Bloor Homes

LAND AT DOLLYMANS FARM, DOUBLEGATE LANE, RAWRETH

Environmental Statement, Volume 1, Chapter 7: Ecology and Nature Conservation

JANUARY 2026

PUBLIC

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7 ECOLOGY AND NATURE CONSERVATION

7.1 CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

Table 7-1 - Summary of Consultee Responses

Body/Organisation	Individual/Statutory Body/Organisation	Meeting Dates and Other Forms of Consultation	Summary of Outcome of Discussions
Environment Agency	Environment Agency representative	Scoping Opinion received 31 July 2025	Environment Agency accepts that the habitat is not favourable for water voles but still expects watercourses/ponds to be mitigated for and enhanced.
Natural England	Natural England representative	Scoping Opinion received 31 July 2025	Natural England details that biodiversity and geodiversity interests in planning decisions should be accounted for in the Environmental Statement as per The National Planning Policy Framework.

7.1.1. A formal EIA Scoping Opinion (**Appendix 1-2: Environmental Impact Assessment Scoping Opinion (Volume 3)**) was received from Rochford District Council (RDC) on 17 December 2025. The two comments left by RDC reflect those also received from the Environment Agency and Natural England, and are therefore reflected throughout this Chapter.

SCOPE OF THE ASSESSMENT

7.1.2. **Table 7-2** details those elements of the Proposed Development that are scoped-in and scoped-out of the assessment, including a summary justification in each case. In some cases this has led to ecological features being scoped out of the assessment entirely as there would be no effects on them.

7.1.3. The majority of effects upon ecological features will be temporary and short term to facilitate construction. There will be on-going disturbance during the operation of the Proposed Development, but on a local level this will be broadly similar to that which currently exists. However, disturbance caused by recreation of residents potentially affecting designated sites along the Essex coast has been considered in line with requirements of the Essex Coast Recreational Disturbance Avoidance Management Strategy.

Table 7-2 - Elements Scoped In or Out of Further Assessment

Element and Receptor	Phase	Scoped In	Scoped Out	Justification
Element: Permanent or temporary land-take/changes to habitats. **Receptors:** Terrestrial habitat (including Lowland Mixed Deciduous Woodland HPI) within the Study Area. Protected and notable species: ▪ Bats; ▪ Badger; ▪ Breeding and wintering birds; ▪ Otter; ▪ Reptiles; ▪ Amphibians; ▪ Dormice; ▪ Plant species; ▪ Terrestrial invertebrates; ▪ Fish; and ▪ Aquatic invertebrates.	Construction	✓	-	Degradation and / or loss of habitat (including through soil compaction). Reduction in the availability of foraging and commuting habitat and resting or breeding sites. Killing or injury of fauna through the removal of occupied resting or breeding sites. Loss of ecological connectivity through severance of habitats resulting in fragmentation. Introduction or spread of invasive species.
Element: Use of temporary lighting for security purposes or to illuminate construction working areas. **Receptors:** Protected and notable species: ▪ Bats; ▪ Badger; ▪ Breeding and wintering birds; ▪ Otter; ▪ Reptiles; ▪ Amphibians; ▪ Dormice; ▪ Terrestrial invertebrates; ▪ Fish; and ▪ Aquatic invertebrates.	Construction	✓	-	Disturbance and displacement of fauna sensitive to lighting resulting in indirect loss of foraging and commuting habitat or resting or breeding sites. Disruption of the physiology of species reliant on natural day / night and seasonal light level changes resulting in loss of fitness and reduction in survival rates. Loss of ecological connectivity through severance (due to introduction of light) of habitats resulting in fragmentation.
Element: Production of aural and visual stimuli and vibration from construction activities such as vehicular movements, piling or site personnel.	Construction	✓	-	Disturbance and displacement of species susceptible to noise / visual disturbance resulting in a reduction of energy intake and / or an increase in energy expenditure

Element and Receptor	Phase	Scoped In	Scoped Out	Justification
Receptors: Protected and notable species: ▪ Bats; ▪ Badger; ▪ Breeding and wintering birds; ▪ Otter; ▪ Reptiles; ▪ Amphibians; ▪ Dormice; ▪ Terrestrial invertebrates; ▪ Fish; and ▪ Aquatic invertebrates.				potentially leading to a reduction in survival and productivity rates.
Element: Temporary hydrological changes (changes to sub surface and surface water flows). **Receptors:** Freshwater habitats and supported fauna. Terrestrial habitat (including Lowland Mixed Deciduous Woodland HPI) within the Study Area. Wick Country Park LoWS and Home Farm Meadow LoWS are hydrologically linked via Benfleet Brook. Protected and notable species: ▪ Bats; ▪ Badger; ▪ Breeding and wintering birds; ▪ Otter; ▪ Reptiles; ▪ Amphibians; ▪ Dormice; ▪ Plant species; ▪ Terrestrial invertebrates; ▪ Fish; and ▪ Aquatic invertebrates.	Construction and Operation	✓	-	Changes to local hydrology resulting in changes or loss of surrounding habitats with subsequent effects on the fauna they support.

Element and Receptor	Phase	Scoped In	Scoped Out	Justification
Element: Creation of airborne particles (e.g. dust) during construction activities and vehicle movements. **Receptors:** Freshwater habitats and supported fauna. Terrestrial habitat (including Lowland Mixed Deciduous Woodland HPI) within the Study Area. Protected and notable species: ▪ Bats; ▪ Badger; ▪ Breeding and wintering birds; ▪ Otter; ▪ Reptiles; ▪ Amphibians; ▪ Dormice; ▪ Plant species; ▪ Terrestrial invertebrates; ▪ Fish; and ▪ Aquatic invertebrates.	Construction	✓	-	Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports.
Element: Contamination of site run-off. **Receptors:** Freshwater habitats and supported fauna. Terrestrial habitat (including Lowland Mixed Deciduous Woodland HPI) within the Study Area. Wick Country Park LoWS and Home Farm Meadow LoWS are hydrologically linked via Benfleet Brook. Protected and notable species: Bats; ▪ Badger; ▪ Breeding and wintering birds; ▪ Otter; ▪ Reptiles; ▪ Amphibians;	Construction	✓	-	The introduction of toxic pollutants or sediments into the environment resulting in changes, loss, or damage to terrestrial or freshwater environments and the fauna they support.

Element and Receptor	Phase	Scoped In	Scoped Out	Justification
▪ Dormice; ▪ Plant species; ▪ Terrestrial invertebrates; ▪ Fish; and ▪ Aquatic invertebrates.				
Element: Increase in vehicle movements and changes in movement patterns and timings during construction activities. **Receptors:** Protected and notable species: ▪ Bats; ▪ Badger; ▪ Breeding and wintering birds; ▪ Otter; ▪ Amphibians; ▪ Reptiles; ▪ Dormice; and ▪ Terrestrial invertebrates.	Construction	✓	-	Potential killing or injury of fauna through road traffic collisions.
Element: Vehicle movements. **Receptors:** Protected and notable species: ▪ Bats; ▪ Badger; ▪ Breeding and wintering birds; ▪ Otter; ▪ Amphibians; ▪ Reptiles; ▪ Dormice; and ▪ Terrestrial invertebrates.	Operation	✓	-	Potential disturbance of fauna through increased vehicle traffic movements. Potential killing or injury of fauna through road traffic collisions.
Element: Disturbance from operational phase lighting. **Receptors:** Protected and notable species: ▪ Bats; ▪ Badger; ▪ Breeding and wintering birds;	Operation	✓	-	Disturbance and displacement of fauna sensitive to lighting resulting in indirect loss of foraging and commuting habitat or resting or breeding sites. Disruption of the physiology of species reliant on natural day / night and seasonal light level

Element and Receptor	Phase	Scoped In	Scoped Out	Justification
▪ Otter; ▪ Amphibians; ▪ Reptiles; ▪ Dormice; and ▪ Terrestrial invertebrates.				changes resulting in loss of fitness and reduction in survival rates. Loss of ecological connectivity through severance (due to introduction of light) of habitats resulting in fragmentation.
Element: Increased recreational pressure. **Receptors:** Essex Estuaries SAC, Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA and Ramsar and Benfleet and Southend Marshes SPA and Ramsar / Essex Coast Recreational Disturbance Avoidance and Mitigation Strategy. Crouch and Roach Estuaries SSSI risk zone and Thundersley Great Common SSSI risk zone Terrestrial habitats including deciduous woodland (HPI) within the Study Area. Freshwater habitats and supported fauna.	Operation	✓	-	The Site falls within the Zone of Influence of the Essex Coast Recreational Disturbance Avoidance and Mitigation Strategy, which includes Essex Estuaries SAC, Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA and Ramsar and Benfleet and Southend Marshes SPA and Ramsar. People from the new residential development (on-site) visiting these coastal sites for recreational activities may result in increased disturbance to designated bird species at these sites, resulting in population decline. The Proposed Development matches the criteria of 100 units or more (Natural England, 2024), therefore effects on Crouch and Roach Estuaries SSSI and Thundersley Great Common SSSI would be material to any planning decision for the Proposed Development. Increased recreational pressures on habitats and the flora and fauna it supports.
Element: Permanent or temporary land-take/changes to habitats and disturbance and pollution to designated sites. **Receptor:** Gidding Copse LNR and Beauchamps Meadow LNR identified within 2km of the Site. Fane Road Meadows LoWS and North Benfleet Hall Wood LoWS within 2km of the Site.	Construction and Operation	-	✓	No direct or indirect impacts are anticipated to these site's, given that they are over 500m from the Site and that the A129, A127 and A130 dual carriage ways and residential areas severs ecological connectivity to the Site.

Element and Receptor	Phase	Scoped In	Scoped Out	Justification
Direct and indirect impacts to water vole.	Construction and Operation	-	✓	One record of water vole was returned approximately 2km west of the Site in 2020 within a watercourse outside of the Site, which is not hydrologically linked to any watercourses within the Site. Both watercourses were heavily shaded with minimal emergent vegetation and the ponds are small with limited suitable connecting habitat and shallow banks. Therefore, watercourses and waterbodies are deemed not suitable to support water vole.

BASELINE DATA COLLECTION

Desk Study

7.1.4. To provide the data for the ecological desk study, the following information was requested from the Essex Field Club who hold records of habitats and species for the county of Essex:

- Records of legally protected and notable species within 2km of the Site Boundary;
- Bat records within 2km of the Site Boundary; and
- Records of non-statutory sites designated for nature conservation value within 2km of the Site Boundary.

7.1.5. Freely downloadable datasets (available from Natural England) were consulted for information regarding:

- Statutory designated sites within 2km of the Site Boundary;
- National Site Network (including Special Areas of Conservation (SAC) and SPAs) and internationally designated Ramsar sites within 10km of the Site Boundary;
- HPI within 1km of the Site Boundary; and
- Woodland listed on the Ancient Woodland Inventory within 1km of the Site Boundary.

7.1.6. Open source 1:25,000 Ordnance Survey mapping was used to identify waterbodies and watercourses within 250m of the Site Boundary, following GCN mitigation guidelines[1].

7.1.7. All desk Study Areas were selected on the basis of CIEEM guidance[2] and professional judgement. Based on the particular characteristics of the Site and the Proposed Development, direct and indirect impacts are unlikely to extend beyond these areas.

1 English Nature (2001) Great Crested Newt Mitigation Guidelines. English Nature, Peterborough
2 CIEEM (2017) Guidelines for Preliminary Ecological Appraisal. Available at: https://cieem.net/resource/guidance-on-preliminary-ecological-appraisal-gpea/ (Accessed 9th May 2025).

Field Surveys

7.1.8. Ecological survey work commenced in March 2025 and was completed in November 2025, which includes:

- Preliminary Ecological Appraisal (PEA);
- Predictive System for Multimetrics (PSYM) (Pond condition) Survey;
- Bats:
  - Preliminary Roost Appraisal (PRA)
  - Ground Level Tree Assessment (GLTA)
  - Night-time Bat Walkover (NBW)
- Aquatic Habitat Appraisal;
- Wintering bird survey;
- Breeding bird survey;
- Great Crested Newt (GCN) Habitat Suitability Index (HSI) and eDNA survey;
- Reptile survey;
- Badger survey;
- Otter survey;
- Dormouse survey; and
- Botanical and invasive plant species survey.

7.1.9. 0The ecological field surveys that have been carried out within the Site or relevant Survey Area are described in **Table 7-3** below.

Table 7-3 – Ecological Field Surveys

Survey	Dates	Scope and Method Detail
PEA	23rd October; 6th and 7th March 2025; and on the 28th August.	All habitats within the Site were described and mapped following Professional Version 2.0 of UK Habitat Classification system[3] (UKHAB, 2023). A habitat condition assessment was also carried to inform the BNG assessment. Potential protected species constraints and the need for further ecological surveys was also identified.

3 UK Habitat Classification Working Group (2023). UK Habitat Classification User Manual. UK Habitat Classification Working Group (UKHab Ltd), Stockport, Cheshire. Available at: https://ecountability.co.uk/ukhabworkinggroup-ukhab/ [Accessed: June 2025].

Survey	Dates	Scope and Method Detail
Bat PRA and GLTA	23rd October; 6th and 7th March 2025; and on the 28th August.	All buildings, structures and trees within the Site were assessed for features suitable to support roosting bats, following good practice guidelines[4].
Aquatic Habitat Appraisal	7th May 2025	A walkover of watercourses and waterbodies were carried out to assess suitability to support protected and/or notable aquatic invertebrates (such as white clawed crayfish *Austropotamobius pallipes*) and protected and / or notable fish species (such as European eel *Anguilla anguilla*).
Winter Bird Survey	20th September 2024 – 24th March 2025	A non-breeding bird walkover survey (based on the methods set out in Bird Survey & Assessment Steering Group (2025)[5]) was undertaken within the Site boundary and within 1km of its boundary, where access permitted. The survey area was visited twice each month from September 2024 to March 2025 (inclusive), with each visit taking one day to complete. These surveys were carried out as instantaneous counts, recording a snapshot of the birds present within each block of habitat (field/plot) at the time it was surveyed.
Breeding Bird Survey	28th March – 25th June 2025	A territory mapping survey, based on the British Trust for Ornithology (BTO) Common Bird Census (CBC) methodology (Marchant, 1983), was carried out within the Site boundary and 100m buffer, where access permitted. The surveys were carried out from March to June 2025 (inclusive) and included six visits in total. While eight to ten visits were required for CBC sites (being monitored over the long-term period), where territory mapping is being used for the purpose of assessing potential environmental impacts it is generally accepted that six visits are sufficient to determine the numbers and distribution of breeding bird territories (for most terrestrial bird species) with a high level of accuracy. The methodology and effort applied is also consistent with the Bird Survey Guidelines (Bird Survey & Assessment Steering Group, 2025).

4 Collins J. (ed.) (2024) Bat Surveys for Professional Ecologists, Good Practice Guidelines (4th Edition). The Bat Conservation Trust, London.
5 Bird Survey & Assessment Steering Group. (2023). 'Bird Survey Guidelines for assessing ecological impacts, v.1.1.0'. https://birdsurveyguidelines.org.

Survey	Dates	Scope and Method Detail
GCN HSI and eDNA Survey	16th and 17th April 2025	A HSI assessment and eDNA survey was carried out of all waterbodies and wet ditches within 250m of the Site to determine the suitability to support GCN and to confirm presence or absence of GCN. The survey followed best practice guidance from Natural England[6].
Reptile Survey	8th April – 23rd June 2025	A reptile presence/absence survey was carried out on all suitable reptile habitat within the Site. The survey included seven visits, between April and June. The survey followed best practice guidance[7].
Badger Survey	27th and 28th February 2025	A walkover was carried out of the Site and surrounding areas up to 30m from the Site boundary to locate and categorise setts and search for signs of badger activity. The badger survey was undertaken in accordance with good practice guidance (Harris et al., 1989[8] and Roper (2010[9]).
Otter Survey	14th and 15th April 2025	A walkover of the two watercourses on Site (including Benfleet Brook) was carried out to locate otter holts (if present) and search for signs of otter activity. The otter survey was carried out in accordance with good practice guidelines (Chanin, 2003[10]).
Botanical and invasive plant species	5th and 6th August 2025	Undertaken within grasslands on Site to collect a combined list of vascular plants and a walkover of the whole Site was undertaken to identify an invasive plant species.
Nighttime Bat Walkover	30th April – 16th September 2025	Three dusk walkovers of the Site, walking pre-determined transect covering all suitable bat habitat within the Site and record bat activity using bat detectors. All survey work was compliant with good practice guidance[2] (Bat Conservation Trust, 2023[2]).

6 DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.'
7 Froglife, 1999. Advice sheet 1. Reptile Survey. Available at: https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-media.org/M4-Newport/C%20-%20Core%20Documents/11.%20Ecology%20and%20Nature%20Conservation/11.3.3%20-%20Froglife%20Froglife%20Advice%20Sheet%2010%20reptile%20survey.%20Froglife%2C%20London.%201999.pdf
8 Harris S, Cresswell P and Jefferies D (1991) (Report) Surveying Badgers. The Mammal. Society, Bristol.
9 Roper (2010) Badger (Collins New Naturalist). HarperCollins, UK.
10 Chanin P (2003). Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough

Survey	Dates	Scope and Method Detail
Hazel Dormouse Survey	7th May – 7th November 2025	Hazel dormouse surveys can only be carried out by a hazel dormouse licenced surveyor. Hazel dormouse nest tubes were installed in suitable habitat and monitored over repeat visits to determine dormouse presence/absence. Surveys were carried out by a hazel dormouse licenced surveyor and undertaken in accordance with the dormouse conservation handbook (English Nature, 2006[11]).

ASSESSMENT METHODOLOGY

7.1.12. This chapter has been prepared in line with current good practice from CIEEM's Guidelines for Ecological Impact Assessment[12], in addition to the specific methodology detailed in Chapter 3: Approach to EIA. Each receptor has been evaluated within the geographic scale of reference and potential effects during the construction and operation phases of the Proposed Development. The assessment presented within this chapter considers potential impacts from the construction and operation of the Proposed Development.

7.1.13. Based on the likely effects set out above, the scope of the assessment presented in this chapter comprises:

- determine the importance of ecological features affected, through survey and/or research;
- assess impacts potentially affecting important features;
- characterise the impacts by describing their extent, magnitude, duration, reversibility, timing and frequency;
- identify cumulative impacts;
- identify potential significant effects of impacts in the absence of any mitigation;
- incorporate measures to avoid and mitigate (reduce) these impacts;
- assess the significance of any residual effects after mitigation;
- identify appropriate compensation measures to offset significant residual effects (if any); and
- identify opportunities for enhancements (including assisting in delivering Biodiversity Net Gain).

11 English Nature (2006). The Dormouse Conservation Handbook. 2nd Edition. Natural England. Peterborough.
12 CIEEM (2022) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Version 1.2). Available at: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf (Accessed June 2025).

7.1.14. For adverse impacts, CIEEM's Guidelines for Ecological Impact Assessment[7] have been adapted to classify the magnitude of impacts by a matrix approach to determine significance of effects. This is based on the approach used for road schemes in the UK by the Design Manual for Roads and Bridges[13]. Although the Proposed Development does not comprise of a road/bridge to which the public has access, this guidance provides a robust methodology for assessing impacts to terrestrial biodiversity and is considered suitable for this assessment.

7.1.15. This methodology has been used to assess both the construction and operation phases of the Proposed Development.

SIGNIFICANCE CRITERIA

7.1.16. The significance level attributed to each effect has been assessed based on the sensitivity/value of the affected receptor(s) and the magnitude of change arising from the Proposed Development, as well as a number of other factors that are outlined in more detail in **Chapter 3: Approach to the EIA (Volume 1).**

VALUE AND SENSITIVITY

7.1.17. As described within **Chapter 3: Approach to EIA (Volume 1)**, sensitivity is a means to measure how affected receptors/processes and/or the receiving environment is likely to respond to change. The sensitivity is assigned at the receptor/process level. This may be defined in terms of quality, value, rarity or importance, and be classed as International, UK/National, Regional/County, District, or Local.

7.1.18. **Table 7-4** summarises the ecological feature conservation value and/or sensitivity adapted from CIEEM's Guidelines for Ecological Impact Assessment[4] for habitats and species; these have been adapted for use in this assessment. CIEEM uses the term "Importance" to reflect value and sensitivity, and this term has been adopted.

Table 7-4 - Biodiversity Description of Value and Sensitivity (i.e. ecological "importance")

Importance	Criteria
International	Habitats - An internationally designated site or candidate site; SPA, candidate SPA, SAC, candidate SAC, SCI, Ramsar Site, Biogenetic/Biosphere Reserve, World Heritage Site or an area that would meet the published selection criteria for designation. 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. Species - A sustainable population of an internationally important species or species listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK BAP) which is listed in Annex IV of the Habitats Directive, or as being of unfavourable conservation status in Europe, of uncertain conservation status or of global conservation concern in the UK BAP. Sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements.

13 Highways Agency (2019) Design Manual for Roads and Bridges, LA 104 Environmental assessment and monitoring. Available at: https://www.standardsforhighways.co.uk/dmrb/search/0f6e0b6a-d08e-4673-8691-cab564d4a60a (Accessed June 2025).

Importance	Criteria
UK/National	Habitats - A nationally designated site, SSSI, NNR, Marine Nature Reserve or a discrete area, which would meet the published selection criteria for national designation (e.g. SSSI selection guidelines). A sustainable area of a priority habitat identified in the UK BAP, or of smaller areas of such habitat which are essential to maintain the viability of a larger whole ancient woodland or large aggregations of ancient/veteran trees. Species - Any regularly occurring/large population of a nationally important species (e.g. Red Data Book). A large population of a species identified as a Species of Principal Importance (SPI). A species population that would qualify for SSSI designation.
Regional/County	Habitats - viable areas of key habitat identified in county/district BAP, or smaller areas of such habitat which are essential to maintain the viability of a larger whole. County sites that the designating authority has determined meet the published ecological selection criteria for designation. A diverse and/or hedgerow network comprised of mostly Important Hedges. Areas of HPI (such as deciduous woodland) or individual ancient/veteran trees. Species - A regularly occurring, locally significant number of a nationally important species. Any regularly occurring, locally significant population of a SPI or a species listed in a county/district BAP (where available). A regularly occurring, locally significant population of a county/district important species. Sites supporting populations of internationally/nationally/regionally important species that are not threatened or rare in the region or county, and not integral to maintaining those populations. Sites/receptors scarce in the county or that appreciably enrich the county habitat resource.
District	Habitats - Areas of habitat that appreciably enrich the local habitat resource (e.g. species-rich hedgerows, ponds). Sites that retain other elements of semi-natural vegetation that, due to their size, quality or the wider distribution within the local area, are not considered for the above classifications. Species - Populations/assemblages of species that appreciably enrich the biodiversity resource within the local context. Sites supporting populations of county/district important species that are not threatened or rare in the region or county and are not integral to maintaining those populations.
Local	Habitats –Common and widespread habitat, not meeting any of the above criteria. Areas of heavily modified or managed vegetation of low species diversity or low value as habitat to species of nature conservation interest. Species - Common and widespread species, not meeting any of the above criteria. Commonplace feature of little or no habitat/historical significance. Loss of such a feature would not be seen as detrimental to the ecology of the area.

MAGNITUDE OF IMPACT

7.1.19. In this Chapter, the magnitude relates to the level of change that the receptor will receive compared to the baseline conditions, using the duration of the impact, timing, scale, size and frequency to determine the magnitude of the impact to each receptor. Magnitude of impact is evaluated in accordance with the definitions set out in CIEEM's Guidelines for Ecological Impact Assessment[4], summarised in **Table 7-5** below.

7.1.20. The following characteristics have been used to assess the magnitude of the impact on ecological receptors as a result of the Proposed Development:

- type of impact – beneficial or adverse;
- extent or spatial scope of the impact;
- reversibility of impact – whether the impact is naturally reversible or reversible through mitigation measures;
- timing and frequency of the impact, in relation to ecological changes;
- likely duration of the impact – short term (< 2 year), medium term (2 - 10 years) or long term (10 or more years); and
- For impacts resulting in air quality changes, whether the impact is "inconsequential" in terms of airborne pollutants.

Table 7-5 - Biodiversity Definitions of Impact Magnitude Classes

Magnitude of Impact	Definition
High	Total loss or large alteration to key elements/receptors of the baseline conditions.
Medium	Partial loss or alteration to one or more key elements/receptors of the baseline conditions.
Low	Small shift away from baseline conditions.
Negligible	Very slight change from baseline conditions.

SIGNIFICANCE OF EFFECT

7.1.21. The overall significance has been assessed using the matrix shown in **Table 7-6**, these have been modified to align with **Chapter 3: Approach to the EIA (Volume 1)**. This uses sensitivity of the receptor and magnitude of change to determine effect significance. Where a range of significance of effect is identified the final assessment for each effect is based upon professional judgement.

7.1.22. In accordance with **Chapter 3: Approach to the EIA (Volume 1),** any effects with a significance level of 'Moderate' or above have been concluded to be significant.

Table 7-6 - Biodiversity Significance of Effects Matrix

	Magnitude of Impacts				
Value /Sensitivity		High	Medium	Low	Negligible
	International	Major	Major to Moderate	Moderate	Negligible
	UK/National	Major	Major to Moderate	Moderate	Negligible
	Regional/ County	Major to Moderate	Moderate	Minor to Moderate	Negligible
	District	Moderate	Minor to Moderate	Minor	Negligible
	Local	Minor	Minor	Negligible	Negligible

7.2 STUDY AREA

7.2.1. The Site covers an area of 89.8 hectares (ha), to the east of Wickford. Its Zone of Influence (ZoI) is the area where impacts arising from the Proposed Development could lead to significant effects on ecological features. Thus, Study Areas have been defined with reference to the ZoI for specific ecological features under assessment (e.g. designated sites) and have been specifically applied to the Site for the Proposed Development. Wider Study Areas have been defined for more sensitive ecological features (that are more likely to be affected by distant impacts), and those supporting mobile species such as birds and bats that can roam widely from their site of origin.

7.2.2. For the purpose of this Environmental Statement (ES), ZoI have been used to define Study Areas and identify potentially sensitive important ecological features which are set out in **Table 7-7** below. Biodiversity Net Gain (BNG) has been assessed separately (WSP, 2025) but links between the two assessments have been described in this chapter.

Table 7-7 - Definition of Study Areas, organised from most to least sensitive

Feature	Study Area
Internationally important statutory designated nature conservation sites, including Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar Sites	10 km radius from the Proposed Development
Nationally important statutory designated nature conservation sites, including National Nature Reserves (NNR), Sites of Special Scientific Interest (SSSI) and Local Nature Reserves	2 km radius from the Proposed Development
Locally important non-statutory designated nature conservation sites (Local Wildlife Site (LWS))	2 km radius from the Proposed Development

Feature	Study Area
Habitats of Principal Importance (HPI)[14] and areas of ancient woodland	1 km radius from the Proposed Development
Habitats, protected and notable species	Site and immediate surroundings

7.3 LEGISLATIVE FRAMEWORK AND GUIDANCE

7.3.1. Details of the relevant legislation, policy and guidance are provided in **Appendix 7.1**: Preliminary Ecological Appraisal. Summary list of the legislation, policy and guidance relevant to this Chapter is provided in this section.

LEGISLATIVE FRAMEWORK

7.3.2. The applicable legislative framework (available on the government legislation website[15]) is summarised as follows:

- The Environment Act 2021[16];
- The Wildlife & Countryside Act 1981 (as amended) (WCA)[17];
- Countryside and Rights of Way (CROW) Act 2000[18];
- The Natural Environment and Rural Communities (NERC) Act 2006[19];
- The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) (Regulations 2019) ('the Habitats Regulations')[7];
- The Hedgerows Regulations 1997[20];
- The Protection of Badgers Act 1992[21];
- The Wild Mammals (Protection) Act 1996;
- National Parks and Access to the Countryside Act 1948; and

14 Natural Environment and Rural Communities Act (NERC) Section 41 Habitats of Principal Importance for Purpose of Conserving Biodiversity in England priority habitat type.
15 UK Government. (2021) UK Legislation. Available at: https://www.legislation.gov.uk/; accessed (Accessed 7 May 2025)
16 UK Government. (2021) Environment Act. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted (Accessed 7 May 2025).
17 HMSO (Her Majesty's Stationary Office) (1981) Wildlife and Countryside Act (as amended by the Countryside and Rights of Way Act 2000). Available at: https://www.legislation.gov.uk/ukpga/2000/37/contents (Accessed 7 May 2025).
18 HMSO (2000) Countryside and Rights of Way Act 2000. Available at: https://www.legislation.gov.uk/ukpga/2000/37/contents (Accessed 7 May 2025).
19 HMSO (2006) Natural Environment and Rural Communities Act. Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents (Accessed 7 May 2025).
20 HMSO (1997) The Hedgerows Regulations SI 1997/1160. Available at: https://www.legislation.gov.uk/uksi/1997/1160/contents/made (Accessed 7 May 2025).
21 HMSO (1992) The Protection of Badgers Act. Available at: https://www.legislation.gov.uk/ukpga/1992/51/contents (Accessed 7 May 2025).

- The Water Environment (Water Framework Directive) (England and Wales) Regulations (the 'Water Framework Regulations') 2017.

POLICY

7.3.3. Applicable planning policy is summarised as follows:

- National Planning Policy Framework[22] (NPPF) 2024;
- UK Biodiversity Action Plan (UKBAP) (JNCC Biodiversity Reporting and Information Group, 2008)[23];
- The UK Post-2010 Biodiversity Framework (2011-2020) (Joint Nature Conservation Committee (JNCC) and Department for Environment, Food & Rural Affairs) (DEFRA, 2012)[24];
- Biodiversity 2020: A strategy for England's Wildlife and ecosystem services. (DEFRA, 2011);
- Essex Biodiversity Action Plan[25];
- Rochford District Council Development Management Plan (2014)[26]
- Essex Local Nature Recovery Strategy[27]

GUIDANCE

7.3.4. The following guidance documents have been used during the preparation of this Chapter:

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2022) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Version 1.2)[4];
- National Planning Practice Guidance (Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government 2020)[28];
- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidance 2017[3];
- The UK Habitats Classification: Habitats Definitions[29];

22 Department for Levelling Up, Housing and Communities (2024) National Planning Policy Framework. Available at: National Planning Policy Framework (Accessed 7 May 2025).
23 HMSO (1994) Biodiversity The UK Action Plan. Available at: Biodiversity: The UK Action Plan (Accessed 7 May 2025).
24 JNCC and DEFRA (2012) UK Post 2010 Biodiversity Framework. Available at: https://jncc.gov.uk/our-work/uk-post-2010-biodiversity-framework/ (Accessed 7 May 2025).
25 Essex Biodiversity Action Plan (1999) A Wild Future for Essex. Available at: The Essex Biodiversity Action Plan - DocsLib (Accessed 07 May 2025).
26 Rochford District Council (2014). Local Development Framework Development Management Plan. Available at: https://www.rochford.gov.uk/sites/default/files/2022-11/planning_jaap_dpdadopted_0.pdf [Accessed June 2025].
27 https://www.essex.gov.uk/about-council/plans-and-strategies/environment-and-planning/local-nature-recovery-strategy accessed 07 May 2025
28 Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2021) National Planning Practice Guidance, Healthy and Safe Communities. Available at: https://www.gov.uk/guidance/health-and-wellbeing (Accessed 7 May 2025).
29 UKHab Ltd (2023) UK Habitat Classification Version 2.0 Available at: ukhab – UK Habitat Classification (Accessed 7 May 2025).

- The Dormouse Conservation Handbook[30];
- Bat surveys for Professional Ecologists: Good Practice Guidelines[31];
- Great Crested Newt Mitigation Guidelines[2];
- Froglife's 'Advice Sheet 10: Reptile Survey[32];
- Herpetofauna Workers' Manual[33];
- Bird Survey Guidelines[34];
- The Mammal Society: Surveying badgers[35];
- Monitoring the Otter *Lutra lutra*[36]
- Birds Census Techniques[37]; and
- Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)[38].

7.4 ENVIRONMENTAL BASELINE

7.4.1. The ecology field survey programme was designed to provide sufficient information on legally protected and conservation notable species, and the general status and condition of all habitats within the Site.

7.4.2. This Chapter is intended to be read in conjunction with the following supporting appendices:

- **Appendix 7-1: Preliminary Ecological Appraisal;**
- **Appendix 7-2: Habitat Regulation Assessment;**
- **Appendix 7-3: Non-Breeding Bird Survey Report;**
- **Appendix 7-4: Breeding Bird Survey Report;**
- **Appendix 7-5: GCN Survey Report;**
- **Appendix 7-6: Badger Survey Report;**
- **Appendix 7-7: Otter Survey Report;**

30 English Nature (2006) The Dormouse Conservation Handbook 2nd Edition. Natural England. Peterborough.
31 Collins J. (ed.) (2023) Bat Surveys for Professional Ecologists, Good Practice Guidelines (4th Edition). The Bat Conservation Trust, London.
32 Froglife (1999) Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice sheet 10. Froglife, Halesworth.
33 Gent, A. and Gibson, S. (2003) Herpetofauna Workers Manual. JNCC, Peterborough.
34 Bird Survey & Assessment Steering Group. (2023). 'Bird Survey Guidelines for assessing ecological impacts, v.1.1.0'. https://birdsurveyguidelines.org.
35 Harris S, Cresswell P and Jefferies D (1991) (Report) Surveying Badgers. The Mammal Society, Bristol
36 Chanin P (2003). Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough
37 Bibby C.J, Burgess N.D, Hill D.A, Mustoe S.H. (2000) Bird Census Techniques. Second Edition. Elsevier Ltd.
38 Oldham R.S., Keeble J., Swan M.J.S., and Jeffcote M. (2000) Evaluating the suitability of habitat for the great crested newt. Herpetological Journal.

- **Appendix 7-8: Aquatic Habitat Survey Report;**
- **Appendix 7-9: Pond Survey Report;**
- **Appendix 7-10: Reptile Survey Report**;
- **Appendix 7-11: Botanical Survey Report;**
- **Appendix 7-12: Dormouse Survey Report**; and
- **Appendix 7-13: Nighttime Bat Walkover Report**.

0DESIGNATED SITES

7.4.3. The designated sites scoped in within the Study Area are summarised in **Table 7-8**. A full list of designated sites within the Study Area is provided in **Appendix 7-1: Preliminary Ecological Appraisal**.

Table 7-8 – Designated Sites Summary

Designated Site(s)	Distance from the Site	Description and Reason for Designation
Essex Estuaries SAC	2.3km northeast of the Site	Sandbanks which are slightly covered by sea water all the time for which the area is considered to support a significant presence. One of the best areas for estuaries, mudflats, sandflats and Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in the United Kingdom. As well as Salicornia and other annuals colonising mud and sand. Spartina swards (*Spartinion maritimae*) for which this is one of only two known outstanding localities in the United Kingdom and is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100 hectares. Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) for which this is one of only four known outstanding localities in the United Kingdom and is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares.
Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar and SPA	2.3km northeast of the Site	The site supports assemblage of rare, vulnerable or endangered species or subspecies of plant and animal including 13 nationally scarce plant species such as slender hare's ear *Bupleurum tenuissimum*, divided sedge *Carex divisa*, sea barley *Hordeum marinum*, golden-samphire *Inula crithmoides*, laxflowered sea-lavender *Limonium humile* and sea clover *Trifolium squamosum*. Several important invertebrate species are also present on the site, including scarce emerald damselfly *Lestes dryas*, the shorefly *Parydroptera discomyzina*, the rare soldier fly *Stratiomys singularior*, and the ground lackey moth *Malacosoma castrensis*. The site is also designated for its assemblage of wintering waterfowl and its winter populations of Dark-bellied brent goose, *Branta bernicla bernicla*.

Designated Site(s)	Distance from the Site	Description and Reason for Designation
Benfleet and Southend Marshes Ramsar and SPA	6km south of the Site	The site comprise an extensive series of saltmarshes, mudflats, and grassland which support a diverse flora and fauna, including internationally important numbers of wintering waterfowl. The site also supports internationally important winter populations of Dark-bellied brent goose, Grey plover *Pluvialis squatarola*, Red knot *Calidris canutus.* Its wintering population of Dunlin *Calidris alpina* is also considered for future consideration.
Outer Thames Estuary SPA	9.4km northeast of the Site	The site is designated for its non-breeding population of red-throated diver *Gavia stellata* and its breeding population of common tern *Sterna hirundo*, little tern *Sternula albifrons*.
The Wick Country Park LoWS	500m west of the Site	This relatively recent country park comprises a mixture of rough grassland, young planted woodland and amenity grassland, bounded and crossed by old hedgerows. North Benfleet Brook flows through the site and a lake has been excavated.
Home Farm Meadow LoWS	860m southwest of the Site	This narrow, unimproved meadow has a sward composed of Creeping Bent (*Agrostis stolonifera*), Tufted Hair-grass (*Deschampsia cespitosa*) and Crested Dog's-tail (*Cynosurus cristatus*) with Hairy Sedge (*Carex hirta*), Bumet Saxifrage (*Pimpinella saxifraga*), Common Knapweed (*Centaurea nigra*), Meadow Buttercup (*Ranunculus acris*), Hoary Ragwort (*Senecio erucifolius*) and the Essex Red Data List species Pepper Saxifrage (*Silaum silaus*) and Sneezewort (*Achillea ptarmica*).

HABITATS

7.4.4. The majority of the Site comprises of arable fields, bordered by dense scrub, woodland and hedgerows. Full details of all habitats identified during the UKHab survey are provided in the PEA (see **Appendix 7-1**). Location of all habitats are presented on **Figure 7-6: UK Habitat Map (Volume 2).**

7.4.5. Parcels of Deciduous Woodland HPI are present within the Site and adjacent to the Site. Minor loss of Deciduous Woodland HPI will take place as a result of the Proposed Development, and there is potential for indirect impacts. Therefore, direct and indirect impacts have been included in the assessment. Three of the seven waterbodies that were surveyed achieved a PSYM quality category of Good and qualify as HPI (Appendix 7-9: Pond Survey Report). These three ponds will be retained as a result of the Proposed Development.

7.4.6. Important habitats on Site include native species-rich hedgerows, native hedgerows, ponds, watercourses, scrub and lowland deciduous woodland. The majority of the Site has habitat of low and negligible ecological importance, including arable fields and field margins, hardstanding and bare ground and modified grassland. Therefore overall, the habitats on Site are assessed to be of '**Local**' ecological importance. All habitats will be included in the BNG metric calculation as contributing to the general biodiversity value of the Site.

PROTECTED SPECIES

Bats

7.4.1. Records of six bat species within 2km of the Site were returned by the desk study, comprising common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auratus*, nathusius pipistrelle *Pipistrellus nathusii*, noctule bat *Nyctalus noctula* and whiskered bat *Myotis mystacinus*, all recorded in 2019. Only one record of a common pipistrelle roost was returned approximately 2km from the Site in 2019. No EPSL for bats were identified within 2km of the Site.

7.4.2. One building is present within the Site. Following the Preliminary Roost Assessment (PRA), the building was identified as having Negligible suitability for roosting bats. Mature and semi-mature trees suitable for roosting bats were identified throughout the Site either within the parcels of woodland or as standalone trees. Ten trees categorised as having Potential Roost Features (PRFs) were subject to a GLTA and were categorised as follows:

- Six were recorded as PRF-I (trees suitable for individual bats or small numbers of bats); and
- Four were recorded as PRF-M (trees suitable for multiple bats and may therefore be used for breeding).

7.4.3. Three of the ten suitable trees (T1, T2 and T8 on **Figure 7-6: UK Habitat Map (Volume 2)**) are present within the Site and two trees (T3 and T6 on **Figure 7-6 (Volume 2)**) are present on or adjacent to the Site boundary. One tree (T4) has been cut down by the landowner which was identified on the 1st October 2025 during a dormouse survey visit. The four remaining trees (T5, T7, T9 and T10) are located outside of the Site boundary.

7.4.4. Full details of each PRF identified and the overall suitability of each PRF are presented in Table 3-7 of the PEA in **Appendix 7-1**. Locations of all trees with PRFs are presented on **Figure 7-6: UK Habitat Map (Volume 2)**. A bat box that could be used by roosting bats on a semi mature oak tree was also recorded (see TN3 on **Figure 7-6: UK Habitat Map (Volume 2)**). No trees suitable for roosting bats will be felled or subject to modification as a result of the Proposed Development.

7.4.5. The results of the Nighttime Bat Walkover (NBW) found that most of the recordings were commuting and foraging common pipistrelle and soprano pipistrelle, with few recordings of noctule and species groups serotine/Leisler's and myotis. A higher number of noctules were recorded during the summer survey. The most activity was recorded around the lines of trees and woodland bordering the western and eastern boundaries of the Site. There were also low levels of activity recorded along hedgerows adjacent to the road and between individual fields within the redline boundary. The linear features including woodland along both watercourses provide connectivity to the wider landscape. Overall, the habitat available for roosting, foraging and commuting bats within the Site is limited and therefore the bat's making use of these habitats are expected to be of '**Local**' importance.

Wintering Birds

7.4.6. Results from the non-breeding bird survey undertaken from September 2024 to March 2025 indicate that the decommissioned reservoir (which remains flooded throughout the year) within the Site and flooded excavation in the adjacent quarry are utilised by a variety of water bird species. However, the numbers of each species were typically low or infrequent in occurrence and unlikely to represent more than 1% of their respective county (Essex) wintering populations on a regular basis[39]. The numbers of wintering farmland birds recorded were also low.

7.4.7. The surveys provided no evidence that the fields within the Survey Area are utilised by qualifying species of the nearby SPAs and Ramsar sites; with only two Shelduck *Tadorna tadorna* recorded on the decommissioned reservoir in late winter, likely related to local breeding birds rather than from the wintering populations of the SPAs and Ramsar sites. The wintering bird community is comprised of common and widespread species and is assessed as '**Local**' ecological importance.

Breeding Birds

7.4.8. The desk study returned 448 records of 66 bird species. The closest of which were records of skylark *Alauda arvensis*, mallard *Anas platyrhynchos*, Cetti's warbler *Cettia cetti*, greenfinch *Chloris chloris*, black-headed gull *Chroicocephalus ridibundus*, wood pigeon *Columba Palumbus*, yellowhammer *Emberiza citronella*, kestrel *Falco tinnunculus*, herring gull *Larus argentatus*, yellow wagtail *Motacilla flava*, house sparrow *Passer domesticus*, dunnock *Prunella modularis*, starling *Sturnus vulgaris*, wren *Troglodytes troglodytes* and song thrush *Turdus philomelos*, which were all returned within Dollymans Farm in 2022 and 2023. Additionally, five species returned by the desk study are listed on WCA Schedule 1 and have the potential to nest within the Site.

7.4.9. The breeding bird survey undertaken at the Site in 2025 indicate that the Survey Area supports a range of species that are typical of the habitats present (arable farmland, gardens, hedgerows and small patches of scrub and deciduous woodland). The highest densities of breeding territories within the Survey Area were located in areas of woodland, scrub and hedgerows.

7.4.10. A total of 15 notable bird species (i.e. those of conservation value) were recorded breeding within the Survey Area in 2025. Of these, two species (Little Ringed Plover *Charadrius dubius* and Cetti's Warbler) are listed on Schedule 1 of the WCA 1981 (as amended) and therefore receive special protection from disturbance during the breeding season.

7.4.11. For all but one of the notable species, the numbers recorded within the Survey Area represent a small proportion (<1%) of their respective (Essex) county population total. However, the single pair of Little Ringed Plover (which bred at the decommissioned reservoir in 2025) will represent well in excess of 1% of the Essex breeding population of this species; the county supports on 12 breeding pairs in total in 2021 and 2022. As detailed in Appendix 7-4: Breeding Bird Report, Little Ringed Plover first bred in Essex in 1947 and then annually since 1954. The population continued to increase with 35 pairs recorded in 1984. However, there has not been a continued rise since 1984, as the Little Ringed Plover breeding population declined with only 12 breeding pairs in total in 2021 and 2022. Given that 15 notable bird species were recorded breeding within the Site and the Little Ringed Plover pair exceeds 1% of the Essex breeding population, the breeding bird community is assessed as '**District**' ecological importance.

[39] EBS (2024). *The Essex Bird Report 2022*. The Essex Birdwatching Society.

Amphibians

7.4.12. The desk study returned records of five amphibian species including common toad *Bufo bufo,* smooth newt *Lissotriton vulgaris,* marsh frog (non-native) *Rana ridibunda,* common frog *Rana temporaria* and Great Crested Newt *Triturus cristatus* (GCN). The closest of which was a record of common frog recorded 800m south of the Site. Four EPSL for GCN were identified within 2km of the Site.

7.4.13. A total of 13 waterbodies were identified within the Study Area. Seven waterbodies were identified within the Site (see P1 – P7 in **Figure 7-5 (Volume 2)).** P7 is floodwater collected in the recently drained reservoir, with no vegetation and therefore deemed not suitable for GCN. Six waterbodies were identified within 250m of the Site (see P8 – P13 in **Figure 7-5 (Volume 2)**). Additionally suitable terrestrial habitat is present in the form of hedgerows, dense scrub and grasslands.

7.4.14. The GCN HSI for each accessible waterbody (see **Section 0**) identified:

- four waterbodies as 'Average' suitability;
- seven waterbodies as 'Below Average' suitability; and
- one waterbody as 'Poor' suitability.

7.4.15. An eDNA survey was carried out for nine waterbodies and four reedbeds (where access permitted; see Section 0). All eDNA samples were returned as negative and therefore GCN are deemed likely **absent** from the Site. No records of toad (an SPI listed species) were returned by the desk study from within the Site and no toads were recorded during the surveys. However, suitable habitat such as parcels of Lowland Deciduous Woodland HPI, dense scrub and waterbodies that could support a locally significant population of toad are present within the Site. Therefore, the amphibian community is assessed as '**Regional/County**' ecological importance.

Reptiles

7.4.16. Seven records of three reptile species, slow worm *Anguis fragilis*, common lizard *Zootoca vivipara*, and adder *Vipera berus* were returned by the desk study. The closest of which was a common lizard recorded 1km east of the Site. No records of grass snake *Natrix natrix* were returned in the last 10 years, however, two records of grass snake were returned 1.9km south west of the Site in 2012.

7.4.17. Survey results indicate that the Site supports a breeding population of slow worm, as well as adult populations of common lizard, grass snake, and adder. Reptiles were recorded in all suitable habitat across the Site, as shown in **Figure 7-16 (Volume 2).** However, it is noted that reptiles were not observed during every survey visit.

7.4.18. According to the Froglife Assessment Criteria (Froglife, 1999), the Site qualifies as a Key Reptile Site, given that it meets 3 out of the 5 criteria. Furthermore, there is potential for the Site to support a larger population of adder than recorded as accurately determining reptile population size is inherently limited by the survey methodology, as only a small proportion of the total population is likely to be detected during each visit. Therefore, as adder are known to be under recorded in Essex (Essex Field Club, 2025) the Site could support a regularly occurring, locally significant number of adder, which is a nationally important (UKBAP) species. As a result, it is determined that the reptile population on Site is of **Regional/County** ecological importance.

Badgers

7.4.19. The data search identified three badger records within the Site and four within a 2km radius of the Site over the past ten years. The most recent record, from 2023, was within the strip of woodland in the southeastern section of the Site. The other two on-site records were from 2017, in the dense scrub in the southeastern section adjacent to the A130, and from 2016, on the field margin in the northeastern section, also adjacent to the A130. Locations of these badger records are presented in **Figure 7-11** of the ES (**Volume 2**). A total of nine disused or defunct badger setts were also identified within 2.25km during the 127/A130 Fairglen Interchange project (Jacobs, 2020). A data search will be sought from Essex Badger Protection Group for reserved matters.

7.4.20. A badger dropping was identified within an area of grassland within the southern section of the Site during the PEA. Furthermore, areas of woodland, dense scrub and hedgerows provide suitable habitat for sett creation within the Site and these habitats together with grasslands provide suitable foraging habitat for badgers. A detailed badger survey that covered all areas within the Site was completed in February 2025.

7.4.21. One active main badger sett was identified within the southeastern section of the Site, within woodland that runs along a watercourse. This badger sett has 15 entrance holes with varying activity levels. Six show high activity with fresh tracks, spoil heaps, claw marks, bedding, and a clear badger run. Three exhibit moderate activity with paths, footprints, spoil heaps, claw marks, but some entrance debris. Five display low to very low activity with some fresh tracks and lots of leaf litter and debris. One hole is disused, filled with debris and no path leading to it. This sett is being monitored by the Essex Badger Protection Group.

7.4.22. Additionally, within the Site a partially active annex badger sett was identified 140m northeast of the main sett and a partially active subsidiary badger sett was identified 100m southwest of the main sett. An active and disused outlier sett was also identified within the Site.

7.4.23. Given that two active setts (including a main sett) and two partially active setts are present within the Site it is determined that the badger population on Site is of '**District**' ecological importance as the large main sett is likely to be used for breeding and will support the local badger population.

Otter

7.4.24. No records of otter were returned with the last ten years by the desk study.

7.4.25. Both watercourses on Site were observed to have limited suitability for otter holts for foraging and commuting. On closer inspection of the woodland habitat running along both watercourses, the woodland had insufficient cover for otter holt and so was deemed not suitable for otter holts. Furthermore, no signs of otter were identified during the otter survey and therefore otter are considered to be likely **absent** from the Site.

Dormice

7.4.26. No records of hazel dormouse were returned with the last ten years by the desk study.

7.4.27. Dormouse tubes were installed within hedgerow, scrub and woodland throughout the Site by a dormouse licenced ecologist and seven monthly visits were carried out from the 7th May to the 7th November 2025. Only one tube had a partially built nest, that had potential to be dormouse. However DNA analysis of the droppings from within the tube were returned as wood mouse and therefore it is likely the nest in this tube was built by a wood mouse.

Terrestrial Invertebrates

7.4.28. A number of butterfly and moth species listed as Species of Principal Importance (SPIs) were returned by the desk study in the last 10 years, including white-letter hairstreak butterfly *Satyrium w-album*. The closest of which was a small heath butterfly *Coenonympha pamphilus* returned from within the Site in 2022. Habitats within the Site may provide suitable habitat for small heath butterfly. Under Section 40 of the NERC Act, public bodies have an obligation to have regard for these species when carrying out their functions. Other important invertebrate species may also be present, such as the cinnabar moth *Tyria jacobaeae* which was also returned by the desk study.

7.4.29. The Site does not fall within an Important Invertebrate Area (IIA)[40] or a B-Line[41] and the only HPI habitat within the Site is lowland deciduous woodland, therefore, no further surveys were carried out for terrestrial invertebrates. A glow worm *Lampyris noctiluca,* which is an Essex Priority Species listed in the Essex Local Nature Recovery Strategy (ECC, 2025), was recorded as an incidental sighting during a NBW survey. Therefore, it is determined that the terrestrial invertebrate population on Site is of '**District**' ecological importance.

Fish

7.4.30. The desk study returned no fish survey records.

7.4.31. The ponds and tributaries have the potential to support minor (i.e. smaller) common fish species (such as three-spined stickleback *Gasterosteus aculeatus*). Therefore, it is determined that the fish population on Site is of '**Local'** ecological importance.

Aquatic Macroinvertebrates

7.4.32. The desk study did not return any records of protected and/or notable aquatic macroinvertebrate species. One INNS was recorded, the New Zealand mud snail. However, it must be noted that this species is widespread throughout the UK and is now considered naturalised.

7.4.33. All the ponds were considered suitable to support aquatic macroinvertebrates. The reedbeds were assessed to provide limited habitat as they were extensively vegetated, with limited open water. The two tributaries were narrow and over deepened with extensively vegetated bank tops and shaded channels providing limited habitat for aquatic macroinvertebrates.

7.4.34. The desk study returned no records of the native, white-clawed crayfish nor the INNS, American signal crayfish *Pacifastacus leniusculus*. No areas of suitable crayfish habitat were observed during the survey.

7.4.35. Therefore, it is determined that the aquatic macroinvertebrate population on Site is of '**Local'** ecological importance.

Macrophytes

7.4.36. The desk study returned no macrophyte survey records.

40 Buglife (2025). Important Invertebrate Areas. Available at: Important Invertebrate Areas - Buglife. [Accessed December 2025].
41 Buglife (2025). B-Lines South of England. Available at: B-Lines South of England - Buglife. [Accessed December 2025].

7.4.1. Submerged and emergent macrophyte species were observed in all six ponds. All the reedbeds were extensively vegetated with grasses and sedges restricting the space for other macrophyte species to colonise. Along both tributaries, mature trees provided extensive shading, restricting the growth of macrophytes. Overall, the ponds, reedbeds and tributaries were considered unsuitable to support a diverse assemblage of macrophyte species and therefore it is considered that the macrophyte population on Site is of '**Local'** ecological importance.

EVALUATION SUMMARY

7.4.2. **Table 7-9** provides a summary of results of the evaluation of ecological features, showing the scale at which they are important. defines the geographical scales of importance. Invasive species are not included in the evaluation summary as they are not important themselves, but they have the potential to affect other features.

Table 7-9 - Ecological Features Evaluation Summary

Ecological Feature	Importance/Sensitivity
Essex Estuaries SAC	International
Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar and SPA	International
Benfleet and Southend Marshes Ramsar and SPA	International
Outer Thames Estuary SPA	International
The Wick Country Park LoWS	District
Home Farm Meadow LoWS	District
Lowland Mixed Deciduous woodland HPI within and adjacent to the Site and Ponds HPI within the Site.	County
Species rich native hedgerows, native hedgerows, ponds, dense scrub, modified grassland and mixed broadleaved woodland.	Local
Birds (wintering)	Local
Birds (breeding)	District
Bats	Local
Amphibians	Regional / county
Reptiles	Regional / county
Badgers	District
GCN	Absent
Otter	Absent

Ecological Feature	Importance/Sensitivity
Hazel Dormouse	Absent
Terrestrial Invertebrates	District
Fish	Local
Aquatic Macroinvertebrates	Local
Macrophytes	Local

7.5 ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

7.5.1. This section details the effects to ecological features during both construction and operational stages of the Proposed Development that are deemed significant and have been considered further in this assessment. Considering mitigation measures following their implementation and identifying any residual effects that may remain.

7.6 FUTURE BASELINE

7.6.1. It is expected that should the Proposed Development not proceed, the baseline conditions within the Site would effectively remain the same. This is because the habitats within the Site are largely managed agricultural fields, and it can be assumed that the existing management regimes (e.g. crop rotation) would be continued.

7.6.2. According to **Chapter 5: Air Quality (Volume 1)** the mitigation measures, which will be incorporated into the Proposed Developments' CEMP as embedded mitigation, will control dust and particulate matter emissions to reduce the risk of impacts from the construction phase to negligible. Therefore, resulting in temporary medium term cumulative effects of Negligible significance. For the operational phase all predicted changes in NO_2, PM_{10} and $PM_{2.5}$ concentrations will result in a residual impact of negligible magnitude and a permanent residual cumulative effect of negligible significance. Additionally, during operation of the Proposed Development in combination with the committed developments, there will be no predicted exceedances of the current AQALs for NO_2, PM_{10} or $PM_{2.5}$ from the Proposed Development in combination with the committed developments in the Do Something scenario, which will result in a negligible impact and a permanent cumulative effect of negligible significance in both the main assessment and the sensitivity test scenario.

7.6.3. According to **Chapter 6: Noise and Vibration (Volume 1)**, during the operational phase internal noise levels will have a negligible to moderate (Significant) effect which with inherent mitigation, glazing and ventilation strategy will have a negligible residual effect. Additionally, external amenity levels will have slight to moderate effect (Significant) which with inherent mitigation and 1.8m solid garden fences will have a slight residual effect. All other operational activities such as road traffic noise, existing commercial noise and proposed commercial noise will have a negligible effect.

7.6.4. For all watercourses, Pollution Prevention for businesses – Good working practices during construction will be adopted as per the Government Guidance for Pollution Prevention (GPPs)[42]. This includes:

- Materials, machinery, labour, and waste disposal facilities will be locally sourced where practicable, to reduce transport miles.
- Using spill control arrangements such as drip trays, bunded plant areas etc; to ensure no pollutants should enter road drainage or run-off to the surrounding soft estate.
- All vehicles and plant will carry spill kits where it is not possible for them to be double bunded.
- All debris arising from the construction works should be effectively encapsulated and removed from site.
- An exclusion zone will be in place to ensure no storage of oils or chemicals should be allowed within 10m of an exposed drain or watercourse.
- The contractor will ensure that they have a robust Pollution Response Plan in place before works start, including knowledge of where associated drains discharge to; and
- Any pollution incident will be contained and cleaned up on the carriageway and reported.

7.6.5. A Construction Environment Management Plan (CEMP) to manage pollution and other risks will be produced for the Proposed Development in advance of the construction stage, which will include the following elements in line with standard industry best practice:

- Appropriate spacing of HGV movements accessing the Site throughout the day;
- Appropriate access routes selected for construction traffic within the local area;
- Dust prevention measures during construction activities;
- Preparation of incident response plans to be present on Site and communicated thoroughly to ensure all contractors are aware of required actions in the event of a pollution incident;
- Provision of fuel spill kits within the Site;
- Storage of plant and machinery away from sensitive receptors (e.g. deciduous woodland, waterbodies and watercourses);
- Watercourses will be protected by implementation of Pollution Protection for Business guidance[42](detailed above);
- Any construction materials brought to Site required to be free from contaminated materials;
- Retained hedgerows to be protected in accordance with BS5837:201230
- Measures to protect retained trees from damage in line with BS5837:2012[30], including the installation of protective fencing.
- Measures to cover or fence-off any deep open excavations overnight;
- Measures to provide a means of egress or to cover any shallow open excavations overnight; and

[42] Gov.UK (2024). Guidance Pollution prevention for businesses. Available at: https://www.gov.uk/guidance/pollution-prevention-for-businesses [Accessed July 2025].

- Works outside of daylight hours will be avoided wherever possible.

7.6.6. Biosecurity measures should be implemented during the construction phase to prevent spread of INNS. Biosecurity is defined as a set of precautions that aim to minimise the risk of moving INNS, parasites and disease pathogens. Measures are likely to include:

- site workers undertaking appropriate biosecurity training and following Defra's "Check, Clean, Dry" principles;
- equipping workers with the necessary equipment, Personal Protective Equipment (PPE); and
- using substances to implement biosecurity control measures, including effective hygiene and sanitation practices. This will most frequently comprise disinfectant tablets, sprayers and brushes to clean and disinfect equipment and PPE prior to entering and leaving the Site.

IDENTIFIED IMPACTS

7.6.7. Following review of the description of the Proposed Development detailed in **Chapter 2: Description of the Nature and Purpose of the Project (Volume 1)**, the following impacts that may lead to effects on ecological features have been identified:

- Construction Phase:
  - habitat loss and fragmentation;
  - noise and vibration;
  - hydrological changes;
  - airborne dust;
  - surface water run-off;
  - lighting; and
  - increase in vehicular movement.
- Operation Phase:
  - surface water run-off;
  - hydrological changes;
  - lighting;
  - noise and vibration;
  - increase in vehicle movements; and
  - increased recreational pressure.

7.6.8. Dust is not considered an operational impact, given that the Proposed Development will be a residential development and so no ground works will take place.

CONSTRUCTION STAGE

7.6.9. **Table 7-10** provides the key findings of the Construction Stage assessment.

Table 7-10 - Assessment of Potential Effects, Additional Mitigation, Residual Effects and Monitoring during Construction

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
Statutory Designated Sites: ▪ Essex Estuaries SAC ▪ Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar and SPA ▪ Benfleet and Southend Marshes Ramsar and SPA ▪ Foulness (mid-Essex Coast Phase 5) Ramsar and SPA ▪ Medway Estuary and Marshes Ramsar and SPA (UK9012031)	**Potential Effects**	All statutory and non-statutory designated sites are outside the land required for the construction of the Proposed Development and will not be subject to direct habitat loss. A Habitats Regulations Assessment (HRA) has been undertaken to assess effects arising on National Site Network within 20km of the Site (**Appendix 7-2: Habitat Regulations Assessment Report**). The HRA concluded that the Proposed Development will not give rise to any Likely Significant Effects (LSE). This conclusion was reached on the basis that: ▪ The Proposed Development does not involve any direct land take from the National Site Network. ▪ According to the wintering bird survey (**Appendix 7-3: Winter Bird Survey Report**), the Site does not support important numbers of National Site Network qualifying bird species and therefore the arable fields within the Site are not classified as Functionally Linked Land (FLL) for the National Site Network. ▪ The Proposed Development is hydrologically linked with the Essex Estuaries SAC and Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar and SPA via Benfleet Brook. However, pollution control measures included within the design of the Proposed Development, measures to protect the Site's watercourses and the distance from the site to the Proposed Development makes it highly unlikely surface water run-off and hydrological changes would affect the site's habitats. ▪ Due to the intervening distance between the Site and National Site Network (2.3km at its nearest point), no other demolition and construction impacts (e.g. disturbance from lighting, noise, vibration, airborne dust, or increase in vehicular movement) would be transmitted and lead to effects on the National Site Network.
	Additional Mitigation	No additional mitigation required.
	Residual Effects and Monitoring	These statutory designated sites are important at the international level, and the magnitude of change is Negligible. Therefore, there is likely to be **Negligible adverse** residual effect on statutory designated sites (**not significant**). No monitoring is required.
Non-statutory designated sites: ▪ The Wick Country Park LoWS ▪ Home Farm Meadow LoWS	**Potential Effects**	All statutory and non-statutory designated sites are outside the land required for the construction of the Proposed Development and will not be subject to direct habitat loss. The Wick Country Park LoWS is located 500m west of the Site and Home Farm Meadow LoWS is located 860m southwest of the Site. Both designated sites are hydrologically connected to the Site via Benfleet Brook, consequently construction impacts of surface water runoff and changes to the local hydrological

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		regime (e.g. from dewatering of excavations) are likely to cause degradation to the sites water quality. Other construction impacts comprising noise/vibration, dust, increase in vehicular movements and lighting are not likely, given the distance between the LoWS sites and the Site.
	Additional Mitigation	The Proposed Development mitigation measures will be set out in a Construction and Environmental Management Plan (CEMP) which will ensures there will be no impact on both LoWS during the construction phase of the Proposed Development. All mitigation measures are detailed within Section 7.6.5.
	Residual Effects and Monitoring	The Wick Country Park LoWS and Home Farm Meadow LoWS are important at District level and the magnitude of change is Negligible. Therefore, there is likely to be **Negligible adverse** residual effect (**not significant**). No monitoring is required.
On-Site habitats: ▪ Deciduous Woodland HPI ▪ Hedgerows ▪ Ponds (including HPI ponds) ▪ Dense scrub	**Potential Effects**	Hedgerows, deciduous woodland, ponds and dense scrub will be lost or subject to fragmentation, due to the construction footprint of the Proposed Development. However, it is expected that loss of existing habitats will be minor as the majority of the Proposed Development will stay within the existing arable fields. Minor loss of Deciduous Woodland HPI will take place for the construction of residential roads as a result of the Proposed Development. Three ponds within the Site achieved a PSYM quality category of Good and qualify as HPI (Ponds 1, 2 and 3 on **Figure 7-15 (Volume 2)**; as detailed in **Appendix 7-8: Pond Survey Report (Volume 3)**) will be retained and therefore no direct impacts to Pond HPI is anticipated. Areas of retained habitats could be detrimentally affected by the localised creation of airborne particles (e.g. dust) during construction activities and increase in vehicle movements, surface water run-off pollution from incidental spills and leaks, hydrological changes, and accidental damage from construction activities. Habitats are not considered to be sensitive to lighting, noise and vibration, which adversely affects animals through disturbance rather than plants and the physical substrates they grow in.
	Additional Mitigation	The Deciduous Woodland HPI on Site will be enhanced and habitat creation and landscaping measures to compensate for the minor loss of deciduous woodland, hedgerows and dense scrub habitats will be implemented, as detailed in the BNG report (WSP, 2025) and Chapter 8 Landscape and Visual. Habitat creation will include other broadleaved woodland, dense scrub and species rich hedgerows. A CEMP will be produced for the Proposed Development in advance of the construction stage. The CEMP will include the mitigation measures as detailed within Section 7.6.5. practice.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	Hedgerows, dense scrub and ponds are important at the Local level, and the magnitude of change, following mitigation, is Medium. Therefore, there is likely to be direct, permanent, long-term **Minor adverse** residual effects on these habitats (**not significant**) following the implementation of mitigation measures. Lowland Deciduous Woodland HPI is important at the County level, and the magnitude of change, following mitigation, is Low. Therefore, there is likely to be direct, permanent, long-term **Minor adverse** residual effects on woodland (**not significant**) following the implementation of mitigation measures. No monitoring is required.
Off-Site habitats: ▪ Deciduous Woodland HPI and Reedbed HPI;	**Potential Effects**	Deciduous Woodland HPI and Reedbed HPI are located adjacent and close to the Site boundary. The Proposed Development does not involve any direct land take of Deciduous Woodland HPI and Reedbed HPI outside of the Site. However, construction impacts such as, dust, surface water runoff, hydrological changes, and increase in vehicular movement are likely to have an impact on the HPI habitats. Habitats are not considered to be sensitive to lighting, noise and vibration, which adversely affects animals through disturbance rather than plants and the physical substrates they grow in.
	Additional Mitigation	A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements as detailed in Section 7.6.5, in line with standard industry best practice.
	Residual Effects and Monitoring	Deciduous Woodland HPI and Reedbed HPI is important at the County level, and the magnitude of change, following mitigation, is Negligible. Therefore, there is likely to be **Negligible adverse** residual effects on both HPIs (**not significant**) following the implementation of mitigation measures. No monitoring is required.
Badger	**Potential Effects**	One active main badger sett, a partially active annex sett, partially active subsidiary sett and an active outlier sett is present within the Site Boundary. Furthermore, the Site is used by badger for foraging and commuting. The Proposed Development will not lead to the loss of any sett (see Figure 2-1 Proposed Red Line Boundary. However, construction of the Proposed Development will take place within 30m of the sett and therefore this work will be carried out under a protected species mitigation licence for badger obtained from Natural England, comprising specific mitigation and monitoring measures for this species, laid out in a method statement. The Proposed Development will also lead to a small loss and fragmentation of foraging habitat through removal of grassland

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		and scrub. Similar foraging habitats (grassland and scrub) are present surrounding the Site Boundary in the wider landscape; thus the Site forms part of a wider habitat resource used by badgers. The Sett's and the habitat surrounding it will be retained as part of the Proposed Development. Habitat creation will increase the available foraging habitat for badgers by providing a mix of grassland and scrub. The network of green open space across Site will provide commuting routes, thus will ensure potential for badger movement is maintained as part of the Proposed Development. Badgers attempting to commute or forage across the Site during the construction stage may be subject to injury or mortality from open excavations and an increase in the number of vehicle movements or change in vehicle patterns and timings during the construction period. Surface water run-off and hydrological changes may have an adverse effect on the available drinking water for badgers. Any temporary artificial lighting, noise, and vibration impacts associated with the construction activities also has the potential to effect badgers actively commuting or foraging across the Site. Dust pollution as a result of construction activities may also have an adverse effect on the health of badgers, due to their subterranean lifestyle and diet of earthworms *Lumbricus terrestris*.
	Additional Mitigation	All works within 30m of the main sett and outlier sett (see **Figure 7-12 (Volume 2)**) will be carried out under a protected species mitigation licence for badger obtained from Natural England, comprising specific mitigation and monitoring measures for this species, laid out in a method statement. The mitigation measures will be incorporated into an Ecological Mitigation Plan, which will be delivered via a planning condition. A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements in line with standard industry best practice: ▪ Measures to cover or fence-off any deep open excavations overnight; ▪ Measures to provide a means of egress or to cover any shallow open excavations overnight; ▪ Works outside of daylight hours will be avoided wherever possible; ▪ Appropriate access routes selected for construction traffic within the local area; ▪ Dust prevention measures during construction activities; ▪ Preparation of incident response plans to be present on Site and communicated thoroughly to ensure all contractors are aware of required actions in the event of a pollution incident;

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		▪ Provision of fuel spill kits within the Site; ▪ Storage of plant and machinery away from sensitive receptors (e.g. deciduous woodland and watercourses); ▪ Any construction materials brought to Site required to be free from contaminated materials; and ▪ Measures to protect watercourses. Where the use of artificial lighting is unavoidable, this will be implemented in accordance with a sensitive lighting strategy which will be secured through the CEMP and seek to avoid light spill onto retained setts and commuting or foraging areas such as retained woodland and hedgerows within the Site, and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation.
	Residual Effects and Monitoring	The Site's badger population are deemed important at District level. The magnitude of change, following mitigation, is Low. Therefore, there is likely to be **Minor adverse** residual effect on badger **(not significant)** following the implementation of mitigation measures. A monitoring survey will be detailed within the method statement for the protected species mitigation licence for badger.
Bats	**Potential Effects**	All trees have been assessed for bat roosting suitability, see **Appendix 7-1: Preliminary Ecological Appraisal**. No trees with features suitable for roosting bats are to be lost as a result of the Proposed Development. Key commuting and foraging habitat was identified as existing woodland and hedgerows within the Site. The majority of existing woodland and hedgerows within the Site will be retained as part of the Proposed Development to ensure continued habitat suitability for commuting and foraging bats. Where removal of hedgerow and woodland are required, habitat creation such as woodland, mixed scrub and hedgerows are proposed and therefore overall, the Proposed Development is not expected to adversely affect the available habitat for commuting and foraging bats. Construction activities may result in accidental damage to retained trees which may support roosting bats, potentially leading to mortality or injury to individual bats and damage or destruction to roosts. In addition, noise, and vibration and increase in vehicular movement impacts associated with the construction activities during daylight hours have the potential to disturb roosting bats and dust pollution, surface water run-off and hydrological changes may have an adverse effect on the invertebrate community of which bats feed on. Furthermore, lighting during night-time works would also likely deter bats from commuting of foraging within the proximity.
	Additional Mitigation	A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include appropriate protection buffers around trees with bat roosting features and the following elements as detailed in Section

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		7.6.5 in line with standard industry best practice. If avoidance of works within these protection buffers is not possible then further surveys to confirm the presence of roosting bats will be required prior to commencement works. If roosting bats are identified then a protected species mitigation licence for bats obtained from Natural England may be required, comprising specific mitigation and monitoring measures for this species, laid out in a method statement. Works outside of daylight hours will be avoided wherever possible. Where the use of artificial lighting is unavoidable, this will be implemented in accordance with a sensitive lighting strategy which will be secured through the CEMP and seek to avoid light spill onto the retained roosting, commuting and foraging areas such as retained woodland and hedgerows within the Site, and outside of the Site Boundary. The lighting strategy will focus on maintaining dark corridors for bats and will be reviewed by an ecologist prior to implementation.
	Residual Effects and Monitoring	Bats are important at the Local level. The magnitude of change, following mitigation, is Low. Therefore, there is likely to be a **Negligible adverse** residual effects on roosting bats (**not significant**) following the implementation of mitigation measures. No monitoring is required.
Amphibians	**Potential Effects**	A HSI for GCN was carried out on 12 of the total 13 waterbodies within the Site. One waterbody (Pond 7 as presented on **Figure 7-10 (Volume 2)**) was within a recently drained reservoir and was a pool of water which has collected due to flooding. Pond 7 is devoid of vegetation and is deemed only of value to waterbirds. Therefore, was assessed to be not suitable for GCN and was therefore not included in the HSI assessment or tested for GCN eDNA. Of the 12 waterbodies, eight were assessed as 'Average' suitability, two were assessed as 'Below Average' suitability and one waterbody was assessed as 'Poor' suitability. An eDNA survey was carried out on nine ponds (where access permitted; see Section 0). All eDNA results were returned as negative. Therefore, GCN are deemed likely **absent** from the Site. Where removal of suitable terrestrial amphibian habitat such as ponds, woodland and scrub are required, habitat creation of woodland, dense scrub, and reedbeds within grassland will mitigate for this loss and therefore overall, the Proposed Development is not expected to adversely affect the available habitat for amphibians, including toads. However, any temporary artificial lighting, dust, surface water run-off, hydrological changes noise and vibration impacts associated with construction activities, may have the potential to effect amphibians within the Site. Furthermore, amphibians attempting to commute or forage across the Site during the construction stage may be subject to injury or mortality from open excavations and an increase in the number of vehicle

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		movements or change in vehicle patterns and timings during the construction period.
	Additional Mitigation	A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements as detailed in Section 7.6.5, in line with standard industry best practice. Where the use of artificial lighting is unavoidable, this will be implemented in accordance with a sensitive lighting strategy which will be secured through the CEMP and seek to avoid light spill onto retained woodland, scrub and waterbodies within the Site, and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation.
	Residual Effects and Monitoring	The Site's amphibian population are deemed important at Regional / County level. The magnitude of change, following mitigation, is Negligible. Therefore, there is likely to be **Negligible adverse** residual effect on amphibians **(not significant)** following the implementation of mitigation measures. No monitoring is required.
Otter	**Potential Effects**	The otter survey concluded that woodland bordering both watercourses within the Site had insufficient cover and so was deemed not suitable for otter holts. Furthermore, no signs of otter were identified during the otter survey and therefore otter are considered to be likely **absent** from the Site. Consequently, no impacts to otter are anticipated as a result of habitat loss, fragmentation, noise and vibration, lighting, or increase in vehicular movement. However, the onsite watercourses are tributaries of the River Crouch, so they have connectivity to the wider Crouch and Roach operational catchment, which in turn is connected to the Greater Thames Estuary (Essex Rivers Hub, n.d.), an area where otters have been recorded within the past 10 years (Essex Wildlife Trust, 2019). Therefore, pollution of both watercourses by surface water run-off, hydrological changes to watercourses and localised creation of airborne particles (e.g. dust) during construction activities may result in pollution of the River Crouch.
	Additional Mitigation	A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements as detailed in Section 7.6.5, in line with standard industry best practice.
	Residual Effects and Monitoring	Otter are considered absent from the Site and no residual effects are anticipated to the River Crouch, following mitigation. No monitoring is required.
Hazel Dormouse	**Potential Effects**	The hazel dormouse survey concluded that dormouse are likely **absent** from the Site as no evidence of dormouse was recorded during the dormouse surveys. Consequently, no

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		construction impacts to dormouse are anticipated as a result of habitat loss, fragmentation, noise and vibration, lighting, airborne dust or an increase in vehicular movement.
	Additional Mitigation	No additional mitigation required.
	Residual Effects and Monitoring	Hazel dormouse are considered absent from the Site and so no residual effects are anticipated. No monitoring is required.
Terrestrial Invertebrates	**Potential Effects**	Habitat suitable for SPI invertebrate species and glow worm (an Essex Priority Species) will be lost and fragmented as a result of the Proposed Development. However, habitat creation will increase the available habitat for SPI invertebrates and glow worms by providing a mix of other neutral grassland, scrub and woodland habitat, which will mitigate for this loss. Surface water run-off and hydrological changes may have an adverse effect on the available habitat for terrestrial invertebrates. Furthermore, any temporary artificial lighting, noise, and vibration impacts associated with the construction activities also has the potential to disturb terrestrial invertebrates within the Site. Dust pollution as a result of construction activities may also have an adverse effect on the available foraging habitat for terrestrial invertebrates. An increase in vehicular movements may also result in the direct loss of terrestrial invertebrates through impact with vehicles.
	Additional Mitigation	A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements as detailed in Section 7.6.5, in line with standard industry best practice. Where the use of artificial lighting is unavoidable, this will be implemented in accordance with a sensitive lighting strategy which will be secured through the CEMP and seek to avoid light spill onto retained woodland, scrub and waterbodies within the Site, and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation.
	Residual Effects and Monitoring	The Site's terrestrial invertebrate population are deemed important at District level. The magnitude of change, following mitigation, is Negligible. Therefore, there is likely to be **Negligible adverse** residual effect on terrestrial invertebrates **(not significant)** following the implementation of mitigation measures. No monitoring is required.
Birds – Wintering	**Potential Effects**	The decommissioned drained reservoir (flooded in the winter) within the Site are utilised by a variety of water bird species.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		However, the numbers of each species were typically low or infrequent in occurrence and unlikely to represent more than 1% of their respective county (Essex) wintering populations on a regular basis[43]. The numbers of wintering farmland birds recorded were also low. The Proposed Development will result in the loss and fragmentation of foraging resources used by wintering birds. However, habitat creation of waterbodies and grassland will mitigate for this loss. Temporary lighting associated with construction work outside of daylight hours, as well as operation of construction machinery and increase in vehicular movement will generate noise, and vibration disturbance across the Site, limiting the resources available to the wintering bird community. Wintering birds could also be detrimentally affected by the pollution of surface water run-off, hydrological changes to watercourses and localised creation of airborne particles (e.g. dust) during construction activities which may reduce their food availability within the Site.
	Additional Mitigation	A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements as detailed in Section 7.6.5, in line with standard industry best practice. Works outside of daylight hours will be avoided wherever possible. Where the use of artificial lighting is unavoidable, this will be implemented in accordance with a sensitive lighting strategy which will be secured through the CEMP and seeks to avoid light spill onto retained vegetation, ponds and surrounding areas. The lighting strategy will be reviewed by an ecologist prior to implementation.
	Residual Effects and Monitoring	Wintering birds are important at the Local level. The magnitude of change, following mitigation and habitat creation, is low. Therefore, there is likely to be a **Negligible adverse** residual effect on wintering birds (**not significant**) following the implementation of mitigation measures. No monitoring is required.
Breeding Birds	**Potential Effects**	Habitats within the Site including arable cropland, hedgerows and woodland support a wide variety of breeding bird species, largely comprised of those that are common and widespread. Furthermore, the decommissioned reservoir (flooded in the winter) may have supported breeding Little Ringed Plover, a species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). The Proposed Development would lead to loss of breeding bird habitat through removal of areas used for nesting (hedgerows, cropland and the decommissioned reservoir) and also for foraging (arable cropland), and destruction of nests and mortality of adults and young could occur as a result of the act of habitat clearance.

43 EBS (2024). The Essex Bird Report 2022. The Essex Birdwatching Society.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		Temporary lighting associated with construction work outside of daylight hours may detrimentally affect active bird nests within retained vegetated areas, if light spills onto these areas. Noise, and vibration impacts from construction activities and increase in vehicular movement have the potential to disturb nesting birds and would also likely deter birds from foraging within the Site. Breeding birds could also be detrimentally affected by the localised creation of airborne particles (e.g. dust) during construction. As well as pollution of waterbodies from surface run-off and hydrological changes to watercourses reducing the food availability for breeding birds. Hedgerows and woodland will be lost or subject to fragmentation, due to the construction footprint of the Proposed Development. However, it is expected that loss of existing hedgerows and woodland will be minor as the majority of the Proposed Development will stay within the existing arable fields. The flooded recently drained reservoir and cropland which supports a small population of breeding Skylark will also be lost. However, habitat creation will include species rich hedgerows, other broadleaved woodland, reedbed and other neutral grassland.
	Additional Mitigation	To mitigate for the loss of Little Ringed Plover breeding habitat, open, sparsely vegetated, gravelly or sandy areas adjacent to waterbodies should be incorporated into the landscape design. This will be considered for detailed design. A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements as detailed in Section 7.6.5, in line with standard industry best practice. Works outside of daylight hours will be avoided wherever possible. Where the use of artificial lighting is unavoidable, this will be implemented in accordance with a sensitive lighting strategy which will be secured through the CEMP and seeks to avoid light spill onto retained vegetation and surrounding areas. The lighting strategy will be reviewed by an ecologist prior to implementation.
	Residual Effects and Monitoring	Breeding birds are important at the District level. The magnitude of change, following mitigation, is low. Therefore, there is likely to be a direct, permanent, long-term **Minor Adverse** residual effect on breeding birds **(not significant)** following the implementation of mitigation measures. No monitoring is required.
Aquatic Receptors (Fish, Aquatic Macroinvertebrates and Macrophytes)	**Potential Effects**	Three ponds that achieved a PSYM quality category of Good and qualify as HPI (Ponds 1, 2 and 3 on **Figure 7-15 (Volume 2)**) will be retained as a result of the Proposed Development. However, three ponds (Ponds 4, 5 and 6 which achieved a PSYM quality category of Moderate and do not qualify as HPI) will be lost as result of the Proposed Development. However, habitat creation of parcels of reedbed and enhancement of watercourses (to be confirmed for reserved matters) will mitigate for this loss and therefore overall, the Proposed

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		Development is not expected to adversely affect the available habitat for aquatic receptors. Indirect impacts to aquatic receptors include pollution during the construction phase from potentially contaminated run-off containing sediment, chemicals and fuel. If allowed to enter the waterbody, construction-derived pollutants can cause direct mortality to aquatic species. Pollution may also lead to habitat degradation though reduction of water quality and available food sources, all of which may have an impact on aquatic receptors. Any elevated levels of suspended sediment from airborne dust from the Proposed Development is an ecological concern and could be considered a pollution event, which is prosecutable. Furthermore, temporary lighting associated with construction work outside of daylight hours may detrimentally affect fish and aquatic macroinvertebrates within retained ponds, if light spills onto these areas. Noise, and vibration impacts from construction activities and increase in vehicular movement have the potential to disturb fish and aquatic macroinvertebrates within retained ponds.
	Additional Mitigation	A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements as detailed in Section 7.6.5, in line with standard industry best practice. Furthermore, appropriately designed site drainage plan should be implemented. Where the use of artificial lighting is unavoidable, this will be implemented in accordance with a sensitive lighting strategy which will be secured through the CEMP and seek to avoid light spill onto retained waterbodies within the Site, and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation.
	Residual Effects and Monitoring	The Site's fish, aquatic macroinvertebrates and macrophytes are deemed important at Local level. The magnitude of change, following mitigation, is Low. Therefore, there is likely to be **Negligible adverse** residual effect on aquatic receptors **(not significant)** following the implementation of mitigation measures. No monitoring is required.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
Reptiles	**Potential Effects**	The majority of suitable reptile habitat will be retained according to the current design of the Proposed Development. The only suitable reptile area to be impacted is the Southern areas (see **Figure 7-15 (Volume 2)**) where a road is proposed (see **Access and Movement Parameter Plan** (Drawing Number: UK0041834.3001.OP.0)) which will result in a small permanent loss of foraging and possible breeding and hibernating habitat for reptiles within the Site. Clearance of habitats and refugia used by reptiles could lead to their death or injury. Landscaping measures to compensate for the small loss of these habitats are proposed within **Figure 8-1 Landscape & Visual Appraisal Plan**, including the creation of a grassland, reedbed and scrub habitat suitable for reptiles. Temporary lighting associated with any works outside of daylight hours may detrimentally affect reptiles within retained vegetation, if light spills onto these areas. Noise and vibration impacts from construction activities have the potential to disturb reptiles and would also likely deter reptiles from basking within the Site. Reptiles could also be detrimentally affected by the localised creation of airborne particles (e.g. dust) during construction activities and increase in vehicle movements associated with construction works for the Proposed Development. In addition, reptiles basking within the Site during the construction stage may be subject to injury or mortality from open excavations and pollution of waterbodies from surface water run-off and hydrological changes to watercourses may impact grass snake which are semi-aquatic.
	Additional Mitigation	A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements as detailed in Section 7.6.5, in line with standard industry best practice. Precautionary methods of working (PMoW) will be produced and included within the CEMP, which details appropriate working methods to avoid impacts to reptiles during the construction stage. This will include the following points: ▪ Habitat clearance of suitable reptile habitat will be undertaken in the active reptile season (March-September inclusive); and ▪ Displacement (through habitat manipulation) of reptiles from within suitable reptile habitat into adjacent land parcel boundary habitat, and hedgerows that will be retained as part of the Proposed Development. Works outside of daylight hours will be avoided wherever possible. Where the use of artificial lighting is unavoidable, this will be implemented in accordance with a sensitive lighting strategy which will be secured through the CEMP and will seek to avoid light spill onto adjacent reptile habitat. The lighting strategy will be reviewed by an ecologist prior to implementation.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	Reptiles are important at the Regional/County level, and the magnitude of change, following mitigation, is Negligible. Therefore, there is likely to be a direct, temporary, long-term **Negligible** residual effects on reptiles (**not significant**) following the implementation of mitigation measures. No monitoring is required.

OPERATIONAL PHASE

7.6.10. **Table 7-11** provides the key findings of the Operational Stage assessment.

Table 7-11 - Assessment of Potential Effects, Additional Mitigation, Residual Effects and Monitoring during Operation

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
Statutory Designated Sites: ▪ Essex Estuaries SAC ▪ Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar and SPA ▪ Benfleet and Southend Marshes Ramsar and SPA ▪ Foulness (mid-Essex Coast Phase 5) Ramsar and SPA ▪ Medway Estuary and Marshes Ramsar and SPA (UK9012031)	**Potential Effects**	A Habitats Regulations Assessment (HRA) has been undertaken to assess the likely significant effects arising on National Site Network and Ramsar sites within 20km of the Site (**Appendix 7-2: Habitat Regulations Assessment Report**). The HRA concluded that the Proposed Development will give rise to LSE from recreational pressure. The closest European Site to the Proposed Development covered by the Essex Coast RAMS is Essex Estuaries SAC, 2.4km northeast. At this distance, regular visits by residents of the Proposed Development (such as for dog walking or exercise) are unlikely. The Proposed Development is hydrologically linked with the Essex Estuaries SAC and Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar and SPA via Benfleet Brook. However, pollution control measures and measures to protect the Site's watercourses included within the design of the Proposed Development and the distance from the site to the Proposed Development makes it highly unlikely surface water run-off and hydrological changes would affect the site's habitats. Furthermore, any impacts from operational activities, such as noise and vibration, lighting and increase in vehicular movements are unlikely to affect the site's habitats given the distance from the Site. Section 3.3 of the Essex Coast RAMS HRA Strategy (Essex County Council, 2019) states that "*...on-site greenspace should be provided as part of individual developments (e.g. to include circular walks, dogs off lead areas etc.) to take some of the pressure off the coastal sites*". Residents are more likely to use the recreational space and walking routes included within the Proposed Development or the Public Rights of Way (PRoW) within the local countryside surrounding the Proposed Development to meet their regular needs. With significant on-Site greenspace proposed within the Proposed Development, including a park of 20ha which will be larger that The Wick Country Park, recreational disturbance effects would be broadly avoided.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		Therefore, the Proposed Development's contribution to disturbance at the Essex Coast RAMS sites alone would be negligible and would not result in adverse effects on the integrity of these European Sites.
	Additional Mitigation	The Site lies within the Essex Coast RAMS ZoI. The Essex Coast RAMS is a strategic solution to account for the 'in-combination' effects of increased recreational disturbance from new residents at internationally designated sites on the Essex coast. To mitigate for this effect, a financial contribution by payment of the appropriate tariff per dwelling will be made towards the Essex Coast RAMS.
	Residual Effects and Monitoring	These statutory designated sites are important at the international level, and the magnitude of change is Negligible. Therefore, there is likely to be **Negligible adverse** residual effect on statutory designated sites (**not significant**). No monitoring is required.
Non-statutory designated sites: ▪ The Wick Country Park LoWS ▪ Home Farm Meadow LoWS	**Potential Effects**	The Wick Country Park LoWS is located 500m west of the Site and Home Farm Meadow LoWS is located 860m southwest of the Site. Both designated sites are hydrologically connected to the Site via Benfleet Brook, consequently operational impacts of surface water runoff and hydrological changes are likely to cause degradation to the sites water quality. Other operational impacts comprising increase in vehicular movements, noise and vibration and lighting are not likely, given the distance between the LoWS sites and the Site. The Wick Country Park LoWS and Home Farm Meadow LoWS are located in close proximity to the Site and could be detrimentally affected by increased recreational pressure resulting from the Proposed Development. The Proposed Development includes the creation of green spaces to mitigate for the recreational pressure on these designated sites. Additionally, there are a number of public footpaths surrounding the Site which also provide access across the local surrounding rural area.
	Additional Mitigation	No additional mitigation required.
	Residual Effects and Monitoring	The Wick Country Park LoWS and Home Farm Meadow LoWS are important at the District level, and the magnitude of change is Negligible. Therefore, there is likely to be **Negligible adverse** residual effect (**not significant**). No monitoring is required.
On-Site habitats: ▪ Hedgerows ▪ Ponds ▪ Modified Grassland	**Potential Effects**	Habitats are not considered to be sensitive to noise, vibration or lighting, which adversely affects animals through disturbance rather than plants and the physical substrates they grow in. However, areas of retained habitats could be detrimentally affected by the increased in vehicle

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
▪ Dense Scrub ▪ Other Broadleaved Woodland Deciduous Woodland HPI		movements, surface water run-off pollution and hydrological changes. Where these habitats are retained as part of the Proposed Development, they could be detrimentally affected by increased recreational pressure resulting from the Proposed Development. The landscape plan (**Figure 8-1 Landscape & Visual Appraisal Plan)** includes the creation of a green spaces to mitigate for the recreational pressure on these priority habitats. Additionally, there are a number of public footpaths surrounding the Site which also provide access across the local surrounding rural area.
	Additional Mitigation	Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development, which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4). No other mitigation is required.
	Residual Effects and Monitoring	These habitats are important at the Local level, and the magnitude of change, following mitigation, is negligible. Therefore, there is likely to be **Negligible** adverse residual effects on other neutral grassland, hedgerows, ponds, dense scrub and lowland deciduous woodland (**not significant**) following the implementation of mitigation measures. No monitoring is required.
Off-Site habitats: ▪ Deciduous Woodland HPI; and ▪ Reedbed HPI.	**Potential Effects**	Habitats are not considered to be sensitive to noise, vibration or lighting, which adversely affects animals through disturbance rather than plants and the physical substrates they grow in. Furthermore, given the habitats are not within the Site, adverse impacts from increase in vehicular movements are unlikely. However, adjacent HPI's could be detrimentally affected by surface water run-off pollution and hydrological changes, Additionally, as Deciduous Woodland HPI and Reedbed HPI are located adjacent or close to the Site boundary, these habitats could be detrimentally affected by increased recreational pressure resulting from the Proposed Development. The landscape plan **(Figure 8-1 Landscape & Visual Appraisal Plan)** includes the creation of a green spaces to mitigate for the recreational pressure on these priority habitats. Additionally, there are a number of public footpaths surrounding the Site which also provide access across the local surrounding rural area.
	Additional Mitigation	Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development, which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4). No other mitigation is required.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	Deciduous Woodland HPI and Reedbed HPI is important at the County level, and the magnitude of change, following mitigation, is Negligible. Therefore, there is likely to be **Negligible adverse** residual effects on both priority habitats (**not significant**) following the implementation of mitigation measures. No monitoring is required.
Badger	**Potential Effects**	One active main badger sett, a partially active annex sett, partially active subsidiary sett and an active outlier sett is present within the Site Boundary and will be retained as part of the Proposed Development. The setts will experience higher levels of human activity by residents using the Public Rights of Way (PRoW) within the Site. This is likely to have an adverse effect on badgers, as the main sett is adjacent to a Public Right of Way (PRoW). Across the Site, an increase noise and vibration and an increase in vehicle movements and changes in movement patterns and timings could lead to additional disturbance to badger. Any permanent increase in levels of lighting as part of the Proposed Development has the potential to disturb badgers actively commuting or foraging across the Site. Furthermore, surface water run-off and hydrological changes may have an adverse effect on the available drinking water for badgers.
	Additional Mitigation	To buffer the main sett from an increase in use of the adjacent PRoW by residents, trees and shrubs will be planted along the watercourse edge between the PRoW and the watercourse. A detailed plan showing these buffer areas will be provided as a reserved matter and consultation with Natural England will be sort to confirm this mitigation is sufficient. Where the use of artificial lighting is unavoidable as part of the Proposed Development, this will be implemented in accordance with a sensitive lighting strategy which will seek to avoid light spill onto retained setts and commuting or foraging areas such as woodland, scrub, grassland and hedgerows within the Site and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation. Buffer planting around each sett will also be used to minimise noise and vibration disturbance. The Proposed Development will be designed so that any roads required will be situated a minimum of 30m away from retained setts and will not sever known commuting routes if possible. Therefore, reducing the impact of an increase in operational vehicle movements. Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development, which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4).

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	The Site's badger population are deemed important at District level. The magnitude of change, following mitigation, is Low. Therefore, there is likely to be **Minor** adverse residual effect on badger **(not significant)** following the implementation of mitigation measures. No monitoring is required.
Bats	**Potential Effects**	Operational surface water run-off and hydrological changes may have an adverse effect on the invertebrate community of which bats feed on. Trees assessed to have bat roost suitability may be subject to disturbance from permanent increase in levels of lighting, noise and vibration. In particular artificial lighting can delay or completely deter bats from leaving roosts, meaning that a key feeding period is missed as the peak insect abundance typically occurs around dusk, with knock-on impacts for growth and survival rates of young bats[Error! Bookmark not defined.]. Artificial lighting may also deter bats from using established commuting routes or foraging resources within the Site, resulting in habitat fragmentation. Increase in recreational pressure and disturbance from increase in vehicle movements is unlikely to have an impact on commuting and foraging bats, given that bats are nocturnal. However, roosting bats may experience higher levels of human activity by residents using the Public Rights of Way (PRoW) within the Site and disturbance from increase in vehicle movements.
	Additional Mitigation	Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development, which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4) Where the use of artificial lighting is unavoidable as part of the Proposed Development, this will be implemented in accordance with a sensitive lighting strategy which will seek to avoid light spill onto retained roosting, commuting and foraging areas such as retained woodland and hedgerows within the Site, and outside of the Site Boundary. The lighting strategy will focus on maintaining dark corridors for bats and will be reviewed by an ecologist prior to implementation. To reduce the disturbance to roosting bats from an increase in noise, vibration and vehicle movements and use of PRoW's by residents, buffer planting (including trees, shrubs and hedgerows) will be planted along PRoW's and around trees suitable for roosting bats. A detailed plan showing these buffer areas will be provided at reserved matters.
	Residual Effects and Monitoring	Bats are important at the Local level. The magnitude of change, following mitigation, is low. Therefore, there is likely to be a direct, temporary, medium-term **Minor adverse** residual effect on bats **(not significant)** following the implementation of mitigation measures. No monitoring is required.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
Amphibians	**Potential Effects**	GCN are deemed absent from the Site. Therefore there will be no potential effects on GCN as a result of the Proposed Development. Artificial lighting, surface water run-off and hydrological changes associated with operational activities, may have the potential to adversely affect other amphibians within the Site. Furthermore, amphibians attempting to commute or forage across the Site during the operational stage may be subject to injury or mortality from an increase in the number of vehicle movements by residents. Suitable amphibian habitat within the Site may experience increase in noise and vibration from increase in recreation pressure (residents using the Public Rights of Way (PRoW) or visiting green spaces) and increase in vehicular movement within the Site.
	Additional Mitigation	Where the use of artificial lighting is unavoidable as part of the Proposed Development, this will be implemented in accordance with a sensitive lighting strategy which will seek to avoid light spill onto suitable amphibian habitat such as woodland, scrub, grasslands and waterbodies within the Site and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation. To reduce the impact of an increase in operational vehicle movements, the Proposed Development will be designed so that any roads required will be situated away from woodland, scrub, grassland and waterbodies if possible. Where this is not possible, suitable speed signs to slow traffic will be installed and if needed a sign detailing potential for toads crossing will be installed. This strategy will be reviewed by an ecologist prior to implementation. Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4). To reduce the disturbance to amphibians from an increase in noise and vibration and increase in recreational pressure by residents, buffer planting (including trees, shrubs and hedgerows) will be planted along PRoW's and suitable amphibian habitat. A detailed plan showing these buffer areas will be provided at reserved matters.
	Residual Effects and Monitoring	The Site's amphibian population are deemed important at Regional / County level. The magnitude of change, following mitigation, is Low. Therefore, there is likely to be **Minor adverse** residual effect on amphibians **(not significant)** following the implementation of mitigation measures. No monitoring is required.
Otter	**Potential Effects**	Otter is deemed absent from the Site. Therefore, there will be no potential effects such as disturbance from lighting, noise, vibration, increase in vehicle movements or increased recreational pressure on otter as a result of the Proposed Development. However, the onsite watercourses are

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		tributaries of the River Crouch, so they have connectivity to the wider Crouch and Roach operational catchment, which in turn is connected to the Greater Thames Estuary (Essex Rivers Hub, n.d.), an area where otters have been recorded within the past 10 years (Essex Wildlife Trust, 2019). Therefore, pollution of both watercourses by surface water run-off and hydrological changes associated with operational activities may result in pollution of the River Crouch.
	Additional Mitigation	Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development, which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4).
	Residual Effects and Monitoring	Otters are considered absent from the Site and no residual effects are anticipated to the River Crouch, following mitigation. No monitoring is required.
Hazel Dormouse	**Potential Effects**	The hazel dormouse survey concluded that dormouse are likely **absent** from the Site as no evidence of dormouse was recorded during the dormouse surveys. Consequently, no operational impacts to dormouse are anticipated as a result of surface water run-off, hydrological changes, lighting, noise and vibration, increase in vehicle movements or increased recreational pressure.
	Additional Mitigation	No additional mitigation required.
	Residual Effects and Monitoring	Hazel dormouse are considered absent from the Site and so no residual effects are anticipated. No monitoring is required.
Terrestrial Invertebrates	**Potential Effects**	Artificial lighting, surface water run-off and hydrological changes associated with operational activities, may have the potential to adversely affect terrestrial invertebrates within the Site. Furthermore, terrestrial invertebrates attempting to commute or forage across the Site during the operational stage may be subject to injury or mortality from an increase in the number of vehicle movements by residents. Suitable terrestrial invertebrate habitat within the Site may experience increase in noise and vibration from increase in recreation pressure (residents using the Public Rights of Way (PRoW) or visiting green spaces) and increase in vehicular movement within the Site.
	Additional Mitigation	Where the use of artificial lighting is unavoidable as part of the Proposed Development, this will be implemented in accordance with a sensitive lighting strategy which will seek to avoid light spill onto suitable amphibian habitat such as woodland, scrub, grasslands and waterbodies within the Site and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		To reduce the impact of an increase in operational vehicle movements, the Proposed Development will be designed so that any roads required will be situated away from woodland, scrub, grassland and waterbodies if possible. Where this is not possible, suitable speed signs to slow traffic will be installed and if needed a sign detailing potential for toads crossing will be installed. This strategy will be reviewed by an ecologist prior to implementation. Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4). To reduce the disturbance to terrestrial invertebrates from an increase in noise and vibration and increase in recreational pressure by residents, buffer planting (including trees, shrubs and hedgerows) will be planted along PRoW's and suitable terrestrial invertebrate habitat. A detailed plan showing these buffer areas will be provided at reserved matters.
	Residual Effects and Monitoring	The Site's terrestrial invertebrate population are deemed important at District level. The magnitude of change, following mitigation, is Negligible. Therefore, there is likely to be **Negligible adverse** residual effect on terrestrial invertebrates **(not significant)** following the implementation of mitigation measures. No monitoring is required.
Birds – Wintering	**Potential Effects**	Any permanent increase in levels of noise and vibration and lighting as part of the Proposed Development has the potential to disturb birds overwintering within ponds and retained vegetated areas. Furthermore, surface water run-off and hydrological changes associated with operational activities, may have the potential to adversely affect wintering birds within the Site. Additionally, an increase in disturbance associated with recreational pressure may deter birds from over wintering within the Site.
	Additional Mitigation	Where the use of artificial lighting is unavoidable as part of the Proposed Development, this will be implemented in accordance with a sensitive lighting strategy which will seek to avoid light spill onto ponds and retained vegetation such woodland and hedgerows within the Site and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation. Buffer planting (including trees, shrubs and hedgerows) will be planted around suitable wintering bird habitat to minimise noise and vibration disturbance. A detailed plan showing these buffer areas will be provided at reserved matters. Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development, which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4).

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		The Proposed Development will be designed so that houses, roads and pedestrian pathways will be situated a minimum of 100m[44] from suitable wintering bird habitat including ponds, hedgerows and woodland, to reduce disturbance.
	Residual Effects and Monitoring	Wintering birds are important at the Local level. The magnitude of change, following mitigation, is low. Therefore, there is likely to be a **Negligible** residual effect on wintering birds (**not significant**) following the implementation of mitigation measures. No monitoring is required.
Breeding Bird	**Potential Effects**	Any permanent increase in levels of noise, vibration and lighting as part of the Proposed Development has the potential to disturb active bird nests within retained vegetation, if light spills onto these areas. Furthermore, surface water run-off and hydrological changes associated with operational activities, may have the potential to adversely affect breeding birds within the Site. An increase in disturbance associated with recreational pressure may deter birds from nesting within some areas of retained vegetation.
	Additional Mitigation	Where the use of artificial lighting is unavoidable as part of the Proposed Development, this will be implemented in accordance with a sensitive lighting strategy which will seek to avoid light spill onto retained vegetation such woodland and hedgerows within the Site, and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation. Buffer planting (including trees, shrubs and hedgerows) will be planted around suitable breeding bird habitat to minimise noise and vibration disturbance. A detailed plan showing these buffer areas will be provided at reserved matters. Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development, which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4). To reduce recreational disturbance, the Proposed Development will be designed so that houses, roads and pedestrian pathways will be situated a minimum of 50m[45] (minimum disturbance distance for passerines) from suitable breeding bird habitat for common and widespread species including hedgerows and woodland, if possible. Additionally, feasibility of houses, roads and pedestrian pathways situated a minimum of 100m[44] from waterbodies to protect Little Ringed Plover breeding habitat will be considered.

44 Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022). Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.
45 Currie, F. & Elliott, G. (1997) Forests and Birds: A Guide to Managing Forests for Rare Birds. Forest Authority, Cambridge and Royal Society for the Protection of Birds, Sandy, UK.

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
	Residual Effects and Monitoring	Breeding birds are important at District level. The magnitude of change, following mitigation, is low. Therefore, there is likely to be a **Negligible** residual effect on breeding birds (**not significant)** following the implementation of mitigation measures. No monitoring is required.
Aquatic Receptors (Fish, Aquatic Macroinvertebrates and Macrophytes)	**Potential Effects**	Artificial lighting, surface water run-off and hydrological changes associated with operational activities, may have the potential to adversely affect aquatic receptors within the Site. Ponds within the Site may experience increase in noise and vibration from increase in recreation pressure (residents using the Public Rights of Way (PRoW) or visiting green spaces) and increase in vehicular movement within the Site. Where the use of artificial lighting is unavoidable as part of the Proposed Development, this will be implemented in accordance with a sensitive lighting strategy which will seek to avoid light spill onto waterbodies and watercourses within the Site and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation. To reduce the impact of an increase in operational vehicle movements, the Proposed Development will be designed so that any roads required will be situated away from waterbodies and watercourses if possible. Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4). To reduce the disturbance to aquatic receptors from an increase in noise and vibration and increase in recreational pressure by residents, buffer planting (including trees, shrubs and hedgerows) will be planted along PRoW's and around ponds. A detailed plan showing these buffer areas will be provided at reserved matters.
	Additional Mitigation	A CEMP will be produced for the Proposed Development in advance of the construction stage, which will include the following elements as detailed in Section 7.6.5, in line with standard industry best practice. Furthermore, appropriately designed site drainage plan should be implemented. Where the use of artificial lighting is unavoidable, this will be implemented in accordance with a sensitive lighting strategy which will be secured through the CEMP and seek to avoid light spill onto retained waterbodies within the Site, and outside of the Site Boundary. The lighting strategy will be reviewed by an ecologist prior to implementation.
	Residual Effects and Monitoring	Fish, aquatic macroinvertebrates and macrophytes are important at the Local level. The magnitude of change, following mitigation, is low. Therefore, there is likely to be a **Negligible** residual effect on aquatic receptors (**not**

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		significant) following the implementation of mitigation measures. No monitoring is required.
Reptiles	**Potential Effects**	Across the Site, an increase in noise, vibration and vehicle movements from residents could lead to disturbance of reptiles. A permanent increase in levels of lighting as part of the Proposed Development has the potential to disturb reptiles if light spills onto habitat and reptile refugia. In addition, pollution of waterbodies from surface water run-off and hydrological changes to watercourses may impact grass snake which are semi-aquatic. An increase in disturbance associated with recreational pressure may also deter reptiles from basking, foraging and hibernating within the Site, and could displace reptiles already living within the Site.
	Additional Mitigation	Where the use of artificial lighting is unavoidable as part of the Proposed Development, this will be implemented in accordance with a sensitive lighting strategy which will seek to avoid light spill onto retained vegetation within the Site. The lighting strategy will be reviewed by an ecologist prior to implementation. Buffer planting (including trees, shrubs and hedgerows) will be planted around suitable reptile habitat to minimise noise and vibration disturbance. A detailed plan showing these buffer areas will be provided at reserved matters. Measures to protect waterbodies and watercourses within the Site will be incorporated into the design of the Proposed Development, which will follow Pollution Prevention for businesses (as detailed in Section 7.6.4). To reduce the disturbance to basking, foraging and hibernating reptiles from an increase in use of PRoW's by residents, buffer planting (including trees, shrubs and hedgerows) will be planted along PRoW's. A detailed plan showing these buffer areas will be provided at reserved matters.
	Residual Effects and Monitoring	Reptiles are important at the Regional/county level, and the magnitude of change, following mitigation, is low. Therefore, there is likely to be a direct, temporary, medium-term **Minor adverse** residual effects on reptiles (**not significant**) following the implementation of mitigation measures. No monitoring is required.

7.7 ASSESSMENT OF COMBINED EFFECTS

7.7.1. The impact assessment in **Table 7-10** and **Table 7-11** has included the in-combination effects of air quality, noise and vibration, visual impacts, traffic and transport, and hydrological changes on the sensitive receptors identified within this chapter.

7.8 ICCI ASSESSMENT

7.8.1. In the long-term, it is anticipated that there will be a change in Site conditions associated with changes in the climate over the next 10 years, and which would continue after this period. This is likely to include warmer wetter winters, hotter drier summers and increased occurrence of extreme weather events resulting in flooding and drought.

7.8.2. Significant climate change impacts that are considered likely to affect the Site's ecological features include increased risk of flooding of the Site (leading to potential runoff pollution, eutrophication, soil erosion and silt deposition, waterlogging and associated habitat degradation), increased drought and heatwaves (leading to plant die back, impenetrable ground increasing risk of flash floods, water quality deterioration, algal blooms, risk of fire, and associated habitat degradation), and high winds (leading to erosion and tree loss or damage).

7.8.3. As a consequence, the plant composition of habitats is likely to change to favour more resilient species resulting in a potential reduction in diversity, and the structure of habitats may also change to include areas of dieback and gaps due to decline in plant health and survival rates. This may have a knock-on effect on the species that rely on these habitats, potentially resulting in a decline in populations of species such as reptiles, birds and bats.

7.8.4. In the absence of mitigation, these impacts could act in combination with effects detailed in **Table 7-10** and **Table 7-11**, resulting in additional loss and degradation of habitats and species. For example, this may occur due to drought stressed habitats and species being more susceptible to impacts from construction and operation, and potentially faster spread of invasive species in a warmer climate.

7.8.5. The impact of future climate change in combination with the effects detailed in **Table 7-10** and **Table 7-11** would be mitigated by measures described in **Table 7-10**, including habitat creation and enhancement of existing woodland. Furthermore, measures to reduce potential air quality impacts are detailed in Chapter 5: Air Quality, such as avoiding combustion as a source of energy, ease of access to public transport, designated cycle routes and Electric Vehicle Charging Infrastructure. Consequently, no significant adverse in combination effects on the ecological features or the efficacy of the reported mitigation measures throughout the lifetime of the Project will be expected.

7.8.6. Temporary effects are not considered within the ICCI, due to the limited exposure to climate change trends during this timeframe.

7.9 DETAIL OF ADDITIONAL MITIGATION

BADGER

7.9.1. It is recommended, wherever possible, that effects upon badgers are avoided through designing proposals to avoid direct effects upon or in close proximity to any of the setts identified as part of this survey. However, it is understood that it is unlikely to be possible to achieve the aims of the Proposed Development without affecting badger setts, as construction of the Proposed Development will take place within 30m of the main sett. Therefore, all works within 30m of the main sett will be carried out under a protected species mitigation licence for badger obtained from Natural England, comprising specific mitigation and monitoring measures for this species, laid out in a method statement.

7.9.2. In addition, recommendations have been provided to avoid and minimise potential indirect effects upon badgers during construction and for measures to be designed into the Proposed Development to avoid adverse effects once it is operational.

COMPLETION OF WORKS IN PROXIMITY TO SETTS, WHERE DIRECT EFFECTS UPON THE SETT CAN BE AVOIDED

7.9.3. Badgers are also legally protected from disturbance whilst occupying setts. Disturbance can result from various construction activities, for example, vibration, noise, lighting and vegetation clearance[46] around setts. Some activities, such as pile driving, are likely to cause disturbance at a much greater distance from the sett.

7.9.4. Where a sett can be retained within the Proposed Development and the required construction works within the vicinity of the sett can be completed in such a way as to ensure the sett will not be disturbed or damaged, a mitigation licence from Natural England[47] to close and remove the sett will not be required. In such cases, construction activities near the sett should follow methods to ensure it is not affected and works in the vicinity of the sett will be completed under a Precautionary Method of Work (PMoW). A PMoW will involve a report detailing specific methods to be used in the vicinity of the sett, and these works may need to be carried out under the supervision of a suitably experienced ecologist.

7.9.5. Consideration should be given on an individual basis to each sett where direct effects can be avoided. All setts, excluding the disused potential outlier sett (S6), lie within the boundary for the Proposed Development. It will be necessary to consider the proposed construction methods (equipment, plant and working methods) and the location, duration and timing in which these will be applied in the context of the location of the sett, sett status, and likely orientation of tunnels below ground. It is not possible at this stage to conclusively state whether disturbance is likely in the absence of detailed construction working method statements, but general good practice recommendations to avoid disturbance have been provided below to inform the selection of construction working methods in proximity to setts.

[46] Please note this is not an exhaustive list.
[47] Natural England do not frequently issue licences for disturbance as wherever possible measures should be taken to avoid disturbance (for example modifying construction timings or working methods).

- In general, all construction activities within 30m of a sett should be avoided during the breeding season (i.e. they should be completed between July and November inclusive); and pile driving or other high vibration activities should be avoided within 100m of a sett (though specific consideration should be given to each situation as described above).
- A zone of 30m around setts in which no construction works are permitted without special permission should be clearly demarcated during the construction period. Where possible, this should be fenced (for example with Netlon or similar highly visible material), with fencing clearly labelled to avoid the risk of re-alignment or removal of fencing (fencing should be at least 180mm above ground level to enable badgers to pass beneath). Precautionary good practice working methods should be implemented within this zone for activities not associated with construction within the zone, but necessary for construction within the wider site. These could include limiting the time heavy plant can wait within the zone, preventing storage of large quantities of material and preventing noisy activities such as generator use.
- All construction activities should be avoided within 30m of sett entrances.
- Non-percussive construction techniques such as dead weight rollers and low vibration retaining wall construction methods (not high vibration piling) should be utilised wherever possible.
- The duration of time in which high vibration activities occur should be minimised, for example, restricting these to the morning only, enabling badgers to rest undisturbed through the afternoon and early evening.
- Unavoidable vegetation removal within 30m of a sett should be completed sensitively using hand tools (to include chainsaws and brush cutters) rather than tracked machinery. No soft landscaping works should take place within 10m of a sett.

7.9.6. In addition to the avoidance of effects upon the setts within the Site, the following recommendations should be followed across the Proposed Development site during the construction period to minimise effects upon badger movement and foraging behaviour:

- Avoid blocking badger runs which are not directly affected by the Proposed Development.
- Avoid leaving open trenches into which animals could fall; if this is not possible, a means of egress should be provided, such as a plank. It should be ensured that dangerous areas such as deep excavations are fenced to prevent badger access or covered overnight, whilst ensuring at least one safe crossing point of the construction footprint is available within 100m.
- Avoid storage of plant or materials in areas of potential foraging habitat (such as retained grassland).
- Raise all fencing at least 180mm above ground level to ensure badgers can continue to move freely (unless intentionally installed to prevent access to unsafe areas).
- Avoid night work where possible, to avoid disturbance through the use of artificial lighting, and ensure the Proposed Development site is left unlit at night during the construction period. If lighting of some areas is unavoidable, hoods, cowls, or shields should be used to avoid light spill onto setts or known badger paths.

CREATION OF ALTERNATIVE FORAGING HABITAT AND MINIMISATION OF OPERATIONAL EFFECTS (ROAD MORTALITY)

7.9.7. Further to the above, incorporation of the following recommendations within the design of the Proposed Development is recommended to compensate for the loss of suitable foraging habitat and to minimise effects (for example, as a result of road mortality) upon badgers foraging and moving across the Site once the works are complete:

- Solid, permanent fencing within, or along the boundary of the Proposed Development (except where fencing is used to funnel badgers towards tunnels to avoid road traffic accidents) should be avoided. If fencing is required, it should be raised at least 180mm above the ground to enable free movement of badgers beneath any fencing.
- In addition, badger accesses should be designed into any necessary close-boarded or acoustic fencing, should this be required, to maintain permeability at a landscape scale. These should comprise gaps at the base of the fencing every 100m, 220mm wide by 360mm high.
- Permanent lighting of the Proposed Development should be minimised, and where unavoidable, hoods and cowls should be used to focus light onto the required areas and minimise light spill onto new landscaping or retained vegetated areas.
- Native hedgerows, shrub planting, and grassland areas should be incorporated within designs to compensate for the loss of foraging habitat associated with the Proposed Development. New landscaping should include the use of native fruiting species (such as blackthorn *Prunus spinosa*, apple *Malus* spp., pear *Pyrus communis*, hawthorn *Crataegus monogyna*, plum *Prunus domestica*, native roses *Rosa canina* or *R. arvensis*, and raspberry *Rubus idaeus*), to compensate for the loss of suitable foraging habitat.

REPTILES

7.9.8. Where possible, habitats known to support reptiles should be retained within the Proposed Development design. Although reptile habitat is not directly protected by law, habitat removal or alteration has the potential to cause death or injury to individual reptiles, and this should be avoided to ensure legal compliance.

7.9.9. The majority of reptiles were recorded within the grassland habitat to the east, outside of the Site boundary. Within the Site boundary reptiles are also known to be present within the grassland to the south, and the tall ruderal habitat within the woodland to the west.

7.9.10. If habitat cannot be retained within the Site, mitigation measures should be implemented to avoid direct and/or indirect effects on reptiles, including detrimental effects on the local reptile population as a whole. The Proposed Development could affect reptiles in the following ways:

- Killing, injury and disturbance of individuals during the construction phase;
- Loss and fragmentation of reptile habitat; and
- Long-term impacts associated with human disturbance and recreational pressures, including increased predation from domestic cats.

7.9.11. It is likely that prior to site clearance, a programme of displacement or translocation will be required during the active reptile season (April-October, but subject to weather conditions). Vegetation clearance in the areas where reptile presence has been confirmed should be avoided in the winter months:

- **Displacement**: Reptiles could be displaced from the other areas of suitable habitat that require removal and into habitat that will be retained. Once further information regarding the Proposed Development is known, a reptile mitigation plan should be produced to ensure displacement is undertaken in an appropriate manner, and to ensure the retained habitat on Site is managed in a way that will ensure the success of the reptile population on Site. This could include some destructive search methods, as outlined in Appendix C.
- **Trapping and translocation**: Movement of reptiles from areas to be affected by the Proposed Development once the receptor habitat has been identified and prepared. If existing reptile habitat cannot be retained within the Site, a receptor site should be identified. This should be of equivalent or greater size and habitat quality to the area of suitable reptile habitat to be lost and not contain an existing reptile population; alternatively, sufficient enhancements should be possible to ensure additional individuals can be supported within the habitat area available. Trapping and translocating must be completed in advance of works. Once further information regarding the Proposed Development is known, a reptile mitigation plan should be produced to ensure trapping and translocation is undertaken in an appropriate manner.

7.9.12. In the longer term, newly created receptor habitat should be managed to provide habitat for reptiles during the operational phase of the Proposed Development. Long-term maintenance should include a 'reptile-friendly' cutting regime, and maintenance of long sward levels during summer months. It is recommended that this be set out in a habitat management plan, which includes a commitment to monitoring the reptile population present.

7.10 OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

7.10.1. Ecological enhancements will be explored though the completion of a BNG Assessment for the Proposed Development. The Assessment will make use of the latest Statutory Biodiversity Defra Metric which provides a baseline assessment of the Biodiversity Unit (BU) value of the existing habitats.

7.10.2. Through an iterative approach to landscape proposals, habitat creation and enhancement (including enhancement of woodland and watercourses) will be designed and assessed against the metric to provide a post-development BU value. This approach will be taken in order to quantify and evidence that the Proposed Development is able to achieve positive gains for biodiversity.

7.10.3. In addition to the Defra Metric, alternative options for enhancing biodiversity across the Site will be explored, focussing on increasing opportunities for notable and/or protected species which are either confirmed to, or may use, the Site. These may include, but are not limited to:

- Habitat value enhancement, such as increasing botanical species diversity through creating new native habitats and enhancing existing habitats through planting appropriate native species.
- Bat roost features in buildings, permanent suitable structures and bat boxes.
- Create and retain dark linear features across the Site to ensure commuting and foraging habitat for bats and other nocturnal species.

- Bird boxes such as traditional bird boxes and bat boxes on retained mature trees.
- Designated reptile habitat, which includes hibernacula, log-piles, tussocky grassland and water features to increase the overall reptile population and species diversity on site.
- Habitat creations of reedbeds and dense scrub in line with the Nature partnership strategy.
- Include underpasses to allow safe passage for badger beneath roads[48].

7.10.4. Overall general ecological enhancements on Site include:

- Key retained ecological boundary features (including woodland areas) will be enhanced through measures including the provision of buffer planting;
- The enhancement of existing habitats and the creation of new linear habitats (including hedgerow, woodland and grassland planting) provides a greater network of connective habitat across the Site for a range of species, including bats, badgers and small mammals, amphibians and reptiles; and
- Proposed planting schedules include a range of native shrub planting of benefit to wildlife, including hazel *Corylus avellana*, as well as a range of fruiting species including rowan *Sorbus aucuparia*, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and honeysuckle *Lonicera periclymenum* of benefit to a range of species including foraging bats, birds and small mammals.

7.10.5. In line with guidance from the Amphibian and Reptile Conservation Trust (ARC; n.d.) and Edgar et al (2010, specific enhancement measures for reptiles include:

- Low intensity 'reptile friendly' cutting regime along retained and created woodland edges and other interface scrub habitats, allowing long grass to provide cover for reptile species during summer months.
- Ensuring created habitats within the Proposed Development are connected to high-quality habitat areas outside the Site, thus allowing for the potential colonisation by reptiles in the future of these areas, and enhancing habitat connectivity in the local area.
- The provision of one / more 'egg laying heaps' for grass snakes. These are primarily piles of rotting vegetation in which grass snakes lay their eggs (usually in the early summer) and which provide protection from predation, as well as a constant temperature in which the eggs can develop. Additional vegetative material should be added each year to ensure the long-term maintenance of high-quality habitat.

[48] Badgerland (2023). Badgers, Tunnels. Available at: https://www.badgerland.co.uk/help/helpbadgers/tunnels.html.

7.11 LIMITATIONS AND ASSUMPTIONS

7.11.1. Post completion of the PEA and protected species surveys, the Site boundary was amended to exclude areas east of the A130 dual carriage way and north of the A129 single carriage way. Isolated sections were also joined to comprise one whole site which was also extended to include a larger section of an arable field. The paddock area within Dollymans Farm was also included. This is not considered to be a significant limitation as the majority of the Survey Area's covered these additional areas and extra survey visits were scheduled to assess the paddock area. Where the amendment of the Site boundary has potentially caused a limitation, this has been detailed within the limitation sections of the ecology baseline reports.

7.11.2. Ecological survey data is typically valid for two years unless otherwise specified, for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management. After this time, or if management regimes change, a further walkover survey is recommended.

7.11.3. Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage.

7.11.4. Badger sett status can change quickly. New setts can be excavated, or for example, outlier or subsidiary setts can quickly be reoccupied after a long period of disuse. The data within this report represents an accurate assessment of badger activity within the Site at the time of survey, but there is potential for sett locations, status, or level of activity to change prior to the commencement of works within the Site.

7.11.5. Some areas of the Site were covered in dense bramble and scrub, which limited access for the badger survey. The woodland and scrub present along the west edge of the Site were, in places, inaccessible due to dense, impenetrable bramble and scrub vegetation. This is not considered to be a significant limitation, as a suitable assessment could be made by surveying the perimeter of these areas of inaccessible woodland and scrub for badger paths leading into the vegetation, providing an indication of the level of badger use.

7.11.6. The construction waste landfill site to the south of the Site could not be accessed for the badger survey but falls within the 30m survey buffer zone. However, an active industrial site with frequent vehicle movement is not suitable for badger sett excavation. Therefore, the omission of this area from the survey is not a constraint to the data. Furthermore, the construction waste landfill site was later accessed on 16th April 2025, during a GCN eDNA survey, with no evidence of badger activity observed.

7.11.7. The location of badger field signs recorded on Field Maps during the survey is to varying degrees of accuracy depending on the GPS signal strength. This was not considered to be a major survey limitation as grid references were always recorded to within 10m, which is an acceptable level of accuracy to assess general badger activity. Surveyors could also manually change the positioning of records based on aerial imagery.

7.11.8. Pond 7 is within the decommissioned reservoir and is a pool of water which has collected due to flooding. Pond 7 is devoid of vegetation and is deemed only of value to waterbirds. Therefore, it is not suitable for GCN and was therefore not included in the HSI assessment or tested for GCN eDNA.

7.11.9. Pond 8 is situated in a private garden and therefore could not be accessed to carry out an GCN eDNA survey. This is not considered to be a significant limitation as a photo could be taken to allow for an HSI assessment. Additionally, the pond is outside the Site boundary and so will not be lost as a result of the Proposed Development.

7.11.10. Pond 10 was not safe to survey for GCN eDNA due to its steep banks. This is not considered to be a significant limitation as an HSI assessment could be carried out which deemed the pond as not suitable for GCN, given it is within an active quarry site with no vegetation, poor water quality and lack of suitable surrounding terrestrial habitat.

7.11.11. Pond 12 is also in a private garden and therefore could not be accessed to carry out an GCN eDNA survey. Furthermore, a view of this pond was not possible and therefore an HSI assessment could not be carried out. This is not considered to be a significant limitation as the pond is outside the Site boundary and so will not be lost as a result of the Proposed Development.

7.11.12. During the otter survey heavy rainfall occurred between the first and second day of surveying. While precipitation may have reduced the visibility of certain field signs, such as spraints and footprints, other indicators of otter activity, such as potential resting sites and potential holts, remained observable. Additionally, survey work was completed on Day 1 prior to the onset of heavy rain, ensuring that at least part of the assessment was conducted under optimal conditions. Therefore, the occurrence of rainfall was not considered a significant limitation.

7.11.13. Access to sections of the watercourses within the Survey Area was limited (see **Figure 7-13** (**Volume 2)**) due to steep banks, deep water, or dense surrounding vegetation. These safety constraints meant that the entire length of the watercourse banks could not be surveyed for otter.

7.11.14. Some otter field signs may not have been identified within the watercourses due to access limitations. However, this is not considered to be a significant limitation, as a sufficient assessment of the presence or absence of otter within the Site was possible from the sections of watercourse that was accessible, the habitat suitability assessment and desk study information.

7.11.15. Some bird species are more difficult to detect due to their shy or secretive nature and therefore may have gone undetected by this survey. As a constraint applicable to all bird surveys, this is not considered to be a significant limitation of this study.

7.12 SUMMARY

7.12.1. A summary table of the likely effects, mitigation and residual effects is included in **Table 7-12** below.

Table 7-12 – Summary of Effects

Issue	Likely Significant Effect	Mitigation	Likely Residual Effect
Construction			
Statutory Sites	Negligible effect (not significant).	No additional mitigation required.	Negligible effect (not significant).
Non-statutory designated sites	Negligible effect (not significant).	Follow control measures within the CEMP.	Negligible effect (not significant).

Issue	Likely Significant Effect	Mitigation	Likely Residual Effect
On-site habitats – Deciduous Woodland HPI, hedgerows, ponds and dense scrub.	Direct, permanent, long-term Minor adverse effects on hedgerows, ponds and dense scrub (not significant). Direct, permanent, long-term Minor to Moderate adverse effects on Lowland Deciduous Woodland (Significant).	Implement habitat creation and enhancement and follow control measures within the CEMP.	Direct, permanent, long-term Minor adverse residual effects on hedgerows, dense scrub and ponds (not significant). Direct, permanent, long-term Minor adverse residual effects on Lowland Deciduous Woodland (not significant).
Offsite HPIs	Negligible effect (not significant).	Follow control measures within the CEMP.	Negligible effect (not significant).
Badger	Direct, permanent, long-term Minor to Moderate adverse effects on Badgers (Significant).	All works within 30m of the main sett and outlier sett will be carried out under a protected species mitigation licence for badger obtained from Natural England, comprising specific mitigation and monitoring measures for this species, laid out in a method statement. Follow control measures within the CEMP. Sensitive lighting strategy.	Direct, permanent, long-term Minor adverse residual effects on Badgers (not significant).
Bats	Negligible effect (not significant).	Follow control measures within the CEMP. Sensitive lighting strategy.	Negligible effect (not significant).
Amphibians	Negligible effect (not significant).	Follow control measures within the CEMP. Sensitive lighting strategy.	Negligible effect (not significant).
Otter	Absent from Site.	Follow control measures within the CEMP.	Absent from Site. Negligible effect (not significant).
Hazel Dormouse	Absent from Site.	No mitigation required.	Absent from Site. Negligible effect (not significant).
Terrestrial Invertebrates	Negligible effect (not significant).	Follow control measures within the CEMP. Sensitive lighting strategy.	Negligible effect (not significant).

Issue	Likely Significant Effect	Mitigation	Likely Residual Effect
Wintering Birds	Negligible effect (not significant).	Follow control measures within the CEMP. Sensitive lighting strategy.	Negligible effect (not significant).
Breeding Birds	Direct, permanent, long-term Minor adverse effects (not significant)	Implement habitat creation and enhancement for Little Ringed Plover and follow control measures within the CEMP. Sensitive lighting strategy.	Direct, permanent, long-term Minor adverse residual effects (not significant)
Aquatic receptors (Fish, aquatic macroinvertebrates and macrophytes)	Negligible effect (not significant).	Follow control measures within the CEMP. An appropriately designed site drainage plan should be implemented. Sensitive lighting strategy.	Negligible effect (not significant).
Reptiles	Direct, temporary, medium-term Minor to Moderate adverse (significant).	Follow control measures within the CEMP, including a Precautionary Method of Working (PMoW) to avoid impacts to reptiles. Sensitive lighting strategy.	Direct, temporary, medium-term Minor adverse (not significant).
Operational			
Statutory Sites	Negligible effect (not significant).	A financial contribution by payment of the appropriate tariff per dwelling will be made towards the Essex Coast RAMS.	Negligible effect (not significant).
Non-statutory designated sites	Negligible effect (not significant).	No additional mitigation required.	Negligible effect (not significant).
On-site habitats	Negligible effect (not significant).	Creation of green spaces. Measures to protect waterbodies and watercourses.	Negligible effect (not significant).
Offsite HPIs	Negligible effect (not significant).	Creation of green spaces. Measures to protect waterbodies and watercourses.	Negligible effect (not significant).

Issue	Likely Significant Effect	Mitigation	Likely Residual Effect
Badger	Direct, permanent, long-term Minor adverse effects (not significant)	Sensitive lighting strategy The Proposed Development will be designed so that any roads required will be situated a minimum of 30m away from retained setts and will not sever known commuting routes if possible. Measures to protect waterbodies and watercourses. Buffer planting around setts and along PRoWs.	Direct, permanent, long-term Minor adverse residual effects (not significant)
Bats	Direct, temporary, medium-term Minor adverse residual effect on bats (not significant	Sensitive lighting strategy Measures to protect waterbodies and watercourses. Buffer planting around retained woodland and along PRoWs.	Direct, temporary, medium-term Minor adverse residual effect on bats (not significant
Amphibians	Direct, temporary, medium-term Minor to Moderate adverse residual effect on amphibians (significant).	The Proposed Development will be designed so that any roads required will be situated away from woodland, scrub, grassland and waterbodies if possible. Where this is not possible, suitable speed signs to slow traffic will be installed and if needed a sign detailing potential for toads crossing will be installed. Measures to protect waterbodies and watercourses. Sensitive lighting strategy Buffer planting around waterbodies and along PRoW.	Direct, temporary, medium-term Minor adverse residual effect on amphibians (not significant).
Otter	Absent from Site.	Measures to protect waterbodies and watercourses.	Absent from Site. Negligible effect (not significant).
Hazel Dormouse	Absent from Site.	No mitigation required.	Absent from Site. Negligible effect (not significant).

Issue	Likely Significant Effect	Mitigation	Likely Residual Effect
Terrestrial Invertebrates	Direct, temporary, medium-term Minor to Moderate adverse residual effect on terrestrial invertebrates (significant).	The Proposed Development will be designed so that any roads required will be situated away from woodland, scrub, grassland and waterbodies if possible. Measures to protect waterbodies and watercourses. Sensitive lighting strategy Buffer planting around waterbodies and along PRoW.	Direct, temporary, medium-term Minor adverse residual effect on terrestrial invertebrates (not significant).
Wintering Birds	Negligible effect (not significant).	Sensitive lighting strategy The Proposed Development will be designed so that houses, roads and pedestrian pathways will be situated a minimum of 100m[44]) from suitable wintering bird habitat including ponds, hedgerows and woodland, to reduce disturbance. Measures to protect waterbodies and watercourses.	Negligible effect (not significant).
Breeding Birds	Direct, permanent, long-term Minor adverse residual effects (not significant)	Sensitive lighting strategy. The Proposed Development will be designed so that houses, roads and pedestrian pathways will be situated a minimum of 50m[45] from suitable passerine breeding bird habitat and 100m[44] from suitable Little Ringed Plover breeding habitat. Measures to protect waterbodies and watercourses.	Direct, permanent, long-term Minor adverse residual effects (not significant)
Aquatic receptors (Fish, aquatic macroinvertebrates and macrophytes)	Negligible effect (not significant).	Follow control measures within the CEMP. An appropriately designed site drainage plan should be implemented. Sensitive lighting strategy.	Negligible effect (not significant).
Reptiles	Direct, temporary, medium-term Minor to Moderate adverse (significant).	Sensitive lighting strategy Measures to protect waterbodies and watercourses. Buffer planting around suitable reptile habitat and along PRoWs.	Direct, temporary, medium-term Minor adverse (not significant).

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