

# Stonestreet Green Solar

## Environmental Statement

### Volume 4: Appendices

### Chapter 9: Biodiversity

### Appendix 9.4: Preliminary Ecological Appraisal

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## 1. EXECUTIVE SUMMARY

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- S.1 This Preliminary Ecological Appraisal ('PEA') has been prepared on behalf of EPL 001 Limited ('the Applicant') to inform the Development Consent Order (DCO) application for Stonestreet Green Solar ('the Project').
- S.2 The Project comprises the construction, operation, maintenance, and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.
- S.3 The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**.
- S.4 The main findings of this Preliminary Ecological Appraisal are: -
- Three statutory designated sites of international importance, consisting of Wye and Crundale Downs SAC, Dungeness Romney Marsh and Rye Bay Ramsar and Special Protection Area ('SPA (incorporating Dungeness SAC) and Folkestone to Etchinghill Escarpment SAC, are present within 10km of the Site.
  - One statutory designated site of local importance, Poulton Wood LNR and one statutory designated site of national importance, Hatch Park SSSI are located within 2km of the Site.
  - The non-statutory designated site of local importance Local Wildlife Sites (LWSs) are located within 1km of the Site comprise: Backhouse Wood LWS, Aldington Sand Pit LWS, Aldington Woods LWS; and Bilsington Woods and Pasture LWS.
  - Backhouse Wood LWS is an Ancient Replanted Woodland located adjacent to the Site. A further 10 ancient woodlands sites are located within 1km of the Site.
  - The Site extends to approximately 192 hectares and is currently predominantly used for arable cropping with less than a tenth managed as grazing pasture. The Site also supports hedgerows, arable margins, woodland and ponds that qualify as HPs (i.e., 'priority habitats' under the NERC Act 2006) and Kent Biodiversity Strategy Priority Habitats
  - Boundary habitats bordering arable fields and watercourses are generally the most suitable for notable and protected species including notable plants, fungi, great crested newt, breeding and wintering birds, bats, dormouse, harvest mouse, brown hare, hedgehog and badger.
  - The arable field extents are generally of lower suitability for protected and notable species but do provide suitable habitat for some species including farmland birds and brown hare.

- S.5 The key recommendations provided within this Preliminary Ecological Appraisal have been addressed within the Environmental Statement (ES) produced for the DCO application as follows: -
- Further assessment of the risk of adverse effects on internationally designated sites is now included in **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and an **Information for Habitats Regulations Assessment (Doc Ref. 7.19)** accompanies the ES. Adverse effects upon other designated sites and ancient woodland are assessed in **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.
  - A suite of further surveys have been recommended for a range of habitats and species. These surveys have now been completed and findings are reported in the **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and its associated appendices.
  - Details of avoidance, mitigation, compensation or enhancement measures recommended within this PEA are provided in the associated, overarching **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and the **Outline Landscape and Ecology Management Plan ('LEMP') (Doc Ref 7.10)** that has been produced to inform the DCO application.
- S.6 This report contains additional detail of ecological survey requirements, and, where possible and appropriate, preliminary recommendations for ecological impact avoidance, mitigation, compensation and enhancement. As such, this report should be read in full.

## 2. INTRODUCTION

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### SCOPE OF WORKS

- 2.1 This Preliminary Ecological Appraisal ('PEA') has been prepared on behalf of EPL 001 Limited ('the Applicant') to inform the Development Consent Order (DCO) application for Stonestreet Green Solar ('the Project').
- 2.2 This PEA is **ES Volume 4, Appendix 9.4 (Doc Ref. 5.4)** to **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.

### THE PROJECT

- 2.3 The Project comprises the construction, operation, maintenance, and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.
- 2.4 The Project will include a generating station (incorporating solar arrays) with a total capacity exceeding 50 megawatts ('MW'). The agreed grid connection for the Project will allow the export and import of up to 99.9 MW of electricity to the grid. The Project will connect to the existing National Grid Sellindge Substation via a new 132 kilovolt ('kV') substation constructed as part of the Project and cable connection under the Network Rail and High Speed 1 ('HS1') railway.
- 2.5 The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the Order limits (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The Order limits plan is provided as **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the Order limits is known as the 'Site'.

### THE SITE

- 2.6 The Site is located approximately 6.5km to the south east of Ashford town centre and approximately 13.7km to the west of Folkestone town centre, in the county of Kent. The Site is situated on land located to the north and west of the village of Aldington, centred at Ordnance Survey National Grid Reference TR 05898 37766. The Site is within the administrative boundaries of Ashford Borough Council ('ABC') and Kent County Council ('KCC').
- 2.7 The Site comprises agricultural fields delineated by hedgerows and tree belts. It extends to approximately 192 hectares and is currently predominantly used for arable cropping and grazing.
- 2.8 The Site also supports hedgerow, parcels of woodland, drainage ditches, ponds and arable field margins. The East Stour River flows in an east to west direction within, and adjacent to, the northern part of the Site.
- 2.9 Note that field references within this report follow **ES Volume 3, Figure 2.1: Field Boundaries and Site Area Plan (Doc Ref. 5.3)** Areas where infrastructure development is proposed are identified by field number. For ease of reference, the

areas of the Site where infrastructure development is proposed, are subsequently referred to as follows:

- South Western Area (Fields 1 to 9);
- Central Area (Fields 10 to 19 and 23 to 25)
- South Eastern Area (Fields 20 to 22);
- Northern Area (Fields 26 to 29);
- Project Substation (location of the Project Substation, in the north western section of Field 26);
- 'Cable Route Corridor' (export of electricity from the Project at 132 kV via underground cables (the 'Grid Connection Cable') to the Sellindge Substation);
- 'Cable Route Crossing' (use of an existing cable duct under the High Speed 1 / Channel Tunnel Rail Link ('HS1') railway or through Horizontal Directional Drilling ('HDD') beneath HS1 for the Grid Connection Cable); and
- Sellindge Substation (location of the existing Sellindge Substation).

#### SCOPE OF WORKS

- 2.10 This assessment was informed by a site visit and a biological records search.
- 2.11 An evaluation of recent and historical aerial images and OS maps, and available information regarding designated sites, was also undertaken as part of the desk study.
- 2.12 In accordance with ecological report writing guidance produced by the Chartered Institute of Ecology and Environmental Management ('CIEEM') (CIEEM, 2017a), this PEA was produced to inform the Project team of potential ecological constraints, considerations and opportunities to inform design iteration and the potential need for additional ecological survey work.
- 2.13 This PEA has been issued following completion of a full suite of further ecological surveys on-Site, the results of these further surveys and the subsequent mitigation recommendations are incorporated into the **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** (having been previously reported in the Preliminary Environmental Information Report ('PEIR')) and are not repeated within this PEA.
- 2.14 This PEA provides an assessment of the likelihood of presence of relevant legally protected species and Species of Principal Importance on Site. This is based on an assessment of the suitability of the on Site habitats for these species and consideration of other relevant factors - such as connectivity to wider off-Site habitat networks and the results of the biological record search. This PEA does not provide confirmation of presence or likely absence of relevant species from the Site (which can typically only be determined through appropriate additional survey work), unless a species was incidentally recorded during the Site visit.

- 2.15 Where this PEA indicates that the Project may result in adverse impacts upon ecologically important features (important species, habitats and/or designated sites), a brief outline of the requirement for further survey, assessment and/or impact avoidance measures is provided with full detail of subsequent survey results and mitigation recommendations provided in **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.
- 2.16 It is important to note that any requirement for avoidance, mitigation, compensation and/or enhancement measures for 'important ecological features' (*defined as species, habitats and designated sites that are of ecological importance based on their legal status, conservation status and/or functional ecological value*) can only be confirmed once the recommended additional ecological surveys have been completed.
- 2.17 The PEA exercise does not include or constitute an invasive plant survey.
- 2.18 The PEA has been updated to inform the Development Consent Order ('DCO') application, following a previous version issued for statutory consultation for an application for development consent under the Planning Act 2008 which informed the PEIR.

#### ASSESSMENT OBJECTIVES

- 2.19 The objectives of this PEA are to: -
- Provide baseline habitat data for the Site, to inform an assessment of the baseline ecological and biodiversity value of on-Site habitats;
  - Confirm whether any Habitats of Principal Importance, or otherwise notable habitats - which are a material consideration for the development consenting process, are present within the Zone of Influence ('Zol') of the Project;
  - Assess the likelihood of presence of relevant legally protected species, Species of Principal Importance and otherwise notable species that are a material consideration for the development consenting process, and which may be affected by the Project;
  - Make recommendations for any additional ecological surveys that are required to confirm the presence or likely absence of relevant important ecological features on or adjacent to the Site and inform the determination of the DCO application;
  - Identify statutory and non-statutory designated sites located within the Zol of the Project; and
  - Make outline recommendations for any ecological avoidance, mitigation, compensation and/or enhancement measures that can be identified at this early scoping stage (*Noting that the final detail of these measures may need to be confirmed once the recommended additional ecological surveys have been completed*) - to inform the layout and design of the Project.

## PEA STAGES IN RELATION TO DESIGN ITERATION AND DCO PROCESS

- 2.20 In accordance with CIEEM Guidance (CIEEM, 2017b), the PEA has been an ongoing process, and has evolved with the design for the Project. The PEA's role is to inform the need for further detailed surveys and is not to record the results of surveys. This version of the PEA report is the second time the PEA has been reported externally (previously prepared to support the 2023 Statutory Consultation prior to the application for development consent) as an appendix to the Environmental Statement informing the application for a Development Consent.
- 2.21 In relating the evolution of the PEA with the Development Consent Order ('DCO') application process, a number of broad stages are relevant to design iterations, statutory consultation and production of the PEIR and ES, as follows:
- **Stage 1: Agree Design/ Scope:**
    - Engage with Applicant to consider the Scope of Works.
  - **Stage 2: Undertake initial PEA:**
    - Undertake desk study and walkover and prepare PEA: informs the need for Ecological Surveys, and the need for mitigation and enhancements to be included within the design.
  - **Stage 3: Ongoing Surveys and design informed by PEA:**
    - Undertake Ecological Surveys.
    - Review design and need for mitigation based on survey results.
  - **Stage 4: Statutory Pre-Application Consultation – informed by PEA:**
    - Statutory Consultation, including with Prescribed Bodies such as Natural England.
    - Issue of PEA and issue of PEIR, informed by the PEA and surveys.
  - **Stage 4: Review PEA following Consultation:**
    - Consider results of Statutory Consultation – review whether the Prescribed Bodies have confirmed the required further surveys, mitigation or enhancement measures.
    - Continue ongoing surveys.
    - Review PEA for changes to the Project and recommend associated further surveys, if needed.
    - Undertake further surveys, if needed.
  - **Stage 5: Application for Development Consent:**
    - Report surveys and results in ES.
    - Potentially reissue PEA (Stage 5) for information if further changes were required at Stage 4.



- 2.22 This PEA was initially prepared to record the initial consideration of the ecological baseline at Stage 2 and inform the need for further surveys (in accordance with CIEEM best practice CIEEM, 2017b) at Stage 3.
- 2.23 The PEA was not issued externally prior to the non-statutory consultation supported by the PEIR, and the necessary surveys have been undertaken since the PEA was initially prepared for internal purposes. Where surveys have subsequently been undertaken, this is noted within this report for information, but it is not the purpose of the PEA to describe the results of these surveys. The results of the surveys are described within **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.

#### LIFESPAN OF THIS PEA

- 2.24 The lifespan of this PEA and the ecological survey information contained herein has been determined based on CIEEM's *Advice Note: On the Lifespan of Ecological Reports and Surveys* (CIEEM, 2019), an assessment of the likelihood of presence of important ecological features on-Site and consideration of how the ecological status of these features on site may change over time.
- 2.25 If the commencement of Site works is delayed beyond two years from the date of issue of this PEA report version (i.e., from time of DCO application submission), an update site walkover should be undertaken by a suitably experienced ecologist.
- 2.26 Following the update walkover, the ecologist will need to determine whether there have been any material changes to the ecological baseline, the potential impacts of the Project and/or the ecology-related legal risks associated with the Project.
- 2.27 If there have been any material changes in baseline ecological conditions, the potential ecological impacts of the Project and/or associated legal risks, or any material changes to relevant ecology-related legislation, standing advice, best practice and/or guidance, an updated PEA should be produced by a suitably experienced ecologist.

### 3. ECOLOGY DESIGN AND PLANNING PRINCIPLES

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- 3.1 The advice provided in this PEA has been informed by ecology and wildlife-related legislation, planning policy and good practice guidelines.
- 3.2 Broad principles that should be used to inform project design are set out below.

#### THE ECOLOGICAL MITIGATION HIERARCHY

- 3.3 This PEA takes account of the following relevant National Policy Statements (NPSs) for energy, which were 'designated' in 2024 and as far as they are applicable, are considered to be matters that will be important and relevant to the Secretary of State's decision as to whether to grant a DCO for the Project.
- 3.4 On the 17 January 2024, National Policy Statement for Energy (NPS EN-1) and National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) came into force. This means that these NPSs are the relevant National Policy Statements that have effect. The main documents that may be considered relevant and important to the SoS's decision would also include:
- Policies from the adopted local Development Plan and other relevant planning policy documents;
  - National Planning Policy Framework ('NPPF'); and
  - Planning Practice Guidance.
- 3.5 Whilst the NPPF does not contain specific policies for projects consented under the Development Consent Order ('DCO') regime, it can be an important and relevant consideration under the 2008 Act. This would be the case where there are no directly applicable NPS policies, or where there are no relevant and/or up to date Development Plan policies.
- 3.6 Paragraph 4.1.15 of EN-1 states that:
- "In the event of a conflict between these documents and an NPS, the NPS prevails for the purpose of Secretary of State decision making given the national significance of the infrastructure."*
- 3.7 The following national planning policy is relevant to the Project:
- Overarching National Policy Statement for Energy (EN-1) (2023), with particular reference to:
  - Paragraphs 4.3.10 and 4.3.17, which provide national policy on what an ES for a Nationally Significant Infrastructure Project (NSIP) project should contain;
  - Paragraph 4.3.18 to 4.3.29, which states what the Secretary of State must, under the Conservation of Habitats and Species Regulations 2017 (as amended) consider when granting a development consent order; and

- Part 5 section 5.4, which sets out guidance on generic impacts relating to biodiversity for the applicant's assessment and decision-making on the application including biodiversity net gain.
  - The National Policy Statement for Energy EN-3 Renewable Energy (2023) sections 2.10.9 to 2.10.162 (inclusive), which set out policy requirements specific to Solar Photovoltaic (PV) Generation.
- 3.8 The above NPSs, in conjunction with paragraph 186(a) of the NPPF, emphasise that the potential ecological impacts of any development project should be avoided and minimised by design wherever possible.
- 3.9 Impacts upon important habitats or habitats utilised by legally protected species can trigger a requirement for additional ecological survey work and can introduce legal, planning and timeline risks. To help minimise these risks and in accordance with Paragraph 186(a) of the 2023 NPPF, the ecological mitigation hierarchy should be followed during the project planning and design processes for all projects.
- 3.10 The ecological mitigation hierarchy comprises a staged process that starts with the avoidance of ecological impacts. The mitigation hierarchy can be summarised as follows: -
- **Step 1: Avoidance:** Significant ecological impacts should be avoided in the first instance - through prioritising the development of sites of low ecological importance and/or through careful design work at the site level;
  - **Step 2: Mitigation:** Where significant ecological impacts cannot be totally avoided, measures should be introduced to reduce the significance of these predicted impacts; and
  - **Step 3: Compensation:** Where significant ecological impacts cannot be avoided or adequately mitigated, as a last resort, compensatory habitats should be delivered.

#### BIODIVERSITY NET GAIN

- 3.11 The Environment Act 2021 introduced a requirement for new developments to deliver a measurable 10% net gain in biodiversity, normally measured in 'biodiversity units' under Defra / Natural England methodology. This legal duty came into force for most development projects from 12th February 2024 under Schedule 7a of the Town and Country Planning Act 1990 (as inserted by Schedule 14 of the Environment Act 2021). The duty is due to subsequently come into force for all other development project types - small sites and Nationally Significant Infrastructure Projects - in April 2024 and November 2025, respectively.
- 3.12 Part 4.6 of the Overarching National Policy Statement (NPS) for Energy (EN-1) is applicable to the Project and sets out assessment principles of Environmental and Biodiversity Net Gain, and how it is an obligation of NSIP proposals to seek opportunities for biodiversity net gain where possible:

*Paragraph 4.6.1 to 4.6.3:*

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*Although achieving biodiversity net gain is not currently an obligation on applicants, Schedule 15 of the Environment Act 2021 contains provisions which, when commenced, mean the Secretary of State may not grant an application for a Development Consent Order unless satisfied that a biodiversity gain objective is met in relation to the onshore development in England to which the application relates.*

*The biodiversity gain objective will be set out in a biodiversity gain statement (as defined under the Environment Act 2021). Normally these statements would be included within an NPS, but the Act allows for the statement to be published separately where a review of an NPS has begun before the provisions are commenced, as is the case with these energy NPSs. Under the provision of the Environment Act 2021, any such separate biodiversity gain statement will be regarded as being contained within these NPSs.*

*The Secretary of State should give appropriate weight to environmental and biodiversity net gain, although any weight given to gains provided to meet a legal requirement (for example under the Environment Act 2021) is likely to be limited..'*

- 3.13 Section 5.4.44 of NPS for Energy (EN-1) is also directly relevant to Biodiversity Net Gain as follows:

*"The Secretary of State should consider what appropriate requirements should be attached to any consent and/or in any planning obligations entered into, in order to ensure that any mitigation or biodiversity net gain measures, if offered, are delivered and maintained. Any habitat creation or enhancement delivered including linkages with existing habitats for compensation or biodiversity net gain should generally be maintained for a minimum period of 30 years, or for the lifetime of the project, if longer.'*

- 3.14 NPS EN3 (Renewable Energy) section 2.10.128 is also applicable as follows:

*'In England, proposed enhancements should take account of the above factors and as set out in Sections 4.6 and 5.4 of EN-1 aim to achieve environmental and biodiversity net gain in line with the ambition set out in the Environmental Improvement Plan and any relevant measures and targets, including statutory targets set under the Environment Act or elsewhere.'*

- 3.15 The National Planning Policy Framework ('NPPF'), with particular reference to Sections 180 to 188, additionally states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible.

- 3.16 As part of this PEA exercise, habitats have been mapped using the UK Habitat Classification system (UK HCWG, 2020). The *Habitat Prior to Development Plan* and associated habitat area measurements (as provided in Section 6) provide a quantitative basis for the later calculation of the number of 'biodiversity units' present on-Site prior to development. This information will be used to inform an assessment of the change in biodiversity at the site level as a consequence of the

Project. The results of this assessment were firstly submitted as a supporting document with the PEIR (preliminary assessment only), and subsequently with the ES.

- 3.17 The Biodiversity Net Gain strategy for the Project will be informed by local, county and national nature conservation priorities and objectives, and habitat proposals will be appropriate to the local ecological conditions. Habitats improvement and creation measures will be targeted and designed to benefit locally occurring priority, rare, scarce and/or declining species.
- 3.18 A habitat condition assessment, the calculation of change in biodiversity units at a site level, and the development of a Biodiversity Net Gain strategy for the Project are beyond the scope of this PEA and are detailed separately within the **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and the **Biodiversity Net Gain Assessment (Doc Ref. 7.1)**.

## 4. METHOD

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### DESK STUDY

- 4.1 Recent and historic aerial images and OS maps were used to search for waterbodies located within 250m of the Site, and to assess the connectivity of on-Site habitats to wider, off-Site habitat networks.
- 4.2 A biological records search was undertaken by Kent and Medway Biological Records Centre ('KMBRC') in April 2020, April 2022 and with the most recent update carried out in August 2023. The data obtained through this search includes records of: -
- Legally protected species;
  - Species of Principal Importance;
  - Habitats of Principal Importance; and
  - Non-statutory designated sites.
- 4.3 The search radius was 1km, measured from the Site boundary. This search radius was extended to 5km for bats. Records obtained within the 10-year period prior to the date of the record search are considered 'recent.' Records older than this are considered 'historic.'
- 4.4 The Multi Agency Geographic Information for the Countryside ('MAGIC') website was used to obtain information about: -
- Statutory designated sites of international, national and local importance;
  - Proposed, possible and potential statutory designated sites of international importance;
  - Impact Risk Zones ('IRZs') associated with Sites of Special Scientific Interest ('SSSIs') and statutory designated sites of international importance;
  - Granted European Protected Species ('EPS') licences;
  - Great crested newt Class Survey Licence returns (England) (records of great crested newt, *Triturus cristatus* presence); and
  - Ancient woodland.
- 4.5 The search radius for statutory designated sites of local importance and ancient woodland was 1km, measured from the Site boundary (as shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**).
- 4.6 This search radius was extended to 2km for statutory designated sites of national importance and 10km for statutory designated sites of international importance.
- 4.7 Where a direct and obvious potential impact (e.g. pollution) pathway exists between the Site and designated site(s) that are located beyond these search radii,

potential impacts upon these more distant designated sites are also considered where appropriate.

- 4.8 SSSIs that are designated for their geological interest only are not included within this PEA. Only SSSIs that are designated on ecological grounds are considered.
- 4.9 The search radius for granted EPS mitigation licences was 5km for bats, hazel dormouse (*Muscardinus avellanarius*) and otter (*Lutra lutra*) and 1km for great crested newt.
- 4.10 Information published online by the Joint Nature Conservation Committee ('JNCC') has been used to identify relevant threats, pressures, activities and/or factors that have the potential to result in adverse effects upon the qualifying features / selection criteria for any statutory designated sites of international importance that are located within the Zol of the Project.
- 4.11 Information Sheets on Ramsar Wetlands provide detail of the factors that are likely to adversely affect a given Ramsar site. These information sheets also state whether the Ramsar site is subject to adverse ecological change.
- 4.12 Natura 2000 Standard Data Forms for Special Protection Areas ('SPAs') and Special Areas of Conservation ('SACs') provide detail of the threats, pressures and activities that have the potential to adversely affect the qualifying features for a given SPA / SAC site.
- 4.13 The Natural England online profile for any SSSI located within the potential Zol of the Project has been reviewed - to identify relevant '*Operations likely to damage the special interest*' of the relevant SSSI(s).

#### SITE VISITS

- 4.14 Site visits were undertaken by suitably qualified professionals on various dates in 2022 (during spring and summer), to update the habitat baseline.
- 4.15 Updated baseline habitat survey work, including habitat condition assessment, was also conducted in June to July 2023. A survey of the previously inaccessible Sellindge substation area was carried out on 10th January 2024.
- 4.16 Vegetation was classified and mapped using UK Habitat Classification ('UK Hab') habitat descriptions (UK HCWG, 2020).
- 4.17 This mapping method does not record very small-scale habitat features such as individual trees.
- 4.18 Any Habitats of Principal Importance, or habitats that may support rare or scarce plant communities and/or invertebrate assemblages, were recorded during the initial site visit.
- 4.19 The suitability of the Site for legally protected species and Species of Principal Importance was assessed during this initial site visit.

- 4.20 Habitat criteria listed in best practice guidelines for individual species or species groups, such as ARG UK (2010) and BCT (2016) were used during this initial in-field assessment.
- 4.21 Within this PEA, the present tense is used when describing habitats and assessing their suitability for protected and priority species. These descriptions are based on the survey findings at the time of the site visit and, where applicable, the desk study.
- 4.22 Any evidence of plant species listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) was recorded during the visit, but no specific invasive plant survey work was undertaken as this is beyond the scope of the PEA.
- 4.23 Photographs of on-Site and relevant off-site habitats were taken during the site visits.

#### ASSESSMENT AND EVALUATION

- 4.24 This PEA has been produced in broad accordance with CIEEM's *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017b) and *Guidelines for Ecological Report Writing* (CIEEM, 2017a).
- 4.25 Where relevant and appropriate, the evaluation of ecological features and the potential ecological impacts of the proposals has followed CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).
- 4.26 Habitat suitability criteria, as detailed in relevant best practice guidelines for individual species or species groups - such as Oldham *et al.*, (2000), ARG UK (2010) and/or BCT (2016), have been used to assess the suitability of habitats for protected and/or priority species.
- 4.27 The suitability of waterbodies for great crested newts has been assessed in accordance with Oldham *et al.*, (2000) and ARG UK (2010). The suitability of terrestrial habitats for great crested newts has been assessed based on information relating to terrestrial habitat requirements, as set out in Chapter 3 of Langton *et al.*, (2001).
- 4.28 Where best practice guidelines are unavailable or unclear, experienced ecologists have used their judgement to assess and categorise the suitability of habitats for protected and/or priority species.
- 4.29 There is no published method for objective assessment of the quality of habitat for reptiles and hazel dormouse, or the likelihood of species presence within habitats.
- 4.30 Lloydbore have developed Habitat Suitability Criteria for both reptiles and hazel dormice based on the key factors and habitat requirements for the species groups, to assess the suitability of sites for the species and determine the likelihood of them being present. The criteria considered in these habitat suitability assessments are included in Annex 1.



- 4.31 The need and scope for additional species surveys has been determined based on the suitability of the habitats for legally protected and/or priority species, the potential impacts of the Project and the nature of the legal protection afforded to the species most likely to be present.
- 4.32 The need and scope for any additional habitat, botanical and/or invertebrate survey work has been determined based on the broad habitat types recorded during the site visit, the potential ecological importance of these habitats and, where appropriate, the results of the desk study.
- 4.33 Section 41 of the Natural Environment and Rural Communities ('NERC') Act 2006 has been used to identify habitats and species that are considered a national conservation priority. These are also called Habitats or Species of Principal Importance. The value of these habitats and species are recognised in Overarching National Policy Statement (NPS) for Energy (EN-1) and the NPPF.
- 4.34 Although it does not afford any legal protection, *The Birds of Conservation Concern 5* (Stanbury *et al.*, 2021) provides guidance on the conservation status of UK bird species. Thus, it can be used to inform judgements on the ecological importance of bird populations and the habitats that they rely on, particularly at a local level. Red status species are those species of highest conservation concern and green status species are those of low or no conservation concern. Amber status species are those of some conservation concern.

#### ZONE OF INFLUENCE

- 4.35 The potential impacts of a development are not always limited to the boundaries of the site concerned. The area over which a development may impact ecologically important features is known as the Zol.
- 4.36 The Zol is determined by the source / type of impact, the presence of any potential pathways for that impact and the location and sensitivity of any ecologically important off-Site features.
- 4.37 The establishment of a potential Zol for a proposed project, including the identification of potential impact pathways that may extend the Zol of the proposal beyond the site's boundary, are important considerations at the PEA stage. These considerations are used to inform the scope of any further assessment and/or survey work that may be required to assess the ecological impacts of a proposed scheme and to inform a DCO application.
- 4.38 Obvious impact pathways that could extend the general ecological Zol of the Project beyond the Site boundary are: -
- The East Stour River located within, and adjacent to, the northern part of the Site, which has the potential to transmit any pollutants arising from site works; and
  - Habitat corridors (hedgerows, field margins and East Stour River) that link the on-Site habitats to off-Site habitat areas suitable for the same protected and/or priority species. The presence of these habitat corridors

means that any protected and/or priority species that utilise on-Site habitats are likely to form part of a wider local population. Therefore, impacts upon on-Site habitats suitable for these species may have impacts upon wider local population(s).

- 4.39 The above potential impact pathways have been considered when establishing potential Zols for important ecological features.
- 4.40 The completion of the additional ecological survey work recommended in this PEA, and analysis of the survey results, has allowed a more detailed assessment of the likely Zol of the Project, as set out in **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.

#### LIMITATIONS

- 4.41 Vegetation can conceal field signs for target species such as badger (*Meles meles*) and hedgehog (*Erinaceus europaeus*). However, a suite of further survey work for these and other species was recommended, has been undertaken at the time of this PEA update (March 2024) and therefore this PEA limitation is not considered significant in the context of the subsequent additional survey and assessment work undertaken for protected and priority species.
- 4.42 The survey of the Sellindge Substation and surrounds was completed in January 2024 (outside of the main botanical survey season) as access could not be granted prior to this date. However, the habitat survey results appear representative given the limited extent and types of habitat present and these habitats comprise a very small proportion of the overall Site habitat extents. Therefore, the Sellindge Substation survey timing is assessed as not representing an ecologically significant limitation to this PEA.
- 4.43 For the reasons cited above, there are no significant limitations to the survey or ecological appraisal. The survey and appraisal are therefore suitable to fulfil the objectives of this PEA.

## 5. RESULTS AND RECOMMENDATIONS

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### PRE-DEVELOPMENT HABITAT BASELINE

- 5.1 **ES Volume 3, Figure 9.6: Habitat Prior to Development Plans (Doc Ref. 5.3)** and Table 1, overleaf, provide detail of the habitats present on the Site at the time of survey (i.e. the pre-development habitat baseline).
- 5.2 Habitats have been mapped using the UK Habitat Classification system (UKHCWG, 2020).
- 5.3 The suitability of these habitats for relevant legally protected species, Species of Principal Importance (SPI) and other notable species is addressed separately, in the *Important Ecological Features* section of this PEA.

*Table 1 Detail of habitats present on-Site, including UK Habitat Classification Codes. The Location Codes provided correspond with those shown on the above Habitat Prior to Development Plan and denote distinct blocks of habitat.*

UK Hab Primary Code	Habitat type	Description
C1	Arable land	Majority of Site, encompassing over 160 hectares of arable agricultural land. Crop planting varies between years with cereal crops such as wheat being most dominant.
C1b	Temporary grass and clover ley	
C1c	Cereal crop	
C1d	Non-cereal crop	
G3	Neutral grassland	Comprises the varying grass sward margins present in the South Western Land Area, Fields 1 to 9 and the South Eastern Land Area, Fields 20 to 22. In places, subject to soil damage from tracked machinery and encroachment by crop. Reasonably diverse grass sward in places but limited diversity of herbaceous species, potentially due to nutrient enrichment.
G3c	Other neutral grassland	Includes Field 8, which is managed as cattle grazed pasture, a paddock field between Fields 10 and 12 and the majority of field margins where grass sward is present. Includes reasonably diverse grass sward in places but generally lacking rare or scarce arable flora.
H2	Hedgerow	Native hedgerows are present along the majority of roadside and field boundaries. These are primarily comprised of hawthorn ( <i>Crataegus monogyna</i> ), with the remainder of hedgerows comprised of a greater woody

UK Hab Primary Code	Habitat type	Description
		species diversity including blackthorn ( <i>Prunus spinosa</i> ), hazel and field maple.
U1b	Developed land, sealed surface	Comprises areas of road access, parking and farm storage areas present throughout the Site.
U1e	Built linear feature	Embankment around the western boundary of Field 26.
U1b6	Other developed land	Primarily comprises the Sellindge Substation area.
U1f	Sparsely vegetated land	Ruderal and ephemeral vegetation bordering parts of the Sellindge Substation.
W1f	Lowland mixed deciduous woodland	A block of Lowland mixed deciduous woodland c. 0.8ha in size and comprised of mature pedunculate oak ( <i>Quercus robur</i> ) and ash ( <i>Fraxinus excelsior</i> ) canopy is situated in between Fields 4, 5 and 7.
W1d	Wet woodland	Alder ( <i>Alnus glutinosa</i> ), oak and elder ( <i>Sambucus nigra</i> ) situated at base of railway embankment along the Cable Route Corridor and extends to border the watercourses adjacent to the Sellindge Substation. Another block is situated along the East Stour River in Field 27 with common alder, goat willow ( <i>Salix caprea</i> ), hazel ( <i>Corylus avellana</i> ) and field maple ( <i>Acer campestre</i> ).
W1g6	Line of trees	Includes the tree-lined southern boundary of Field 17 and sections of the northern boundary of Field 19 where formal hedgerow is not present.
R1a	Eutrophic standing water	Comprises the ponds and standing waterbodies distributed across the Site.

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UK Hab Primary Code	Habitat type	Description
R2	River and stream	Primarily comprised of the East Stour River and tributaries within the north of the Site, but also includes drainage ditches in the centre of the Site and a small stream in the southeastern field between Fields 20 and 22.

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## IMPORTANT ECOLOGICAL FEATURES

5.4 Table 2, overleaf, provides: -

- Detail of the suitability of on-Site and adjacent habitats for relevant legally protected species, Species of Principal Importance and otherwise notable species;
- Detail of any on-Site and adjacent Habitats of Principal Importance, and designated sites that are located within the known or potential ZOI of the Project; and
- Recommendations in relation to these important ecological features.

*Table 2 Important ecological features: Likelihood of presence, likely and/or potential impacts and recommendations. Note that where recommended measures included in the PEA exercise are now underway or have been completed, this is stated in bold text. Where relevant, notes are included indicating where further relevant information can be found, within the Environmental Statement.*

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Statutory designated sites of international importance</b> (e.g. SPAs, SACs, Ramsar sites): Internationally important and afforded legal protection by the</p>	<p><b>Wye and Crundale SAC</b> Distance and direction from the Site: c.5.2km north at closest point. Qualifying features: - Semi-natural dry grassland and scrubland facies on calcareous substrate; and Important orchid site.</p>	<p>The potential threats listed for the SAC include air pollution and air borne pollutants, grazing and biocenotic evolution and succession. None of these potential threats to the SAC are relevant to the Project.</p>	<p>The Project is unlikely to impact the SAC. Further assessment of the risk of adverse effects is now included in <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b> and an <b>Information for Habitats Regulations Assessment (Doc Ref. 7.19)</b> accompanies the ES. This detail is not repeated here.</p>



Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p>Conservation of Habitats and Species Regulations 2017 (as amended).  <b>Search radius:</b> 10km.  <b>Number of sites present:</b> 4.</p>	<p><b>Folkestone to Etchinghill Escarpment SAC</b>  Distance and direction from the Site: c.8.7km east at closest point.  Qualifying features: -  Semi-natural dry grassland and scrubland facies on calcareous substrate; an important orchid site</p>	<p>The potential threats listed for the SAC include air pollution and airbourne pollutants, grazing and biocenotic evolution and succession.  None of these potential threats to the SAC are relevant to the Project.</p>	<p>The Project is unlikely to impact the SAC. Further assessment of the risk of adverse effects is now included in <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b> and an <b>Information for Habitats Regulations Assessment (Doc Ref. 7.19)</b> accompanies the ES. This detail is not repeated here.</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Site located within IRZ for international site(s):</b> No.</p> <p><i>Note: Stodmarsh SAC, SPA, Ramsar and SSSI is located further afield than the 10km standard search radius, and is assessed separately, within Information for Habitat Regulations Assessment (Doc Ref. 7.19).</i></p>	<p><b>Dungeness Romney Marsh and Rye Bay Ramsar and SPA</b></p> <p>Distance and direction from the Site: Ramsar c.6.2km south and SPA c. 7.3km south at closest point.</p> <p>Qualifying features: - Supports breeding and wintering birds including birds of prey, passage warbler and breeding sea birds; and Supports a network of wetland types and habitats that support vulnerable, endangered and critically endangered wetland species.</p>	<p>The potential threats, pressures, activities, factors that may adversely affect the site include human disturbance, changes in biotic conditions and invasive non-native species.</p> <p>None of the potential threats listed for the Ramsar and SPA are relevant to the Project (due to a combination of the lack of relevant impact pathways and distance).</p>	<p>The Project is unlikely to impact the Ramsar. Further assessment of the risk of adverse effects is included in <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b> and an <b>Information for Habitats Regulations Assessment (Doc Ref. 7.19)</b> accompanies the ES. This detail is not repeated here.</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Statutory designated sites of national importance</b> (e.g. SSSIs, National Nature Reserves ('NNRs')): Nationally important and afforded legal protection by the Wildlife and Countryside Act 1981 (as amended). <b>Search radius:</b> 2km. <b>Number of sites present:</b> 1. <b>Site located within IRZ for national site(s):</b> Yes</p>	<p><b>Hatch Park SSSI</b> Distance and direction from the Site: c.1.8km north at closest point. Description of ecological features / Reasons for notification: - Unimproved acidic grassland; and Ancient pollard woodlands.</p>	<p>Relevant operations that are likely to damage the special interest of the site: The changing of water levels and tables and water utilisation (including irrigation); and Modification of the structure of watercourses.</p>	<p>The Project is unlikely to impact the SSSI. Further assessment of the risk of adverse effects is included in <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b>. This detail is not repeated here.</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Statutory designated sites of local importance:</b> Local Nature Reserves ('LNRs'): Locally important and afforded legal protection by Wildlife and Countryside Act 1981 (as amended).</p> <p><b>Search radius:</b> 1km.</p> <p><b>Number of sites present:</b> 1.</p>	<p><b>Poulton Wood LNR</b></p> <p>Distance and direction from the Site: c.470m south at closest point.</p> <p>Description of ecological features: -</p> <p>Coppiced woodland with oak, hornbeam and ash; and Ancient and Semi-Natural woodland site.</p>	<p>There is no hedgerow or water bodies connecting the Site to Poulton Wood. The Project is unlikely to have any detrimental impact on the LNR.</p>	<p>The Project is unlikely to impact the LNR. Further assessment of the risk of adverse effects is included in <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b>. This detail is not repeated here.</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Non-statutory designated sites:</b> Local Wildlife Sites (LWS): Non-statutory designation. Material planning consideration. <b>Search radius:</b> 1km. <b>Number of sites present:</b> 4.</p>	<p><b>Backhouse Wood LWS</b> Distance and direction from the Site: Adjacent to the Site. <b>Aldington Sand Pit LWS</b> Distance and direction from the Site: c.45m south at closest point. <b>Aldington Woods LWS</b> Distance and direction from the Site: c.370m south at closest point. <b>Bilsington Woods and Pasture LWS</b> Distance and direction from the Site: c.720m south-west at closest point.</p>	<p>Given the proximity to the Site, Backhouse Wood is the only ancient woodland site that may be impacted by the Project. Potential impacts during the construction phase of the Project include: - Debris/ pollution entering the woodland; - Noise and light pollution; and - Damage to tree roots and boundary trees.</p>	<p>Recommendations as described within the 'Ancient Woodland' section below.</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Ancient woodland:</b> Identified as an irreplaceable habitat type within NPPF.</p> <p><b>Search radius:</b> 1km.</p> <p><b>Number of sites present:</b> 11.</p>	<p><b>Distance and direction of closest ancient woodland(s) from the Site:</b></p> <p>Between 0m (Backhouse Wood) and c.720m.</p> <p>See Figure 9.3 of <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b>: Locations of Ancient Woodland Sites for detail of all ancient woodland locations within 1km of the Site, and <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b> for detail of exact distances from the Site.</p>	<p>Given the proximity to the Site, Backhouse wood is the only ancient woodland site that may be impacted by the Project.</p> <p>- Potential impact during the construction phase include:</p> <ul style="list-style-type: none"> <li>- Debris/ pollution entering the woodland;</li> <li>- Noise and light pollution; and</li> <li>- Damage to tree roots and boundary trees.</li> </ul>	<p>There will be a minimum 15m buffer zone from the Backhouse Wood LWS boundary.</p> <p>No works should be undertaken within this buffer zone including all ground works. In addition, the buffer zone cannot be used to store construction materials or temporary site buildings.</p> <p>Heras fencing fitted with debris netting should be erected along the buffer zone perimeter to prevent debris entering the woodland during the construction phase.</p> <p>Site lighting should be kept to a minimum and should not be directed towards the woodland.</p> <p>Overall, the risk of adverse effects during construction will be controlled through implementation of the <b>Outline Construction Environmental Management Plan (Doc Ref. 7.8) ('Outline CEMP')</b> and during decommissioning through the <b>Outline Decommissioning Environmental Management Plan (Doc Ref. 7.12) ('Outline DEMP')</b>. ."</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Other notable habitats :</b> e.g. Habitats of Principal Importance</p>	<p>The Site supports hedgerow, freshwater ponds, freshwater river, lowland mixed deciduous woodland and arable field margins.</p>	<p>Loss, damage and/or functional degradation during construction, operational and decommissioning phases of the Project.</p>	<p>A further baseline habitat survey was required to determine whether the habitats on-Site can be classified as Habitats of Principal Importance.</p> <p>This survey has now been completed in 2023. Findings are reported in <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b> with detailed results provided within <b>ES Volume 4, Appendix 9.5a: Hedgerow Condition and Importance Assessment (Doc Ref. 5.4)</b>, and the <b>Biodiversity Net Gain Assessment (Doc Ref. 7.1)</b>.</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Site biodiversity (general):</b> The NPPF encourages the delivery of measurable biodiversity net gains through development</p>	<p>See <i>Pre-Development Habitat Baseline</i> section (above) for descriptions of, on-Site habitats. Areas and measurements are detailed within <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b>.</p>	<p>Net loss of biodiversity at a site and/or district level as a consequence of loss, damage and/or functional degradation of habitats during construction, operational and decommissioning phases of the Project.</p>	<p>To address the requirements of the objectives of the NPPs, and to demonstrate how the Project proposes to deliver a measurable biodiversity net gain, a Biodiversity Net Gain strategy, including an assessment of biodiversity unit change on site, has been produced. This will require continued coordination between the Project ecologist, design team and landscape architect, to avoid and minimise biodiversity loss by design wherever it is possible and practicable to do so. This strategy is provided as the <b>Biodiversity Net Gain Assessment (Doc Ref. 7.1)</b>. Avoid and minimise impacts upon highly distinctive habitats such as hedgerow, river corridors and woodland. This will help to minimise the loss of biodiversity units from the Site and thereby reduce the number of units that need to be offset.</p>



Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Notable plants and fungi:</b> Species may be afforded legal protection by the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations 2017 (as amended) and/or be listed as Species of Principal Importance under the NERC Act 2006 and/or listed on the UK Red Data List.</p>	<p>Further surveys were required within on-Site habitats such as woodland, hedgerow, grassland and arable field margins to complete an assessment of the Site's botanical and fungi assemblages.</p>	<p>Loss of plants and/or their supporting habitat during site clearance works; loss, damage and/or functional degradation of plants and their supporting habitats during construction, operational and decommissioning phases of the Project.</p>	<p>Further botanical and fungi surveys were required. These surveys were completed in November 2022. Findings are reported in the <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b> with detailed survey results provided in <b>ES Volume 4, Appendix 9.5c: Fungi Survey Report (Doc Ref. 5.4)</b> and the <b>Biodiversity Net Gain Assessment (Doc Ref. 7.1)</b></p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Invasive, non-native flora and fauna:</b>                      Controlled by Schedule 9 of Wildlife and Countryside Act (as amended) and/or Environmental Protection Act 1990.</p>	<p>No invasive species have been recorded during any of the site visits. However, the presence of non-native species cannot be scoped out.</p>	<p>Functional degradation of on and off-Site habitats if Schedule 9 plant species are spread through site works.</p>	<p>Japanese knotweed is a Schedule 9 plant species that frequently occurs on development sites.                      As a precaution, prior to the commencement of site works, all site personnel should be briefed on the identification of Japanese knotweed and any invasive plant species identified through the botanical survey. This briefing could be delivered through a Toolbox Talk.                      If Japanese knotweed, or any other plant listed on Schedule 9 of the Wildlife and Countryside Act, is discovered on-Site prior to or during works, all works within 7m of the plant(s) should cease immediately and a suitably experienced specialist should be contacted for advice.                      Precautionary measures for invasive species are provided within the <b>Outline Landscape Ecological Management Plan ('LEMP')</b> (Doc Ref. 7.10) and the <b>Outline Construction Environmental Management Plan ('CEMP')</b> (Doc Ref. 7.8).</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Important invertebrate species / assemblages:</b> Individual species may be afforded legal protection by the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations 2017 (as amended) and/or be listed as Species of Principal Importance under the NERC Act 2006 and/or listed in UK Red Data Book.</p>	<p><b>Preliminary assessment of habitat importance for invertebrates:</b> The Site supports habitat that could support rare and scarce invertebrate species. Suitable habitats include wet ditches, river, ponds, woodland, hedgerows, and arable field margins. <b>Likelihood of presence on-Site:</b> Presence possible, but unlikely.</p>	<p>Loss and/or degradation of important invertebrate assemblages and/or their supporting habitat during site clearance works; loss, damage and/or functional degradation of habitats during construction, operational and decommissioning phases of the Project.</p>	<p>An invertebrate assessment and invertebrate survey were recommended for the Site. These surveys were completed in 2020 and 2022 (<b>ES Volume 4, Appendix 9.5b: Invertebrate Survey Report (Doc Ref. 5.4)</b>), with full analysis and evaluation of results within <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b>.</p>

<p><b>Amphibians: Great crested newt ('GCN') and common toad (<i>Bufo bufo</i>):</b>                  GCN are afforded legal protection by the Conservation of Habitats and Species Regulations 2017 (as amended) (as amended) and Wildlife and Countryside Act 1981 (as amended). GCN and common toad are also listed as Species of Principal Importance under the NERC Act 2006.</p>	<p><b>Suitability of on-Site terrestrial habitats for GCN:</b>                  Hedgerow, woodland and arable field margins provide habitats of 'high' suitability for GCN.  <b>Number of standing waterbodies present on-Site and within 250m of the Site:</b>                  28.  <b>Closest standing water body to the Site:</b> There are seven on-Site waterbodies.  <b>Suitability of waterbodies for GCN:</b>                  Of the 28 waterbodies, 17 were accessible. Of the 17 assessed, a number were considered suitable for GCN. Further detail of water body suitability for GCN can be found within <b>ES Volume 4, Appendix 9.5d: Amphibian Survey Report (Doc Ref. 5.4)</b>.  <b>Records of GCN presence within 1km of the Site:</b> The KMBRC data search returned 15 recent records of GCN. The</p>	<p>Killing, injury and/or disturbance of GCN and/or common toad during site clearance works, loss of habitat, obstruction of access to habitat features.</p>	<p>Further survey for both species was required to be undertaken.                  A great crested newt survey was undertaken in spring 2020 and again in spring 2022 and spring 2023. Survey for common toad was also included in the 2022 amphibian survey work. This survey included an assessment of all accessible ponds, a population survey of suitable ponds and eDNA survey on ponds where traditional pond surveys could not be completed. Further details of these surveys are provided within <b>ES Volume 4, Appendix 9.5d: Amphibian Survey Report (Doc Ref. 5.4)</b>, and the results have been factored into <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b>.</p>
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Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
	<p>Defra MAGIC tool returned one record of GCN.</p> <p><b>Result of subsequent further survey:</b> GCN present.</p> <p><b>Common toad:</b> The Site supports suitable habitat for common toad including hedgerow, arable field margins and woodland.</p> <p>Lakes adjacent to the northern section of the Site boundary may provide suitable breeding sites.</p> <p><b>Result of subsequent further survey:</b> Common toad present.</p>		

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Reptiles:</b> All UK reptile species are afforded legal protection by the Wildlife and Countryside Act 1981 (as amended) and are also listed as Species of Principal Importance under the NERC Act 2006.</p>	<p><b>Suitability of on-Site habitats for reptiles:</b> Arable field margins provide suitable habitat for reptiles.</p> <p><b>Records of reptile presence within 1km of the Site:</b> The KMBRC data search returned recent and historic records of slow worm (<i>Anguis fragilis</i>), grass snake (<i>Natrix helvetica</i>) and common lizard (<i>Zootoca vivipara</i>) and historic records of adder (<i>Vipera berus</i>) located within 1km of the Site.</p> <p><b>Result of subsequent further survey:</b> Reptiles present.</p>	<p>Killing, injury and/or disturbance of reptiles, during site clearance works; loss of habitat.</p>	<p>A reptile presence / likely absence survey was required to be undertaken by a suitably experienced ecologist in the period April to September (inclusive). This survey has now been completed, in 2020 and 2022. Findings are reported in <b>ES Volume 4, Appendix 9.5e: Reptile Survey Report (Doc Ref. 5.4)</b>, including full detail of the survey work undertaken.</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Birds:</b> All nesting birds are afforded legal protection by the Wildlife and Countryside Act 1981 (as amended). Species listed on Schedule 1 of the Act are also afforded protection from disturbance whilst nesting. Some species are also listed as Species of Principal Importance under the NERC Act 2006 and/or on the RSPB's Birds of Conservation Concern list.</p>	<p><b>Suitability of on-Site and immediately adjacent habitats for nesting birds:</b> Arable land provides suitable habitat for a range of farmland birds. Hedgerow and woodland provide suitable foraging and nesting opportunities for birds. The river habitat within the northern section of the Site provides suitable habitat for water birds and bird species commonly found within river habitats such as kingfisher (<i>Alcedo atthis</i>).</p>	<p>Killing / injury of birds, their eggs or young; destruction of active nests during site clearance works. Removal of important bird breeding, foraging and/or winter roosting habitat.</p>	<p>A breeding bird survey and a winter bird survey was required to be undertaken. These surveys have now been completed, between 2020 and 2022. Findings are reported in <b>ES Volume 4, Appendix 9.5f: Wintering Bird Survey Report (Doc Ref. 5.4), ES Volume 4, Appendix 9.5g: Breeding Bird Survey Report (Doc Ref. 5.4) and ES Volume 4, Appendix 9.5g 9.5n: Schedule 1 Bird Species Report (Doc Ref. 5.4)</b> including full detail of the survey work undertaken.</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Water vole (<i>Arvicola amphibius</i>):</b> Afforded full legal protection by the Wildlife and Countryside Act 1981 (as amended). Also listed as Species of Principal Importance under the NERC Act 2006.</p>	<p><b>Suitability of on-Site and adjacent habitats for water vole:</b> River and stream banks provide suitable habitat for water vole. <b>Records of water vole presence within 1km of the Site:</b> The KMBRC data search returned four historic and no recent records of water vole. <b>Result of subsequent further survey:</b> Water vole likely to be absent.</p>	<p>Killing, injury of water voles; obstruction of access to burrows during site clearance; loss of suitable habitat.</p>	<p>Impacts upon the river and streams should be avoided and minimised by design. If impacts upon the river and stream cannot be avoided, a water vole presence / likely absence survey will need to be undertaken by a suitably experienced ecologist within the period April to September (inclusive). This survey has now been completed, in 2020 and 2022. Findings are reported in <b>ES Volume 4, Appendix 9.5k: Riparian Mammal Survey Report (Doc Ref. 5.4)</b>, including full detail of the survey work undertaken.</p>



Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Hazel dormouse:</b> Afforded legal protection by the Conservation of Habitats and Species Regulations 2017 (as amended) and Wildlife and Countryside Act 1981 (as amended). Also listed as Species of Principal Importance under the NERC Act 2006.</p>	<p><b>Suitability of on-Site and adjacent habitats for hazel dormouse:</b> Hedgerow and woodland provide suitable habitat for hazel dormouse. The on-Site hedgerows are connected to off-Site habitat.</p> <p><b>Records of hazel dormouse presence within 5km of the Site:</b> The KMBRC data search returned seven historic and no recent records of hazel dormouse within 1km of the Site.</p> <p><b>Result of subsequent further survey:</b> Hazel dormouse confirmed present.</p>	<p>Killing, injury and/or disturbance of hazel dormice during site clearance works; loss of suitable habitat</p>	<p>Impacts upon hedgerow should be avoided and minimised by design.</p> <p>If impacts upon hedgerow cannot be avoided, a hazel dormouse presence / likely absence survey will need to be undertaken by a suitably experienced ecologist across the period April to November (inclusive). The survey will need to be set up approximately one month before the survey commencement of the survey.</p> <p>This survey was completed, in 2020/2021 and 2022. Findings are reported in <b>ES Volume 4, Appendix 9.5i: Hazel Dormouse Survey Report (Doc Ref. 5.4)</b>, including full detail of the survey work undertaken.</p>

<p><b>Badger:</b>                  Afforded legal protection by the Protection of Badgers Act 1992.</p>	<p><b>Records of badger presence within 1km of the Site:</b> The KMBRC data search returned 23 recent and historical (age of over 10 years) records of badger located within 1km of the Site, with the most recent record of badger comprising a 2021 record.</p> <p><b>Badger setts recorded on the Site and/or within 30m of the Site:</b> Refer to confidential badger report <b>ES Volume 4, Appendix 9.5m: Badger Report (Doc. Ref 5.4).</b></p> <p><b>Access to full 30m buffer zone around the Site possible:</b> No.</p> <p><b>Other badger field signs recorded on or near the Site:</b> Yes. Several dung pits, communal latrines and mammal runs have been observed across the Site.</p> <p><b>Suitability of on-Site habitats for badger foraging and/or sett establishment:</b> The Site supports arable fields, field</p>	<p>Killing, injury of badgers; damage / destruction of setts; disturbance of badgers in setts; obstruction of access to setts during site clearance works; loss of suitable foraging habitat</p>	<p>Impacts upon boundary hedgerow and woodland should be avoided and minimised by design. Development within 30m of the identified badger setts should be avoided and minimised by design.</p> <p>If impacts within 30m of badger setts cannot be avoided, further badger sett survey work will need to be undertaken by a suitably experienced ecologist within the period March to June (inclusive) - to determine whether the sett(s) are likely to constitute a main and/or breeding sett.</p> <p>This survey has now been completed, in 2020 to 2023. Findings are reported in <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b>, including full detail of the survey work undertaken provided as a confidential appendix <b>ES Volume 4, Appendix 9.5m: Badger Report (Doc. Ref 5.4).</b></p>
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Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
	<p>margins, woodland, and hedgerow. All these habitats provide suitable foraging habitat and sett establishment.</p> <p><b>Result of subsequent further survey:</b> Several active badger setts are present on Site and within 30m of the Site.</p>		

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Otter:</b> Afforded legal protection by the Conservation of Habitats and Species Regulations 2017 (as amended) (as amended) and Wildlife and Countryside Act 1981 (as amended). Also listed as Species of Principal Importance under the NERC Act 2006.</p>	<p><b>Suitability of on-Site and adjacent habitats for otter:</b> The river and riverbank habitat support suitable habitat for otter.</p> <p><b>Records of otter presence within 1km of the Site:</b> The KMBRC data search returned four historic and no recent records of otter.</p> <p><b>Result of subsequent further survey:</b> otter are likely to utilise the on-Site and adjacent river and watercourse sections for foraging, commuting and/or dispersal , but no evidence or indicators of holt presence was found</p>	<p>Killing, injury and/or disturbance of otters; obstruction of access to holts (dens); loss of suitable foraging habitat</p>	<p>Impacts upon the river and riverbank should be avoided and minimised by design.</p> <p>If impacts upon the river and riverbank cannot be avoided, an otter presence / likely absence survey will need to be undertaken by a suitably experienced ecologist. This survey can be undertaken at any time of year but is typically most effective within the months of March and April.</p> <p>This survey was completed, in 2020 and 2022. Findings are reported in Findings are reported in <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b>, with <b>ES Volume 4, Appendix 9.5k: Riparian Mammal Survey Report (Doc Ref. 5.4)</b> providing full detail of the survey work undertaken.</p>

<p><b>Bats:</b> All UK bat species are afforded legal protection by the Conservation of Habitats and Species Regulations 2017 (as amended) (as amended) and the Wildlife and Countryside Act 1981 (as amended). Some species are also listed as Species of Principal Importance under the NERC Act 2006.</p>	<p><b>Suitability of on-Site and adjacent habitats for roosting bats:</b> There are several on-Site trees that support suitable roosting features.</p> <p><b>Suitability of on-Site and adjacent habitats for foraging and commuting bats:</b> On-Site hedgerow, woodland, arable field margins and river habitat provide suitable foraging habitat for bats.</p> <p>On-Site hedgerow and river habitat and railway line, adjacent to the Site, provide potential commuting opportunities for bats.</p> <p><b>Records of bat presence within 5km of the Site:</b> The KMBRC data search returned recent and historic records of whiskered bat (<i>Myotis mystacinus</i>), Daubenton's bat (<i>M. daubentonii</i>), Natterer's bat (<i>M. nattereri</i>), noctule (<i>Nyctalus noctula</i>), common pipistrelle (<i>Pipistrellus pipistrellus</i>), soprano pipistrelle (<i>P.</i></p>	<p>Killing, injury and/or disturbance of roosting bats; obstruction of access to roost features; loss of suitable roosting, foraging and commuting habitat</p>	<p>Impacts upon boundary trees should be avoided by design. Where this cannot be achieved, further survey to determine the presence or likely absence of roosting bats within any suitable trees due to be impacted will need to be undertaken within the period May to August, inclusive.</p> <p>A bat activity survey of the Site, comprising one survey visit per month, was required to be undertaken by suitably experienced ecologists across the period April to October (inclusive).</p> <p>This survey has now been completed, in 2020 and 2022. Findings are reported in <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b> and <b>ES Volume 4: Appendix 9.5I: Bat Tree Survey Report (Doc Ref. 5.4)</b>, including full detail of the survey work undertaken. A bat-sensitive lighting scheme will need to be delivered on the Site.</p> <p>External lighting will be minimised across the entire Site, particularly adjacent to hedgerow, woodland and river habitats. This is subject to relevant highways and public health and safety considerations.</p> <p>A dark corridor will need to be maintained adjacent to the hedgerow, woodland and river habitats, because these habitats support high quality bat foraging and commuting habitat.</p> <p>Only the minimum level of lighting required for site security / health and safety should be installed on-Site. Use of narrow spectrum lighting with no UV content, or 'warm white' LED lighting (ideally &lt;2700 Kelvin, with peak wavelengths higher than 550nm (nanometres)) is recommended.</p>
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	<p><i>pygmaeus</i>), serotine (<i>Eptesicus serotinus</i>) and brown long-eared bat (<i>Plecotus auritus</i>) located within 5km of the Site</p> <p>The closest recorded maternity roost was a brown long-eared maternity roost of an unknown number of bats in 2008, located c.1.8km south-east from the Site. The closest hibernation record was a hibernating serotine bat in 1992, located c.5.4km north-west of the Site at the closest point.</p> <p><b>Likelihood of bat presence on-Site:</b></p> <p><b>Roosting bats:</b> Roosting bats likely to be present within some mature site and field boundary trees.</p> <p><b>Foraging / commuting bats:</b> Bats highly likely to forage and/or commute along Site and field boundary habitats and East Stour River corridor.</p>		<p>All lighting should be directed to ground and light spill should be minimised through use of hoods, shields and/or cowls to maintain an upward light ratio of 0%.</p> <p>Operational lighting will be limited to emergency and overnight maintenance lighting only at Inverter Stations, Intermediate Substations and the Project Substation and will be directed within the Order limits as secured in the <b>Design Principles (Doc Ref. 7.5)</b>. In general, lighting should follow the principles outlined in Section 3 of the Bat Conservation Trust and Institution of Lighting Professionals <i>Guidance Note 08/18: Bats and artificial lighting at night</i> (BCT and ILP, 2023), and should only be used where necessary.</p> <p>As a precaution, an experienced ecologist should review the detailed lighting proposals for the scheme and will provide advice on minimising light spill and illumination of boundary habitats.</p>
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<p><b>Hedgehog (<i>Erinaceus europaeus</i>):</b>                  Listed as a Species of Principal Importance under the NERC Act 2006.</p>	<p><b>Suitability of on-Site and adjacent habitats for hedgehog:</b> On-Site hedgerow and arable field margins provide suitable foraging and refuge for hedgehog.</p> <p><b>Records of hedgehog presence within 1km of the Site:</b> The KMBRC data search returned recent and historic records of hedgehog located within 1km of the Site. The most recent record was from 2012 and evidenced presence of hedgehog c.725m north of the Site.</p> <p><b>Likelihood of hedgehog presence on-Site:</b> Possible presence.</p>	<p>Risk of crushing, asphyxiation, killing and/or injury of hedgehogs during site clearance works.</p>	<p>A hedgehog presence / likely absence survey has undertaken within suitable habitat to better assess whether hedgehog are present on-Site.</p> <p>The optimal time for hedgehog survey is September / October when vegetation is reduced, and hedgehogs can be seen foraging.</p> <p>This survey was completed, in 2022. Findings are reported in <b>ES Volume 4, Appendix 9.5j: Hedgehog Survey Report (Doc Ref. 5.4)</b> and <b>ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)</b>, including full detail of the survey work undertaken.</p> <p>During the construction and decommissioning phases of the Project, recommendations include maintaining a precautionary watching brief for hedgehogs when clearing any patches of dense vegetation or piles of debris. Any hedgehogs found should be carefully moved out of harm's way (with thick gloves) into suitable vegetation cover away from roads and vehicle access.</p> <p>No trenches or pits should be left open overnight unless they are fitted with a means of escape for mammals (e.g. a scaffold plank positioned to form a ramp).</p> <p>On-Site habitats can be improved for hedgehogs by installing piles of logs and/or brushwood for shelter, which can be left in place to gradually decompose and thus provide invertebrate prey and nesting opportunities.</p> <p>Fencing around residential curtilages (if required) should be hedgehog friendly, with 13cm x 13cm holes in or under boundary and garden fencing or walls - to allow free</p>
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Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
			passage of hedgehogs between gardens. 'Hedgehog highway' labels should be placed above the holes to deter residents from blocking them up in the future.
<p><b>Brown hare (<i>Lepus europaeus</i>):</b> Listed as a Species of Principal Importance under the NERC Act 2006.</p>	<p><b>Suitability of on-Site and adjacent habitats for brown hare:</b> Arable field and arable field margins support suitable habitat for brown hare.</p> <p><b>Records of brown hare presence within 1km of the Site:</b> The KMBRC data search returned eight recent and historic records of brown hare.</p> <p><b>Likelihood of brown hare presence on-Site:</b> Presence confirmed.</p>	<p>Risk of temporary habitat loss and/or decreased mobility through introduction of fencing.</p> <p>Risk of crushing, asphyxiation, killing and/or injury of hares during site clearance works.</p> <p>Adult hares are generally able to escape from injury during site clearance and vehicle movements, but their young may be less mobile and therefore vulnerable.</p>	<p>Maintain a careful watching brief for this species during clearance of grassland habitat, and if any potential hares are seen they should be avoided until they can safely move out of harm's way.</p> <p>Ensure post-development habitats are designed to maximise their quality for brown hare.</p>



Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Harvest mouse (<i>Micromys minutus</i>):</b> Listed as a Species of Principal Importance under the NERC Act 2006.</p>	<p><b>Suitability of on-Site and adjacent habitats for harvest mouse:</b> Arable fields and arable field margins support suitable foraging and nesting opportunities for harvest mouse.</p> <p><b>Records of harvest mouse presence within 1km of the Site:</b> The KMBRC data search returned one recent and one historic record of harvest mouse.</p> <p><b>Likelihood of harvest mouse presence on-Site:</b> Possible presence.</p>	<p>Risk of crushing, asphyxiation, killing and/or injury of hares during site clearance works.</p>	<p>Maintain a careful watching brief for this species during clearance of grassland habitat, and if any potential harvest mouse are seen they should be avoided until they can safely move out of harm's way.</p> <p>Include suitable habitat for this species within habitat proposals for the Site.</p>

Ecological feature and status	Likelihood of presence on-Site and/or within Zol (as appropriate), and relevant detail of feature	Likely and/or potential impacts	Recommendations
<p><b>Other animals</b> All wild mammals are afforded some legal protection under the Wild Mammals (Protection) Act 1996 (as amended). The Animal Welfare Act 2006 (as amended) imposes a duty of care on anyone responsible for an animal to take reasonable steps to ensure that the animal's needs are met.</p>	<p>Rabbit burrows were recorded on-Site during the initial site visit.</p>	<p>Crushing, asphyxiation, killing and/or injury of mammals and other vertebrates during site clearance works.</p>	<p>If any animal burrows (excluding badger setts) are identified on-Site and need to be removed to facilitate development, these will need to be carefully excavated in a manner that allows animals (e.g. rabbits or foxes) to safely escape before works commence. Implementation of this approach should be sufficient to avoid an offence.</p> <p>If site contractors are not confident undertaking these excavation works, direct ecological supervision can be provided.</p> <p>To reduce the risk of harm to animals that may enter the Site, the following is recommended: -</p> <ul style="list-style-type: none"> <li>- Any holes that are excavated on-Site are covered overnight to prevent animals from falling in;</li> <li>- Alternatively, a broad wooden plank or similar can be placed in the excavation to allow animals to escape. A scaffolding board pitched at a maximum 45° angle would be ideal; and</li> <li>- Excavations should be checked first thing each morning, prior to the start of works that day. Any animals found within excavations should be allowed to escape and move off, or carefully removed and placed within suitable habitat cover, before site works commence.</li> </ul>

## 6. ANNEX 1: SPECIES HABITAT SUITABILITY CRITERIA

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### REPTILES

- 6.1 For the purpose of this PEA, habitat suitability criteria developed by Lloydbore have been used to assess and categorise on Site habitats for reptiles.
- 6.2 Suitable reptile habitats include the following habitat types: -
- Heathland;
  - Moorland;
  - Grasslands;
  - Scrub;
  - Woodland;
  - Wetlands;
  - Sand dune;
  - Hard and soft cliffs;
  - Vegetated shingle;
  - Open mosaic habitats; and
  - Coastal lagoon.
- 6.3 These habitats can be found within a broad range of land use types, including: -
- Farmland;
  - Brownfield sites;
  - Gardens and allotments;
  - Parks and grounds;
  - Churchyards;
  - Mineral sites;
  - Road and rail embankments; and
  - River and sea walls.
- 6.4 Other habitat and land use types may be utilised by reptiles, if the basic ecological requirements of reptiles (foraging, shelter, protection, breeding and/or hibernation) are met by the habitat. It is therefore imperative that all sites / habitats are assessed based on their ecological functionality for reptiles, rather than making hard and fast judgements based on broad habitat and/or land use type.

- 6.5 The below suitability criteria have been devised to provide a structured way of assessing ecological functionality for reptiles, which can be applied by suitably experienced ecologists.
- 6.6 Reptiles require large areas, or closely spaced patches, of suitable habitat to support viable population in the long term.
- 6.7 Therefore, habitat connectivity is important on a landscape level but also within a site.
- 6.8 The content of the below Table has been taken from the *Reptile Habitat Management Handbook* and details of habitat requirements of reptiles (Edgar, Foster and Baker, 2010). The presence / absence and extent of the features covered within this Table informs the suitability criteria that are set out within the following 'Reptile Habitat Suitability Criteria' Table.

*Table 3 Reptile habitat requirements (Edgar, Foster and Baker, 2010)*

Requirement	Description
Insolation (exposure to sun)	<ul style="list-style-type: none"> <li>Reptiles bask openly in direct sunlight or seek warm sites under cover (in vegetation or under object) or partially exposed amidst dense vegetation (mosaic basking).</li> <li>Varied topography (south-facing slopes are particularly favoured by reptiles) and a mosaic of open, sunny areas and dense cover provide the best range of basking opportunities.</li> </ul>
Shelter from the elements (heat, dry weather and wind), predators	<ul style="list-style-type: none"> <li>Reptiles need vegetation cover and open areas in close proximity to each other.</li> <li>The best habitats are structurally diverse habitats, or <i>mosaics of vegetation of differing heights, ages or types</i>.</li> <li>Thorny or prickly plants such as gorse and bramble can provide particularly good refuge from predators</li> </ul>
Hibernation opportunities (shelter during the winter)	<ul style="list-style-type: none"> <li>Hibernation sites must be frost-free, humid (but not wet) <i>and safe from flooding and predators</i>.</li> <li>Typical hibernation sites <i>include mammal burrows, rotted tree stumps and root holes, chalk fissures, large grass tussocks, anthills, old walls and building foundations, piles of rubble and other debris and under large logs and fallen trees</i>.</li> <li>Sand lizards, grass snakes <i>and adders usually make seasonal movements to hibernation sites</i>.</li> <li>Slow worms and common lizard do not travel so far and hibernation sites correspond to areas used during the active season.</li> </ul>

Requirement	Description
Food	<ul style="list-style-type: none"> <li>• Legged lizard prey - insects and other invertebrates such as spiders.</li> <li>• Slow worm prey - soft-bodies invertebrates such as slugs and worms.</li> <li>• Smooth snake prey - reptiles and small mammals.</li> <li>• Grass snake prey - <i>amphibians and fish</i>.</li> <li>• Adder prey - small mammals and occasionally lizards.</li> </ul>
Breeding habitat	<ul style="list-style-type: none"> <li>• Breeding sites are more likely to be found where structurally diverse habitats encourage high population densities.</li> <li>• Reptiles require secluded areas close to, or under, secure cover for courting and mating.</li> <li>• Grass snakes need access to decomposing material to lay their eggs. Sites include manure heaps, compost heaps, grass clippings, sawdust, cut reed and in coastal areas, seaweed heaps.</li> <li>• Sand lizards require areas of exposed sand (or similar loose substrate) with good sun exposure in which to lay their eggs.</li> </ul>

6.9 The below habitat suitability criteria have been adapted based on the ecology and specific ecological requirements of reptiles.

*Table 4 Reptile Habitat Suitability Criteria*

Habitat Suitability Category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category
High	<p>Provides significant opportunities for: -</p> <ul style="list-style-type: none"> <li>- foraging;</li> <li>- shelter / protection;</li> <li>- breeding; and</li> <li>- hibernation.</li> </ul>	<ul style="list-style-type: none"> <li>• Heterogenous habitat (e.g. grassland, scrub, woodland edges).</li> <li>• Structurally diverse habitats, mosaics of vegetation of differing heights, ages or types (e.g. tussocky grassland, dense scrub/islands).</li> <li>• Extensive landscape connectivity to suitable off-Site reptile habitat.</li> </ul>

Habitat Suitability Category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category
Medium	Provides opportunities for two or three of the above ecological functions.	<ul style="list-style-type: none"> <li>Homogenous / slightly heterogenous habitat (one to two dominant habitats e.g. grassland and scrub).</li> <li>Habitat structure is diverse, but habitat type is uniform (e.g. tussocky grassland only).</li> <li>Sub-optimal landscape connectivity to suitable off-Site reptile habitat.</li> </ul>
Low	Provides opportunities for one of the above ecological functions.	<ul style="list-style-type: none"> <li>Uniform habitat composition (e.g. grassland).</li> <li>Limited vegetative structure (e.g. closely mown grassland).</li> <li>Possess limited landscape connectivity to suitable off-Site habitat.</li> </ul>
Negligible	Does not provide any opportunities for reptiles.	<ul style="list-style-type: none"> <li>Un-vegetated areas, includes bare ground and buildings.</li> </ul>

**HAZEL DORMOUSE**

6.10 For the purpose of this PEA, habitat suitability criteria developed by Lloydbore have been used to assess and categorise on Site habitats for hazel dormouse.

6.11 The content of the below table has been taken from the Hazel Dormouse Conservation Handbook and details trees and shrubs of value to dormice (Bright et al., 2006). The presence and percentage cover of tree and shrub species listed in this Table informs the suitability criteria that are set out within the following 'Hazel Dormouse Habitat Suitability Criteria' Table.

*Table 5 Trees and shrubs of value to dormice*

Species	Description
Hazel	Where present, this is the principal source of food (nuts) for fattening up prior to hibernation. Hazel also supports many insects, including caterpillars, which are potential dormouse food. Hazel forms a continuous understorey of sprawling poles, easy for arboreal activity and is a very valuable (but not essential) species for the dormouse.

Species	Description
Oak	An important source of insect food (including caterpillars). Dormice also eat oak flowers, but acorns are of little value
Honeysuckle	The plant's finely shredded bark is the preferred nesting material used by dormice. Honeysuckle flowers also provide food at a time when few other things are available, with berries later. The climbing strands also offer convenient routes into the trees and provide dense shelter in which to nest.
Bramble	Its flowers and fruits are very important dormouse foods and tend to be available for a long period (especially where the site has slopes which vary the amounts of sunlight on the shrubs) and the thorns provide good protection for nests. Bramble often flowers late, when many other species are over, and dormice also eat the berries and seeds in autumn. Dormice seem to thrive where blackberries are abundant, even in the absence of hazel. Bramble is best if scattered among hazels and trees.
Sycamore	A valuable source of insect food and pollen. A useful tree: dormice can survive in habitats with many sycamores. However, sycamores cast a dense shade which reduces the understorey. Thus sycamores should be kept few and scattered, perhaps coppiced to prevent seeding and to reduce the extent of shading.
Ash	Ripening seeds ('keys') are eaten whilst they are still on the tree, but ash supports few food insects. The canopy does not cast a dense shade, but generally ash woodlands are not good habitat.
Wayfaring tree	Fruits in late summer when little else may be available. Dormice eat the seeds and probably also the flowers.
Yew	The fruits are a favoured food and dormice will make special excursions to reach them, but the seeds are not eaten.
Hornbeam	Seeds are small and hard, but dormice eat them. The advantage is that they are too small to be attractive to squirrels, so they may form an alternative food where squirrels have taken most of the hazel nuts. Fruiting is erratic.
Broom	Flowers are eaten in early summer.

Species	Description
Sallow	Unripe seeds are eaten from the flowers in early summer. Sallow also supports many insects
Birch	The catkins are over too early in the year to be much use to dormice, but they can eat the seeds. These are too small to attract squirrels and may provide support where squirrels compete for hazel nuts.
Sweet chestnut	Chestnuts are an excellent food source and dormice may also eat the flowers.
Blackthorn	Fruits (kernels) are eaten but the flowers come too early in the year. Dense blackthorn thickets tend to be avoided where alternative shrubs are available.
Hawthorn	Flowers are an important food in the spring. The fruits are eaten occasionally.
Conifers	Little is known about the use made of these trees by dormice, but they often support many aphids and caterpillars – potential dormouse food. The trees may also provide shelter from the wind and rain in exposed sites.
Other species such as cherry, crab apple, holly, ivy.	Little is known about the value of these trees to dormice, but it is likely that they will eat the pollen (stamens) and perhaps fruits. Ivy is a useful source of food insects and its evergreen tangles among tree branches are often used for summer nesting sites.

6.12 The below habitat suitability criteria have been adapted based on the ecology and specific ecological requirements of this hazel dormice.



*Table 6 Hazel Dormouse Habitat Suitability Criteria*

Habitat Suitability Category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category
High	Provides significant opportunities for: - - foraging; - shelter / protection; - breeding; and - hibernation.	<ul style="list-style-type: none"> <li>• 5 or more native tree and/or shrub species of value to dormice present (as per list provided in Table 8).</li> <li>• Dense canopy, understorey and/or shrub layer (as present) with good aerial connectivity.</li> </ul>
Medium	Provides opportunities for two or three of the above ecological functions.	<ul style="list-style-type: none"> <li>• Between 2 and 4 native tree and/or shrub species of value to dormice present.</li> <li>• Sub-optimal aerial connectivity (non-continuous / 'gappy' canopy, understorey and/or shrub layer (as present)).</li> </ul>
Low	Provides opportunities for one of the above ecological functions.	<ul style="list-style-type: none"> <li>• 0 or 1 native tree or shrub species of value to dormice present.</li> <li>• Canopy, understorey and/or shrub layer (as present) are 'sparse,' with poor / infrequent aerial connectivity.</li> </ul>
Negligible	Does not provide any opportunities for hazel dormouse.	<ul style="list-style-type: none"> <li>• Un-vegetated areas, includes bare ground and buildings.</li> </ul>

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