Preliminary Ecological Appraisal

Land at Chelmsford Road, Shenfield, Brentwood, Essex (ECO5014)

March 2019

1. Introduction

1.1. Aspect Ecology has completed a Phase 1 survey (in September 2018) of land at Chelmsford Road, Shenfield, Brentwood, Essex (the site) and has also undertaken Habitat Suitability Index (HSI) assessments of four waterbodies within / adjacent to the site and a desktop study. A summary of the findings is provided below and illustrated on the accompanying plans. Specific development proposals have not been reviewed at this stage, therefore the assessment below relates to the general principle of future development at the site.

1.2. The site is located to the north of Shenfield and is bound to the west by Chelmsford road and to the north by the curtilage of a line of residential properties, beyond which lies the A12 (dual carriageway) and open farmland. The east of the site is bound by a railway line, beyond which lies woodland, residential development and further farmland. The grounds of Shenfield High School bounds the site to the south, beyond which lies further residential dwellings.

2. National policy

2.1. The National Planning Policy Framework (NPPF)[1] describes the Government's national policies on 'conserving and enhancing the natural environment' (Chapter 15). NPPF is accompanied by Planning Practice Guidance on 'Biodiversity, ecosystems and green infrastructure' and ODPM Circular 06/2005[2].

2.2. NPPF takes forward the Government's strategic objective to halt overall biodiversity loss[3], as set out at Paragraph 170, which states that planning policies and decisions should contribute to and enhance the natural and local environment by:

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

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

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

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;

1 Ministry of Housing, Communities & Local Government (2019) '*National Planning Policy Framework*'
2 ODPM (2006) '*Circular 06/2005: Planning for Biodiversity and Geological Conservation – A Guide to Good Practice*'
3 DEFRA (2011) '*Biodiversity 2020: A strategy for England's wildlife and ecosystem services*'

b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

2.4. The above approach encapsulates the 'mitigation hierarchy' described in British Standard BS 42020:2013[4], which involves the following step-wise process:

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

2.5. The measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development (BS 42020:2013, section 5.5).

3. Local Policy

3.1. Relevant policy pertaining to ecology from the 'Brentwood Local Plan' (2005) is reproduced below.

3.2. **Policy C3 County Wildlife Sites, Local Nature Reserves and Other Habitats and Natural Features of Local Value –** *"Development, including changes of use, that would have an unacceptable detrimental impact, directly or indirectly, upon a county wildlife site, local nature reserve or any other site or natural feature of conservation interest (and their inter-relationships with each other) will not be permitted unless it can be clearly demonstrated that there are reasons for the proposal which outweigh the need to safeguard the substantive nature conservation value of the site or feature. In all cases where development is permitted, such damage will be kept to a minimum. Where appropriate, the authority will require appropriate mitigation and compensatory measures to be provided. The council will encourage the enhancement and management of such sites and natural features, and, where desirable, their use for informal recreation. Development that would affect a habitat or species identified in the Essex biodiversity action plan and/or Brentwood biodiversity action plan will only be*

[4] British Standards Institution (2013) '*Biodiversity – Code of practice for planning and development*', BS 42020:2013

permitted where the council is satisfied that it would have no unacceptable impact on that habitat or species."

3.3. **Policy C4 Management of Woodlands –** *"Existing woodlands should be retained with management appropriate to age, use, location and scientific interest. In any management scheme it is essential that the visual amenity, historical and ecological values of the woodland are safeguarded, and, where possible, enhanced."*

3.4. **Policy C5 Retention and Provision of Landscaping and Natural Features in Development –***"In proposals for development, existing trees, hedges, woods, ponds, watercourses and other natural features should be retained, with new landscape works required to enhance any new development."*

New Local Plan

3.5. Brentwood Council is preparing a new Local Plan, which is currently under consultation and is due to be adopted towards the end of 2019. Accordingly, relevant policies pertaining to ecology from the most recent pre-submission 'Brentwood Local Plan 2016 to 2033, Regulation 19' (February 2019) are reproduced below, although it should be noted that the wording of these policies may be subject to change prior to their formal adoption. A review of these policies are provided below as appropriate.

3.6. **Policy BE18 Green And Blue Infrastructure –** "

A. 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.

B. 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.

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

D. 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."

3.7. According to the definitions within the supporting information for this policy, the hedgerows, tree lines, woodland and potentially grassland and watercourse within the site would qualify as 'Green and Blue Infrastructure'. As such these features should be retained, protected and enhanced wherever possible within any proposed development.

3.8. Paragraph B. section i. states that developments "*should deliver environmental net gains*". National policy paragraph 170 states that "*planning policies and decisions should contribute to and enhance the natural local environment by… minimising impacts on and providing net gains for biodiversity*". The requirement for delivering "*environmental net gains*" under Policy BE18 appears broader in scope than national policy requirements which focus on "*biodiversity*". Furthermore, Paragraph B. section i. of Policy BE18 states that "*if there is a net loss from the development, provide provisions through offsetting*". There are no policies within the NPPF relating to 'offsetting', therefore the local policy appears to go beyond national policy requirements. That said, the local policy appears compliant with British Standard BS 42020:2013[5], which details a step-wise hierarchical process of avoidance, mitigation, compensation and enhancement and states that compensation can be provided to "*offset any harm*". It is unclear from the wording of Policy BE18, or its supporting information, how any net gains / losses and any associated offsetting requirements would be measured / calculated, or the mechanism by which the council or developer would deliver this.

3.9. **Policy BE19 Access to Nature –** *"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 1 km 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."

3.10. **Policy NE01 Protecting and Enhancing the Natural Environment –** *"*

A. The Council will support proposals which minimise the use of natural resources and proactively conserve 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 and blue infrastructure;

c. ecological and ecosystem restoration; and

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

B. 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 nondesignated heritage assets, including biodiversity, geodiversity, landscape character and any other aspect of

[5] British Standards Institution (2013) '*Biodiversity – Code of practice for planning and development*', BS 42020:2013

ecological potential, priority habitats and/or species, water cycle, green wedges, ancient woodlands and landscapes.

C. 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 the following hierarchy:

a. where 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. where 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. where a site of local importance, such as a Local Wildlife Site (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.

D. 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 appropriate to the nature and scale of the proposal, identifying links to similar ecosystems within proximity of the development site in line with Policy BE18 Green and Blue 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 conserve and/or justification for the removal of any trees or hedgerows during on-site construction; d. details of landscaping maintenance arrangements; and e. a method statement for any land raising and/or dispersal of excavated or dredged materials.

3.11. Paragraph B. states that development "*proposals will not be permitted if potential impacts will lead to the deterioration or loss of the borough's natural designated and nondesignated heritage assets … including biodiversity, …".* It is not clear if this relates to statutory or non-statutory ecological designations, or more general features of ecological importance. No mitigation hierarchy to avoid such potential impacts is proposed in this paragraph and therefore any deterioration of features of ecological importance as a result of development proposals would contravene Policy NE01. This paragraph therefore appears contradictory to Paragraph C. which states "*development should avoid adverse impact on existing natural heritage assets as a first principle … Where adverse impacts are unavoidable, they must be*

adequately and proportionately mitigated". As such, Paragraph C. appears to allow for deterioration of features of ecological importance where these can be demonstrated as unavoidable and adequately mitigated.

3.12. **Policy NE03 Trees, Woodlands, Hedgerows** – *"*

A. 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.

B. 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.

C. 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 to:

a. assess all trees, woodland, hedges and/or hedgerows that are likely to be affected by the proposal, describing and assessing their value;

b. set 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 seek to be avoided, or if unavoidable how they will be minimised.

D. 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.

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

F. 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, will compensate for the harm and can be implemented and established before development starts.

G. 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.

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

3.13. Paragraph A. states that development "*proposals will not be permitted where it would … result in the loss of … a feature of ecological importance…"*. No mitigation hierarchy to avoid such potential impacts is proposed in this paragraph. This paragraph therefore appears contradictory to the remainder of the Policy which details a range of scenarios / measures that would allow the deterioration / loss of a feature of ecological importance, and a mitigation hierarchy to follow.

3.14. **Policy NE08 Floodlighting and Illumination –** "

A. *Development proposals involving floodlighting or any other means of illumination (other than advertisements) will only be permitted where the scheme:*

…

d. uses an appropriate light spectrum and specification that will not be harmful to nocturnal wildlife or human health…"

3.15. **Policy R03 Land North of Shenfield –** *"Land north of Shenfield, as shown in Appendix 2, known as Officer's Meadow and surrounding land is allocated for residential development. Development proposals should consider the following:*

…

B. Development Principles

g. provision for new multi-functional green infrastructure including public open space;

h. maintain and enhance Public Right of Way within the site and to the wider area; and

i. protect and where appropriate enhance the Local Wildlife Site (Arnold's Wood).

j. provide for appropriate landscaping and buffers along sensitive boundaries adjoining the A12 and railway line…"

3.16. A well designed scheme should be able to accommodate the requirements of this Policy.

4. Ecological Designations - Statutory

4.1. There are no statutory designations within or adjacent to the site. The nearest statutory designation is Hutton Country Park Local Nature Reserve (LNR) located 1.1km east of the site. This designation comprises a variety of habitats including grassland, ancient woodland, ponds, wetland and a section of the River Wid. The next nearest statutory designation is Thorndon Park Site of Special Scientific Interest (SSSI) located 3.4km south-west of the site. This designation comprises semi-natural broad-leaved woodland and ancient parkland. The site lies within a SSSI Impact Risk Zone, although this is not relevant to residential proposals.

4.2. All statutory designations in the surrounding area are well removed from the site. Given the separation distances involved, these designations are unlikely to be affected.

5. Ecological Designations – Non-Statutory

5.1. There is a section of a non-statutory designation within the boundary of the site, namely Arnold's Wood Complex Local Wildlife Site (LWS). This LWS comprises fragmented ancient woodland, with some sections of secondary woodland. The section of the LWS within the site is identified as ancient woodland. The next nearest non-statutory designation is Long Ridings LWS located 0.4km south-east of the site. This designation comprises a thin strip of woodland within an urban setting.

5.2. *Recommendation.* The non-statutory designation within the site should be retained and as it is identified as ancient woodland, it should be buffered from development to a minimum of 15m. If possible, direct access from new residents should be restricted and suitable alternative recreation provision be provided within any future development scheme. All other non-statutory designations in the surrounding area are well removed and separated from the site and are therefore unlikely to be affected by future development of the site.

6. Habitats

6.1. A review of historic aerial images shows that the site appears to have had a varied agricultural management regime since 2000. The fields within the site have had altered management between grassland and arable on numerous occasions. The most recent site visit (September 2018) found the majority of the site to be under arable cultivation (recently ploughed). The majority of the arable has very narrow grass margins. A small number of tree lines form the

boundaries of the separate fields. A woodland block is located at the north-east of the site as well as a small wooded area located at the west of the site. Two grassland fields are located at the south of the site which are bound by hedgerows and trees. The most southerly field has not been subject to ecological survey, as the land had only recently been acquired at the time of writing. Nonetheless, a review of aerial imagery shows this field to predominantly comprise grassland bound by hedgerows and trees and contains two structures. A watercourse runs east to west along a proportion of the site's southern boundary. A single public footpath is present at the east of the site.

6.2. The majority of habitats within the site (e.g. arable, grassland, scrub and tree lines) are considered to be of value at the local level. The woodland at the north-east of the site, which forms part of the Arnold's Wood Complex LWS, is likely to qualify as a Priority Habitat, and is identified as 'ancient' in its citation as well as on the MAGIC database, although MAGIC states that confidence in the habitat classification is 'low'. Further detailed survey would therefore be required in order to confirm its status as ancient or otherwise. Nonetheless, this woodland is of elevated ecological value, and forms an important ecological feature. It is also noted that there are numerous similar sized or larger areas of ancient woodland and Priority Habitat woodland in the local area. The length of watercourse within the site is of limited ecological interest, being narrow, shallow and with few naturalistic features. Numerous stands of the invasive species Himalayan Balsam are also present along its length. This watercourse however extends well beyond the boundary of the site, particularly to the north-west, where it eventually joins to the River Wid. As a whole, the watercourse functions as a wildlife corridor and is therefore of elevated ecological value and forms an important ecological feature. Two hedgerows associated with the grassland at the south of the site will qualify as Priority Habitat, and two (eastern most and western most hedgerows) may also qualify as 'important' under the Hedgerows Regulations 1997. As such these hedgerows are of elevated ecological value and form an important ecological feature.

6.3. *Recommendations*. The habitats of elevated ecological value, e.g. Arnold's Wood and the watercourse, should be retained in their entirety. The scheme design should protect and buffer these features. Development of the site provides the opportunity to enhance the section of Arnold's Wood and the length of watercourse within the site through the implementation of an ecologically sensitive management plan, which would include the removal of non-native species such as Himalayan Balsam. Should the section of Arnold's Wood within the site be determined to be ancient woodland (see recommended further survey work below), it would require a 15m buffer of no built development adjacent to the wood as a minimum. It is recommended that a buffer of 8m either side of the watercourse is also provided by the scheme. Where practicable the scheme design should also seek to retain and bolster the tree lines and hedgerows within its green infrastructure.

6.4. The scheme design should also include areas of species-rich wildflower grassland. New areas of wildflower grassland would be of most benefit when created adjacent to retained habitat of elevated value (e.g. woodland and the watercourse), thereby establishing a mosaic of habitats of elevated value. Any new SuDS features required for drainage should be designed to benefit ecology, e.g. by providing permanently wet areas as well as sinuous margins. Habitat connectivity should also be maintained and enhanced through scheme design and planting of additional lengths of hedgerow / tree lines to connect existing retained habitat. Where crossing of linear habitat features is required / unavoidable, impacts to connectivity can be minimised by the incorporation of hop-overs and / or wildlife underpasses.

6.5. *Recommended further survey work* – A botanical survey of the section of Arnold's Wood within the site should be undertaken within the optimal season for surveying woodland (between April and May inclusive), in order to establish, where possible, if the woodland is indeed

ancient. This survey would also be useful for the production of an effective ecological management plan (see paragraph 7.2 below), in accordance with Policy C4. A Phase 1 habitat survey should be undertaken for the newly acquired field at the south of the site, in order to confirm the habitats and features present and establish if any of these habitats are of elevated ecological value.

7. Fauna

7.1. **Bats**. Information received from Essex Wildlife Trust Biological Records Centre returned no records of bats within or adjacent to site. Several records of Brown Long-eared Bat *Plecotus auritus*, Common Pipistrelle *Pipistrellus pipistrellus* and Natterer's Bat *Myotis nattereri* were returned from within 2km of the site with the closest record being a Brown Long-eared Bat located approximately 0.5km south-east of the site dated 2010. Numerous mature and semi-mature trees are present within the site which provide potential roosting features for bats. From a review of aerial photography, two structures appear to be present at the south of the site which may provide potential roosting opportunities for bats. The majority of the site comprises arable and is therefore sub-optimal habitat for foraging and commuting bats. Boundary vegetation, in particular woodland, hedgerows and tree lines provides suitable foraging and commuting habitat for bats, albeit the habitat associated with the curtilage of the residential properties (north) is considered sub-optimal. For the most part the lines of trees within the site are unlikely to form significant commuting routes for bats due to their generally gappy nature and as they do not connect to potentially suitable off-site habitat albeit they may still provide a foraging resource. Providing a future scheme design retains and enhances the suitable roosting and foraging features, and incorporates a sensitive lighting scheme, bats are unlikely to represent a significant constraint to the future development of the site.

7.2. *Recommended further survey work* – Should any of the trees identified as having moderate potential for roosting bats be required to be removed to facilitate the proposals, these trees would require further survey effort in the form of dusk emergence / dawn re-entry surveys. A preliminary bat inspection survey of the two structures at the south of the site is recommended to establish the suitability of these structures for roosting bats. Should these structures be found to afford potential for roosting bats and are to be lost to the proposals, further survey effort in the form of dusk emergence / dawn re-entry surveys would be required. Any trees or structures confirmed as having roosting bats present would require a Natural England licence to enable felling / demolition. The removal of any trees identified as having low potential for roosting bats would not require further survey effort, but would require a soft-felling technique to be implemented. Bat activity surveys (comprising manual walked activity and static monitoring), to establish the use of the site by foraging and commuting bats is likely to be required. It is recommended that the scope of any future bat activity survey work be discussed with the LPA in order to establish a proportionate survey effort.

7.3. **Badger.** No specific records of Badger within or adjacent to the site were returned from the desk study. A number of records of Badger were returned from the surrounding search area, with the closest record originating from 2012 and located approximately 0.5km south-east of the site. Surveys undertaken in 2015, by third party consultants, recorded foraging activity and a disused Badger sett associated with the adjacent railway line. No Badger setts were recorded within or associated with the site during the 2018 survey. However, Badger use the site to forage and commute, with the site providing suitable foraging habitat, although Badgers use of the arable fields for foraging will evidently be seasonal in nature. Nonetheless, Badgers are not an overriding constraint to the future development of the site.

7.4. *Recommended further survey work* – A detailed Badger survey is recommended to be undertaken prior to the preparation of a formalised scheme design as Badgers are known to be using the site and may create new setts within the site.

7.5. **Dormouse.** The on-site woodland, tree lines and scrub provide potential opportunities for Dormice. However, no background records for Dormice were returned from within or adjacent to the site. A single record for Dormice was returned originating in 2010 and located approximately 1.3km to the south of the site and Dormice are known to occur in this area of the UK. Subject to the retention of the woodland and the majority of the hedgerows and tree lines within the scheme design, Dormice are unlikely to be affected by future development of the site.

7.6. **Otter and Water Vole**. Background information includes a single record for Otter within the vicinity of the site, associated with the River Wid. No records for Water Vole were returned. The watercourse within the site provides sub-optimal habitat for Otter and Water Vole. Nonetheless, subject to the implementation of a sensitive scheme design which retains and buffers this watercourse, these species are unlikely to form an overriding constraint to future development of the site. Indeed the scheme provides the opportunity to enhance the watercourse for the benefit of Otter and Water Vole.

7.7. *Recommended further survey work* – A detailed Otter and Water Vole survey of the watercourse within the site is unlikely to be required. Nonetheless, an update walkover of the watercourse should be undertaken between April and September inclusive, in order to inform any future planning application.

7.8. **Amphibians.** A single Great Crested Newt *Triturus cristatus* record was returned, dating to 2013, located approximately 1.9km away from the site. Records were also returned for Smooth Newt *Lissotriton vulgaris*, Common Frog *Rana temporaria* and Common Toad *Bufo bufo* with the closet being a record of a Common Frog located 0.9km from the site. No waterbodies (breeding habitat) are present on-site, however, five waterbodies are known to be present within the local area according to OS mapping. The locations of these waterbodies are shown on Plan 5014 ECO2 – Waterbodies. A Habitat Suitability Index assessment of these off-site waterbodies has been undertaken where access was gained. The results of this assessment are provided in **Table 1** below.

Table 1: HSI survey results.

Pond	Suitability Indices										HSI Score	Suitability
	SI 1 Location	**SI 2** Pond Area	**SI 3** Pond Drying	**SI 4** Water Quality	**SI 5** Shade	**SI 6** Water Fowl	**SI 7** Fish	**SI 8** Ponds	**SI 9** Terrestrial Habitat	**SI 10** Macrophytes		
Off-site Ponds												
P1	1	1	0.9	0.67	1	0.67	0.67	0.66	0.67	0.8	**0.79**	*Good*
P2	DRY											
P3	1	0.05	0.1	0.33	1	1	1	0.9	0.67	0.3	**0.44**	*Poor*
P4	DRY											
P5	No Access Gained											

7.9. The pond nearest to the site (P1) was found to have 'good' suitability for Great Crested Newt. Ponds P2 and P4 were dry at the time of survey and also appear to have been dry for a number of years with only a shallow depression present and no associated marginal or aquatic species present. Ponds P2 and P4 are therefore not considered to provide suitable Great Crested Newt breeding habitat. Pond P3 was almost dry at the time of survey and was determined to be of poor suitability for Great Crested Newt. No access was gain to pond P5 and therefore no assessment could be made. Arrangements for access to pond P5 are on-going.

7.10. A third party consultant undertook an environmental DNA (eDNA) presence / likely absence survey of pond P1 in May 2015. This survey established Great Crested Newt to be likely absent from this waterbody (although this survey is now considered out of date).

7.11. The site contains suitable terrestrial habitat for Great Crested Newt (namely woodland, tree lines with associated scrub and the grassland fields at the south of the site), albeit the majority of the site, arable, is considered sub-optimal terrestrial habitat. The Natural England Rapid Risk Assessment tool was used to estimate the likelihood of an offence being committed under a number of scenarios and assumptions. Scenario 1: Great Crested Newt have colonised pond P1 since 2015 (and all of the habitat within the site is suitable for Great Crested Newt). Scenario 2: Great Crested Newt remains absent from pond P1 but is present within pond P5 (and all of the habitat within the site is suitable for Great Crested Newt). The results of this assessment indicate that the proposals are 'highly likely' to result in an offence under Scenario 1 and are 'likely' to result in an offence under Scenario 2. If the Rapid Risk Assessment is undertaken again, but this time the actual suitability of habitat within the site for Great Crested Newt is taken into account, then the results change for Scenario 2, which shows that an offence is 'highly unlikely', but not for Scenario 1.

7.12. Should the presence of Great Crested Newt be confirmed in either ponds P1 or P5 (by further survey work, see below), this would not be an overriding constraint to development, however it would have a number of implications. A Natural England licensed trapping and translocation exercise (between 30 days to 90 days) may be required. The scheme layout may be somewhat restricted (depending on the precise survey results), and the scheme may need to provide on-site compensatory habitat, as well as maintain Great Crested Newt commuting links across the site. Should Great Crested Newt be confirmed as present within pond P1, then it would be recommended that a buffer of a minimum 50m should be incorporated within the scheme design around this pond.

7.13. *Recommended further survey work* – A Great Crested Newt presence / absence survey of all relevant ponds associated with the site should be undertaken. This would involve either a standard four survey visits between mid-March to mid-June, with half the surveys needing to be undertaken between mid-April and mid-May, or an environmental DNA (eDNA) survey undertaken between mid-April and the end of June to collect water samples for further laboratory analysis. Should Great Crested Newt be confirmed as present within either of the ponds, then additional survey work would be required to determine the Great Crested Newt population size, in accordance with Natural England Guidance.

7.14. **Reptiles.** A number of background records for reptiles were returned from Essex Field Club county records, namely Grass Snake *Natrix natrix*, Adder *Vipera berus* and Common Lizard *Zootoca vivipara*. The closest record was for Grass Snake located approximately 1.6km from site and dated 2012. The majority of the site is considered to offer negligible opportunities for reptiles. The suitable terrestrial habitat is limited to the grassland fields with hedgerows at the south of the site as well as the lines of trees and narrow grass margins associated with the arable fields.

7.15. *Recommended further survey work* – A reptile presence / absence survey of suitable habitat within the site should be undertaken. This would involve seven survey visits, between March and October and optimally in April, May and September. The results of this survey would inform any necessary mitigation and enhancement requirements.

7.16. **Birds.** Information returned from the desktop study included records for several bird species within 1km of the site, including Barn Owl, Kingfisher, Common Quail, Whooper Swan, Merlin, Peregrine Falcon, Hobby, Brambling, Red Kite, Green Sandpiper, Redwing and Fieldfare which are all listed under Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended). A number of records for Red List and Priority Species were also returned.

7.17. The habitats on-site, particularly the woodland, hedgerows, tree lines and watercourse provide potential habitat for a range of birds. The arable fields and grassland habitat will also provide some foraging opportunities for local birds. Nonetheless, large areas of similar habitat are present within the local area. It is anticipated that birds are unlikely to be an overriding constraint to future development, subject to the majority of the habitat of elevated value for birds being retained, and with new areas of high quality habitat being provided. It is recommended that any clearance of suitable vegetation (e.g. hedgerows or trees) be undertaken outside the bird-nesting season (March to August inclusive) if practicable, or else be supervised by a suitably qualified ecologist.

7.18. *Recommended further survey work* – Due to the scale of the proposals, it is recommended that a breeding bird survey is undertaken to establish the use of the site by bird assemblages. The results of this survey work would further inform the scheme design and any mitigation required.

7.19. **Invertebrates.** The site is dominated by arable land which is likely to support only a limited diversity of invertebrates. Nonetheless, the site has woodland, tree lines and a watercourse that would typically indicate elevated potential for invertebrates[6], although features such as a variable topography with areas of vertical exposed soil, areas of species-rich semi-natural vegetation; variable vegetation structure with frequent patches of tussocks combined with short turf; free-draining light soils; walls with friable mortar are absent. Accordingly, providing the key habitat features (e.g. woodland, watercourse and tree lines) can be retained and based on the lack of adjacent sites designated for invertebrate interest, it is considered unlikely that the proposals will result in significant harm to any protected, rare or notable invertebrate populations.

8. Opportunities

8.1. **Ecological Designations – Non-statutory.** Development of the site provides the opportunity to enhance the part of the non-statutory designation, Arnold's Wood Complex (LWS), located within the site. This could be achieved through the implementation of a sensitive management regime. Where appropriate, the designation could be enhanced by additional planting of native shrubs in the understorey which is currently lacking.

8.2. **Habitat creation / enhancement.** The development of the site provides the opportunity to enhance existing habitat as well as create new habitat of greater value to wildlife. An ecologically guided management plan should be implemented in order to maximise the biodiversity value of the habitats and features retained by the scheme. Sensitive management of woodland, watercourse and tree lines would provide the most benefit. Any new habitat to be created by the scheme should where practicable, be located adjacent to existing habitat of

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

elevated value (either on-site or adjacent) to create larger areas of habitat of benefit to wildlife, rather than smaller less well-connected areas of habitat. New habitat could include new hedgerows, species-rich wildflower grassland, community orchard and wetland habitat including ponds. Where practicable, new habitats should be incorporated within the same area in order to create a mosaic of habitats, rather than distinct blocks of separate habitat types. More formalised open space for recreational purposes could also include features of benefit to wildlife such as flowering lawns and nectar-rich planting, thereby still providing opportunities for wildlife.

8.3. **Habitat connectivity** – can be enhanced by providing improvements to existing habitat connectivity features and by the creation of new connections between retained on-site habitat and habitat adjacent to the site. The existing lines of trees can be enhanced by bolstering gaps and lengthening the features with additional planting to connect to adjacent similar habitat, widening where appropriate with additional native species and by providing wider associated grass margins. Habitat connectivity across the site and to the surrounding landscape can be improved by the creation of new native species-rich hedgerows, where no habitat connections currently exists, in particular along the northern boundary of the site as well as at the south-east of the site along the adjacent railway embankment.

8.4. **Bats.** The habitat creation and enhancements described above will increase foraging and commuting opportunities for local bats. Additional opportunities for roosting bats could be provided through the provision of a range of bat boxes for a variety of species as well as for summer and winter roosting. A range of styles for inclusion on both retained trees and newly constructed buildings should be provided. The boxes should be located in close proximity to habitat of benefit to bats, e.g. woodland and water features.

8.5. **Otter and Water Vole**. The habitat creation, management and enhancements described above will increase foraging and shelter opportunities for Otter and Water Vole along the watercourse within the site.

8.6. **Amphibians and Reptiles.** The habitat creation, management and enhancements described above will increase breeding, foraging and shelter opportunities for local amphibians and reptiles. In addition, specific features for the benefit of amphibians and reptiles such as hibernacula, loggeries and brash piles could also be incorporated within areas of suitable open space.

8.7. **Birds.** The habitat creation and enhancements described above will increase foraging opportunities for local birds. Additional nesting opportunities could be provided through the provision of a range of bird boxes for local species. A range of box styles for inclusion on both retained trees and newly constructed buildings should be provided.

8.8. **Invertebrates.** A proportion of any brash or deadwood arising from vegetation clearance works should be retained within the site in a number of wood piles located within areas of new planting, new wetland habitats or areas of wildflower grassland in order to provide potential habitat opportunities for invertebrate species, which in turn could provide a prey source for a range of other wildlife. In addition, the provision and management of new native landscape planting would likely provide additional opportunities for invertebrates at the site in the long term.

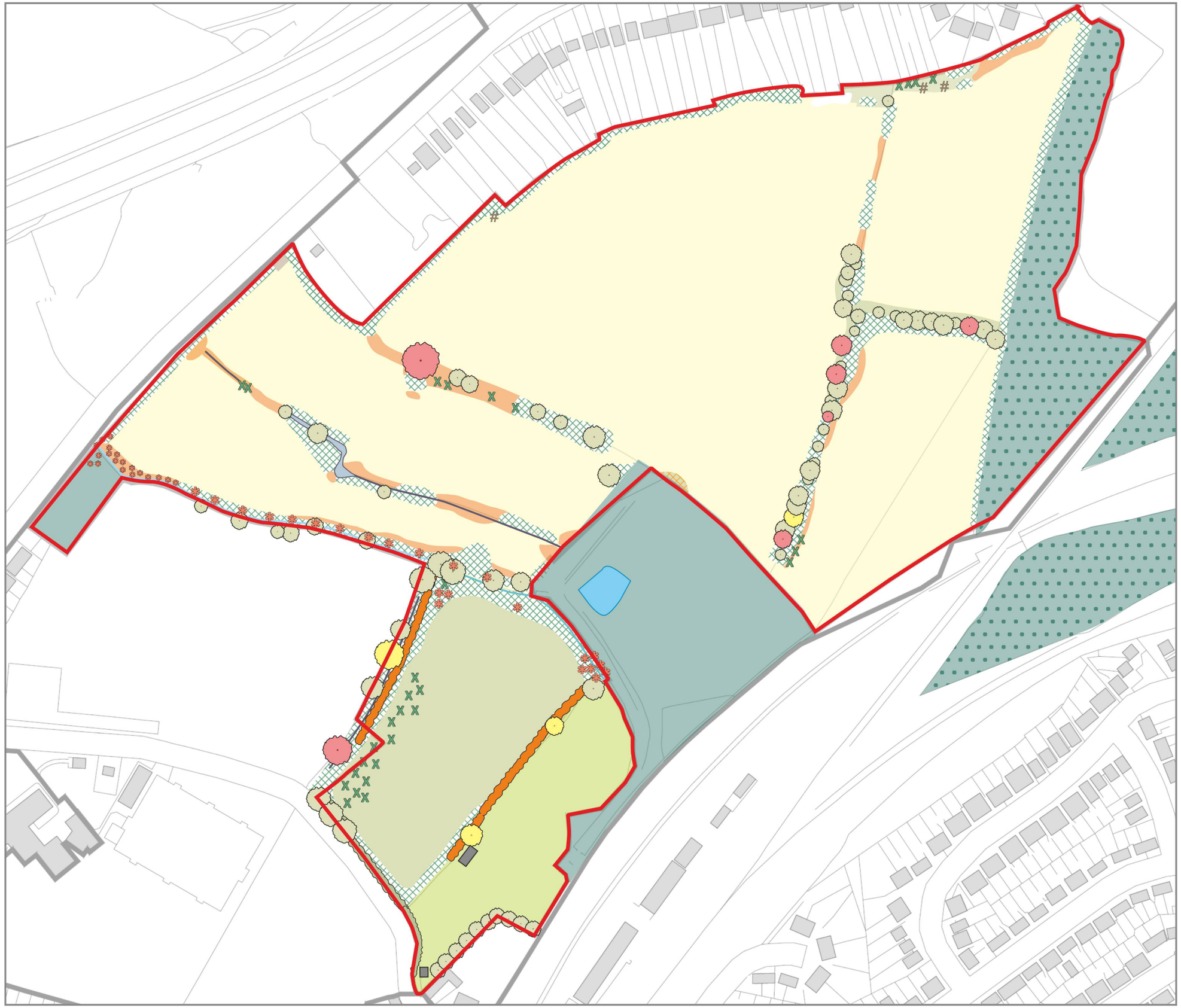
9. Summary

9.1. The site comprises a range of habitats including arable, woodland, grassland, watercourse, hedgerows, scrub and lines of trees. The woodland at the north-east of the site, the

watercourse and the hedgerows are of elevated ecological value and are considered to be important ecological features. Further habitat and protected species survey work is recommended to fully inform a future scheme design and to inform any licensing, mitigation or compensation requirements. Subject to a sensitively designed development scheme, implemented with suitable avoidance, mitigation and compensation measures, it is considered that there are no overriding ecological constraints to the future development of the site, albeit depending on the results of the recommended further survey work, certain areas within the site may be constrained and timing restrictions to development activities may be required. Development of the site nonetheless provides the opportunity to provide a number of biodiversity benefits in accordance with both National and Local Policy.

Enclosed:

- Plan 5014 / ECO1 – Ecological Features
- Plan 5014 / ECO2 – Pond Location



KEY:

- Site Boundary
- Arable
- Semi-improved Grassland
- Grassland
- Tall Ruderal Vegetation
- Woodland
- Tree
- Hedgerow
- Hedgerow
- Dense Scrub
- Scattered Scrub
- Colonising Ground
- Pond
- Dry Pond
- Watercourse
- Dry Ditch
- Tree with Low Bat Roosting Potential
- Tree with Moderate Bat Roosting Potential
- Himalayan Balsam
- Brash Piles
- Building/ Structure

Designations

- Arnold's Wood Complex Local Wildlife Site (LWS) and Ancient Semi-natural Woodland (ASW)

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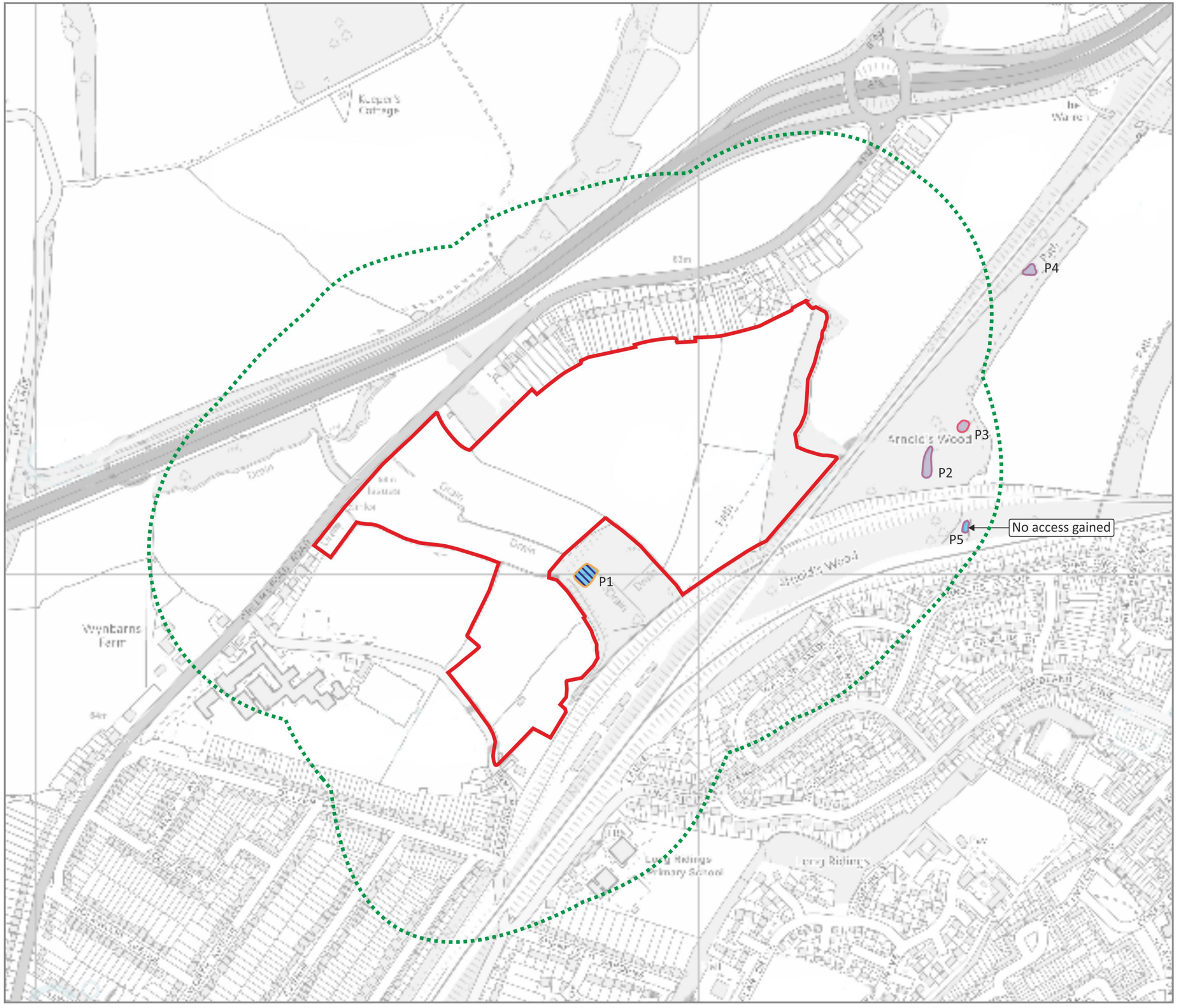
Land at Chelmsford Road, Shenfield	PROJECT
Habitat & Ecological Features	TITLE
5014/ECO1	DRAWING NO.
-	REV.
March 2019	DATE



Key:

- Site Boundary
- 250m Buffer
- Pond
- Dry Pond

HSI Results

- Good
- Poor
- Unsuitable

eDNA 2015 survey Results

- Absent

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Land at Chelmsford Road, Shenfield	PROJECT
Pond Location	TITLE
5014/ECO2	DRAWING NO.
-	REV.
March 2019	DATE