

Ecological Impact Assessment

Chapel Gate, Basildon on behalf of
Sempra Homes Ltd

Our reference: DFCEP 3791

Date: 25 March 2021

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Provided no significant changes are made to the proposal (where provided) or on the proposed site (*e.g.* significant changes to management practices or habitats present) subsequent to the report's issue; this report can be considered valid for 18 months from the date of issue.

Document History

This document has been issued and amended as follows:

Version	Initial Survey Date	Report Issue Date	Description	Author	Job Title	Verified and Approved by	Job Title
1	24.03.2020	25.03.2021	Final Version	Sophie Lancaster	Ecologist and Director of SoEcology Ltd	Alexandra Zemanova	Assistant Consultant Ecologist

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Qualifications of Principal Author

Recommendations included within this report are the professional opinion of an experienced ecologist, based on an ecological site survey and the client's proposal for the site.

The site surveys were managed and predominantly carried out by Alexandra Zemanova and report was produced by Sophie Lancaster. Alexandra is an assistant ecological consultant with a BSc (Hons) in Ecology and Conservation and an MSc in Species Identification and Survey Skills, and is a holder of Natural England's class 1 survey licence for great crested newts. She is also a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Sophie Lancaster is Director and Ecologist at SoEcology Ltd. Sophie has completed a masters (MSc) in Environmental Consultancy and has been working in private consultancies since 2013. She is an Associate member of CIEEM. Sophie holds protected species licences for bats (level 2 class licence) and great crested newt (class 1).

Quality Assurance

This report has been produced in accordance with guidelines produced by CIEEM and British Standards Institute (BSI):

- BSI (2013) *Biodiversity – Code of practice for planning and development. BS 42020: 2013.*
- CIEEM (2017) *Guidelines on Ecological Report Writing.* Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1 Updated September 2019.* Chartered Institute of Ecology and Environmental Management, Winchester.

All ecological reports produced by DF Clark Contractors Ltd are checked, verified, and approved by a second competent ecologist.

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1 Summary

1.1 Purpose of the Report

The purpose of the Ecological Impact Assessment (EclA) report is to support a planning application for the construction of 233 new residential units comprising 16 houses and 217 apartments. The site predominantly comprises a hardstanding car park on the east and woodland and semi-improved grassland to the west. The majority of the woodland will be retained as part of the development proposals.

This report supersedes the 'Updated Ecological Appraisal Report' issued by D F Clark Contractors Ltd (formally known as D F Clark Bionomique Ltd) in June 2020. The report included the results of an ecological appraisal carried out on Laindon Link Car Park 14, Basildon (central grid reference TQ 69836 88343), on 24th March 2020. The survey was undertaken to update previous ecological data obtained during surveys in 2016 (Peter Brett Associates LLP, 2016).

This report includes the survey results from the Extended Phase 1 Habitat Survey, bat emergence surveys on a tree assessed to be of moderate suitability for roosting bats, and reptile surveys undertaken by both D F Clark Contractors Ltd and Peter Brett Associates LLP, in 2020 and 2016, respectively. As well as, badger sett monitoring survey undertaken by D F Clark Contractors Ltd in 2020 and 2021.

1.2 Key Impacts and Mitigation/Compensation Measures

The EclA has identified the risk of increased recreational impacts on the Thames Estuary and Marshes SPA and Ramsar site and Langdon Ridge SSSI. Mitigation has been proposed within this report in accordance to the Essex Coast RAMS SPD. This includes the provision of financial contributions and site-specific mitigation in the form of information boards to promote residents to utilize less sensitive sites.

The application site is dominated by habitats of low ecological value. The habitat of greatest ecological value is the semi-natural broad-leaved woodland assessed to be of local value. The semi-natural broad-leaved woodland will be partially lost to facilitate the development. Precautionary measures to prevent damaging the remaining woodland has been provided within this report. The minor loss cannot be avoided and therefore, compensation measures have been included in the form of a woodland management plan, with the aim of enhancing the remaining woodland habitat.

A mitigation strategy has been proposed for the translocation of reptiles to an on-site receptor. The badger outlier sett is to be removed via a Natural England CL35 licence within the months of July to November, inclusively. Precautionary measures have been proposed for bat activity, trees of low suitability for roosting bats, nesting birds, hazel dormouse and hedgehog.

Compensation measures have been proposed to make negative residual effects following mitigation into positive effects, which is considered achievable for the collective loss of the low value habitats on-site. Following compensation, no negative impacts are anticipated for protected species and on-site habitats.

2 Introduction

2.1 Instruction

D F Clark Bionomique Ltd were instructed by Basildon Borough Council to produce an Ecological Impact Assessment (EclA) report to support a planning application for a residential development on Laindon Link Car Park 14, Basildon, Essex, SS15 5AH, (TQ 69836 88343).

2.2 Site Description

The proposed development site is approximately 2.3 hectares in size. A habitat plan showing the site boundaries can be seen in **Appendix 3**.

Its eastern extent is currently occupied by a disused open-air hardstanding car park, with associated introduced shrub, ephemeral/short perennial planting and scattered broadleaved trees. The western half comprises areas of species-rich and species-poor semi-improved neutral grasslands in the north. The south-west of the proposed development site is occupied by semi-natural broadleaved woodland. Fences, dense scrub, rubble/hard core bund, wet and dry ditches can also be found on-site.

The proposed development site lies towards the center of the town of Basildon. Directly to its north is the B1007 Laindon Link road, to its east is the A176 Nether Mayne road and to the south is the mainline railway embankment.

The surrounding area comprises largely residential urban landscape. The nearest significant wooded area is at Marks Hill Nature Reserve (part of Langdon Ridge SSSI) which lies approximately 480m to the west and is connected via railway embankment vegetation to the on-site habitats.

2.3 Development Proposal

The planning application is for the construction of 233 residential units comprising 16 houses and 217 apartments. The apartment blocks are to be located within the existing car park and the residential houses are to be located within the semi-improved grassland and woodland habitat to the west. The majority of the woodland is to be retained as part of the planning application and a green buffer is proposed along the southern boundary, in addition to further soft landscaping in the form of wildflower meadow sowing, amenity grassland, introduced shrub and tree planting.

2.4 Purpose of the Report

This survey report aims to:

- Identify the potential for significant ecological effects associated with the development proposals;
- Identify any cumulative impacts associated with the development;
- Provide mitigation measures that comply with nature conservation legislation and policies;
- Identify how mitigation measures will be secured;
- In response to the mitigation, identify the significance of any residual effects on ecological receptors;
- Provide appropriate enhancement measures with the aim of achieving a net gain in biodiversity; and,
- Set out any post construction monitoring requirements.

3 Planning Policy & Legislation

3.1 Overview

In surveying and assessing the biodiversity features present on and near the site, regard has been given to relevant biodiversity legislation and the planning context of the development proposal. Reference has been made to established planning principles, all relevant national and local planning policies, local biodiversity objectives and targets, and green infrastructure strategies, along with any relevant supplementary planning documents.

Appendix 4 provides a more detailed summary of planning policy and biodiversity legislation information.

3.2 Planning Policy

The National Planning Policy Framework (NPPF) (Ministry of Housing, communities and Local Government, 2019) is detailed in Appendix 4. The NPPF compliments legislation on nature conservation, as well as, stating the need for developments to achieve a net gain in biodiversity, in Paragraph 174: *“To protect and enhance biodiversity and geodiversity, plans should:/... promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.”*

Relevant local planning policies are provided within the ‘Basildon District Local Plan Saved Policies September 2007’ (Basildon Council, 2018). Relevant policies are as follows:

- Policy BAS C1 - The Council will not permit development which may have an adverse material effect on a Site of Special Scientific Interest (SSSI). When considering planning applications affecting Sites of Importance for Nature Conservation (SINC) or other important wildlife habitats, the Council will have full regard to the nature conservation value of the site.
- Policy BAS C2 - The Council will not normally permit development which may adversely and materially affect the conservation or landscape value of a Country Park.
- Policy BAS C5 - Existing woodlands should be retained, especially where they are Ancient Woodlands.
- Policy BAS C13 - The Council will not normally permit development which may adversely and materially affect any river, pond, lake or other important water feature or wildlife habitat of acknowledged importance.

Basildon Borough Council Core Strategy Revised Preferred Options Report 2013, set out Core Policies (Basildon Council, 2015), named Core Policy 9, which states that the Council will *“enhance, restore and/ or increase the coverage, and connectivity between the Borough’s biodiversity and landscape assets through”*:

- Protecting and enhancing sites of national and local importance, in accordance with policies within the Development Plan;
- Ensuring that new development within the Borough does not harm International and European sites of nature conservation, namely Ramsar, SPA and SAC sites, beyond the Borough’s boundaries;
- Protecting priority habitats and species by assisting in the implementation of the Essex Biodiversity Action Plan;
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- Promoting the Living Landscapes initiative and supporting projects that reconnect wildlife habitats both within the Borough and at a landscape scale beyond the Borough boundary; and
- Protecting and establishing the positive management of the Borough's remaining Ancient Woodland.

3.3 Designated Site Legislation

International designations include Special Areas of Conservation (SACs); Special Protection Areas (SPAs); and, Ramsar Sites. SACs and SPAs are protected under Conservation of Habitat and Species Regulations 2017. Ramsar Sites are designated under the Ramsar Convention and are afforded the same level of protection as SPAs and SACs. Any development identified to have a significant effect on these designations, either alone or in combination with other developments, shall be subject to an Appropriate Assessment of its implications for the site. A process collectively known as a Habitat Regulations Assessment.

National designations include Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs) are protected under the Wildlife and Countryside Act 1981 (as amended). The legislation requires Local Planning Authorities to notify Natural England if a development has potential to impact SSSIs or NNRs prior to granting planning permission.

3.4 Protected Species Legislation

The Wildlife and Countryside Act (1981) as amended offers protection for wild birds, their nests and eggs; a range of wild mammals and plants. Different species fall into different schedules with different levels of protection. Actions that would adversely affect these species require a licence and/or mitigation agreed and secured via planning conditions. Any such actions conducted without a licence would be a criminal offence and liable to punishment. Species protected under the Wildlife and Countryside Act include great crested newts, nesting birds, reptiles, hazel dormice, otters, water voles and bats.

Conservation of Habitat and Species Regulations 2017 is designed to transpose the European Council's Habitat Directive (92/43/EEC) on the conservation of natural habitats and of wild flora and fauna. It also covers the designation and protection of European designated sites and European protected species.

The Natural Environment and Rural Communities Act (NERC) 2006 places a duty on public authorities including local planning authorities to consider possibilities to conserve biodiversity (Section 40). It also requires the creation and maintenance of a list of species and habitat types of principle importance as defined by Natural England (Section 41). The list of priority habitats and species is informed by the UK Biodiversity Action Plan and should be taken into account during the planning and decision-making process.

The Protection of Badgers Act 1992 protects badgers and their setts. Under this act it is an offence to kill, mistreat, or dig for a badger as well as intentionally or recklessly damage or obstruct a sett, cause a dog to enter a sett or intentionally disturb an occupied sett. Licenses should be obtained for the destruction of badger setts if appropriate mitigation is to be undertaken.

All wild mammals receive some protection under the Wild Mammals (Protection) Act 1996. This act includes offenses of crushing and asphyxiation of any wild mammal with intent to inflict unnecessary suffering.

4 Methodology

4.1 Scope of the assessment & Zone of Influence

The survey site included the habitats within the proposed construction zone (red-line boundary), and where possible the survey boundary extended just beyond the construction zone.

‘The ‘zone of influence’ of the project is the area over which ecological features may be subject to significant effects as a result of the proposed project and associated activities’ (CIEEM, 2016). Ecological features considered include: sites designated for nature conservation, habitats, protected species and species of principle importance. The potential impacts of a development are not always limited to the boundaries of the site concerned. The impacts that are considered include, but are not restricted to: recreation, vibration, air pollution, light spill and contamination. Pollution pathways such as running waterbodies and topography and the receptor to these pathways are also assessed within the scope of this report.

In order to determine the zone of influence of the proposed development on ecological features (receptors), the following information was reviewed: Landscape Master Plan, drawing No. PR196-01, Rev. E (Matt Lee Landscape Architecture, 2020); the External Artificial Lighting Assessment, REV: 01 (Calfordseaden LLP, 2021); information attained from a client meeting on the 9th March 2021; and, the information sources referred to within section 4.2 of this report. Collectively, they can help to identify potential key activities that can generate ecological impacts during the construction and operational phases of the development.

The zone of influence of the project should be reviewed if the project changes to ensure that it is still relevant.

4.2 Desk Study

The Multi Agency Geographic Information for the Countryside (MAGIC) website managed by Natural England was consulted on the 23rd March 2020 to obtain information about:

- Statutory designated sites such as Sites of Special Scientific Interest (SSSI) within a 2km radius of the site;
- Sites of European/international importance such as Special Protection Areas (SPA) within a radius of 5km and consideration to wider zones of influences provided within Recreational Avoidance and Mitigation Strategies;
- The potential for the proposed development site to be present within a *SSSI Impact Risk Zone (IRZ)* and the effect that this could have on the proposed development;
- European Protected Species Mitigation (EPSM) licences that have been issued to a distance of 2km from the proposed development site.

Essex Wildlife Trust Biological Records Centre (EWTBRC) was utilised on the 30th March 2020 to identify Sites of Importance for Nature Conservation (SINCs)/Local Wildlife Sites/County Wildlife Sites, as well as protected/priority/otherwise notable species recorded within a 2km radius of the application site. Records from the last 10 years were reported only, any records beyond this timeframe is considered historic and not a representation of the present.

Aerial imagery (google.com/maps website, accessed 20th March 2020) was used in order to provide an indication of land-use in the surrounding area and the connectivity of habitats on and adjacent to the proposed development site. Particular attention was given to the presence of waterbodies within a 250m radius of each trial site, to help in determining the sites potential to support protected species.

Previous survey work (Peter Brett Associates LLP, 2016) and updating ecological survey by D F Clark Contractors was also used to inform this assessment.

4.3 Desk Study Limitations

Information attained from online resources, regarding aerial photography, EPSM licenses and protected areas is accurate to the date the records were retrieved, and last updated.

Records from biological record centre help understand the species that are present in and around the study area. However, survey effort is variable between areas and many records are not submitted to records centres. Therefore, biological records centres cannot confirm absence of a species, and have only been used in this report in conjunction with other techniques to build up a picture of a study area.

There were no other known limitations to the desk study.

4.4 Field Survey

A single daytime site visit was conducted by Alexandra Zemanova on 24th March 2020. The weather conditions on the day of the visit were sunny/clear.

The survey was conducted following the standard methodology for Extended Phase 1 Habitat Surveys (CIEEM, 2017), with habitats mapped following the UK Joint Nature Conservation Committee classification system (JNCC, Revised 2016). Characteristics considered when assessing the vegetation communities included species compositions, age, structure, permanence, condition and management.

Suitability of habitats within the zone of influence to support protected/notable species, species of principal importance, invasive species or evidence of these species was also recorded, along with location information.

The survey included an assessment of protected species potential on-site. This includes a visual search for evidence of presence and more detailed visual assessments, in the form of:

- Preliminary bat Roost Assessment (PRA) on buildings and trees on-site, in accordance to the Bat Conservation Trust (BCT) best practice guidance (Collins, 2016) when assessing a structure or tree for roosting bat suitability.
- A search for badger setts within the site boundary and up to 30m beyond the site boundary where access was possible.
- A Habitat Suitability Index (HSI) assessment (Oldham R.S., 2000) for great crested newt was undertaken on any waterbodies on site or where access was possible/granted within 250m radius of the site.

4.5 Field Survey Limitations

The Extended Phase 1 Habitat Survey was undertaken in March, which is considered a sub-optimal month for this survey type. However, this limitation is mitigated by the detailed survey undertaken by Peter Brett Associates LLP in 2016 and additional site visits that followed for protected species.

4.6 Badger Survey

The badger survey was undertaken in accordance to Surveying for Badgers Good Practice Guidelines (Scottish Badgers, 2018).

The badger survey included the monitoring of the single mammal entrance recorded during the Extended Phase 1 Habitat Survey, between the 10th September and 9th October 2020. The monitoring included placing sticky tape, sand and sticks at the entrance of the sett and frequently checking the tape, sand and sticks for evidence of badger. The monitoring visits were undertaken on the same dates as the reptile surveys, provided in Table 2. During each visit the site in its entirety was also searched for diagnostic badger field signs – setts, latrines, faeces, prints, hair, snuffle holes, runs and scratch marks.

Further badger sett monitoring was undertaken in winter 2021, in the form of camera trapping. The camera trapping was undertaken over a period of 21 days between 18th February and 11th March 2021. Weekly visits were undertaken in between the camera installation and collection dates to collect the footage and replace the camera batteries. The camera model used was SPYPOINT HD-7, and the footage was taken under the following settings 10 second videos with 1m delay.

The badger surveys were undertaken by D F Clark Contractors Ltd Ecologists Alexandra Zemanova and Maithri Jayasuriya.

4.7 Badger Survey Limitations

Both badger sett monitoring surveys were undertaken within the optimal survey season. No limitations were recorded during the surveys.

4.8 Bat Survey

Two dusk emergence surveys were undertaken between the 26th August and 29th September 2020. Two surveyors were present at each survey to adequately cover the property. In line with BCT best practice guidance, the dusk emergence surveys were undertaken 15 minutes before sunset and at least 1.5 hours after sunset.

TABLE 1: BAT SURVEY WEATHER CONDITIONS.

Emergence survey: 26th August 2020		
	Start	End
Temperature	21°C	19°C
Wind (Beaufort)	0	0
Cloud (%)	90	80
Precipitation	0	0
Emergence survey: 29th September 2020		
Temperature	15°C	12°C
Wind (Beaufort)	0	1
Cloud (%)	90	40
Precipitation	0	0

The bat surveys were undertaken by D F Clark Contractors Ltd Ecologists Alexandra Zemanova and Maithri Jayasuriya. The bat detectors used were Elekon Batlogger M's and the BatExplorer software was used to analyse the calls.

4.9 Bat Survey Limitations

The bat surveys were undertaken during optimal weather conditions. The professional decision to undertake two dusk emergence surveys, instead of one dusk emergence and one dawn re-entry, as recommended for structures assessed to be of moderate suitability, is not considered a significant limitation. The reason for undertaking two dusk emergence surveys is that dawn surveys are less optimal in September. Dawn re-entry times for bat species are highly variable and none of the dusk emergence surveys reported concerns for potentially missed late emergences, to rationally determine the requirement for a dawn re-entry survey (L., 2016).

4.10 Reptile Survey

The methodology for the reptile survey undertaken was based on industry standard best practice guidance from Froglife (1999).

Around 35 artificial refuges comprising a mixture of 0.5m x 0.5m and 1.0m x 0.5m pieces of roofing felt and corrugated tin were placed in sunny spots within the species-rich semi-improved grassland

habitat on site. The refuges were installed on 26th August 2020 and left undisturbed for a period of at least 7 days to allow any reptiles present on site to begin using them as preferential basking sites before the seven inspections commenced. Data collected during each visit comprised: species, sex, life stage and number along with the time of survey and weather conditions.

TABLE 2: REPTILE SURVEY DATES, TIMES AND WEATHER CONDITIONS.

Survey Date	Time	Temperature (Start to End)	Cloud cover (%)
10 th September 2020	13:45	17°C - 19°C	20
18 th September 2020	10:00	17°C - 17°C	20
21 st September 2020	10:30	13°C - 14°C	100
22 nd September 2020	10:00	14°C - 14°C	25
28 th September 2020	12:30	14°C - 14°C	70
7 th October 2020	12:35	14°C - 14°C	70
9 th October 2020	10:30	10°C - 11°C	25

The reptile surveys were undertaken by D F Clark Contractors Ltd Ecologists Alexandra Zemanova and Maithri Jayasuriya.

Population size was estimated by taking the maximum number (peak count) of adults recorded in one visit, as recommended by Froglife (1999). The guidance classifies the populations as either 'low', 'good' or 'exceptional' based on the peak adult count of each reptile species, as shown in Table 3 below.

TABLE 3: CLASSIFICATION OF REPTILE POPULATIONS FROM PEAK ADULT COUNTS ATTAINED IN ONE SURVEY.

Species	Low Population	Good Population	Exceptional Population
Adder (<i>Vipera berus</i>)	<5	5-10	>10
Grass snake (<i>Natrix natrix helvetica</i>)	<5	5-10	>10
Common lizard (<i>Zootoca vivipara</i>)	<5	5-20	>20
Slow-worm (<i>Anguis fragilis</i>)	<5	5-20	>20

4.11 Reptile Survey Limitations

The surveys were predominantly undertaken during suitable weather conditions, with temperatures between 10°C - 18°C, dry and low winds. The only exception is the first survey, where the end temperature was 1°C higher than recommended. This limitation is considered minor and not detrimental to the overall assessment.

4.12 Assessment

The report undergoes a scoping process and initially considers all ecological features present or with potential to be present within the zone of influence of the application site. The desk-top study and field surveys provide information to identify which ecological features have potential to be impacted by the development proposals. Where designations are considered to be sufficiently separated from the application site and protected species are likely absent, no further recommendations are deemed necessary and they are not mentioned beyond Section 5 of this report. Where potential impacts on ecological features are identified, they are brought forward to Section 6 of this report for further assessment.

The assessment evaluates the importance of ecological features and the impact and residual effect of a development in accordance to (CIEEM, 2018) guidance.

The significance of the residual impact is to be determined by the importance of the ecological feature based on geographical context. The agreed scale of reference is:

- International and European
- National
- Regional
- County
- River Basin District
- Local
- Site

The assessment of scale is undertaken by professional judgement, legislation and policy and the distribution of species and habitats. Site value is given to ecological features where their loss is not going to be detrimental at a local level and impacts of the loss is restricted to within the site itself. For example, hardstanding or a habitat comprising a small total area and of low species diversity. Habitats are assessed separately to protected species and therefore, if a habitat is assessed to be of site value, it may still be subject to mitigation measures in relation to a protected species.

Where the residual impact is so minor that the HMT proposed is unlikely to have an effect on an ecological feature at a local scale or above, then the significance of the residual impact is to be referred to as 'non-significant positive/negative effect'.

The assessment identifies potential impacts on ecological features, which have been scoped-in for further assessment and characterises them in accordance to the following terminology:

- Complexity – e.g. direct/indirect, cumulative
- Positive or negative
- Magnitude – numerical value of area of habitat lost and percentage decline in species population
- Extent – the spatial or geographical area the impact may occur
- Duration – timeframe of impact, taking in consideration the life cycle of the species impacted
- Reversibility – can determine the significance of the effect as some habitats/populations are easier and quicker to replace/recover than others
- Frequency – this can influence the resulting effect e.g. recreational activity
- Timing – similar to frequency and can avoid impacts in some instances.

Once impacts have been identified, a methodology is provided on how to avoid and mitigate the impacts. On determining suitable avoidance and mitigation measures, an assessment of residual impact is to be undertaken to determine the significance of the effect. Where significant residual effects cannot be avoided, compensatory measures are to be provided. Compensatory measures will be considered against ecological objectives in determining the outcome of the application.

Geographical scale is used to help quantify the significance of residual effects. Compensation measures are not included when determining significance of residual effects. Compensation measures are detailed in a separate section of this report, alongside recommendations for enhancements.

5 Baseline Ecological Conditions

5.1 Overview

Only the results pertinent to the production of this report have been included below. Full copies of the original field and desk-top data, along with evidence of subsequent analysis and interpretation of results are available upon request.

5.2 Zone of Influence

Construction activities are unlikely to have a significant effect on the wider surrounding landscape, although the lighting, noise and commotion during construction and demolition activities may create a localised and temporary disturbance to wildlife. Increase in lighting during the operational phase of the development has potential to have a long-term localised impact if not designed to eradicate light spill beyond the site boundary.

5.3 Designated Sites

The MAGIC website indicated that there are no designated sites of European/international significance within a 5km radius of the application site.

There are two statutory designated sites of national or local importance within a 2km radius of the site, Table 5. The site is located within Zone of Influence (ZoI) for international designations included within the Essex Coast Recreational disturbance Avoidance and Mitigation Strategy (RAMS) (Place Services, 2020). Table 4 below lists the international designations included within the RAMS, their ZoI and the application sites proximity to the designations.

TABLE 4: THE APPLICATION SITES LOCATION TO ESSEX COAST RAMS ZONE OF INFLUENCE .

European Designation	Zone of Influence	Sites Proximity to designation
Essex Estuaries SAC	*	10.8km
Hamford Water SPA and Ramsar	8km	60km
Stour and Orwell Estuaries SPA and Ramsar	13km	58km
Colne Estuary SPA and Ramsar	9.7km	41.5km
Blackwater Estuary SPA and Ramsar	22km	24km
Dengie SPA and Ramsar	20.8km	32.5km
Crouch and Roach Estuaries Ramsar and SPA	4.5km	10.8km
Foulness Estuary SPA and Ramsar	13km	23km
Benfleet and Southend Marshes SPA and Ramsar	4.3km	8.9km
Thames Estuary and Marshes SPA and Ramsar	8.1km	6.8km

* SAC overlaps with the Blackwater Estuary, Colne Estuary, Crouch and Roach Estuaries, Dengie, Foulness and Thames Estuary SPA and Ramsar sites.

Table 4 identifies the application site to be within the ZoI for Thames Estuary and Marshes SPA and Ramsar site located 6.8km south. Therefore, the potential for recreational impacts on this designation enquires further assessment within Section 6 of this report. The application site is not within the zone of influence of the Essex Estuaries SAC, as its closest proximity to the site is from within Crouch and Roach Estuaries SPA and Ramsar site.

The site falls within the Langdon Ridge SSSI Impact Risk Zone for residential proposals. Therefore, the SSSI Impact Risk Zone is assessed further within Section 6 of this report.

TABLE 5: RESULTS OF THE UK/LOCAL STATUTORY DESIGNATED SITES DESK STUDY.

Name	Designation	Proximity	Reasons for Designation
<i>Statutory designations</i>			
Langdon Ridge	SSSI	480m W	The site is of special interest as it supports nationally important features such as species-rich neutral grassland; fen-meadows; ancient and long-established semi-natural woodlands; assemblages of invertebrates chiefly associated with open short sward and scrub-heath; and populations of the plant Deptford pink (<i>Dianthus armeria</i>).
Vange Hill	Local Nature Reserve	1.8km SE	Informal open space of grassland and scrub woodland. Large numbers of the commoner butterflies can be seen in summer, and also some rarities such as the marbled white (<i>Melanargia galathea</i>). Notable among its flowering plants are pale flax (<i>Linum bienne</i>) and fairy flax (<i>Linum catharticum</i>).

The data search report (Essex Wildlife Trust, 20th March 2020) also identified 10 Local Wildlife Sites (LoWS)/ (non-statutory designations) within a 2km radius of the site (Table 6).

TABLE 6: RESULTS OF NON-STATUTORY DESIGNATED SITES DESK STUDY.

Name	Designation	Proximity	Reason for Designation
<i>Non-statutory designations</i>			
Ba24 Dry Street Pastures	LoWS	1km (SW)	Lowland meadows featuring flower-rich pastures which include pyramidal orchid (<i>Anacamptis pyramidalis</i>), green winged orchid and yellow rattle (<i>Rhinanthus minor</i>). Nationally scarce and rare invertebrate assemblages also supported including adonis ladybird (<i>Hippodamia variegata</i>), flower beetle (<i>Olibrus millegolii</i>) and grizzled skipper butterfly (<i>Hesperiidae</i> sp.). Adders (<i>Vipera berus</i>), common lizard (<i>Zootoca vivipara</i>), slow worm (<i>Anguis fragilis</i>) and grass snake (<i>Natrix natrix helvetica</i>) also recorded.
Ba29 Gloucester Park Meadow	LoWS	1.04km (NE)	Grassland managed for floristic interest and invertebrate assemblage. Flower-rich sward includes meadow foxtail (<i>Alopecurus odoratum</i>), crested dog's-tail (<i>Cynosurus cristatus</i>) and Essex Red list species including corn parsley (<i>Petroselinum segetum</i>).
Ba23 St Nicholas Church Complex	LoWS	1.63km (NW)	Lowland meadows and ponds designated for reptile and amphibian assemblages. Supports great crested newts (<i>Triturus cristatus</i>), smooth newts (<i>Lissotriton vulgaris</i>), adders and common lizards. Also supports nationally scarce puralid moth (<i>Calamatropha paludella</i>).
Ba53 Nethern Mayne	LoWS	1.75km (SE)	Roadside verge comprising of neutral grassland with flower-rich mosaics of grassland and young scrub.
Ba32 Bells Hill Meadow	LoWS	1.75km (SE)	Lowland meadow featuring green winged orchid, adders tongue fern (<i>Ophioglossum uulgatum</i>). Eight species of bumblebee and reptile assemblages also present.
Ba30 Hawkesbury	LoWS	1.78km (SE)	Lowland meadows, scrub and woodland habitats producing rich assemblage of flora and fauna. Site is

Manor			adjacent to part of Basildon Meadows SSSI to the east. It supports bumblebee species and reptiles as well as white letter hairstreak butterflies (<i>Satyrrium w-album</i>).
Ba29 Langdon Complex	LoWS	1.8km (SW)	Lowland meadows and mixed deciduous woodland featuring pedunculated oak (<i>Quercus robur</i>), ash (<i>Fraxinus excelsior</i>) with scrubby hawthorn (<i>Crataegus monogyna</i>) and blackthorn (<i>Prunus spinosa</i>). Langdom Reserve features ancient woodland habitats with understory of wood anemone (<i>Anemone nemorosa</i>) and bluebell (<i>Hyacinthoides non-scripta</i>). Grassland supports common spotted orchid (<i>Dactylorhiza fuchsia</i>) and green winged orchid (<i>Orchis morio</i>). Langdon Reserve was notified for presence of great-crested newts (<i>Triturus cristatus</i>).
Ba35 Vange Hill and Golf Course	LoWS	1.8km (SE)	Includes Vange Hill and Basildon Golf Course which supports nationally significant invertebrate fauna. This includes bumblebee (<i>Bombus sylvarum</i> and <i>B. lumilis</i>) and fly species (<i>Dorycera gramineum</i>). Vange Hill supports species-rich grassland featuring rough meadow grass (<i>Poa trivialis</i>), cock's foot (<i>Dactylis glomerata</i>) and herbs such as pale flax and grass vetchling.
Ba48 Tompkins Farm Meadow	LoWS	1.82km (SE)	Lowland meadow featuring spiny restharrow (<i>Ononis spinosa</i>). Also features meadow barley (<i>Hordeum secalinum</i>), yellow oat-grass (<i>Trisetum flavescens</i>) and wild carrot (<i>Daucus carota</i>).
Th68	LoWS	2km (SE)	Two meadows with rich grassland flora. Corky-fruited water-dropwort (<i>Oenanthe pimpinelloides</i>) can be found here. Flower-rich meadows provide habitats for diverse invertebrate assemblage including grizzled skipper and marbled white (<i>Melanargia galathea</i>) butterflies.

5.4 Habitats

A plan showing the habitats found on-site can be seen in Appendix 3. Photographs of the site can be found in Appendix 1.

Semi-natural broadleaved woodland

The majority of the semi-natural broadleaved woodland was found in the south-west of the site (Photo 2) and consisted mainly of young saplings and young to semi-mature trees, with mature, ivy-clad (*Hedera helix*) trees scattered throughout. Canopy and understory species within the woodland included sycamore (*Acer pseudoplatanus*), oak (*Quercus robur*), ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*), field maple (*Acer campestre*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*), bramble (*Rubus fruticosus* agg.) and field rose (*Rosa arvensis*).

The woodland supported a species-poor ground flora dominated by ivy. Other occasional species included cow parsley (*Anthriscus sylvestris*), lords and ladies (*Arum maculatum*), common nettle (*Urtica dioica*), pendulous sedge (*Carex pendula*), common hogweed (*Heracleum sphondylium*), cleavers (*Galium aparine*), hard fern (*Blechnum spicant*), dock (*Rumex* sp.), willowherb (*Epilobium* sp.) and wood avens (*Geum urbanum*).

An earth bund approximately 2-3m in height was present running east to west through the woodland. The resulting low-lying land to the south of the bund was wet with run off from the adjacent railway embankment.

A second area of semi-natural broadleaved woodland was present along the north-eastern boundary of the car park. This comprised semi-mature and young oak, cherry (*Prunus sp.*) and hazel (*Corylus avellana*) trees. Its ground flora was dominated by cow parsley and also supported holly (*Ilex aquifolium*), blackthorn, ivy, and cranesbill (*Geranium sp.*).

A small, shallow, ephemeral area of standing water was recorded within the woodland near the southern boundary fence, TN8. The standing water is assessed to be absent for most of the year and did not support any aquatic vegetation (Photo 1). A pile of logs (TN6) was seen within the woodland near the species-poor semi-improved grassland.

Woodland habitat on the western end of the application site is identified in MAGIC as a Lowland Mixed Deciduous Woodland UK BAP priority habitat. The woodland located north of the car park on site has not been identified as priority habitat. This may be because it is likely planted woodland strip, however, it supports native woody species and fulfills the priority description, albeit the description is elusive and open to interpretation. Overall, all woodland habitat on site is considered to be priority habitat.

Lowland deciduous woodland is relatively widespread, with ancient woodland being of greater conservation significance and recognized as an Essex priority (BAP) habitat. The woodland present on-site is young and planted in areas and not identified to support any species of conservation significance. The woodland on site covers a small total area of the local landscape, which supports a good density of woodland, with the largest areas associated with Network Rail lineside estate and Langdon Ridge SSSI. Therefore, the woodland habitat on site is assessed to be of **local value**.

Scattered trees

The majority of the scattered amenity trees were present on the eastern half of the proposed development site, within the aisles of the car park. These included standard oak and ash specimens (Photo 5).

The trees are not mature in age and are planted specimens and thus, are assessed to be of **site value**.

Dense Scrub

A belt of dense scrub was present between the central area of species-rich semi-improved neutral grassland and the hardstanding car park area (Photo 3). The scrub was dominated by blackthorn with occasional bramble and young beech saplings. A second thin area of dense scrub was noted along the southern boundary of the car park.

The dense scrub makes up a small total area of the site, comprises widespread species, is of low species diversity and therefore, is assessed to be of **site value**.

Introduced shrub

The northern-most aisle of the car park supported a mix of native and introduced shrub. Ornamental species were present as well as bramble, holly, blackthorn, and privet (*Ligustrum sp.*) (Photo 10).

The introduced shrub makes up a small total area of the site and supports a small diversity of native species and therefore, is assessed to be of **site value**.

Species-rich semi-improved neutral grassland

The central area of the site was dominated by species-rich semi-improved neutral grassland (Photo 4) and was found to be wet at the time of the survey. A single stand of willow (*Salix sp.*) was noted within the north-western corner of the grassland. Species list from previous surveys (Peter Brett Associates LLP, 2016) includes cocksfoot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), bent-grass (*Agrostis sp.*), common nettle (*Urtica dioica*), cleavers (*Galium aparine*), yarrow (*Achillea millefolium*), cowslip (*Primula veris*), soft rush (*Juncus effuses*), common spotted orchid (*Dactylorhiza fuchsia*), ox-eye daisy (*Leucanthemum vulgare*), bird's-foot trefoil (*Lotus corniculatus*), crested dog's tail (*Cynosurus cristatus*), meadowgrass sp (*Poa sp.*), creeping cinquefoil (*Potentilla reptans*), red clover (*Trifolium pratense*), cut-leaved cranesbill (*Geranium dissectum*), false oat-grass (*Arrhenatherum elatius*), brome sp. (*Bromus sp.*), common vetch (*Vicia sativa*), meadow buttercup (*Ranunculus acris*), teasel (*Dipsacus fullonum*) and clustered dock (*Rumex conglomeratus*). Not all species were possible to be observed during the 2020 survey due to recent close mowing of the grassland evident in the photograph.

The grassland does not support any UK or Essex priority species, with all species recorded considered widespread and relatively common. Furthermore, there are a number of 'undesirable' species, associated with nitrogen rich sites present, such as common nettle, cock's-foot and false oat-grass. Nonetheless, the grassland does support a reasonable diversity and mix of grasses and herbaceous species. The grassland is very small and makes up a small total area of the site and thus, has been assessed to be of **site value**.

Species-poor semi-improved grassland

An area of short, managed species-poor semi-improved grassland was present running along the road in the north-west part of the site (Photo 6). The species list from previous surveys (Peter Brett Associates LLP, 2016) includes common bent (*Agrostis capillaris*), cocksfoot, fescue (*Festuca sp.*), cranesbill (*Geranium maculatum*), yarrow, medick (*Melilotus sp.*), creeping buttercup, daisy (*Bellis perennis*), dandelion (*Taraxacum officinale agg.*), cow parsley and chives (*Allium schoenoprasum*). Not all species were possible to be observed during the 2020 survey due to recent close mowing of the grassland.

The species-poor grassland comprises 'undesirable' species, does not support any notable flora assemblage and therefore, is assessed to be of **site value**.

Ephemeral/short perennial

Areas of the former car park were colonised by short perennials and grasses which had established within cracks and gaps in the hardstanding, and through encroachment from surrounding introduced shrubs.

The vegetation within this habitat is sparse and the habitat itself makes up a small total area of the site, and therefore, is assessed to be of **site value**.

Rubble and hardcore bund

Two rubble and hardcore bunds colonised by bramble, short perennials and grasses including cocksfoot were found on site (Photo 12). The first one ran along the eastern boundary of the car park and the second one was present on the northern boundary where the old entry to the car park from Laindon Link road used to be.

The rubble and hardcore bunds were predominantly bare, supporting a sparse amount of common and widespread species. This habitat makes up a small total area of the site and therefore, is assessed to be of **site value**.

Hardstanding

The east half of the proposed development site was dominated by hardstanding which was previously used as a car park.

The hardstanding on site does not support a flora community and therefore is assessed to be of **site value**.

Wet ditch

A ditch ran south to north within the belt of dense scrub between the grassland and the car park, and contained shallow standing water at the time of survey due to run-off from the railway embankment. This ditch was heavily overgrown by bramble and blackthorn, contained no aquatic vegetation and considered likely to be dry for most of the year.

The wet ditch is lacking in species diversity, heavily shaded, and is dry for most of the year, and therefore, is assessed to be of **site value**.

Dry ditch

A second ditch was noted along the eastern site boundary (Photo 8), between the rubble and hardcore bund and the wooden boundary fence. This ditch was dry and had no aquatic plant species.

The dry ditch is absent of a flora community and therefore is assessed to be of **site value**.

Fence

A wooden fence runs along the eastern boundary and a metal fence runs along the southern boundary of the proposed development site (Photo 11).

The fence does not support any notable flora species and therefore is assessed to be of **site value**.

5.5 Species

The below information will include a combination of desk study and field information. Value judgements will be included with regards to the species present or possibly present on site.

Amphibians

There is one European Protected Species Mitigation (EPSM) licence for great crested newts within 2km of the site from the last 10 years. The licence was issued in 2015 for a site located approximately 1.4km south-west, which allowed the destruction of a resting place.

The nearest recorded great crested newt survey is located approximately 1km north-west. The survey was undertaken in 2018 and great crested newt were assessed as likely absent.

The EWTBRC database has 15 records of amphibian species within 2km of the site, with the nearest record being a common frog (*Rana temporaria*) approximately 130m to the south-west recorded in 2012. Other species included great crested newt (*Triturus cristatus*), smooth newt (*Lissotriton vulgaris*) and common toad (*Bufo bufo*).

The MAGIC website indicated that there are no ponds present within 250m of the proposed development site.

The site contains two waterbodies; an ephemeral area of standing water (**TN8**) within the semi-natural broadleaved woodland to the west of the site, and a wet ditch running through the center of the site. Both these features are highly unlikely to hold water all year round, and are heavily shaded with no aquatic vegetation. Previous Habitat Suitability Index calculations (Peter Brett Associates LLP, 2016) for both of these waterbodies returned a score of 0.38, which indicates that they represented poor quality habitat for great crested newts.

The conditions have not changed since 2016 therefore these waterbodies can be scoped out for further surveys.

The areas of semi-improved grassland and scrub provide potential sheltering and foraging habitats to support great crested newts during the terrestrial phases of their life-cycle. The site however is surrounded by a network of roads, commercial and residential buildings. It is unlikely that amphibians such as great crested newts would be able to access the site. Therefore, no further surveys for great crested newts are necessary and the species has been **scoped out** for further assessment.

Bats

There is one EPSM licence return for bats issued within 2km of the site from the last 10 years. The licence is located approximately 380m north of the site and was granted in 2013 to facilitate the destruction of a common pipistrelle (*Pipistrellus pipistrellus*) resting place.

The EWTBRC database has the following records of bats within 2km of the site from the last 10 years:

- Two serotine bats (*Eptesicus serotinus*); the most recent record being approximately 1.3km to the north in 2014.
- Eleven common pipistrelles; the most recent recorded approximately 1.5km to the south-west in 2017.
- Twelve soprano pipistrelles (*Pipistrellus pygmaeus*); the closest and most recent record being approximately 400 metres to the north-east in 2016.
- One brown long-eared (*Plecotus auritus*) was recorded approximately 1.2km to the north in 2014.
- Two Daubenton's bats (*Myotis daubentonii*) were recorded. Both records were from 2010, with the closest being approximately 600 metres to the north.
- Seven noctules (*Nyctalus noctula*) were recorded; the closest record being approximately 1.5km to the south in 2015.

The woodland, scrub and grassy areas of the site will provide good quality foraging opportunities for commuting bats. The site is directly connected to lineside estate which provides a 'green corridor' through the built-up area of Basildon and good connectivity to more suitable foraging habitats off-site such as more extensive broadleaved woodland approximately 450m to the south-west.

In addition to this, five trees located in and around the hardstanding area of the car park showed potential bat roosting features (PRF) both in previous (Peter Brett Associates LLP, 2016) and re-confirmed in the 2020 assessment. This is detailed in Table 7 below:

TABLE 7: RESULTS OF ASSESSMENT OF SCATTERED TREES ON-SITE FROM THE GROUND.

Target Note	Species	PRF	Roosting Potential
1	Oak	Some flush cuts with shallow cavities.	Low
2	Oak	Some flush cuts with shallow cavities.	Low
3	Oak	Possible canker with no cavity visible. Some shallow knot holes visible.	Low
4	Ash	Woodpecker holes visible in trunk (Photo 5).	Moderate

5	Willow	Woodpecker holes with flush cut facing upwards open to elements.	Low
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TN 4 tree has previously been taken forward for further assessment in the form of emergence/re-entry surveys (Peter Brett Associates LLP, 2016). Two surveys were completed between May and June 2016. No bats were recorded emerging /re-entering the tree or incidentally in its vicinity during the course of the two survey visits. As such, it was reasonably assumed that roosting bats were likely to be absent from the tree.

An updating roosting bat survey was undertaken in 2020 the results of the survey were similar to the 2016 surveys, with low level of bat activity of common pipistrelle recorded only and no bat emergences recorded, as detailed in Table 8.

TABLE 8: BAT EMERGENCE SURVEY RESULTS.

Species Recorded	Earliest and Latest Recording	Observations
Emergence Survey 26.08.2020		
Common pipistrelle	20:17 to 21:12	The maximum number of registrations recorded was 10, by Position 2 surveyor. Common pipistrelles were seen flying south to north.
Emergence Survey 29.09.2020		
Common pipistrelle	19:07 to 20:06	The maximum number of registrations recorded was 8, by Position 1 surveyor. One common pipistrelle was seen flying south to north.

Overall, roosting bats are assessed as **likely absent**, however, suitable roosting features are present and thus, precautionary measures are provided in Section 6, in accordance to relevant guidance for trees of low suitability for roosting bats.

The previous emergence/re-entry surveys were combined with transect survey work (Peter Brett Associates LLP, 2016). Bat activity recorded during transects at the site was very low. A total of four passes were recorded over the course of the two survey visits. All were attributed to common pipistrelle bats; a common and widespread species, primarily using vegetation along the southern site boundary. The bat assemblage present was of no more than **site value** importance.

Hazel dormice

The results of the desk study found no records of dormice within 2km of the site from the last 10 years. Hazel dormouse (*Muscardinus avellanarius*) is sporadically located within Essex and the site and the adjoining railway line is not connected to these known populations.

Despite the site not being connected to dormouse populations the potential for the species to occupy new areas of Essex cannot be disregarded. The woodland and scrub habitat provides potential nesting and foraging habitats for hazel dormice that includes species such as hawthorn, blackthorn, bramble and hazel. A stretch of woodland along the southern border extends to the west where the B1036 road separates it from the Marks Hill nature reserve to the south-west. Presence/likely absence surveys were conducted by Peter Brett Associates in 2016, in the form of nest tube surveys and nut surveys. No evidence of dormice or dormice activity was found.

The previous survey didn't find any evidence of hazel dormice, the habitat hasn't significantly changed since 2016 and the site and adjoining railway line are not connected to any known populations. However, the potential for hazel dormice to colonise new territory cannot be overlooked and therefore, precautionary measures are provided within this report, despite the **likely absence** of this species.

Water vole and Otter

There are no records of water voles (*Arvicola amphibus*) or otter (*Lutra lutra*) within 2km of the site from the last 10 years.

The shallow ditch which at the time of the walkover contained some standing water was not steep enough to provide any opportunities for water voles to make their burrows or otters to make holts. The sides of the ditch were largely covered in bramble and do not provide any foraging opportunities for these species. Additionally, there is little connectivity to any suitable habitat off-site.

The site is of **negligible potential** for water voles and otters.

Invertebrates

There are extensive records of invertebrates within 2km of the site from the last 10 years. This includes the Purple Emperor butterfly (*Apatura iris*), a Schedule 5 species under the Wildlife & Countryside Act 1981 (as amended). Three records from 2018 exist for Marks Hill Wood approximately 480m to the south-west. There are several records of white Letter Hairstreak (*Satyrrium w-album*), the most recent record being 1.4km away to the south-west in Langdon Hills Country Park in 2018. This species has also been recorded in Marks Hill Wood in 2014. There are extensive records of Grizzled Skipper butterfly in the surrounding area. The closest being in the Langdon Hills Country Park in 2016.

The habitats on site are considered to be of value to common and widespread invertebrate species. Therefore, the site is assessed to be of **site value** for invertebrates and no further surveys are necessary.

Reptiles

All four common species of reptiles have been recorded within 2km of the site from the last 10 years. There are:

- Five records of slow-worms; the most recent being approximately 1.6km away to the north-east in 2018.
- Five records of grass snakes; the most recent being approximately 1.1km away to the south-west in 2016.
- Four records of common lizards; the most recent record being 1.1km away to the south in 2012.
- Fourteen records of adders; the most recent record being approximately 1.2km away to the south-west in 2017.

Seven presence/likely absence surveys were conducted in 2016 by Peter Brett Associates. The surveys showed the site to have an exceptional population of slow-worms (peak count: 121) and a good population of common lizards (peak count 13).

The grassland, scrub and woodland margins habitats would provide potential sheltering, foraging and commuting opportunities for the common reptile species listed above. The margins of the railway running along the southern border of the site would provide suitable connectivity to off-site habitats such as Marks Hill Wood.

The log pile and rubble and hardcore bunds also provide further hibernation and sheltering opportunities. One common lizard was seen during the walkover in the patch of species-rich semi-improved grassland.

An updating presence/likely absence survey for reptiles was undertaken in 2020 within the species-rich semi-improved grassland habitat on-site. Table 9 below details the survey results.

TABLE 9: REPTILE SURVEY RESULTS FOR EACH SURVEY.

Date	Slow-Worm	Common Lizard	Other Species
10.09.2020	Male: 2 Female: 3 <i>Juvenile: 5</i>	Adult: 1	-
18.09.2020	-	Adult: 3 <i>Juvenile: 1</i>	-
21.09.2020	Juvenile: 2	Juvenile: 2	-
22.09.2020	Female: 2	-	-
28.09.2020	Juvenile: 2	Adult: 5 <i>Juvenile: 2</i>	-
07.10.2020	-	Adult: 4 <i>Juvenile: 2</i>	-
09.10.2020	-	-	-

The peak count for slow-worm and common lizard during the 2020 survey was 5 adults. A peak count of 5 is considered a 'good population' for each species. Grass snake and adder remain likely absent from the site.

Both slow-worm and common lizard are considered common and widespread within Essex, however, 'good' populations are likely to be less frequent within the local area, which predominantly comprises existing commercial and residential developments. Therefore, the site is assessed to be of **local value** for reptiles.

Birds

There are extensive records of birds within 2km of the site from the last 10 years, including a treecreeper (*Certhia familiaris*) which was recorded on site in 2018. Species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were recorded including one Cetti's warbler (*Cettia cetti*) approximately 700 metres to the south in 2014; bramblings (*Fringilla montifringilla*), most recently recorded in 2015 approximately 1.6km to the south-west, peregrine falcon (*Falco peregrinus*) most recently recorded in 2018 approximately 1.4km to the south-west. A black redstart (*Phoenicurus ochruros*) was recorded approximately 1.4km away to the north-west.

During the walkover survey, bird species observed included robin (*Erithacus rubeculla*); carrion crow (*Corvus corone*), woodpigeon (*Columba palumbus*), magpie (*Pica pica*), blue tit (*Cyanistes caeruleus*) and great tit (*Parus major*).

The woodland, scrub habitats and mature or semi-mature scattered trees on-site offer potential nesting opportunities, as well as foraging opportunities for birds.

The proximity of the site to further suitable habitats in the surrounding area makes it likely that common bird species would use the site during the nesting season.

The habitats suitable to support birds within the Application Site are widespread and make up a small percentage of suitable nesting habitat within the local landscape for common and widespread bird species, therefore the site is assessed to be of **site value** for birds.

Badger

There are five records of badgers within 2km of the site from the last 10 years. The most recent record is approximately 1.5km away to the south in 2015.

Previous survey (Peter Brett Associates LLP, 2016) identified the presence of a badger sett within woodland at the site. This comprised a single entrance hole and was considered to be in a state of disuse at the time of survey. No evidence of badger activity was found within the site or its boundaries. Due to the absence of obvious field signs and the state of disuse of the sett entrance, it was considered unlikely that badgers were resident at the site. On-site woodland and grassland did, however, offer suitable habitat for foraging and commuting badger.

A single potential badger sett was identified during the 2020 walkover, located in the woodland on the western half of the site (Photo 7). There were no other identifying signs of badgers such as paw prints, snuffle holes, latrines or fur. However, a mammal pathway was observed in the area.

The identified badger sett (TN7) was monitored with sticks, sand and tape installed at the entrance between September and October 2020. The monitoring recorded the sticks to be knocked over with badger hair on the sticky tape and a confirmed badger print (see photos 13 to 15). Despite the evidence of badger use from the monitoring methods, the sett entrance still did not look like it had been in recent use. Further monitoring of the badger sett was undertaken using a motion sensor camera between February and March 2021. The camera footage did not record any badger activity. Therefore, it has been concluded that the outlier sett is in irregular use.

The site is likely used as part of the lineside estate and makes up a small total area of the suitable foraging, commuting and sett creation habitat within the wider landscape. The sites positioning does not make it important connecting habitat for the species movement through the landscape. Therefore, the site is assessed to be of **site value** for badger.

Other legally protected/notable species

The site has the potential to support fox (*Vulpes vulpes*) and hedgehog (*Erinaceus europaeus*) however, there are no records of these species within 2km of the site from the last 10 years. There is a record of a muntjac (*Muntiacus reevesi*) 1km to the north-west in 2015; and a roe-deer (*Capreolus capreolus*) approximately 1.3km to the south-west in 2010.

Even though no evidence of hedgehogs was seen during the time of the survey, boundary hedgerows, scrub, and the surrounding landscape have potential as resting and foraging habitat for them. Although hedgehogs have no specific legal protection, they are listed as 'Species of Principal Importance' under the NERC Act. They have undergone a significant decline in recent years and will be considered later in the recommendations within this report.

Overall, the site is assessed to be of **site value** for notable species, such as, hedgehog.

Plants

The EWTBRC database has one record of bluebells (*Hyacinthoides non-scripta*) approximately 1km to the south-west in 2018. Jersey cudweed (*Gnaphalium luteoalbum*) was recorded 1km to the south-west in 2018. These plants are listed under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended), though no evidence of their presence was noted during the walkover.

Plant species afforded additional protection are considered **likely absent** from site. No further surveys are necessary.

Invasive plants

The EWTBRC database records show that Himalayan balsam (*Impatiens glandulifera*), butterfly bush (*Buddleia davidii*) and three-cornered garlic (*Allium triquelrum*) within the sites 1km grid reference. No evidence of invasive species or species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) was observed during the walkover.

Invasive species have not been recorded on-site and are considered **likely absent**.

6 Assessment of Effects and Mitigation Measures

6.1 General

The below section includes information regarding the ecological constraints and opportunities, recommendations for mitigation and any further survey works required.

Opportunities to enhance biodiversity have been provided in Section 8, and the '*mitigation hierarchy*' has been followed (BS 42020:2013). The '*mitigation hierarchy*' seeks first to avoid impacts, then mitigate unavoidable impacts, as a last resort compensation is recommended for unavoidable residual impacts (BS 42020:2013).

The Application Site is approximately 2.3ha in size. The most dominant habitats on site are the hardstanding dominated car park at 1ha, the semi-natural broad-leaved woodland at 0.75ha and the species-rich semi-improved grassland at 0.28 ha. These three habitats, total to approximately 2ha of the site and the other habitats make up the remaining 0.3ha. The design of the proposed development has followed the mitigation hierarchy, with impacts to biodiversity largely avoided by concentrating the construction work within the car park, which has the least value to biodiversity. This has enabled the more valuable habitat, in the form of the semi-natural broadleaved woodland to predominantly be retained. Adverse effects have been avoided or minimized through mitigation measures and as a last resort, compensation measures have been provided where a significant residual effect is anticipated despite the mitigation proposed.

The Application Site is within the Essex Coast RAMS ZoI for Thames Estuary SPA and Ramsar site and is also within the Impact Risk Zone of Langdon Ridge SSSI. Therefore, avoidance and mitigation measures are provided in this Section to avoid and reduce the significance of effect.

The majority of the habitats on-site are assessed to be of site value. The baseline ecological conditions assessment scoped-in the semi-natural broadleaved woodland for further assessment of effects as it was determined to be of local value.

The habitats assessed to be of site value are considered collectively within this report, as although they are of low intrinsic ecological value, their loss without mitigation, compensation and/or enhancements would risk a net loss of biodiversity, which is not in keeping with the NPPF. Habitat provisions considered sufficient to offset any loss are provided as mitigation/compensation and those, anticipated to provide a net gain in biodiversity are recommended as enhancements.

The application site has potential to support bats, hazel dormice, reptiles, nesting birds, badger and hedgehog. Therefore, suitable avoidance and mitigation measures are recommended within this Section, to eliminate and/or reduce the significance of effect and to ensure the development is compliant to protected species legislation.

6.2 Zone of Influence

Construction Phase Potential Impacts

There is potential for chemical spills to occur during the construction phase, that can spill beyond the site boundary. There is also a risk of security lights to spill beyond the boundaries of the site and into the Network Rail lineside estate.

Construction Phase Avoidance/Mitigation Measures

Standard pollution prevention control measures are recommended during construction. These measures should be reflected in working method statements and be communicated to all staff. Working method statements that include standard pollution prevention controls that all staff are aware of, understand and implement, will mean that any pollution incidents will be unlikely during construction and if they do occur, should be predominantly limited to the construction zone boundaries and those areas just beyond.

Emergency plans should be in place and practiced in absence of a real incident to ensure that they are suitable and sufficient, and provide training to staff.

Security lighting is to be motion censored and directed into the application site and away from ecological receptors e.g. suitable roosting bat and nesting bird features.

The effectiveness and implementation of environmental control measures should be continually monitored and reviewed. If unsure about the relevant controls required, gaining the advice of a specialist is recommended.

Construction Phase Significance of Residual Effects

Provided that the mitigation measures provided are followed, the residual effect of the development beyond the site boundary is anticipated to be **negligible** during the construction phase.

Operational Phase Potential Impacts

The operational phase of the development has the potential to increase light pollution within the immediate surrounding habitats. The operational phase will also result in an increase in noise pollution from the residents and an increased risk of fly-tipping of garden waste into the Network Rail linside estate.

Operational Phase Avoidance/Mitigation Measures

Light spill beyond the boundaries has been avoided with considerate positioning of fixings and incorporating fittings with naturally high levels of horizontal light cut-off and a very low light output ratio. As apparent within the light intensity plan within the report (Calfordseaden LLP, 2021) light spill beyond the site boundary is only anticipated at low (10 lux) levels on the northern elevation which is an already well-lit road. The adjacent Network Rail lineside estate is of greatest significance in relation to wildlife and a lux level of zero is expected along its length. Following correspondence with a lighting engineer, the lighting strategy was further improved in regards to ecology. Lighting intensity along the southern boundary has been reduced.

The increase in noise pollution of residential use is not anticipated to notably impact local wildlife due to the built-up location. No wildlife considered particularly sensitive to increased noise levels (e.g. ground nesting birds) are anticipated to be present within the vicinity.

Increase risk of garden waste fly-tipping into the Network Rail lineside estate has been reduced by the incorporation of the reptile receptor along the southern boundary, which creates a gap between private properties and the lineside estate.

Construction Phase Significance of Residual Effects

Impacts on habitats beyond the site boundary have been inherently avoided by the developments design. Therefore, the residual effect of the development beyond the site boundary is anticipated to be **negligible** during the operational phase.

6.3 Designated sites

Potential Impacts

No direct impacts on designated sites are anticipated as a result of the development proposals, as the closest designated site is the Langdon Ridge SSSI, located 480m away.

The development has been identified to increase the risk of recreation impacts on Thames Estuary SPA and Ramsar site, as it is located within the designations established 8.1km ZoI (Zone of Influence). Research within the Essex Coast RAMS demonstrates that visitors come mainly from within the established ZoI's. The 'in combination' impact of proposals involving a net increase of one or more dwellings within this ZoI is concluded to have an adverse effect on Habitats site integrity unless

avoidance and mitigation measures are in place.

The application site also falls within the SSSI Impact Risk Zone (IRZ) for Langdon Ridge SSSI. The IRZ for the Application Site is indicating that any residential development of 100 units or more will need to consult with the Local Authority and Natural England as recreational impacts are predicted to be likely.

Avoidance/Mitigation Measures

In accordance to the Essex Coast RAMS, development of 10 or more dwellings is to secure financial contributions via a Section 106 agreement. The financial contributions agreed will go towards schemes that aim to reduce recreational impacts on the designations and to fund their management. The RAMS Supplementary Planning Document (SPD) (Place Services, 2020) states that *“Applicants must submit a Heads of Terms document for the Section 106 Agreement, identifying these requirements and specifying their agreement to enter into a planning obligation. Heads of Terms should be provided at the point of submission of the planning application.”*

In addition to the financial contributions, site specific avoidance/mitigation strategy is also proposed by encouraging new and existing local residents to use alternative natural greenspaces. Such sites include Gloucester Park, which is within easy reach to the north of the site. This can be achieved through the provision of leaflets to local residents and new occupants of the development and the installation of information boards within the application site and within existing, surrounding residential developments, highlighting local walks within non-designated sites.

The mitigation measures do not negate the need for a Habitat Regulations Assessment (HRA). However, the RAMS SPD states that Basildon Borough Council is a *“partner local planning authority which encourages mitigation to be secured via a strategic approach and prefers developer contributions to the RAMS.”*

It is anticipated that the mitigation measures put in place to minimize impacts on Thames Estuary SPA and Ramsar site will also mitigate recreational impacts on Langdon Ridge SSSI.

Significance of Residual Effects

The mitigation measures detailed above will reduce recreation pressures on the designated sites. The significance of the residual effect is dependent on the sum of financial contributions agreed and how the funds are invested. Overall, taking into consideration the sites location, the size of the development proposal and site-specific mitigation, a **non-significant negative effect** is considered likely.

6.4 Habitats

Low Value Habitats

Potential Impacts

Majority of on-site habitats were found to be of low intrinsic ecological importance. However, these habitats are anticipated to be lost to facilitate the development proposals and cumulatively, their loss can result in a net loss of biodiversity.

Avoidance/Mitigation Measures

In this instance loss can be partly avoided via the translocation of the species-rich semi-improved grassland to the proposed grassland areas, illustrated in the landscape plan in Appendix 2. Preferably the areas proposed for amenity grassland, as the species-rich semi-improved grassland will inherently support a wider range of species than an amenity mix.

Significance of Residual Effects

The in-situ translocation of the species-rich semi-improved grassland on-site avoids the loss of 0.28ha of habitat within the application site. This helps in ensuring no net loss of biodiversity, however, is not sufficient in offsetting overall loss and therefore, the residual impact is a **non-significant negative effect**.

Semi-Natural Broad-Leaved Woodland

Potential Impacts

The semi-natural broad-leaved woodland makes up approximately 0.75ha of the site. The majority of the woodland will be retained as part of the development, however, a loss of between 0.1 and 0.2ha is anticipated. There is also the risk of ground preparation works harming tree specimens on the edge of the woodland habitat proposed for retention.

Avoidance/Mitigation Measures

Prior to groundworks commencing, the root protection areas are to be established around the trees on the woodland edges proposed for retention in line with BS5837:2012 using Heras fencing or similar.

Significance of Residual Effects

Inherent mitigation is included within the proposal, with the majority of the woodland habitat proposed for retention. Overall, the residual impact will be **non-significant negative effect**.

6.5 Species

Bats

Potential Impacts

A total of four trees within and over-hanging into the site were assessed to support suitable roosting bat features. The three trees (TN1 to TN3) assessed to be of low suitability for roosting bats will be retained as part of the development proposals (see Appendix 2). However, the ground preparation works risk harming these trees proposed for retention.

The tree of moderate suitability for roosting bats (TN4), which has been surveyed and determined unlikely to support roosting bats will be lost to facilitate the development. The surveys have concluded that it is highly unlikely that the felling of this tree will result in the loss of an active bat roost, however, suitable roosting features will be lost. Furthermore, it is not possible to completely scope out the potential for future occupation.

The increase in light pollution during the construction and operational phases of the development has the potential to reduce utilization of the site and the bounding habitat by foraging and commuting bats. Following the surveys the impact is considered unlikely to be greater than site level as only low numbers of common pipistrelle have been recorded commuting through the site. The site is also already subject to light pollution from the surrounding road infrastructure and urban positioning. The adjacent Network Rail lineside estate provides a 'green corridor' through Basildon for bat species and an increase in light intensity on the edge of the 'green corridor' as a result of the development has the potential to have the greatest impact on bat activity.

The proposals will result in the minor loss of suitable habitat within the western half of the site with the minor loss of woodland and grassland habitat. Overall, the impact on bat activity is very minor with new commuting habitat inherently incorporated into the development in the form of a tree line along the northern boundary and wildflower meadow creation along the southern boundary.

Avoidance/Mitigation Measures

Prior to groundworks commencing, the root protection areas are to be established around the roosting bat potential trees proposed for retention in line with BS5837:2012, using Heras fencing or similar.

If in the future any of the trees with roosting bat potential require works such as pruning, as a minimum these trees will need to be inspected using an endoscope by an ecologist with the appropriate licence, immediately prior to the works. If evidence of bats is found, a mitigation strategy will be produced and a licence from Natural England is likely to be required prior to felling the tree.

The current Bat Conservation Trust guidelines state in paragraph 5.2.9 that "If the structure has been classified as having low suitability for bats, an ecologist should make a professional judgement on how to proceed based on all of the evidence available". The suitable roosting bat features within TN4 have been assessed to be absent of roosting bats, however, future occupation cannot be ruled out therefore, precautionary felling measures are to be undertaken.

Precautionary mitigation measures include the 'soft felling' of TN4 tree, which consist of cutting the tree in sections, avoiding cutting through suitable roosting features and gently lowering to the ground and leaving the sections to rest over-night. Immediately prior to the 'soft felling' a suitably licensed ecologist will undertake an endoscopic survey of the features and will supervise the removal works to assure adherence to the 'soft-felling' methodology. In the highly unlikely circumstances that a bat or evidence of bat is found during the endoscope survey an additional dawn, re-entry survey is to be undertaken between May and August to inform an EPS mitigation licence application. The EPS licence application will need to be granted by Natural England prior to the tree being felled.

Inherent lighting mitigation has been incorporated within the development with, light spill beyond the site boundaries restricted and avoided along the southern boundary 'green corridor'.

Following correspondence with a lighting engineer, the lighting strategy was further improved in regards to ecology. Lighting intensity along the southern boundary has been reduced. Paragraphs 0 and 0 detail the mitigation inherently incorporated into the proposals.

Significance of Residual Effects

Overall, the application site has been assessed to be of site value for roosting bats and bat activity and the significance of effect of the development would always be low. The roosting bat impacts have inherently been avoided and mitigation has been provided. The remaining negative impact that could not be mitigated for is the intensity of light pollution proposed on TN3. However, this has been compensated for within Section 7 of this report. Impacts on foraging and commuting bats have predominantly been inherently avoided within the Lighting Strategy. However, the increased proximity of intense light towards the 'green corridor' cannot be avoided for reasons of security. Overall, the developments residual impact will be **non-significant negative effect**.

Hazel dormice

Hazel dormouse are considered highly unlikely to be present, however, in accordance to best practice guidance, presence should not be completely ruled out where colonization is feasible.

Potential Impacts

The removal of semi-natural woodland habitat and scrub habitat on site, makes up a small percentage of the application site, however, will result in the loss of suitable hazel dormouse habitat and risks harming individuals.

The operational phase of the development increases the risk of predation by domestic cats and increase in lighting has potential to impact the value of the on-site woodland and adjacent Network Rail lineside suitability for hazel dormice.

Avoidance/Mitigation Measures

Removal of the woodland and scrub habitat is to be undertaken by hand tools and only under the supervision of a hazel dormouse licensed Ecologist. The licensed Ecologist will undertake a search for evidence of hazel dormice immediately prior to works commencing.

Adherence to the reptile mitigation measures in paragraphs 0 and 0 will prevent the risk of harming hazel dormouse individuals.

The site is positioned within an area already subject to light pollution and the increased proximity of light intensity to the 'green corridor' is unlikely to have a significant impact on wildlife already inhabiting the estate. The lighting strategy has avoided light spill on to the 'green corridor' to reduce any potential impacts.

The risk of cat predation within the adjacent 'green corridor' can be reduced by installing wire mesh along the existing fence divide, allowing free movement of reptiles and also providing gaps within the western end of the woodland suitably sized for hedgehog. Such mitigation would require agreement with Network Rail prior to installation.

Significance of Residual Effect

Hazel dormouse is considered unlikely to be present and precautionary measures have been advised in this report in accordance to best practice guidance, therefore, the residual effect is anticipated to be **negligible**.

Reptiles

Potential Impacts

The development will result in the temporary loss of the 0.28ha species-rich semi-improved grassland, as it gets translocated and placed within alternative areas of the site. The development will also result in the loss of other suitable reptile habitat on site in the form of the rubble and hardcore bund, scrub and woodland habitat.

The removal of the suitable reptile habitats on site also risks harming and killing slow-worm and common lizard.

The operational phase of the development will result in an increased risk of domestic cat predation.

Avoidance/Mitigation Measures

A reptile translocation onto retained habitat on-site, connected to the adjacent 'green corridor' is preferred. The translocation will ensure the reptiles are not harmed during the ground clearance works and are not present within the construction zone during the construction phase.

The reptile receptor site is to be located within the site boundary, as on-site receptors are preferred over off-site receptors. The landscape plan has been amended to allow for 0.29ha of the southern boundary to be retained and enhanced, to sufficiently support the good population of slow-worm and common lizard present on-site. The 0.29ha excludes the woodland habitat to be retained on the western end of the site, which will be accessible to translocated reptiles throughout the construction and operational phase of the development. The receptor site has been positioned to adjoin with the Network Rail lineside estate, which is a valuable 'green corridor' suitable for reptiles to maneuver within the local landscape.

The on-site receptor is currently dominated by dense scrub and requires enhancing before the translocation of reptiles and the commencement of ground works on-site.

Stage 1 – Preparing the Receptor Site

The reptile receptor is to be enhanced via the removal of the existing scrub, woodland and the associated stumps. This involves the strimming of the scrub to 15-30cm between April and October 2021 at temperatures above 9°C and under the supervision of a suitably experienced Ecologist. It is also advised that the trees are soft-felled following the methodology in paragraph 0. A portion of the brush and logs are to be set aside on the hardstanding car park, isolated from vegetation, and are to be utilized for hibernacula and log pile creation. The rest is to be chipped and removed from site. After at least 24 hours after the strimming, the ground is to be stripped using an excavator with a toothed bucket under the supervision of a suitably qualified ecologist. The scrub clearance work will be undertaken methodically, in the direction of the Network Rail lineside estate, to allow reptiles to move at their own accord. Part of the rubble and hardcore bund located within the reptile receptor will also be removed by hand and under the supervision of the suitably experienced ecologist. Any suitable aggregate from the removal of the bund will be utilized for the hibernaculum creation (Appendix 5).

The identified log pile on-site (TN6) is also to be removed to facilitate the development and therefore, it is recommended that it is relocated into the reptile receptor by hand under the supervision of a suitably experienced ecologist and during suitable weather conditions.

On completion of the clearance works the reptile receptor fencing is to be installed on site (see Reptile Mitigation Plan in Appendix 5) and wildflower turf or seed mix is to be sown/laid within the receptor site. Whether a turf or seed mix is to be chosen will be dependent on timing constraints (considering a minimum of 70 days translocation is required between March and October, inclusively, and only once the grassland within the receptor site has established and deemed suitable for supporting reptiles). A wildflower turf such as WFT-Shade-41 by Wildflowerturf.co.uk (Wildflower Turf, Accessed 2021), will enable translocation to commence within a month from laying and a seed mix such as Emorsgate EM10 Tussock Mixture (Emorsgate Seeds, Accessed 2021) will take longer to establish before reptiles can be translocated. When seeding/laying a meadow mix, the contractor must adhere to the preparation and maintenance instructions provided by the supplier to ensure successful establishment. Where establishment has not been successful, reapplication will be required.

The trees proposed for planting on the western end of the receptor and the amenity grassland turf proposed within the receptor site, are to be planted at the same time as the meadow sowing/laying. The amenity grassland within the receptor site is promoted as it provides suitable basking habitat for reptiles. Artificial reptile habitat will also be installed in the form of log piles, and hibernacula's, as illustrated in Appendix 5. Rubble and hardcore from the existing bund on-site will be used to create the hibernacula. It is required that this is undertaken by hand under the supervision of an ecologist.

Stage 2 - Translocation

Once the reptile receptor site has been inspected by an ecologist and deemed suitable for translocating good numbers of reptiles, the reptile exclusion fencing is to be erected around the construction site boundary, as illustrated in the Reptile Mitigation Plan (Appendix 5). The reptile fencing is to be installed by an experienced contractor under the supervision of a suitably experienced ecologist.

Once the reptile exclusion fencing has been installed 150 reptile refugia consisting of 0.5m² bitumen roofing felts are to be placed within suitable habitat throughout the development site. The refugia will be allowed to bed in for a week before the translocation commences. The translocation is seasonally restricted to mid-March to mid-October and each visit must be conducted under appropriate weather conditions of dry, low winds and temperature of between 10-18°C.

As the receptor site is on-site the ecologist can translocate each reptile caught directly into the receptor site. A cloth bag can be used when the refugia is distanced from the receptor site. The minimum trapping days has been revised since the Preliminary Ecological Appraisal report which suggested 90 days. The peak reptile count recorded in 2016 was significantly higher than recorded by D F Clark Contractors Ltd in 2020 and it is likely that the 2016 survey covered a wider area and not just the species-rich semi-improved grassland, otherwise the mat density in the 0.28ha grassland patch would have been excessive. Therefore, the translocation is covering all potential suitable habitat within the site perimeter and the 2016 have been considered in devising the translocation methodology. In accordance to Herpetofauna Groups of Britain and Ireland Best Practice and Lawful Standards Guidance, a peak count of 121 slow-worm in a 2.3ha site is around 53 per ha, which is considered a medium population and thus 70 days of trapping is deemed sufficient. If no reptiles are observed for 10 consecutive days between translocation visit 50 to 70 the translocation can end before the 70 days. Otherwise, the translocation will continue until no reptiles are observed for five consecutive days.

To prevent the translocation from extending beyond 70 days, habitat manipulation of the grassland, rubble and hardcore bund and scrub habitat may be necessary during translocation to improve capture success. This includes methodically strimming the grassland and the scrub habitat and the dismantling of the bund under the supervision and direction of a suitably experienced ecologist.

Stage 3 – Post translocation

Once the translocation survey is completed any remaining dense scrub will be strimmed to 15-30cm and all grassland on-site will be methodically cut to ground level under the supervision of an experienced ecologist.

Following this the ground is to be stripped using an excavator with a toothed bucket under the supervision of a suitably experienced ecologist. If any reptiles are encountered during the clearance works they will be translocated to the receptor site. This is to be undertaken during the months of mid-March to October at temperatures above 9°C.

On completion of the ground clearance works the reptile exclusion fencing around the development can be removed, however, the reptile fencing around the perimeter of the receptor site will be retained and maintained throughout the construction phase.

On completion of the construction phase the reptile receptor fencing will be removed under the supervision of a suitably experienced ecologist. The ecologist will simultaneously start the first set of annual monitoring of reptiles on the day the of the receptor fence removal. The monitoring will be undertaken as per the presence/likely absence survey methodology with a minimum of four checks required (Sewell, 2012).

A full report on the location of capture and the release of all animals with details on their age and sex will be provided on completion of the translocation and destructive search works. The report will also provide a five-year monitoring program to determine the success of the mitigation and the appropriate management strategy for the reptile receptor.

Favorable habitat management of the receptor site is to be secured through a contract with the land management company, or similar agreement.

Significance of Residual Effect

Provided that the mitigation measures are followed, the residual impact will be **non-significant negative effect**.

Birds

Potential Impacts

Without suitable mitigation, increased disturbance as a result of construction noise, dust and vibration is likely to affect the ability of birds nesting within the retained woodland and Network Rail inside estate and to hold territory and breed successfully, if construction takes place in the breeding season. Ambient noise level increases would be variable, but at times there could be considerable increases in noise levels.

The removal of the woodland, dense scrub, trees and introduced shrub habitat will result in the loss of suitable nesting bird habitat and the potential loss of active nests.

The development is likely to increase the risk of predation from domestic cats within the site.

Avoidance/Mitigation Measures

The strimming of the scrub habitat on-site down to 15-30cm during the winter months October to February, will not clash with the reptile and hazel dormouse mitigation, provided that ground disturbance is avoided and a suitably experienced ecologist is supervising.

The introduced shrub and trees planted within the car park are isolated and are not considered suitable for both reptiles and hazel dormouse and therefore can also be fully removed during the winter months without supervision.

Where vegetation removal must be undertaken during the bird nesting season of March to September, the area will be checked in advance for active nests by an ecologist. If there is no evidence of nesting birds, the clearance works will be completed within 48 hours of inspection. If an active nest is identified, vegetation clearance will cease and an appropriate buffer zone will remain until it has been confirmed that the young have fledged and the nest is no longer in use.

Protection of root protection areas in line with BS5837:2012, using Heras fencing or similar, will reduce disturbance impacts on nesting birds within the retained habitats. Pollution prevention measures, as detailed in paragraph 0 will also help in preventing any impacts in relation to dust etc.

Information on cat predation will be included within householder information packs. Additional suggestions such as how to appropriately provide food for birds, putting a bell on the cat's collar and keeping cats indoors overnight will also be outlined within the information pack.

Significance of Residual Effect

Provided that the mitigation measures are followed, the residual impact will be **non-significant negative effect**.

Badgers

Potential Impacts

The identified outlier sett will be lost to facilitate the development and there is a risk of badger becoming trapped and killed during its removal. The proposals will result in the minor loss of suitable foraging habitat for badger. However, the development site is predominantly car park and the suitable habitat lost is not of sufficient size to be of consequence to an individual's foraging needs. The application site will be retaining its suitability for badger to commute through, if required.

During construction there will be an increase in the number and amount of hazards which could potentially harm a badger. There will be open trenches and pipes, which badgers could become trapped in.

Avoidance/Mitigation Measures

It has been concluded that the outlier sett on-site is in irregular use by badger. The loss of an occasionally used outlier sett is not anticipated to have a significant impact to local badger population. However, its removal risks harming or killing a badger if occupied at the time of removal. Therefore, it is recommended that a Natural England licence is attained. The sett is suitable for removal by a registered user of a CL35 licence. An CL35 replaces the need to apply for an individual licence and Natural England respond to site registration forms to undertake the mitigation within five days.

An CL35 licence enables the lawful exclusion of badgers and the destruction of their setts between 1st July and 30th November, inclusively. At other times you must apply for an individual licence. On approving the registration the licensed ecologist will ensure that badgers are not utilizing the sett using one-way gates prior to the destruction of the sett.

Badgers are very mobile and new setts can appear at any time of year, therefore, it is recommended that whilst on-site, the CL35 licensed ecologist undertakes a search for newly created setts within 30m of the construction zone.

In the unlikely event that a badger becomes trapped in excavations during construction works, a timber ramp should be inserted to allow the animal to escape of its own accord.

Any temporary pipes will be capped to prevent badgers gaining access during the night.

Significance of Residual Effect

Ultimately the development will result in the loss of the outlier sett, despite all other potential impacts considered sufficiently mitigated for. Therefore, the residual impact will be **non-significant negative effect**.

Other legally protected/notable species

Potential Impacts

There is potential for the construction phase to directly impact hibernating or resting hedgehog during the removal of the dense scrub and introduced scrub habitat.

There will be a temporary loss of grassland habitat for foraging during construction phase.

Avoidance/Mitigation Measures

The precautionary clearance methodology proposed as part of the reptile mitigation will prevent the risk of harming hedgehog. However, the introduced shrub habitat clearance is not included in the reptile mitigation strategy and therefore, the base of the introduced shrub will be checked for hedgehog prior to removal.

The reptile mitigation strategy will provide sheltering habitat provisions in the form of log piles, hibernaculum's and dense tussocky grassland.

Significance of Residual Effects

The residual effect on hedgehogs as a result of the development is assessed to be **negligible**.

7 Compensation Measures

Compensation measures are inherently incorporated within the landscape plan, which negate the negative non-significant effects identified for a number of ecological receptors on-site:

- Replacement tree planting;
- Replacement introduced shrub planting
- Wildflower meadow creation;
- Continuous 'green belt' retained around the site boundary
- Sensitive Lighting Strategy

The listed inherent compensation measures sufficiently compensate for the loss of the low value habitats and have the potential to provide a **non-significant positive effect**.

The minor loss of semi-natural broad-leaved woodland habitat can be compensated for via the production of a woodland management plan, secured through a planning condition. The aim of the woodland management plan would be to enhance the remaining woodland habitat. This can be achieved via the creation of glades, thinning of sycamore or coppicing regime and the provision of a long-term management plan secured through a contract with the land management company. This compensation measure has the potential to offset the negative effect of the development on the on-site woodland habitat and achieve a **negligible effect**.

The inherent compensation measures are considered to sufficiently compensate for the loss of suitable nesting bird habitat and reptile habitat and ultimately result in **negligible effect**, with the potential to achieve a non-significant positive effect.

The inherent compensation will also benefit foraging and commuting bats, with the potential to result in a **negligible effect**. Additional compensation is recommended for roosting bats, as tree TN3, assessed to be of low suitability to support bats will be subject to intense light, which will reduce the value of the roosting bat feature present. Furthermore, the removal of the TN4 tree also requires sufficient compensation for the loss of suitable roosting features. Suitable compensation measures include the provision of two Schwegler 2FN bat boxes within suitably sized trees on site, as illustrated within Appendix 6. The inclusion of two bat boxes within the scheme will result in the development having a **negligible** effect on roosting bats. The Schwegler 2FN bat boxes are to be installed between 3 to 5m high, facing south.

The landscape plan is not capable of providing sufficient compensation to undo any adverse impacts on designated sites and the removal of the badger outlier sett. The adverse impacts are however, considered small and not sufficient to warrant amendments to the development proposals.

8 Enhancements

The incorporation of the below enhancements will ensure that the development is achieving a net gain in biodiversity in accordance to the NPPF. It is recommended that the below enhancement measures can be secured through a planning condition:

- Five Habitat Bat Boxes or Ibstock Bat Boxes incorporated into the proposed properties. These integrated boxes and tiles are preferred over conventional boxes as they are unobtrusive, aesthetically pleasing and are at less risk from vandalism or removal. The boxes should be installed at least 3m from the ground, away from window ledges and external lighting and on southern elevations.
- Artificial nesting bird habitat that can be incorporated into the development include six Schwegler 1MR Avianex bird boxes on trees and buildings on-site and three custom brick facing Terrace Sparrow Boxes. The boxes are to be installed at least 3m from the ground, out of reach of cats and facing either a north or easterly direction. The integrated boxes are preferred over conventional boxes as they are unobtrusive, aesthetically pleasing and are at less risk from vandalism or removal.
- Widespread reptiles are known to utilise residential gardens, therefore, to assure they can attain access to the proposed gardens it is recommended that each stretch of boundary fencing has a hole cut at the base to connect gardens. The hole should be 5” sq., so to be suitable for other small mammals, such as hedgehog. The installation of ‘Hedgehog Highway’ signs (see Appendix 6) above each hole will reduce the likelihood of the occupants from blocking them up during the operational phase.
- The wet ditch on-site is to be opened up, which has the potential to enable wetland grass and herbaceous species to establish.
- It is recommended that a continuous strip of grassland around the retained, soft landscaped northern and eastern boundaries undergoes a minimal cutting regime and is allowed to remain long throughout the reptile active season (April to October). This will entice reptiles to use the soft landscaped north and eastern boundaries of the site as well as the southern boundary receptor.
- Additional enhancements can be achieved through the incorporation of a vast variety of shrubs and herbaceous species within the soft landscaping proposals. Native tree and shrub varieties are advantageous; however, non-native varieties are also beneficial to pollinators. It is recommended that the landscaping plan provides all-year round food source for pollinators, as warmer winters are disturbing hibernating patterns of insects. The Royal Horticultural Society provide an extensive list of pollinator plants that flower by season (Royal Horticultural Society, 2015).

9 Conclusion

The development has been identified to have the potential to indirectly impact Thames Estuary and Marshes SPA and Ramsar site and Langdon Ridge SSSI through an increase in recreational pressure, alone and in combination with other residential developments. Mitigation measures have been proposed in accordance to the Essex Coast RAMS SPD. This includes the provision of financial contributions and site-specific mitigation in the form of information boards to promote the use of non-designated sites.

The application site is dominated by habitats of low ecological value. The habitat of greatest ecological value is the semi-natural broad-leaved woodland assessed to be of local value. The semi-natural broad-leaved woodland will be partially lost to facilitate the development. A compensation measures has been proposed within this report to alleviate the residual effect from the 0.1 to 0.2ha of semi-natural broad-leaved woodland loss.

The protected species interest within the application site, which has undergone further surveys to establish presence and conservation significance are reptiles, trees of roosting bat suitability and a badger outlier sett.

A mitigation strategy has been proposed for the translocation of reptile to an on-site receptor. The badger outlier sett is to be removed via a Natural England CL35 licence within the months of July to November, inclusively.

Precautionary measures have been proposed for bat activity, trees of low suitability for roosting bats, nesting birds, hazel dormouse and hedgehog.

Compensation measures have been proposed to make negative residual effects following mitigation into positive effects, which is considered achievable for the collective loss of the low value habitats on-site. Following compensation, no negative impacts are anticipated for protected species or on-site habitats.

The enhancement measures proposed have the potential to provide a net gain in biodiversity, in accordance to the NPPF. Provided that the avoidance/mitigation/ compensation and enhancement measures are adhered to, the development will be conforming to relevant legislation and policy.

10 Bibliography

- Basildon Council. (2015). *Basildon Borough Council Planning Obligations Strategy*.
- Basildon Council. (2018). *Basildon District Local Plan. Saved Policies September 2007*.
- British Standards Institution . (2012). *Trees in relation to design, demolition and construction. Recommendations. BS 5837:2012*. BSI.
- Calfordseaden LLP. (2021). *Chapel Gate, Basildon. External Artificial Lighting Assessment. REV: 01*. Orpington.
- CIEEM. (2017, December). *Guide to Ecological Surveys and Their Purpose*. Retrieved from <https://cieem.net/wp-content/uploads/2019/02/Guide-to-Ecological-Surveys-and-Their-Purpose-Dec2017.pdf>
- CIEEM. (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1 Updated September 2019*. Winchester: Chartered Institute of Ecology and Environmental Management.
- Collins, J. (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edn)*. London: The Bat Conservation Trust .
- D F Clark Contractors Ltd. (2020). *Updated Ecological Appraisal Report* . Althorne, Essex.
- Emorsgate Seeds. (Accessed 2021). *EM10 Tussock Mixture*. Retrieved from Emorsgate Seeds: <https://wildseed.co.uk/mixtures/view/10/tussock-mixture>
- Froglife. (1999). *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10*. Halesworth: Froglife.
- Herpetofauna Groups of Britain and Ireland. (1998). *Evaluating local mitigation/translocation programmes: Maintaining Best Practice and lawful standards. HBGI advisory notes for ARGs*. Halesworth: Froglife .
- JNCC. (Revised 2016). *Handbook for Phase 1 habitat survey – a technique for environmental audit*. Peterborough: ISBN 0 86139 636 7.
- L., A. H. (2016). *A review of Empirical Data in respect of Emergence and Return Times Reported for the UK's 17 Native Bat Species*. Bridgewater: AEcol.
- Matt Lee Landscape Architecture. (2020). *Landscape Master Plan. Chapel Gate, Basildon*. Bishop's Stortford, Herts.
- Ministry of Housing, communities and Local Government. (2019, February 19). *National Planning Policy Framework*. Retrieved from [gov.uk: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf)
- Natural England . (n.d.). Retrieved from MAGIC: <https://magic.defra.gov.uk/home.htm>

- Natural England. (2015, July 29). *Hazel or common dormice: surveys and mitigation for development projects. Standing advice for local planning authorities to assess the impacts of development on hazel dormice*. Retrieved from Gov.uk: <https://www.gov.uk/guidance/hazel-or-common-dormice-surveys-and-mitigation-for-development-projects>
- Oldham R.S., K. J. (2000). *Evaluating the suitability of habitat for the great crested newt (Triturus cristatus)*. Herpetological Journal 10 (4) 143-155.
- Peter Brett Associates LLP. (2016). *Car Park 14, Basildon Draft Ecological Appraisal Report*.
- Place Services. (2020). *Essex Coast Recreational disturbance Avoidance and Mitigation Strategy. Supplementary Planning Document*.
- Royal Horticultural Society. (2015, January). *RHS Perfect for Pollinators Plant List*. Retrieved from https://www.rhs.org.uk/science/pdf/conservation-and-biodiversity/wildlife/rhs_perfectforpollinators-plantlist-jan15.pdf
- Scottish Badgers. (2018). *Surveying for Badgers: Good Practice Guidelines. Version 1*.
- Sewell, D. G.-A. (2012). When is a species declining? Optimizing survey effort to detect population changes in reptiles.
- The British Standards Institution . (2013). *Biodiversity - Code of practice for planning and development*. BSI Standards Limited 2013.
- Wildflower Turf . (Accessed 2021). *wildflowerturf.co.uk*. Retrieved from Wildflower Turf : <https://www.wildflowerturf.co.uk/>

11 Appendix 1: Photographs



Photo 1: Onsite ephemeral area of standing water (Target Note 8).



Photo 2: Semi-natural broadleaved woodland.



Photo 3: Dense scrub.



Photo 4: Species-rich semi-improved natural grassland.



Photo 5: Tree with moderate bat roost potential (Target Note 4).



Photo 6: Species-poor semi-improved neutral grassland.



Photo 7: Onsite potential badger sett (Target Note 7).



Photo 8: Dry ditch.



Photo 9: Ephemeral, planted trees and hardstanding within the car park on site.



Photo 10: Car park and introduced shrub.



Photo 11: Fence along eastern boundary.



Photo 12: Rubble and hardcore bund.



Photo 13: Badger sett monitoring 2020.



Photo 14: Badger print in sand.



Photo 15: Badger hairs on sticky tape.

12 Appendix 2: Landscape Proposal