



South East Strategic Reservoir Option
Preliminary Environmental Information Report

Chapter 7 - Terrestrial ecology

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7 Terrestrial ecology

7.1 Introduction

- 7.1.1 This chapter of the Preliminary Environmental Information (PEI) Report reports the preliminary assessment of likely significant effects on Terrestrial ecology from the construction and operation of the proposed **SESRO Project** (the Project, as detailed in Chapter 2: Project description).
- 7.1.2 Within this chapter, aspect-specific sections are included on:
- Legislation, policy and guidance (Section 7.2)
 - Consultation, engagement and scoping (Section 7.3)
 - Assessment methodology (Section 7.4)
 - Study area (Section 7.5)
 - Baseline conditions (Section 7.6)
 - Project parameters, assumptions and limitations (Section 7.7)
 - Embedded design mitigation and standard good practice (Section 7.8)
 - Preliminary assessment of likely significant effects (Section 7.9)
 - Next steps (Section 7.10)
- 7.1.3 This chapter provides a preliminary assessment of the likely significant effects upon terrestrial ecology from the construction and operation of the Project. Potential effects are considered in respect of a range of receptors including designated nature conservation sites, and notable and protected habitats and species.
- 7.1.4 This chapter should be read in conjunction with Chapter 2: Project description and other chapters of key relevance, namely:
- Chapter 5: Water environment – which provides predictions of hydrological changes which inform the assessment of effects upon groundwater dependent terrestrial habitats as well as riparian species.
 - Chapter 6: Aquatic ecology – which provides baseline information and assessment of impacts to ground and surface water dependent habitats that also support terrestrial receptors.
 - Chapter 13: Air quality – which provides predictions of effects on air quality, which inform the assessment of the effects of such pollutants upon designated sites, habitats and the species they support.
 - Chapter 14: Noise and vibration – which provides predictions of the noise and vibration effects associated with the construction and operation of the Project, relevant to the assessment of disturbance effects upon protected species.
 - Chapter 18: Climate resilience – consideration of future environmental changes for the future baseline and the consideration of changing impact pathways to habitats and species.
 - Chapter 20: Cumulative effects – which provides consideration of other relevant developments for the future baseline and assessment of potential cumulative effects upon Terrestrial ecology receptors.

- 7.1.5 This chapter is supported by the following figures and appendices:
- Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology
 - Figure 7.1: Terrestrial ecology study area
 - Figure 7.2: Statutory designated sites (international)
 - Figure 7.3: Statutory designated sites (national) and non-statutory designated sites
 - Figure 7.4: Important habitats
- 7.1.6 This PEI Report does not constitute a draft Environmental Statement (ES). Assessments reported within this PEI Report chapter are considered a reasonable 'worst case', as a precautionary approach has been taken where design, construction or baseline information is incomplete. Nevertheless, the preliminary assessment is considered sufficiently robust to enable consultees to understand the likely significant environmental effects of the Project, based on current design information and understanding of the baseline environment. Gaps in information identified within the PEI Report will be considered and addressed as part of the assessment during the production of the ES, as noted in Section 7.10: Next steps.
- 7.1.7 Where provisional likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed and the design and mitigation are further developed. The ES will be submitted with the Development Consent Order (DCO) application and will provide the final assessment of likely significant effects; this will be informed by the ongoing Environmental Impact Assessment (EIA) process and associated consultation and engagement.

7.2 [Legislation, policy and guidance](#)

- 7.2.1 The Project is located mainly within the Vale of White Horse District, with the exception of the far eastern extent on the eastern bank of the River Thames, which falls within the South Oxfordshire District. The Project is wholly within the county of Oxfordshire. The regional and local planning policies most relevant to the assessment within this chapter are included in Table 7.1.
- 7.2.2 Table 7.1 lists the legislation, policy and guidance relevant to terrestrial ecology for the Project and specifies where in the PEI Report information is provided in relation to these. A full policy compliance assessment will be presented within the Planning Statement as part of the DCO application.
- 7.2.3 National Policy Statements (NPS) form the principal policy for developments progressing through the Planning Act 2008 process. The NPS for Water Resources Infrastructure (NPSWRI) is the primary NPS for the Project. In addition, the Secretary of State must also have regard to any other matters which they think are both important and relevant to the decision and this could include regional and local planning policies.
- 7.2.4 The Project is located mainly within the Vale of White Horse District, with the exception of the far eastern extent on the eastern bank of the River Thames, which falls within the South Oxfordshire District. The Project is wholly within the county of Oxfordshire. The regional and local planning policies most relevant to the assessment within this chapter are included in Table 7.1.

Table 7.1 Relevant legislation, policy and guidance for Terrestrial ecology

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
Legislation		
The Conservation of Habitats and Species Regulations 2017 (as amended) Provides legal protection for designated sites and species of European importance.	There is the potential that the Project would result in impacts upon wildlife sites and species afforded protection under this legislation. It is therefore relevant to the impact assessment and mitigation development for the Project.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
The Wildlife and Countryside Act 1981 (as amended) Provides protection for certain habitats and species and includes provisions relating to invasive non-native species (INNS) and offences arising from their release or spread.	There is the potential that the Project would result in impacts upon habitats and species afforded protection under this legislation or include actions relevant to species included in Schedule 9 (often referred to as Invasive Non-Native Species). It is therefore relevant to the impact assessment and mitigation development for the Project.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
The Countryside and Rights of Way Act 2000 Strengthens the protection of Sites of Special Scientific Interest (SSSIs) and Ramsar sites and enhances provisions for the conservation of species and habitats through increased enforcement powers and public body duties.	There is the potential that the Project would result in impacts upon SSSIs and species afforded protection under this legislation. It is therefore relevant to the impact assessment and mitigation development for the Project.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
The Protection of Badgers Act 1992 Provides protection to badgers and their setts.	There is the potential that the Project would result in impacts to badgers that are afforded protection under this legislation. It is therefore relevant to the impact assessment and mitigation development for the Project.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
The Natural Environment and Rural Communities (NERC) Act 2006 Places a duty on public authorities to have regard to the conservation and enhancement of biodiversity,	There is the potential that the Project would result in impacts upon habitats and species listed under Section 41 of the NERC Act which are considered of principal importance for the conservation of biodiversity in England. It is therefore	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
including habitats and species of principal importance published in a list pursuant to Section 41 in England.	relevant to the valuation of receptors, impact assessment and mitigation development for the Project.	
The Environment Act 2021 Environment Act 2021 requires mandatory 10% minimum Biodiversity Net Gain (BNG) for new developments. A consultation on the implementation of BNG for NSIPs was launched by Defra on 28 May 2025. Defra has proposed introducing mandatory BNG for NSIPs from May 2026. The Environment Act 2021 also introduces Local Nature Recovery Strategies (LNRS) and updates the responsibility of public bodies in relation to the general biodiversity objective.	It is relevant to the biodiversity objectives for the Project. A BNG assessment is underway and will be submitted as part of the DCO submission for the Project.	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
The Hedgerows Regulations 1997 Provides protection to important countryside hedgerows by requiring landowners to notify the local planning authority before removing or destroying important hedgerows.	There is the potential that the Project would result in effects upon important hedgerows afforded protection under this legislation. It is therefore relevant to the valuation of receptors, impact assessment and mitigation development for the Project.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
The Invasive Alien Species (Enforcement and Permitting) Order 2019 Prevents and manages the introduction and spread of listed invasive alien species, and setting out enforcement measures and permitting requirements.	There is the potential for invasive species to be encountered or spread on the Project. It is therefore relevant to the impact assessment and mitigation development for the Project.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
National Policy Statement for Water Resources Infrastructure (NPSWRI)		
Paragraphs 3.3.1, 3.3.2, 4.3.4, 4.3.13 - Completion of Habitats Regulations	A report providing information to inform Habitat Regulations Assessment will be prepared as part	The Assessment will be prepared as part of the

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
Assessment (and agreement of the same with relevant regulators)	of the DCO submission for the Project.	DCO submission for the Project.
Paragraphs 2.6.5, 3.4.1, 3.6.3 – Consideration of sensitive design and the wider environmental and social benefits of reservoir creation	The integration of these objectives into the design are integral to the Project, as set out in Chapter 2: Project description. The development of the BNG strategy for the Project is taking account of wider environmental and social benefits.	Chapter 2: Project description. Section 7.9: Preliminary assessment of likely significant effects.
Paragraphs 4.2.2, 4.2.7 - The air quality effects of the proposed development on wildlife and biodiversity should be assessed	The impact assessment for the Project includes an assessment of air quality effects upon terrestrial ecological receptors.	Section 7.9: Preliminary assessment of likely significant effects. Chapter 13: Air Quality.
Paragraphs 4.3.5, 4.3.12, 4.3.17, 4.3.19 - The ES should clearly set out any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance (including those outside England) on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity	The impact assessment for the Project takes account of all relevant protected terrestrial ecological receptors within the identified study area (which is limited to England), including internationally, nationally and local designated ecological sites and those habitats and species identified as being of principal importance for the conservation of biodiversity in England. This PEI Report includes an assessment of the likely significant effects of the Project upon these ecological receptors. The impact assessment for the Project also takes account of designated sites of geological conservation importance as detailed within Chapter 10: Geology and Soils.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology. Chapter 10: Geology and soils.
Paragraphs 4.3.6, 4.3.7, 4.3.9, 4.3.10 – Application of the mitigation hierarchy. Demonstrate how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests. Identify appropriate	The Project design is taking account of the mitigation hierarchy first seeking to avoid, then minimise, mitigate and compensate impacts to terrestrial and aquatic ecological receptors. The measures the Project has taken to conserve and enhance geological	Chapter 2: Project description. Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant effects. Chapter 6: Aquatic ecology.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
mitigation measures as an integral part of the proposed development	conservation are detailed within Chapter 10: Geology and soils.	Chapter 10: Geology and soils.
Paragraphs 4.3.11 – Developers should avoid significant harm to biodiversity and geological conservation interest and provide net gains for biodiversity.	As described above the Project is prioritising avoidance of impacts upon biodiversity in the first instance. The Project is being designed to deliver at least 10% BNG. The measures the Project has taken to conserve and enhance geological conservation are detailed within Chapter 10: Geology and soils.	Chapter 2: Project description. Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice; Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
Paragraphs 4.3.15 – where an adverse effect on a SSSI is likely, development consent should only be granted where the benefits of the development at this site clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest, and any broader impacts on the national network of SSSIs	The impact assessment for the Project takes account of the presence of SSSI and potential impact pathways to such SSSI and any associated impacts on the national network of SSSIs.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
Paragraphs 4.3.18 – Developers should identify ways to avoid negative effects on ancient woodland or ancient and veteran trees	The Project takes account of the potential presence of ancient woodland and ancient and veteran trees as part of the baseline establishment and impact assessment. If present, appropriate compensation strategies will be developed accordingly.	Chapter 9: Landscape and visual; Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice.
Paragraphs 4.3.20, 4.3.21, 4.3.22 – Development should contribute to and enhance the natural environment by providing net gains for biodiversity. Applicants should use the current version of the biodiversity metric and should use the same version to calculate their biodiversity baseline and inform their BNG outcome - Development should contribute to and	The Project is being designed to ensure BNG objectives are achieved. BNG assessment is underway and will be submitted as part of the DCO submission for the Project.	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice; Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
enhance the natural environment by providing net gains for biodiversity. Applicants should use the current version of the biodiversity metric and should use the same version to calculate their biodiversity baseline and inform their BNG outcome		
Other national policy		
Environment Improvement Plan 2023. First revision of the 25 Year Environment Plan (HM Government, 2023). The policy seeks to protect and restore nature including landscape scale habitat creation / restoration.	This has relevance to the mitigation design and BNG strategy for the Project.	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice; Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
National Planning Policy Framework (NPPF) 2024: Paragraphs 187-195 (Ministry of Housing, Communities & Local Government, 2024). The framework sets out government's planning policies for England and how these are expected to be applied. The NPPF seeks to protect and enhance biodiversity and states that plans should identify features of wildlife value, including designated sites and the wildlife corridors and stepping stones that connect them. The NPPF states that plans should promote conservation, restoration and enhancement of priority habitat and species and ecological networks, and identify and pursue	As described above, the Project is prioritising avoidance of impact upon biodiversity in the first instance. The impact assessment will take account of all relevant protected terrestrial receptors including designated sites. The Project will need to demonstrate that only in exceptional circumstances are effects on SSSIs and/or irreplaceable habitats requested to be permitted. The Project incorporates locations identified for biodiversity mitigation and enhancement, which are referred to by the Project as Priority Areas for Biodiversity (PABs), within the draft Order limits. The Project will deliver at least 10% BNG. A report providing information to inform a Habitats Regulations Assessment (HRA) will be prepared as part of the DCO submission for the Project.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
measurable net gains. The NPPF also sets out the expectation for development with regard to the identification of ecological receptors, demonstration of the application of the mitigation hierarchy and that only in exceptional circumstances should development that impacts SSSIs and irreplaceable habitats be permitted. The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (SPA, Special Areas of Conservation (SAC) and Ramsar sites, and potential or proposed SPA, SAC or Ramsar sites).		
Regional and local policy		
Vale of White Horse, South Oxfordshire District Council , Draft Joint Local Plan, Policy NH1. Biodiversity designations. The Emerging Local Plan contains developing planning policies that help address the climate emergency, restore nature, and meet the needs of residents. Under the proposed (not yet adopted) Policy NH1, designated sites at all levels are to be protected from adverse effects from development. Measures are to be provided to avoid, mitigate or, as a last resort, compensate for the adverse effects resulting from development.	The Project design takes account of the mitigation hierarchy, first seeking to avoid, then minimise, mitigate and compensate effects to terrestrial ecological receptors.	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
Vale of White Horse, South Oxfordshire District Council Draft Joint Local Plan Policy NH2. Biodiversity Net Gain and Ecological Networks. Under the proposed (not yet adopted) Policy NH2, development subject to the statutory framework for BNG includes a target of 20% BNG. Where development is not subject to the statutory framework, a target of avoidance of net loss of biodiversity and opportunities to achieve biodiversity gains are encouraged.	The Project incorporates locations identified for biodiversity mitigation and enhancement, which are referred to by the Project as PABs, within the draft Order limits. The Project will deliver at least 10% BNG.	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice; Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology .
Vale of White Horse Local Plan 2031 Part 1, Core Policy 45. Green Infrastructure The policy sets out the spatial strategy and strategic policies for the district to deliver sustainable development. A net gain in Green Infrastructure, including biodiversity, will be sought either through on or off site provision. This should be integrated into design proposals and biodiversity receptors to avoid a net loss of Green Infrastructure and biodiversity.	The Project incorporates locations identified for biodiversity mitigation and enhancement, which are referred to by the Project as PABs, within the draft Order limits. The Project will deliver at least 10% BNG.	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice; Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology .
Vale of White Horse Local Plan 2031 Part 1, Core Policy 46. Conservation and Improvement of Biodiversity The policy permits development that will conserve, restore and enhance biodiversity in the district by seeking opportunities for large-scale habitat restoration,	The Project will conserve, restore and enhance biodiversity within the district and net loss of biodiversity will be avoided.	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
reconnection and enhancement, with a primary focus on delivery in the Conservation Target Areas. A net loss of biodiversity will be avoided.		
Oxfordshire's draft Local Nature Recovery Strategy LNRS were introduced as part of the Environment Act 2021 they form a system of spatial strategies for nature and environmental improvement, setting out priorities for nature recovery at a regional level, mapping the most valuable existing areas for nature, and mapping specific proposals for creating or improving habitat for nature and wider environmental goals. The draft Oxfordshire LNRS has been consulted on, with finalisation and the start of delivery of the LNRS due in 2025.	The development of the BNG strategy for the Project is taking account of wider environmental and social benefits; habitat creation and enhancement measures are being designed to seek to align with the objectives of the emerging LNRS.	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice.
Biodiversity Action Plans for 2025-2026, Oxfordshire County Council Sets out the Oxfordshire County Council actions to be undertaken in 2025 to fulfil the biodiversity duty under the NERC Act 2006 and Environment Act 2021.	The Project is prioritising avoidance of impacts upon biodiversity in the first instance, with particular focus on the avoidance and assessment of impacts upon habitats and species of principal importance as protected under the NERC Act 2006.	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice.
Neighbourhood Plans: Steventon Parish Neighbourhood Development Plan 2022 – 2031, East Hanney Neighbourhood Plan 2021 – 2031, Sutton Courtenay Neighbourhood Plan 2031, Wootton and St Helen Without Neighbourhood Plan 2019 – 2031, East Challow Neighbourhood Plan 2022-2031, Drayton	These neighbourhood plans provide contextual information, not captured in higher-level Plan documents, that have been referred to for baseline information, policies and priorities within their respective Plan areas. In some cases this includes ecological baseline evidence base documents, in others descriptive context on biodiversity observations and ongoing parish-level management of habitats. In the examples of Plans	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
Neighbourhood Development Plan 2015 – 2031, West Hanney Neighbourhood Development Plan 2016 – 2031, Appleton with Eaton Parish Neighbourhood Development Plan 2020-2031, Chilton Neighbourhood Development Plan 2021 to 2031. Additional Neighbourhood Plans for areas within the study area may become adopted, and will be reviewed, at the ES stage – notably the Plan for Abingdon on-Thames is expected.	such as East Hanney Neighbourhood Plan 2021 – 2031, descriptive linkages to the emerging draft LNRS for Oxfordshire are included.	
Guidance		
Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater and Coastal (Chartered institute of Ecology and Environmental Management (CIEEM), 2018) Guidance sets out an industry standard approach to ecological impact assessment, from identifying relevant ecological features, assessing potential impacts and determining significance of effects.	The assessment method has been developed in accordance with the CIEEM guidelines.	Section 7.4: Assessment methodology.
Biodiversity and Planning in Oxfordshire. March 2014 Oxfordshire County Council, Berkshire Buckinghamshire and Oxfordshire Wildlife Trusts (BBOWT), Thames Valley Environmental Records Centre (TVERC). A jointly prepared set of guidance to help those involved in planning in Oxfordshire ensure that development within the county	The Project is undertaking a suite of ecological surveys, with reference to TVERC data and opensource data, to identify the location of sensitive ecological receptors to implement a mitigation hierarchy approach on the Project. The development of the BNG strategy for the Project is taking account of wider environmental and social benefits, habitat creation and enhancement measures will be designed to seek to align with local	Chapter 2: Project description. Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
protects and enhances local biodiversity. The guidance brings together legislation and planning policy to identify when and where biodiversity will need to be protected by the planning system, as well as identifying opportunities to deliver effective biodiversity enhancements.	biodiversity objectives, such as those in the emerging LNRS.	
Thames Water Biodiversity and Heritage Policy. Policy no. POL014 (2025) The policy sets out principles for managing assets in a sustainable manner that enhance biodiversity and prevent the establishment of INNS.	There is the potential for INNS to be present within the Project study area, the policy is therefore relevant to the impact assessment and mitigation development for the Project.	Section 7.6: Baseline conditions; Section 7.9: Preliminary assessment of likely significant effects; Section 7.8: Embedded design mitigation and standard good practice.

7.3 Consultation, engagement and scoping

- 7.3.1 Feedback from consultation and engagement is used to define the assessment approach and to ensure that appropriate baseline information is used. Feedback is also used to drive the design of the Project to avoid, prevent and reduce any likely environmental effects. In particular, feedback from key stakeholders has informed the Project's proposed mitigation measures. Specific mitigation measures relevant to the **Terrestrial ecology** assessment are summarised in Section 7.8: Embedded design mitigation and standard good practice of this chapter. Engagement is ongoing and will continue to inform the EIA and design process.

Scoping Opinion

- 7.3.2 The EIA Scoping Report (Thames Water, 2024) was issued to the Planning Inspectorate (PINS) on 28 August 2024. PINS provided its EIA Scoping Opinion (The Planning Inspectorate, 2024) on 8 October 2024, which included feedback from consultation bodies that it formally consulted.
- 7.3.3 Table 7.2 captures the key Scoping Opinion comments received from PINS and other key comments received from consultation bodies relevant to the Terrestrial ecology assessment, along with the Applicant's response to these at this stage of the assessment. Key activities to inform the final assessment that will be undertaken between the PEI Report and ES are covered in Section 7.10: Next steps. The full consultee comments on the EIA Scoping Report and responses to these will be provided in the ES.

Table 7.2 Key Scoping feedback for Terrestrial ecology

Stakeholder	Scoping comment	Applicant response
Planning Inspectorate (PINS)	3.2.4 - Scoping Report Table 7-3 identifies a number of designated LWS as hydrologically connected to the River Thames and the Proposed Development, however, they are not located on Scoping Report Figure 8.1 or any other figure. The ES should identify all designated site receptors that are hydrologically connected to the Proposed Development on a figure and this should correlate with any discussion within the ES chapters.	All designated sites with a pathway for effect have been included on the PEI report supporting Figure 7.2: Statutory Designated sites (International) and Figure 7.3: Statutory Designated Sites (National) and Non-Statutory Designated Sites, and are also referenced in Chapter 6: Aquatic ecology.
PINS	3.3.5 - Dormice surveys have not yet been undertaken on the site, although paragraph 8.6.42 of the Scoping Report states that given the lack of suitable habitat currently available on site, hazel dormice are unlikely to be present. However, paragraph 8.5.16 of the Scoping Report states that desk based research has identified habitat features with the potential to support dormice. Paragraph 8.6.42 states that if dormice are found during surveys, they will be scoped back in. The Inspectorate agrees with this approach.	Hazel dormouse surveys are being undertaken through 2025 to improve understanding of the likely presence or absence of the species. This is set out in PEI Report Section 7.6: Baseline conditions; Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant effects; and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology .
PINS	3.3.6 - The Scoping Report explains that Great Crested Newt (GCN) are known to be present within the Proposed Development site boundary, however the Applicant proposes to scope this species out of further assessment during operation as the Scoping Report considers that potential impact pathways identified (mortality and injury, and habitat loss) are only relevant to the construction phase. The Inspectorate considers that due to the nature of the Proposed Development and the creation of wetland areas, there is potential for great crested newts to be affected during operation and therefore does not agree to scope this matter out.	Operational effects on GCN have been scoped in to the Ecological Impact Assessment (EclA). This is set out in PEI Report Section 7.6: Baseline conditions; Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant effects; and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
PINS	3.3.7 - The Scoping Report states that natterjack toads have been recorded 1.3km north-west of the Proposed Development site, however it is unknown	Operational as well as construction effects on natterjack toad have been scoped in to the EclA. This is

Stakeholder	Scoping comment	Applicant response
	if the current habitats present on site are suitable for this species, therefore this species is scoped in for the construction phase. The Inspectorate considers that due to the nature of the Proposed Development and the creation of wetland habitats there is potential for [operational phase] effects on natterjack toad and therefore does not agree to scope this matter out.	set out in PEI Report Section 7.6: Baseline conditions; Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant effects; and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
PINS	3.3.8 - Impacts on other amphibians are scoped in for the construction phase as desktop records identify presence of common frogs, toads, palmate and smooth newt. However, the Applicant proposes to scope out impacts on other amphibians during operation of the Proposed Development, as it considers there to be no pathway to effect. The Inspectorate considers that due to the nature of the Proposed Development and the creation of wetland areas, there is potential for [amphibians] to be affected during operation and therefore does not agree to scope this matter out.	Operational effects on other amphibians have been scoped in to the EclA. This is set out in PEI Report Section 7.6: Baseline conditions; Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant effects; and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
PINS	3.3.9 - The Scoping Report seeks to scope out impacts to adder, common lizard, grass snake and slow worm during operation, on the basis that there is no likely impact pathway to effect during operation. However, the Scoping Report does not explain what maintenance activities may be required. The Inspectorate does not agree to scope this matter out and considers that the ES should provide details of maintenance activities and any potential effects on adder, common lizard, grass snake and slow worms.	Operational effects on reptiles have been scoped in to the EclA. This is set out in Section 7.6: Baseline conditions; Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant effects; and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
PINS	3.3.12 - The Scoping Report explains that there are some ancient and veteran trees identified within the Proposed Development site boundary, the location of these trees is shown in Figure 8.2. The Scoping Report states that one ancient tree would be removed as a result of the Proposed Development and further survey work is ongoing to establish if	Construction and operational effects on ancient and veteran trees have been scoped in to the EclA. This is set out in PEI Report Section 7.6: Baseline conditions; Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant

Stakeholder	Scoping comment	Applicant response
	there are other ancient/veteran trees which may be affected. As survey work is still ongoing to establish the presence of ancient/veteran trees, the Inspectorate does not agree to scope this matter out. Effects on ancient and veteran trees should be addressed in the ES, where there is potential for likely significant effects to occur.	effects; and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
PINS	3.3.16 - The Applicant intends to offset the effects of the Proposed Development on GCN by obtaining a licence through the Natural England District Level Licensing (DLL) scheme. The Inspectorate understands that the DLL approach includes strategic area assessment and the identification of risk zones and strategic opportunity area maps. The ES should include information to demonstrate whether the Proposed Development is located within a risk zone for GCN. If the Applicant enters into the DLL scheme, Natural England will undertake an impact assessment and inform the Applicant whether their scheme is within one of the amber risk zones and therefore whether the Proposed Development is likely to have a significant effect on GCN. The outcome of this assessment will be documented on an Impact Assessment and Conservation Payment Certificate (IACPC). The IACPC can be used to provide additional detail to inform the findings in the ES, including information on the Proposed Development's impact on GCN and the appropriate compensation required.	The most appropriate licensing route for GCN is still being considered and will be informed by the results of ongoing GCN surveys. As data collection is ongoing, the proposed licensing route and full assessment of impacts on GCN will be detailed within the ES, with a summary of current proposals and precautionary assessment of impacts set out in PEI Report Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant effects; and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology. If this route is selected, further engagement will be held with NatureSpace Partnership, who administer DLL in Oxfordshire, and Natural England on DLL and all relevant information provided to NatureSpace Partnership and Natural England and included in the ES.
Oxfordshire County Council	Up to date data should be used and ecological survey information used.	Further baseline surveys for aquatic and terrestrial ecology receptors are being undertaken in 2025 and 2026, and updated desk studies undertaken as required to inform the ES.
Oxfordshire County Council	Reference should also be made to the emerging LNRS which is due for public	The draft Oxfordshire LNRS is referenced and applied to the

Stakeholder	Scoping comment	Applicant response
	consultation later this year and publication in 2025.	Project where applicable in this chapter.
Oxfordshire County Council	Whether Hutchin's Copse Local Wildlife Site (LWS), which is within the scoping boundary, is an ancient woodland should be established.	It has been concluded that, Hutchin's Copse LWS woodland is not classified as ancient woodland and therefore is not an irreplaceable habitat. The rationale for this conclusion is set out in PEI Report Section 7.6: Baseline conditions; Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant effects; and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
Oxfordshire County Council	The study area for emissions from road traffic should be reviewed and expanded where necessary.	A review of the study area is ongoing in response to Project parameters and this is set out in PEI Report sections Section 7.8: Embedded design mitigation and standard good practice; Section 7.9: Preliminary assessment of likely significant effects; and Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology. Chapter 12: Traffic and transport Chapter 13: Air quality
Oxfordshire County Council	The environmental assessment will need to distinguish between habitats created to provide compensation for impacts and those providing BNG.	The EIA and BNG assessment will distinguish between any habitat improvements provided to mitigate effects, as opposed to improvements above and beyond this to provide BNG.
Oxfordshire County Council	We would expect the data available from the Thames Valley Environmental Records Centre to be updated to ensure the EIA is informed by up-to-date environmental information.	Updated desk study data has been and will continue to be secured from TVERC under an appropriate licence agreement throughout the development of the ES.

Stakeholder	Scoping comment	Applicant response
Oxfordshire County Council	Due to land access restrictions it is unclear how ecological survey information can be collected in appropriate seasons and be available in time to inform decisions and Project design in line with the Project timeline. It is essential that ecological survey information is available to inform design of the scheme to allow the mitigation hierarchy to be followed and ensure BNG is delivered in such a way that it contributes to local nature recovery.	Further access has been obtained for survey work in 2025 and continues to be sought. Where access is not obtained, a precautionary approach has been taken based on available field survey data and desk study information, to develop assumptions for the application of the mitigation hierarchy and the EclA. All limitations and assumptions are clearly presented in Section 7.7: Project parameters, assumptions and limitations. The EclA and associated DCO documents will also set out what surveys will be undertaken prior to construction to confirm mitigation and inform protected species licence applications. A precautionary approach is being taken to habitat loss and BNG calculations as well as potential effects to species where access has not been obtained.
Oxfordshire County Council	In assessing the importance of ecological features at a County-wide scale reference should be made to the biodiversity and species priorities in the emerging Oxfordshire LNRS and the LWS Selection Criteria for Berks, Bucks and Oxon LWS selection criteria.	The draft Oxfordshire LNRS has been referenced alongside LWS Selection Criteria for Berks, Bucks and Oxon LWS for this PEI Report and will continue to inform the development of the Project.
Vale of White Horse District Council	Concerns raised about the land access restrictions upon ecological surveys and therefore fundamental evidence gaps in the assessment.	Further access has been obtained for survey work in 2025 and continues to be sought. Where access is not obtained, a precautionary approach has been taken based on available field survey data and desk study information, to develop assumptions for the application of the mitigation hierarchy and the EclA. All limitations and assumptions are clearly presented in Section 7.7:

Stakeholder	Scoping comment	Applicant response
		Project parameters, assumptions and limitations. The EclA and associated DCO documents will also set out what surveys will be undertaken prior to construction to confirm mitigation and inform protected species licence applications. A precautionary approach is being taken to habitat loss and BNG calculations as well as potential impacts to species where access has not been obtained.
Vale of White Horse District Council	Concerns raised about the desk-based habitat suitability modelling used to inform species scoping. This modelling has not been completed, or subject to independent review. As such, decisions on scoping appear to have been made in the absence of this evidence.	Habitat suitability modelling was explored to give an early indication of likely suitable habitats to support protected species, particularly in the context of limited access for surveys in 2024. However, further access has been obtained for survey work in 2025 and continues to be sought. Habitats are being assessed for suitability to support protected species and further surveys undertaken (as appropriate). Where access is not possible an appropriate precautionary approach, including all limitations and assumptions, will be established and set out within the ES.
Vale of White Horse District Council	Disagree with proposed scoping out of hazel dormice without having undertaken any field surveys.	A field survey-based approach to refining the likely presence or absence of hazel dormouse is being carried out in targeted areas of suitable habitat. The methodology for these surveys are described in the PEI Report.
Vale of White Horse District Council	Disagree with proposed scoping out of operational impacts upon LWS	Operational effects on LWS sites have been scoped in to the EclA, as set out in this PEI Report.

Stakeholder	Scoping comment	Applicant response
Vale of White Horse District Council	Disagree with proposed scoping out of amphibians and reptiles from operational impact assessment	Operational effects on reptiles and amphibians, have been scoped in to the EclA.
Abingdon Town Council	Concerns raised about the feasibility of achieving BNG.	The Project is working to an approach that will deliver at least 10% BNG.
Culham Parish Council	Concerns raised about the omission of scope of work for the assessment of the River Thames intake/outfall and supporting infrastructure.	The potential effects of the River Thames intake/outfall on both terrestrial and aquatic ecology have been included in the PEI report. Ongoing baseline survey development is taking place throughout 2025, and this impact pathway will be fully assessed in the ES. See also Chapter 6: Aquatic ecology.
Sutton Courtenay Parish Council (and Didcot Parish Council	Queried whether BNG would be achieved on the Project.	The Project is working to an approach that will deliver at least 10% BNG.

Non-statutory public consultation

- 7.3.4 Non-statutory public consultation on the emerging proposals for the Project was undertaken with stakeholders and local communities in Summer 2024. Formal responses to this non-statutory consultation feedback have been provided within the 'Statement of Response' (Thames Water, 2025b). Any feedback relevant to the Terrestrial ecology assessment has been taken into account.

Ongoing engagement

- 7.3.5 This section summarises the ongoing technical engagement for Terrestrial ecology with key stakeholders since EIA scoping. This includes Technical Liaison Group (TLG) meetings attended by Natural England, the Environment Agency, Oxfordshire County Council and the Vale of White Horse District Council.
- 7.3.6 Table 7.3 provides a summary of the ongoing technical engagement for Terrestrial ecology, including the issues raised and outcomes for the assessment.

Table 7.3 Key ongoing engagement for Terrestrial ecology

Stakeholder	Topics	Outcome
Technical Liaison Group: Natural England, Environment Agency,	Ongoing regular engagement. Discussions on scoping responses. Review of existing survey information and proposed ecological surveys scope for 2025.	Confirmed the value of updated biological records being obtained to inform relevant assessment stage over the Project programme. The LNRS was discussed and Oxfordshire County Council confirmed that it is aiming for

Stakeholder	Topics	Outcome
Oxfordshire County Council, Vale of White Horse District Council	Initial discussions on approach to species – specific mitigation requirements.	the LNRS to be adopted in Autumn 2025. It was agreed that the Project would seek to align with the LNRS and that it is being taken into consideration during assessment. Approach to BNG clarified. The status of Hutchin's Copse LWS was discussed to clarify that it is not considered ancient woodland and will not be treated as such on the Project. The justification for this assessment is included in the PEI Report Section 7.6. Scope of surveys have been amended to reflect discussions. Agreed ongoing engagement on ecological mitigation requirements as survey results are gathered through 2025.
Natural England	Discussions have focused on protected species surveys, mitigation and licensing requirements. Particular areas of focus were bat and hazel dormouse survey approaches, and badger mitigation.	Terrestrial ecological survey scopes, methodologies and mitigation strategies have been amended to take account of discussions.
NatureSpace Partnership	Exploring opportunities to collaborate and use District Level Licensing for GCN as part of the mitigation strategy for the Project.	The most appropriate licensing route for GCN is still being considered and will be informed by the results of ongoing GCN surveys.

7.4 Assessment methodology

- 7.4.1 The Project-wide approach to the assessment methodology is set out in Chapter 4: Approach to the environmental assessment. This has informed the approach used in this Terrestrial ecology assessment. Any further data collection or site surveys, studies, modelling, or additional assessments that are still to be undertaken to inform the ES are set out in Section 7.10: Next steps.
- 7.4.2 This section outlines the methodology followed to assess the likely significant effects of the Project in relation to Terrestrial ecology including:
- Effects scoped in to the assessment
 - Study area
 - Criteria for determining likely significant effects
 - Assessment of cumulative effects
- 7.4.3 The assessment methodology followed for Terrestrial ecology has been prepared in line with current good practice as set out in the CIEEM Guidelines for Ecological Impact Assessment (CIEEM, 2024).

Scope of the assessment

- 7.4.4 The scope of the assessment has been informed by the EIA Scoping process, including the EIA Scoping Report (Thames Water, 2024) and Scoping Opinion (The Planning Inspectorate, 2024), combined with subsequent changes to the Project design and an enhanced understanding of the baseline environment.
- 7.4.5 Matters that have been scoped out of the Terrestrial ecology assessment are documented within Appendix 4.1: Matters scoped out of the EIA, along with justification for this scoping approach. In summary, matters scoped out are:
- Operational effects to ancient woodland
 - Construction and operational effects on hazel dormouse, sand lizards and smooth snakes
 - Operational effects on LWS with the exception of Marcham Salt Spring and the Cuttings and Hutchins Copse LWS
 - Operational effects on Habitats of Principal Importance
 - Operational effects on notable vascular plants
 - Operational effects from habitat loss / gain, fragmentation and modification and spread of INNS
- 7.4.6 Effects that are scoped in for the Terrestrial ecology assessment relevant to the construction phase are:
- Habitat loss / gain, fragmentation, and modification: The construction of the Project would require the temporary and permanent loss or modification of terrestrial habitats that could result in adverse effects upon habitats, including habitats of principal importance, irreplaceable habitats such as ancient/veteran trees, and habitats likely to be used by, or to support, protected and notable species. Temporary and/or permanent habitat fragmentation could occur as a result of removal of sections of linear habitats such as hedgerows, lines of trees, scrub and woodland belts and riparian corridors. Severance of such habitats could result in adverse effects upon protected or notable species that rely upon these habitats for sheltering, foraging, commuting or dispersal. The construction Early Works will also deliver habitat creation and enhancement in the form of Project PABs, which are designed to provide habitat and species benefits including improved connectivity.
 - Mortality and injury of species: During construction, the following activities have the potential to cause mortality and/or injury of species: site clearance, earthworks, drainage works affecting watercourses, and other temporary works requiring excavations which could result in entrapment of wildlife. Mortality or injury of wildlife could also occur as a result of collision with construction plant and vehicles. Mortality or injury of individual animals could cause a reduction in feeding success, fitness and breeding success which could consequently result in adverse effects on the local population as a whole.
 - Species disturbance (from changes to noise, vibration, visual and light stimuli): Construction activities could result in changes to noise, vibration, visual and light stimuli. Such disturbance could arise from the following activities: vegetation clearance, site hoarding and fencing installation, establishment of site compounds including laydown areas and facilities, construction plant movements, utility diversions, bulk earthworks, drainage works and temporary security lighting of construction areas. This

list of activities potentially causing disturbance has been expanded upon since the EIA Scoping Report to provide greater detail. Impacts from visual disturbance (including human activity and artificial lighting) and noise disturbance could have significant effects on sensitive species. This could lead to abandonment of territory or of young, increased predation risk and use of critical energy reserves. Disturbance resulting from lighting can also lead to significant effects on nocturnal species such as bats.

- Air quality changes: Air quality effects and air pollution during construction could result in long-term habitat degradation, biodiversity loss and ecosystem disruption. Excess nitrogen from ammonia and nitrogen oxides arising from vehicle emissions may lead to nutrient enrichment, altering plant communities and reducing biodiversity in nitrogen-sensitive habitats. Pollutants such as sulphur dioxide and nitrogen oxides may also contribute to acid deposition, which can degrade soil and water quality, impacting species adapted to low-nutrient conditions. Air pollution may affect key ecological processes and persistent exposure to air pollutants can weaken habitat resilience, making habitats and species dependent on them more vulnerable to other environmental stressors. Dust accumulation due to construction works and vehicle movements on plant surfaces can reduce photosynthesis, impair respiration and hinder growth, particularly in sensitive habitats and can enter water bodies, affecting aquatic habitats. Persistent dust pollution can lead to gradual habitat degradation and increase vulnerability to wider pressures. Chapter 13: Air quality provides details on the air quality assessment, which has been used to inform the ecological assessment.
- Hydrological changes: There is potential for hydrological change to cause significant effects during construction where works would directly or indirectly impact watercourses; such impact pathways to terrestrial ecology receptors could include sediment and other pollutant releases, changes to groundwater flow causing significant changes to groundwater-dependent terrestrial habitats, and alterations to runoff regimes altering the volume and quality of surface and groundwater. Construction related changes to hydrology, hydrogeology and fluvial geomorphology are further assessed in Chapter 5: Water environment.
- Introduction and spread of INNS plant species: During construction works, topsoil and subsoil potentially containing invasive non-native plant species would be disturbed. Such soil or seed and propagules could be spread during construction activities, including excavation and machinery movements. Any introduction or spread of INNS would potentially cause significant adverse effects to sensitive terrestrial habitats due to the dominance that these species can have over native species.

7.4.7 Effects that are scoped in for the Terrestrial ecology assessment relevant to the operation phase are:

- Mortality and injury of species: Once operational the Project will include provision of new access roads, visitor facilities and associated car parks. Mortality and injury of wildlife could occur as a result of the movement of visitor and staff vehicles, particularly for those species active during operational hours. Given the introduction of a significant body of water, it is anticipated that there could be an increase in waterfowl and wader populations at the site, this could represent an increased risk of bird strike with aircraft (note: risk of bird strike is also scoped in to Chapter 19: Major accidents and disasters). Mortality or injury of individual animals as a result of operation of the Project could cause a reduction in feeding success, fitness and breeding success which could consequently result in adverse effects on the local population as a whole.

- **Species disturbance** (from changes to noise, vibration, visual and light stimuli): During operation, disturbance could arise from changes to light, noise and/or visual stimuli caused by the recreational opportunities provided by the reservoir, such as the proposed recreational lakes, visitor café, education centre and nature trail. Impacts from visual disturbance (including human activity and artificial lighting) and noise disturbance could have significant effects on sensitive species. This could lead to abandonment of territory or of young, increased predation risk and use of critical energy reserves. Disturbance resulting from lighting can also lead to significant effects on nocturnal species such as bats.
- **Hydrological changes**: During operation of the reservoir and associated new, and realigned, watercourses there is the potential for changes to groundwater flow. These changes could result in significant adverse effects upon groundwater-dependent terrestrial habitats.
- **Air quality changes**: During operation of the reservoir and associated new recreational facilities and highways, there would be expected to be trip generation which would result in traffic on the new and existing highway network. Habitats and designated sites for nature conservation may be sensitive to air pollution, particularly nitrogen-based compounds emitted by road traffic. These pollutants can have significant ecological impacts, even at low concentrations, especially when deposition occurs over long periods. Nitrogen oxides emitted from vehicle exhausts contributes to nitrogen deposition, and although more commonly associated with agriculture, ammonia can also be emitted from catalytic converters and contribute to nitrogen enrichment. Particulate matter including from tyre wear, brake dust, and exhaust emissions can settle on vegetation and soil, affecting plant health and soil chemistry. Specific habitats may be adapted to nutrient-poor conditions and nitrogen deposition can lead to the dominance of competitive species, altering habitat structure. Trip generation or redistribution of traffic may arise from site workers and commuting, or from recreational users travelling to visit the site.

7.4.8 The effects described above are associated with impact pathways for a range of terrestrial ecological receptors. The ecological receptors scoped in for the Terrestrial ecology assessment are summarised in Table 7.4. The effects scoped in to the assessment have been updated from those reported in the EIA Scoping Report to align with the PINS Scoping Opinion and also the change to dOI, with Natterjack toad, other amphibians, reptiles, and ancient/veteran trees now scoped in for the operation phase of the Project accordingly, with ancient woodland scoped in for construction and operation. Similarly Hazel dormouse has been scoped in for both construction and operation phases of the Project for consistency with the precautionary approach taken for other ecological receptors.

Table 7.4 Summary of terrestrial ecological receptors scoped in to the assessment for each Project phase

Ecological receptor	Project phase – scoped in / out	
	Construction	Operation
European designated sites	In (hydrological changes; air quality changes)	In (hydrological changes; air quality changes)

Ecological receptor	Project phase – scoped in / out	
	Construction	Operation
Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR)	In (hydrological changes; air quality changes)	In (hydrological changes; air quality changes)
Local Wildlife Sites (LWS) and Local Nature Reserves (LNRs)	In (habitat loss / gain, fragmentation, and modification; hydrological changes; air quality changes; and introduction and spread of INNS)	In (hydrological changes; air quality changes; disturbance)
Badger	In (habitat loss / gain, fragmentation, and modification; disturbance; mortality and injury)	In (disturbance; mortality and injury)
Bats	In (habitat loss / gain, fragmentation, and modification; disturbance; mortality and injury)	In (disturbance)
Birds – breeding, wintering and Schedule 1 species (including barn owl, Cetti's warbler and kingfisher)	In (habitat loss / gain, fragmentation, and modification; disturbance; mortality and injury)	In (disturbance; mortality and injury)
Hazel dormouse	In (habitat loss / gain, fragmentation, and modification; disturbance; mortality and injury)	In (disturbance; mortality and injury)
Great crested newt (GCN)	In (habitat loss / gain, fragmentation, and modification; mortality and injury)	In (mortality and injury)
Otter	In (Habitat loss / gain, fragmentation or modification; hydrological changes; disturbance; mortality and injury)	In (disturbance)
Water vole	In (Habitat loss / gain, fragmentation or modification; hydrological changes; disturbance; mortality and injury)	In (disturbance)
Natterjack toad	In (habitat loss / gain, fragmentation, and modification; mortality and injury)	In (mortality and injury)
Other amphibians	In	In (mortality and injury)

Ecological receptor	Project phase – scoped in / out	
	Construction	Operation
	(habitat loss / gain, fragmentation, and modification; mortality and injury)	
Species of Principal Importance	In (habitat loss / gain, fragmentation, and modification; disturbance; mortality and injury)	In (disturbance; mortality and injury)
Reptiles	In (habitat loss / gain, fragmentation, and modification; disturbance; mortality and injury)	In (mortality and injury)
Terrestrial invertebrates	In (habitat loss / gain, fragmentation, and modification; mortality and injury)	In (disturbance; mortality and injury)
Ancient/veteran trees	In (Habitat loss and modification; air quality changes)	In (hydrological; air quality changes)
Ancient woodland	In (air quality changes from dust deposition; hydrological changes; introduction and spread of INNS)	Out (N/A – no impact pathway to effect)
Habitats of Principal Importance	In (Habitat loss and modification; air quality changes from dust deposition; hydrological changes; introduction and spread of INNS)	Out (N/A – no impact pathway to effect)
Notable vascular plants	In (Habitat loss and modification; air quality changes from dust deposition; hydrological changes; introduction and spread of INNS)	Out (N/A – no impact pathway to effect)

Study area

- 7.4.9 The study area is defined by the maximum extent of the predicted Zone of Influence (ZOI) in which an important terrestrial ecological feature (including habitats, species and protected sites scoped into assessment and presented in Table 7.4) may be significantly affected by biophysical changes as a result of the Project. This ZOI varies for different ecological features depending on their sensitivity to environmental change but includes the entirety of the draft Order limits and an appropriate buffer over which an ecological feature could be significantly affected by the Project construction or operation. For example, a SAC that has bats as a qualifying feature may have a ZOI of 30 kilometres (km) due to the distance those bats may travel and therefore potentially be impacted by the Project. The study areas vary for each ecological receptor. As detailed in Section 7.5: Study area ,

individual receptor study areas have been determined based on specific guidance relevant to that receptor, the predicted ZOI and consultation with statutory bodies as appropriate.

Methodology

Baseline

Data collection

7.4.10 Baseline data collection has been undertaken to obtain information over the study areas. This section provides the approach to collecting baseline data.

7.4.11 The following data sources have been accessed to inform the baseline with respect to Terrestrial ecology:

- The British Trust for Ornithology (BTO Data Report: Proposed Reservoir, 2024)
- Thames Valley Environmental Records Centre (TVERC) data including non-statutory designated sites information and species records (TVERC, 2024)
- Ancient Woodland Inventory (Natural England, 2024b)
- Woodland Trust Ancient Tree Inventory (Woodland Trust, 2024)
- Oxfordshire Badger Group (OBG) badger records data (OBG, 2024)
- Priority Habitats Inventory (England) (Natural England, 2024a)
- Multi-Agency Geography Information for the Countryside (MAGIC) for statutory designated sites and European Protected Species mitigation licences (Defra, 2025b)
- Statutory designated site information from the Joint Nature Conservation Committee (JNCC, 2025)
- Publicly available Ordnance Survey maps and aerial imagery (2014-present)
- Field data (from surveys 2022 to the present).

7.4.12 In addition to these data sources, the Terrestrial ecology assessment also draws on environmental baseline data collated for other aspects, specifically, baseline data presented in Chapter 5: Water environment, Chapter 6: Aquatic ecology, Chapter 13: Air quality and Chapter 14: Noise and vibration.

Site surveys

7.4.13 Site surveys are being undertaken in 2025 and into 2026 to provide an updated understanding of the baseline sensitivity of the terrestrial ecological features. Site surveys comprise the following survey types:

- UK Habitats Classification (UKHab) surveys
- Protected and notable species scoping surveys
- National Vegetation Classification (NVC) surveys
- Hedgerow surveys
- Bat surveys – comprising ground level tree assessments (GLTA), external preliminary roost assessment (PRA), internal inspections of structures, internal hibernation inspections (trees and structures), activity surveys with static detectors, emergence surveys using night vision aids, night-time bat walkovers (NBW) and advanced licence bat survey techniques (ALBST)
- Badger surveys – comprising field sign surveys with deployment of camera traps, and badger territory bait marking surveys

- Bird surveys – comprising breeding bird transects and wintering bird transects undertaken across daytime and nocturnal periods, barn owl surveys, kingfisher surveys, and tailored Schedule 1 species surveys if potential presence identified during preliminary surveys
- Hazel dormouse surveys comprising habitat suitability assessment, footprint tunnel surveys, nest tube/box presence absence surveys
- Great crested newt surveys comprising habitat suitability index (HSI) assessments, eDNA surveys and population size class estimate surveys
- Natterjack toad presence / likely absence surveys
- Otter surveys comprising habitat suitability assessments and presence / likely absence surveys
- Reptile surveys comprising habitat suitability assessments and presence/ likely absence and population size class surveys
- Terrestrial invertebrate surveys comprising a habitat suitability assessment and a range of survey techniques tailored to the habitats present
- Water vole surveys comprising habitat suitability assessments and presence/ likely absence surveys.

7.4.14 Tree surveys including ancient and veteran trees, are described further under Section 7.6: Baseline conditions, and further details of survey methodologies are set out within Chapter 9: Landscape and visual.

7.4.15 As these 2025/2026 surveys are in progress full reports are not available for this PEI Report, but will be appended to the ES.

Future baseline

7.4.16 The assessment has considered the likely evolution of the baseline without the implementation of the Project. The future baseline for the Terrestrial ecology assessment has been established in accordance with the Guidelines for Ecological Impact Assessment (CIEEM, 2024) and includes the following:

- Any other developments expected to be relevant prior to or during the construction and operation of the Project
- Trends in species population and distribution
- Rates of potential colonisation by new species and habitats
- Ecological processes, such as succession
- Likely changes in agricultural practice, including agri-environmental schemes
- Expected outcomes from current and predicted management practices
- Trends in habitat quality e.g. resulting from pollution or pollution control
- Environmental trends e.g. climate change
- Management plans and conservation objectives for designated sites

7.4.17 The following chapters will also be relevant to informing the future baseline with respect to Terrestrial ecology:

- Refer to Chapter 6: Aquatic ecology for evaluation associated with the water environment and aquatic ecosystems.
- Refer to Chapter 10: Geology and soils for evaluation associated with soil resources and contamination.

- Refer to Chapter 13: Air quality for evaluation associated with impact pathways arising from changes to air quality, including traffic and construction dust.
- Refer to Chapter 18: Climate for the evaluation of whether the Project is suitably managing the effects associated with a changing climate.
- Refer to Chapter 20: Cumulative effects for the methodology used to prepare the list of other developments relevant to the future baseline.

Criteria for the assessment of significance

- 7.4.18 The methodology for assessing effects is based on the principle that the environmental effects of the Project, in relation to a receptor, should be determined by identifying the receptor's sensitivity (importance), assessing the magnitude of impact the Project would have on the receptor and then combining these two elements to identify the significance of effect (using professional judgement where necessary). The Guidelines for Ecological Impact Assessment (CIEEM, 2024) uses the term 'importance' as opposed to 'sensitivity' in categorising ecological features; however, for consistency with other chapters reference has also been provided below to the corresponding sensitivity of each receptor.
- 7.4.19 Due to the assessment assumptions and limitations set out under paragraph 7.7.3, it has not been possible to confidently assign the magnitude of impacts and therefore categorise the significance of each effect for this preliminary assessment of effects on Terrestrial ecology. Instead, the sensitivity of receptor and professional judgement has been used to determine whether effects are likely to be significant or not, and where appropriate adopting a precautionary determination that effects are likely to be significant, where design, construction or baseline information that informs the assessment is still being developed.

Assessment of sensitivity and importance

- 7.4.20 The sensitivity of each identified terrestrial ecology receptor has been assigned for the preliminary assessment based on criteria set out in Table 7.5.
- 7.4.21 The CIEEM (2024) guidelines recommend that the importance of each ecological feature is considered within a defined geographic reference. To align with the sensitivity categories used within other chapters of this PEI Report, regional and county importance have been combined within the moderate sensitivity category, and district and local importance have been combined within the low sensitivity category. Table 7.5 provides further detail on the criteria for establishing the importance of ecological receptors comprising designated sites, habitats and species with reference to this geographic context, and the sensitivity attributed to each of these receptors.

Table 7.5 Criteria for establishing the sensitivity (value) of ecological receptors

Sensitivity of receptor	Importance of receptor	Typical descriptors
Very high	International and European	An internationally designated site or candidate site, i.e. a Special Protection Area (SPA), provisional SPA, SAC, candidate SAC, Ramsar site, or area which would meet the published selection criteria for designation (e.g. SACs and SPA: site condition, citations and conservation objectives (JNCC, 2024a))

Sensitivity of receptor	Importance of receptor	Typical descriptors
		A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat that is essential to maintain the viability of a larger whole Sites supporting populations of internationally or European (including Annex II) important species
High	National (UK)	A nationally designated site, i.e. SSSI, NNR, or discrete area which would meet the published selection criteria for national designation (e.g. SSSI selection guidelines (JNCC, 2024b)) A viable area of habitat identified as a Habitat of Principal Importance or smaller areas of such habitat essential to maintain wider viability Viable populations of nationally important species that are of threatened or rare conservation status, including those identified as Species of Principal Importance
Moderate	Regional / County	Regional: Sites that exceed the county-level designation but fall short of SSSI selection criteria Smaller areas of key habitat identified as a habitat of principal importance essential to maintain wider viability Viable populations of nationally scarce species identified in the regional biodiversity plans or strategies and/or regularly occurring populations of a regionally important species. County: Wildlife/nature conservation sites designated at the county level, such as LWS and LNR Areas of habitats and species identified in county or equivalent authority plans or strategies, such as areas of key habitat / habitats of principal importance identified in the Local BAP Viable populations of species important at the county scale
Low	District / Local	District: Sites recognised by local authorities, e.g. sites of district Importance or considered to meet published ecological selection criteria for such designation. Viable areas of habitat or populations/assemblages of species of district importance. Local: Areas of habitat or populations/assemblages of species that appreciably enrich the local habitat resource (e.g. ponds) Sites that retain other elements of semi-natural vegetation due to their size, quality or the wider distribution within the local area or identified in the local BAP. Viable populations of species identified in the local BAP and/or regularly occurring populations of species important at the local or district scale.
Negligible	Within the Zol only	Sites that retain habitats and/or species of limited ecological importance due to their size, species composition or other factors.

Magnitude of impact

- 7.4.22 As noted in paragraph 7.4.19, the preliminary assessment of effects for this aspect has not categorised the magnitude of impacts caused by the Project. The approach used is based on professional judgment and experience with reference to defined criteria from the CIEEM Guidelines for Ecological Impact Assessment (CIEEM, 2024), with the starting point that all receptors scoped-in following the Scoping Opinion have been included for further assessment.
- 7.4.23 For the assessment that is reported in the ES, the criteria for assessing magnitude of impact in Table 7.6 will be applied. These criteria have been developed based on the CIEEM Guidelines.
- 7.4.24 Whilst not relied upon for the preliminary assessment, in forming a professional judgement of whether an effect will be significant or not, an indicative consideration of the criteria in Table 7.6 has been made at this stage, although the magnitude of impact is not reported.

Table 7.6 Criteria for assessing the magnitude of impact

Magnitude of impact	Description and nature of impact
Large	The impact permanently (or over the long-term) adversely or beneficially affects the conservation status of a habitat/species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area through environmental change. Relative to the wider habitat resource/species population, a large area of habitat or large proportion of the wider species population is affected. For designated sites, integrity is compromised.
Medium	The impact permanently (or over the long term) adversely or beneficially affects the conservation status of a habitat/species reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area through environmental change. Relative to the wider habitat resource/species population, a small-medium area of habitat or small-medium proportion of the wider species population is affected.
Small	The quality or extent of designated sites or habitats or the sizes of species' populations, experience some small-scale reduction or increase. These impacts are likely to be within the range of natural variability and there is not expected to be any permanent change in the conservation status of the species/habitat or integrity of the designated site. The impact is unlikely to modify the evaluation of the ecological feature in terms of its importance.
Negligible	Although there may be some effects on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations would experience little or no change. Any impacts are likely to be within the range of natural variability and there would be no short-term or long-term change to conservation status of habitats/species or the integrity of designated sites.
No change	An impact, the level of which is so low, it is not discernible on designated sites or habitats or the size of species' populations, or changes that balance each other out over the lifespan of a Project.

Significance of effect

- 7.4.25 As noted in paragraph 7.4.19, the preliminary assessment for this aspect has not categorised the significance of each effect (i.e. whether it is major, moderate, minor, neutral or none). Instead, the sensitivity of the receptor and professional judgement and experience (with indicative consideration of the criteria in Table 7.6) have been used to determine if each likely effect is anticipated to be 'significant' or 'not significant'.
- 7.4.26 For the assessment that is reported in the ES, categories of significance will be applied to effects, based on the combination of magnitude of impact and sensitivity of receptor as shown in Table 7.7. Effects that are moderate or major are deemed to be significant. The resultant effects may be either adverse, beneficial or neutral, depending on the nature of the impact. Note that Table 7.7 is based on the overarching significance categories applied across the SESRO EIA noted in Chapter 4: Approach to the environmental assessment.
- 7.4.27 Whilst not relied upon for the preliminary assessment, in forming a professional judgement of whether an effect will be significant or not, an indicative consideration of the significance matrix in Table 7.7 has been made in determining if likely effects are anticipated to be 'significant' or 'not significant'.

Table 7.7 Significance matrix

Receptor Sensitivity	Magnitude of impact				
	No change	Negligible	Small	Medium	Large
Very high	None	Minor	Moderate (significant)	Major (significant)	Major (significant)
High	None	Minor	Moderate (significant)	Moderate (significant)	Major (significant)
Moderate	None	Neutral	Minor	Moderate (significant)	Major (significant)
Low	None	Neutral	Neutral	Minor	Moderate (significant)
Negligible	None	Neutral	Neutral	Neutral	Minor

- 7.4.28 For this preliminary assessment, the assessment of effects has assumed that 'embedded design mitigation' and 'standard good practice mitigation' relevant to the Terrestrial ecology assessment are in place (these measures are presented in Section 7.8: Embedded design mitigation and standard good practice). Nevertheless, as noted in Section 7.4: Assessment methodology, the preliminary assessment assumes that additional mitigation that may reduce any identified likely significant adverse effects is not applied, as the viability, nature, and extent of these are not confirmed at this stage in the EIA process. As a result, consideration of residual effects (those that remain after the implementation of all mitigation, including additional mitigation) has not been completed for this preliminary assessment; this will be undertaken in the ES. Additional mitigation that is being explored is presented in Section 7.10: Next steps.

7.4.29 For Terrestrial ecology, 'additional mitigation' includes protected species mitigation, which is a legal requirement for the Project to proceed. As this is still subject to the findings of the ongoing baseline surveys and further design development, it has not been taken into account at this preliminary stage. Assessments reported within this PEI Report chapter are considered a reasonable 'worst case' in line with the precautionary approach that has been taken. Where preliminary likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed, and the design and mitigation are further developed, including measures and method statements secured through protected species mitigation licences issued by Natural England.

Assessment of cumulative effects

7.4.30 The cumulative effects assessment approach for both inter- and intra-project cumulative effects is broadly set out in Chapter 20: Cumulative effects. However, for this aspect further detail on the assessment process for inter-project cumulative effects is set out below.

- **Species disturbance effects:** The study area for species disturbance effects (for certain mobile species) is extensive, for example a study area of 30km has been used for bats. Likely significant inter-project cumulative effects on mobile species at the wider extent of study areas are only likely to occur with very large developments, those that may have likely significant residual effects on receptors identified for the Project. Therefore, the search of other developments for these wider study areas has been limited to large developments including Nationally Significant Infrastructure Projects, Hybrid Bills, Transport and Works Act Orders, new garden villages and towns.
- **Hydrological change effects:** The study area for hydrological change effects is extensive and covers a number of water catchments (refer to Chapter 5: Water environment). Only other developments which could affect the hydrology (and resulting effects on habitats or species) are likely to give rise to inter-project cumulative effects. Refer to Chapter 5: Water environment for further information.
- **Air quality changes:** The inter-project cumulative effect assessment of air quality changes on ecological receptors will rely on the approach to impact pathways set out in Chapter 13: Air quality.

7.4.31 The outcomes of the inter-project cumulative effects assessment are reported in Chapter 20: Cumulative effects. The intra-project cumulative effects assessment is summarised within Chapter 20: Cumulative effects, and within Chapter 20 signposts are provided to the location of the intra-project cumulative effects assessment (where it has been possible to provide at this stage).

7.5 Study area

7.5.1 The study areas are defined according to the sensitivity of the receiving environment and the potential effects of the Project. The methodology used to define the study areas are outlined in Section 7.4: Assessment methodology above. The study areas for Terrestrial ecology are shown in PEI Report Figure 7.1: Terrestrial Ecology Study Area.

7.5.2 The study areas have changed since the EIA scoping stage as a result of changes to the design and the associated draft Order limits. See Chapter 2: Project description for details of the Project parameters and assumptions for the PEI Report.

7.5.3 In relation to the draft Order limits, the Terrestrial ecology study areas remain:

- Internationally designated statutory sites with bats as a qualifying feature (SAC) within 30km
- Internationally designated sites (SAC, SPA, Ramsar) within 10km
- Nationally and locally designated statutory sites (SSSI, NNR, LNR) within 5km
- Locally designated non-statutory sites (LWS) within 2km
- Protected and Notable Species within 2km (unless specifically extended)
- INNS within 2km
- Habitats of Principal Importance (Priority Habitat) within 1km
- Ancient Woodland, Ancient/Veteran Trees within 100m

7.5.4 As further extended by:

- Impact pathways to terrestrial ecology receptors directly connected to and dependent on flow and water quality in the River Thames within the categories listed above, as described within Section 6.5: Aquatic Ecology Study area. The pathway establishing this element of the study area is the hydraulic connection between the water source that has the potential to be changed, and relevant terrestrial ecology receptors up or down gradient. This study area includes terrestrial ecology receptors whose function is associated with all surface waterbodies within the draft Order limits, as well as those in hydraulic connection where flow or water quality may change. This may, for example, include designated sites downstream adjacent to the River Thames.
- Impact pathways defined by the Affected Road Network (ARN) as derived from traffic and air quality modelling will also consider the categories listed above where those potential impact pathways exceed the distances stated to apply to the draft Order limits. This may, for example, include designated sites adjacent to nearby roads once the Project is completed.
- Species-specific buffer survey areas beyond draft Order limits for particular species/species groups take into consideration the location, nature and scale of the Project and its potential impact on each species/species group's mitigation proposals and strategies. It should be noted that since EIA scoping stage, the update to the draft Order limits now encompasses significant areas for ecological mitigation as the sole planned works. The Core Project Area is the primary location of impact for survey, with buffers extended outside the dOI where impact pathways have the potential to be present for specific species and groups. Additionally, areas within the dOI which are included for the purposes of ecological mitigation are the subject of targeted species-specific survey where baseline information is a necessary aspect of mitigation design.

7.6 Baseline conditions

7.6.1 To assess the significance of effects arising from the Project in relation to terrestrial ecology, it is necessary to identify and understand the baseline environment within the study areas. This provides a reference state against which any potential effects on terrestrial ecology can be assessed.

- 7.6.2 This section outlines the existing and expected future baseline conditions of terrestrial ecology in the study areas.

Existing baseline

- 7.6.3 This assessment has considered the known receptors within the study areas. Key existing baseline features for **terrestrial ecology** are shown in PEI Report Figure 7.2: Statutory Designated sites (International), Figure 7.3: Statutory Designated Sites (National) and Non-Statutory Designated Sites and Figure 7.4: Important Habitats.
- 7.6.4 A suite of field surveys was undertaken where access was available between 2023 and 2024. Field surveys to develop and improve understanding of the baseline are currently ongoing, throughout 2025 and 2026. A summary of initial findings from these surveys is provided in Table 7.8; and full results will be reported in the ES.

Designated sites

- 7.6.5 There are no SACs within 30km of the draft Order limits for which bats are a qualifying feature, and no SPAs or Ramsar sites within 10km of the draft Order limits.
- 7.6.6 The internationally designated nature conservation sites within 10km of the draft Order limits (with distance and direction to the designation) are:
- Cothill Fen SAC 2.5km NW
 - Hackpen Hill SAC 5km S
 - Little Wittenham SAC 6.6km ESE
 - Oxford Meadows SAC 9.7km NNE
- 7.6.7 The relevant nationally designated statutory (biological) nature conservation sites within 5km of the draft Order limits are:
- Barrow Farm Fen SSSI 0.3km N
 - Culham Brake SSSI 0.8km NNE
 - Dry Sandford Pit SSSI 2.1km NNW
 - Frilford Heath, Ponds and Fens SSSI 0.2km NNW
 - Cothill Fen SSSI 2.5km NW
 - Cothill NNR 2.6km NNW
 - Abbey Fishponds LNR 2.2km NNE
 - Mowbray Fields LNR 2.3km ESE
 - Appleton Lower Common SSSI 3.4 NNW
 - Hackpen Warren & Gramp's Hill Downs SSSI 5.0km S
 - Whitehorse Hill SSSI 4.3km SW
 - Fernham Meadows SSSI 4.9km W
- 7.6.8 Little Wittenham SSSI (6.6km ESE) is not within 5km of the draft Order limits; however, it is identified within Section 6.6 - Aquatic Ecology Baseline conditions as potentially interacting with the River Thames and potential impact pathways relating to flow and water quality and is included here.
- 7.6.9 The relevant non-statutory designated sites within 2km of the draft Order limits are:
- The Cuttings and Hutchins Copse LWS, within draft Order limits

- Cowslip Meadow LWS, partially within draft Order limits
- Marcham Salt Spring LWS, within draft Order limits
- Gozzards Ford Fen LWS 1.5km NW
- Radley Gravel Pits LWS 1.4km NNE

7.6.10 The relevant non-statutory designated sites identified as interacting with the River Thames that have potential impact pathways relating to flow and water quality have also been presented within Section 6.6 - Aquatic Ecology Baseline conditions. For completeness they are listed here, with applicable terrestrial ecology interest features:

- Hayward's Eyot LWS (spring, pond, reedbed and Loddon lily *Leucojum aestivum* features)
- Clifton Hampden Meadows LWS (floodplain meadow, swamp and wet grassland features)
- Clifton Hampden Wood LWS (wet woodland and Loddon lily features)
- Dorchester Meadow LWS (floodplain meadow feature)
- Dorchester Gravel Pits (Allen Pit) LWS (eutrophic standing water wintering bird supporting habitat function)

Habitats and flora

7.6.11 The 2024 desk study identified habitats of principal importance (HPIs) and notable habitats within the EIA Scoping Boundary plus a 1km buffer. These habitats were reported as deciduous woodland, coastal and floodplain grazing marsh, good quality semi-improved grassland, lowland dry acid grassland, lowland fens, lowland meadows, open mosaic habitat, traditional orchards and wood-pasture and parkland.

7.6.12 Ancient woodland is identified using presence or absence of woods from historic maps, information about the wood's name, shape, internal boundaries, location relative to other features, ground survey, and aerial photography.

7.6.13 A search of the Ancient Woodland Inventory (Forestry Commission, 2024a) identified one area of ancient semi-natural woodland within the draft Order limits, which is located outside of the Core Project Area adjacent to the location where potential reprovision of the solar farm (to the north of West Hanney) is being considered.

7.6.14 Other than this one area of woodland, desk-based studies of historic OS maps and Lidar data, indicate that other areas in the draft Order limits have not been continuously wooded since 1600AD and therefore do not meet the definition of ancient woodland.

7.6.15 Whilst UKHab/species assessment of Drayton Copse and Hutchins Copse LWS (north of the railway) in 2023/2024 identified these woodlands support ancient woodland indicator species and mature trees, they have not been continually wooded since 1600AD and are therefore not ancient woodland.

7.6.16 The Woodland Trust's Ancient Tree Inventory identified a significant number of trees within the draft Order limits as being potentially ancient or veteran.

7.6.17 UK Habitat Classification Survey and hedgerow surveys of accessible areas identified the following habitats within the draft Order limits:

- Arable – the majority of the area is arable land with cereal and non-cereal crops and associated arable field margins

- Grassland – after arable land, grassland is the second most abundant broad habitat type, primarily modified grassland and other neutral grassland
- Woodland – primarily other broad-leaved woodland, including Hutchins Copse and Drayton Copse
- Individual trees
- Scrub
- Hedgerows – primarily native, including some species-rich hedgerows
- Standing water – primarily field boundary ponds
- Watercourses and ditches – including the River Ock and the River Thames, and numerous field boundary ditches

7.6.18 The 2024 desk study returned over 40 protected, priority and notable species of higher plants, one species of fungi, and six species of invasive plants within 2km of the EIA Scoping boundary. Two notable species were recorded during the field surveys to date: wild pear *Pyrus sp.* and dwarf spurge *Euphorbia exigua*, both of which are listed on the Oxfordshire rare plants register.

Protected and notable species

Badger

7.6.19 The 2024 data search reported a high number of records associated with badgers, including badger setts, live and dead sightings (particularly associated with the local road network), and various field signs such as dung, hair, and tracks. Previous surveys within the study area identified setts of varying classification and activity levels, including (but not limited to) multiple active main setts. Furthermore, badger field signs such as latrines have been identified throughout the study area suggesting distinct territory boundaries of multiple clans.

Bats

7.6.20 Roosts of the following bat species have been confirmed within the study area by a combination of desk study and field survey; brown long eared and soprano pipistrelle bats (both considered widespread and abundant within southern England), whiskered, Daubenton's, Natterer's and noctule bats (all considered widespread but not as abundant within southern England), serotine bats (considered to be rarer or have a restricted distribution in southern England), and barbastelle (rarest annex II species and very rare).

A further four species have been recorded foraging and commuting within the draft Order limits, with no evidence or records of roosting to date; common pipistrelle, Brandt's, Nathusius' pipistrelle and Leisler's bats. Roosting habitat for bat species (structures and trees) is present within the draft Order limits whilst the areas of woodland and established mature hedgerow, mature tree lines, and watercourses provide suitable foraging and commuting features. The draft Order limits appear to be connected by suitable habitat features (River Ock, streams and ditch network, hedgerows and a tree lined train line) to suitable roosting and foraging resources within the wider landscape. However, the connectivity is likely to be tempered by the presence of the A34 dual carriageway to the east and predominance of large-scale arable fields within the local landscape.

Birds

- 7.6.21 The BTO Data Report returned a large number of bird records relating to different species within the study area. These records were based on the impacted Core Project Area and include species associated with various habitats within the study area including open farmland, woodland, grassland and aquatic habitats (rivers, ponds, ditches). Notable bird records included Schedule 1, Annex 1, Birds of Conservation Concern (BoCC) Red List and BoCC Amber List species.
- 7.6.22 Red List species observed from surveys during 2024 and 2025 included grey partridge, curlew, merlin, skylark, starling, corn bunting and yellowhammer. Amber List species observed during 2024 and 2025 field surveys included teal, mallard, wigeon, snipe, tawny owl, song thrush, redwing and reed bunting. The farmland bird assemblage observed to date during 2024 and 2025 surveys includes notable numbers of corn bunting, skylark and yellowhammer. Other farmland species observed include lapwing, golden plover and grey partridge. To date a range of bird species have been observed utilising different parts of surveyed areas in different seasons (winter, breeding and passage).

Hazel dormouse

- 7.6.23 Hazel dormouse distribution is limited within Oxfordshire, mainly clustered within woodlands in the south-east of the county; however, recent records confirmed presence of hazel dormouse within proximity to Abingdon. Previous surveys identified suitable hazel dormouse nesting and foraging habitats including woodland belts, hedgerow networks and scrub habitat. These habitats are functionally linked throughout the study area and into the wider landscape via linear habitat belts associated with the A-roads, railway and watercourse corridors that pass through or adjacent to the study area.

Riparian mammals

- 7.6.24 The 2024 data search returned a high number of records of otter and water vole within the study area. The majority of the records were associated with the main rivers (River Ock and River Thames) and their tributaries. The 2024 field surveys identified the presence of suitable waterbodies for otter for commuting, foraging, resting and holt creation including supporting habitats within 200m of those waterbodies. Previous surveys identified that waterbodies included a notable proportion that are sub-optimal or unsuitable for water vole, with a lesser proportion assessed as suitable or good. Conclusive otter signs (e.g. footprints, spraints, anal jelly and sightings) and conclusive water vole signs (e.g. droppings, latrines and sightings of water vole) were identified from previous surveys.

Great Crested Newts

- 7.6.25 The 2024 data search returned records of great crested newts, including licence returns, within the study area. Suitable habitats for amphibians exist within the study area including ponds, ditches, grassland, hedgerows and woodland containing deadwood.

Natterjack Toad

- 7.6.26 The 2024 data search returned records of natterjack toads within the study area. The majority of the study area comprises unsuitable or sub-optimal habitat for natterjack toad however, areas of floodplain grazing with shallow pools and short grassland may offer opportunity for natterjack toad presence.

Other Amphibians

- 7.6.27 The 2024 data search returned records of other amphibians within the study area. Suitable habitats for other amphibians exist within the study area including ponds, ditches, grassland, hedgerows and woodland containing deadwood. It is considered that other amphibians such as common frog, common toad, smooth newt and palmate newt will be present within the study area.

Reptiles

- 7.6.28 The 2024 data search returned a small number of records of common lizard, grass snake and slow worm. Suitable habitats exist within the study area including semi-natural and unmanaged grassland, arable field margins, woodland, scrub, hedgerows and artificial habitats (e.g. rubble piles).

Terrestrial Invertebrates

- 7.6.29 Habitats with the potential to support a wide range of terrestrial invertebrates have been recorded within the study area. Arable land with cereal and non-cereal crops and associated arable field margins has potential to support a significant number of invertebrates. Pollinators such as bees, moths, and butterflies are vital for plant and crop productivity and beetles and spiders are important predators of crop pests. The range of species and life stages of trees in woodland, including dead and decaying wood, provide a range of habitats for numerous invertebrates. The wood decay assemblage is associated with stag beetle, which has previously been recorded within the draft Order limits.

Terrestrial invasive and non-native species (INNS)

- 7.6.30 The risks associated with INNS have been identified as being primarily associated with the aquatic environment and more detail of this assessment is set out within Chapter 6: Aquatic ecology. This sets out that a variety of invasive flora and fauna has been reported within the study area. Several INNS have been recorded within River Thames waterbody reaches, during previous surveys, including demon shrimp *Dikerogammarus haemobaphes*, zebra mussel *Dreissena polymorpha* and Nuttall's waterweed *Elodea nuttallii*. Likewise, from previous studies, the Ock waterbody reaches recorded INNS such as New Zealand mud snail *Potamopyrgus antipodarum* and freshwater shrimp *Gammarus fossarum*. Desk based records of the study area have previously indicated the presence of Japanese knotweed *Fallopia japonica*, *Montbretia Crocosmia* × *crocosmiiflora*, giant hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera*, orange balsam *Impatiens capensis*, tree of heaven *Ailanthus altissima*, American mink *Neovison vison*, Canada goose *Branta canadensis*, Chinese muntjac *Muntiacus reevesi*, eastern grey squirrel *Sciurus carolinensis*, Egyptian goose *Alopochen aegyptiaca*, Mandarin duck *Aix galericulata*, red-crested pochard *Netta rufina*, and snow goose *Anser caerulescens*.

Summary of baseline survey results

- 7.6.31 Table 7.8 provides a high level summary of baseline survey results collected to date from surveys ongoing throughout 2025. The full results and analysis of survey findings will be presented in baseline reports appended to the ES.

Table 7.8 Summary of baseline survey results

Survey Type	Summary of findings
Habitats	UKHab surveys, including condition assessment, are ongoing within the draft Order limits. Habitats identified are in line with those recorded during surveys in 2024.
Ancient/veteran trees	As set out in Chapter 9: Landscape and visual, 250 trees have been identified within the draft Order limits on the Woodland Trust's Ancient Tree Inventory as being potentially ancient or veteran; 116 of these trees have been surveyed so far (see Chapter 9: LVIA) and of these, ten have been confirmed as being ancient or veteran. These ten are comprised of eight crack willow, one field maple and one ash. A further 134 of the trees within the draft Order limits on the Woodland Trust's Ancient Tree Inventory are still to be surveyed (subject to land access agreements) however, based on the combination of survey work and desk top assessment to date, it is anticipated that the proportion of trees that will ultimately be confirmed as being ancient or veteran (relative to those identified as such on the Ancient Tree Inventory) will remain broadly in line with the proportion confirmed so far.
Badger	Sett classification and field sign surveys are currently ongoing and have identified high levels of badger activity throughout the draft Order limits. The habitats within the draft Order limits are comprised of intensively managed agricultural land, with arable field margins and woodland belts providing favourable foraging and commuting habitat for badgers. Sett classification surveys have returned multiple main, annex, and subsidiary setts, indicating the presence of several badger clans. Bait marking surveys will be completed in September and October 2025 to establish clan territory boundaries, with a supplementary bait marking exercise programmed for Spring 2026 to capture any further setts identified during Winter 2025. Camera traps will be deployed at main setts in Autumn 2025 to support monitoring and capture information around clan size and activity.
Bats	In line with the bat survey guidelines for a Project of this scale, Advanced Licence Bat Survey Techniques (ALBST) surveys form a key part of the suite of bat surveys to understand roost resource and identify roosts of high conservation concern, supplemented by a reduced scope of standard survey techniques. ALBST surveys commenced in May 2025, utilising automated receiver units positioned across the site, to monitor the location of tagged bats. Maternity colonies of brown long-eared, Daubenton's, Natterer's and noctule bats have been confirmed within the draft Order limits, particularly associated with Drayton Copse and Hutchin's Copse. Maternity colonies of common pipistrelle, soprano pipistrelle, whiskered and barbastelle bats have been located outside the draft Order limits, with bats utilising the site for foraging and commuting. Surveys continued until late September 2025. Ground Level Tree Assessment (GLTA) of trees and Preliminary Roost Assessment (PRA) of structures are ongoing within the main construction area, with emergence surveys being undertaken at structures where access allows. To date five confirmed roosts of four species (common pipistrelle, soprano pipistrelle, brown long-eared, Natterer's bat roosts) have been identified. Static detector monitoring is also ongoing at 38 locations within the draft Order limits. As no surveys are proposed at structures located in adjacent urban areas, Nighttime Bat Walkover (NBW) surveys are being undertaken in East Hanney, Steventon and Drayton to gain an understanding of bat activity in these areas.

Survey Type	Summary of findings
Birds	Breeding bird surveys have been conducted across a range of habitats within the draft Order limits. A total of seven transects were completed in the 2025 season, with surveys of each transect conducted monthly between March to July 2025. Further breeding bird surveys will be undertaken in the 2026 season (13 transects). In addition, 20 acoustic monitoring detectors have been deployed to record bird activity between June and August 2025 and will be redeployed between March to May 2026. Results to date indicate that the site provides a range of habitats for a range of breeding birds including a notable farmland bird assemblage with a number of threatened species, as identified in the desk study. A large number of barn owl boxes have been identified. Barn owls are regularly seen during field surveys roosting, foraging and are likely to be breeding on site. Dedicated barn owl inspection surveys were undertaken in July and August 2025.
Hazel dormouse	Dormouse surveys are being conducted under the updated survey guidelines (published March 2025). Targeted dormouse survey areas were identified based on the presence of suitable connected habitat within and adjacent to the draft Order limits, which were subject to ground-truthing. Survey visits are ongoing between May and November 2025, with a combination of biweekly footprint tunnel checks, and monthly nest box and nest tube surveys. To date (late September 2025), no evidence of dormouse has been recorded.
Riparian mammals	Approximately 195 waterbodies (including watercourses and ponds) were subject to a habitat suitability assessment for otter and water vole; and the first search for field signs on suitable waterbodies undertaken between mid-April to end of June 2025 (early season). Otter field signs were noted on main waterbodies including the River Ock, Childrey Brook, Letcombe Brook and Cow Common Brook. Water vole field signs were mainly noted on a ditch network associated with the River Ock, Cow Common Brook and Mere Dyke. Late season (July to September 2025) surveys for water vole have been undertaken, including land that was not accessible during the spring survey window. Mink rafts with no glow trail cameras have been deployed on main waterbodies (River Ock, Letcombe Brook, Cow Common Brook) with additional trail camera monitoring at potential holt sites. To date, no mink have been recorded, but otter have been confirmed on Letcombe Brook.
GCN and other amphibians	A total of 42 waterbodies and 148 ditches were subject to a Habitat Suitability Index (HSI) assessment for GCN within the draft Order limits. A total of 20 waterbodies and eight of the ditches were identified as being suitable for Environmental DNA (eDNA) surveys and these were completed between 15 April and 30 June 2025. All ditches returned negative results for GCN, whilst waterbodies returned two positive results, one inconclusive result and 17 negative results. Presence/absence and population surveys are ongoing with further surveys planned in spring 2026. Common toad and smooth newt have been recorded within waterbodies and/or ditches within the site. In addition, habitat suitability for natterjack toads is being considered during the GCN surveys.
Reptiles	A desk-based review has been undertaken of suitable reptile habitat within the draft Order limits, and survey sites selected on this basis. Reptile refugia have been deployed in ten locations (to date) across various habitats to determine

Survey Type	Summary of findings
	presence/absence. Presence of grass snake and common lizard has been confirmed in several locations, with presence/absence and population surveys (as appropriate) ongoing in autumn 2025 and spring 2026.
Terrestrial invertebrates	Walkover surveys were undertaken in May 2025 to identify suitable locations for targeted terrestrial invertebrate sampling surveys across various habitat types. Monthly sampling visits were undertaken between June and August 2025, with further sampling planned in April to June 2026. Various techniques have been employed, including deployment of pitfall traps, bark traps and interception traps as well as sweep netting and bug vac sampling. Specimens will be subject to lab analysis to confirm species ID, therefore no survey results are available at this stage.
Other Species of Principal Importance (SPI)	No specific surveys are being undertaken for SPI. However, incidental records are being recorded during other survey activities. To date, the presence of polecat, brown hare and hedgehog has been recorded.

Future baseline

- 7.6.32 As set out in Chapter 4: Approach to the environmental assessment, the preliminary assessment of effects considers the likely evolution of the baseline without the implementation of the Project. Where climate change may alter future terrestrial ecology baseline conditions and therefore LSEs, this is discussed as part of the In-combination Climate Change Impact (ICCI) assessment which brings together all climate related impacts on aspect assessments, and is presented in Appendix 18.3: In-combination Climate Change Impact Assessment.
- 7.6.33 Changes to the ecological baseline, in the absence of the Project, have been considered in terms of pressures and trends as well as anticipated plan-driven overall improvements in biodiversity led by legislation and policies. In terms of land use, it would be expected that as the landscape is predominately arable it would continue to be managed in this way in a steady state.
- 7.6.34 Within the study area, statutory designated sites are afforded protection provisioned through the framework of nature conservation legislation. Whilst this legal protection remains in place, the future baseline for these sites is likely to be safeguarded, additionally benefiting in future from landscape-scale policies and initiatives led by strategic planning processes. Non statutory designated sites, such as LWS, are afforded protection through local planning policies and are likely to also benefit from plan-led strategies for nature conservation, including LNRS introduced by the Environment Act 2021. As such, changes to the future baseline of these sites are likely to be positive.
- 7.6.35 A combination of legal protection, LNRS, local planning policy and local catchment plans are likely to safeguard important habitats, with the important contribution made by the statutory requirement for BNG applicable to the future baseline in ensuring that habitats are not lost to development where planning permission is required and are prioritised for replacement at a Local Authority geographical scale wherever possible. Along with the potential for implementation of agri-environmental schemes, changes to the future baseline of habitats support a long-term trend towards a more mosaic-like, ecologically rich and visually diverse rural landscape. That said, significant urbanising influences from possible

future housing development and highway improvements linked to national and local policy drivers, and attendant potential for adverse effects, may act to counterbalance some of these habitat improvements.

- 7.6.36 Protected species are afforded varying levels of legal protection from killing, injury, loss of shelter and resting places, and disturbance. Species groups are variously safeguarded through the requirement for derogation licences, permits and consents for works which could affect the species or their habitat. In the absence of the Project, it is likely these species would continue to be present within suitable supporting habitats and would react to larger-scale population trends, including the implementation of Species Conservation Strategies (SCS) introduced by the Environment Act 2021, potentially expanding their range and territories to maintain a favourable conservation status. Rare and notable species risk being overlooked in terms of legal protection and consequently any loss of habitat, failure in the control of INNS leading to increased distribution or abundance and human disturbance and urbanisation have potential to adversely affect the success of these taxa in the future. As a result, in the absence of the Project, balanced against the potential supporting habitat benefits of LNRS and BNG, and more concerted efforts of SCS for certain species and groups, declines and localised loss of some other species is possible.
- 7.6.37 The other developments which will form part of the future baseline identified in Chapter 20: Cumulative effects have been reviewed, and do not materially alter the future baseline assessed for this aspect.

Terrestrial ecology receptors considered in the preliminary assessment

- 7.6.38 Table 7.9 shows the Terrestrial ecology receptors in the study area that have been considered in the preliminary assessment for the PEI Report. In some cases, individual receptors have been grouped where anticipated effects and mitigation are likely to be very similar. The sensitivity of each receptor is defined in the table with commentary justifying the sensitivity category assigned. The table also identifies the area ID, effect ID(s) and figure relevant to each receptor. The effect IDs are unique identifiers of each effect assessed (discussed further in Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology), whilst the area ID relates to the spatial extent of the receptor assessed.
- 7.6.39 Figures 7.2, 7.3 and 7.4 show the locations of the receptors that have been spatially defined for the preliminary assessment for the PEI Report, with relevant Area IDs noted. Table 7.9 signposts to which figure shows which area ID. Note that certain receptors have not been spatially mapped where data is not sufficiently complete to allow this, or where spatial representation is not applicable, Table 7.9 notes where this is the case. Further data gathering to inform the ES will inform any revisions to the defined spatial extents of receptors.

Table 7.9 Receptors assessed in the preliminary assessment

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
International statutory designated sites (shown on Figure 7.2: Statutory Designated sites (International) and Figure 7.3: Statutory Designated Sites (National) and Non-Statutory Designated Sites where the site is also a SSSI)				
Cothill Fen SAC & SSSI	Very High	Cothill Fen SAC & SSSI is a lowland valley mire and contains one of the largest surviving examples of alkaline fen vegetation in central England, also designated for alluvial forests and support rare and notable associated faunal species. SAC's are internationally designated and therefore considered to be of very high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-230, TEC-231, TEC-232, TEC-233	EIA-128
Hackpen Hill SAC	Very High	Hackpen Hill SAC is an extensive area of unimproved chalk grassland with a close-grazed, species-rich sward situated around Hackpen Hill at 225m and isolated from notable urban areas. SAC's are internationally designated and therefore considered to be of very high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-241, TEC-242, TEC-243, TEC-244	EIA-127
Little Wittenham SAC & SSSI	Very High	Little Wittenham SAC & SSSI is designated primarily for its great crested newt population and comprises two main ponds set in a predominantly woodland context. The site also supports an outstanding breeding assemblage of amphibians, dragonflies and damselflies. SAC's are internationally designated and therefore considered to be of very high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-237, TEC-238, TEC-239, TEC-240	EIA-175
Oxford Meadows SAC	Very High	Oxford Meadows SAC is designated for its lowland hay meadows. SAC's are internationally designated and therefore considered to be of very high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-124, TEC-234, TEC-235, TEC-236	EIA-129
Statutory designated sites and non-statutory designated sites (shown on Figure 7.3: Statutory Designated Sites (National) and Non-Statutory Designated Sites)				
Cothill NNR	High	Cothill NNR is known for its fens and invertebrate life, but in addition the site also includes open water, reedbeds and oak and alder woodland. It is a small 2ha area of the larger Cothill Fen SSSI (which was designated nine years prior to the NNR designation) and SAC (this designation being assigned many decades later, in 2005). NNRs represent important areas for biodiversity and geodiversity at the national level and therefore considered to be of high sensitivity, in alignment with the approach outlined in Table 5.5.	TEC-261, TEC-262	EIA-141

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
Appleton Lower Common SSSI	High	Appleton Lower Common is designated for broad-leaved woodland on the Oxford Clay which has remained unmodified by conifer planting or clear felling. Wet ash-wych elm woodland, a relatively uncommon woodland stand type is well represented and also young pedunculate oak standards with occasional older oaks and, more locally ash standards. SSSI represent important areas for biodiversity and geodiversity at the national level and therefore considered to be of high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-253, TEC-254	EIA-136
Barrow Farm Fen SSSI	High	Barrow Farm Fen is primarily of interest for its remnants of calcareous fen vegetation within a matrix of dense wet and dry carr woodland, similar to the nearby Cothill Fen. SSSI represent important areas for biodiversity and geodiversity at the national level and therefore considered to be of high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-213, TEC-214, TEC-215, TEC-216	EIA-130
Culham Brake SSSI	High	Culham Brake SSSI supports willow carr by the Thames and contains one of the largest British populations of summer snowflake <i>Leucojum aestivum</i> . SSSI represent important areas for biodiversity and geodiversity at the national level and are therefore considered to be of high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-218, TEC-220, TEC-249, TEC-250	EIA-133
Dry Sandford Pit SSSI	High	Dry Sandford Pit is an abandoned sand quarry which has developed a valuable mosaic of calcareous vegetation including fen, grassland, scrub and lichen-rich heath. A series of spring-fed shallow pools with clear, calcareous water overlie hard calcareous rock on the quarry floor and support an interesting flora and fauna which may be analogous with that of small marl lakes, and associated rich calcareous fen. SSSI represent important areas for biodiversity and geodiversity at the national level and therefore considered to be of high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-251, TEC-252	EIA-135
Fernham Meadows SSSI	High	Fernham Meadows represent a species-rich grassland type atypical of meadows elsewhere in Oxfordshire and characterised by a mosaic of drier grassland and wet fen meadow habitats, which also provides supporting habitat for faunal species. SSSI represent important areas for biodiversity and geodiversity at the national level and therefore considered to be of high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-247, TEC-248	EIA-131
Frilford Heath, Ponds and Fens SSSI	High	Frilford Heath supports acid grassland, heathland and valley fens with diverse flora and fauna, including nationally rare vascular plants and notable beetles, flies, bees and other insects. SSSI represent important areas for biodiversity and geodiversity at the national level and therefore considered to be of high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-173, TEC-174, TEC-175, TEC-176	EIA-137

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
Hackpen, Warren & Gramp's Hill Downs SSSI	High	Hackpen, Warren & Gramp's Hill Downs SSSI is an amalgamation of three discrete, adjacent tracts of unimproved chalk grassland. Together they represent an extensive area of a habitat now uncommon in the Berkshire Downs. SSSI represent important areas for biodiversity and geodiversity at the national level and therefore considered to be of high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-245, TEC-246	EIA-138
Whitehorse Hill SSSI	High	Whitehorse Hill supports a high proportion of the few remaining unploughed grasslands along the chalk escarpment in Oxfordshire, with grasslands also supporting notable invertebrate fauna. SSSI represent important areas for biodiversity and geodiversity at the national level and therefore considered to be of high sensitivity, in alignment with the approach outline in Table 5.5.	TEC-255, TEC-256	EIA-139
Abbey Fishponds LNR	Moderate	Abbey Fishponds is set within an area of residential development on the eastern edge of Abingdon and supports wet woodland, reedbed, fen and meadow habitats with associated flora, bird and invertebrate species. LNRs are designated by local authorities under the National Parks and Access to the Countryside Act 1949 (as amended) and are sites of local importance for wildlife, geology, education, and public enjoyment and therefore considered to be of moderate sensitivity, in alignment with the approach outline in Table 5.5.	TEC-257, TEC-258	EIA-142
Mowbray Fields LNR	Moderate	Mowbray fields serves as an area of informal recreation for local residents with a small stream, large grass field, and disused railway embankment cycle route. The small section of stream, newly created wildflower meadow and a fill pond and wetland are associated with flora, bird and invertebrate species. LNRs are designated by local authorities under the National Parks and Access to the Countryside Act 1949 (as amended) and are sites of local importance for wildlife, geology, education, and public enjoyment and therefore considered to be of moderate sensitivity, in alignment with the approach outline in Table 5.5.	TEC-259, TEC-260	EIA-143
Cowslip Meadow LWS	Moderate	Cowslip Meadow is recorded to support areas of good quality semi improved grassland and lowland meadow. LWS are non-statutory designated sites that identify areas of substantive local importance for biodiversity recognised in national planning policy and therefore considered to be of moderate sensitivity, in alignment with the approach outline in Table 5.5.	TEC-131, TEC-132	EIA-148
Gozzards Ford Fen LWS	Moderate	Gozzards Ford Fen LWS is located on the Sandford Brook, downstream (south) of the Cothill Fen NNR/SSSI/SAC and Dry Sandford Pit SSSI designations and is recorded to support open areas of fen vegetation are found amongst wet willow and alder woodland with associated flora and invertebrate species. LWS are non-statutory designated sites that identify areas of substantive	TEC-264	EIA-144

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
		local importance for biodiversity recognised in national planning policy and therefore considered to be of moderate sensitivity, in alignment with the approach outline in Table 5.5.		
Marcham Salt Spring LWS	Moderate	Marcham Salt Spring is recorded as a degraded site, but which continues to support notable flora. The physical conditions at the site, along with historical interest, are relevant to its designation. LWS are non-statutory designated sites that identify areas of substantive local importance for biodiversity recognised in national planning policy and therefore considered to be of moderate sensitivity, in alignment with the approach outline in Table 5.5.	TEC-155, TEC-156, TEC-157, TEC-158, TEC-160	EIA-145
Radley Gravel Pits LWS	Moderate	Radley Gravel Pits LWS is managed for nature conservation and supports open water, wetlands, wet woodland and grassland habitats with associated species of flora and fauna. LWS are non-statutory designated sites that identify areas of substantive local importance for biodiversity recognised in national planning policy and therefore considered to be of moderate sensitivity, in alignment with the approach outline in Table 5.5.	TEC-263	EIA-146
The Cuttings and Hutchins Copse LWS	Moderate	LWS are non-statutory designated sites that identify areas of substantive local importance for biodiversity recognised in national planning policy. LWS frequently support Habitats and Species of Principal Importance including woodlands, species-rich grasslands and hedgerow networks. Many sites are small and isolated, making them particularly vulnerable to effects such as pollution, invasive species, and disturbance from adjacent land uses and a significant proportion may be in decline or at risk. LWS are frequently integral to LNRS under the Environment Act 2021, contributing to the delivery of BNG and the creation of a coherent ecological network.	TEC-167, TEC-168, TEC-169, TEC-170, TEC-171, TEC-172, TEC-229	EIA-147
Important habitats (records indicated on Figure 7.4: Important Habitats)				
Ancient woodland	High	Ancient woodlands in England are both spatially limited and ecologically sensitive. These woodlands are defined as any area that has been wooded continuously since 1600AD, as such they are considered irreplaceable habitats. Given this permanence of habitat, ancient woodlands are often some of the richest and biodiverse habitats in the country, supporting a diverse range of species including lichens, fungi, invertebrates, birds, and mammals, many of which are rare or legally protected. Ancient woodlands exhibit high sensitivity to environmental change and disturbance. Physical damage, soil compactions, invasive species, changes in hydrology, pollution, disease, inappropriate management can result in long-term decline or loss.	TEC-226, TEC-227, TEC-228	EIA-827
Ancient/ veteran trees	High	Ancient and veteran trees in England are both spatially limited and ecologically sensitive. These trees represent a critical component of England's natural and cultural heritage, characterized by their considerable age, ecological complexity, and habitat value. These trees often serve as	TEC-115, TEC-116,	Not spatially mapped

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
		keystone structures, supporting a diverse range of species including lichens, fungi, invertebrates, birds, and mammals, many of which are rare or legally protected. The distribution of ancient and veteran trees in England is highly uneven and closely linked to historical land management practices, predominantly found within woodlands, parklands, hedgerows, and on ancient commons. Ancient and veteran trees exhibit high sensitivity to environmental change and disturbance with slow growth and inability to be readily replaced. Physical damage, soil compaction, changes in hydrology, pollution, and inappropriate management can result in long-term decline or loss.	TEC-117, TEC-225	
Habitats of Principal Importance	High	Habitats of Principal Importance (HPIs), also known as Section 41 habitats under the NERC Act 2006 (as amended), represent priority habitats for conservation in England. These habitats are recognized for their high biodiversity value and are often sensitive to environmental change due to their rarity, fragmentation, and dependence on specific ecological conditions. HPIs are distributed across a wide range of terrestrial, freshwater, and coastal environments in England. Key examples include traditional orchards, hedgerows and wet woodland. Many of these habitats occur in patches and are often highly fragmented. These habitats may have slow recovery from disturbance, narrow ecological tolerances, and support the presence of legally protected or notable species.	TEC-111, TEC-112, TEC-113, TEC-114	EIA-171
Species (not spatially mapped)				
Badger	Low	Badgers are common and widespread territorial mammal species in England, typically associated with a mosaic of woodland, pasture, and hedgerow habitats. The Protection of Badgers Act 1992 affords protection to badgers for welfare reasons and not due to this species being of conservation concern, however, this legislation still applies to activities associated with development.	TEC-3, TEC-4, TEC-5, TEC-6, TEC-7	Not spatially mapped
Bat species - Rarer or restricted distribution within southern England	High	Several bat species in southern England, including serotine, Leisler's and Nathusius' pipistrelle bats are of rarer or restricted distribution and may be associated with specialist habitat requirements. These species may be more sensitive to change due to low population density and limited distribution; strong site fidelity, particularly to maternity roosts and hibernation sites; and their dependence on high-quality, contiguous habitats. Species within this receptor group may be expected to be infrequently encountered within the landscape covered by the draft Order limits. All bat species are included as European Protected Species (EPS) under the Conservation of Habitats and Species Regulations 2017 (as amended) and are also protected under the Wildlife	TEC-21, TEC-22, TEC-23, TEC-24	Not spatially mapped

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
		and Countryside Act 1981 (as amended). This includes protection of both individuals and their roost sites, whether in use or not.		
Bat species - Rarest annex II species and very rare	Very High	Bat species considered rarest Annex II species in southern England are barbastelle, Bechstein's and greater horseshoe bats, or (like grey long-eared bats) are very rare. These species are of highly restricted distribution and abundance in southern England and roost sites are rarely encountered. These species are considered highly sensitive to change due to low population density and limited distribution; strong site fidelity, particularly to maternity roosts and hibernation sites; and their dependence on high-quality, contiguous habitats. Species within this receptor group may be expected to be rarely encountered within the landscape covered by the draft Order limits. All bat species are included as European Protected Species (EPS) under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended). This includes protection of both individuals and their roost sites, whether in use or not.	TEC-25, TEC-26, TEC-27, TEC-28	Not spatially mapped
Bat species - Species considered widespread and abundant in southern England	High	Widespread and abundant bat species within southern England, for example common pipistrelle, soprano pipistrelle and brown long-eared bat, can be expected to be frequently encountered within the landscape covered by the draft Order limits. While these species are described as widespread and relatively abundant in southern England, legal protection applies regardless of population status. All bat species are included as European Protected Species (EPS) under the Conservation of Habitats and Species Regulations 2017 (as amended) and are also protected under the Wildlife and Countryside Act 1981 (as amended). This includes protection of both individuals and their roost sites, whether in use or not.	TEC-13, TEC-14, TEC-15, TEC-16	Not spatially mapped
Bat species - Species considered widespread but not as abundant in southern England	High	Several bat species in southern England including Natterer's, Daubenton's and noctule bats, while widespread in distribution, are comparatively less abundant and may not be frequently encountered within the landscape covered by the draft Order limits. While these species are described as widespread in southern England, legal protection applies regardless of population status. All bat species are included as European Protected Species (EPS) under the Conservation of Habitats and Species Regulations 2017 (as amended) and are also protected under the Wildlife and Countryside Act 1981 (as amended). This includes protection of both individuals and their roost sites, whether in use or not.	TEC-17, TEC-18, TEC-19, TEC-20	Not spatially mapped
Birds - Barn Owl	High	The barn owl is a Schedule 1 species under the Wildlife and Countryside Act 1981 (as amended) which affords it special legal protection, particularly during the breeding season. Barn owls are a characteristic species of lowland agricultural and rural landscapes and although barn owls have	TEC-101, TEC-102, TEC-103,	Not spatially mapped

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
		shown some recovery in recent decades due to conservation initiatives they remain sensitive to habitat impacts, particularly during nesting. Southern England supports one of the highest densities of barn owls in the UK and the species is typically associated with mixed farmland, particularly where traditional barns or tree cavities provide nest sites, and where habitats support high small mammal abundance. Barn owls exhibit strong territory fidelity with nest and roost sites often reused over multiple years. Their nocturnal hunting behaviour and requirement for extensive open foraging habitat (up to several kilometres from nest sites) mean that they are vulnerable to land use changes.	TEC-104, TEC-105	
Birds - BoCC Amber List species	High	Birds listed on the Birds of Conservation Concern (BoCC) Amber List are considered to be of medium conservation priority in the UK. While not as critically threatened as Red List species, Amber-listed birds are of conservation concern due to declining trends, important regional populations, or dependence on specific, vulnerable habitats. Amber List species are typically subject to moderate population declines, localised breeding or wintering distributions, or are of importance in the UK during part of their annual cycle. While not necessarily rare, Amber-listed species often rely on habitats susceptible to degradation, making them ecologically sensitive to change. Amber-listed species in England include a wide range of habitat specialists and generalists, such as the rook, reed bunting and kestrel. Some, like the snipe, are now largely confined to specific wetland sites. Others, such as the dunnoek or moorhen, remain widespread but have suffered notable population reductions.	TEC-76, TEC-77, TEC-78, TEC-79, TEC-80	Not spatially mapped
Birds - BoCC Red List species	High	The Birds of Conservation Concern (BoCC) Red List identifies bird species in the UK that are at the greatest risk due to severe population declines, restricted ranges, or significant threats to their habitats. Red-listed species are of high conservation priority, reflecting sustained long-term population declines or severe contractions in range. Many of these species are also Species of Principal Importance under Section 41 of the NERC Act 2006 (as amended) and/or are protected under Schedule 1 of the Wildlife and Countryside Act 1981(as amended). The distribution of Red List species in England varies widely. Some species, such as the house sparrow and starling remain relatively widespread but have undergone significant national population declines. Others, including the turtle dove, tree sparrow or yellow wagtail have experienced marked reductions in range and now occur in increasingly isolated or fragmented populations.	TEC-71, TEC-72, TEC-73, TEC-74, TEC-75	Not spatially mapped
Birds - Breeding	High	Breeding bird assemblages in southern England are diverse, reflecting the area's varied landscapes including lowland farmland, chalk grasslands, woodlands, heathlands and wetlands. which support important breeding populations of several species listed on the Birds of Conservation Concern (BoCC) Red and Amber Lists, as well as species protected under	TEC-91, TEC-92, TEC-93,	Not spatially mapped

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
		Schedule 1 of the Wildlife and Countryside Act 1981. Population distributions in southern England are patchy and strongly habitat dependent and the Thames Valley supports regionally and nationally important populations. Many species occur in fragmented populations tied to remaining patches of semi-natural habitat or land managed under agri-environment schemes. Farmland and edge habitats support high densities of common and declining species, while more specialised habitats are critical for rarer or range-restricted breeders. Habitat connectivity and structural diversity are key to supporting these breeding assemblages.	TEC-94, TEC-95	
Birds - Curlew	High	The Eurasian curlew is listed as Red on the Birds of Conservation Concern (BoCC) list and is a Species of Principal Importance under Section 41 of the NERC Act 2006 (as amended). Curlew populations have undergone significant long-term declines across their breeding range in England due to habitat loss, agricultural intensification, drainage of wetlands, disturbance and nest predation. In southern England, breeding populations are now highly fragmented, typically confined to areas of lowland wet grassland, unimproved pasture, moorland fringe, and heathland. Curlews are ground-nesting and highly vulnerable to disturbance during the breeding season, especially from recreational pressure, construction activity and predator presence. In southern England, breeding curlew populations are sparse and in decline, breeding densities are generally low, and populations are often isolated from each other, increasing their vulnerability to local extinction.	TEC-106, TEC-107, TEC-108, TEC-109, TEC-110	Not spatially mapped
Birds - Farmland Bird Assemblage	High	Farmland bird assemblages in England are particularly sensitive to changes in land use, agricultural intensification, and habitat fragmentation. Farmland birds include a range of species that rely on arable and pastoral systems for breeding, foraging, and overwintering. Many are listed on the Birds of Conservation Concern (BoCC) Red or Amber Lists due to long-term declines linked to loss of mixed farming practices, reductions in fallow land, pesticide use, and removal of field margins and hedgerows. Key species of concern include skylark, yellowhammer, linnet, corn bunting, and grey partridge. Farmland bird species are widely distributed across lowland England, particularly in regions with extensive arable farming however populations are often fragmented and concentrated in areas with favourable habitat features including hedgerows, uncultivated field margins, winter stubble, and scattered scrub, making local populations vulnerable to incremental habitat loss.	TEC-81, TEC-82, TEC-83, TEC-84, TEC-85	Not spatially mapped
Birds - Passage	High	Southern England lies on key migratory flyways and supports a wide range of passage migrant bird species during both spring and autumn migration. These assemblages include waders, passerines, and raptors which rely on a network of stopover sites for rest and foraging. Passage migrants are sensitive to disturbance, habitat loss, and degradation of key feeding and roosting	TEC-96, TEC-97, TEC-98,	Not spatially mapped

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
		sites and many passage migrants are species of conservation concern, including birds listed on the Birds of Conservation Concern (BoCC) Red or Amber Lists or protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). The distribution of passage migrants in southern England is dynamic and weather-dependent, but certain landscapes consistently attract high numbers, notably coastal areas such as the Solent, Sussex coast, and Thames Estuary, as well as inland sites like the New Forest, Salisbury Plain, and gravel pits in the Thames and Avon Valleys which serve as critical stopover points.	TEC-99, TEC-100	
Birds - Schedule 1	High	Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) affords special protection to a list of bird species due to their rarity, vulnerability to disturbance, or conservation concern. These species are protected year-round, with additional provisions during the breeding season against disturbance at or near the nest. These species are likely to be also listed as Birds of Conservation Concern (BoCC) Red or Amber, and Species of Principal Importance under Section 41 of the NERC Act 2006 (as amended). Their populations are often limited in distribution, fragmented, or declining. The distribution of Schedule 1 birds varies from widely dispersed breeding species with nationally important strongholds to highly localised species with restricted UK ranges. Others have specialist habitat requirements and are confined to specific coastal or upland breeding sites, which are particularly vulnerable to human activity and land-use changes.	TEC-66, TEC-67, TEC-68, TEC-69, TEC-70	Not spatially mapped
Birds - Wintering	High	Wintering bird assemblages include species listed on the Birds of Conservation Concern and Wildlife and Countryside Act 1981 (as amended) and are sensitive to habitat change and habitat alterations during a sensitive period when birds rely heavily on suitable feeding and roosting sites for survival. Inland wetlands, reservoirs, floodplains and agricultural land support large numbers of overwintering wildfowl, some of which gather in nationally or internationally important numbers. The distribution of wintering birds across inland England is closely linked to the availability of suitable open water, wet grasslands, low-disturbance roosting sites, and agricultural foraging grounds. Some species form large, predictable aggregations, while others are more dispersed across farmed landscapes and semi-natural habitats. Many species exhibit high site fidelity to traditional wintering grounds and are vulnerable to displacement by development or land-use change.	TEC-86, TEC-87, TEC-88, TEC-89, TEC-90	Not spatially mapped
GCN	High	The GCN is a European Protected Species, listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended) and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). It is also a species of principal importance under Section 41 of the NERC Act 2006 (as amended). GCN are widely but patchily distributed across England, with particularly strongholds in central, eastern, and southern counties. Despite its relatively wide range, the GCN	TEC-37, TEC-40, TEC-41	Not spatially mapped

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
		has undergone long-term declines within parts of England, mainly due to loss, degradation, and fragmentation of aquatic and terrestrial habitats. Many remaining populations are small, isolated, and vulnerable to further disturbance or change.		
Hazel dormouse	High	Subject to ongoing surveys, hazel dormice cannot as yet be confirmed as present or likely absent within draft Order limits. Hazel dormice are a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended), are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are also listed as a Species of Principal Importance under section 41 of the NERC Act 2006.	TEC-8, TEC-9, TEC-10, TEC-11, TEC-12	Not spatially mapped
Natterjack toad	High	The natterjack toad is a European Protected Species fully protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended). It is also listed as a Species of Principal Importance under Section 41 of the NERC Act 2006 (as amended). These protections reflect its restricted distribution and conservation concern in England. Natterjack toads have a highly restricted and fragmented distribution in England, with populations confined mainly to coastal dune systems, lowland heathland, and some inland sandy habitats. Many populations are small and isolated, relying on intensive conservation management to remain viable. Natterjack toads have specific ecological requirements including open, early-successional habitats with sparse vegetation; shallow, often ephemeral breeding pools with minimal predation pressure; and terrestrial habitat for foraging and dispersal, typically characterised by low vegetation or bare sand.	TEC-42, TEC-43, TEC-44	Not spatially mapped
Notable vascular plants	High	The vascular flora of England is experiencing significant pressures, with nearly 20% of species assessed as threatened and many more classified as Near Threatened under International Union of Nature Conservation (IUCN) criteria. Decline may be largely attributed to habitat loss, eutrophication, land drainage and changes in land use, particularly in lowland areas. Populations of many sensitive species are now highly fragmented, increasing their vulnerability to local extinction while plants dependent on nutrient-poor soils, traditional grasslands, or undisturbed wetlands are particularly at risk. Many species exhibit narrow ecological tolerances, making them highly sensitive to hydrological changes, nutrient enrichment, and physical disturbance. Notable vascular plants may serve as indicators of habitat quality and continuity, and their presence or absence may therefore be indicative of habitats overall.	TEC-118, TEC-119, TEC-120, TEC-121	Not spatially mapped
Other amphibians	High	Other amphibian species, including common frog, common toad, smooth newt, and palmate newt are widespread native amphibians in England. These species receive limited legal protection primarily prohibiting sale and trade, although common toad is additionally listed as a	TEC-45, TEC-46, TEC-47	Not spatially mapped

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
		Species of Principal Importance in England under Section 41 of the NERC Act 2006 (as amended). These species are broadly distributed throughout England, with presence in a wide range of habitats, including farmland, woodland, gardens, parkland, and moorland. Common frog and smooth newt are considered the most frequently recorded and adaptable, occurring in a wide range of aquatic and terrestrial habitats. Common toad is still a widespread species but has suffered decline due to habitat fragmentation, road mortality, and loss of breeding ponds. Palmate newt is more commonly associated with acidic, upland, or sandy habitats and is more locally distributed in southern heathlands of England.		
Otter	High	The otter is a European Protected Species and receives full protection under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended). It is also listed as a species of principal importance in England under Section 41 of the NERC Act 2006 (as amended). Otters are now widely distributed across England, following a substantial national recovery since the 1980s. They are present in most river catchments, including upland and lowland systems, and can be found in both rural and increasingly urban landscapes where suitable freshwater and riparian habitats exist. Nonetheless, population density remains relatively low, and otters are highly dependent on the quality and continuity of aquatic and riparian corridors.	TEC-48, TEC-49, TEC-50, TEC-51, TEC-52	Not spatially mapped
Reptiles	High	In England there are six native reptile species, four of which are commonly encountered and widespread (albeit declining in many areas) and would include those species expected to be present within the draft Order limits. All native reptiles are protected under the Wildlife and Countryside Act 1981 (as amended) and listed as a Species of Principal Importance in England under Section 41 of the NERC Act 2006 (as amended), making it an offence to intentionally kill or injure individuals. Common lizard and slow worm are the most widespread, occurring in a range of habitats including grassland, heathland, woodland edges, brownfield land, and gardens. Grass snake is patchily distributed but found throughout much of lowland England, favouring wetland edges, ponds, and associated rough vegetation. Adder is declining across much of southern and central England, largely absent from intensive agricultural landscapes such as those widespread across the draft Order limits.	TEC-53, TEC-54, TEC-55, TEC-56	Not spatially mapped
Species of Principal Importance	High	The scoped-in species of brown hare, harvest mouse, hedgehog, and polecat are all listed as Species of Principal Importance under Section 41 of the NERC Act 2006 (as amended), reflecting their conservation concern due to historic and ongoing population declines and planning authorities are required to consider these species when determining applications. Brown hare is widespread across lowland England, but highly dependent on open farmland,	TEC-57, TEC-58, TEC-59,	Not spatially mapped

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)	Area-ID
		especially mixed arable and grassland systems. Harvest mouse is likely under-recorded but found throughout England, especially in the south and east and associated with rough grassland, and arable margins. Hedgehog is widespread but declining across England, including rural, suburban, and urban landscapes, while polecat is considered to be recolonising central and eastern counties in England and prefers mosaic habitats often associated with watercourses.	TEC-60, TEC-61	
Terrestrial Invertebrates	High	Central southern England supports a diverse and nationally significant assemblage of terrestrial invertebrates, including several Species of Principal Importance under Section 41 of the NERC Act 2006 (as amended), as well as many locally notable and Red List species. Mosaics of grassland, woodland, heathland, and brownfield sites provides habitat for both widespread and highly specialised invertebrates. These species are often dependent on highly specific habitat features including bare ground, nectar sources, deadwood, or particular host plants. While specific sites in the region are designated for their invertebrate interest, many important populations persist outside protected areas. Locations in central-southern England may support sites notable for butterflies and moths, pollinators including bumblebees, solitary bees, and hoverflies, and saproxylic and soil-dwelling species, often associated with old trees, hedge bases, and uncultivated grassland.	TEC-62, TEC-63, TEC-64, TEC-65	Not spatially mapped
Water vole	High	The water vole is a Species of Principal Importance for biodiversity in England and is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) with respect to intentional killing, injury, or taking, and to damage, destruction, or obstruction of their places of shelter or protection. Historically widespread across lowland Britain, water vole populations have undergone a severe decline, with a loss of over 90% of their range since the 1990s. In England, populations are now fragmented and largely restricted to areas with high-quality riparian habitat and effective mink control. Water voles are closely associated with slow-flowing or still freshwater habitats, favouring watercourses with well-vegetated banks for burrowing and foraging. They are highly sensitive to activities that adversely affect bank structure, marginal vegetation, or water levels.	TEC-29, TEC-30, TEC-31, TEC-32, TEC-33	Not spatially mapped

7.7 Project parameters, assumptions and limitations

- 7.7.1 Chapter 2: Project description relies on the use of relevant parameters and assumptions to allow flexibility in the final design of the Project in accordance with the Rochdale envelope approach (Planning Inspectorate, 2018). This preliminary assessment for the Terrestrial ecology aspect uses the parameters and assumptions outlined in Chapter 2: Project description, as well as additional parameters and assumptions specific to this aspect, to ensure that the reasonable worst-case scenario is considered within this assessment.

Project parameters and assumption specific to this aspect

- 7.7.2 Table 7.10 identifies the Project parameters, components and activities relevant to this assessment where assumptions specific to the preliminary Terrestrial ecology assessment have been generated.

Table 7.10 Project parameters and assumptions forming the basis of assessment

Project parameter / component / activity	Assumption (basis of assessment)
Most / all Project Components	The maximum dimensions (lateral and height) for all new structures including the highest vertical limit of deviation (as noted in Chapter 2: Project description) has been assumed for the assessment.
Network of Project PABs for mitigation, compensation and BNG	The draft Order limits are sufficiently sized and appropriately located to avoid net loss of biodiversity, and to support any protected species mitigation (e.g. translocations) resulting from the main Works programme where these are required and appropriate, and contribute to BNG. It is assumed that the design of habitat will evolve prior to ES and DCO submission to reflect the outcome of environmental surveys.
Network of Project PABs for habitat creation and enhancement outside the Core Project Area	Habitat mitigation and enhancement will be delivered during Early Works and Enabling Works phases of the Project programme to provide mitigation for species translocation or similar purposes.
Network of Project PABs for habitat creation inside the Core Project Area	Assumed that new habitats in these locations will be created late in the main works construction phase and will not be available during construction to provide mitigation for species translocation or similar purposes.
Existing habitats inside the Core Project Area required for utilities diversions and enabling works	Existing habitats will be lost during construction except where explicitly identified as retained and protected from impacts within the parameters set out within Chapter 2: Project description. It is assumed that the he Cuttings and Hutchins Copse LWS would be retained by the Project.
Use of publicly accessible areas and recreation facilities	Most habitats near the reservoir will be publicly accessible. Publicly accessible areas will be carefully designed to link key amenities. Footpaths and cycle routes will be designed to provide access throughout the landscaped area, and guide people away from more

Project parameter / component / activity	Assumption (basis of assessment)
	sensitive habitats in the north / north-west of the reservoir embankments, including wetlands and curlew habitat areas.
Duration of habitat mitigation and enhancement	BNG requirements will be for 30 years of habitat monitoring and management, with protected species monitoring and management requirements conforming to corresponding licence requirements. A consultation on the implementation of BNG for NSIPs was undertaken by Defra in July 2025, guidance following this consultation is anticipated in 2026 ahead of implementation of mandatory BNG for NSIPs from May 2026. It is anticipated that the guidance will include greater detail on which habitats will be subject to the 30 year monitoring and management requirement. In the absence of this guidance the assumption is that the 30 year requirement applies to all BNG habitats. The Project will align this requirement with the new guidance once published.
Water availability for water-dependent habitat mitigation and enhancement elements	Sufficient water within local catchments will be available for the creation, establishment and maintenance of water-dependent habitats where these are the target for habitat creation, including floodplain grazing marsh west of the reservoir embankment, which will not be compromised by competing pressure for water from a re-established Wilts & Berks Canal.
INNS	It is assumed that a management plan will be in place during construction and operation to avoid the spread of INNS.

Assessment assumptions and limitations

- 7.7.3 This section identifies the aspect-specific assumptions and limitations for the preliminary Terrestrial ecology assessment including those related to the availability of data to inform the assessment and assumptions used in the methodology. The assessment of effects in this chapter is preliminary and will be revisited in the ES in light of data available at that time and the design taken forward for submission. The preliminary assessment reported within this PEI Report chapter are considered a reasonable 'worst case' as a precautionary approach has been taken where design, construction or baseline information is incomplete. Where initial likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed, and the design and mitigation are further developed, including measures and method statements secured through protected species mitigation licences issued by Natural England. Nevertheless, the preliminary assessment is considered sufficiently robust to enable consultees to understand the likely significant environmental effects of the Project, based on current design information and understanding of the baseline environment. Gaps in information identified within the PEI Report will be considered and addressed as part of the assessment during the production of the ES, as noted in Section 7.10: Next steps. Assumptions and limitations identified in relation to the preliminary Terrestrial ecology assessment are detailed below.
- 7.7.4 Baseline surveys for all ecological receptors are in progress, and the baseline evidence presented as part of the preliminary assessment in the PEI report is acknowledged to be incomplete. In some instances, this refers to a lack of full site coverage of field surveys; in

others, this limitation extends to the baseline not yet being sufficient to confirm the presence or likely absence of a scoped-in receptor. All assessment presented in the preliminary assessment takes a good practice approach to precautionary assessment based on assumptions that valuable resting places, resources, supporting conditions, or physical processes have the potential to be present, until sufficient survey and assessment effort can robustly conclude otherwise. Examples would include assessments for hazel dormice and natterjack toad.

- 7.7.5 As the Project design develops, the assessment of impact pathways remains under review. For the purposes of the preliminary assessment in the PEI report, a precautionary approach has been taken to assumptions relating to impact pathways, including the potential for the source of impacts to be widely dispersed within the draft Order limits, or to occur in proximity to sensitive receptors (see point above for this limitation and uncertainty). Where several options exist, for example, related to construction vehicle routing, a precautionary approach to impact pathways and ecological receptors has been adopted.
- 7.7.6 Biological records obtained from Biological Records Centres (specifically, Thames Valley Environmental Records Centre) are regularly updated. For the purposes of this PEI Report, records searches have been based on the Core Project Area. This is addressed by the precautionary approach to baseline uncertainty set out above in this section and future updates will additionally take into account more remote locations where these may be the subject of (e.g.) habitat mitigation delivery.
- 7.7.7 All assessments presented in this preliminary assessment are for information purposes at this Project stage and will be updated fully as part of the EIA process in development of the ES, and other supporting assessments. Where further information on Project parameters, receptor baselines, or impact pathways changes the potential for ecological effects, the most up-to-date and robust information will be applied in the ES.

7.8 Embedded design mitigation and standard good practice

- 7.8.1 As described within Chapter 4: Approach to the environmental assessment, identified embedded design (primary) mitigation and standard good practice (tertiary) measures are assumed to be applied within this preliminary assessment, to reduce the potential for environmental effects.
- 7.8.2 Embedded design mitigation measures identified for the Project at this stage are noted in Chapter 2: Project description. These, and standard good practice measures to be applied, are described in greater detail within Appendix 2.2: Draft commitments register.
- 7.8.3 Table 7.11 and Table 7.12 list the embedded design mitigation and standard good practice measures applicable to the preliminary Terrestrial ecology assessment during construction and operation respectively, including the unique commitment IDs that relate to the Draft commitments register (where further detail on each can be referred to). The tables also state the purpose of each mitigation and the applicable securing mechanisms.

Table 7.11 Construction: Relevant embedded design mitigation and standard good practice measures, their purpose and the securing mechanisms

Embedded design mitigation or standard good practice measure (unique commitment ID)	Purpose of mitigation measure	Indicative securing mechanism
Design the Project to reduce the need to import material as far as reasonably practicable (ED-04)	Reduced import of material reduces the risks associated with unintentional introduction of INNS.	Under the terms of the DCO
Use of rail to transport bulk construction materials, if practicable (ED-05)	Measure will reduce the adverse effects of large numbers of heavy-duty vehicles passing in proximity to sensitive ecological receptors.	Under the terms of the DCO
Provision of Project Priority Areas for Biodiversity (ED-27)	The provision of extensive areas of habitat creation, enhancement and beneficial management for nature conservation are required to provide opportunities to provide replacement habitats, contribute to BNG and reinforce landscape connectivity for the species dependent upon these habitats.	Under the terms of the DCO
Construction stage surface water management (ED-41)	These measures reduce the risks of adverse effects associated with species and habitats dependent on established hydrological regimes and water quality.	CoCP
Standard good practice measures to reduce the impacts to surface and groundwater resources (SGP-02)	These measures reduce the risks of adverse effects associated with species and habitats dependent on established hydrological regimes.	CoCP
Standard good practice measures for works within or adjacent to waterbodies (SGP-03)	These measures reduce the risks of adverse effects associated with species and habitats dependent on established hydrological regimes and potentially present with limited capability for dispersal within sensitive habitats.	CoCP
Standard good practice measures for managing ecology impacts (SGP-06)	These measures reduce the risks of adverse effects associated with species and habitats potentially present on site including the location, methodology and timings of activities.	CoCP
Timing of construction works to reduce ecological impacts (SGP-07)	These measures reduce the risks of adverse effects associated with species and habitats potentially present on site and with specific sensitive periods within their annual cycle.	CoCP
Standard good practice measures for controlling and treating INNS (SGP-08)	Required to mitigate the risk of introduction and spread on INNS which may otherwise result in harm or damage to ecological receptors and/or a failure to comply with the law.	CoCP

Embedded design mitigation or standard good practice measure (unique commitment ID)	Purpose of mitigation measure	Indicative securing mechanism
Standard good practice measures to protect trees during construction (SGP-11)	These measures reduce the risks of adverse effects on trees not intended to be lost and inadvertent damage or loss to this receptor and any species which may be present and/or dependent on them, including associated legal compliance with the protection of their resting places.	CoCP
Standard good practice measures for establishment of trees and other planting (SGP-12)	Where ecological mitigation is provided by habitat creation it is important it reaches its target condition and establishes as designed. Whilst overall positive, establishing new planting can have adverse effects on species with resting places within or adjacent to planting areas and good practice is required to mitigate such risks.	CoCP
Standard good practice measures to reduce impact of construction traffic on communities and the environment (SGP-19)	To mitigate the adverse effects of routing heavy duty vehicles in proximity to sensitive ecological receptors.	CoCP
Off-site Construction Traffic Management Measures (SGP-20)	To mitigate the adverse effects of routing heavy duty vehicles in proximity to sensitive ecological receptors outside the draft Order limits.	CoCP Under the terms of the DCO
On-site Construction Traffic Management Measures (SGP-21)	To mitigate the adverse effects of routing heavy duty vehicles in proximity to sensitive ecological receptors.	CoCP
Standard good practice dust mitigation measures (SGP-23)	To mitigate the adverse effects of routing heavy duty vehicles in proximity to sensitive ecological receptors.	CoCP
Standard good practice measures for minimising vehicle, plant and machinery emissions (SGP-24)	Mitigation to address the impacts on habitats arising from air pollution.	CoCP
Apply measures including Best Practicable Means to reduce construction noise and vibration (SGP-25)	Mitigation to address the impacts on species sensitive to disturbance, and those whose resting places may be affected by vibration effects.	CoCP
Carry out construction works during standard working hours (where reasonably practicable) (SGP-26)	Mitigation to address the impacts on species sensitive to disturbance effects during hours of darkness and those primarily active and mobile during hours of darkness	CoCP
Land that is only required temporarily during construction to be reinstated (SPG-34)	Mitigation to address the impacts of habitat loss by replacing quickly-regenerating	Under the terms of the DCO

Embedded design mitigation or standard good practice measure (unique commitment ID)	Purpose of mitigation measure	Indicative securing mechanism
	habitats to mitigate as much as possible the loss of that habitat's functionality.	
Design of temporary crossings during construction to maintain function and integrity of watercourses (SGP-35)	Mitigation to address impacts on species and habitats dependent on maintaining connectivity along watercourses and associated with specific hydrological regimes.	Under the terms of the DCO
Reduce light spill from construction (SGP-51)	Mitigation to address the impact of construction lighting where that would otherwise adversely affect the use of the illuminated habitat and/or form a barrier to connectivity between habitats by light sensitive species.	CoCP

Table 7.12 Operation: Relevant embedded design mitigation and standard good practice measures, their purpose and the securing mechanism

Embedded design mitigation or standard good practice measure (unique commitment ID)	Purpose of mitigation measure	Indicative securing mechanisms
Reduce the impact of the Steventon to East Hanney road diversion on environmental receptors (ED-20)	Mitigation to reduce effects on nearby terrestrial ecology receptors.	Design Principles
Provision of Project Priority Areas for Biodiversity (ED-27)	The provision of Priority Areas for Biodiversity will incorporate habitats and processes which will mitigate effects and enhance habitats, including through the management of natural processes. new watercourse channels, drains and wetlands will allow control of catchment hydrology to mitigate adverse effects.	Under the terms of the DCO
Operation stage surface water management (ED-42)	Mitigation to address the impacts associated with alteration of water sources on habitats dependent on hydrological pathways.	Under the terms of the DCO
Asset design manages water table variability (ED-43)	Mitigation to address the impacts associated with alteration of water sources on habitats dependent on hydrological pathways.	Under the terms of the DCO
Designated ecological site protection from direct disturbance (ED-48)	Designated ecological sites are safeguarded through integration into site planning and protection from hydrological impacts. This supports aquatic ecology by maintaining the quality and stability of connected aquatic habitats.	CoCP

Embedded design mitigation or standard good practice measure (unique commitment ID)	Purpose of mitigation measure	Indicative securing mechanisms
Design Project and lighting strategy to minimise light spill from permanent facilities (ED-60)	Mitigation to address the impact of permanent lighting where that would otherwise adversely affect the use of the illuminated habitat and/or form a barrier to connectivity between habitats by light sensitive species.	Under the terms of the DCO

7.9 Preliminary assessment of likely significant effects

Introduction

- 7.9.1 This section summarises the findings of the preliminary assessment of effects for Terrestrial ecology, focusing on key effects that are initially anticipated to be 'significant', be they adverse, beneficial or neutral. The judgement of significance has been made assuming that embedded design mitigation and standard good practice mitigation relevant to Terrestrial ecology is applied (these are noted in Table 7.10 and provided in detail in the Draft commitments register in Appendix 2.2). Nevertheless, the assessment assumes that additional mitigation is not yet applied, as the precise nature and extent of any additional mitigation measures is not confirmed at this stage in the EIA process. As a result, consideration of residual effects (those that remain after the implementation of *all* mitigation, including additional mitigation) has not been completed for the PEI Report.
- 7.9.2 As noted in paragraphs 7.1.6 and 7.1.7, assessments reported within this PEI Report chapter are considered a reasonable 'worst case' in line with the precautionary approach that has been taken. Where initial likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed, and the design and mitigation are further developed, including measures and method statements secured through protected species mitigation licences issued by Natural England. The next steps for the Terrestrial ecology assessment, including further exploration of relevant additional mitigation, are set out in Section 7.10: Next steps.
- 7.9.3 Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology, sets out the preliminary assessment of effects, receptor by receptor, for construction and operation phases respectively. The appendix is split into tables that list effects that are initially anticipated to be significant, and tables that list effects that are not anticipated to be significant. The tables identify the following for each effect:
- Receptor name, the Effect ID (a unique identifier for each effect), and sensitivity category
 - Project components and activities giving rise to the effect
 - Relevant embedded design mitigation and standard good practice mitigation (with unique Commitment ID, which relates to Appendix 2.2: Draft commitments register)
 - Initial category of effect significance, including whether it is adverse, beneficial or neutral (taking account of embedded design mitigation and standard good practice mitigation)
 - Description and duration of the effect

- Any additional mitigation and monitoring identified at this stage (with unique Additional Mitigation ID to enable cross reference to the measures noted in Section 7.10: Next steps)

Progression of understanding of terrestrial ecology receptors and impact pathways

- 7.9.4 Species surveys undertaken to date indicate that there are known populations of badger, bats, birds (including barn owl), otter, water vole, common toad, smooth newt, grass snake, common lizard and a range of terrestrial invertebrates within the draft Order limits, therefore at this stage of the assessment process and in line with the Precautionary Principle, these species are assumed to be more likely to experience significant effects. In contrast, surveys undertaken to date have found no presence of hazel dormice, therefore, based on the current available information it is anticipated that these species are unlikely to experience significant effects. GCN is currently assumed to be present due to positive eDNA results in two locations, but populations are not confirmed.
- 7.9.5 Of those species scoped into the assessment, only bat species defined as ‘rarest Annex II species and very rare’ and the SAC sites have been identified as of ‘very high’ sensitivity. Due to these receptors sensitivity, it is therefore more likely that they will experience significant effects when considered under the Precautionary Principle, however it is also the case that the likelihood of encountering high value habitats and resting places associated with mobile species in this category is greatly reduced when compared to more widely dispersed and abundant species and ecological receptors of ‘very high’ sensitivity. Due to these receptors sensitivity, it is therefore more likely that they will experience significant effects.
- 7.9.6 Off-site designations including SAC, SSSI, NNR and LNR have been included within assessments for the potential for impacts from the Project to affect these designations and, where applicable, their qualifying features.
- 7.9.7 Whilst designs continue to develop and associated modelling of impact pathways is being refined, some uncertainty in assessment remains at the current time and the precautionary principle has been applied to address this. It also remains the case that the scoped-in impact pathways of hydrological changes and air quality changes to off-site designations are unlikely to result in significant effects on these designations, due to a combination of the geographical location of designated sites (upstream within catchments, on hill tops, away from highways) and the limited changes from the Project resulting in these designations likely being outside the zone of influence. Embedded design mitigation and standard good practice mitigation (for example, construction vehicle route selection and the use of rail) are considered likely to avoid exceedances of site-relevant screening thresholds for adverse effects or will be able to mitigate effects to avoid damage and degradation of designated sites. Where applicable to designations which form part of the national site network, final assessment of Likely Significant Effects will be set out as information to inform Habitats Regulations Assessment to support a DCO. These positive effects will be fully detailed and assessed in the ES.

Summary of likely significant construction effects

- 7.9.8 This section summarises the construction effects that are initially anticipated to be ‘significant’ through the preliminary assessment of effects for terrestrial ecology. It pulls out the key potential causes and types of effects.

Key potential causes of effects

- 7.9.9 Chapter 2: Project description explains the construction components and activities for the Project. Key effects on Terrestrial ecology may result from the following:
- All construction activities risk adversely affecting terrestrial ecology receptors. Although the scale of effect will differ between receptors, construction activities including excavations, areas of earthworks, demolition works, loss of watercourses / in-channel works, use of heavy machinery, vehicular movements and increased human presence have the potential to affect terrestrial ecology receptors.
 - Requirements for vegetation clearance, such as grass, scrub, tree and hedgerow removal and the removal of bank vegetation on watercourses, is a key consideration in all construction effects.

Key likely significant construction effects

- 7.9.10 The likely significant construction effects on terrestrial ecology receptors are summarised below and provided in full in Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology.
- Habitat loss / gain, fragmentation or modification: The construction phase of the Project would result in habitat loss and the loss of suitable habitat for species found to be present within the draft Order limits, potentially leading to declines in local populations, displacement from territories, reduced foraging efficiency, and elevated stress on many terrestrial ecology receptors. The loss of habitat may also result in fragmentation of retained habitats, reducing habitat connectivity, divide receptors territories, and inhibit dispersal.
 - Disturbance: The construction phase of the Project would require the use of heavy machinery, excavation, or vehicular movement, which can cause noise and vibration that may disturb terrestrial ecology receptors. Disturbance can disrupt foraging, nesting, and breeding behaviour, potentially leading to nest abandonment or reduced reproductive success. Artificial lighting from night-time construction work may deter nocturnal activity for receptors, reducing feeding efficiency and increase vulnerability to predators, thereby affecting and population viability.
 - Mortality and injury: Construction activities may pose a direct risk of mortality or injury to terrestrial ecology receptors where habitats are present within buildings or other structures subject to demolition and vegetation, hedgerow and trees subject to felling / removal. Where receptors are present, construction activities can lead to crushing or entrapment, whilst mortality and injury may result from machinery operation, groundworks or piling activities.
 - Hydrological changes: For some terrestrial ecology receptors changes in the hydrological conditions, such as changes in water levels and flows, as a consequence of construction activities, risk potentially impacting habitat quality, availability and stability of the receptor, specifically otters and water voles. In addition, changes in hydrological conditions within designated sites (internationally, nationally or locally designated) also risks affecting the sites ecological integrity and resilience.
 - Air quality changes: Air pollution during construction including excess nitrogen from ammonia and nitrogen oxides from vehicle emissions may lead to nutrient enrichment, altering plant communities in nitrogen-sensitive habitats. Pollutants such as sulphur dioxide and nitrogen oxides may also contribute to acid deposition, which can degrade

soil and water quality. Dust accumulation on plant surfaces from construction activities can reduce photosynthesis, impair respiration, and hinder growth, particularly in sensitive habitats. Persistent dust pollution can lead to gradual habitat degradation and increase vulnerability to wider pressures.

- 7.9.11 Although the above initial likely significant adverse effects have been identified from the construction activities, the suite of standard good practice and embedded design mitigation will ensure that the magnitude of impact on terrestrial ecology receptors is reduced. A key part of the embedded design mitigation is the provision of Project PABs, which will be extensive areas of habitat creation, enhancement and beneficial management for nature conservation. Habitat creation and enhancement within the Project PABs will focus on providing suitable habitat for species known (and assumed) to be present within the Core Project Area. The location of these areas has been designed to facilitate displacement of species, where feasible, and local relocation/translocation of less mobile species or where the distance between impacted receptors and relocation areas means that displacement is not viable. All protected species subject to licensable activities will only be impacted once the appropriate mitigation licence has been secured from Natural England and works will be carried out in accordance with that licence and any associated conditions. Due to the length of the construction phase, the Project PABs would be designed to provide adequate foraging habitat for species (as appropriate) to support populations throughout construction. For example, artificial setts could be provided for displaced badger clans, but sufficient foraging habitat would also be provided to support each clan within their new / adapted territory.
- 7.9.12 The provision of Project PABs will therefore provide the opportunity through modified and enhanced habitats and habitat connectivity, while secured and licenced species mitigation strategy method statements developed as additional mitigation provide exactly planned and enforceable steps to ensuring the target receptors successfully benefit from that habitat provision.
- 7.9.13 Habitat creation would focus on a mosaic of habitats, including grassland, woodland, scrub, ponds and ditches, with specific locations designed to act as receptor sites for certain species and surrounding habitats to support their natural colonisation of land adjacent to these sites. Careful consideration would be given to the siting of certain species receptor sites in proximity to each other where it is likely to result in increased predation or disturbance. The distribution of Project PABs around the Core Project Area also allows for the most appropriate local relocation / translocation sites to be selected to support species at a population level in the long term, bolstering existing habitat corridors and features currently used by species, for example, Hutchin's Copse and the Cuttings LWS and associated railway corridor habitats.
- 7.9.14 In addition to habitat creation, enhancement of existing habitats is also proposed within the Project PABs to maximise the biodiversity benefit they deliver and increase the carrying capacity for species already known to be present within these areas. This would comprise enhancement of woodlands, grasslands and ponds to enhance overall habitat condition, and the creation of specific features for species, such as veteranisation of suitable trees to create features for bats.
- 7.9.15 It is acknowledged that construction of the Project requires the loss of large areas of arable land. Whilst considered a lower value habitat, farmland provides an important foraging resource and arable margins support a wide range of species. The proposals for the

Project PABs would therefore include large areas of retained arable land, to be sensitively managed to encourage biodiversity through provision of wide arable margins, hedgerow enhancements, alternative cropping cycles and retention of winter stubble as examples. Combined with the creation and enhancement of habitats detailed above, this would create a diverse network of habitats to support species throughout the construction phase, as well as enhancing connectivity of these habitats within the wider landscape. Mechanisms to secure biodiversity provision on arable land are currently under review. As such these are considered to be additional mitigation and have not been taken into account at this stage of the assessment.

Summary of likely non-significant construction effects

- 7.9.16 At this stage, as the baseline information confirming the presence or absence and distribution of terrestrial ecology receptors within the draft Order limits is incomplete, non-significant construction effects have been identified associated with several receptors, notably designated sites remote from the draft Order limits with no identifiable pathway of effect or functional linkage.

Summary of likely significant operation effects

Key potential causes of effects:

- 7.9.17 Chapter 2: Project description explains the operation components and activities for the Project. Key effects on terrestrial ecology receptors may result from the following:
- Overall, the presence of the Project during operation has the potential to adversely affect all terrestrial ecology receptors as it will increase the presence of people, machinery, and vehicles, and potentially increase lighting within the draft Order limits.
 - Specifically, maintenance activities, creation of publicly accessible areas and recreation facilities will all increase the number of people within the area, as well workforce and visitor vehicle movements increasing the volume of vehicles.
 - The changes to how land is managed and the objectives of that management resulting from the existence of the Project also has the potential to change the hydrological conditions within the draft Order limits affecting some terrestrial receptors.

Key likely significant operation effects

- 7.9.18 As with construction effects, as the baseline information for all terrestrial species is not yet complete, it is not possible to confirm which species which may have a greater risk of significant effects than another. The points below summarise the key likely significant effects, which may adversely affect all terrestrial ecology receptors depending on the outcome of ongoing baseline surveys which will determine presence or absence.
- Disturbance: The operation phase of the Project may result in disturbance to terrestrial species (where these are present). Disturbance can result in displacement from habitats and result in increased competition, reduced foraging efficiency, and elevated stress. The operation phase will introduce public recreational access to areas of the site as well as new land management and maintenance practices which have the potential to lead to disturbance. New permanent lighting of newly created or retained habitats may also lead to disturbance effects on species present within these locations.

Artificial lighting from streetlights, vehicles, and associated infrastructure, and noise and vibration from vehicular traffic and maintenance works all have the potential to disturb light and noise-sensitive species. Furthermore, some species are highly vulnerable during hibernation and breeding, increasing their vulnerability to effects from disturbance.

- Mortality and injury: The introduction of new public recreational access to areas of the site as well as new permanent highways and vehicle movements have the potential to lead to mortality and injury of some terrestrial species. Routine land management operations can cause injury or mortality to some species, including mowing and other mechanical management.
- Hydrology: Changes to hydrology from site management including vegetation clearance, drainage maintenance, watercourse realignment, or infrastructure upgrades can potentially have consequences for trees, plants, designated sites and other habitats within the catchment. Hydrological changes can shift plant community composition, reduce habitat suitability for specialist species, and encourage encroachment by invasive or generalist species, all of which will potentially undermine the catchments ability to support the habitats and species present, including designated sites. In addition, some habitats are vulnerable to hydrological changes driven by alteration of their physical environment and land-use pressures during the operation of the Project.
- Air quality: Some habitats and designated sites are sensitive to air pollution, particularly nitrogen-based compounds and particulate matter emitted by road traffic potentially associated with any significant increase in staff and visitor vehicle movements. These pollutants can have significant ecological impacts, even at low concentrations, especially when deposition occurs over long periods. Nitrogen deposition can lead to the dominance of competitive species, altering habitat structure while acidifying pollutants can change soil pH, affecting nutrient availability and microbial communities, with knock-on effects for plant health and regeneration.

- 7.9.19 The locations of Project PABs have been designed to facilitate movement of species into land adjacent to the reservoir once construction works and associated landscaping works are completed, where feasible, providing an overall net increase in available habitat for species in the long term. It is acknowledged that components of the Project, such as publicly accessible areas and recreational facilities with associated lighting would introduce potential disturbance effects to species. Public rights of way have therefore been designed to avoid Project PABs as far as practicable, with the exception of existing public rights of way. Where public rights of way are required they have been designed to reduce the potential for long term disturbance impacts within these areas, for example, by avoiding areas of core bat roosting habitat.

Summary of likely non-significant operation effects

- 7.9.20 At this stage, as the baseline information confirming the presence or absence and distribution of terrestrial species within the draft Order limits a precautionary approach to likely non-significant operation effects has been taken. However, it is anticipated that designated sites at significant distance within the study area are not likely to experience significant effects as no impact pathway has been identified.

- 7.9.21 Whilst not an impact pathway scoped into EIA for adverse effects, the Project has significant potential for public recreational use during the operational phase and this is likely to yield a positive effect on designated sites (alone and in-combination). The Project itself will not generate additional recreational pressure (as it does not result in additional permanent residents) however it will provide a resource akin to a Suitable Alternative Natural Greenspace (SANG) through its provision of suitable public infrastructure. Given wider growth within the area, this is considered likely to be an attractive resource to existing and new residents associated with other developments who would otherwise have been drawn to the existing spaces of SACs, SSSIs, NNRs and LNRs, reducing pressure on those sites.
- 7.9.22 It is also worth noting that some species / species groups are likely to benefit from the creation of the reservoir and surrounding recreational land, potentially resulting in increases in populations in the long term. Examples of this effect are likely to be seen in populations of soprano pipistrelle and Daubenton's bat as well as certain wintering birds / waders. These positive effects will be fully detailed and assessed in the ES.

7.10 Next steps

- 7.10.1 As part of next steps, the Project is proactively developing the design, refining the construction approach and continuing to define the environmental baseline, in conjunction with ongoing consultation and engagement. These activities will inform the EIA process and provide a robust evidence base for the ES. The aim is that where initial likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed, and the design and mitigation proposals are further developed. Effects that remain after the implementation of all mitigation are referred to as 'residual effects'. These effects are not reported in the PEI Report as additional mitigation is not assumed to be implemented at this stage of the assessment. The assessment of the significance of residual effects after all mitigation is applied is a key outcome of the EIA process and will be reported within the ES, which will be submitted with the DCO application.
- 7.10.2 The next steps anticipated to be undertaken in relation to the Terrestrial ecology assessment prior to completion of the ES and submission of the DCO application are explained below.

Further exploration of additional mitigation

- 7.10.3 A key aspect of the next steps is to further explore additional mitigation that may reduce adverse effects that the preliminary assessment has initially identified as likely to be significant. Additional mitigation that has been identified for the Terrestrial ecology assessment is noted against relevant likely significant effects in Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology. All additional mitigation that has been identified in relation to the Terrestrial ecology assessment to date is listed below in Table 7.13 along with a description of what each measure entails. Each measure has a unique Additional Mitigation ID to enable cross reference between Appendix 7.1: Preliminary assessment of effects for Terrestrial ecology and Table 7.13. As noted previously above, the preliminary assessment presented in the PEI Report assumes that additional mitigation is not yet applied, as the precise nature and extent of any additional mitigation measures is not confirmed at this stage in the EIA process.

Table 7.13 Additional mitigation identified to date in relation to the Terrestrial ecology assessment

Additional mitigation ID	Additional mitigation name	Description of additional mitigation measure
AM-17	Measures to manage and protect water flows in watercourses	Relevant to supporting habitat for Terrestrial ecology receptors, measures are being explored to manage and protect water flows within the River Thames during water abstraction and augmentation. Example measures may include: - The development and application of an appropriate hands-off flow regime in liaison with the Environment Agency to manage or prevent water abstraction when river flows are low enough that further reductions could significantly harm the aquatic environment. - The development and application of an abstraction and discharge regime with incremental flow adjustments to manage flow velocities as the Project progresses (with necessary environmental permit(s)). Furthermore, where appropriate, river habitats at other watercourses could be designed to mitigate potential changes in flow and habitat quality.
AM-20	Measures to reduce effects on aquatic ecology during operation	Relevant to supporting habitat for Terrestrial ecology receptors, where practicable, example measures to reduce adverse ecological effects during reservoir operation could include: - Bespoke habitat design monitoring and (if necessary) adaptive management for watercourse diversions and realignments for invertebrate, macrophyte and/or fish species and communities. - Species translocations targeting specific macroinvertebrates or macrophytes if required. - Access management along diverted watercourses. - Sensitive lighting design along new river corridors and reservoir. - Consideration of the mesh screen size at the intake structure to reduce risk of juvenile/larval fish entrainment at intake. - Additional habitat enhancement/creation upstream and downstream of the intake/outfall site, including fish refuge provision to compensate for loss of aquatic habitat on River Thames. - Consideration of the outfall design and discharge operation to reduce risk of fish attraction to the outfall. - Review of intake and discharge patterns to determine where it may be practicable to further avoid periods when juvenile/larval fish at risk of entrainment may be present. - Optimisation of a ramp up flow release sequence for the reservoir to ensure fish communities in the River Thames can adapt to flow changes.
AM-21	Measures to reduce effects on	Measures to reduce adverse effects on terrestrial ecology during reservoir operation may include for example: - The management of public access to some habitat areas.

Additional mitigation ID	Additional mitigation name	Description of additional mitigation measure
	terrestrial ecology during operation	- Consideration of lighting design to be sensitive to ecological receptors where appropriate in public areas, along diverted watercourses and adjacent to the reservoir. - Monitoring of populations for comparative analysis and to establish whether remedial works need to be undertaken.
AM-27	Long term management and maintenance of planting and habitats	Detailed long-term management and maintenance plans would be implemented in relation to planting and habitats. These may include measures for other landscape, visual and ecological mitigation and enhancements to ensure their continued function and quality, informed by the outline Landscape and Ecological Management Plan and BNG requirements.
AM-29	Encourage public transport / active travel use	Measures to encourage visitors and operational/maintenance staff to use public transport or active travel could reduce private car trips during operation. This may include methods such as: - Provision of a website to guide visitors to SESRO which encourages access to the site by public transport, cycling or walking - parking restrictions - Offering shuttle bus services from nearby stations.
AM-35	Water quality monitoring and subsequent remedial activities where these are required	Water quality monitoring will be required post construction to identify potential impacts to water bodies sensitive to changes in water quality. If required, subsequent remedial activities may be undertaken, where these are able to reduce impacts to hydromorphological, water quality and biological conditions in the waterbodies. Examples of potential remedial activities include: • The aeration of waterbodies • Planting vegetation • Silt removal • Biomanipulation techniques and circulation measures • Use of additional chemicals to manage water quality in the event algal load increases.
AM-73	Investigate, assess and remediate contaminated land	Investigate, assess and remediate contaminated land based on sustainable remediation options, in accordance with the Environment Agency Land Contamination: Risk Management (LCRM).
AM-75	Species / habitat specific mitigation strategy	To support Project Priority Areas for Biodiversity, specific species and habitat mitigation strategies are likely to be required and would need to be coordinated with any licence(s) issued by Natural England, where required. This may include monitoring and management measures.
AM-76	Additional mitigation which may result from the Habitats	A Habitats Regulations Assessment is required for the Project. Any mitigation or monitoring identified within the assessment would be applied as appropriate.

Additional mitigation ID	Additional mitigation name	Description of additional mitigation measure
	Regulations Assessment	
AM-79	Compensation for the loss of ancient and veteran trees	Compensation for the loss of ancient and veteran trees focuses on replicating their ecological value as far as possible through translocation of habitat features, preservation of genetic material, and creation of substitute habitats.

Other next steps

7.10.4 Other steps that are continuing or are planned to be undertaken to support the Terrestrial ecology assessment prior to completion of the ES and submission of the DCO application are noted below with an explanation of how these will inform the EIA process:

- Continue to undertake detailed baseline ecological surveys for all receptors scoped into assessment in order to develop a thorough and consistent baseline to inform the assessment of sensitivity of individual receptors or receptor groups; inform the evaluation of potential impacts; and develop and inform the assessment of the effectiveness of mitigation measures across all receptors scoped-in to assessment as set out in paragraphs 7.4.13 to 7.4.15.
- Carry out detailed assessment following the methodology set out in Section 7.4: Assessment methodology, using the baseline data, responses to the PEI Report consultation, and updated clarity on construction methods, programme and assumptions. This will be undertaken in collaboration with other aspects where those have a key role in informing the likelihood and magnitude of impacts, as also described in paragraph 7.4.28.
- Assessments linked with EIA and terrestrial ecology that are also being progressed, including the requirement for Habitats Regulations Assessment of the Project. Additionally, assessments not unique to terrestrial habitats and species, such as INNS, which will be integrated with assessments for aquatic ecology where this produces more robust assessment.
- Engagement with regulators and stakeholders to inform ongoing survey approaches and findings; the development of mitigation and enhancement opportunities; and the emerging results of assessments.
- Continue to refine the Projects habitat design to maximise biodiversity benefit, focusing on delivering habitat creation, enhancement and beneficial management, particularly with the provision of the Project PAB's. Consideration and engagement will also be sought to deliver partnership opportunities in maximizing biodiversity benefits. Such benefits will not be limited to the Project scale, but are being approached from a perspective of maximizing habitat connectivity opportunities and supporting the provision of enhancement at a landscape scale.
- Where specific opportunities exist to restore and recreate habitats that align with the Project design parameters as set out within Chapter 2: Project description, stakeholder engagement will be sought to ensure that these opportunities are explored to the fullest, such as reinstating previously lost habitats of higher value, for example wood pasture.

- The next steps outlined above are considered to provide benefits in the form of more robust assessment to support decision making; continued engagement with stakeholders to integrate their priorities from an early stage; and to deliver better ecological outcomes, maximizing the opportunities created by the Project locally, and at a larger geographical scale.

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