Ecology

9

9 Ecology

9.1 Introduction

9.1.1 This ES Chapter provides an assessment of the likely significant effects of the proposed development upon 'receptors' or 'resources' of Ecology and Nature Conservation value.

9.1.2 This chapter describes the assessment methodology, the baseline ecological conditions and the 'value' of specific existing receptors/resources of ecology and nature conservation interest; the likely significant effects upon valued ecological receptors/resources (VER's); the mitigation measures required to prevent, reduce or offset any such significant effects; and the likely residual effects following the implementation of such measures. This chapter has been prepared by FPCR Environment and Design Limited on behalf of Hallam Land Management and Mrs Pelly.

9.1.3 This chapter and the associated figures (Figure 9.1 – 9.3) and appendices (Appendices 9.1 – 9.8).

9.1.4 An Extended Phase 1 Habitat Survey of the proposed development site area was undertaken to determine the habitats present and to highlight the suitability of those habitats present for protected species, with subsequent specialist species surveys undertaken to determine their presence absence as necessary. The detailed surveys include:

- Extended Phase 1 Habitat Survey
- Badger
- Breeding Birds
- Wintering Bird
- Dormice
- Great Crested Newt
- Reptile
- Bats: Activity and Roosts Surveys
- Riparian Mammals

9.1.5 The ecological baseline and the assessment of the effects of the proposed development relate to Ecological Resources / Ecological Receptors present within the site unless the Zone of Influence (ZOI) is considered to extend to a wider area. The surveys were initially undertaken in 2014, with updates occurring in 2015.

9.2 Legislation and Policy

National Planning Policy Framework (NPPF)[1]

9.2.1 Guidance on nature conservation planning policy is provided in the NPPF under Section 11 'Conserving and Enhancing the Natural Environment'. The NPPF provides guidance on protection, through the planning system, of statutory and non-statutory sites of biodiversity value, as well as biodiversity conservation of the wider environment.

The key principles include:

"109. The requirement for the planning system to contribute to and enhance the natural and local environment by:

Minimising impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressure."

"118. When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- *If significant harm 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;*
- *Proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on features of the site that make it of special scientific interest and any boarder impacts on the national network of Sites of Special Scientific Interest."*

9.2.2 In considering biodiversity issues, the NPPF places particular emphasis on the requirements for Government Ministers and Departments to pay due regard to the conservation and enhancement of biodiversity. Section 41 of the Natural Environment and Rural Communities Act (NERC) 2006[2] places a duty on the Secretary of State to publish, review and revise lists of living organisms and types of habitat in England that are of principal importance for the purpose of conserving biodiversity, and to consult Natural England.

9.2.3 The Government Circular ODPM06/2005 (ODPM (2006) Planning for Biodiversity and Geological Conversation – A Guide to Good Practice)[3] was originally published to accompany PPS9, however Planning Practice Guidance (PPG) states that this is to be updated by DEFRA, however to date no new revisions have published and therefore the Government Circular ODPM06/2005 is still a valid document. This states that the presence of a protected species is *"… a material consideration when a planning authority is considering a development proposal which, if carried out, would be likely to result in harm to the species or its habitat*".

9.2.4 National legislation for the protection of selected species is provided within the Wildlife and Countryside Act 1981 (as amended)[4]. This states under section 1 (1) and 1 (2) "*all British bird species, their nests and eggs (excluding some pest and game species) are protected from intentional killing, injury or damage".* Schedule 5 provides protection from disturbance for other wildlife species *"any structure or place which any wild animal (included in the schedule) uses for shelter and protection"*. The introduction of the CRoW Act as amended section 1 (5) whereby it is now an offence to "recklessly" disturb a protected species, which is punishable by imprisonment.

9.2.5 Additional protection is afforded to a number of species through their inclusion on Schedule 2 of The Conservation of Habitats and Species Regulations 2010[5]. This protects against deliberate disturbance to species present and assessment of the development impact on such species will need to be assessed before planning permission is given. Species within Schedule 2 include bat species, dormice, great crested newts, and otters.

9.2.6 The Protection of Badgers Act 1992 provides specific protection for badgers. This legislation is primarily to protect badgers from baiting, thus making it an offence to: wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so; To intentionally or recklessly interfere with a sett (this includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it).

9.2.7 In March 2011 as part of the UK government's review the UKBAP site was 'closed' and the core content was migrated into the JNCC website. However the lists of Priority Species and Habitats are still relevant under the NERC Act[2], under section 41 of this Act it requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. This list is drawn up in consultation with Natural England, and those listed on the NERC Act are therefore considered priority species in England.

Local Context

St Edmundsbury Core Strategy (December 2010)[6]

9.2.8 The policies within the St Edmundsbury Core Strategy, which are relevant to the proposed development with regards to ecology include the following:

Strategic Objective G:

"To maintain and protect built and natural environment and ensure that new developments maximises the opportunity to re-use previously developed land and protects and enhances assets of local design, cultural, historic and conservation importance, and character of the landscape and townscape."

Strategic Objective H:

"To maintain, protect and enhance the biodiversity, geodiversity and natural environment and seek opportunities to increase the provision of green open space"

9.2.9 Policy CS2 'Sustainable Development' states that high quality and sustainable environments will be achieved through sensitive design and mitigation which are appropriate for the nature and scale of the development, the document includes a number of measures, those relevant to ecology are:

"B) protecting and enhancing biodiversity, wildlife and geodiversity, and avoiding impact on areas of nature conservation interest in both rural and built up areas;

C) identifying, protecting and conserving: a network of designated sites including the Breckland Special Protection Area (SPA) and other sites of national and local importance; Biodiveristy Action Plan (BAP) habitats and species; wildlife or green corridors, ecological networks; and other green spaces will be identified, protected and habitat created as appropriate;"

Haverhill Vision 2031 (September 2014)[7]

9.2.10 This document provides a plan to guide the direction of the future service provisions and the management needed over the next 20 years, this was compiled by St Edmundsbury Borough Council and other partners, and forms part of the council's local plan. The policies are the outcome of technical studies, working with local communities and stakeholders.

9.2.11 The objective set for Haverhill include the following relating to ecology:

"Objective 5

To ensure that any new development conserves and, where opportunities arise, enhances the natural, built and historic environment, local identity and distinctiveness of Haverhill and increases and improves access to green space and surrounding countryside."

9.2.12 There is reference to the proposed development of Great Wilsey Park within this document, which falls within Policy HV4: Strategic Site – North-East Haverhill, in relation to ecology there was limited reference, however it does state:

"A buffer is identified on the Policies Map which could provide a variety of supporting uses which may include amenity/recreational open space, agricultural land, landscaping, Sustainable Urban Drainage (SUDS)"

9.2.13 Policy HV18: Green Infrastructure in Haverhill:

"In and around the town of Haverhill the integrity and connectivity of the strategic green infrastructure network will be maintained, protected and enhanced, which includes the creation of new habitats, through the implementation of the St Edmundsbury Green Infrastructure Strategy.

Opportunities to extend the coverage and connectivity of the strategic green infrastructure network should be undertaken in association with new developments, where appropriate.

Green Infrastructure projects will:

a) Enhance the character of the Green Infrastructure Action Zones identified in the Green Infrastructure Strategy;

e) *Connect multifunctional green infrastructure routes/corridors in the town to existing and future green spaces;"*

Joint Development Management Policies Document (February 2015)[8]

9.2.14 This document has been adopted by Forest Heath and St. Edmundsbury Councils, and replaces a number of policies within each councils existing Local Plan, replacing them with locally specific management policies for a range of topics, including preservation of the environment.

9.2.15 Policy DM2 'Creating Places – Development Principles and Local Distinctiveness', this ensures that a development has a good design, to ensure places are better for people to live in, this is achieved via enhancing characteristics of the area and ensuring that surrounding areas are not affected. In terms of ecology, the following is relevant:

"G) taking mitigation measure into account, not affect adversely:

iv) sites, habitats, species and features of ecological interest"

9.2.16 Policy DM3 'Masterplans',

"the masterplan will include analysis of the site conditions, consultation feedback and identification of key issues, and will set out:

c) major landscaping, green infrastructure and open space proposals to assimilate new developments into the landscape, providing sufficient recreational greenspace and create new habitats;

d) a comprehensive biodiveristy plan, including species and habitat protection. Mitigation, compensation and new habitat creation measures for sustainability for the whole Proposed development site;

9.2.18 Policy DM10 'Impact of Developments on Sites of Biodiversity and Geodiversity Importance', and is summarised as follows:

"When considering development proposals which may have an adverse impact on nature conservation sites or interests, the local planning authority will have regard to the expert nature conservation advice provided by Natural England, the Suffolk Wildlife Trust and other specialist sources and the following criteria:

a) the ecological or geological value and objectives for which the site was classified or designated;

b) the integrity of the site in terms of its wildlife value, its diversity and relationship with other ecological resources;

c) the cumulative impact of the proposal and other developments on the wildlife or geological value of the site;

d) the presence of protected species, habitat areas and wildlife corridors, or geological features, and proposed measures to safeguard and enhance them;

e) the opportunity to create new habitat areas and to improve the conservation status of locally vulnerable species;

f) guidance set down within Biodiversity Action Plans (BAP), habitat management plans and other relevant sources; and

g) the extent to which the imposition of conditions or planning obligation:

i) would mitigate the effects of the development and/or protect the geological or nature conservation value of the locality;

ii) ensure replacement habitat or features; and/or

iii) ensure that resources are made available for the future enhancement and management of the replacement habitat or feature to enable it to attain the quality and attributes that have been lost.

Proposals which would result in significant harm to biodiversity, having appropriate regard to the 'mitigation hierarchy', will not be permitted."

9.2.19 Policy DM11 'Protected Species':

"Developments which would have an adverse impact on species protected by the Conservation of Habitats and Species Regulations (2010) (as amended), the Wildlife and Countryside Act (1981), the Protection of Badgers Act (1992), and listed in the Suffolk Biodiversity Action Plan, or subsequent legislation, will not be permitted unless there is no alternative and the local planning authority is satisfied that suitable measures have been taken to:

a) reduce disturbance to a minimum; and

b) (i) maintain the population identified on site; or

(ii) provide adequate alternative habitats to sustain at least the current levels of population.

Where appropriate, the local planning authority will use planning conditions and/or planning obligations to achieve appropriate mitigation and/or compensatory measures and to ensure that any potential harm is kept to a minimum.

Note: Developers should take into account separate legislation, Acts, regulations, case law, planning guidance and any subsequent replacement Supplementary Planning Documents and laws preventing interference with protected species, and should be aware of the need to undertake relevant assessments, studies and surveys as required prior to the submission of planning and related applications."

9.2.20 Policy DM12: Mitigation, Enhancement, Management and Monitoring of Biodiversity:

"In addition to, or as part of the requirements of other policies in this DPD, measures should be included, as necessary and where appropriate, in the design for all developments for the protection of biodiversity and the mitigation of any adverse impacts. Additionally, enhancement for biodiversity should be included in all proposals, commensurate with the scale of the development. For example, such enhancement could include watercourse improvements to benefit biodiversity and improve water quality, habitat creation, wildlife links (including as part of green or blue infrastructure) and building design which creates wildlife habitat (e.g. green roofs, bird and/or bat boxes)."

St Edmundsbury Green Infrastructure Strategy – Final Report (September 2009)[9]

9.2.17 A number of 'action zones' have been defined to focus green infrastructure during the planning process, these areas are based on the character and opportunities for functional links. These form a series of potential green infrastructure projects. One of these action zones is Haverhill, which is summarised:

"In Haverhill, the river valley and disused railway provide a focus for the GI network, building a strong sense of place and identity for the town and linking it to its river valley setting. The streetscapes and green spaces have a unified management strategy, providing an attractive, safe, pedestrian/cycle friendly place to live and visit. Sustainable drainage systems will play a key role in new developments. Housing Proposed development sites are integrated with a variety of well-maintained multifunctional green spaces and accessed via wide streets lined by large canopy trees and footpaths. The Stour Valley Path and the proposed Stour Brook Green Corridor are key multifunctional routes in and around the town. New green space provides a resource for existing and new communities and responds to place and the river valley setting, notably opportunities for flood management."

9.2.18 The Haverhill Action Zone has a number of Outline Projects associated with this proposed development, which extends to the north of Haverhill, those Projects specific to this proposed development site include:

"Project E.3

Creation of Green Corridor 'fingers' to the north of Haverhill. These will improve existing footpaths and bridleways to provide well-defined Level 2 multifunctional routes (where appropriate); improve access between the Stour Brook and Stour Valley Path, linking several sites of interest including East Town Park and Puddle Brook Playing Fields. The routes should include way markers (to provide orientation and distance travelled) and interpretative signage and promote understanding of habitats and cultural heritage assets such as Roman relics and buildings (e.g. Kedington Church)."

"Project E.7

Advance landscape planting in relation to developments sites, to provide landscape and visual mitigation and habitat connectivity."

9.3 Assessment Methodology

9.3.1 The potentially significant effects on the ecological and nature conservation resources within the Ecological Zone of Influence (EZoI) have been assessed in accordance with IEEM guidelines based on the value or the potential value of the ecological receptor/resource within a defined geographic context using the criteria detailed in Table 9.1. A minimum threshold of site value has been set to take forward through the assessment.

9.3.2 In order to assess the significance of effects of a development on the valued ecological resources/receptors (VERs), a range of parameters (e.g. extent, magnitude and duration) are used to describe and identify possible effects. The significance of effect has been assessed by considering the effect of the integrity of an ecological feature, where integrity is defined as "the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat and/or the levels of populations of the species for which it was classified" (IEEM, 2006[10]).

Determining Biodiveristy Value

9.3.3 The IEEM Guidelines[10] identifies various characteristics that can be used to identify ecological resources or features likely to be important in terms of biodiversity. These include:

- Animal or plant species that are rare or uncommon, either internationally, nationally or more locally;
- Ecosystems and their component parts, which provide the habitats required by the above species, populations and/or assemblages;
- Endemic species or locally distinct sub-populations of a species;
- Habitat diversity, connectivity and or/synergistic associates (e.g. networks of hedgerows and areas of species-rich pasture that provide important feeding habitat for a rare species such as greater horseshoe bat);
- Notably large populations of animals or concentrations of animals considered uncommon or threatened in a wider context;
- Plant communities (and their associated animals) that are considered to be typical valued natural/semi-natural vegetation types – these will include examples of natural species-poor communities;
- Species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change;
- Species-rich assemblages of plants and animals; and/or
- Typical faunal assemblages that are characteristic of homogenous habitats.

Geographic Frame of Reference

9.3.4 Table 9.1 below provides the geographic frame of reference used for the assessment. The table based on that provided in IEEM Guidelines[10]. Former United Kingdom Biodiversity Action Plan (UKBAP) priority species and habitats still regarded as conservation priorities within the UK Post-2010 Biodiversity Framework are now listed on Section 41 of the NERC[2]. Table 9.1 below has been amended to reflect this.

Table 9.1: Geographical Frame of Reference

Level of Value	Examples
International	■ An internationally designated site or candidate site (Specially Protected Area (SPA), potential SPA (pSPA), Special Area of Conservation (SAC) or candidate SAC (cSAC)), Ramsar site, Biogenetic Reserve or an area which meets the published selection criteria for such designation, irrespective of whether or not it has yet been notified; ■ A viable area of a habitat type listed in Annex I of the Habitats Directive or smaller areas of such habitat which are essential to maintain the viability of a larger whole; ■ Any regularly occurring population of an internationally important species, which is threatened or rare in the UK (i.e. it is a UK Red Data Book (RDB) species or listed as occurring in 15 or fewer 10km squares in the UK or of uncertain conservation status or of global conservation concern; and

Level of Value	Examples
	■ A regularly occurring, nationally significant population/number of any internationally important species.
National	■ A nationally designated site (Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Marine Nature Reserve (MNR)) or a discrete area, which meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified; ■ A viable area of a habitat listed on Schedule 41 of the Natural Environment and Rural Communities Act (NERC S41) or smaller areas of such habitat which are essential to maintain the viability of a larger whole; ■ Any regularly occurring, regionally or county significant population/number of any nationally important species; and ■ A feature identified as of critical importance also listed as NERC S41 habitats of principal importance.
Regional	■ Viable areas of key habitat identified in the Regional Biodiversity Action Plan (BAP) or smaller areas of such habitat which are essential to maintain the viability of a larger whole; ■ Viable areas of key habitat identified as being of Regional value in the appropriate Natural Area profile; ■ Any regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation; ■ A regularly occurring, locally significant number of a regionally important species; and ■ Sites which exceed the County-level designations but fall short of SSSI selection guidelines, where these occur.
County	■ Semi-natural ancient woodland greater than 0.25ha; ■ County/Metropolitan sites and other sites which the designating authority has determined to meet the published ecological selection criteria for designation, including Local Nature Reserves (LNR) selected on County/Metropolitan ecological criteria (County/Metropolitan sites will often have been identified in local plans); ■ A viable area of habitat identified in the County BAP; ■ Any regularly occurring, locally significant population of a species which is listed in a County/Metropolitan "red data book" or BAP on account of its regional rarity or localisation; and ■ A regularly occurring, locally significant number of a County/Metropolitan important species.
District	■ Semi-natural ancient woodland smaller than 0.25 ha; ■ Areas of habitat identified in a sub-county (District/Borough) BAP or in the relevant Natural Area profile; ■ District sites that meet the published ecological selection criteria for designation, including LNR selected on District/Borough ecological criteria (District sites, where they exist, will often have been identified in local plans); ■ Sites/features that are scarce within the District/Borough or which appreciably enrich the District/Borough habitat resource; ■ A diverse and/or ecologically valuable hedgerow network; ■ A population of a species that is listed in a District/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation; and ■ A regularly occurring, locally significant number of a District/Borough important species during a critical phase of its life cycle.
Local	■ Areas of habitat considered to appreciably enrich the habitat resource within the context of the parish or neighbourhood (e.g. species-rich hedgerows); and LNRs selected on parish ecological criteria.
Site	■ Areas of habitat which are considered to have value at an immediate level only and which are not considered to be of value outside of their adjacent zone of influence within the site itself.

Determining Ecological Significant Effects

9.3.5 The IEEM assessment of conservation importance was used to measure the spatial effect of predicted effects; this was then correlated against an assessment of the degree of significance which was classified

as being of substantial, moderate, minor or negligible significance. The definitions can be seen in Table 9.2.

Table 9.2: Definitions of Significance

Effect Terminology (IEEM)	Definitions
Substantial	■ A total loss of a habitat, in which a species relies for refuge, foraging, breeding or commuting, leading to the death of species through the impacts it is subjected to. ■ Habitats lost that are of unique species content within an area, which could be of statutory importance and are not commonly found.
Moderate	■ Partial loss of a habitat affecting foraging, breeding and commuting whereby a species will have to change its behaviour due to the impacts it is subjected to. Additional areas within the area can be utilised by a species without leading to detrimental effect on health or survival ■ Partial loss of a habitat that is well represented within the immediate area that has no statutory designation. Sufficient like habitats are represented that are unaffected by impact
Minor	■ No direct impact on a species, behaviours are likely to be unaffected by impact and habitats utilised can still be used. ■ Habitats will be relatively unchanged by impacts, small areas may be affected.
Negligible	■ Species will not be affected in anyway by the impacts involved. ■ No negative impacts will occur on the habitat in question.

9.3.6 When describing the effects on an ecosystem, structure or function, reference may be made to the parameters detailed within Table 9.3 below.

Table 9.3: Parameters Used to Describe Effects

Parameters for Describing Effects on Ecological Structure and Function	Definitions of the Parameters
Beneficial or Adverse	Whether the effect is beneficial or adverse
Extent	The area over which the effect occurs
Magnitude	The size or amount of an effect
Duration	The time for which the effect is predicted to last prior to recovery or replacement of the resource or feature
Reversibility	Whether the effect is permanent (i.e. irreversible) or temporary (i.e. reversible)
Timing and Frequency	How often the effect occurs (e.g. repeated noise from piling work) and when it occurs (e.g. vegetation clearance undertaken outside of the bird breeding season).

9.3.6 As part of the Ecological Impact Assessment (EcIA) it is important to assess whether or not an effect (referred to as an impact within the IEEM Guidelines, 2006[10]) is significant or not. Significance is defined as, "*an impact (adverse or beneficial) on the integrity of a defined site or ecosystem and/or the conservation status of a habitat or species within a given geographic area"* (IEEM, 2006[10]).

9.3.7 As part of the process of determining whether there is likely to be an effect on the integrity of a site or ecosystem, the following questions were considered:

- Will any site/ecosystem process be removed or change;
- What will be the effect on the nature, extent and function of the component habitats; and
- What will be the effect on the average population size and the viability of the component species.

9.3.8 Once an effect is considered to be significant, the scale of the effect is assessed on a geographic scale (i.e. international, national, regional, county, borough etc.) see Tables 9.1 and 9.2 for details. For example, the effect may not be significant at a county scale but it is significant on the local/site scale.

9.3.9 The methodologies for assessing current ecological data from consultation responses can be seen in the relevant ecological reports within the appendices; also within these reports are the specific methodologies for assessing the species presence and population sizes, these followed published guidelines as accepted by statutory and non-statutory agencies including Natural England and IEEM.

9.4 Baseline Conditions

Existing Biological Information

9.4.1 The following section provides the results of desk survey and comprehensive field surveys for sites of nature conservation interest and protected or otherwise notable species undertaken to inform this Environmental Statement.

Statutory & Non-Statutory Sites of Nature Conservation Interest (Figure 9.1)

9.4.2 There are no internationally designated sites within a 15km radius of the Proposed development site. One locally designated site Haverhill Railway Walks Local Nature Reserve (LNR) falls within 492m from the Proposed development site; this is designated for its importance as a wildlife corridor, but also supports a range of flora and fauna.

9.4.3 Four County Wildlife Sites (CWS) occur within 1km of the Proposed development site; these comprise of Haverhill Disused Railway Line, Annes Suckling's Way, Broad Street Old Allotments and Norney Plantation, details in Table 9.4.

Table 9.4: Designated Sites

Site Name	Designation	Approximate Location	Size (ha)	Reasons for Designation
Haverhill Railway Walks	LNR	492m south	15.09	The disused railway provides a valuable wildlife corridor, with scrub and larger trees. It offers food and shelter to a wide range of birds, animals, insects and plants.
Haverhill Disused Railway Line	CWS	492m south	13.58	A disused railway line running NW to SE through Haverhill, it provides a valuable link between other important reptile sites in the town. For most of its length the railway walk comprises areas of dense species-rich, native scrub with patches of unimproved grassland, supporting a variety of flowering plants and is particularly important for reptiles and breeding birds.

Anne Suckling's Way	CWS	729m north-west	0.3	A footpath and bridleway comprising species-rich grassland and hedgerows habitats. The site provides a routeway for wildlife and is an important conservation area in an otherwise intensively farmed landscape.
Broad Street Old Allotments	CWS	760m west	0.34	A disused allotment situated immediately to the south of the disused railway line. The site is particularly important for the reptile populations which it supports, in particular a medium sized population of slow-worm. A variety of deciduous trees, a mosaic of unmanaged grassland, scrub and closely mown paths provide habitat for breeding birds, odonata and small mammals.
Norney Plantation	CWS/ Ancient Woodland	990m north-west	8.82	Ancient semi-natural woodland. A large proportion of the wood has been planted with sycamore. In addition, some planting of ash and oak has taken place in recent years. The ground flora is dominated by dog's-mercury and nettle. The wood is reported to have had a large starling roost in it for a number of years.

9.4.4 There are three Sites of Special Scientific Interest (SSSI) in the wider area, however these were outside of the standard FPCR search area of 2km; this include Trundley & Wadgell's Wood and Over & Lawns Woods. These SSSIs were between 3-4km from the proposed development site and were designated for their broadleaved, mixed and yew woodland content; all these units were currently classified as unfavourable and recovering.

9.4.5 A number of habitats around the northern east of Haverhill have been identified within the Haverhill Vision[7], and in the St Edmundsbury Green Infrastructure Strategy[8], as potential 'action zones' to increase green infrastructure, however none have any formal designations.

Protected and Notable Species (Figure 9.1)

Badgers

9.4.6 There were no consultation results received that identified any badger sightings or location of setts.

Birds

9.4.7 There were a number of bird records associated with a variety of habitats within a 1km radius, however the majority of the records occurred within a single grid square to the north east, these were from a single bird recorder. The records run adjacent to the proposed development site and include reed bunting *Emberiza schoeniclus*, fieldfare *Turdus pilaris*, song thrush *Turdus philomelos*, common cuckoo *Cuculus canorus* , yellow wagtail *Motacilla flava*, turtle dove *Streptopelia turtur*, northern lapwing *Vanellus vanellus*, kingfisher *Alcedo atthis*, yellow hammer *Emberiza citrinella* and barn owl *Tyto alba*.

9.4.8 There were also a number of bird records within the Haverhill Disused railway CWS, around the junction of the A143, this included house sparrow *Passer domesticus*, fieldfare, reed bunting, song thrush and starlings *Sturnus vulgaris*.

Dormice

9.4.9 There were no confirmed records of dormice within a 1km radius of the proposed development site from Suffolk Biological Records Centre. Conversations were held with Simone Bullion of the Suffolk Wildlife Trust, who commented that there were potential areas within Haverhill that could potentially support dormice, and that there was a record of a dormice nest on a proposed development near the Haverhill

Disused Railway CWS, however this was removed. A dead dormouse was also handed into a local vet in November 2014, however where this individual was found was not documented.

Great Crested Newts (GCN)

9.4.10 There were no consultation results of GCNs within a 1km radius of the proposed development site.

Reptiles

9.4.11 Five records of common lizard *Zootoca vivipara* were recorded, four were within or near Haverhill Railway Walks LNR/Haverhill Disused Railway CWS these ranged between 270m to 957m from the Proposed development site; the fifth record was recorded within a 1km square to the west of the Proposed development site within the residential estate. Three slow-worm *Anguis fragilis* and one grass snake *Natrix natrix* were also recorded in the same areas as above. The above records were dated between 2003 and 2006.

Bats

9.4.12 Five records of bats were received; with one confirmed Pipistrelle roost located near Hamlet Croft in 2009, this is approximately 950m south of the proposed development site. An unknown *Pipistrelle* and a Soprano Pipistrelle *Pipistrellus pygmaeus* were recorded approximately 1.37km north of the site these were in flights when recorded in 2010. Two unidentified bats were recorded between 970/980m north of the proposed development site near Little Wratting, these were recorded in 2000 and 2003. An injured brown long-ear *Plecotus auritus* was recorded within a garden in 2012, 278m south west of the proposed development site.

Water Vole/Otters

9.4.13 There was only one record of water voles *Arvicola amphibious* within a 1km radius of the proposed development site, this occurred approximately 500m south east within a water course at Haverhill Golf Club; here latrines, burrows and footprints were identified. There were further records of water voles in the wider area, within a ditch 1.5km south of proposed development site running along A1017 in 2003, there was also records within the River Stour 1.5km north east in 2008 this was accompanied by an otter *Lutra lutra* record in 2008.

Field Surveys – Habitats (Appendix 9.1 & Figure 9.2)

9.4.14 The full details of the habitat surveys undertaken onsite can be seen in the Ecological Appraisal Report within Appendix 9.1, surveys of the habitats were undertaken in 2014 and subsequently updated in 2015.

Arable

9.4.15 The majority of the land within the proposed development site was under active arable cultivation consisting of a large open monoculture compartments, field margins varied in width between 4-7m with a neutral grassland content, with common grass and arable weed species.

9.4.16 Fields to the east of Great Wilsey Farm displayed 'Wildlife Conservation Area' signs. The desk study did not provide any information such areas within the site, and it is assumed that this would be part of the farm's countryside stewardship scheme.

9.4.17 These habitats were considered to be of negligible nature conservation value.

Improved Grassland

9.4.18 A small number of fields were left uncultivated and were dominated with species typical of improved grassland habitats; with Yorkshire fog *Holcus lanatus* and perennial rye-grass *Lolium perenne* being the most dominant. There were small patches of ribwort plantain *Plantago lanceolota* and creeping buttercup *Ranunculus repens.* These were regularly managed and frequently used by local residents for dog walking as they formed linkages along the central dry watercourse. The poor species content and small area coverage provided limited opportunities for local fauna. Such habitats were considered to be of negligible nature conservation value.

Field Margins

9.4.19 The field margins supported species typical of semi-improved neutral grassland, with a mix of grasses and a range of common herbaceous species. Field margins at the north and eastern extents of the proposed development site were signposted as 'Wildlife Conservation Area', the species content here resembled a sown seed mix, and these areas were also regularly managed. The sward comprised a mixture of grasses however the most frequently recorded included Yorkshire fog *Holcus lanatus*, cock's-foot *Dactylis glomerata*, creeping bent *Agrostis capillaris*, false oat-grass *Arrhenatherum elatius*, Timothy *Phelum pratense*, meadow foxtail *Alopecurus pratensis*, red fescue *Festuca rubra agg*, meadow fescue *Festuca pratensis,* soft brome *Bromus hordeacous*, sweet vernal grass *Anthoxanthum oderatum* with occasional wild oat *Avena fatuna*, meadow oat-grass *Avenula pratensis*, black grass *Alopecurus myosuroides* and barren brome *Bromus sterilis*. Sedge species were also recorded within the margins to the north and east of Great Wilsey Farm including glaucous sedge *Carex flacca* and spring sedge *Carex caryophyllea*.

9.4.20 Frequently recorded herbaceous species included red clover *Trifolium pratense,* white clover *Trifolium repens*, black knapweed *Centurea nigra,* ribwort plantain, common ragwort *Senecio jacobea,* creeping buttercup, tufted vetch *Vicia cracea*, hop trefoil *Trifolium campestre,* dove's- foot crane's-bill *Geranium molle*, smooth tare *Vicia tetrasperma,* rough hawk's-beard *Crepis biennis*, field bind weed *Convolvulus arvensis,* smooth sow-thistle *Sonchus oleraceus,* welted thistle *Cardus crispus*, red bartsia *Odontites vernus*, smooth hawk's-beard *Crepis capillaris,* betony *Stachys officinalis* and dandelion *Taraxicum officinale agg.*

9.4.21 Arable field margins are listed as NERC[2] habitats of principal importance and are also Suffolk Biodiveristy Action Plan Habitats. Generally across the proposed development site, the width and characteristics of the field margins varied greatly from narrow, restricted (<2m wide) to extended (>2m wide) field margins. In both instances, given that such habitats are easily replicable, common and widespread within the local area and the wider county; they are considered of negligible nature conservation value. Those margins to the north and east have started to develop a more diverse range of species, however their composition are common and widespread species and lack nationally scarce or rare species; although they do form a potential foraging resource for invertebrates due to the nectar source available. Therefore these hedgerows are considered to be of site nature conservation value.

Tall Herb/Ruderal

9.4.22 Tall ruderal herb species were present across the site, largely at the margins around the fields, waste land areas around farm materials/rubble and around woodland edges. Dominant species in such situations included common nettle *Urtica dioica*, creeping thistle *Cirsium arvense* and great willowherb *Epilobium hirsutum* with frequent mugwort *Artemisia vulgaris*, teasel *Dipsacus fullonum* and broad-leaved dock *Rumex obtusifolius.* These were considered to be of negligible nature conservation value, due to the limited coverage and species diversity.

Mixed and Broadleaved Plantation Woodland

9.4.23 Great Field Plantation consisted of two distinct areas (W5 & W7). The western compartment (W5) had a number of mature specimens which were possibly planted as part of the original landscape as research dated back to 1886 found these specimens to be present. The content included Austrian pine *Pinus nigra sp. Nigra*, common larch *Larix decidua*, Grand fir *Abies grandis*, Beech *Fagus sylvatica,* English elm *Ulimus procera*, elder *Sambucus nigra*, Scots pine *Pinus sylvatica*, Norway spruce *Picea abies* and Sycamore *Acer pseudoplatanus*.

9.4.24 The eastern compartment (W7) had a higher content of deciduous trees such as common larch, grand fir and Norway spruce, which were more regularly spaced. Discussions with the landowner confirmed that this part of the plantation was intended to produce Christmas trees, but they were not harvested, and allowed to grow.

9.4.25 Ground flora in both compartments consisted of ivy *Hedera helix*, common nettle, herb Robert *Geranium robertum,* false brome *Brachypodium sylvaticum*, hemlock *Conium maculatum,* wood dock *Rumex crispus* and dog's-mercury *Mercurialis perennis.* There were some under canopy species which included holly *Ilex aquifolium* and hazel *Corylus avellana*. The woodland was well trodden with footpaths and showed signs of regular human disturbance from the presence of fires, dens and litter.

9.4.24 A woodland parcel runs along the south western boundary of the Proposed development site (W1), was composed of number of early mature Norway maple *Acer platanoides* and sycamore with a mixture of Scots and Austrian pine, all planted in a linear formation with little space between them which therefore reduced ground flora. Under canopy species included English elm, field maple *Acer campestre*, blackthorn *Prunus spinose* and dog wood *Cornus sanguinea*. A number of informal pathways ran through this woodland providing access for dog walkers and local residents.

9.4.26 A dry watercourse ran through the proposed development site from the north west to south east, this is lined with a dense tree group (TN2) which runs its length. Species here consist of crack willow *Salix fragilis* and alder, with under storey species of blackthorn, elder, hawthorn *Crataegus monogyna* and dogwood. As a result of the dense overshading and periods of dryness, aquatic and emergent vegetation within the stream was limited to very occasional brooklime *Veronica beccabunga* and pendulous sedge *Carex pendula*. As the watercourse headed south easterly more English oak were present on the banks, this also included a number of damaged specimens. The woodland compartment become wider towards the southern boundary with sycamore, ash, field maple and hawthorn the most commonly recorded species, with flora comprised common ivy, false brome, dog's mercury, hemlock and several puff ball fungus *Lycoperdon sp*. Half way down this watercourse was a woodland outcrop (W4), this contained a number of Scots and Austrian pine tightly planted thus reducing the light infiltration to the ground, this resulted in bramble and common nettle becoming dominant.

9.4.27 A number of tree groups backed onto the boundaries of the proposed development site (TN3, W6 & TN4), these consisted of a variety of broadleaved species including Ash *Fraxinus excelsior*, field maple, goat willow, English elm; with an understorey of dogwood, hazel, blackthorn and crab apple.

9.4.28 A recently planted linear tree belt ran near the western boundary (TN5), this linked woodland W1 to the north western boundary. This contains young and semi mature specimens planted approximately 2m apart, here species consist of ash, field maple, goat willow, English oak, wild cherry *Prunus avium*, apple *Malus domestica* and silver birch *Betula pendula*. Little management had occurred within these areas, as neutral grassland had established around the bases.

9.4.29 Great Field Plantation contains a variety of deciduous woodland species, that have been purposely planted, which therefore falls under the designation of a plantation woodland[11], due to its planted nature the woodland cannot be designated as a lowland mixed deciduous woodland, and therefore not a Habitat of Principal Importance under NERC Act[2]; this woodland also does not qualify for CWS[12]. However, the woodland has a good composition and provides a range of habitats for a variety of fauna, especially with the differing specimen life stages which increase biodiversity.

9.4.30 The woodland compartments have no formal designations, however they do form a linkage habitat for a number of species; these are considered to have local nature conservation value.

Hedgerows

9.4.31 A total of thirty-one hedgerows were present within the Proposed development site. Most were relatively diverse in terms of overall canopy species, but were dominated by only two to three native woody species. Assessment under Hedgerow Evaluation Grading System (HEGS)[13] determined H8, H11, H12, H20, H21 and H23 being classified as moderate to moderately high value; the remaining hedgerows were classified as moderate to low value, or of low value.

9.4.32 Evaluation under the Hedgerow Regulation (REGS)[A] highlighted hedgerows H1 and H19 as being important under the wildlife and landscape criteria of the regulation. Hedgerow H1 occurs on the boundary of Great Wilsey Farm, which defines the development boundary.

9.4.33 All hedgerows on site contain at least 80% native species and therefore are habitats of principal importance in England under the NERC Act[2]. The existing hedgerows were considered to be of local level importance to nature conservation.

Watercourses and Ditches

9.4.34 A watercourse runs northwest to south east bisecting the proposed development site into two. The bank sides are steep with surrounding broadleaved tree groups which help to stabilise the soil. There was no free flowing water during the majority of the survey period, during wetter periods there were areas that retained some water, however these were shallow and short lived. Ground flora around this feature was typically of woodland charactertic with ground ivy, soft brome, hemlock, common nettle, bramble, dog's-mercury, and cuckoopint *Arum maculatum*. The degree of overshading limited the aquatic and emergent vegetation able to establish, as this was limited to brooklime *Veronica beccabunga* and pendulous sedge. This watercourse eventually runs into the River Stour.

9.4.35 The majority of the field boundaries included dry ditches; those within hedgerows were densely over-shaded and those that were open were densely vegetated with the surrounding semi-improved grassland, with patches of great willowherb *Epilobium hirsutum*, rosebay willowherb *Chamerion angustifolium* and common nettle. Wet ditches were shallow (<10cm of water) at the time of survey and are found in association with hedgerows H3, H16 and H17. All wet ditches were heavily over-shaded by the adjacent hedgerows providing little to no opportunity for aquatic and emergent vegetation other than pendulous sedge which was occasionally recorded. These subsequently dried during drier periods.

9.4.36 The water retention of the watercourses within the proposed development site was poor and during the majority of the surveys these were dry. The conservation value as a water retaining feature is negligible, however as these form linear features associated with hedgerows and tree groups, they would form

[A] The Hedgerow Regulations 1997 – Statutory Instrument 1997 No. 1160. [Online]. London: HMSO. Available from: http://www.legislation.gov.uk/uksi/1997/1160/contents/made [Accessed 11/08/2015].

important corridors of movement for wildlife. The ditches and watercourse were of no more than local nature conservation value.

Waterbodies

9.4.37 Two waterbodies were identified within the proposed development site; ponds P3 and P3a. Pond P3 was dry during the majority of the surveys, as this was positioned on the southern edge of Great Field Plantation it received very little light, resulting in only soft rush, pendulous sedge and brooklime establishing. This waterbody had no defined structure and it formed more of a shallow depression which would subsequently hold water only during wet periods. P3a had similar characteristics to pond P3, as it was more of a depression that held water; this measured approximately $2m^2$ and was dry during the majority of the survey season.

9.4.38 The lack of water content limited the conservation value of these features, although not dry all the time there was not enough water consistently to enable vegetation to establish which would be of benefit to wildlife. These waterbodies were thought to provide negligible nature conservation value.

Fauna

Badger (Appendix 9.2)

9.4.39 Two main badger setts were identified within the proposed development site; the first occurred along the southern stretches of the watercourse and associates tree groups; consisting of approximately seven holes running along the length of the watercourse with concentrations around TN6. Holes were seen along the banks of the watercourse, with other entrances emerging into the fields. These also had evidence of fresh bedding, prints and runs which went along the banks. The holes prior to the main sett were considered to be outlier setts.

9.4.40 A subsidiary sett was found within the tree group near the southern boundary (TN7), this had four entrances however two had levels of leaf litter within them, suggesting that they were not in current occupation. The remaining two entrances had evidence of recent burrowing. Two large well used latrines (TN7) were seen within the immediate area of this sett; a single latrine was also seen on the north eastern edge of the woodland W1, this consisted of a few recent deposits. Searches of Mary Cole's Grove (W3) found a small latrine that was actively used.

9.4.41 The second main sett was located on the eastern edge of Great Field Plantation (TN8), and consisted of five actively used holes and a number of latrines. In association with this main sett were two outlier setts to the south, these looked to be active as there was a lack of debris in entrances; however there were no definitive paths leading to the main sett.

9.4.42 The occurrence of two main setts within the proposed development site, along with a number of outlier setts, would suggest that the badger population was well established and therefore evaluated that the badgers are of no more than local nature conservation value.

Breeding Birds (Appendix 9.3)

9.4.43 Forty-nine species were recorded during breeding bird season; these were all fairly to very common residents or summering species to Suffolk and the UK, unexceptional populations were recorded. The species recorded are typical of the main open arable field habitats available. Twenty-two species were 'notable' as they are listed as NERC[2] or Suffolk LBAP species of principal importance and/or feature on the Birds of Conservation Concern (BoCC)[14] Red & Amber lists. No notable species were confirmed as breeding within the proposed development site.

9.4.44 A further twenty-five green-listed species of low conservation concern and two unlisted (introduced) species of no conservation concern were recorded. Eight low/no conservation concern species were confirmed as breeding onsite: woodpigeon *Columba palumbus*, great-spotted woodpecker *Dendrocopos major*, blue tit *Cyanistes caeruleus*, great tit *Parus major,* long-tailed tit *Aegithalos caudatus*, wren *Troglodytes troglodytes*, robin *Erithacus rubecula* (all Green-listed) and red-legged partridge *Alectoris rufa* (unlisted).

9.4.45 Twenty-three species were considered probable breeders, including the following notable species:

- NERC/Red/LBAP – skylark *Alauda arvensis,* song thrush *Turdus philomelos* and yellowhammer *Emberiza citronella*;
- NERC/Amber/LBAP – dunnock *Prunella modularis* and reed bunting *Emberiza schoeniclus;*
- Amber – stock dove *Columba oenas,* willow warbler *Phylloscopus trochilus* and common whitethroat *Sylvia communis.*
- Eighteen species were considered possible breeders (12) or non-breeders (6).

9.4.46 The proposed development site is considered to be of local nature conservation value in the breeding season for the twenty-two notable species and of site nature conservation value in the breeding season for the twenty-five green-listed and two unlisted species.

Wintering Birds (Appendix 9.4)

9.4.47 Forty two species were recorded during the winter season; these were all fairly to very common resident or overwintering species to Suffolk and the UK, with unexceptional populations recorded. The species recorded are typical of the main habitats available and are characterised by open arable field with margins.

9.4.48 Sixteen species were 'notable' as they are listed as Schedule 1, NERC[2] or Suffolk LBAP species of principal importance and/or feature on the NoCC[16] Red & Amber lists; this included Schedule 1 & red listed Redwing *Turdus iliacus* & Fieldfare *Turdus pilaris*, and red listed/NERC/LBAP herring gull *Larus argentatus*, skylark starlings *Sturnus vulgaris*, and song thrush.

9.4.49 The assemblages within the site were unexceptional and assessed as being of no more than local nature conservation value.

Dormice (Appendix 9.5)

9.4.50 A total of 381 nest tubes were installed in March 2015, and subsequently checked monthly between May and September 2015. The majority of the hedgerows and woodland compartments were covered during this period, many of which lacked a continuous understorey, however linkages did exist throug the proposed development site and into the surrounding area. During the final survey in September a dormice nest was found within a nesting tube located south of woodland W4; this consisted of green leaves and a loosely woven structure, no individuals were seen.

9.4.51 Dormice are protected under the Conservation of Habitats and Species Regulations[5], the Wildlife & Countryside Act[4], they are a Species of Principal Importance under NERC[2] and they are also a LBAP species. Under Policy CS2 of the St Edmundsbury Core Strategy[7] and Policy DM11 of the Joint Development Management Policies Document[8] protected species which are adversely affected by

development will not be permitted unless measures can be undertaken to prevent harm to species. Dormice are identified as having a widespread population within Suffolk in accordance with the Dormice Conservation Handbook, although there were no consultation records nearby. The population within the proposed development is thought to be small and of local value.

Great Crested Newts (GCN) (Appendix 9.6)

9.4.52 In 2014 and 2015 aquatic presence and absences surveys were undertaken; during the most recent surveys a total of eleven ponds were surveyed which fell within the 500m radius of the proposed development site. During these surveys no GCNs were recorded, it was thus concluded that the proposed development site was of negligible value to this species.

Reptiles (Appendix 9.7)

9.4.53 A 'good population' of common lizards was recorded within the proposed development site, these populations were predominately along field margins to the east, but were spread around the other parts of the site. A 'low population' of slow worms and grass snakes were also recorded. A single adult slow worm was recorded along the woodland belt that lines the watercourse; whereas grass snakes were found at three different locations.

9.4.54 All native reptiles are Species of Principal Importance under NERC Act[2] and protected under Schedule 5 of the Wildlife & Countryside Act, they are also Suffolk BAP species. As with dormice under Policy CS2 of the St Edmundsbury Core Strategy[7] and Policy DM11 of the Joint Development Management Policies Document[8] protected species which are adversely affected by development will not be permitted unless measures can be undertaken to prevent harm to species or habitats. The numbers are isolated to small areas of the proposed development site due to the dominance of arable farming, and are therefore of local value.

Bats (Appendix 9.8 & Figure 9.3)

Activity

9.4.55 During surveys conducted in 2014 and 2015 ten species of bat were identified using the proposed development site. These species included common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, unidentified *Myotis* species, *Nyctalus* species, Noctule, brown long-eared, Barbastelle, Serotine and unidentified bat species. The most frequently recorded species were common Pipistrelles. The overall peak bat activity occurred along hedgerows H4, H17, H19, and H23, and associated habitats such as the watercourse and the young plantation (TN5) but particularly woodland W5, W7 and W1. Bat activity was also recorded in a lesser extent along woodland W4 and, hedgerow H1, H2, H12, H18, H21 and H25.

9.4.56 All bat species are priority species within the Suffolk BAP and are protected under the Conservation of Habitats and Species Regulations 2010 and under Schedule 5 of the Wildlife & Countryside Act. However only Soprano Pipistrelles, Barbastelle, Noctule, and brown long eared are a Species of Principal Importance under NERC[2]. The proposed development site has been evaluated as being of local nature conservation value for the more common and widespread species of bat, excluding Barbastelle.

9.4.57 A number of Barbastelle registrations were recorded during the static surveys undertaken during the survey period, these are Annex II species and one of the rarer bats in the UK, these are also Species of Principal Importance under NERC Act[2], and priority species under Suffolk BAP. Registrations occurred in a variety of locations through the proposed development site; however they all seem to follow woodland compartments or linear features such as the watercourse and associated habitats. Peaks in registrations

occurred around the peripheries of Great Field Plantation (W5 & W7), particularly on the eastern edges; here activity was recorded throughout the 2015 season with greater registrations in May 2015. Woodland W1 recorded registrations in the hundreds on two survey occasions (April & May 2015), with additional registrations along this south/south western boundary. Isolated registrations were recorded along the woodland belt associated with the watercourse, with peaks occurring in May 2015 nearer woodland W4, where activity then continued up hedgerow H23/H24. This species is largely associated with woodland habitats therefore their occurrence was expected, however the number of registrations and the constant occurrence have evaluated the Barbastelle within the proposed development site as being of County nature conservation value.

Roosts

9.4.58 The tree surveys have identified four roosts, three of these occur within the proposed development site. A hibernating Pipistrelle species was found within T28, which occurred with the woodland belt along the watercourse. Tree T44 situated within the south eastern corner of Great Field Plantation, had droppings of an unidentifiable bat, however during nocturnal surveys no bats were seen emerging, this has been classified as roost not regularly used. The third roost occurred in T49 situated on the southern edge of hedgerow H17; this had Pipistrelle species droppings and during nocturnal surveys a Pipistrelle was seen roosting in a branch cavity, this was classified as an occasionally roost.

9.4.59 An offsite tree roost was also found within Mary Cole Grove, where a brown long eared bat was found within a 20cm deep cavity.

9.4.60 Thirteen high/moderate classified trees were also surveyed, during which they all exhibited features that could be utilised by bats, but currently roosting bats were absent. Forty-two low roosting potential trees were also recorded, again no roosts were found. The species identified roosting are common and widespread species; the proposed development site has been evaluated as being of local nature conservation value for roosting local bat populations.

Riparian Mammals

9.4.61 Surveys of the watercourse which runs through the proposed development site was intermittently holding water, this had therefore limited the potential for water voles which use water as a means escape from predation. The absence of water also limits the potential usage of this proposed development site for otters as a foraging resource would largely be absent. Throughout the survey period there has been no evidence of water voles or otters recorded, and thus the proposed development site has been evaluated as being of negligible conservation value to these species.

9.5 Predicted Effects

9.5.1 The assessment of effects takes into account the proposed design, which includes the planned Green Infrastructure provision (GI). Specific mitigation measures for habitats and species is provided in the Mitigation and Residual Effects sections, and therefore will not form a part of this assessment at this stage.

9.5.2 Areas highlighted as providing more ecological value, such as the woodland compartments, have shaped the GI locations, which ensures that residential areas are positioned in more central areas away from existing linear features.

Construction Effects (Appendix 4.1)

Effects Statutory/Non-Statutory Sites

9.5.3 During the construction work there will be no direct effects on the Haverhill Railway Walks LNR, due to the distance which the proposed development site is positioned. Dust deposits from the proposed development are unlikely to cause any secondary effects on habitats or fauna associated with this LNR. It is considered that there will be negligible effects on this site.

9.5.4 Any habitat loss or possible release of dust deposits that does occur are not considered to represent a potential effect on the integrity of any CWS identified within Section 9.4.3, given the relative degree of geographic separation between these and the proposed development site (492m to 990m); the effects are considered to be negligible.

Effects on Habitats

Arable

9.5.5 The proposed development will include the loss of all arable fields which make up the majority of the land use, these have limited conservation value. These losses will have a negligible effect on conservation value.

Improved Grassland Pastures

9.5.6 There are three field compartments that have an improved grassland habitat. The field compartment to the west of Great Field Plantation (W7) will be totally lost to residential/extra care residential development, this will result in approximately 2.25ha of habitat lost. These habitats had a poor content and structure due to the regular management, the losses of such habitats has been considered to be negligible.

9.5.7 A central pasture runs along the banks of the watercourse in the north west of the proposed development site, this will be largely retained with some losses occurring due to the creation of GI to include attenuation, footpaths, tree planting and ecological enhancements; these losses will have a negligible effect on the conservation value of such habitats.

Field Margins

9.5.8 The majority of the field margins are poorly developed with limited species content and structure; however there were margins to the north and east that had started to develop a more diverse range of species. These habitats are associated with hedgerows, the majority of which will be retained, however constriction works may need to remove surface vegetation to allow for profiling and/or the construction of footpaths or these areas could be used for the storage of materials/equipment. It is likely that there will be some field margins temporarily lost, the effects on the majority of such habitats will be negligible. Potential losses of margins in the north and east, such as those along hedgerow H19, H21, and H23/H24 will be minor adverse in the short term with a temporary direct effect at site level.

Tall Herb/Ruderal

9.5.9 Such habitats were isolated to small proportions of the proposed development site, and the losses of such areas will have a negligible effect.

Woodland

9.5.10 There will be a permanent loss of approximately 0.3ha of the young plantation (TN5) in the north west of the proposed development site; and approximately 1.1ha of woodland W1. The species lost have limited

value individually, but as these woodland compartments and plantation form a continuous linear feature across the proposed development site it is anticipated that there will be a minor/moderate adverse long term permanent direct effect at site level.

9.5.11 The remaining woodland compartments will be retained without any direct losses occurring, however there is potential for accidental encroachment into such areas by machinery, equipment and building materials. Such activity could cause direct damage, or if soil is compacted this could affected the gaseous exchanges within root systems, this potential leads to a loss of health. Under such circumstances it is anticipated that inappropriate placement of construction items could have a minor/moderate adverse short term temporary/permanent indirect effect at a site level.

9.5.12 The majority of the woodland compartments will be surrounding by GI buffering them from possible construction pressures, however the vast majority of the arable fields will be removed to enable construction of the proposed development. The large loss of existing arable land will potentially see dust particles released during their removal, which could potentially cover the adjacent trees, thus affecting their efficiency to photosynthesis, which could affect health temporarily. The dust release could have a minor adverse short term temporary indirect effect at site level.

Hedgerows

9.5.13 There will be a partial loss of hedgerows H4, H9, & H14 (15m, 17m & 16m respectively); there will also be some hedgerow losses within H12/H13 where a combined loss 30m is proposed for access into the local centre.

9.5.14 Native hedgerows are Habitats of Principal Importance under NERC Act[2] and are also Suffolk BAP, and a number of the local polices also mention the protection of connectivity and GI through Haverhill. The losses of hedgerows will be kept to a minimal therefore the loss of hedgerow H4, H9, H13 & H14 are considered to have a minor adverse long term permanent direct effect at local level.

9.5.15 There will also be small sectional losses along those hedgerow classified as moderate/moderately high value in accordance to HEGS[13], hedgerow H11, H12, H21 & H23. Hedgerow H11 runs along the northern boundary of the proposed development site backing onto A143 Haverhill Road, as this will be the main access road a new roundabout will be constructed to enable safe passage; this will result in approximately 40m loss of existing hedgerow. Hedgerow H21 will be bisected twice for access roads to pass into different plots, resulting in a possible combined loss of 35m; and a 15m loss of hedgerow H23. The construction phase will have a minor adverse long term permanent direct effect at local level on the HEGS hedgerows within the proposed development site.

9.5.16 Hedgerow H19 was classified as ‘important’ under REGS, this occurs to the east of the proposed development site, whereby there will be a 15m loss. This small loss is considered to be minor adverse long term permanent direct effect at local level.

9.5.17 The positioning of footpaths, access roads and buildings near the root systems of existing and newly planted hedgerows could have a detrimental effect on their health and cause the loss of species. There are also potential risks during the construction phases that construction vehicles and materials encroach into hedgerows or compact the ground around them, causing damage to both foliage and /or root systems. Such works will result in a minor adverse medium term temporary/permanent indirect/direct effect at site level.

Watercourse

9.5.18 The majority of the ditches through the proposed development site will be retained within the GI, as many were associated with hedgerows. It is accepted that there will be some partial losses for the construction of access roads into field compartments, but these will be limited to a few meters (see above). The ditches through the proposed development site had a negligible value due the lack of continuous water and limited aquatic and marginal vegetation content; therefore the loss and partial loss of some of the ditches will have a negligible effect.

9.5.19 The central watercourse, which is a tributary of the River Stour, held very little water and was not recorded to have a continuous flow during the surveys. This will also be retained within the GI unaltered, with the exception of a few access road crosses, therefore it is anticipated that there would be negligible effects upon this ecological resource.

9.5.20 Due to the dry nature of the watercourse within the proposed development site, there is potential that waste building material could be dumped within these features, which would degrade these features further, but also impede any future development. Such circumstances could have a minor adverse short term indirect temporary effect at site level.

Waterbodies

9.5.21 The two shallow depressions (Pond P3/P3a), will be lost during the proposed excavation of the new attenuation ponds. Due to inconsistency of water retention and the lack of marginal/aquatic species the loss of this feature would have a negligible effect on the conservation value of the proposed development site.

Effects on Fauna

Badgers

9.5.22 The main sett on the eastern edges of Great Field Plantation will become surrounding by clearance works during the construction phase, however there will be no direct effects on the main sett identified within it. The other sett identified along the watercourse, will also be retained within GI, with only possible remedial works occurring on southern areas. Badgers generally become habituated to disturbance; but for those clans within the proposed development site it is possible that they have not been exposed to such activities; therefore it is anticipated that there could initially be some minor adverse short term indirect temporary effects at site level on badgers, but becoming negligible.

9.5.23 It is anticipated that foraging resources will increase within the proposed development site during the construction phase, as vegetation removal occurs and ground excavations take place exposing more invertebrate prey items, this will encourage individuals into the working area. The construction phase will also entail a number of possible deep excavations for culverts, drainage and foundations this could increase the potential for badgers to fall and become injured. Depending on the extent of the injuries, there would be a minor/moderate adverse short term indirect temporary effect at site level on the badger population.

Breeding Birds

9.5.24 The species recorded onsite that are most vulnerable to impacts are the eleven notable species that appear on the BoCC red list, are listed as priority species under NERC Act and/or feature on the Suffolk LBAP; namely: swift, skylark, starling, song thrush, dunnock, house sparrow, yellow wagtail, linnet, bullfinch, yellowhammer and reed bunting.

9.5.25 The proposed development will result in the loss of open arable habitat from the site, this has the potential to impact upon two notable species in the breeding season the skylark and yellowhammer. Neither species thrives close to residential areas and the associated levels of regular human disturbance. Although some suitable open grassland habitat will be retained in the east of the proposed development site, these open-farmland specialists are likely to be mostly displaced from the site post-development, resulting in a minor adverse long term permanent direct effect at local level for breeding skylark and yellowhammer populations are predicted.

9.5.26 Yellow wagtail, linnet, bullfinch and reed bunting were all recorded in modest populations throughout the breeding surveys. Negligible effects are expected for the local populations of all four species.

9.5.27 There will be some losses of nesting opportunities as small parts of hedgerows/woodland are lost. If hedgerows are removed within the bird breeding season (March to Mid-August/September) there is a possibility that nesting birds could be disturbed, injured or killed, this would lead to an offence under the Wildlife & Countryside Act[3]. If breeding birds are present during removal there will be a moderate adverse direct short term permanent effect at site level.

Wintering Birds

9.5.28 The species recorded within the proposed development site that are vulnerable to impacts are the ten 'notable' Red/NERC/LBAP species, namely: herring gull, skylark, starling, fieldfare, song thrush, redwing, dunnock, house sparrow, bullfinch and reed bunting.

9.5.29 The proposed total loss of arable habitat from the proposed development has the potential to impact upon skylark in winter. This open-farmland specialist is likely to be displaced from the site post-development, it is anticipated that there will be minor adverse direct long term permanent effect at local level to skylark are predicted.

9.5.30 Herring gull, fieldfare, song thrush, redwing, bullfinch and reed bunting were all recorded in modest populations throughout the winter surveys. Negligible residual impacts are predicted for all six species.

Dormice

9.5.31 There will be approximately 183m of hedgerow and 1.4ha of woodland lost during the construction phase of the proposed development, the majority of the habitat loss occurs outside of the area where dormice were found. It is possible that dormice could be present within these areas, and the habitat loss could potentially injure/kill individuals if removals are undertaken outside of designated periods. It is also possible that individuals become isolated within the proposed development as linear features become severed. It is considered that the habitats losses could have a minor/moderate adverse long term indirect/direct permeant effect at local level.

9.5.32 Hedgerow H23/H24 occurs to the north of where dormice were recorded, this section of hedgerow will have approximately 15m removed to allow for access roads to be constructed. It is estimated that dormice have a home range around 70m along linear features such as hedgerows, this sectional loss occurs approximately 200m from where the nest was found, therefore limiting the potential for this hedgerow to form part of its home range. It is therefore assumed that the hedgerow also will have a negligible/minor adverse long term indirect permeant at a site level.

9.5.33 The habitats within which dormice was recorded will be incorporated within the proposed GI, therefore avoiding any direct effects from the constriction phase. However as the GI will back on to the development there is potential that the retained habitats could be accidental or intentional encroached with construction

equipment or material. This could damage habitats, inhibit movement of dormice whereby there will be minor adverse short term indirect temporary effect at site level.

9.5.34 During the construction phase GI will be created which will incorporate a number of native species that will enhance or create new hedgerow and woodlands habitats; it is possible that where new species are planted that they become grazed deer. Grazing can causes stunted growth and if severe will cause death of plants, this potentially could cause new habitats to become unusable for dormice and as the GI is created to increase foraging and commuting, this could have a moderate adverse long term indirect temporary effect at site level.

Great Crested Newts

9.5.35 No GCNs have been recorded within the proposed development site and no records have been provided, therefore effects are considered to be negligible.

Reptiles

9.5.36 The reptiles found within the proposed development site were associated with hedgerows, the majority of which will be retained; however there will be some sectional losses, particularly along hedgerows H4, H11, and H14 to provide access. The removal could lead in injuries and death of individuals. The majority of the hedgerow losses will occur away from locations where individuals were recorded, however it is accepted that the surveys only represent a fraction of the possible population size. As all native reptile species are NERC Act species of principal importance and listed under the Suffolk BAP, the loss of habitats was considered to have a moderate adverse medium term direct permanent effect at a local level.

9.5.37 Where there will be hedgerow losses occurring, which will not have a direct effect on reptile populations i.e. death or injuries, there is a possibility that bisections of linear features could have longer terms detrimental effects as populations become isolated. This is likely to occur within the given locations mentioned above, it is considered that the isolation of populations could have a minor/moderate adverse long term indirect temporary/permanent effect at site level.

9.5.38 Reptile populations not affected directly by habitat losses, will be retained within GI such as those which occur along hedgerow H2, H18, long eastern boundary near Mary Cole Grove, along the watercourse and in areas along the southern boundary backing onto existing residential areas. It is possible that these GI areas could be accidentally accessed during the construction phase and used for storage of equipment, materials or site offices whereby disturbing or destroying these habitats. During the construction of access roads, residential units and other infrastructure there will be a number of ditches, holes and excavations created, this could cause reptiles to fall in and become trapped. It was thought that there would be a minor adverse short term indirect temporary effect at site level from possible encroachment into GI and infrastructural works.

Bats

9.5.39 The majority of the habitats identified as key areas within the proposed development site will be largely retained. There will be some permanent losses of small sections of hedgerows and woodland, the most significant loss will be the 1.2ha from woodland W1. This woodland runs along the southern boundary providing a wider linkage to the surrounding area, and has been used by a number of bat species including Barbastelle which recorded a peak 197 registrations during May 2015. Approximately 1ha will be lost from the north eastern corner, however with this lost a continuing linkage will be retained; an additional 0.2ha loss will occurring half way down this woodland compartment to enable an additional access road. There were no tree roosts identified within those sections to be lost, however the loss of these larger areas could temporarily disorientate the navigational patterns of local bats which regularly use

such areas. It is anticipated that the loss of these areas of woodland W1 will have a minor adverse short term indirect temporary effect at site level.

9.5.40 The Hedgerows Removal Plan (within FPCR Bat Report Appendix 9.8) indicates that there will be approximately 198m of hedgerow lost to facilitate road and footpath access, which assumes that there will be approximately ten crossings through existing hedgerows with between 15-40m losses occurring along each length. With the exception of hedgerow H11, where there will be a 40m loss, the remaining losses will be averaging 17.5m. There will also be a loss of 0.3ha from the young plantation woodland (TN5), this will occur in two areas. These breaks may subsequently fragment existing foraging and commuting corridors, but could also increase potential predation. These habitat breaks will have up to a minor adverse short term indirect temporary effect at local level.

9.5.41 There is potential for existing bat foraging or commuting routes to be interrupted by artificial lighting erected around site compounds, security offices and working areas during the construction process, resulting in disruption to foraging or migrating habits of local bat populations. It is probable that disruption through such means will have a minor adverse short term indirect temporary effect at site level on common and widespread species, but greater on barbastelle bats; moderate adverse short term indirect temporary effect at site level.

9.5.42 All bat roosts identified within the proposed development site will be retained within the GI, therefore direct effects from the construction phase will be avoided. Where these roosts are situated attenuation (SuDs) will created, therefore if excavation works are likely to be undertaken during dusk periods it is possible that lighting within the area could illuminate the roosts or habitats leading to them, this could cause the roost to become unused. This type of disruption could have a minor short term indirect temporary effect at local level.

Riparian Mammals

9.5.43 Water voles and otters are absent from the proposed development site, therefore effects of the construction phase are negligible. All watercourse crossings will retain the water channel so if the Proposed development site becomes colonised in the future migration through the site will be possible unhindered.

Operational Effects

Effects Statutory/Non-Statutory Sites

9.5.44 There will be no direct damage to the LNR or CWS due to the distance these occur from the proposed development site. The proposed development will increase the number of residents within Haverhill due to the proposed 2500 units. This could have recreational impacts on those surrounding LNR and CWS.

9.5.45 Haverhill Railway Walk LNR is located 492m south of the proposed development site and is accessible via walks through the existing residential area of Haverhill on public footpaths and then accessed off Chalkstone Way directly onto the LNR, this is a 1.5km walk. The LNR would provide a long linear path that follows old railway lines which enable for longer walks from the proposed development. It is possible that residents from the Proposed Development might utilise this features for longer recreational walks, however there are also a number of public rights of way that currently bisect the proposed development site providing a more diverse range of routes and natural habitat content.

9.5.46 The four CWS all occur within 1km of the proposed development site; Haverhill Disused Railway Line falls within the same area as the LNR mentioned above and would be accessible from the same route. Anne

Sucklings Way is a narrow strip of grassland that is accessible from the proposed development site from a bridle way opposite the A143 which is an approximate a 1km walk on foot, this would also provide access to Norney Plantation which is an additional few metres west. Broad Street Old Allotments are situated to the south west, adjacent to the disused railway, access would be possible from the disused railway line, providing people know its location; it is also unlikely that residents would travel this distance to access a small plot of land.

9.5.47 The LNR and CWS are accessible from the proposed development site, it is anticipated that the recreational visits to the surrounding LNR and CWS by new residents would a minor adverse long term temporary/permanent direct effect at local level on their ecological value.

Effects on Habitats

Field Margins

9.5.48 See Hedgerow Section below 9.5.54.

Woodland

9.5.49 All woodland compartments within the proposed development site could be subjected to increased levels of recreational use, which could lead to an adverse effect on the ground flora and tree specimens. The degree to which woodland compartments will be used is dependent on their location within the scheme, density of woodland planting and accessibility from public areas.

9.5.50 Great Field Plantation is situated south of the proposed new Great Wilsey Park, but this residential area also extends down the eastern edge of the woodland. To the west is the proposed mixed use local centre, therefore it is likely that those residents separated from such amenities by Great Field Plantation will cut through this habitat. There are a number of existing routes through this woodland, however the majority of the western compartments are densely formed with bramble and other under canopy species. There is potential that new networks of pathways will be created through this woodland which will reduce any woodland flora and disturb fauna using such areas. The increase in residential traffic through this woodland could have minor adverse long term direct temporary/permanent effect at site level.

9.5.51 Woodland W1 runs along the south/south western boundary and has an existing public right of way that follows the southern boundary of the proposed development site; the increase in residential dwellings to the north could increase the movement of residents through this woodland into existing estates to the south. The degree of informal movement through this wood could be lessened by the created access road and footpaths which occur at dedicated areas. A proposed school will be positioned near the watercourse in the middle of the proposed development, the catchment area for this could extend into the adjoining residential areas, whereby the woodland would provide a short cut for access to the school for pupils and parents. The increase in footfall within this woodland could have a minor adverse long term direct temporary/permanent effect at local level.

9.5.52 Woodland W4, backing on to the watercourse, has a number of public paths running around the peripheries, and this forms a section of the GI spine that runs through the middle of the proposed development site. This GI corridor will potentially provide an informal play area, which will back onto the woodland, there is a possibility due to the accessibility of the woodland from the public and children, that play might extend into it, causing more damage to the limited understorey and potential trees. The increase in disturbance to this woodland could have a minor adverse long term direct temporary/permanent effect at local level.

9.5.53 The increase in residential dwellings could cause damage to tree specimens and degradation of the natural value of the woodland through increased litter levels, compaction of soil, and possible enrichment of soils from dog waste. It is anticipated that the degree of effects will be minor adverse long term direct temporary effect at local level.

Hedgerows

9.5.54 Hedgerows and associated margins could be subject to disturbance from the public where unofficial short cuts are created; these could especially be a problem where new hedgerows separate residential areas from rights of way or local amenities. The creation of gaps through hedgerows could lead to damage/die back of individual specimens, which will cause gaps within linear features, if such areas are regularly used then possible fragmentation of linkage corridors could occur. Breaks in linear habitats could affect the movement and refuge opportunities of wildlife around the proposed development. Such public activity will have a minor adverse medium term temporary direct effect at site level.

Watercourse

9.5.55 The tributary of the River Stour, which runs through the proposed development, will not hold any additional water levels from those pre-development. As this watercourse is associated with the GI which runs either side of this feature, there is a possibility that recreational disturbance on these features might increase; degrading ground flora and tree specimens. The recreational disturbance is likely to have a minor adverse long term temporary/permanent direct effect at local level.

Newly Created Habitats

Residential Gardens

9.5.56 Residential gardens will provide increases in resources to local wildlife, in some instances providing increased connectivity, but specifically with potential to offer increased nesting and foraging resources to local bird and bat populations, and increase in potential habitat for reptiles. Residential gardens are considered to represent potential minor beneficial direct long term permanent effects at site level.

New Woodland Planting

9.5.57 Additional woodland planting will be undertaken throughout the development, with focus to the north around the primary access route, where additional linear features will be created which were previously absent. Further planting will take place along the central watercourse, around the peripheries of the proposed development and in the south east, where a potential new Country Park could be created. This new planting will take a number of years to mature, therefore during this period saplings will be sensitive to periods of drought and disturbance from the public, which could cause damage to specimens, especially when situated to areas of GI. Damage of new woodlands are anticipated as having a minor adverse medium term direct temporary effect at local level.

New Habitats

9.5.58 As newly created habitats mature they will start adding to the biodiversity interest of the site, forming mosaics that were previously absent or poorly represented. Such habitat creations will have a moderate/major beneficial long term direct effect at local level.

9.5.59 To ensure that habitats mature successfully and maintain their biological value, management will need to be undertaken in a sensitive manor whereby specific cutting regimes will be required on specific habitats at optimal periods, whereby floral assemblages and structural differences will need to be accounted for. Inappropriate management could potentially lead to moderate adverse short/medium/long term direct temporary/permanent effect at local level.

Effect on Fauna

Badgers

9.5.60 The two main badger setts will be retained within the GI, with buffers between them and any built environments. However residential dwellings will be in close proximity to such areas, with official and unofficial paths running close to both setts within Great Field Plantation and along the watercourse corridor. Due to the proximity there is a possibility that there might be interferences with the setts, which could result in potential injury to individuals or damage to setts. Such activities will lead to a moderate adverse medium term permanent direct effect at site level.

9.5.61 The increase in residencies is likely to increase dog ownership, and there could be potential conflicts between them if encountered. Generally where the badger setts occur they are within areas of GI, whereby dogs are generally likely to be on lead, however there could be instances where this is not the case. The potential injuries to badgers and setts from domestic dogs are likely to have a minor/moderate adverse long term permanent direct effect at site level.

9.5.62 Badgers are known to adjust their foraging based on the availability of food, as the site becomes more residential scavenging opportunities will become easier as domestic bins, gardens and allotments provide immediate food sources. The potential effects on the badger population is that individuals become injured or ill because of food items eaten, or that they start exclusively eating in urban areas exposing them to traffic and further disturbance. In either situation the badger population could suffer, where it is considered that there would be a minor adverse long term temporary indirect effect at site level.

Birds

9.5.63 The habitats created within the proposed development site will provide new refuge and foraging opportunities however, these habitats will take a while to mature, during which time bird species will lack refuge and a food source. This could affect the local bird population, particularly those which have been historically associated with the proposed development site. This could be a particular problem as domestic cat ownership could increase within the area, leading to increased predation.

9.5.64 The majority of the hedgerows and woodland compartments will be retained within the site, which will provide adequate refuge until new areas have matured. However if these habitats are degraded due to public interference, the bird assemblages will be under pressure for food sources, nesting areas and refuge from predation, whereby there could be a minor adverse medium term direct temporary effect at a site level.

Dormice

9.5.65 The new GI will enhance existing and create new habitats which can be utilised by dormice in the future; however the success of such measures will depend on the long term management. New hedgerows will take a number of years to mature and if they are not appropriately managed they could develop a structure that is suboptimal for dormice, and in some cases impede the movement and utilisation by dormice. Inappropriate management of GI for dormice are thought to have a minor/moderate adverse long term temporary/permanent indirect effect at site level.

9.5.66 New and existing habitats could become degraded as more residents use the GI for recreational activities, and possible short cuts through such features, this would potentially sever linkages around the proposed development and into the surrounding habitats. Erosion of GI could have a minor/moderate adverse long term indirect temporary/permanent effect at site level.

9.5.67 The residential dwellings will increase domestic cat occurrence within areas that were previously void of such species or occurred in smaller numbers. It is possible where habitats are currently poorly developed or are under mature that dormice might be more prone to predation, as cats could access the internal structure of hedgerows and woodland understoreys. The population of dormice within the site are likely to be in small numbers, so the predation by cats could have a minor adverse medium term temporary direct effect at site level.

Reptiles

9.5.68 The increase in residential dwellings is likely to increase the number of domestic pets, a particular problem will be cats, as these are known to kill and injure reptile species. This would lead to a minor adverse long term permanent direct effect at site level.

9.5.69 The ability of the retained habitats to be maintained where reptiles were found, will be important factor in determining the effects of the operational stage of the proposed development. As with the hedgerows mention in Section 9.5.54 if the habitats become degraded due to public interference or lack of associated management then the reptile population could become more isolated and decline. The degradation of habitats utilised by reptiles are thought to have a minor/moderate adverse long term temporary/permanent direct effect at site level.

Bats

9.5.70 The light associated with access roads, footpaths and buildings could potentially spill over onto surrounding retained/created habitats such as woodland compartments, hedgerows and watercourses. The inappropriate positioning of artificial lighting would potentially over illuminate surrounding habitats; changing normal patterns of behaviour including foraging and commuting. This is potentially a significant problem on habitats where Barbastelle bats have been recorded, as these species a particularly sensitive to light, as are more common species such as some species of *Myotis* and long eared bats.

9.5.71 The primary main access road that leads into and around the proposed development site, largely avoids those habitats identified as providing a valuable resource for foraging and commuting bats. However there are possibly illuminations of habitats in the following areas, which could affect bat populations but particularly Barbastelle bats.

- Northern and western edges of Great Field Plantation, as lit footpaths and access roads pass in close proximity, with residential dwellings backing onto the western peripheries and the main access road passing close to the south western edge;

- Residential dwellings backing on hedgerow H17;
- The central GI corridor which follows the watercourse that runs northwest to the south east, as the main access road passes near the south edges near the Great Field Plantation which could possibly expose regions of the GI to light pollution. This central GI is also bisected by lit access routes at three other locations, potentially disrupting commuting and foraging further;
- Hedgerows H19 & H23 with the Mary Cole's View are lined either side by dwellings which could increase exposure to light;
- The southern portion of hedgerow H19 and the entire stretch of H20 will have footpaths lit, which will also partly include stretches of hedgerow H21 which will also be bisected by the main access road, which is also lit;
- Woodland W1 has a number of residential units backing onto the northern peripheries, these could become illuminated, this woodland is known to have a number of Barbastelle passes;
- The young plantation woodland (TN5), will be bisected twice by the primary access route, this forms the southern linear connecting corridor with woodland W1, whereby the gaps for the access road could sever potential commuting and foraging routes which are known along these habitats.

9.5.72 The potential effects of the lit access routes and building lighting on the most used habitats for foraging and commuting bats is considered to be moderate adverse short term permanent indirect effect at a local level.

9.5.73 The roosts identified with trees T28, T44 and T49 are all situated within GI away from lit access routes and building lights; however as linear habitats leading to these roosts are bisected by access roads and lighting it is possible those bats routinely roosting in these trees may be forced use other roosts away from the proposed development, the effects of these are thought to be negligible.

9.6 Mitigation, Monitoring and Residual Effects

9.6.1 The following section includes mitigation for the significant effects identified in the previous section. It also provides guidance to ensure that no offence is committed under European or UK legislation.

9.6.2 Habitats of value within the proposed development site primarily consist of woodland and hedgerows. These are largely retained and reinforced with appropriate buffers and linked directly with generous new planting to create a strong network of habitats and prevent any detrimental effects during construction and operational stages.

Mitigation for Construction Effects

Habitats

Dust Particles and Chemical Pollution

9.6.3 The clearance of arable habitats from the field compartments should not disturb high amounts of dust, however as construction vehicles pass through the proposed development site during warmer periods it is possible for dust to be released and spread into surrounding habitats. During such periods water will be

sprayed over the working area to suppress dust, thus preventing deposits on sensitive habitats within the vicinity, particularly woodland compartments.

9.6.4 All chemicals such as diesel and petrol used during the proposed development will be stored in designated areas away from retained or created habitats. Where chemical use occurs this will be undertaken in designated areas where a chemical spill kit will be available to limit any accidental spillages, details of which will be specified within the Construction Environment Management Plan (CEMP). Any vehicles with fuel leaks will have drip traps in place to avoid exposing habitats to pollution, and all vehicles should not be operated until the leaks are fixed. The relevant Pollution Prevention Guidelines (PPG) will be adhered to, to ensure construction works are undertaken in an environmentally responsible manner. Any environmental hazardous material used will be kept in dedicated stores and storage tanks contained by appropriate bunding.

Field Margins

9.6.5 The direct damage to or loss of hedgerow margins will largely be avoided as the majority of the linear features will be retained within the proposed development. However as these features back onto habitats that will be removed, fencing will be implemented that will provide a buffer to avoid any accidental encroachment. The type of fencing used does not need to be substantial, but clearly visible so potential damage from vehicles and storage of materials can be avoided.

9.6.6 Where field margins are to be lost, particularly in the north and east, compensatory habitats will be created through the proposed development site, which includes the additional GI which will run through the central areas of the site; strengthening riparian habitats.

Woodland

9.6.7 The loss of 1.2ha of woodland W1 and 0.3ha of the young plantation (TN5) will be compensated for by the additional planting of approximately 4.3ha new woodland; these will be largely located around the peripheries of the site in the north, south and east. As well as new tree planting the existing woodland features will also be strengthened with further woodland and hedgerow planting, this will be approximately 5.7ha. The degree of new and reinforced planting can be seen in the FPCR Bat Report (Appendix 9.8).

9.6.8 Tree species selected will be based on the woodland communities W8 and W10 as stated within National Vegetation Classification[B] for woodland, although consultations with the county ecologist will also refine species content. Understorey species will provide a range of flowers, fruits and seeds throughout the season for wildlife.

9.6.9 All construction works taking place in the vicinity of retained woodland and trees should conform to British Standard 5837[C]. Root Protection Areas (RPA) will be fenced off prior to site works; this will avoid any accidental damage via machinery access or storage of materials. This is of particular importance around Great Field Plantation and Woodland W1 on the south/south eastern boundary. Such measures will be detailed within the CEMP.

9.6.10 Where public footpaths and roads are to be constructed within RPAs these will be constructed using a 'no dig method of construction' utilising soft materials that will allow gaseous diffusion through root systems. If such methods cannot be used load spreading and tree root friendly construction will need to be adopted.

[B] National Vegetation Classification. Joint Nature Conservation Committee. 2004
[C] British Standards Institution (2012). *Trees in Relation to Design, Demolition and Construction - Recommendations'*

9.6.11 Effects of dust particle release during the clearance works will be reduced by the dampening of the ground during dry periods, which will suppress dust release (Section 9.6.3).

9.6.12 The network of GI proposed within the proposed development site follows those objectives mentioned within the Haverhill Vision 2031[7], whereby GI will add to the character of the Action Zones and also provide a multifunctional GI routes and corridors. The GI design also addresses those concerns within the Joint Development Management Policies Document[8] Policy DM10; where developments should ensure replacement of habitats and/or features that are lost through development; but that the new resources created should provide future enhancements that have biological value.

Hedgerows

9.6.13 Where sections of hedgerow will be lost (H4, H9, H11, H12, H13, H14, H19, H21 & H23), these will be compensated for by additional hedgerow planting and the reinforcement of existing features All hedgerow species planted will be of native origin, but provide fruit bodies and a nectar source which will benefit a variety of wildlife. Existing hedgerows will be improved through additional planting and 'gapping up'. Typical hedgerow content should comprise of those listed below, however these will be altered depending on the features needed.

■ Hawthorn	Crataegus monogyna	35%
■ Blackthorn	Prunus spinosa	5%
■ Honeysuckle	Lonicera periclymenum	10%
■ Hazel	Corylus avellana	25%
■ Field Maple	Acer campestre	5%
■ Dog wood	Cornus sanguinea	5%
■ Goat Willow	Salix caprea	5%
■ Holly	Ilex aquifolium	2.5%
■ Dog Rose	Rosa canina	2.5%
■ Wayfaring Tree	Viburmum lantana	2.5%
■ Guelder Rose	Viburmum opulus	2.5%

9.6.14 Newly planted hedgerow species will be monitored, if specimens are in poor health or die, then these will be replaced with similar species. New hedgerows will also be periodically laid to create a strong structural framework across the Proposed Development, where such practises cannot be undertaken, for example on existing hedges then cutting will be based on a rotational management at 3 year intervals, this will increase flower, fruit and nut production and structure. Where new hedgerows have been planted temporary post and wire fencing will be erected to avoid public interference. A Green Infrastructure and Biodiversity Management Plan (GIBMP) will ensure that hedgerows are appropriately managed, this will also ensure that specimens planted are replaced on a like for like basis if they deteriorate in health or die.

9.6.15 To avoid accidental encroachment into areas where new hedgerow planting has been undertaken, high visibility fencing/tape will be used that are easy to see from machinery. Also prior to construction works 'tool box' talks will be given to all contractors detailing areas of habitat creation and good practices when working close to such areas.

Watercourses

9.6.16 The appropriate disposal of building materials will be mentioned within 'tool box' talks, during which it will be highlighted that there are a number of habitats within the proposed development site that will be sensitive to disturbance and that all building material should be kept to designated areas and the litter should not be dumped within the natural environments.

Fauna

Badgers

9.6.17 The clearance works will not occur directly adjacent the setts within the proposed development, the sett within Great Field Plantation is positioned within the woodland, whereby there will also be a buffer grassland habitat of approximately 25m. This distance from surface vegetation removal is unlikely to cause any direct disturbance to the individuals that are within the sett, therefore no licence from Natural England would be required. The sett along the watercourse is also surrounded by large areas of GI whereby clearance works will be largely restricted to sections away from the sett, so disturbances to the individuals are unlikely to occur.

9.6.18 Clearance works and excavations which are likely to occur during the construction phase could trap and injure badgers, to avoid such occurrences all excavations will be covered over night; where such voids are too large to cover banks should be provided that are of a gradient to allow badgers a means of escape.

Birds

9.6.19 The removal of hedgerows will potentially lead to a loss of nesting opportunities however the loss is limited to small stretches which will be compensated for by the planting of an extensive new hedgerow network through the proposed development. The possibility of an offense under the Wildlife and Countryside Act and injury/death to nesting birds will be avoided by undertaking hedgerow/scrub and tree removal outside of the bird breeding season (between March and mid-August/September), where this is not possible all vegetation will be searched by an experienced ecologist before removal.

9.6.20 To mitigate for the loss of any potential bird nesting, roosting and foraging habitat on the site the project design will include the planting of native and ornamental trees and shrubs, with preference given to species of value to local bird populations, e.g. berry- and fruit-bearing species such as crab apple *Malus sylvestris*, hawthorn, rowan *Sorbus aucuparia*, holly and guelder rose *Viburnum opulus*. The scheme will provide habitat buffers adjacent to retained hedgerows to minimise potential impacts to local bird populations in the long-term. New areas of woody species planting throughout the site will in time mature into habitats suitable for use by foraging and nesting birds

9.6.21 Consideration will be given to the provision of bird boxes to be affixed to suitable buildings and retained trees to enhance nesting opportunities for birds in the local area and therefore contribute to requirements of NPPF via biodiversity enhancement. A selection of hole and open fronted designs will be used in order to encourage a variety of species.

Dormice

9.6.22 The dormice population seems to be confined to a small area of the proposed development, and as such habitat losses are not expected to have a significant effect on the population, as the species is likely to be absent in the majority of the areas. However to minimise the likely effects, a Natural England dormouse mitigation licence will be required to legitimise the works. Hedgerow losses are approximately 183m and woodland loss 1.4ha, these are below those stated on the www. gov.uk (hedgerow loss less than 300m and woodland loss of 1-1.5); thus the required mitigation measures would be the licensable use of persuasion methods, whereby:

- Winter Removal: Vegetation removed down to 600mm during periods when dormice are hibernating at ground level (November to March) by hand. Then further removal occurring when dormice are active, preferable May, September and October.

- Summer Clearance: Removal of vegetation by hand during the period when dormice are active May – October. Remove vegetation slowly in one direction to allow unhindered dispersal of any individuals in hedgerow.

9.6.23 Where gaps are formed within linear habitats by access roads, mitigation measures will ensure that at either point of the loss new species are planted that could potentially bridge the gap between habitats, thus extending over the access roads via upper canopy links.

9.6.24 Encroachment into GI areas will be avoided by the erection of appropriate fencing and onsite contractors will be briefed regarding working within areas where protected species are possible. The grazing of new plants by deer will be avoided by erecting deer proof fencing and/or planted mature species that are not subjected to such vigorous pressures.

Reptiles

9.6.25 A 'good population' of common lizards and 'low population' of slow worms and grass snakes were recorded along the margins and hedgerows, which are all to be incorporated into the GI. To avoid any accidental encroachment into these areas suitable fencing will be installed, therefore avoiding any injuries or deaths to these species. However, where there will be some margin/hedgerow losses to make way for access routes, passive displacement will be undertaken; this will involve the strimming off and the removal of vegetation from the construction footprint. This will be maintained by frequent cutting for the period running up to start of onsite operations, prior to the construction phase the surface grassland layer will be removed under supervision of an ecologist. This will ensure that the reptiles do not cross from surrounding habitats into the development footprint.

9.6.26 Isolation of populations will be largely avoided due to the degree of GI introduced within the proposed development. Where linear features are bisected there will be sufficient habitats either side of the break to support reptile populations, these will also link up to surrounding areas to ensure that there are possible exchanges of individuals to ensure the population is sustainable in the future.

9.6.27 Where construction material needs to be stored in close proximity to habitats where reptiles are present, these materials will need to be placed on pallets which will avoid reptiles using such features as shelter or refuge. All deep excavations will need to be covered overnight, larger holes should have a single sloped side to allow animals to exit, this will ensure reptiles and mammal species such as hedgehogs and badgers can escape.

Bats

9.6.28 The partial loss of the young plantation (0.3ha) in the centre, woodland W1 (1.2ha) along the southern boundary and other losses, will be compensated for by the addition of native woodland planting, which will be greater in terms of size and diversity, compared to those that have been lost. The habitats created will consist of 4.3ha of new woodland and 5.7ha of reinforced boundary planting including hedgerows. Preference will be given to species of local provenance that will be nectar and fruit producing species to provide foraging for insects, birds and mammals. Species should include alder, beech *Fagus sylvatica*, silver birch *Betula pendula*, wych elm, gean cherry *Prunus avium*, hornbeam *Carpinus betulus*, English oak, rowan, goat willow, hawthorn, hazel, field maple, blackthorn, dogwood *Cornus sanguinea*, elder guelder rose, field rose *Rosa arvensis* and dog rose *Rosa canina.*

9.6.29 In order to maintain the linkages and an area of darkness (below 1lux), where hedgerows, woodland, watercourse or other linear features are bisected by access roads, 'hop-overs' will be created (see Appendix 4.3). These comprise of tall trees planted/retained either side of a break within linear features, these effectively 'push' passing bats/birds higher into the canopy whereby avoiding light pollution, and continuing interlinkages to the surroundings. Additional planting will increase linkages around the proposed development, whereby new navigational and foraging corridors will be created that include habitat mosaics which were previously absent such as waterbodies with permanent water.

9.6.30 Where possible construction work will not be undertaken during dusk, where this needs to take place lights should be positioned away from natural features and shrouded and/or directional lighting used.

Mitigation for Operational Effects

Statutory and Non Statutory Sites

9.6.31 The proposed development is approximately 167.4ha in size, of this 78.28ha will be proposed GI, which will also include open spaces, attenuation, permissive paths, play areas etc., this means that 48% of the proposed development will be GI; this exceeds the recommended 40% by Natural England. GI running through the site will be multi-functional however the design will ensure that a semi natural experience with a variation of habitats and features of interest are created. The central walks will incorporate woodland habitats of Great Field Plantation which will have dedicated paths to ensure pockets are retained undisturbed, access will continue along the watercourse which bisects the proposed development site. The riparian habitats will be associated with additional woodland planting and open spaces, which will have a variety of grassland types, tussocky to wild flower meadows, informal mown paths will ensure a more natural experience, but also provide a valuable resource for biodiversity. Hard surfaced walks will enable use by wheelchairs and pushchairs. Attenuation will function as focal points for a number of the pathways associated with the proposed development; these will be sensitively designed to incorporate ecological features.

9.6.32 The network of footpaths/cycleways will enable for recreation activates such as running, walking, cycling and dog walking. Central open spaces could provide immediate dog exercising opportunities for morning/evening short walks, however off lead areas may have to be incorporated into the south eastern extent of the proposed development; this is going to be used as a Country Park. These open spaces provide diversity and features of interest, but also provide recreational opportunities for all residents, these would reduce the requirements for residents to travel to the surrounding CWS and LNRs.

Habitats

Woodland

9.6.33 Great Field Plantation will have a number of designated pathways instated through it, linking those residential dwellings in the east with the amenities provided in the west. These footpaths will be soft engineered to ensure that the root systems are not damaged and allow for gaseous exchange. To ensure that only small sections of the woodland are accessible a hedgerow will be planted around the entire woodland peripheries, this will consist of native thorny species which will impede access to specific areas. It will take a few years for hedgerow species to development, therefore fencing will also be erected in the meantime.

9.6.34 Near the entry/exit points of Great Field Plantation, dog and litter bins will be stationed, this will limit the degree of littering and nutrient enhancement occurred in the wood, thus ensuring appropriate ground flora can establish. The woodland will undergo canopy thinning to ensure that light can penetrate to the floor; in certain areas hedgerow planting will be undertaken to provide a barrier between publicly assessable areas and more conservation favourable areas.

9.6.35 Similar exclusion and dedicated paths will be created around the peripheries of woodland W1, buffers along the northern edges are a little narrower and have residential dwellings backing onto the woodland edge, therefore public access will be limited to specific regions where tree removal has been undertaken. Again litter and dog bins will be installed at entrances and also along the linear existing footpath that runs to the south of the woodland, on the red line boundary.

9.6.36 Where woodlands are located near open spaces or children's play areas, thorny species will also be planted to deter play from extending into sensitive habitats in these areas, in such locations fencing will be installed behind which the hedgerow planting will take place to increase the buffer from children. In such location interpretation boards will also be installed to ensure that residents are aware of the sensitivity of woodland habitats, this will explain why sections are fenced off.

Hedgerows

9.6.37 New and existing hedgerows will separate residential areas providing a natural screen between dwellings; however in such areas there may be situations that these are cut through by resident as they provide short cuts to other areas. To discourage such activity post and wire fences will be used until hedgerows mature, woody species will be planted along such areas, however there will be a reduced density of blackthorn due to the nature of its spread.

9.6.38 Newly planted hedgerows will be monitored, if specimens are in poor health or die, then these will be replaced with similar species. New hedgerows will also be periodically laid to create a strong structural framework across the proposed development, where such practises cannot be undertaken, for example on existing hedges then cutting will be based on a rotational management at 3 year intervals, this will increase flower, fruit and nut production and structure. Where new hedgerows have been planted temporary post and wire fencing will be erected to avoid the public interference. Such measures will be addressed within the GIBMP.

9.6.39 Along existing and new hedgerows, margins will be provided which will be left to naturally establish where possible, or where grassland habitats are required for landscaping this will consist of species rich grassland (unimproved neutral herb rich). Such areas will provide further habitats for the existing reptile populations to colonise, but also use as refuge and linkages to other areas of the proposed development.

Watercourse

9.6.40 As water retention of the existing watercourse will not be improved, there is a possibility that play from surrounding open spaces might extend into these features; this will cause the ground flora to be lost. As a result fencing will be installed along the tops of the banks, these will be planted with shrubs and climbers such as buddleia, hazel, honeysuckle *Lonicera sp.* and jasmine *Jasminum sp*; these will increase invertebrate assemblages and bat foraging opportunities.

New Habitats

Woodland

9.6.41 New woodland will take a number of years to develop, during which time it is possible that recreational activities could damage specimens, therefore such areas will be fenced off and any damaged specimens replaced.

Grassland Habitats

9.6.42 Grassland fields and green ways will form important habitats through the proposed development, amenity grassland areas for public recreation will be created in linear compartments which run between residential blocks. These are all linked through designated footpaths which will be lined with species rich neutral grassland mixes, these networks of footpaths designed with regard to maximising biodiversity will allow, along with gardens, a greater permeability of wildlife into more central areas of the proposed development, these will be particularly important for invertebrates.

9.6.43 Amenity playing fields located near the school will consist of limited species diversity and be managed more regularly. A number of smaller grassland areas throughout the proposed development will consist of open central “rides” or spaces for recreational activities; such areas are associated with the watercourse and areas to the south/south east near the proposed allotments and Country Park. Wide margins around these areas will contain rich tussocky grassland habitats, which will be of benefit to a range of fauna including small mammals and reptiles. Such tussocky habitats will be allowed to mature for approximately five years. After maturity sections will be cut on a rotational basis, ensuring that not all areas are uniformly cut at once, such management will be defined within the GIBMP.

9.6.44 Meadow grassland habitats will be created between areas of GI along the watercourse and linear features from the northern boundary; there will also be larger meadows proposed in the Country Park in the south east. These meadows may require some remedial works to be undertaken on existing land in advance of enhancements to prepare for seeding with wildflower mixes. Local seed/green hay from existing wildflower meadows will be sourced where possible, otherwise locally appropriate seed mixes will be used such as MG5 mixes. Species will include black knapweed *Centaurea nigra,* autumn hawkbit *Leontodon autumnalis*, ribwort plantain *Plantago lanceolata*, common sorrel *Rumex acetosa,* meadow buttercup *Ranunculus acris*, native red clover *Trifolium pratense* and ox-eye daisy *Leucanthemum vulgare.* These meadow grasslands will be subjected to two varieties of cutting regimes on a rotational basis; a twice annual cut early spring and summer, or a single annual cut during early spring or late summer, this will ensure that floristic diversity is maintained into the future.

Attenuation

9.6.45 A number of detention basins will be created through the proposed development with the primary function for attenuation; however there will be a number of ecological features included in their design where possible, this will include embayments, spits, varying water depths and areas of differing water retention. Smaller ponds and scrapes will be created in such areas which are only for ecological benefits, which will create a variety of micro-habitats for wildlife, including invertebrates and amphibians.

9.6.46 Natural colonisation of attenuation (wet) ponds will be encouraged; however some parts will be planted with native species of local provenance to ensure good development of vegetation. Where establishment does not take place species such as fools watercress *Apium nodiflorum*, lesser water parsnip *Berula erecta*, marsh marigold *Caltha palustris*, purple loosestrife *Lythrum salicaria*, brooklime and water mint *Mentha aquatic* will be planted.

9.6.47 Reed and marshland habitats will be created immediately around areas of open water providing additional cover for wildlife. The outer edges of the waterbodies will be interlinked through tussocky grassland habitats to other habitats such as hedgerows, forming further linkages into the wider area. Such areas will be fenced off with wooden post and rail fencing, around such areas night flowering species will be planted which will benefit invertebrates and bats. Some ornamental species such as lavenders *Lavandula spp*, hyssop *Hyssopus spp*, and borage *Borago officinalis* can also be used.

Fauna

Badgers

9.6.48 The badger setts within Great Field Plantation and along the watercourse will be protected from public disturbance by planting thorny hedgerow species around the perimeter, this will also have a post and rail fence with a wire mesh along its base, this will limit possible disturbance by dogs but a gate will allow badger access. Within surrounding open spaces near badger setts signs will be installed informing dog owners that dogs need to be kept on a lead to ensure ecological sensitive habitats and fauna are not disturbed.

9.6.49 All refuse areas within business and residential developments, will be walled with access possible through doors with no gaps around the bases; bins should also be used to ensure that foraging opportunities are minimised. These measures will ensure that scavenging within urban areas by the known badger clans are minimised. There will be traffic calming methods around the residential areas, which will therefore reduce possible traffic collisions.

9.6.50 The proposed allotments are situated within close proximity to badger setts, therefore it is proposed the badger proof fencing be installed around the perimeter to ensure that crops are not eaten.

Birds

9.6.51 The new GI will create a more diverse range of habitats which were previously absent or limited, therefore potentially attracting species which are currently absent or in low numbers. New hedgerow networks will also be created with more foraging resources. However as such habitats will take a long time to mature nesting boxes will be installed around the development, with particular focus on house sparrow nest box terraces on buildings.

9.6.52 Tussocky grassland habitats created within the proposed development will also potentially provide habitats for small mammals such as bank voles and field mice; these would be potential prey items for barn owls, which have been recorded in the wider area but not with the proposed development site. Such areas are likely to be created in the south east way from residential areas, and domestic cats.

Dormice

9.6.53 The habitats within the site will be suitably managed dependant on their types and life stages; woodland will be coppiced to allow understorey vegetation to establish, whereby these too will be managed to ensure connectivity and increased fruiting bodies. Hedgerows will be managed in the approaches mentioned with section 9.6.38, additional details will be provided within a GIBMP.

9.6.54 To minimise disturbance from residents new and existing hedgerows and woodland habitats will have sections fenced off with post and wire fencing, these will also be planted with thorny species limiting opportunities for short cuts to be created. Sensitive habitats will also be adequately signposted and residents made aware of the biodiversity importance of the area.

9.6.55 Predation by domestic cats will be avoided by the dense planting of hedgerow species within and around sensitive habitats. Where possible new and existing hedgerows will be two to four stands wide, thus allowing for a dense central structure that will be hard for cats to penetrate, ideally these should consist of more mature species. To increase potential places of shelter and refuge a number of dormice nesting boxes will be installed along hedgerows and within woodland, these will also be monitored to ensure suitability, but to also assess the population dynamics within the proposed development.

Reptiles

9.6.56 The habitats within which reptiles were found will be retained within the GI and new habitats created through the proposed development, which will maintained for the purpose of the reptile population. Areas of GI are located where there is a known reptile population, such as the periphery habitats in the north east (Mary Cole's View), here linear features run south to GI around attenuation. Open spaces will be managed to ensure a tussocky sward which will allow perfect conditions for foraging and refuge, also within these areas hibernaculums will be created, which are ground and surface structures which allow refuge, hibernation and basking areas for reptiles. A series of log piles will be created around and within suitable habitats, this provides habitats for invertebrates which are prey items for reptiles, but also provide basking areas.

9.6.57 These grassland areas should be created as early as possible, this will allow time for them to mature to a suitable status in which they can be used by reptiles during the construction of residential areas, such areas will be fenced off to avoid accidental encroachment. Hedgerow networks, log piles and hibernaculum will provide refuge from predation from cats, therefore such structures should be readily available throughout suitable habitats.

Bats

9.6.58 The GI within the proposed development site has been designed to ensure that dark corridors can be achieved through the proposed development where light levels do not exceed 1lux, which is particularly important for Barbastelle bats. Light assessment work has been undertaken by the lighting engineers Vanguardia Consulting (Appendix 4.3). This lighting research has informed the further design of the proposed development site to ensure mitigation for bats are included and appropriate features have been added to ensure the proposed development is still utilised by bat species.

9.6.59 A central corridor of GI will run from the northern boundary, through the middle of the proposed development, along the southern boundary of Great Field Plantation and then head south eastward, following the watercourse. Due to the width of this GI the effects of street and dwelling lighting will be minimal; the main access road from the northern boundary will pass close to Great Field Plantation in the south western corner, however it will only come within 21m. The lighting engineer report has stated that the proposed lighting strategy will require lights mounted at 6m heights, the models ran have showed that at 15m a lux measurement of 0.2lux is achievable. However, exposure levels do increase where lit roads cross gaps within hedgerows, the young plantation and across the watercourse into adjoining plots. At such junctions a 'hop-over' will created, this will comprise of semi-mature/mature trees (over 6m) being planted either side of the road, so the canopies will allow for interlinked over this section. It is recommended that these trees are sourced from the possible removal of sections of woodland W1, so they can be planted and utilised straightway.

9.6.60 The woodland edges of Great Field Plantation are in close proximity to the built environment; the north western edges are approximately 10m from proposed residential lighting; in the north this is 15m from footpath and cycle path lighting; and along the eastern edge this varies between 10-25m from residential lighting. Lighting from houses alone do not emit over 1lux at 10m, as values at this distance are only 0.2lux; this therefore means that the peripheries to the east and west are not exposed to detrimental levels of light and bats can still utilise such areas. The northern edges of this woodland will only be exposed to approximately 0.2lux of light from the public rights of way, therefore not affecting bat behaviours.

9.6.61 The distance from which residential dwellings will be situated from woodland W1 will vary along its length, as this is dependent on the GI buffer and the types of roads which back onto it. Secondary and tertiary roads will be located near the edges and these vary in road and footpath width; a secondary factor is also the positioning of the houses, whereby if there are rear or side gardens. Regardless of the type of road, woodland will be a minimum of 10m from any houses/light source, therefore under 1lux light levels will be achieved. There is a second footpath that runs along the southern boundary of woodland W1, this has small under canopy clearing that extends the length of the wood, this has been recorded to have bats commuting and foraging along it. It is therefore anticipated that bats will continue to use this corridor, if the northern edge habitats are not agreeable.

9.6.62 Hedgerow H23, which runs north from woodland W4, will be planted with a double hedgerow this will allow for a dark corridor to be created through the middle between two residential areas. The principals of light levels over distance still meant that the light exposure here would be low, but these would benefit from additional mitigation. The remaining linear features within the Proposed Development will be adequately buffered to incorporate a dark corridor (between 10m-15m).

9.6.63 In addition to the above lighting strategy, further lighting modifications can take place to reduce potential effects further. Street lighting can be sensitively positioned away from linear features, particularly woodlands, but also where practicable away from tree lines and hedgerows. This can be achieved by illuminating only those areas needed for public access. Where such areas fall in close proximity to green corridors, lights are to be shrouded and directionally focused so to avoid illumination of canopies. All lighting will be designed in accordance with guidance issued by the Institute of Lighting Professionals (ILP) in order to prevent light pollution.

9.6.64 Where new dwellings back onto new or existing natural linear features, efforts should be made to install security lighting that is sensitive to those habitats, this would entail low wattage LEDs, instead of the standardised security lights, thus limited illumination of canopies etc.

9.6.65 The proposed development will incorporate a variety of habitats that were previously missing or poorly represented within the Site. This will include habitats such as attenuation and grassland habitats that will increase the number of invertebrate assemblages, thus increasing potential foraging resources.

9.6.66 The inclusion of a variety of bat boxes and barabstelle bat boxes around the development site on suitable trees and particularly along the woodland edges would provide new potential roosting sites for bats within the local area. Bat boxes could be considered for inclusion within the design of proposed buildings including boxes, bat tube or bat bricks.

Residual Effects

9.6.67 Due to the separation of the proposed development site from the County Wildlife Sites and Local Nature Reserve, direct effects from construction will be negligible. The location of these designated sites are

within a commutable distance for local residents, however the GI created within the proposed development site will have a more diverse range of habitats and provide more accessible features such as play areas and off lead exercise areas for dog, this combined with the large network of paths, will reduce the requirement for new residents to use CWS and LNR; it is also hoped that existing residents will use the GI within the Development Site which could potential reduce effects locally. The mitigation measures will ensure that there is unlikely to be any significant effects on these sites.

9.6.68 The removal of arable land will create a significant opportunity to increase the number of beneficial habitats thus significantly promoting habitat diversity such as; species rich grassland, waterbodies, woodlands, and new hedgerow network. The removal of intensively managed arable habitats will therefore have a minor/moderate beneficial long term direct effect at a local level on the conservation value of the proposed development site.

9.6.69 The additional GI created through the proposed development will compensate for field margins lost during the construction phase and those that are retained will be adequately buffered and protected with fences. These measures will result in a minor beneficial direct effect in the long term at site level.

9.6.70 The loss of sections of woodland W1 and the young plantation will be compensated for by the additional woodland planting which will occur through the proposed development, which will increase green linkages into and around Haverhill as stated as one of projects within the St Edmundsbury Green Infrastructure Strategy[9]. New woodland planting will account for approximately 4.3ha, with reinforcement of existing features totalling 5.7ha; this will ensure that native trees are used and understorey habitats created, which will increase biodiversity within the proposed development. The increase in woodland habitats will have a moderate beneficial long term direct effect at local level.

9.6.71 Damage to woodland during construction will be mitigated for by 'tool box talks', no dig methods of construction near root systems, RPA instated and dampening of ground during drier periods; all which will be detailed within CEMP. This will have negligible residual effects on the woodland within the proposed development site.

9.6.72 Where woodlands occur close to public open spaces mitigation measures will ensure that damage to understoreys are limited with controlled access to specific regions, through the implementation of dedicated routes and periphery planting of hedgerow; litter and dog bins will be installed at entrances to these habitat. The mitigation measures provided will have minor beneficial long term effect at local level on the woodlands, as the new linkages will provide biodiversity improvements.

9.6.73 Due to the 80.19ha of GI created within the proposed development the future management of the array of habitats will ensure ecological receptors maintain features which enhance biodiversity. The habitats created will provide a moderate beneficial direct effect in the long term at a local level.

Badger

9.6.74 The badger setts will be retained within the GI and habitat enhancements will ensure that disturbance from the public will be minimised. Increased foraging opportunities will be provided within the GI and urbanised management of refuse will ensure that badgers are not attracted to such areas. It is anticipated that there will be a negligible effect on the badger population from the proposed development.

Breeding Birds

9.6.75 Swift, starling, song thrush, dunnock and house sparrow are expected to benefit from the proposed GI, including the retention of many of the existing hedgerows and trees (important for all species), new tree

planting (starling and song thrush) and the creation of open greenspace (particularly important for foraging starlings). In addition, all five species show varying degrees of habituation to residential areas, particularly as gardens mature, and an ability to thrive in urban environments. Therefore, a minor beneficial long term permanent direct effect at local level is expected for these species.

Wintering Birds

9.6.76 Starling, dunnock and house sparrow are expected to benefit from the proposed GI, including the retention of many of the existing hedgerows and trees (important for all species), new woodland planting (dunnock and starling) and the creation of a new linear country park, creating a 'Green Spine' through the centre of the site. This green space will link Haverhill Road in the north with Coupals Road in the south and will benefit all three species. In addition, all three species show varying degrees of habituation to residential areas, particularly as gardens mature, and an ability to thrive in urban environments. Therefore, minor beneficial long term permanent direct effect at local level for these species.

Reptiles

9.6.77 Grassland habitats will be created through the proposed development with areas of woodland and an increased network of hedgerows providing additional foraging, hibernation and linkages into the surrounding area. The increase in more suitable habitats will potentially increase numbers of reptiles within the local area. The proposed mitigation and enhancement of habitats within the proposed development site will lead to a minor beneficial long term direct effect at a local level for the reptile species.

Dormice

9.6.78 Existing habitats used by dormice will be strengthened with additional planting, and the GI through the development will ensure connectivity continues into the wider area. Planting will be structural diversity, maintained arboreal movement and the diversity of species planted will allow for foraging opportunities to continue throughout the season. Nesting boxes will be installed to increase refuge during the development of vegetation and appropriate management will ensure the habitats persist in providing optimal conditions for dormice, thus ensuring a Favourable Conservation Status is maintained. The proposed development will have a minor beneficial long term effect at a local level.

Bats

9.6.79 The proposed development site has been designed to ensure that dark corridors are maintained, the current parameters for lighting will ensure that habitats used by bats are retained as dark areas. Additional mitigation measures will also ensure that lighting within the proposed development are also minimised further and that navigational and foraging routes are retained and enhanced. The GI created will increase the number of foraging opportunities, as habitats are created that were previously absent or poorly represented; the GI will also increase linear features offering a multitude of commuting and foraging routes with increased roosting opportunities. The proposed mitigation and enhancements within the proposed development site will lead to a minor/moderate beneficial long term direct effect at a local level.

Cumulative Effects

9.6.80 Consideration has been given to the potential cumulative effects that may arise as a result of the effects of the proposed development in combination with the residential development at North West Haverhill including the North West Relief Road, detailed in Chapter 16.

Construction

9.6.81 A proposed relief road and associated works, with approximately 1150 residential dwellings and a local centre, covers 48.2ha of agricultural land to the north west of Haverhill. A relief road will run from Haverhill Road to Withersfiled Road to the west. This development is adjacent the proposed development, separated by Haverhill Road. The North West Relief Road proposal is 32m south of Ann Sucklings Way and 63m south of Norney Platation County Wildlife Sites (CWS). During the construction works dust exposure could be deposited on these CWS, which could damage flora species particularly crest cow-wheat which is a rare species in Suffolk and classified as Nationally important. Habitats within this proposal were evaluated as being of low conservation value and protected species were largely absent. Providing mitigation measures are enforced during the construction phase there should be a negligible effect on ecological receptors.

Operational

9.6.82 The 1,150 residential dwellings will increase the possible recreational pressures on those CWS which are immediately adjacent to the development, especially as Ann Suckling is a bridleway that form linkages to other areas, this could be regularly used for walks away from the development. However, mitigation measures will endeavour to alleviate such effects by deflecting residents away from CWS and into onsite open spaces which consist of 11.38ha, including children's play areas, playing fields and amenity/informal areas. It is envisaged that this development would have a negligible effect.

9.7 Non-Technical Summary

9.7.1 An assessment has been undertaken to establish the likely significant environmental effects of the proposed development in terms of ecology and nature conservation. The assessment has been informed by a comprehensive desk study and suite of ecological surveys.

9.7.2 There are no statutory or non-statutory sites within the proposed development, and the only designated sites within 1km radius of the site were four County Wildlife Sites and one Local Nature Reserve. These features will not be directly affected by the development and operational pressures such as recreational disturbance will be negligible due to the degree of Green Infrastructure provided within the proposed development.

9.7.3 A large majority of the site is under arable cultivation which supports habitats of low diversity and negligible value. The development will retain the bulk of existing habitats which will consist primarily of woodland compartments and hedgerow networks with margins, all arable habitats will be removed. There will be some small losses of hedgerows to incorporate access roads and public footpaths through the proposed development. The Green Infrastructure will create a number of habitats which are currently absent, including species rich grasslands, waterbodies, additional woodland planting, diverse hedgerow networks and wildflower margins. Such mitigation features will create a total area of 80.19ha of Green Infrastructure. The habitats created will have at least a moderate beneficial direct effect in the long term at a local level.

9.7.4 A CEMP will ensure that retained habitats are protected from the construction phase of the proposed development, this will ensure that root protection areas and buffer areas are enforced around woodland, hedgerows and badger setts. The Green Infrastructure and Biodiversity Management Plan will ensure the enhancement of existing habitats through gapping up of hedgerows and enhancement and protection of woodland/hedgerow edges. The Management Plan will also help to sustain newly created habitats in the long term; ensuring optimal biodiversity value is attained. The enhanced retained habitats and newly created GI will have a moderate beneficial long term effect at local level.

9.7.5 The bat species encountered were largely common, with the exception of Barbastelle bats which are Annex II species. These were generally recorded is a variety of areas but particularly around linear features such as the woodland compartments and central watercourse with associated tree groups. There were a number of Barbastelle registrations in hundreds along woodland W1 and Great Field Plantation. The general bat assemblages were of no more than local conservation, with Barbastelle species classified as County level due to their rarity. The new habitats created will ensure that existing foraging and commuting corridors are retained and the new opportunities are provided with the variety of new habitats created, whereby it is anticipated that there will be a minor/moderate beneficial long term effect at local level.

9.7.6 Badger setts were found within two locations; Great Field Plantation and along the south eastern watercourse. These will be incorporated within the Green Infrastructure and mitigation measures will ensure that they are sensitively screened to avoid disturbance. One dormice nest was found in proximity to woodland W4 during September; the linear features within which this was found, will be retained and enhanced in the Green Infrastructure. A 'good' population of common lizards and 'low' population of grass snake and slow worms were recorded in the site. The Green Infrastructure will increase the suitability of habitats for badgers, dormice and reptiles, as new habitats are created and additional linkages created, this will ensure that a favourable conservation status is maintained.

9.7.7 The CEMP will ensure that best working practices are maintained during the construction phase; this includes the removal of hedgerows, trees and scrub outside the bird breeding season; control of the effects of construction working during dusk hours by the use of directional lighting; passive displacement takes place on hedgerow/margin losses for access roads where reptiles populations are known and that badger setts remain undisturbed. Such measures will ensure that the impact significances are negligible.

9.7.8 The full potential for enhanced and created habitats to increase biodiversity largely depends on achieving successful and sustained management. The Green Infrastructure and Biodiversity Management Plan will provide a mechanism to ensure that habitats are adequately maintained, that faunal assemblages are allowed to develop and achieve their full potential. Management of habitats will also encourage species and groups of species which are poorly represented or currently absent. Management practices will include; grassland cutting regimes tailored to suit specific species; waterbodies optimised through maintaining ranges of micro-habitats; species rich hedgerows cut/laid to increasing fruiting bodies and nesting/bat roosting boxes to encourage onsite breeding.

9.7.9 The habitats created and the species which will benefit from such mitigation measures will lead to an overall moderate beneficial direct effect in the long term at a local level.

9.7.10 Table 9.5 contains a summary of the likely significant effects of the proposed development.

Table 9.5: Summary of effects

Potential Effect	Nature of Effect	Significance	Mitigation / Enhancement Measures	Geographical Importance	Residual Effects
Construction					
Statutory & Non-Statutory Sites					
Dust Particles Exposure on LNR & CWS	Temporary	Negligible	Work area sprayed with water during dry conditions	Local	Negligible
Habitats					
Arable Field Loss	Permanent	Negligible	Diverse range of habitats will be created within previously arable dominated areas	Negligible	Minor/ Moderate Beneficial Long Term
Improved Grassland – Loss of fields	Permanent	Negligible	Some fields to be retained along the water course, these will be enhanced with additional planting. More species rich meadow grassland habitats are to be created within the GI	Negligible	Negligible
Field Margins – Partial loss	Permanent/ Temporary	Negligible	Majority retained within hedgerows. New areas of grassland habitats created providing more coverage and diversity	Site	Minor Beneficial Long Term
Field Margins – Partial loss of North/East 'Wildlife Conservation Areas' margins. (H19, H21 & H23/H24)	Permanent/ Temporary	Minor Adverse Short Term		Site	
Woodland - Loss of 1ha of Woodland Compartment W1	Permanent	Minor/ Moderate Adverse Long Term	Additional woodland planting through the Application Site	Local	Moderate Beneficial Long Term at Local Level.
Woodland - Loss of 0.3ha Recently Planted Plantation (TN5)	Permanent	Minor/ Moderate Adverse Long Term	Additional woodland planting to compensate for losses	Local	
Woodland – Damage from encroachment by equipment or materials	Temporary/ Permanent	Minor/ Moderate Adverse Short Term	Retained habitats fenced off and 'tool box' talks given to contractors. No dig methods where roads and footpath required.	Site	Negligible
Woodland – Foliage coverage with dust particles	Temporary	Minor Adverse Short Term	During dry periods water will be sprayed over the ground, suppressing dust.	Site	
Hedgerows - Partial losses of hedgerows H4, H9, H13 & H14	Permanent	Minor Adverse Long Term	Existing hedgerows strengthened with additional native species. Compensatory hedgerows planted.	Local	
Hedgerows - Partial losses of HEGS hedgerows H11, H12, H21 & H23				Local	

Potential Effect	Nature of Effect	Significance	Mitigation / Enhancement Measures	Geographical Importance	Residual Effects
Hedgerows - Partial loss of hedgerows H19 'important' under REGS				Local	
Hedgerows - Damage to existing and newly planted hedgerows from machinery, equipment and materials	Temporary/ Permanent	Minor Adverse Medium Term	Retained habitats fenced off and 'tool box' talks given to contractors	Site	
Watercourses - Becoming clogged with rubbish/building material	Temporary	Minor Adverse Short Term	'Tool box' talks given to contractors about sensitively of habitats	Site	
Fauna					
Badgers - Disturbance of badger clans within Application Site from habitat clearance	Temporary	Minor Adverse Short Term	Retain buffer during initial site works.	Site	Negligible
Badgers -Becoming injured by excavations	Temporary	Minor/ Moderate Adverse Short Term	All excavations are to be covered overnight, or means of escape given	Site	
Birds (Breeding) – Removal of arable habitats	Permanent	Minor Adverse Long Term	No arable habitats will be created. Additional nests and foraging provided in GI.	Negligible	Negligible
Birds (Breeding) – Removal of hedgerow & part of woodland W1 removal during breeding season	Permanent	Moderate Adverse in Short Term	Habitat removal to occur outside of breeding season or under supervision of an experienced ecologist. New hedgerows will be planted with fruiting bodies for foraging and dense structure for nesting.	Site	Negligible
Breeding Birds- Habitat created benefit swift, starlings, song thrush, dunnock and house sparrow.	Permanent	Minor Beneficial Long Term	GI will create additional hedgerow, trees, areas of open greenspace and residential gardens.	Local	Minor Beneficial Long Term
Wintering Birds – Loss of arable habitats on skylarks	Permanent	Minor Adverse Long Term	Displaced to surrounding arable field	Local	Negligible
Dormice – Loss of habitats used by dormice – Isolation and injury/death	Permanent	Minor/ Moderate Adverse Long Term	Removal of habitats under Natural England licence at appropriate times of the year.	Local	Negligible
Dormice Loss of hedgerow H23/H24	Permanent	Negligible / Minor Adverse Long Term		Site	Negligible

Potential Effect	Nature of Effect	Significance	Mitigation / Enhancement Measures	Geographical Importance	Residual Effects
Dormice - Possible encroachment of construction machinery/materials into retained habitats used dormice	Temporary	Minor	Retained habitats fenced off and 'tool box' talks given to contractors	Site	Negligible
Dormice – Deer grazing on new GI planting	Temporary	Moderate Adverse Long Term	Fencing off or planting more mature species.	Site	Negligible
Reptiles - Loss of habitats used by reptile populations	Permanent	Moderate Adverse Medium Term	Passive displacement will be undertaken in areas when habitat losses occur.	Local	Minor Beneficial Long Term
Reptiles - Isolation of reptile populations from access roads/habitat loss	Temporary/ Permanent	Minor/ Moderate Long Term	Ensuring populations are not isolated by displacement measures and additional habitats created	Site	
Reptiles - Possible encroachment of construction machinery/materials into retained habitats used by reptiles	Temporary	Minor Adverse Short Term	Retained habitats fenced off and 'tool box' talks given to contractors	Site	Negligible
Bats -Losses of woodland W1 will alter navigational and foraging behaviours	Temporary	Minor Adverse Short Term	Linkages will be retained within other areas of woodland W1. Increased GI will provide alternative routes.	Site	Negligible
Bats - Fragmentation of navigational corridors due the linear losses	Temporary	Minor Adverse Short Term	Habitat 'Hop-overs' to be created near gaps and additional planting to ensure additional navigational routes	Local	
Bats - Disruption of navigational and foraging routes by artificial lighting from construction works – common species of bat	Temporary	Minor Adverse Short Term	Limit dusk working hours, where required direction lighting will be situated away from natural habitats.	Site	Negligible
Bats - Disruption of navigational and foraging routes by artificial lighting from construction works – Barbastelle bats	Temporary	Moderate Adverse Short Term		Local	
Bats - Disruption of tree roosts and access to them, by artificial lighting from construction works	Temporary	Minor Adverse Short Term		Site	Negligible
Operational Effects					

Potential Effect	Nature of Effect	Significance	Mitigation / Enhancement Measures	Geographical Importance	Residual Effects
Statutory & Non Statutory Sites					
Increase in recreational disturbance on CWS & LNR.	Temporary/ Permanent	Minor Adverse Long Term	Specific GI created for recreational activities i.e. off lead dog walking. Circular walks with semi natural features.	Local	Negligible
Effects on Habitats					
Woodland - Recreation disturbance on Great Field Plantation	Temporary/ Permanent	Minor Adverse Long Term	Perimeter planting and fencing to focus public access to designated paths. Interpretation boards installed.	Local	Minor Beneficial Long Term
Woodland - Increase disturbance of woodland W1, due to possible access to new amenities	Temporary/ Permanent	Minor Adverse Long Term		Local	
Woodland - Increased disturbance and possible damage of woodland W4 from extended play and public interference	Temporary/ Permanent	Minor Adverse Long Term		Local	
Woodland - Increase in litter levels within woodland affecting ground flora and fauna	Temporary	Minor Adverse Medium Term	Litter bins to be located at entry points to woodland and near public amenities	Local	
Woodland - Disturbance through public short cuts through exiting and created hedgerow/margins	Temporary	Minor Adverse Medium Term	Post and wire fencing to allow time for hedgerows to establish.	Site	Negligible
Watercourse - Increase in recreational pressure of watercourse, particularly the central feature	Temporary/ Permanent	Minor Adverse Long Term	Fencing and public interpretation boards to raise awareness of biological features.	Local	
Residential Gardens	Permanent	Minor beneficial Long Term	N/A	Site	Minor beneficial Medium Term
New Woodland – Damage by the public	Temporary	Minor Adverse in Medium Term	New woodland planting will be fenced off and managed	Local	Negligible
New Habitats – Grassland, waterbodies, woodland, and individual tree planting	Permanent	Moderate/ Major Beneficial Long Term	New habitats create	Local	Moderate/ Major Beneficial Long Term
New Habitats – Inappropriate Management	Temporary/ Permanent	Moderate Adverse Short/	A Green infrastructure & Biodiveristy Management Plan will be written	Local	Moderate Beneficial Long Term

Potential Effect	Nature of Effect	Significance	Mitigation / Enhancement Measures	Geographical Importance	Residual Effects
		Medium/ Long Term			
Effects on Fauna					
Badgers - Disturbance of setts	Permanent	Moderate Adverse Medium Term	Fencing and dense shrub planting around setts	Site	Negligible
Badgers- Domestic dog disturbance of sett and individuals	Permanent	Minor/ Moderate Long Term	Fencing and dense shrub planting around setts. Areas near setts will require dogs to be kept on the lead.	Site	
Badgers - Foraging in urban areas	Temporary	Minor Adverse Long Term	Ensure that all refuse areas are fenced off and that bins are used.	Site	
Birds – Domestic Cats and Slow Development of Habitats	Temporary	Minor Adverse Medium Term	Existing habitats retained to allow possible refuge. Where possible more mature hedgerow species planted. Nesting boxes will provide opportunities while habitats mature.	Site	Negligible
Birds – New GI	Permanent	Minor Beneficial Long Term	Retention of hedgerows and the GI created will provide more refuge and foraging opportunities	Local	Minor Beneficial Long Term
Dormice – Inappropriate Management of Habitats	Temporary/ Permanent	Minor / Moderate Adverse Long Term	A Green infrastructure & Biodiveristy Management Plan will be written	Site	Minor Beneficial Long Term
Dormice – Degradation of existing/created habitats by public	Temporary/ Permanent	Minor / Moderate Adverse Long Term	Habitats will be fenced off while they develop and interpretation boards specifying the importance of such areas	Site	
Dormice – Predation by Cats	Permanent	Minor Adverse Long Term	Dense hedgerow planting and nesting boxes installed for refuge opportunities while habitats develop.	Site	
Reptiles – Predation by Cats	Permanent	Minor Adverse Long Term	New grassland habitats will be created through the site with specific reptile features such as hibernacula, log piles and hedgerows. These will act as refuge and hibernation structures.	Site	Minor Beneficial Long Term
Reptiles – Habitat Creation	Permanent	Minor Beneficial Long Term		Site	
Reptiles – Degradation of existing/created habitats by public	Temporary/ Permanent	Minor/ Moderate	Habitats will be fenced off while they develop and interpretation boards specifying the importance of such areas	Site	
Bats – Street and Building Lighting	Permanent	Moderate Adverse Short Term	Buffers will be created along habitats to limit the degree of light spill. Where lighting required they will be directionally focuses or	Local	Negligible

Potential Effect	Nature of Effect	Significance	Mitigation / Enhancement Measures	Geographical Importance	Residual Effects
			shrouded. Lighting on buildings will only be placed where necessary. Additional GI will provide alternative foraging and commuting opportunities		
Bats – Additional GI	Permanent	Minor/ Moderate Beneficial Long Term	Additional GI created that will provide new commuting and foraging opportunities. GI will increase prey items as waterbodies and grassland habitats created.	Local	Minor/ Moderate Beneficial Long Term
Cumulative Effects – North West Haverhill Development					
Construction					
Dust Particles Effects on Statutory Sites	Temporary	Minor Adverse Short Term	Supress with spraying ground with water during dry periods	Borough	Negligible
Loss of hedgerows	Permanent	Minor Adverse Long Term	New hedgerow planting with GI	Site	
Operational					
Recreational pressures on Ann Sucklings Way & Norney Platation CWS	Permanent	Minor Adverse Long Term		Borough	Negligible

9.8 References

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4 The Countryside and Rights of Way Act 2000, Act of Parliament in 2000
5 The Conservation of Habitats and Species Regulations 2010
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11 JNCC (2010) Handbook for Phase 1 habitat survey - a technique for environmental audit: Peterborough

12 Suffolk County Wildlife Site Selection Criteria (2010). Revised March 2010. Suffolk Biodiversity Partnership. Accessed 11/08/15.

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