australis* and common figwort *Scrophularia nodosa*. No aquatic vegetation was recorded within these waterbodies.

4.27 P1 was a small field pond approximately 0.5m deep with perennial rye grass, cock's-foot and false oat-grass frequently to abundantly distributed on the banks and within the waterbody basin. Willow species saplings were also growing within the basin of the waterbody. Additional vegetation on the banks consisted of soft rush and common nettle, with some alder and willow saplings present.

4.28 P7 was located in the south-western corner of the site. This supported well vegetated banks, composed of bramble scrub stands and hawthorn, elder, and holly. Unmanaged grassland was also recorded, consisting of frequent to abundant false oat-grass, cock's-foot, red fescue and rough meadow grass, as well as a herbaceous community of common plants including occasional broad-leaved dock, perennial sow-thistle *Sonchus arvensis*, lesser burdock *Articum minu*s and common vetch.

4.29 A large garden pond was identified within a residential property on the north-western boundary of the site (TN2).

Running Water

4.30 Running water was restricted to the ditches, D7, D8, D9 and D12 located in the centre of the site that fed waterbodies P3 to P6. These ditches supported approximately 0.5-1m water flowing in a southerly direction. Vegetation communities composed of frequent to abundant rosebay willowherb, pendulous sedge, soft rush, and hard rush, as well as occasional common figwort, teasel, and alder and willow saplings. Dense bramble scrub and bracken stands were also associated with these ditches.

4.31 D8, which ran through W3 compartment, contained shallow rust coloured water. The banks of this ditch supported a sparser, more limited diversity to the others, and included occasional stands of remote sedge, male fern *Dryopteris filix-mas*, ground-ivy and broad buckler fern *Dypteris dilatata.*

Photograph 3: Ditch D8

Arable

4.32 Seven large arable fields form the majority of the site, covering an area of approximately 32ha. During the time of survey all the fields were either ploughed or supported rye-grass crops *Lolium* sp.

4.33 The field margins measured approximately 2-3m in width and supported frequent to abundant distributions of perennial rye-grass, annual meadow grass and cock's-foot. Typical arable margin herb species were also recorded at occasional to locally frequent densities including red dead-nettle *Lamium purpureum*, small nettle *Urtica urens*, swinecress *Coronopus squamatus* and common field speedwell *Veronica persica*.

Photograph 4: Typical Arable Habitat On-site

Hedgerows

4.34 There were 17 hedgerows bounding the fields on site. Excluding hedgerows H3 and H9 which comprised ornamental species, all the hedgerows onsite included a variety of native species. Mature and semi-mature trees were frequent within the hedgerows.

4.35 Using the Hedgerow Evaluation and Grading System (HEGS) the majority of hedgerows were assessed as being of moderate to high conservation value (*Table 5*) mainly due to their composition and the lack of recent management.

4.36 Hedgerows H4, H11, and H16 were considered 'important' under the The Hedgerow Regulations 1997 due to the number of native species present and the presence of associated features.

4.37 All hedgerows, excluding H9 and H13, were classified as NERC S41 Habitats of Principle Importance, due to having at least 80% of their canopy comprising native species. H11 and H16 were also considered to be Essex LBAP habitats having five woody species in an average 30m length.

Table 5: Hedgerow Survey Summary

Ref	Canopy Sp.	Length (m)	Notes	HEGS Value and Score	Important Under REGS
H1	*Cm, Ps, Ap, Qr, Um, Rf*	55	Field boundary hedge. Mixed native dominance. 4 Mature Standards, 1 Young Tree. 10-0% gaps, 3 connections. Ditch present.	2 Moderately high to high value	**Not Important** 3sp / 30m
H2	*Ps, Um, Qr, Cm, cotoneaster*	150	Residential boundary Hedge. Mixed native dominance. 2 Mature Standards, 15 Young Trees. 30-10% gaps, 3 connections. Ditch present.	2+ Moderately high to high value	**N/A Residential Hedgerow**
H3	*Qr, Rf, Ps, Cm, Ca, Ia, Fe, Ap, Sn*	397	Residential boundary hedge. Mixed native dominance. 3 Mature Standards, 5 Young Trees. 10-0% gaps, 3 connections. Ditch present.	2 Moderately high to high value	**N/A Residential Hedgerow**
H4	*Ps, Qr, Fs, Lo, Ia, Cm, Sx sp., Sn Um, Rf, Fe, Ca*	478	Field boundary hedge. Mixed native dominance. 11 Mature Standards, 9 Young Trees. 30%+ gaps, 1 connection. Ditch present, PRoW.	-2 Moderately high to high value	**Important** 4sp / 30m and 3 associated features (ditch, 1 tree/50m, PRoW)
H5	*Ia, Qr, Ps, Ca, Um, Fe, Ap, Cup x ley, Ac*	191	Field boundary hedge. Mixed native dominance. 7 Mature Standards, 5 Young Trees. 30-10% gaps, 3 connections.	-1 high to very high value	**Not Important** 3sp / 30m
H6	*Qr, Ia, Sx sp., Ps, Fe, Broom*	87	Field boundary hedge. Mixed native dominance. 8 Young Trees. 30-10% gaps, 4 connections. Ditch present.	2 Moderately high to high value	**Not Important** 4sp / 30m
H7	*Qr, Ps, Ca, Cb, Ia, Bp, Sn*	88	Field boundary hedge. Mixed native dominance. 5 Mature Standards, 4 Young Trees. 10-0% gaps, 3 connections. Ditch present.	-1 high to very high value	**Not Important** 4sp / 30m
H8	*Qr, Ps, Cb, Sx sp.,*	176	Field boundary hedge. Mixed native dominance. 3 Mature Standards, 9 Young Trees. 10-0% gaps, 2 connections. Ditch present.	2 Moderately high to high value	**Not Important** 2sp / 30m
H9	*Cup x ley*	132	Residential boundary hedge. 1-2 species dominance. No gaps, 3 connections.	N/A	**N/A Residential Hedgerow**

Ref	Canopy Sp.	Length (m)	Notes	HEGS Value and Score	Important Under REGS
H10	*Ia, Ps, Qr, Ca, Sn, Cm, eucalyptus sp.*	128	Field boundary hedge. Mixed native dominance. 3 Mature Standards, 7 Young Trees. 10-0% gaps, 5 connections. Ditch present.	-1 high to very high value	**Not Important** 4sp / 30m
H11	*Sx frag., Cb, Qr, Rc, Pop alb., Cm, Ap, Ps, Bp, Ah, Ag, Cs, Ia, Pa, Qu rub., eucalyptus, Rf*	100	Field boundary hedge. Mixed native dominance. 2 Young Trees. 10-0% gaps, 5 connections.	1 high to very high value	**Important** 8sp / 30m
H12	*Ps, Qr, Pa, Cm, Ca, Ac, Rf, Fe, Ia, Cup x ley*	111	Field boundary hedge. Mixed native dominance. 2 Mature standards, 3 Young Trees. 30-10% gaps, 4 connections.	2 Moderately high to high value	**Not Important** 4sp / 30m
H13	*Cup x ley, Rf, Sn*	30	Field boundary hedge. Ornamental species dominant. No gaps, 2 connections.	-2 Moderately high to high value	**Not Important** Non-native
H14	*Qr, Cm, Ca, Fe, Cb, Fs, Ca, Sn, Cup x ley, Rf*	206	Field boundary hedge. 1-2 species dominant. 1 Mature Standard, 2 Young Trees. 30-10% gaps, 4 connections.	-2 Moderately high to high value	**Not Important** 4sp / 30m
H15	*Fe, Qr, Cm, Fs, Sn, Ia, Ps, Pop alb., Qu rub., Rf, Ap*	365	Field boundary hedge. Mixed native dominance. 15 Mature Standards. 30-10% gaps, 3 connections.	2 Moderately high to high value	**Not Important** 4sp / 30m
H16	*Qr, Fe, Cm, Sn, Ia, Ca, Rf, Sx sp., Bp, Psyl., Ps*	157	Field boundary hedge. Mixed native dominance. 5 Mature Standards, 2 Young Trees. 10-0% gaps, 3 connections. Ditch present.	1 high to very high value	**Important** 5sp / 30m and 4 associated features (<10% gaps, 1 tree / 50m, ditch present and 3 ground flora species).
H17	*Qr, Ac, Ap, Ca, Fs, Ps, Sn, Cm, Cb, Ia, Rf, Ah*	240	Field boundary hedge. Mixed native dominance. 17 Mature Standards, 1 Young Trees. 30-10% gaps, 2 connections. 1m+ Bank Present.	1 high to very high value	**Not Important** 4sp / 30m

Key to hedgerow species: Ac *Acer campestre* Field maple, Ap *Acer pseudoplatanus* Sycamore, *Ag Alnus glutinosa* Alder, *Ah Aesculus hippocastanum* Horse Chestnut, *Bp Betulus pendula* Silver birch, *Ca Corylus avellana* Hazel, Cb *Carpinus betulus* Hornbeam, Cm *Crataegus monogyna* Hawthorn, Cs *Castanea sativa Sweet Chestnut, Cup x Ley Cupressus x leylandii Leylandii,* Fe *Fraxinus excelsior* Ash, *Fs Fagus sylvatica* Beech, Jr *Juglans regia* Walnut, *Ia Ilex aquifolium Holly, Lo Ligustrum Ovalifolium Privet, Lv Ligustrum vulgare* Wild Privet, *Malus* sp. Apple sp., Pd *Prunus domestica* Damson, Ps *Prunus spinosa* Blackthorn, *Psyl Pinus sylvestris* Scot's Pine, Qr *Quercus robur* Pedunculate Oak, *Qu rub Quercus rubra* Red Oak, Rc *Rosa canina* Dog rose, Rf *Rubus fruticosus* ag. Bramble aggregate, Sa *Sorbus*

aucuparia Rowan, Sn *Sambucus nigra* Elder, Sx cin *Salix cinerea* Grey Willow, Sx frag *Salix fragilis* Crack Willow, Sx sp. *Salix species* Willow, Um *Ulmus minor* English elm, Vl *Viburnum lantana* Wayfaring-tree

Ditches

4.38 Further to the water containing ditches details above, there were eight dry ditches identified throughout the site (D1-D6, D10 and D11), associated with field boundaries and woodland edges. The majority of the ditches were composed of approximately 2-3m wide channels with 1-2m high earth banks.

4.39 The dry ditches support limited botanical diversity which comprised bramble scrub, tall ruderal and disturbed ground species including bracken, common nettle, cleavers, ground ivy *Glechoma hederacea* and hedge woundwort *Stachys sylvatica*. There was no aquatic or marginal vegetation present to indicate that the ditches were inundated with water for any long periods of time.

Buildings and Hardstanding

4.40 There was one building (B1) on-site, located in the centre of the site adjacent to P6. This was a single storey shed constructed with concrete breeze blocks and a flat roof comprising corrugated metal.

4.41 A small area of hardstanding used as a farm vehicle compound was located at the western end of hedgerow H5. Some spoil heaps of soil and manure were present and these supported a limited botanical diversity, consisting of occasional to locally frequent ephemeral and disturbed ground species including annual meadow grass, common fleabane *Pulicaria dysenterica*, petty spurge *Euphorbia peplus*, hoary cress *Lepidium draba* and willowherb *Epilobium* sp.

Fauna

Badgers

4.42 Evidence of badger was recorded on site, however due to the sensitive nature of this species, the details have been omitted and provided in a separate stand-alone report. This will only be available to those that have a legitimate need to view the information.

Bats

4.43 The woodlands, hedgerows, waterbodies and field margins, as well as the adjacent residential garden boundaries provide optimal dispersal and feeding habitat for local bat populations. The arable fields provide sub-optimal habitat due to the application of herbicides / pesticides which limit diversity and subsequently prey items (invertebrates).

Tree Assessment

4.44 Eight mature trees were considered to have low potential to support bat roosts, and a further seven were considered to have moderate potential. These are summarised in *Table 6* (below).

Table 6: Results of Ground Level Tree Assessments for Potential Bat Roosts.

Tree reference	Species	Category (See Table 1)	Comments
1	Pedunculate oak	Moderate	Cavity in knot hole and smaller cavities due to branch failure
2	Pedunculate oak (dead)	Moderate	Cavities where branches have failed
3	Pedunculate oak	Low	Some fissures and cracked bark
4	Dead tree	Moderate	Woodpecker hole
5	Pedunculate oak	Low	Branch failure and cavities but upward facing
6	Pedunculate oak	Low	Multiple branch tear-outs, mostly upward facing. Some deadwood with fissures in crown.
7	Pedunculate oak	Low	Woodpecker hole
8	Pedunculate oak	Moderate	Large branch tear out in the canopy with substantial deadwood present. Tree appears to be failing so possible large internal cavity.
9	Beech	Low	Small area of rotting wood on main trunk
10	Pedunculate oak	Moderate	Large knot hole in main trunk plus substantial branch tear out and rotting wood in crown
11	Pedunculate oak	Moderate	Large knothole cavity with staining present. Further branch tear outs and rotting wood in crown.
12	Pedunculate oak	Low	Partially detached bark plates
13	Pedunculate oak	Moderate	Woodpecker hole and large natural cavity in stem.
14	Pedunculate oak	Low	Branch tear-outs, resulting cavities mostly upward facing.

Tree reference	Species	Category (See Table 1)	Comments
15	Pedunculate oak	Low	Branch tear-outs resulting in mostly upwards facing cavities. Some partially detached bark plates.

Building Assessment

4.45 The building on-site was a single storey shed with a flat roof. During the assessment, no evidence of bats was recorded. Potential access points included a large gap above the door, and smaller gaps under the metal roofing. However, the building did not appear to have a roof void or under-boarding and was exposed to the elements; it was therefore considered to have no potential to support roosting bats.

Birds

4.46 Given the habitats present within the study area boundary and its size and location, it is considered that it will be used for foraging and nesting by a variety of bird species including those typical of farmland, wetland, woodland, and residential fringe. This includes species such as song thrush *Turdus philomelos,* skylark *Alauda arvensis,* and grey partridge *Perdix perdix* all of which are Birds of Conservation Concern (BoCC) red list species, species of principal importance under the NERC Act, and Essex LBAP species.

4.47 Common, urban edge bird species such as blackbird *Turdus merula,* great tit *Parus major*, wren *Troglodytes troglodytes*, magpie *Pica pica*, mallard *Anas platyrhynchos,* and buzzard *Buteo buteo,* were observed during the site survey.

Herpetofauna

4.48 There were seven ponds within the site boundary and OS maps and aerial photography revealed a further eleven ponds within 250m of it (*Figure 3*). HSI assessments were undertaken on all on-site ponds, the results of which are presented in *Table 7.*

Table 7: Pond Characteristics and HSI Survey Results

Waterbody	HSI Result	Description	Photograph
1	HSI Score 0.73 – Good suitability, predicted presence 79%	Very shallow field pond, densely vegetated with grass species. Moderate surrounding habitat, 40% shade, 100% vegetation coverage. Fish possible.	
2	HSI Score 0.73 – Good suitability, predicted presence 79%	Small pond surrounded by scrub and trees draining into larger waterbodies. Good surrounding habitat, 60% shade, 0% macrophyte coverage. Fish present.	
3	HSI Score 0.31 – Poor suitability, predicted presence 3%	Large steep banked waterbody. Moderate surrounding habitat, 0% shade, 0% macrophyte coverage. Fish present.	
4	HSI Score 0.69 – Good suitability, predicted presence 69%	Small pond within woodland draining into larger lake. Good surrounding habitat 80% shade, 5% macrophyte coverage. Possibility of fish	

5	HSI Score 0.65 – Average suitability, predicted presence 55%	Small pond within woodland draining into larger lake. Good surrounding habitat 80% shade, 20% macrophyte coverage. Possibility of fish	
6	HSI Score 0.39 – Poor suitability, predicted presence 3%	Large steep banked waterbody surrounded by beech trees. Good surrounding habitat, 90% shade, 0% macrophyte coverage. Fish present.	
7	HSI Score 0.72 – Good suitability, predicted presence 79%	Drainage pond within field margin. Moderate surrounding habitat, no shade, 10% macrophyte coverage. Fish possible	

4.49 The majority of the site was considered to be unsuitable as foraging habitat for amphibians due to its arable nature. However, the woodland, hedgerow bases, and unmanaged semi-improved grassland was considered to be suitable habitat for foraging or hibernating amphibians.

4.50 The margins of the fields and areas of grassland were considered suitable for reptile species having the complex and varied vegetation structure preferred by reptiles for basking and shelter. The areas of aquatic habitat are also considered suitable for grass snake in particular.

Other species

4.51 The hedgerows and woodland within the site are considered to offer suitable habitat for hazel dormice *Muscardinus avellanarius*. The varied canopy and scrub species provide foraging opportunities throughout the year, with opportunities for torpor available in tree crevices/cavities

within trees. The hedgerow network provides corridors to the wider area, particularly to the south and west where additional optimal habitats are present, particularly within Weald Country Park LWS.

4.52 The woodland edges and hedgerows provide suitable habitat for stag beetles, as they contain dead wood piles, and rotting wood

5.0 EVALUATION & RECOMMENDATIONS

National Planning Policy Framework (NPPF)

5.1 Within the NPPF[8] there is a 'presumption in favour of sustainable development' which underpins the production of development plans and decision taking.

5.2 The NPPF states that "*Planning policies and decisions should contribute to and enhance the natural and local environment"* by, amongst other things, *"minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures"*

5.3 Within the NPPF there are clear objectives for conserving and enhancing habitats and biodiversity. "*To protect and enhance biodiversity and geodiversity, plans should:*

> *a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
>
> *b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*

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

> *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*

[8] Ministry of Housing, Communities and Local Government. (2018). *National Planning Policy Framework*. [Online]. London: Ministry of housing Communities and Local Government. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf [Accessed 29/01/2018]

developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

Statutory Sites

5.4 SACs are strictly protected sites, designated under the Habitats Directive, which contain habitats and/or species (excluding birds) considered to be most in need of conservation at a European level

5.5 Guidance on International sites is provided by the National Planning Policy Framework and Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.[9] In brief the circular states that the competent authority (the local planning authority (LPA)) must establish if any proposals not directly connected to or necessary for the management of the international site, either alone or in combination, are likely to have a significant effect on the interest feature of the site. If, on a precautionary basis, there is a risk that there may be a significant effect upon the international site then a further appropriate assessment may be required.

5.6 The study area does not receive any statutory or non-statutory nature conservation designations such as SPA, SSSI, SAC or LNR.

5.7 Emerging policy NE02 Recreational Disturbance Avoidance and Mitigation Strategy (RAMS), in the Brentwood Borough Council Local Plan draft states that *"New residential development within the RAMS Zone of Influence will be subject to proportionate contributions to deliver all mitigation measures identified (including strategic measures) through project level HRAs, to mitigate any recreational disturbance impacts in compliance with the Habitat Regulations and Habitats Directive. Proposals will need to implement on-site options for avoidance and/or reduction in recreational disturbance impact through sensitive layout and design measures and green infrastructure proportionate to the scale of the development. The Council will seek appropriate financial contributions towards off site mitigation as prescribed in the Essex Coastal 'RAMS' mitigation strategy and the Epping Forest 'RAMS' mitigation strategy (as applicable)."*

5.8 Epping Forest SAC is located approximately 13.5km north-west of the site. Brentwood District Council commissioned a Habitats Regulations Assessment of their Draft Local Plan: Allocated Sites[10]. This stated that the two main adverse effects on Epping Forest SAC by development are recreational pressure and atmospheric pollution due to road traffic emissions. The assessment concluded that the site allocations within Brentwood were at least 8.8km from the SAC and that this distance was outside of the recreational zone of influence, and that based on current data, contribution of traffic flows from Brentwood to Epping Forest SAC are minimal. It is therefore considered that the proposed development is unlikely to have an adverse effect on the SAC given its distance from it.

[9] Office of the Deputy Prime Minister (2005). *National Planning Policy Framework and Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System* HMSO

[10] Aecom. *Habitats Regulations Assessment of Brentwood District Council Draft Local Plan: Preferred Site Allocations Regulation 18 Consultation* (January 2018) [Online] http://www.brentwood.gov.uk/pdf/30012018135031000000.pdf [Accessed 17.01.19]

5.9 There are no other important statutory designated sites (either international, national or local) located close to the site, and therefore the presence of nearby statutory sites is not considered to be a constraint to development.

Local Planning Policy

5.10 As well as NE02 described above, there are a number of emerging policies in the Brentwood Borough Council Local Plan Draft dated October 2018[11] aimed to help maintain the Borough's natural environment. Those that are considered pertinent to the subject site include:

- Policy BE36: Green & Blue Infrastructure, which states that *"Brentwood's existing ecological networks, its green and open spaces, as well as green and blue features in the built environment are a part of the Borough's network of Green and Blue Infrastructure (GBI) and should be protected, planned, enhanced and managed.*

  Development proposals should:

  a. ensure GBI is integral to the primary decision making at every stage in the planning process;

  b. maximise opportunities for the provision, restoration, enhancement, and connection of GBI that integrates with natural and historic environments and systems;

  c. direct buildings and construction area to the least sensitive locations;

  d. provide appropriate specification and maintenance plans for proposed on site green and blue infrastructure throughout the life of the development, this includes small scale greening interventions such as green roofs, street trees and soft landscaping;

  e. protect and enhance Brentwood's rivers, ponds and watercourses, avoid any adverse impacts on existing rivers, the water quality of the rivers and watercourse, and demonstrate that any unavoidable impacts are mitigated;

  f. seek to improve the water environment and ensure that adequate wastewater infrastructure capacity is provided;

  g. ensure that misconnections between foul and surface water networks are eliminated and not easily created through future building alterations;

  h. incorporate measures such as smart metering, water saving and recycling, including retrofitting and rain/grey water harvesting, to help to achieve lower water consumption rates and to maximise futureproofing;

  i. deliver environmental net gains; if there is a net loss from the development, provide provisions through offsetting.

  Where this is not possible, financial contributions to facilitate improvements to the quality and extent of existing GBI in Brentwood Borough will be sought.

[11] Brentwood Borough Council, *Brentwood Local Plan Pre-Submission (Publication Draft) Regulation 19* October 2018

The quantity, quality, accessibility and distribution of Green and Blue Infrastructure for proposed allocations, including Dunton Hills Garden Village, will be set out in site specific policies.

- Policy BE37 - Access to Nature, which states "Access to nature should be integrated as a fundamental part of site and buildings design. Development, including conversion of existing buildings, will be supported if they:

  a. Major development should provide direct access to nature by measures such as buildings design and orientation, high-quality landscaping, planting, green roofs, green walls, nature-based sustainable drainage and/or non-motorised access to the countryside;

  b. These measures should be protected, planned, designed and managed as integrated features of Green and Blue Infrastructure;

  c. Development in areas that are more than 1km walking distance from an accessible green open space should seek opportunities to improve residents' experience and interaction with nature by means of design and/or greening interventions."

- Policy NE01 – Protecting and Enhancing the Natural Environment, which states that *"Proposals will be supported which minimise the use of natural resources and proactively protect and enhance the quality of the natural environment according to their international, national and local significance, aiming to achieve:*

  a. ecological connections between significant sites through multi-functional green and blue infrastructure provision;

  b. biodiversity net-gain across all green infrastructure;

  c. ecological and ecosystem restoration; and

  d. habitat and species protection and enhancement (both statutory and non-statutory, including priority habitats and species) of international, national and local importance commensurate with their status.

  Proposals will not be permitted if potential impacts will lead to the deterioration or loss, either direct or indirect, of the borough's natural designated and non-designated heritage assets, including Biodiversity, Geodiversity, Landscape Character and any other aspect of ecological potential, priority habitats and/or species, water cycle, green wedges, ancient woodlands and landscapes.

  Development should avoid adverse impact on existing natural heritage assets as a first principle and enable net gains by designing in landscape and biodiversity features and enhancements. Where adverse impacts are unavoidable, they must be adequately and proportionately mitigated in accordance with their international, national and local significance. Proposals must demonstrate how they have taken all necessary steps of avoidance, minimisation and then mitigation; if insufficient to fully address adverse impacts, consideration will be given to compensation measures. Following this process, a proposal will only be supported subject to a hierarchy where:

  a. a site of international importance, being a special area of conservation (SAC), special protection area (SPA) or Ramsar site would be affected there has to be exceptional

overriding reasons of human health, public safety or environmental benefit; impact on these international (European) sites will also be subject to Policy NE02.

b. a site of national importance, such as a site of special scientific interest (SSSI) or national nature reserve (NNR) would be affected there has to be exceptional circumstances where the need for, and the benefits of, the proposal significantly outweigh both the potential impacts on the features of the site that make it of national importance and any broader impacts on the national and regional network of such sites; and

c. a site of local importance such as Local Wildlife Sites (LWS), a protected species, a priority habitat or species, a site of local or regional importance, the achievement of water body good ecological potential, or the biodiversity value of the proposed development site as part of the wider network would be affected, the need for and the benefits of the proposal must clearly outweigh the assessed impacts.

Proposals will be required to demonstrate that all potential adverse impacts on natural heritage assets are accompanied by an appropriate appraisal, investigating all individual and cumulative potential impacts and demonstrate what measures are to take place to avoid adverse impacts.

Where appropriate development proposals will be required to be accompanied by:

a. an ecological survey as required by appropriate to the nature and scale of the proposal, identifying links to similar ecosystems within proximity of the development site in line with Policy 10.10 Green Infrastructure;

b. a landscape scheme detailing new planting requirements and where appropriate, replacement trees of a value commensurate or greater to that which is lost, boundary treatments and proposals for ecological enhancement;

c. an arboricultural assessment detailing the measures to protect and/or justification for the removal of any trees or hedgerows during onsite construction;

d. details of landscaping maintenance arrangements; and

e. a method statement for any land raising and/or dispersal of excavated or dredged materials.

- Policy NE03 – Trees, Woodlands, Hedgerows, which states *"Development will not be permitted where it would have a detrimental effect on, or result in the loss of, significant landscape heritage or a feature of ecological importance, including trees, woodlands or hedgerows.*

  A development proposal will only be supported where it seeks to conserve and enhance any existing tree, woodland, hedge and/or hedgerow of value that would be affected by the proposed development.

  Where potential adverse impacts on trees, woodland, hedges and hedgerows is unavoidable, a proposal must demonstrate that the impact has been investigated. Where investigations show that such adverse impacts are possible a statement will be required that:

a. assesses all trees, woodland, hedges and/or hedgerows that would be affected by the proposal, describing and assessing their value;

b. sets out how the details of the proposal have been decided upon in terms of their impact on the value of trees, woodland, hedges and hedgerows and how adverse impacts will be avoided as far as possible, or if unavoidable how they will be minimised as far as possible.

The loss, threat or damage to any tree, woodland, hedge and/or hedgerow of visual, heritage or nature conservation value will only be acceptable where:

a. it is addressed firstly by seeking to avoid the impact, then to minimise the impact and finally where appropriate to include mitigation measures; or

b. there are sound arboricultural reasons to support the proposal.

Where impacts remain the need for, and benefits of, the development in that location must clearly outweigh the loss, threat or damage.

Where loss, threat or damage cannot be fully addressed through minimisation and/or mitigation measures the proposal may be supported if alternative measures such as reinstatement of features, additional landscaping, habitat creation or tree planting that will compensate for the harm and can be implemented and established before development starts.

Proposals for major scale development will be required to include additional new trees to form part of the landscaping for the proposal, the form of which will be determined by negotiation.

Trees or groups of trees subject to Tree Preservation Order protection will be protected from damage or removal, including their root protection zone"

5.11 High Wood LWS and ancient woodland is within the site's boundary. Although signs indicate that High Wood is a private woodland, it is easily accessible from both Ongar Road and from the adjacent Larkin's Playing Field, and is heavily used by the general public having wide well-worn paths throughout, some invasive species and signs of vandalism (*Photographs 5-7*).

Photograph 5: Signs of Vandalism in High Wood LWS (W1)

Photograph 6: Well-worn path in High Wood LWS (W1)

Photograph 7: Non-native species in High Wood LWS (W1)

5.12 According to the Brentwood Borough Local Wildlife Site Review[12] High Wood LWS meets the criteria as an LWS as both an ancient woodland site and as a lowland mixed deciduous woodland on non-ancient site. It also qualifies as an Essex BAP habitat. The wood is described as being ancient in its main body with more recent woodland at its eastern end and adjacent to

[12] Essex Ecology Services Ltd. EECOS *Brentwood Borough Local Wildlife Site Review 2012* 4th December 2012

the residential houses. It lies within the Havering and Brentwood Ridge Living Landscape, an Essex Wildlife Trust designation that promotes significant landscapes for wildlife which are also beneficial to local people and communities and foster a flourishing local economy.

5.13 The proposals seek to retain Hall Wood LWS in its entirety, and increase the boundary planting to buffer the more ecologically valuable areas from development. During construction suitable protection will adhere to standard best practice guidance. This will include BS5837 Trees in Relation to Design, Demolition and Construction – Recommendations: 2012 for trees and hedges.

5.14 New planting, along with the already extant younger woodland around the edges of the woodland will ensure that a buffer of at least 15m will be provided between the LWS and the development. The new planting will link to further areas of green space within the development.

5.15 A long-term management plan will be implemented which will be designed to enhance the woodland with prescriptions such as invasive species removal, coppicing, deer control (if necessary), and rerouting pathways to avoid more sensitive areas, being put in place.

5.16 The LWS Review states that the two main threats to ancient coppices are neglect and deer browsing. For High Wood LWS it recommends resumption of coppicing as a management tool, but states that trampling of new coppices, and invasion of the woodland by sycamore are management issues.

5.17 It is considered that if the development was to progress, the woodland could be brought under a management regime that would be advantageous to its status. By the use of well sign-posted paths and interpretation boards, residents and the general public that live off-site but currently use the wood would be encouraged to stay away from the more sensitive areas of woodland, thereby allowing management prescriptions to take place, without excluding the public.

5.18 Rather than being of detriment to the LWS it is considered that providing there is a commitment to provide appropriate management and involve the local community, the woodland will benefit from the proposed adjacent development. For instance, The Woodland Trust states that "*Local people are often the key to dealing with litter and fly-tipping in urban woods. Contact with the community shows them that the landowner has a local representative who is monitoring the woodland, and that the litter or fly-tipping problem is not a lost cause…….involving them can help to create a sense of ownership and responsibility in the community that will, in turn, benefit the wood."*[13]

5.19 There are a further eight LWS within 1km of the site. The nearest is Weald Country Park LWS which is located almost immediately adjacent the site's western boundary, on the opposite side of Sandpit Lane. This is an open public space, and is managed as such, it is therefore considered that there will be no adverse effect from the proposed development on this LWS.

5.20 All of the remaining nearby LWS: Honeypot Lane Meadows; St Charles Nature Reserve; Marconi Gardens; Shenfield Meadow; La Plata Grove; Hall Wood; and Vicarage Wood are considered to be sufficiently separated from the site to make it unlikely that there will be a detrimental effect on them due to increased recreational pressure.

[13] Woodland Trust *UrbanWoodland management Guide2: Litter and Fly-tipping* October 2002 [online] https://www.woodlandtrust.org.uk/mediafile/100385321/pg-wt-161214-urban-wood-2.pdf?cb=981c47c517754ae2865317c21587a6dd [Accessed 08.02.19]

Habitats

5.21 The arable fields and plantation woodland are to be lost due to the development. These habitats are of negligible biodiversity value, and it is considered that their loss will be easily offset by the retention, enhancement and creation of additional greenspace around the site that will increase the site's value for biodiversity overall. Other habitats, such as scrub and tall ruderal vegetation have some intrinsic value for nature conservation, contributing to habitat heterogeneity of the local area and providing habitat for a range of plant and animal species. Where possible, particularly in and around the woodlands, around the waterbodies and along the ditches, these habitats will be retained.

5.22 The semi-natural woodland, trees, semi-improved grassland, standing and running water, and hedgerows within the site are considered to provide greater biodiversity value and are considered separately below.

Woodland

5.23 Excluding High Wood which is dealt with separately (above), there are three other natural / semi-natural woodland parcels within the site boundary (W2 –W4). These contained a diverse range of native species and will be of increasing value for nature conservation as they mature. The vast majority of these woodland parcels are likely to be retained as part of the development proposals, and will be afforded suitable protection during construction activities i.e. working methods must adhere to standard best practice guidance. This will include BS5837 Trees in Relation to Design, Demolition and Construction – Recommendations: 2012 for trees and hedges.

5.24 Management strategies put in place for High Wood, would extend in part to the other woodland areas within the site. This will seek to maintain a balance between the provision of public greenspace around the site and its value as a resource for nature conservation.

Trees

5.25 The majority of trees around the site are to be retained, and removal to facilitate access will be kept to a minimum. As with the woodland, trees will be afforded suitable protection during construction activities i.e. working methods must adhere to standard best practice guidance. This will include BS5837 Trees in Relation to Design, Demolition and Construction – Recommendations: 2012 for trees and hedges.

Grassland

5.26 The majority of the site consisted of arable field compartments and the areas of semi-improved grassland were of limited diversity and supported common and widespread species of little floristic interest and were therefore considered to be of low nature conservation value.

5.27 There is capacity within the scheme to provide a greater diversity of grassland habitats within the extensive green space provision.

Standing Water

5.28 All seven waterbodies within the site boundary are to be retained as part of the extensive green space provision. Enhancement and management will be ongoing to ensure their continued value for biodiversity.

Running Water

5.29 The ditches that link waterbodies P2 –P6 will be retained and enhanced for biodiversity. D8 in particular is currently showing signs of pollution. It is considered that once enhancement and management measures are undertaken as part of the ongoing management for the greenspace around the development, then the value for biodiversity of the running water resource around the site will be increased.

5.30 During construction, all retained aquatic habitats (both running and standing water) should be protected, and it is recommended that best practice is followed to ensure the risk of any potential impacts from pollution events are minimised. Best practice should follow the recommendations of the Guidance for Pollution Prevention (GPP).[14]

Hedgerows

5.31 Of the 17 hedgerows in and around the site, six scored high to very high values according to the HEGs assessment, whilst all but one of the remainder were assessed as being of moderately high to high value. Three hedgerows were considered to be 'important' under the Hedgerow Regulations. Hedgerows are a Habitat of Principal Importance under NERC, and ancient and/or species-rich hedgerows are an Essex BAP habitat.

5.32 The development proposals will be designed to retain and buffer all the hedgerows within the site wherever feasible, and breaches required to facilitate access will be kept to a minimum. Post-development all hedgerows around the development will be managed to maintain and enhance their value for biodiversity.

Fauna

5.33 If a planning application were to be prepared for this site, a number of protected species surveys would be recommended in order to ascertain their presence/absence and/or use of the site. These are detailed below, along with details of how the proposals have been designed to ensure the favourable conservation status of these species could be maintained should they be present and enhancement recommendations.

Bats

5.34 The habitats within the site including the woodland, waterbodies, hedgerows, and nearby residential gardens connect to the wider environment including large woodland blocks within Weald Country Park to the west, and therefore provide potential for use by bats. Given the size of the site and the habitats present, it is recommended that bat activity is assessed using monthly

[14] NetRegs *Environmental Guidance for your Business* [online] http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/. [Accessed 24.01.19]

transect surveys and static monitoring methods. Such surveys will help to assess the overall usage of the site and identify areas of highest and lowest likely impact on bats and the data can be used to inform appropriate avoidance and mitigation measures. The bat activity survey season is from April to October.

5.35 Proposals will ensure the vast majority of habitats are to be retained particularly the woodland compartments, waterbodies, and hedgerow networks. Additional green space provision will increase resources for bat species through the creation of wildlife meadows that will encourage a range of invertebrate species.

5.36 Surveys demonstrated that there are some mature trees which have moderate or low potential as bat roosts, supporting features such as woodpecker holes, branch cavities and bark fissures. All bat species and their roosts are fully protected in the UK by the Wildlife & Countryside Act (WCA) 1981 (as amended) and at a European level by the Conservation of Habitats & Species Regulations 2017. Some bat species are species of principal importance under the NERC Act, and Essex LBAP species.

5.37 Most hedgerows and trees will be retained as part of the development proposals. However, there may be some localised losses for access purposes and if any of the trees deemed to have potential for roosting bats are to be lost or isolated, then further surveys will be necessary to establish if bats are present. This could include aerial roped access surveys, if the trees are deemed safe to climb, or nocturnal surveys to be undertaken between the months of May – August (inclusive) to confirm the presence or likely absence of a bat roost within them. This methodology takes into account BCT guidelines introduced in 2016.

5.38 In the event that a bat roost is present within any of the trees a European Protected Species (EPS) Licence from Natural England may be required to legitimise its removal. This would require the provision of mitigation/compensation within the development. Further surveys would be undertaken to determine the size and status of the roost and inform the mitigation strategy.

5.39 Sufficient scope exists within the scheme for such mitigation measures to maintain the favourable conservation status of any affected bat species. Full planning permission and the discharge of any relevant nature conservation conditions would need to be in place prior to any EPS license applications.

5.40 There was one building within the site but this was considered to be unsuitable for roosting bats due to the lack of suitable features. No further surveys are considered necessary.

5.41 Lighting will be designed to avoid or minimise impacts of light spill on wildlife using the more important habitat features such as the woodland compartments, waterbodies and hedgerows, or any new areas of connected semi-natural vegetation created as part of proposed GI. This can be achieved by a combination of the following steps:

- avoiding unnecessary lighting;
- the use of low-intensity lighting; and
- minimising light spill with the use of directed lighting or designing planting to shield sensitive areas.

Birds

5.42 Due to the variety of habitats within the site and its large size, it is recommended that further bird surveys are undertaken in order to gain an understanding of the use of the site by local bird populations. Both wintering bird and breeding bird surveys are recommended.

5.43 The development proposal will retain the majority of important nesting habitat for birds in the form of the woodland and hedgerows, and the range of diverse habitats provided as part of the development's green infrastructure will increase foraging opportunities for bird species. As all birds are protected whilst on the nest under the WCA 1981 (as amended). It is recommended that site clearance works including the removal of any woody vegetation and ground flora during construction is conducted outside the bird breeding season (March – September, inclusive). If clearance is planned for the bird breeding season, then it will be preceded by a nesting bird survey conducted by an experienced ecologist. This will involve observing any vegetation to identify birds exhibiting nesting behaviour and / or searching for active nests. Should active nests be identified then an exclusion zone would need to be retained until the chicks had fledged as determined by the supervising ecologist.

Herpetofauna

Great Crested Newts

5.44 Great crested newts are fully protected in the UK by the WCA 1981 (as amended) and at a European level by the Conservation of Habitats & Species Regulations 2017.

5.45 A number of records for great crested newts were returned during the desk study. The site provides both suitable aquatic and terrestrial habitat for the species. Of the seven waterbodies on-site four were deemed to have good breeding potential for great crested newts, whilst one was deemed to have average potential, and the remaining two were considered to have poor potential.

5.46 Although, the waterbodies are to be retained as part of the green infrastructure, it is recommended that GCN presence/absence surveys are undertaken on both the waterbodies within the site, and accessible waterbodies within 250m of it. This will help inform future management of the waterbodies, and also determine whether there is likely to be the need for an EPS licence from Natural England in order to mitigate for any effects on the local GCN population.

5.47 Both aquatic and terrestrial habitat suitable for GCN is to be retained as part of the proposals, and these will form important linkages throughout the site and into the wider area. New habitat creations proposals will increase meadow and tussock grassland provision at the expense of sub-optimal arable land, thereby increasing the foraging and shelter resource for amphibians in general and GCN in particular.

Reptiles

5.48 All British reptiles are protected under the WCA 1981 (as amended). Grass snake, slow worm, and common lizard are protected against intentional killing or injury and against sale.

5.49 Unmanaged grassland, woodland edges, ditches, and field margins were considered to provide suitable habitat for reptile species. Given this, and the fact that there are records of grass snake

in the local area, it is recommended that a full presence/absence survey should be undertaken. Surveys should take place between April and October of any given year, provided weather conditions are favourable. Surveys would need to comprise one visit to lay refugia within suitable habitat and then seven visits to check the refugia during suitable weather conditions.

5.50 Should reptiles be present within the area two options for mitigation exist. The chosen method for mitigation will depend on the population size and the extent of habitat loss.

5.51 Option 1 would be displacement of reptiles from working areas through management of vegetation. This could be undertaken if a low population of reptiles was recorded within areas that are linked to suitable retained habitats. If this is the case, then reptiles could be displaced through a two-stage cut of vegetation during the reptile active season when temperatures are above 10^{o}C. The first cut should be to 200mm and then the second at least an hour later to 50mm. Vegetation should be cut from the working area towards the retained habitats allowing reptiles to move into retained habitats. Once the two cuts have been completed all suitable refugia should be removed by hand under the supervision of a suitably qualified ecologist. Reptiles present should be caught and removed to retained habitats.

5.52 Option 2 would be required if a high population of reptiles is found to be present within large areas of the study area that are not linked to retained habitats. In this instance trapping, may need to be undertaken. This would involve ensuring a receptor site was in place prior to trapping which would need to include suitable habitat for reptiles in the form of a range of habitats and hibernation areas. Further detail would be provided if this were necessary. Reptiles could then be trapped between March and October for a period of between 30 and 90 days depending on the population size. Individuals caught during trapping would need to be removed to the receptor site.

5.53 As part of the green infrastructure the water bodies and wet ditches are to be retained. Further habitat enhancements will increase the foraging resource for reptiles through the provision of a range of meadow planting that will encourage a diverse array of invertebrates. The provision of tussock grassland and strategically placed log piles will also increase the areas of rest and shelter for reptiles amongst other taxa.

Other Species

Hazel Dormice

5.54 The hazel dormouse is listed under Annex IVa of the EC Habitats Directive and as a result is covered by the Conservation of Habitats and Species Regulations 2017. It is also protected under the WCA 1981 (as amended). Taken together, these make it an offence to;

- deliberately capture or intentionally take a dormouse;
- deliberately or intentionally kill or injure a dormouse;
- to be in possession or control of any live or dead dormouse or any part of, or anything derived from a dormouse;
- damage or destroy a breeding site or resting place of a dormouse;

- Intentionally or recklessly obstruct access to any place that a dormouse uses for shelter or protection;
- intentionally or recklessly disturb a dormouse while it is occupying a structure or place that it uses for shelter or protection;
- deliberately disturb any dormouse in particular any disturbance which is likely to impair their ability to survive, breed, reproduce or to rear or nurture their young; or in the case of hibernating or migratory species, to hibernate or migrate; or
- to affect significantly the local distribution or abundance of the species to which they belong.

5.55 The hedgerows and woodland compartments offer suitable habitats to support nesting and foraging opportunities for hazel dormice. In addition to this, dormice have been recorded at sites in Essex to the east of Brentwood. It is therefore considered that the habitats onsite are conducive to support hazel dormice.

5.56 In order to determine the presence/likely absence of dormice, surveys will involve the installation of dormice tubes within suitable habitats on site during March / April; these are then subsequently checked each month between May and October.

5.57 Hedgerows and woodland are to be retained as part of the site's green infrastructure. Other additional shrub and hedgerow planting planned as part of the site's open space provision will increase the foraging and shelter resource for dormice.

Stag Beetles

5.58 Stag beetles are listed under Schedule 5 of the WCA 1981 (as amended), where they are protected from sale, offering for sale, and possession or transporting for the purpose of sale (live or dead animal, part or derivative).

5.59 Stag beetles have been recorded in the local area, and the habitats on-site, i.e. woodland edges and hedgerows are suitable habitat for the species. As a species of principal importance under the NERC Act and an Essex LBAP species, it is recommended that measures are put in place to encourage the use of the site by the species. These include ensuring that as much deadwood as possible is retained on the woodland floors, any removal of deadwood that takes place during construction should take place under ecological supervision, and any larvae or adults found should be translocated to a location away from the construction area that contains suitable habitats for the species. Furthermore, any dead wood created due to construction activity should be placed in suitable areas of retained woodland, hedgerow bases and around scattered trees.

General Enhancements

5.60 Green space including informal and formal areas such as play areas will be linked by informal paths which will also provide recreational space for dog walkers and other users, and will be designed to be a focal point for recreation, reducing the need for residents to use the woodland compartments within the site. Regular litter picks and the inclusion of waste bins around the development will aid in protecting its integrity.

5.61 New habitat creation proposals should aim to increase the diversity of habitats present and provide structural diversity, with scrub, trees, informal and formal grassland areas, and wetland

associated with the on-site waterbodies. Any garden planting proposed at the outset should also seek to use native species of value to wildlife. Suitable small tree species for inclusion in garden planting schemes include field maple *Acer campestre*, silver birch *Betula pendula* and holly. All informal areas of planting should use native species and be subject to sympathetic management to promote their conservation value. More formal areas should consider the use of non-native species with known value to wildlife these are often species with nectar bearing flower, fruit and berries. Planting schemes should seek to create a varied three-dimensional structure through use of ground cover, climbers and shrubs with an emphasis on species bearing nectar, berries, fruit and nuts, as these enhance the foraging opportunities for local wild fauna including birds and invertebrates.

5.62 Attenuation features are to be created across the site which, if designed appropriately, will provide substantial ecological benefits. These should be designed specifically to maximise biodiversity value with wide shallow draw down zones, scalloped edges and deep central areas. The waterbodies could be planted with locally native aquatic vegetation including species such as soft-rush *Juncus effusus* and purple loosestrife *Lythrum salicaria* in marginal areas, tall emergent plants and submerged plants with surface leaves such as yellow water-lily *Nuphar lutea* will be planted within the deeper areas of water. The features could be made more visually attractive through addition of selected species including marsh marigold *Caltha palustris*, water dock *Rumex hydrolapathum* and common water plantain *Alisma plantago-aquatica.* A denser and taller area of vegetation should be planted/encouraged around the feature to provide more microhabitat suitable for invertebrates and amphibians.

5.63 Roosting opportunities for bats could be enhanced by the provision of bat boxes/tubes on existing mature standards, and bat boxes incorporated into the built fabric of residential dwellings. Bat boxes could be installed at varying heights between 3 and 6m on the southern, south-eastern and south-western aspects of the trees, with a variety of box types used to provide roosting opportunities for a wide range of species. Bat bricks could be positioned on the southern, eastern and western elevations of buildings at least 4m from the ground. Boxes should be arranged around the site so that a number of different aspects are covered. Suitable boxes for buildings include the Schwegler 1FR bat tube and N27 bat brick, and those suitable for trees are the Schwegler 2F and 2FN boxes.

5.64 Breeding opportunities for birds could be enhanced by inclusion of nest boxes or nest bricks around the development. The use of a number of different nest boxes with different entrances, e.g. 26mm, 32mm and open-fronted will enable the scheme to encompass the nesting requirements of a range of species. Boxes would need to be placed on retained trees or selected buildings in sheltered locations that are free of regular disturbance. Nest bricks may be incorporated into the fabric of proposed buildings in similarly sheltered locations.

5.65 As reptile species have been recorded in the local area it is recommended that areas around the margins of the residential area are enhanced for reptile use by creating and maintaining strips of informal tussocky grassland to enhance commuting and foraging activity. If reptiles are found within the site during surveys then an area would need to be set aside to provide a section of optimum habitat for reptiles to move into prior to construction works. The creation of dead wood piles in strategic locations would provide further opportunities for shelter and basking and would also provide potential habitat for amphibians and invertebrates in general. Insect houses could provide further enhancements.

5.66 It is considered that the above enhancements, coupled with a robust long-term management strategy for the green space, including the enhancement and protection of the on-site LWS will embody the principals of the NPPF 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"*

Key

- Site Boundary
- 1km buffer
- 2km buffer consultation
- Local Wildlife Sites

Protected Species Records

- Adder
- Common Toad
- Grass Snake
- Great Crested Newt
- Unidentified Bat
- Brown Long-eared Bat
- Common Pipistrelle
- Daubenton's Bat
- Nathusius's Pipistrelle
- Natterer's Bat
- Noctule Bat
- Soprano Pipistrelle
- Mediterranean Gull
- Red Kite
- Stag Beetle
- White-letter Hairstreak

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Hallam Land Management

Calcott Hall Farm,
Brentwood

CONSULTATION PLAN

scale 1:21,300 | drawn OMS/JV | issue 13/2/2019

drawing / figure number
Figure 1 | ref **8363-E-01**

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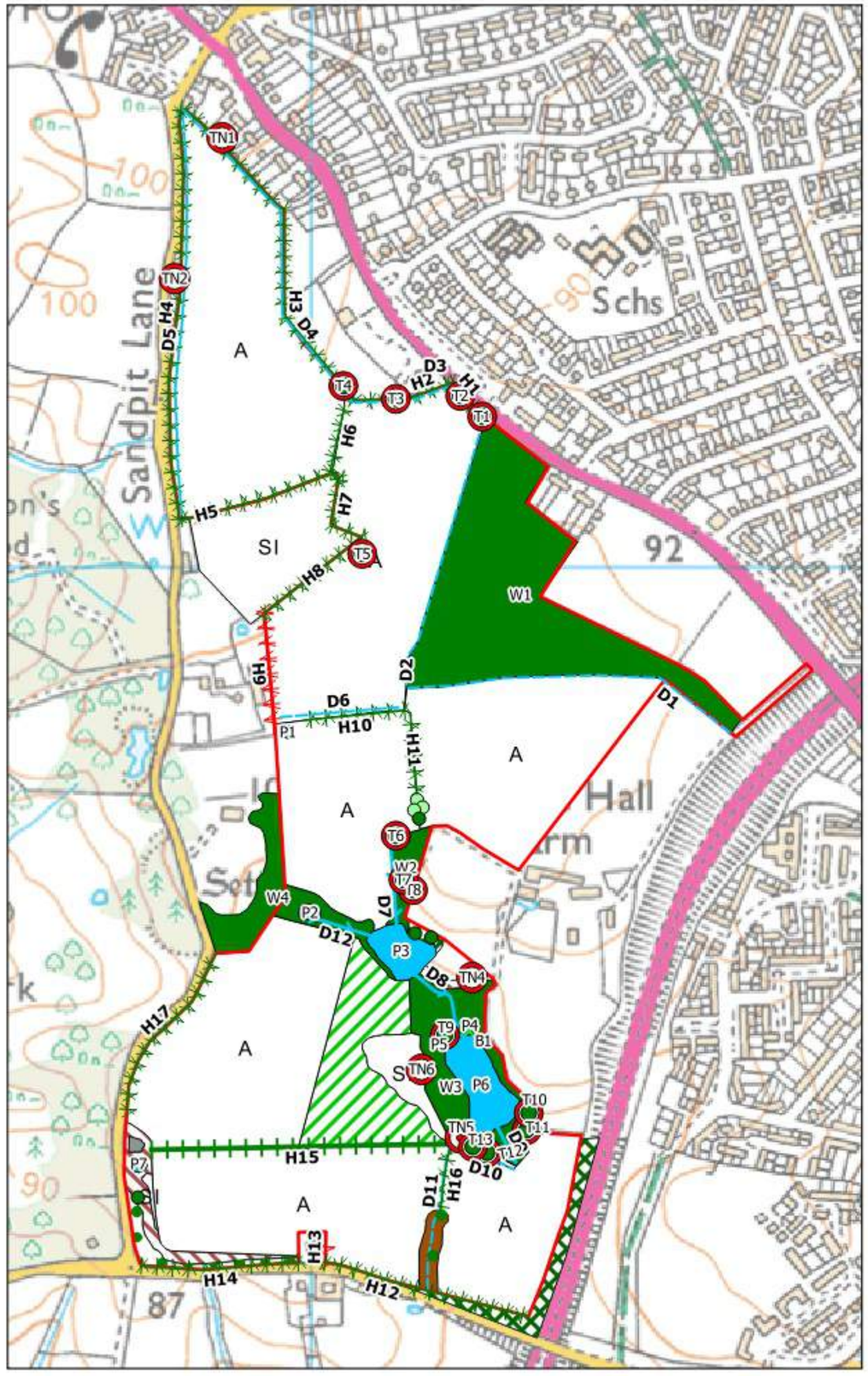

Key

- Site Boundary
- Tree with bat potential
- Target note
- coniferous trees
- Broadleaved tree
- Running water
- Dry ditch
- Hedges: Introduced shrub
- Hedge with trees - species-poor
- Hedge with trees - native species-rich
- Broadleaved trees
- Scrub - scattered line
- Built Environment: Buildings/hardstanding
- Buildings
- Broadleaved woodland - semi-natural
- Scattered trees
- Standing water
- Scrub - dense/continuous
- Other tall herb and fern - ruderal
- Coniferous woodland - plantation
- SI Poor semi-improved grassland
- A Cultivated/disturbed land - arable

Hallam Land Management

Calcott Hall Farm,
Brentwood

PHASE 1 HABITAT PLAN

scale 1:6,500 | drawn PJP/OMS | issue 13/2/2019

drawing / figure number: Figure 2 | job no. 8363-E-01

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Key

- Site Boundary
- 250m Buffer

Waterbody (with ref)

- Normal
- Dry

Pond Reference	Approximate Distance from Site Boundary (m)
P1	Within site boundary
P2	Within site boundary
P3	Within site boundary
P4	Within site boundary
P5	Within site boundary
P6	Within site boundary
P7	Within site boundary
P8	Within site boundary
P9	20m west
P10	20m west
P11	23m south-west
P12	30m east
P13	54m west
P14	100m east
P15	120m west
P16	145m west
P17	152m west
P18	215m south
P19	226m west

Hallam Land Management

Calcott Hall Farm,
Brentwood

WATERBODY LOCATIONS PLAN

scale 1:8,000 | drawn LV | issue 13/2/2019

drawing / figure number **Figure 3** | rev **8363-E-01**

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