South East Strategic Reservoir Option

Preliminary Environmental Information Report

# Chapter 6 - Aquatic ecology

Date: October 2025

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# 6 Aquatic ecology

## 6.1 Introduction

6.1.1 This chapter of the Preliminary Environmental Information (PEI) Report provides the preliminary assessment of likely significant effects from the construction and operation of the proposed SESRO Project (the Project, as detailed in Chapter 2: Project description) on features of aquatic ecological value.

6.1.2 Within this chapter, aspect-specific sections are included on:

- Legislation, policy and guidance (Section 6.2)
- Consultation, engagement and scoping (Section 6.3)
- Assessment methodology (Section 6.4)
- Study area (Section 6.5)
- Baseline conditions (Section 6.6)
- Project parameters, assumptions and limitations (Section 6.7)
- Embedded design mitigation and standard good practice (6.8)
- Preliminary assessment of likely significant effects (Section 6.9)
- Next steps (Section 6.10)

6.1.3 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 the Project effects on groundwater levels, and surface water which inform the assessment of effects on aquatic ecology receptors.
- Chapter 7: Terrestrial ecology – which provides baseline information and assessment of effects to aquatic habitats including ponds and watercourses which also support terrestrial receptors.
- Chapter 14: Noise and vibration – which provides assessment of the levels of noise and vibration created during construction and operation which inform the assessment of effects on aquatic ecology receptors.
- Chapter 18: Climate resilience – which provides predictions of the effects associated with climate change which will inform the future baseline.
- Chapter 20: Cumulative effects – which provides consideration of other relevant developments for the future baseline and assessment of potential cumulative effects upon aquatic ecology receptors.

6.1.4 This chapter is supported by the following figures and appendices:

- Figure 6.1: Aquatic ecology study area
- Figure 6.2: Statutory designated sites (international)
- Figure 6.3: Statutory designated sites (national) and non-statutory designated sites
- Figure 6.4: Watercourses and priority river habitat
- Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024)
- Appendix 6.2: Preliminary assessment of effects for Aquatic ecology

6.1.5 This PEI Report does not constitute a draft 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 being developed. 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 6.10: Next steps.

6.1.6 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. The ES will be submitted with the 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.

## 6.2 Legislation, policy and guidance

6.2.1 Table 6.1 lists the legislation, policy and guidance relevant to aquatic 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.

6.2.2 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.

6.2.3 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 6.1.

Table 6.1 Relevant legislation, policy and guidance for aquatic 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)**<br>Provides legal protection for designated sites and species of European importance. | There is the potential that the Project would result in effects upon designated sites and species afforded protection under this legislation. It is therefore relevant to this assessment. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| | | and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| **The Wildlife and Countryside Act (as amended) 1981**<br>Provides protection for certain habitats and species and includes provisions relating to invasive non-native species and offences arising from their release or spread. | There is the potential that the Project would result in effects upon designated habitats and species afforded protection under this legislation. There is also potential for invasive species to be encountered on the Project, and the potential for an offence under this legislation. It is therefore relevant to this assessment. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| **The Countryside and Rights of Way Act 2000**<br>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 effects upon Sites of Special Scientific Interest and species afforded protection under this legislation. It is therefore relevant to this assessment. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| **The Natural Environment and Rural Communities (NERC) Act 2006**<br>Places a duty on public authorities to have regard to the conservation and enhancement of biodiversity, including habitats and species of principal importance published in a list pursuant to under Section 41 in England. | There is the potential that the Project would result in effects upon habitats and species that are published in a list pursuant to Section 41 of the NERC Act which are considered of principal importance for the conservation of biodiversity in England. It is therefore relevant to this assessment. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| **The Environment Act (2021)**<br>Requires mandatory 10% minimum Biodiversity Net Gain (BNG) for all new developments. A consultation on the | The Environment Act updates the responsibility of public bodies in relation to the general biodiversity | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| 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. | objective. It is therefore relevant to this assessment. Please note that, while BNG is not currently a statutory requirement for DCO applications, Thames Water is committing to delivering at least 10% BNG. Following a Government consultation on BNG for Nationally Significant Infrastructure Projects (NSIPs), it is proposed that BNG will become mandatory for such projects from May 2026. | of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| Environmental Protection Act 1990<br>Provides legal protection and a framework for regulating waste management, controlling emissions and addressing pollution to protect the environment. | There is a potential that the Project will result in effects to the natural environment that are afforded protection under this legislation. It is therefore relevant to this assessment. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| The Thames Conservancy Act 1932<br>Places a duty on The Thames Conservancy who are legally responsible for the regulation of navigation, water management and conservation along the River Thames | There is a potential that the Project will result in effects upon the River Thames afforded protection under this legislation. It is therefore relevant to this assessment. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| The Water Environment (Water Framework Directive (WFD)) (England and Wales) Regulations 2017 | There is the potential that the Project would result in effects to waterbodies and | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| Implements the Water Framework Directive in domestic law, requiring adherence to the environmental objectives approved by regulation 12. | relevant objectives under the WFD. It is therefore relevant to this assessment. | of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| The Eels (England and Wales) Regulations 2009<br>Requires measures to protect the European eel (Anguilla anguilla), including the conservation of its habitats and the facilitation of eel passage. | There is a potential that the Project would result in effects on European eel *Anguilla anguilla*. It is therefore relevant to this assessment. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| Salmon and Freshwater Fisheries Act 1975<br>Provides legal protection for salmon and freshwater fish, including provisions relating to obstruction of migratory routes, pollution, and unlawful fishing methods. | There is a potential that the Project would result in effects to salmon and freshwater fish that are afforded protection under this legislation. It is therefore relevant to this assessment. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| The Invasive Alien Species (Enforcement and Permitting) Order 2019<br>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 the listed invasive species to be encountered or spread, and the potential for an offence under this legislation. It is therefore relevant to this assessment. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024) and Appendix 6.2: Preliminary assessment |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| | | of effects for Aquatic ecology. |
| National Policy Statement for Water Resources Infrastructure (NPSWRI) | | |
| Paragraphs 1.1.12, 3.3.1, 3.3.2. 4.3.4 - Provision of sufficient information in Habitats Regulations Assessment. | A report providing Information to inform Habitat Regulations Assessment will be prepared as part of the DCO submission for the Project. Information to support Habitats Regulations Assessment will be provided within a separate report to accompany DCO submission. It is envisaged that this will be appended to the ES for consistency of referencing. | This will be prepared as part of the 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 development of the BNG strategy for the Project is taking account of wider environmental and social benefits. | Section 6.9: Preliminary assessment of likely significant effects |
| Paragraphs 4.3.5, 4.3.12, 4.3.17, 4.3.19 - The Environmental Statement clearly sets 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 must take account of all protected aquatic ecological receptors and those identified as being of principal importance for the conservation of biodiversity in England. | Section 6.9: Preliminary assessment of likely significant effects |
| Paragraphs 4.3.6, 4.3.7, 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 mitigation measures as an integral part of the proposed development. | The Project design must take account of the mitigation hierarchy first seeking to avoid, then minimise, mitigate and compensate significant effects to aquatic ecological receptors. | Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects |
| Paragraphs 4.3.9, 4.3.20 & 4.3.21, 4.3.22 & 4.3.23 - Development should contribute to and enhance the natural environment by providing net gains for biodiversity. Applicants should use the current version | The Project is being designed to ensure BNG targets are achieved. | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| of the biodiversity metric and should use the same version to calculate their biodiversity baseline and inform their biodiversity net gain outcome | | 6.9: Preliminary assessment of likely significant effects; Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| **Paragraphs 4.3.15 –** where an adverse effect on a Site of Special Scientific Interest (SSSI) is likely, that a 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 will take account of the presence of SSSI and potential impact pathways to such SSSI and any associated impacts on the national network of SSSIs. | Section 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.3: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024). |
| **Paragraphs 4.15.8 & 4.15.9** - Consideration of the protection of the water environment and identify mitigation measures | The EIA for the Project must consider a range of measures to protect the water environment including preventing the spread of INNS and protecting / improving mobile species passage. | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| Other national policy | | |
| **A Green Future: Our 25 Year Plan to Improve the Environment (HM Government, 2018)** 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. | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects; Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| **National Planning Policy Framework (NPPF) 2024: Paragraphs 180-188 (Ministry of Housing, Communities & Local Government, 2024).** | The Project will need to demonstrate that only in exceptional circumstances are effects on SSSIs and/or irreplaceable habitats | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| Sets out government's planning policies for England and how these are expected to be applied.<br>The NPPF 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. | being requested to be permitted. | assessment of likely significant effects; Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. |
| Regional and local policy | | |
| **Biodiversity and Planning in Oxfordshire. March 2014. Oxfordshire County Council, Berkshire Buckinghamshire and Oxfordshire Wildlife Trusts, Thames Valley Environmental Records Centre (TVERC).**<br>A jointly prepared set of guidance to help those involved in planning in Oxfordshire ensure that development within the county protects and enhances local biodiversity.<br>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. | 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.<br>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 biodiversity objectives, such as those in the emerging LNRS. | Chapter 2: Project description. Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |
| **Oxfordshire's draft Local Nature Recovery Strategy (LNRS)**<br>**(currently in consultation)**<br>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 is currently | 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 the objectives of the emerging LNRS. | Chapter 2: Project description. Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
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| under consultation, with finalisation and the start of delivery of the LNRS due in 2025. | | |
| **Biodiversity Action Plans for 2025-2026, Oxfordshire County Council**<br>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 6.6: Baseline conditions; Section 6.9: Preliminary assessment of likely significant effects; Section 6.8: Embedded design mitigation and standard good practice. |
| **Thames River Basin District Management Plan (Environment Agency (EA), 2022)**<br>A strategy released by the Environment Agency that outlines the current state and pressures affecting the water environment of the Thames basin. It sets legally binding objectives for all water bodies | The River Basin Management Plan sets the legal and environmental framework for how water bodies in the region must be protected, restored, and enhanced. This guides the Project to ensure compliance with these objectives. | Chapter 2: Project description. Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |
| **Vale of White Horse District Council Local Plan 2031 Part 1 (adopted December 2026) (Vale of White Horse District Council, 2016)**<br>Sets out the spatial strategy and strategic policies for the district to deliver sustainable development.<br>CP 45, Green Infrastructure: A net gain in Green Infrastructure, including biodiversity, will be sought either through on-site provision or off-site contributions and the targeted use of other funding sources. A net loss of Green Infrastructure, including biodiversity, through development proposals, will be resisted.<br>CP 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, reconnection and enhancement, with a primary focus on delivery in the Conservation Target Areas. A net loss of biodiversity will be avoided. | 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. | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| **Vale of White Horse District Council Local Plan 2031 Part 2.**<br>Complements the Part 1 plan and sets out policies and locations for housing and detailed development management policies and allocates additional development sites for housing.<br>DP 30, Watercourses: Development of land that contains or is adjacent to a watercourse will only be permitted where it would not have a detrimental impact on the function or setting of the watercourse or its biodiversity, or the detrimental impact can be appropriately mitigated. | If detrimental impacts on watercourses are identified appropriate mitigation/enhancement will have regard to watercourses in line with the policy. | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |
| **Oxford Local Plan 2016-2036.**<br>Contains detailed policies to guide and shape new developments.<br>G1, Protection of Green and Blue Infrastructure Network: The policy outlines that developments will be expected to protect blue networks and their environmental functions. | The Project will have regard to the environmental protection of Blue Infrastructure networks (River Thames). | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |
| **East Hanney Neighbourhood Plan (2021-2031).**<br>Sets out a plan for a sustainable future for East Hanney, including objectives and policies that will be used in shaping future development.<br>EHNP7, Letcombe Brook.<br>Development proposals should respond positively to the highly sensitive nature of the Letcombe Brook, taking account of its ecologic and flood risk significance. Proposals should include measures to conserve and enhance biodiversity, landscape and recreational value of Letcombe Brook, with due consideration of the global rarity and ecological significance of the Brook as a chalk stream. | The Project overlaps the Letcombe Brook and tributaries. | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |
| **East Hanney Neighbourhood Plan (2021-2031).**<br>EHNP9, Nature Recovery Network and Biodiversity.<br>Development proposals are to have full regard to the functionality of the East | The Project overlaps the Letcombe Brook and tributaries, and route of the Wilts and Berks Canal. | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| Hanney Nature Recovery Network, including the Letcombe Brook green corridor and area associated with the route of the old Wilts and Berks Canal and include provision for BNG. | | assessment of likely significant effects. |
| **Thames Catchment Flood Management Plan. Environment Agency, 2009.**<br>Provides strategic guidance on managing flood risk as a result of new infrastructure. | The Project will have regard to the protection of flow regimes and water quality. | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |
| **Thames Water Biodiversity and Heritage Policy. Policy no. POL014 (2025)**<br>The policy sets out principles for managing assets in a sustainable manner that enhance biodiversity and prevent the establishment of invasive non-native species (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 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |
| **South Oxfordshire and Vale of White Horse District Councils Emerging Joint Local Plan 2041 (Publication version).**<br>The Emerging Local Plan will guide the kinds of new housing and jobs needed and where they should go, informing planning application decisions for the two districts. It contains developing planning policies that help address the climate emergency, restore nature, and meet the needs of residents.<br>NH1, Biodiversity Designations: The policy outlines requirements for protection for sites of international, national and local nature conservation importance.<br>NH2, Nature Recovery: Under the proposed (not yet adopted) Policy, 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 proposed (not yet adopted) Policy NH1 guides the Project to protect designated sites at all levels from adverse effects from development. Including providing measures to avoid, mitigate or, as a last resort, compensate the adverse effects.<br>In line with NH2, 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. | Section 6.6: Baseline conditions; Section 6.8: Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |
| **South Oxfordshire District Council Joint Local Plan 2011-2035.** | The Project will have regard to the conservation, | Section 6.6: Baseline conditions; Section 6.8: |

| Legislation, policy or guidance description | Relevance to assessment | Where in the PEI Report is information provided to address this |
|---|---|---|
| Sets out the future for development in South Oxfordshire up to 2035.<br>ENV2, Biodiversity - Designated Sites, Priority Habitats and Species:<br>The policy outlines requirements for protection for sites of international, national and local nature conservation importance.<br>ENV3, Biodiversity – Non designated Sites, Priority Habitats and Species: The policy outlines requirements for development that will conserve, restore and enhance biodiversity, with no net loss of biodiversity as a minimum. Development proposals which would result in a net loss of biodiversity will only be considered if it can be demonstrated that alternatives which avoid impacts on biodiversity have been fully explored in accordance with the mitigation hierarchy.<br>ENV4, Watercourses: The policy outlines that development on land that contains or is adjacent to a watercourse must protect and, where possible, enhance the function, setting, and biodiversity value of the watercourse. Where adverse impacts are unavoidable, appropriate mitigation must be provided as a last resort.<br>ENV5, Green Infrastructure: The policy outlines that development will be expected to contribute towards the provision of additional Green Infrastructure and protect or enhance existing Green Infrastructure. | restoration, and enhancement of biodiversity within both designated and non-designated sites across the district. Biodiversity loss will be avoided wherever practicable, and appropriate mitigation will be provided where impacts are unavoidable. The Project will also seek to deliver additional green infrastructure as part of its BNG commitments. | Embedded design mitigation and standard good practice; Section 6.9: Preliminary assessment of likely significant effects. |
| Guidance | | |
| **Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater and Coastal (Chartered institute of Ecology and Environmental Management (CIEEM), 2018)**<br>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 6.4: Assessment methodology |

## 6.3 Consultation, engagement and scoping

6.3.1 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 significant environmental effects. In particular, feedback from key stakeholders has informed the Project's proposed mitigation measures. Specific mitigation measures relevant to the Aquatic ecology assessment are summarised in Section 6.8: 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

6.3.2 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.

6.3.3 Table 6.2 captures the key Scoping Opinion comments received from PINS and other key comments received from consultation bodies relevant to the Aquatic 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 6.10: Next steps. The full consultee comments on the EIA Scoping Report and responses to these will be provided in the ES.

Table 6.2 Key Scoping feedback for aquatic ecology

| Stakeholder | Scoping comment | Applicant response |
|---|---|---|
| Planning Inspectorate (PINS) | PINS 3.2.5<br>Box culverts are proposed to be considered for crossing small watercourses and ditches. However, the Environment Agency advises that this is not appropriate mitigation as longitudinal migration of aquatic species must be maintained. The ES should describe the mitigation measures for crossing small watercourses and ditches, explain why it is appropriate and how it maintains longitudinal migration of relevant species. | The risks of culverts to aquatic ecology receptors is acknowledged. This is being addressed through design development of watercourse crossing locations in line with the mitigation hierarchy (see Table 6.10). |
| PINS | PINS 3.2.6<br>Scoping Report paragraph 12.6.8 states that piling may be adopted during construction which has potential to cause noise impacts. Impacts to aquatic ecology during construction includes 'species disturbance, injury or mortality' in Scoping Report paragraphs 7.6.14 to 7.6.17 but impacts from noise are not named. For clarity, the ES should assess significant effects from piling on aquatic ecology where they are likely to occur and this should include any impacts from noise likely to lead to significant environmental effects. | An assessment of noise and vibration effects on aquatic ecology through construction and operation has been undertaken to enable an assessment of this effect on aquatic receptors. The noise and vibration baseline is outlined in Chapter 14: Noise and vibration of the PEI Report. |

| Stakeholder | Scoping comment | Applicant response |
|---|---|---|
| PINS | PINS 3.2.7<br>Scoping Report paragraphs 7.6.32 and 7.6.33 identifies that the changes in flow rates and water levels can impact water quality levels. This also has potential to alter the thermal properties of water, impacting aquatic ecology. The ES should provide an assessment of significant effects where they are likely to occur as a result of thermal changes to aquatic ecology. | The risks associated with thermal changes to aquatic ecology receptors are acknowledged. Further engagement with the Environment Agency is required to determine the appropriate approach and will be reported in the ES. |
| PINS | PINS 3.2.9<br>Ecological establishment is proposed through both planting and benthic sediment transfer which includes translocation of invertebrates. Such translocations can have associated risks e.g. introduction of INNS. The ES should set out the methodology for translocation including proposed monitoring and remediation measures to ensure success and assess any associated significant effects where they are likely to occur. | The risk of spreading INNS through translocation of benthic sediment is acknowledged. Appropriate mitigation will be developed which will set out the approach to translocation of invertebrates (see Table 6.10. |
| Environment Agency | No specific mitigation measures for INNS have been identified for the operational phase, such as monitoring, biosecurity protocols linked to recreational activities, or augmentation-related actions. We recommend the inclusion of such measures to manage the unintentional spread of INNS from the reservoir. Furthermore, we suggest using the Strategic Resource Option Aquatic Invasive Non-native Species Risk Assessment Tool (SAI-RAT) v2.0 as part of a broader risk assessment to identify potential sources of risk and guide biosecurity priorities. | The SAI-RAT tool has been utilised at previous stages of the design and will be updated for the ES. This will inform appropriate INNS specific mitigation during the construction and operation phase including a biosecurity management plan. |
| Environment Agency | There are several valuable offsite opportunities that the SESRO scheme could support to deliver joint environmental benefits. Current plans to remove fish passage barriers on the downstream reaches of the Letcombe Brook could align with the SESRO scheme, creating opportunities for collaboration. The scheme could also contribute to local initiatives such as the Letcombe Brook Chalk Stream Restoration project, led by the Ock Catchment Partnership and Freshwater Habitats Trust. These partnerships present further opportunities for SESRO to deliver offsite Biodiversity Net Gain (BNG) enhancements. Engagement with the Thames and Ock Catchment Partnerships, who are jointly delivering a Landscape Recovery project, would be key to integrating with | Engagement with the catchment partners is being undertaken to explore opportunities for environmental enhancement (see Table 6.3). |

| Stakeholder | Scoping comment | Applicant response |
|---|---|---|
| | and supporting planned conservation efforts in the area. | |
| Environment Agency | Intake / Outtake structure<br>The impacts on the new intake/outfall structure on the River Thames are looked at in 7.6.12, with marginal habitat being lost. Marginal habitat is important fish habitat for juvenile fish, European eel and brook lamprey. As well as vital macroinvertebrate habitat, which in turn supports fish through food resource. Should loss of this habitat occur compensation should be provided locally on the River Thames. | An assessment of fish habitat along the River Thames is being undertaken to determine its value for aquatic receptors and suitable mitigation/compensation for any loss of habitat. This will be addressed in the ES. |
| Environment Agency | Construction Risks<br>During the construction of diverted watercourses (para 7.6.18) the fate of fish that would normally be attracted into the River Ock and associated tributaries must be considered. I.e. will fish be trapped in coffer-dammed sections, or be susceptible to being stranded in areas of watercourse that have poor water quality because of reduced flow? | Fisheries mitigation measures will be developed in consultation with the Environment Agency, which will consider direct and indirect effects on fish during the construction of the watercourse diversions within the Ock catchment. This will be addressed in the ES. |
| Environment Agency | To fully understand and mitigate potential impacts on fish populations, a comprehensive assessment should be undertaken to evaluate how changes in flow and water levels resulting from the scheme may affect fish passes, ensuring their functionality for all fish species under all flow conditions, in line with the National Fish Pass Manual. Additionally, paragraphs 7.6.35 and 7.6.36 acknowledge the risk of impingement and entrainment, particularly for juvenile and larval fish with limited swimming ability. Therefore, an assessment should also be conducted to determine how increased flow from augmentation may influence approach velocities at both existing downstream intakes and the proposed new intake for SESRO. This should inform whether such changes could elevate the risk to early life stages of fish and guide necessary mitigation. | This will be investigated and engagement with the Environment Agency will be undertaken as appropriate. This will be addressed in the ES. |
| East Challow Parish Council | The huge amount of water stored will inevitably have an effect on the Thames from which the water will be drawn. It is estimated that it will take up to 18 months to fill. Once full it will serve a population increase of between 1.4 million and 4 million which will require water being drawn off at a rate of between 182 million and 560 million litres per day requiring water to be taken from the Thames at this rate. This could | The PEI Report and ES provide an ecological impact assessment of the effects of changes to flow on the River Thames. This assessment will determine potential for adverse effects on ecological receptors and |

| Stakeholder | Scoping comment | Applicant response |
|---|---|---|
| | have a serious detrimental effect on the water level and, as a consequence, the oxygen levels, affecting wildlife in and adjacent to the river. | identify requirements for mitigation in line with the mitigation hierarchy. |

### Non-statutory public consultation

6.3.4 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, 2025). Any feedback relevant to the Aquatic ecology assessment has been taken into account where appropriate.

### Ongoing engagement

6.3.5 This section summarises the ongoing technical engagement for aquatic ecology with key stakeholders since EIA scoping. This includes meetings, written correspondence and a Technical Liaison Group (TLG) attended by the Environment Agency and Natural England.

6.3.6 Table 6.3 provides a summary of the ongoing technical engagement for aquatic ecology, including the issues raised and outcomes for the assessment.

Table 6.3 Key ongoing engagement for aquatic ecology

| Stakeholder | Topics | Outcome |
|---|---|---|
| Environment Agency and Natural England Technical Liaison Group specific to Surface Water and Aquatic ecology. | This TLG has discussed the following topics:<br>• Survey methods<br>• Environment Agency data availability (hydroacoustic and boom boat fish survey data)<br>• Approach to ecological assessment<br>• Approach to supplementary studies required to inform the ES, e.g. fish passage (on existing structures) and entrainment/impingement studies associated with SESRO (as detailed in scoping comments) | • Determination of agreed survey methods is in progress.<br>• Confirmation of available Environment Agency fish survey data.<br>• Determination of agreed approach to ecological assessment is in progress.<br>• Determination of scope of appropriate supplementary studies to inform ES assessment. |
| Environment Agency | Principles of fisheries mitigation during SESRO construction. | Agreed principles for how a fisheries mitigation plan will be developed to protect fish welfare and the population. |

## 6.4 Assessment methodology

6.4.1 This section outlines the methodology followed to assess the likely significant effects of the Project in relation to aquatic ecology including:

- Effects scoped into the assessment
- Study area
- Criteria for determining likely significant effects
- Assessment of cumulative effects

6.4.2 The project-wide approach to the assessment methodology is set out in Chapter 4: EIA Approach to the environmental assessment. This has informed the approach used in this Aquatic 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 6.10: Next steps.

6.4.3 The assessment methodology followed for aquatic ecology considers the effect of the Project. The assessment within the PEI Report and ES follows guidance as set out in Section 5.2: Legislation, policy and guidance. Key guidance relating to the assessment methodology includes CIEEM Guidelines for Ecological Impact Assessment (CIEEM, 2024). The Water Environment (Water Framework Directive) (England and Wales) Regulations (amended 2017) and the EIA Handbook (McBain and Styles, 2019).

### Scope of the assessment

6.4.4 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 current Project design and an enhanced understanding of the baseline environment.

6.4.5 Matters that have been scoped out of the Aquatic ecology assessment are documented in Appendix 4.1: Matters scoped out of the EIA, along with justification for this scoping approach. In summary, matters scoped out are construction effects on phytoplankton and zooplankton in the River Thames.

6.4.6 Effects that are scoped in for the Aquatic ecology assessment relevant to the construction phase are:

- **Direct habitat loss and/or severance:** During the diversion of the watercourses direct habitat loss and severance to existing watercourse could have an adverse impact on the distribution and abundance of aquatic species and this could also alter the composition of aquatic communities. Enhancement to aquatic habitats is considered within both the construction and operational effects, due to the construction and establishment of new watercourses and other aquatic features taking place at an early stage in the overall construction programme, leading to some of the benefits being realised prior to the operational phase of the Project.
- **Changes in flow / level:** Construction of watercourse diversions within the Project could temporarily change hydrological function and affect aquatic communities. Changes to watercourse alignment around the reservoir may reduce catchment area and alter flow regimes. Watercourse diversions could also affect local flow conditions.

- **Changes in water quality:** During construction, there is a risk of contaminants (such as fuels and oils) being accidentally released into watercourses. There is also potential for the release of suspended sediments, or fine materials into watercourses.
- **Introduction and spread of invasive non-native species (INNS):** Construction activities could facilitate the introduction and/or spread of INNS, either by translocation or the natural introduction from upstream sources. This could affect aquatic habitats and species, especially where INNS outcompete native species for resources.
- **Species disturbance, injury or mortality:** Aquatic species could be disturbed, injured or killed in the construction phase. This includes, but is not limited to, construction activities to divert and realign watercourses around the reservoir location, as well as disturbance caused by noise and vibration from construction activities, including piling. Such disturbance could cause a reduction in feeding success, fitness and breeding success and consequently a loss in abundance and diversity through time.

6.4.7 Effects that are scoped in for the Aquatic ecology assessment relevant to the operation phase are:

- **Direct habitat loss / gain or severance:** The Project will result in the creation of extensive aquatic habitat. This will include the reservoir and associated habitat features designed to support aquatic species including floating islands and lagoons; enhancement to watercourses including stream and ditch systems within the Ock catchment to support improved aquatic habitats; a canal system within the site; and additional standing waterbodies including ponds across the site and lake habitats to the north of the reservoir. The availability of new/altered aquatic habitats is considered a beneficial effect as it could provide a significant beneficial contribution to the diversity and distribution of aquatic species in the study area as well as terrestrial species with an aquatic life stage / association.
- **Changes in flow/level:** Changes in the alignment of watercourses around the reservoir location could affect the flow regime of watercourses within the Ock catchment and result in the loss of catchment area and alteration to groundwater connection to surface waterbodies which could affect aquatic communities. The Project could result in flow changes in the River Thames due to changes in water abstraction from and release into the River Thames. The changes in flow/level could have a direct impact on habitat availability for sensitive features at particular times of the year, e.g. nursery habitat for juvenile fish. Changes in flow could also have a direct effect on community structure, e.g. washout of flow sensitive species and/or life stages.
- **Changes in water quality:** Watercourse diversions could change the catchment area and alter groundwater connections for the River Ock and this could change water quality which could affect aquatic ecology. The abstraction and augmentation of water as a part of the Project could change water quality within the River Thames, including potential change to physico-chemical properties such as nutrients, dissolved oxygen and temperature. Some of these changes could be beneficial to aquatic ecology, i.e. improving the water quality of the River Thames during augmentation.
- **Introduction and spread of INNS and pathogens:** The current Project design does not include any abstraction from, or discharge to watercourses within the River Ock catchment, and therefore, there is no hydrological pathway for the transfer of INNS or pathogens between the reservoir and these watercourses.

6.4.8 There is potential for the transfer of INNS and pathogens between the River Thames and the reservoir through abstraction of water from the River Thames into the reservoir, and discharge of water from the reservoir into the River Thames (a situation which exists at other reservoirs connected with the River Thames). INNS and pathogens which are already established within the River Thames may be drawn into the reservoir and become established, leading to a risk of discharging INNS and pathogens back into the River Thames, and whilst this may not be introducing new INNS or pathogens into the catchment, there may be an increase in the numbers of viable INNS and pathogens released during discharge from the reservoir.

6.4.9 INNS and pathogens may be brought onto the Project site during construction or operational phases, either associated with construction activities (e.g. plant or machinery, or Personal Protective Equipment (PPE)/other equipment), or through recreational activities during operation (e.g. fishing equipment, boats, illegal fish movements, etc), which may pose a risk of introducing novel species to the reservoir and associated waterbodies and watercourses (e.g. ponds, lakes, watercourse diversions, Wilts and Berks Canal, wetlands and ditches), and subsequently to the River Thames, if these become established.

- Changes in community structure / function caused by primary productivity changes – River Thames only: Flow changes could alter primary productivity, both directly through increased or decreased flows (e.g. washout of phytoplankton and zooplankton) or indirectly through changes in flow induced changes in water quality (such as nutrients required for growth). This could affect the food-web and result in a loss of diversity and/or abundance of some species. Conversely, effects may be beneficial in supporting primary productivity during certain periods and mitigating the effects of drought (e.g. through reducing the frequency of algal blooms (including cyanobacteria)).
- Changes to barrier porosity, including function of existing fish passes – River Thames only: It is not anticipated that the Project will affect river flows in a way that disrupts fish migration within the river channels of the River Thames or River Ock. The abstraction and augmentation of water could however impact the porosity of existing barriers to fish on the River Thames, including fish passes. Abstraction of water may affect the minimum flow requirements for fish pass operation, potentially adversely affecting the passability of barriers. On the other hand, augmentation may support the design flows (i.e. flows that enable fish passage) at fish passes for a longer duration than under the baseline, thereby providing potential benefit.
- Entrainment / impingement at intake/outfall structures – River Thames only: The new intake/outfall structure for abstraction could cause an increased risk of fish impingement or entrainment. Changes in operation of the abstraction points in the lower River Thames (i.e. abstractions that may be able to operate for longer with the Project in place than without it) could also result in increased risk of impingement and entrainment at existing intakes at other abstraction points.

6.4.10 The effects described above are associated with impact pathways for a range of aquatic ecological receptors. The ecological receptors scoped in for the Aquatic ecology assessment are summarised in Table 6.4.The effects scoped into the assessment have been updated from those reported in the EIA Scoping Report to align with the PINS Scoping Opinion, this update applies to change in thermal properties which has been added to the water quality effects during operation.

Table 6.4 Summary of aquatic ecological receptors scoped in for the assessment at each project phase

| Ecological receptor | Project phase – scoped in / out | |
|---|---|---|
| | Construction | Operation |
| Statutory and non-statutory designated sites and notable (e.g. priority) habitats | In (direct habitat loss / gain and/or severance; changes in flow / level; changes in water quality; and introduction and spread of INNS) | In (direct habitat loss / gain and/or severance; changes in flow / level; changes in water quality; and introduction and spread of INNS) |
| Aquatic habitats (including watercourses, ponds, lakes and reservoir) | | |
| Fish (including protected and notable species) | In (direct habitat loss / gain and/or severance; changes in flow / level; changes in water quality; introduction and spread of INNS; and species disturbance, injury or mortality) | In (direct habitat loss / gain and/or severance; changes in flow / level; changes in water quality; introduction and spread of INNS; changes in community structure / function caused by primary productivity changes –Thames only; changes to barrier porosity, including function of existing fish passes – River Thames / fish only; and entrainment / impingement at intake/outfall structures – River Thames/fish only) |
| Macroinvertebrates (including protected and notable species) | | |
| Macrophytes (including protected and notable species) | | |
| Phytobenthos (photosynthetic organisms such as diatoms that live on surfaces) (Ock catchment only) | In (direct habitat loss / gain and/or severance; changes in flow / level; and changes in water quality) | |
| Phytoplankton (free floating photosynthetic) (Thames only) | Out | |
| Zooplankton (free floating organisms) (Thames only) | Out | |

### Study area

6.4.11 The study area for the Aquatic ecology assessment is informed by the 'source-pathway-receptor' model and is selected based on the potential pathways and impacts on aquatic ecology receptors associated with the Project. The pathway is the hydraulic connection between the water source that has the potential to be changed and aquatic ecology receptors up or down gradient. This study area includes all surface waterbodies within the draft Order limits as well as those in hydraulic connection where flows may change due to the presence of the reservoir, abstractions or discharges. Where the Project is in the vicinity of or could potentially impact / have hydraulic connectivity with a WFD waterbody,

the whole waterbody has been included in the study area. This study area therefore contains the predicted Zone of Influence (ZOI) for all aquatic ecology receptors.

6.4.12 The study area is designed to be aligned with the study area within the WFD assessment, see Appendix 5.1: WFD Screening and Scoping Report. The study area will be reviewed and, as appropriate, refined between the PEI Report stage and the ES, as the assessment progresses, taking into account any activities which have the potential to affect aquatic ecology receptors at greater distance (such as dewatering and discharges). The final study area will ensure that all aquatic ecology receptors that are potentially in hydraulic connectivity with the Project that could be reasonably impacted are included (such as downstream receptors).

## Methodology

### *Baseline*

#### Data collection

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

6.4.14 The following data sources have been accessed to inform the baseline with respect to aquatic ecology:

- The Multi-Agency Geographic Information for the Countryside (MAGIC) Defra website to identify any statutory and non-statutory designated sites (Defra, 2025) (Accessed: August 2024)
- Publicly available Ordnance survey (OS) mapping and aerial imagery.
- The Environment Agency Statutory Main Rivers Map (Environment Agency, 2020) (Accessed: August 2024)
- The Environment Agency salmonid main rivers map (Environment Agency, 2017) (Accessed: August 2024)
- Natural England data on chalk rivers (Natural England, 2023) (Accessed: August 2024)
- Natural England data on priority rivers (Natural England, 2024a and 2024b) (Accessed: August 2024)
- Environment Agency Ecology and Fish Data Explorer data (Environment Agency 2024a) (Accessed: August 2024)
- Environment Agency supplementary data requests including Fisheries Classification Scheme 2 (FCS2) data (UK Technical Advisory Group (UKTAG), 2008) (Accessed: July 2025)
- Environment Agency Water Framework Directive (WFD) Ecological status for the 2015, 2019 and 2022 cycles (Environment Agency, 2024b) (Accessed: August 2024)
- 2020 to 2024 Strategic Reservoir Option (SRO) Monitoring Programme data (Accessed: November 2024)
- Zooplankton and juvenile fish surveys completed on behalf of Thames Water in 2023 and 2024 (Accessed: November 2024)
- Thames Valley Environmental Records Centre (TVERC) data, including species records and non-statutory designated site extents (TVERC, 2022) (Accessed: August 2024)

- Lyons J., et al. (2021) An Assessment of Hydroacoustic and Electric Fishing Data to Evaluate Long Term Spatial and Temporal Fish Population Change in the River Thames, UK. *Water*, *13*(20). (Accessed: November 2024)

6.4.15 In addition to these data sources, the Aquatic ecology assessment also draws on environmental baseline data collated for other aspects, specifically, baseline data presented in Chapter 5: Water environment and Chapter 7: Terrestrial ecology.

### Site surveys

6.4.16 Site surveys are being undertaken in 2025 to provide an updated understanding of the baseline sensitivity of the aquatic ecological features. This follows data obtained through the 2020-2024 Strategic Reservoir Option (SRO) Monitoring Programme which includes fish, fish habitat, invertebrates, macrophytes, diatoms, phytoplankton, zooplankton/algae, specialist depressed river mussel *Pseudanodonta complanata* surveys in the River Thames, multi-purpose environmental DNA (eDNA) monitoring and bespoke INNS surveys within the Ock catchment. The 2025 site surveys include the continuation of the monitoring programme for the River Thames with further targeted surveys for the watercourses within the Ock catchment. Site surveys include the following:

- Ditch biodiversity surveys which are comprised of several survey sub-types (ditch condition assessments, macrophytes and macroinvertebrates)
- Pond surveys which are comprised of two related survey sub-types (Predictive SYstem for Multimetrics (PSYM) and eDNA surveys)
- Multidisciplinary surveys which are comprised of several survey sub-types (macrophytes, fish, phytobenthos, macroinvertebrates and INNS surveys)

6.4.17 Further surveys are being undertaken to maintain and/or update the understanding of the baseline sensitivity of the aquatic environment within key reaches of the River Thames. These include:

- Targeted macrophyte, macroinvertebrate, INNS, phytoplankton and zooplankton surveys
- Juvenile and larval fish surveys (fish trawls and seine netting)

6.4.18 As these 2025 surveys are in progress they are not available for this PEI Report.

6.4.19 Reports on all surveys undertaken in winter 2024/2025 onwards will be appended to the ES

### Future baseline

6.4.20 The assessment has considered the likely evolution of the baseline without the implementation of the Project. The future baseline for the Aquatic ecology assessment has been established in accordance with CIEEM guidelines and includes the following:

- Any relevant other developments expected to be operational 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

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

- Refer to Chapter 5: Water environment for the evaluation of change to the water environment as a result of future climatic change and consequent effects on aquatic ecology.
- Refer to Chapter 10: Geology and soils for evaluation associated with soil resources and contamination.
- 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 development relevant to the future baseline.

*Criteria for the assessment of significance*

6.4.22 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 in combining these two elements to identify the significance of effect (using professional judgment where necessary). The CIEEM guidelines uses the term 'importance' as opposed to sensitivity in categorising ecological features; however, for consistency with other chapters, the term sensitivity is used (paragraph 6.4.24 and Table 6.5 explain how importance corresponds with the sensitivity of each receptor).

6.4.23 Due to the assessment assumptions and limitations set out under paragraph 6.7.3, 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 Aquatic 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

6.4.24 The sensitivity of each identified aquatic ecology receptor has been assigned for the preliminary assessment based on criteria set out in Table 6.5.

6.4.25 The CIEEM 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, professional judgement has been used, and regional and county importance have been included in the moderate sensitivity category, and district and local importance have been combined within the low sensitivity category. Table 6.5 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 6.5 Criteria for establishing the sensitivity and ecological importance of 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, Special Area of Conservation (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))<br>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<br>Sites supporting populations of internationally or European important species |
| High | National (UK) | A nationally designated site, i.e. Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), or discrete area which would meet the published selection criteria for national designation (e.g. SSSI selection guidelines (JNCC, 2024b))<br>A viable area of habitat identified as habitats of principal importance or smaller areas of such habitat essential to maintain wider viability.<br>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<br>Smaller areas of key habitats identified as habitats of principal importance essential to maintain wider viability<br>Viable populations of nationally scarce species identified in the regional biodiversity plans or strategies and/or regularly occurring populations of a regionally important species.<br>County: Wildlife/nature conservation sites designated at the county level, such as Local Wildlife Sites (LWS) and Local Nature Reserves (LNR).<br>Areas of habitats and species identified in county or equivalent authority plans or strategies, such as areas of key habitats of principal importance identified in the Local Biodiversity Action Plan (BAP).<br>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.<br>Viable areas of habitat or populations/assemblages of species of district importance.<br>Local: Areas of habitat or populations/assemblages of species that appreciably enrich the local habitat resource (e.g. ponds) |

| Sensitivity of receptor | Importance of receptor | Typical descriptors |
|---|---|---|
| | | 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.<br>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 draft Order limits only | Sites that retain habitats and/or species of limited ecological importance due to their size, species composition or other factors. |

### Magnitude of impact

6.4.26 As noted in paragraph 6.4.23, the preliminary assessment of effects for this aspect has not categorised the magnitude of impacts (referred to as characterisation of impacts in the EIA Scoping Report) 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).

6.4.27 For the assessment that is reported in the ES, the criteria for assessing magnitude of impact in Table 6.6 will be applied. These criteria have been developed based on the CIEEM Guidelines and consider the nature (i.e. beneficial or adverse) magnitude, extent, duration, timing and frequency, and reversibility of change upon the receptor.

6.4.28 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 6.6 has been made at this stage, although the magnitude of impact is not reported.

Table 6.6 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 habitats and species, including the extent, structure and function of habitats and the extent, abundance and distribution of species. This reduces or increases 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 habitats and species, including the extent, structure and function of habitats and the extent, abundance and distribution of species. This reduces or increases 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 |

| Magnitude of impact | Description and nature of impact |
|---|---|
| | likely to be within the range of natural variability and there is not expected to be any permanent change in the conservation status of habitats and species, including the extent, structure and function of habitats and the extent, abundance and distribution of species; 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 and species, including the extent, structure and function of habitats and the extent, abundance and distribution of 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

6.4.29 As noted in paragraph 6.4.23 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 receptor and professional judgement and experience (with indicative consideration of the criteria in Table 6.6) have been used to determine if each likely effect is anticipated to be 'significant' or 'not significant'.

6.4.30 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 6.7 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 6.7 is based on the Design Manual for Roads and Bridges (DMRB) guidance and has been adapted to align with the overarching significance categories applied across the SESRO EIA noted in Chapter 4: Approach to the environmental assessment.

6.4.31 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 6.7 has been made in determining if likely effects are anticipated to be 'significant' or 'not significant'.

Table 6.7 Significance matrix

| Receptor sensitivity | Magnitude of impact | | | | |
|---|---|---|---|---|---|
| | Very large | Large | Medium | Small | Negligible |
| Very high | Major (significant) | Major (significant) | Major (significant) | Moderate (significant) | Minor |
| High | Major (significant) | Major (significant) | Moderate (significant) | Moderate (significant) | Minor |

| Receptor sensitivity | Magnitude of impact | | | | |
|---|---|---|---|---|---|
| Moderate | Major (significant) | Moderate (significant) | Moderate (significant) | Minor | Minor |
| Low | Moderate (significant) | Moderate (significant) | Minor | Minor | Neutral |
| Negligible | Moderate (significant) | Minor | Minor | Neutral | Neutral |

6.4.32 For this preliminary assessment, the assessment of effects has assumed that 'embedded design mitigation' and 'standard good practice mitigation' relevant to the Aquatic ecology assessment are in place (these measures are presented in Section 6.8: Embedded design mitigation and standard good practice). Nevertheless, as noted in Section 6.9: Preliminary assessment of likely significant effects, 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 6.10: Next steps.

### Assessment of cumulative effects

6.4.33 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. Likely significant inter-project cumulative effects on mobile species across the wider extent of study area are only likely to occur with very large developments, as these projects cover extensive areas. When multiple such large-scale developments are involved, their combined effects can exceed the capacity of mitigation measures, particularly when they disrupt critical migration routes or habitats, leading to likely significant residual effects on the identified receptors for the Project. Therefore, the search of other developments 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 several 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, therefore, only certain types of other development have been reviewed for this type of impact which include: Infrastructure projects of national significance within the Water Environment and Environment Agency Area Plans such as Flood Risk Management Plans and Drought Management Plans. Refer to Chapter 5: Water environment, paragraph 5.4.33 for further information.

6.4.34 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).

## 6.5 Study area

6.5.1 The study area is defined according to the sensitivity of the receiving environment and the potential effects of the Project. The methodology used to define the study area is outlined in Section 6.4: Assessment methodology above. The study area for aquatic ecology is shown in PEI Report Figure 6.1: Aquatic ecology study area.

6.5.2 Since the EIA scoping stage, the study area has expanded following revisions to Project parameters and assumptions outlined in the PEI Report and the draft Order limits. Chapter 2: Project description provides full details of these revisions.

6.5.3 This study area is aligned with the WFD study area which is outlined in Appendix 5.1: WFD Screening and Scoping Report.

6.5.4 The aquatic ecology study area is sub-divided into two areas summarised below:

- River Thames: the River Thames within the study area upstream and downstream of the SESRO intake / outfall structure which may be subject to impacts associated with this structure and associated infrastructure as well as the abstraction and release of flows to the Thames via this structure. This area includes the River Thames between the SESRO intake / outfall structure down to Teddington Weir which forms the tidal limit, and at which point additional flows released from the Project will have been re-abstracted.
- Ock catchment (and adjacent tributaries): Includes watercourses within the Ock catchment which may be directly impacted by the footprint of the reservoir and associated infrastructure and / or are in hydrological connection to the Project and may be indirectly impacted. This excludes the River Thames, but does include watercourses adjacent to the Ock catchment which flow into the Thames. Whilst these do not connect directly to the Ock catchment they have been grouped with the Ock catchment due to their proximity to the draft Order limits and associated potential for direct and indirect impacts.

6.5.5 In relation to statutory and non-statutory designated sites, sites which are scoped in for the Aquatic ecology assessment are those which are designated for their aquatic habitats and/or species and may be at risk due to their location within the draft Order limits or through hydrological linkage. On the River Thames relevant sites are confined to the River Thames immediately downstream of the Project combined intake/outfall structure at Culham up to the confluence with the River Thame, which is the reach with greatest hydrological influence where there is potential for significant effects to statutory and non-statutory designated sites.

6.5.6 Ponds which are within the draft Order limits and/or in hydraulic connection with the reaches described above are considered within this chapter. However, this chapter does not consider all potential effects on pond ecology. Potential effects on species other than

aquatic macrophytes and macroinvertebrates, such as amphibians seasonally inhabiting ponds (including the legally protected great crested newt *Triturus cristatus*) that may be affected by the Project are considered in the Terrestrial ecology chapter (see Chapter 7: Terrestrial ecology).

## 6.6 Baseline conditions

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

6.6.2 This section outlines the existing and expected future baseline conditions of aquatic ecology in the study area.

### Existing baseline

6.6.3 This assessment has considered the known receptors within the study area. Key existing baseline features for aquatic ecology are shown in PEI Report Figure 6.2: Statutory designated sites (international), Figure 6.3: Statutory designated sites (national) and non-statutory designated sites and Figure 6.4: Watercourses and priority river habitat. The baseline description provided in this section has been informed by emerging survey information, including that reported in Appendix 6.1: Macroinvertebrate, invasive species and depressed river mussel baseline surveys (2024).

#### *Statutory and non-statutory designated sites*

6.6.4 The Statutory and Non-Statutory Designated Sites that have been scoped in for the Aquatic ecology assessment are listed below. These sites are designated for their aquatic habitats and/or species and may be at risk due to their location within the draft Order limits or through hydrological linkage.

6.6.5 Within the draft Order limits:

- Cowslip Meadow LWS
- Marcham Salt Spring LWS
- The Cuttings and Hutchins Copse LWS

6.6.6 The sites listed below are hydrologically connected to the River Thames, and situated within an area where the Project is expected to have the greatest hydrological influence, and where there is potential for significant effects to statutory and non-statutory designated sites:

- Little Wittenham SSSI
- Hayward's Eyot LWS
- Clifton Hampden Meadows LWS
- Clifton Hampden Wood LWS
- Dorchester Meadow LWS
- Dorchester Gravel Pits LWS

6.6.7 No LNRs, NNRs, SACs SPAs or Ramsar sites which support aquatic habitats and/or species as qualifying features are located within the area with greatest hydrological influence from the Project, where there is potential for significant effects to statutory and non-statutory designated sites.

*Watercourse habitats*

6.6.8 Watercourses within the Ock catchment can be typically characterised as slow to moderate flowing lowland streams with a connected ditch network associated with predominantly agricultural land uses. Available data on the connected ditches shows that these are typically of moderate conservation value, although two surveyed ditches were considered to be of fairly high conservation value.

6.6.9 The River Thames is a large lowland river that has been historically modified for navigation and flood alleviation and is a level-controlled system. Watercourses within the Ock catchment and the River Thames associated with the aquatic ecology study area are considered to be cyprinid rivers; however, habitats that may be suitable for native brown trout may also exist.

6.6.10 The watercourses are generally not considered priority habitats, with the exception of priority river habitat which has been identified in multiple locations within the aquatic ecology study area as indicated within Figure 6.4: Watercourses and priority river habitat. This includes chalk river habitat associated with Letcombe Brook and lower Childrey Brook, which is located to the west and intersects the draft Order limit, but is outside of the reservoir footprint area. Letcombe Brook is a chalk stream which originates from springs in Letcombe Regis and Letcombe Bassett and is a tributary of Childrey Brook. Further chalk stream habitat is located within the study area associated with the headwaters of Ginge Brook and the upper Ock catchment, upstream of the draft Order limits. Additionally, an unnamed tributary of the River Ock located upstream and to the west of the draft Order limits has been identified as a priority river due to high naturalness.

*Pond habitats*

6.6.11 Numerous ponds are located within the aquatic ecology study area and within the draft Order limits. No survey data from earlier stages of the Project is available regarding the condition of these ponds or their status as priority ponds. PSYM (Predictive System for Multimetrics) surveys are currently underway to assess their status.

*Fish (including protected and notable species)*

6.6.12 Based on available data, the Ock catchment is broadly characterised by relatively low fish species richness (one to six species recorded at each survey location) and abundance, with the lower Childrey Brook and lower River Ock being the exceptions with comparatively greater species richness and abundance recorded. The latter supports rheophilic species, such as brown trout *Salmo trutta* and dace *Leuciscus leuciscus*. Fish species recorded in relatively high abundance in the lower River Ock and Childrey Brook include three-spined stickleback *Gasterosteus aculeatus*, gudgeon *Gobio gobio*, minnow *Phoxinus phoxinus*, roach *Rutilus rutilus,* and stone loach *Barbatula barbatula*, all considered tolerant species to water quality fluctuations and are typically smaller species. Bullhead *Cottus gobio* and dace *Leuciscus leuciscus* are also abundant in the River Ock. Other species recorded in this location include pike *Esox lucius*, ruffe *Gymnocephalus cernua*, perch *Perca fluviatilis*,

chub *Squalius cephalus*, and brown trout *Salmo trutta*. The most abundant species recorded in 2024 surveys is bullhead, a Habitats Directive Annex II species (note: this protection is only applicable when bullhead are listed as a designated feature within a SAC, and does not apply elsewhere).

6.6.13 Based on available data, the middle reaches of the River Thames within the aquatic ecology study area support a comparatively species-rich fish community dominated (both in terms of diversity and abundance) by a coarse fish community. No European eel *Anguilla anguilla* or brown trout were recorded in the River Thames project monitoring efforts; however, the River Thames is a significant migratory pathway for both catadromous and anadromous fish species. Low numbers of barbel were found, which are a species common to the study area.

6.6.14 The larval fish species recorded in the River Thames (from seasonal bi-weekly larval trawls focused on the intake/outflow reach) across 2005, 2006, 2008, 2023 and 2024 surveys included roach, bleak *Alburnus alburnus*, chub, minnow, bullhead, dace, perch, stone loach, three-spined stickleback, pike, gudgeon, tench *Tinca tinca*, ruffe and common bream *Abramis brama*, with bleak and roach dominating the larval fish community. Most larval fish were found in marginal macrophyte areas.

6.6.15 The juvenile fish species recorded in the River Thames comprise eighteen species (roach, bleak, chub, gudgeon, dace, perch, common bream, minnow, ruffe, pike, stone loach, three-spined stickleback, bullhead, tench, lamprey *Lampetra sp.*, barbel *Barbus barbus*, rudd *Scardinius erythrophthalmus*, ten-spined stickleback, with roach, bleak and chub dominating and gudgeon, perch and dace).

### *Macroinvertebrates (including protected and notable species)*

6.6.16 Available data within the Ock catchment indicates that the watercourses and ditches support typical lowland macroinvertebrate communities. These communities are characterised by highly varying levels of species richness and sensitivity to environmental changes.

6.6.17 The macroinvertebrate community in the River Thames is reflective of a large slow flowing lowland river which is typically indicative of good water quality and varying levels of species richness. These communities support numerous notable species including Species of Principal Importance (under s.41 of NERC Act 2006) such as fine-lined pea mussel *Pisidium tenuilineatum* where the River Ock is considered to support a nationally important population; and within the River Thames depressed river mussel *Pseudanodonta complanata*.

### *Macrophytes (including protected and notable species)*

6.6.18 The available data suggests that the macrophyte communities found in the watercourses associated with the SESRO Project in the Ock catchment are reflective of nutrient enriched, slow flowing watercourses with filamentous algal cover generally low.

6.6.19 Broadly, the macrophyte communities of the River Thames reaches included in the study area are typical of large base-rich, lowland rivers and are indicative of communities which prefer nutrient enriched conditions. The available data indicate the presence of notable macrophyte species in watercourses associated with the SESRO Project within the Ock catchment and the River Thames.

### *Phytobenthos*

6.6.20 Across all watercourses included in the study area, the available data suggest that the phytobenthos communities are indicative of assemblages that prefer nutrient enriched watercourses. The data also indicates higher nutrient levels in the watercourses associated with the Ock catchment when compared to the reaches of River Thames included in the study area. The available data also suggest an increase in nutrient concentrations in a downstream direction on the River Thames, with deteriorating conditions in the lower reaches.

### *Phytoplankton*

6.6.21 The available data for the River Thames within the study area shows that chlorophyll-a (a measure of phytoplankton biomass) follows a consistent annual pattern of increasing in the spring, driven by growth of diatoms, peaking from the end of April to early May, with the size of the peak increasing with distance downstream of the study area. Typically, by June, diatoms and nano-chlorophytes have reduced in number and pico-chlorophytes are dominant and continue to be so through to the autumn, before all phytoplankton drop to low numbers throughout the winter. Diatom and chlorophyll-a concentrations sometimes produce very large peaks in late August to the end of September. Cyanobacteria make up only a small proportion of the total phytoplankton biomass and their blooms tend to be sporadic and short-lived, but are most common in August.

### *Zooplankton*

6.6.22 The available baseline data suggest that the zooplankton communities in the River Thames within the study area are typical of large eutrophic rivers. The zooplankton communities consist mostly of rotifers, cladocera and copepods. These zooplankton make up the 'animal' component of the plankton communities and are the intermediary species in the food chain, transferring energy from planktonic algae (primary producers) to the larger invertebrate predators and fish who feed on them. Zooplankton densities recorded suggest that their abundance in the River Thames within the study area is highly seasonal with temporal patterns in zooplankton density tracking phytoplankton growth. Spring zooplankton communities are associated with spring/early summer diatom blooms, dominated by cold adapted grazers such as copepods and some rotifers, then in mid-summer when small chlorophytes, cryptophytes and cyanobacteria are more abundant, there are dense populations of some rotifer species. Previous studies which have identified this relationship also indicate that the timing and magnitude of these peaks is highly variable across years.

### *Riparian and Aquatic Invasive Non-Native Species (INNS) and Pathogens*

6.6.23 A variety of invasive flora and fauna has been reported within the Ock and River Thames 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* within the environs. Pathogens are also expected to be present within the study area and may be subject to further survey at the appropriate time (i.e. ahead of any planned fish

movements), including fish health checks to inform appropriate risk assessment and mitigation.

### Future baseline

6.6.24 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 aquatic 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.

6.6.25 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.

6.6.26 In terms of future change to the water environment, the River Thames is managed through numerous structures for navigation. It is expected that it would continue to be a level-controlled system in the future. The Water Industry National Environment Programme (WINEP) for water companies associated with Asset Management Plans (AMP) (including AMP8 and past AMPs) included the introduction of measures to reduce phosphate inputs (e.g. improvement in treatment processes and increased storm tank capacity). Additionally, it would be expected that WINEPs associated with future AMPs may also include further measures to reduce phosphate inputs. Many abstractions for public water supply have also been subject to sustainability reductions and these reductions will likely continue to ensure environmental protection and enhancement. These changes may benefit the aquatic communities, potentially resulting in an increase in the distribution and abundance of pollution and flow sensitive species. However, overall water demand is expected to increase to 2075 and new water supplies will need to be pursued to meet the shortfall (Thames Water, 2024).

6.6.27 Land use within the Ock Catchment is not expected to change. However, there may be changes in agricultural practices (e.g. changes in crop types and changes in the use of fertilizers and pesticides) which could change the water quality and watercourse habitat within both the Ock and the River Thames catchment in the future.

6.6.28 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 Local Wildlife Sites are afforded protection through local planning policies and are likely to also benefit from plan-led strategies for nature conservation, including Local Nature Recovery Strategies (LNRS) introduced by the Environment Act 2021. As such changes to the future baseline of these sites is likely to be positive.

6.6.29 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 Biodiversity Net Gain (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. Changes to the future baseline of habitats, including aquatic habitats such as watercourses and ponds support a long-term trend toward a more mosaic-like, ecologically rich and visually diverse rural landscape. That said, urbanising influences from possible future housing development and highway improvements linked to national and local policy drivers may act to counterbalance some of these habitat improvements.

6.6.30 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 that 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 introduced by the Environment Act 2021, potentially expand 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 the 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 Species Conservation Strategies (SCS) for certain species and groups, declines and localised loss of some species is possible.

6.6.31 The following developments in isolation may influence the future baseline of the aquatic ecology study area. However, some are functionally linked to SESRO and may not proceed without SESRO. Consequently, they are not considered as part of the future baseline for SESRO which predicts the state of the environment without SESRO taking place.

- Severn to Thames Transfer
- Thames to Southern Water Transfer (T2ST)
- Farmoor Transfer (SWOX Raw water transfer)
- Wilts and Berks Canal
- East Hanney Flood Alleviation Scheme
- Steventon Flood Alleviation Scheme

6.6.32 The following developments may influence the future baseline of the aquatic ecology study area and may be expected to proceed without SESRO:

- Abingdon Flood Alleviation Scheme
- Land for Abingdon south bypass
- Frilford and Marcham improvements (Marcham bypass)
- River Thames Scheme
- Teddington Direct River Abstraction

### Aquatic ecology receptors considered in the Preliminary Assessment

6.6.33 Table 6.8 shows the aquatic 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 6.2: Preliminary assessment of effects for Aquatic ecology), whilst the area ID relates to the spatial extent of the receptor assessed. Figure 6.1: Aquatic ecology study area, Figure 6.3: Statutory designated sites (national) and non-statutory designated sites, and Figure 6.4: Watercourses and priority river habitat show the locations of receptors that have been spatially defined for the preliminary assessment for the PEI Report, with relevant area IDs noted. Table 6.8 signposts to which figure shows which area ID. Further data gathering to inform the ES will inform any revisions to the defined spatial extents of receptors.

Table 6.8 Receptors assessed in the preliminary assessment

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Designated sites (shown on Figure 6.3: Statutory designated sites (national) and non-statutory designated sites) | | | | |
| Little Wittenham SSSI | High | The site supports one of the largest known populations of GCN in the UK, outstanding assemblage of breeding amphibians including smooth newt, frog, toads and dragonflies and damselflies, next to River Thames it is an area of woodland with ponds, grassland and scrub. SSSIs are designated at the national level and therefore considered to be of national importance, equating to high sensitivity. This site is also listed as an SAC, however it is not valued as an SAC in this assessment as the qualifying features of the SAC (great crested newts) are not functionally linked to the Thames where the effects of the project are expected to be limited and therefore the SAC is not considered further in this assessment. | AEC-117, AEC-118, AEC-160, AEC-161, AEC-298 | EIA-175 |
| Clifton Hampden Meadows LWS | Moderate | Floodplain meadow with swamp and wet grassland areas, site is located next to River Thames near Clifton Hampden, approximately 8.5km downstream of the proposed intake/outfall. LWS are designated at the county level and therefore considered to be of county importance, equating to moderate sensitivity. | AEC-113, AEC-114, AEC-156, AEC-157, AEC-158, AEC-159, AEC-297 | EIA-678 |
| Clifton Hampden Woods LWS | Moderate | Floodplain meadow with swamp and wet grassland areas, site is located next to River Thames near Clifton Hampden, approximately 8.5km downstream of the proposed intake/outfall. LWS are designated at the county level and therefore considered to be of county importance, equating to moderate sensitivity. | AEC-115, AEC-116 | EIA-677 |
| Cowslip Meadows LWS | Moderate | The site includes three meadows along the Letcombe Brook at East Hanney, with one grazed by horses and the others managed for hay. These traditionally managed meadows support a rich diversity of wildflowers, including abundant cowslips and the uncommon, parasitic common broomrape. LWS are designated at the county level and therefore considered to be of county importance, equating to moderate sensitivity. | AEC-78, AEC-79, AEC-80, AEC-105, AEC-106, AEC-107, AEC-294 | EIA-148 |
| Dorchester Gravel Pits LWS | Moderate | Former gravel pit which is now standing water habitat. Site is located next to the River Thames near Dorchester on Thames approximately 11.9km downstream of the | AEC-121, AEC-122, AEC-164, | EIA-676 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| | | proposed intake/outfall. LWS are designated at the county level and therefore considered to be of county importance, equating to moderate sensitivity. | AEC-165, AEC-300 | |
| Dorchester Meadow LWS | Moderate | Floodplain meadow. Site is located next to the River Thames near Dorchester on Thames approximately 12.2km downstream of the proposed intake/outfall. LWS are designated at the county level and therefore considered to be of county importance, equating to moderate sensitivity. | AEC-119, AEC-120, AEC-162, AEC-163, AEC-299 | EIA-675 |
| Hayward's Eyot LWS | Moderate | Formerly an island, now comprises channels either side of the designated site with springs, ponds and reedbeds. This LWS is located next to the River Thames at Little Wittenham approximately 5.8km downstream of the proposed intake/outfall. LWS are designated at the county level and therefore considered to be of county importance, equating to moderate sensitivity. | AEC-111, AEC-112, AEC-154, AEC-155, AEC-296 | EIA-674 |
| Marcham Salt Spring LWS | Moderate | A formerly arable field now supports a wetland area where wild celery, the only known population in the county, has re-established since 1998 following earlier loss due to land drainage. Although the original salt spring no longer flows, the area remains wet and supports a diverse aquatic and wetland flora, including marsh foxtail, reed sweet-grass, pink and blue water speedwell, celery-leaved buttercup, and brooklime. LWS are designated at the county level and therefore considered to be of county importance, equating to moderate sensitivity. | AEC-136, AEC-138, AEC-139, AEC-140, AEC-295 | EIA-145 |
| The Cuttings and Hutchins Copse LWS | Moderate | The Cuttings are a series of ponds along the railway and a small area of sedge swamp, Hutchin's Copse is classed as ancient woodland, woodland bound by ditches, GCN recorded in ponds, multiple nationally notable beetles LWS are designated at the county level and therefore considered to be of county importance, equating to moderate sensitivity. | AEC-102, AEC-103, AEC-104, AEC-151, AEC-152, AEC-153, AEC-293 | EIA-147 |
| Priority habitats (shown on Figure 6.4: Watercourses and priority river habitat) | | | | |
| Aquatic Habitats (priority rivers) - River Ock catchment | Very High | Priority River Habitat is present in the form of chalk river habitat associated with Letcombe Brook and lower Childrey Brook, which is, located to the west and intersects the draft Order limit. This chalk stream originates from springs in Letcombe Regis and Letcombe Bassett and is a tributary of Childrey Brook. Further chalk stream habitat is located within the study area associated with the headwaters of Ginge Brook, upstream of the draft Order limits. Chalk rivers are globally rare with over 80% | AEC-84, AEC-85, AEC-86, AEC-148, AEC-149, AEC-150 | EIA-65 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| | | of the world's chalk rivers found in England. As such they are considered to be of international importance and very high sensitivity. Additionally, an unnamed tributary of the River Ock located upstream and to the west of the draft Order limits and within the study area has been identified as a priority river due to high naturalness. However, as there is no impact pathway to this priority river this has been excluded from this assessment. | | |
| Habitats and species (related catchments shown on Figure 6.1: Aquatic ecology study area) | | | | |
| Aquatic Habitats (Ditches) - River Ock catchment | Low | There is limited baseline information available on the quality of the ditches present which reduces confidence in assigning sensitivity. Available information suggests the communities supported are typical of lowland ditch habitats and of moderate conservation value. As such, they are considered to be of Local importance, and the receptor is therefore assessed as having 'Low' sensitivity. | AEC-192, AEC-193, AEC-194, AEC-195, AEC-196, AEC-202, AEC-203, AEC-204 | EIA-66 |
| Aquatic Habitats (Non-priority rivers and streams) - River Ock catchment | High | Rivers are a NERC Act Section 41 Habitat of Principal Importance and as such are considered to be of national importance and high sensitivity. | AEC-81, AEC-82, AEC-83, AEC-142, AEC-144, AEC-146 | EIA-66 |
| Aquatic Habitats (Non-priority rivers and streams) - River Thames | High | Rivers are a NERC Act Section 41 Habitat of Principal Importance and as such are considered to be of national importance and high sensitivity. | AEC-108, AEC-109, AEC-110, AEC-143, AEC-145, AEC-147 | EIA-818 |
| Aquatic habitats (Ponds) - River Ock catchment | Low | No available baseline data to assign level of sensitivity for ponds and there are no identified priority ponds (as per Freshwater Habitats Trust guidance) currently within the Project. Therefore it has been assumed that pond habitats are of Local importance. | AEC-197, AEC-198, AEC-199, AEC-200, AEC-201, AEC-205, AEC-206 | EIA-66 |
| Aquatic habitats - River Ock catchment | Low | Habitats such as ponds, ditches and watercourse present within the Ock catchment enrich the local habitat resource and hold features suitable for a range of species. However available information on these features is limited. From the available | AEC-285, AEC-316 | EIA-66 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| | | information communities recorded suggest a typical assemblage observed in lowland areas and therefore considered to be of local importance. | | |
| Aquatic habitats - River Thames | High | The River Thames is a navigable lowland river which provides a diverse range of aquatic and riparian habitats which support a wide range of aquatic species. Rivers are a NERC Act Section 41 Habitat of Principal Importance and as such are considered to be of national importance and high sensitivity. | AEC-289, AEC-320 | EIA-818 |
| Depressed River Mussel - River Thames | High | A population of depressed river mussel is known to be present on the River Thames including reaches which may be affected by the Project. Depressed river mussel is a NERC Act Section 41 Species of Principal Importance and as such is considered to be of national importance and high sensitivity. | AEC-127, AEC-128, AEC-129, AEC-130, AEC-177, AEC-178, AEC-179 | EIA-818 |
| Eel - River Ock catchment | Very High | The European eel, is listed as 'Critically Endangered' on the IUCN Red List of Threatened Species. Protected under the Eels Regulations and listed as a species of principal importance under section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. | AEC-217, AEC-218, AEC-219, AEC-220, AEC-234, AEC-235, AEC-236 | EIA-66 |
| Eel - River Thames | Very High | The European eel, is listed as 'Critically Endangered' on the IUCN Red List of Threatened Species. Protected under the Eels Regulations and listed as a species of principal importance under section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. | AEC-221, AEC-222, AEC-223, AEC-224, AEC-237, AEC-238, AEC-239, AEC-240, AEC-241, AEC-242 | EIA-818 |
| Fine-lined pea mussels - River Ock catchment | High | A population of fine-lined pea mussel has previously been recorded on the River Ock and may be present in connected tributaries, including those which may be impacted by the Project. Fine-lined pea mussel are a NERC Act Section 41 Species of Principal Importance and as such is considered to be of national importance and high sensitivity. | AEC-91, AEC-92, AEC-93, AEC-94, AEC-174, AEC-175, AEC-176 | EIA-66 |
| Fish - River Ock catchment | Moderate | A diverse community of fish species is present in the Ock catchment. This grouping includes lower conservation valued coarse fish species, minor fish species such as | AEC-209, AEC-210, AEC-211, | EIA-66 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| | | minnow and stone loach and more nationally important and less abundant species such as brook and river lamprey, bullhead and brown trout. It is worth noting that the Ock catchment has limited and pressured habitats, which present more impacts to the fish species. | AEC-212, AEC-225, AEC-226, AEC-227, AEC-286, AEC-317 | |
| Fish - River Thames | Moderate | A diverse community of fish species is present in the Thames. This grouping includes lower conservation value but more abundant coarse fish species, which dominate the Thames, especially roach and chub. It also includes minor fish species such as minnow and stone loach but also includes more nationally important and less abundant species such as brook and river lamprey, bullhead, and brown trout. It is worth noting that the Thames catchment has wide-ranging habitats that fish species can utilise under different conditions. | AEC-213, AEC-214, AEC-215, AEC-216, AEC-228, AEC-229, AEC-230, AEC-231, AEC-232, AEC-233, AEC-290, AEC-321 | EIA-818 |
| Macroinvertebrates - River Ock catchment | Moderate | The macroinvertebrate community present within the Ock catchment is typical of lowland watercourses and ditches. These communities correspond to bad to moderate WFD Status based on species richness and composition of sensitive species within the community. These communities provide Community Conservation Index (CCI) scores which typically correspond to ‘low conservation value' with localised CCI scores of fairly high and high conservation value, associated with the presence of small numbers of notable taxa which correspond to local or regional ecological importance. | AEC-87, AEC-88, AEC-89, AEC-90, AEC-166, AEC-168, AEC-170, AEC-172, AEC-287, AEC-318 | EIA-66 |
| Macroinvertebrates - River Thames | High | The macroinvertebrate community in the River Thames is reflective of a large slow flowing lowland river which is typically indicative of good water quality and varying levels of species richness. These communities correspond to WFD statuses which range from Bad to Good, though typically correspond to moderate WFD status based on species richness and composition of sensitive species within the community. These communities provide Community Conservation Index (CCI) scores which also range from low to very high conservation value range associated with the presence of a wide range of notable taxa including species which are considered rare and nationally important. Consequently, the macroinvertebrate community in the River Thames is determined to be of high sensitivity. | AEC-123, AEC-124, AEC-125, AEC-126, AEC-167, AEC-169, AEC-171, AEC-173, AEC-291, AEC-322 | EIA-818 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Macrophytes - River Ock catchment | Moderate | The macrophyte community present within the Ock catchment is typical of lowland watercourses and ditches. The communities reflect high tolerance to pollution indicative of eutrophic watercourses, low species richness and low numbers of functional groups. Filamentous algae presence is also low. Historically, a number of notable macrophyte species have been recorded in the Ock catchment typically of county importance. | AEC-95, AEC-96, AEC-97, AEC-98, AEC-180, AEC-181, AEC-183, AEC-288, AEC-319 | EIA-66 |
| Macrophytes - River Thames | Moderate | Broadly, the macrophyte communities of the River Thames reaches included in the study area are typical of large base-rich, lowland rivers and are indicative of communities which prefer nutrient enriched conditions. This community contains a number of notable species records across the Thames study area, including species listed as up to vulnerable under the IUCN red list or species listed as rare or scarce at the county level or nationally scarce. | AEC-131, AEC-132, AEC-133, AEC-134, AEC-135, AEC-182, AEC-184, AEC-292, AEC-323 | EIA-818 |
| Phytobenthos - River Ock catchment | Low | While individual phytobenthos species are not considered ecologically significant in isolation and are not afforded species-level protection under UK legislation, the community as a whole plays a vital ecological role. As primary producers, phytoplankton form the foundation of the aquatic food web, supporting invertebrates, fish, and other organisms throughout the river system. Within the context of the Ock catchment, phytobenthos is considered locally important for maintaining ecosystem function and overall biodiversity. | AEC-99, AEC-100, AEC-101, AEC-185, AEC-186, AEC-187 | EIA-66 |
| Phytoplankton - River Thames | Low | The phytoplankton community in the River Thames is characteristic of a large lowland river, comprising a diverse mix of freshwater species. While individual phytoplankton species are not considered ecologically significant in isolation and are not afforded species-level protection under UK legislation, the community as a whole plays a vital ecological role. As primary producers, phytoplankton form the foundation of the aquatic food web, supporting invertebrates, fish, and other organisms throughout the river system. Within the context of the River Thames, phytoplankton are considered locally important for maintaining ecosystem function and overall biodiversity. | AEC-188, AEC-189 | EIA-818 |
| Zooplankton - River Thames | Low | The zooplankton community in the River Thames is typical of a large lowland river and is primarily composed of rotifers, cladocerans, and copepods. While individual zooplankton species are not designated or protected under UK legislation, and are not considered ecologically significant in isolation, the community as a whole plays a vital | AEC-190, AEC-191 | EIA-818 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| | | ecological role. Within the River Thames, zooplankton are considered locally important for supporting biodiversity and maintaining ecosystem function. | | |
| Depressed River Mussel - River Thames | High | A population of depressed river mussel is known to be present on the River Thames including reaches which may be affected by the Project. Depressed river mussel is a NERC Act Section 41 Species of Principal Importance and as such is considered to be of national importance and high sensitivity. | AEC-127, AEC-128, AEC-129, AEC-130, AEC-177, AEC-178, AEC-179 | EIA-818 |
| Eel - River Ock catchment | Very High | The European eel, is listed as 'Critically Endangered' on the International Union of Nature Conservation (IUCN) Red List of Threatened Species. Protected under the Eels Regulations and listed as a species of principal importance under section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. | AEC-217, AEC-218, AEC-219, AEC-220, AEC-234, AEC-235, AEC-236 | EIA-66 |
| Eel - River Thames | Very High | The European eel is listed as 'Critically Endangered' on the IUCN Red List of Threatened Species. Protected under the Eels Regulations and listed as a species of principal importance under section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. | AEC-221, AEC-222, AEC-223, AEC-224, AEC-237, AEC-238, AEC-239, AEC-240, AEC-241, AEC-242 | EIA-818 |
| Fine-lined pea mussels - River Ock catchment | High | A population of fine-lined pea mussel has previously been recorded on the River Ock and may be present in connected tributaries, including those which may be impacted by the Project. Fine-lined pea mussel is a NERC Act Section 41 Species of Principal Importance and as such is considered to be of national importance and high sensitivity. | AEC-91, AEC-92, AEC-93, AEC-94, AEC-174, AEC-175, AEC-176 | EIA-66 |
| Fish - River Ock catchment | Moderate | A diverse community of fish species is present in the Ock catchment. This grouping includes lower conservation valued coarse fish species, minor fish species such as minnow and stone loach and more nationally important and less abundant species such as brook and river lamprey, bullhead and brown trout. It is worth noting that the Ock catchment has limited and pressured habitats, which present more impacts to the fish species. | AEC-209, AEC-210, AEC-211, AEC-212, AEC-225, AEC-226, AEC-227, AEC-286, AEC-317 | EIA-66 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| Fish - River Thames | Moderate | A diverse community of fish species is present in the Thames. This grouping includes lower conservation value but more abundant coarse fish species, which dominate the Thames, especially roach and chub. It also includes minor fish species such as minnow and stone loach, but also includes more nationally important and less abundant species such as brook and river lamprey, bullhead, and brown trout. It is worth noting that the Thames catchment has wide-ranging habitats that fish species can utilise under different conditions. | AEC-213, AEC-214, AEC-215, AEC-216, AEC-228, AEC-229, AEC-230, AEC-231, AEC-232, AEC-233, AEC-290, AEC-321 | EIA-818 |
| Macroinvertebrates - River Ock catchment | Moderate | The macroinvertebrate community present within the Ock catchment is typical of lowland watercourses and ditches. These communities correspond to bad to moderate WFD Status based on species richness and composition of sensitive species within the community. These communities provide Community Conservation Index (CCI) scores which typically correspond to 'low conservation value' with localised CCI scores of fairly high and high conservation value, associated with the presence of small numbers of notable taxa which correspond to local or regional ecological importance. | AEC-87, AEC-88, AEC-89, AEC-90, AEC-166, AEC-168, AEC-170, AEC-172, AEC-287, AEC-318 | EIA-66 |
| Macroinvertebrates - River Thames | High | The macroinvertebrate community in the River Thames is reflective of a large slow flowing lowland river which is typically indicative of good water quality and varying levels of species richness. These communities correspond to WFD statuses which range from Bad to Good, though typically correspond to moderate WFD status based on species richness and composition of sensitive species within the community. These communities provide Community Conservation Index (CCI) scores which also range from low to very high conservation value range associated with the presence of a wide range of notable taxa including species which are considered rare and nationally important. Consequently, the macroinvertebrate community in the River Thames is determined to be of High sensitivity. | AEC-123, AEC-124, AEC-125, AEC-126, AEC-167, AEC-169, AEC-171, AEC-173, AEC-291, AEC-322 | EIA-818 |
| Macrophytes - River Ock catchment | Moderate | The macrophyte community present within the Ock catchment is typical of lowland watercourses and ditches. The communities reflect high tolerance to pollution indicative of eutrophic watercourses, low species richness and low numbers of functional groups. Filamentous algae presence is also low. Historically, a number of | AEC-95, AEC-96, AEC-97, AEC-98, AEC-180, AEC-181, | EIA-66 |

| Receptor Name | Sensitivity | Sensitivity Commentary | Effect-ID(s) | Area-ID |
|---|---|---|---|---|
| | | notable macrophyte species have been recorded in the Ock catchment typically of county importance. | AEC-183, AEC-288, AEC-319 | |
| Macrophytes - River Thames | Moderate | Broadly, the macrophyte communities of the River Thames reaches included in the study area are typical of large base-rich, lowland rivers and are indicative of communities which prefer nutrient enriched conditions. This community contains a number of notable species records across the Thames study area, including species listed as up to vulnerable under the IUCN red list or species listed as rare or scarce at the county level or nationally scarce. | AEC-131, AEC-132, AEC-133, AEC-134, AEC-135, AEC-182, AEC-184, AEC-292, AEC-323 | EIA-818 |
| Phytobenthos - River Ock catchment | Low | While individual phytobenthos species are not considered ecologically significant in isolation and are not afforded species-level protection under UK legislation, the community as a whole plays a vital ecological role. As primary producers, phytoplankton form the foundation of the aquatic food web, supporting invertebrates, fish, and other organisms throughout the river system. Within the context of the Ock catchment, phytobenthos is considered locally important for maintaining ecosystem function and overall biodiversity. | AEC-99, AEC-100, AEC-101, AEC-185, AEC-186, AEC-187 | EIA-66 |
| Phytoplankton - River Thames | Low | The phytoplankton community in the River Thames is characteristic of a large lowland river, comprising a diverse mix of freshwater species. While individual phytoplankton species are not considered ecologically significant in isolation and are not afforded species-level protection under UK legislation, the community as a whole plays a vital ecological role. As primary producers, phytoplankton form the foundation of the aquatic food web, supporting invertebrates, fish, and other organisms throughout the river system. Within the context of the River Thames, phytoplankton are considered locally important for maintaining ecosystem function and overall biodiversity. | AEC-188, AEC-189 | EIA-818 |
| Zooplankton - River Thames | Low | The zooplankton community in the River Thames is typical of a large lowland river and is primarily composed of rotifers, cladocerans, and copepods. While individual zooplankton species are not designated or protected under UK legislation, and are not considered ecologically significant in isolation, the community as a whole plays a vital ecological role. Within the River Thames, zooplankton are considered locally important for supporting biodiversity and maintaining ecosystem function. | AEC-190, AEC-191 | EIA-818 |

## 6.7 Project parameters, assumptions and limitations

6.7.1 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 Aquatic ecology aspect uses the parameters and assumptions outline in Chapter 2: Project description as well as additional parameters and assumptions specific to this aspect to ensure the reasonable worst-case scenario is considered within this assessment.

### Project parameters and assumptions specific to this aspect

6.7.2 Table 6.9 identifies the Project parameters, components and activities relevant to this assessment where assumptions specific to the preliminary Aquatic ecology assessment have been generated.

Table 6.9 Project parameters and assumptions forming the basis of assessment

| Project parameter / component / activity | Assumption (basis of assessment) |
|---|---|
| Most / all project parameters | It is assumed that there will be a reduction in flow that reaches the River Ock from the river diversions. This is due to a reduction in the active contributing catchment, as a result of the establishment of the reservoir.<br>It is assumed that measures to manage INNS will be restricted to areas within the draft Order limits. |
| Reservoir embankment | The wave protection design and maintenance of rip-rap (rock armour) and/or open stone asphalt will limit establishment of natural marginal and littoral habitats within the reservoir. |
| Reservoir towers | It is assumed that reservoir towers will have screens to prevent fish from entering the structure, but these will not prevent the movement of some juvenile or larval fish (or eggs) and/or INNS.<br>It is assumed that the dimensions of the reservoir towers are the maximum extents stated and does not include an allowance for INNS colonisation. |
| Reservoir tunnels | It is assumed that the reservoir tunnels will be dry/drained at certain times during the operational phase, which may limit the growth and/or proliferation of INNS (particularly invasive bivalves), however the frequency of draining the tunnels during operation is not yet determined, so it is not possible to rely on this measure as a part of an INNS management strategy in this assessment. |
| Stocking of the smaller fishing lake | It is assumed at this stage that the fishing lake will not be stocked, and will contain fish that are present through natural migration. |
| Reservoir and larger recreational lake | It is assumed that the reservoir and larger recreational lake could contain fish species and other aquatic life, and that these may enter through natural pathways or unsolicited means. |
| Intake and Outfall structures | It is assumed that no treatment works are included in the Project, to limit the spread of INNS into and out of SESRO. |

| Project parameter / component / activity | Assumption (basis of assessment) |
|---|---|
| | It is assumed that the Abingdon STW outfall will be moved to a location downstream of the SESRO intake/outfall structure.<br>The preliminary assessment assumes a 2mm mesh screen as a maximum mesh dimension, which exceeds current requirements under the Eels Regulations. |
| Pumping station | It is assumed that the hydro-electric turbines within the pumping station have the potential to cause harm to fish that are entrained from the reservoir and transferred through the conveyance system to the River Thames. |
| The abstraction and discharge from and to the River Thames | It is assumed that all fish species and life cycles expected to be present will be considered in the environmental permit process. |
| Abstractions and discharges to the River Thames in operation | The abstraction from/discharge to the River Thames will be subject to the conditions of an environmental permit, and will be at the values detailed in Chapter 2, Section 2.6.<br>If water quality in the River Thames does not meet the desired limits, or flows drop below the hands off flow, abstraction will be controlled accordingly. |
| Dewatering activities | It is assumed all fish will be translocated before or during dewatering activities with enough time to ensure safe environmental fish capture conditions. Fish will be moved to sites further downstream in the Ock catchment, or to the River Thames as agreed with the EA. |
| Aquatic habitats provided through Project design | Draft Order limits incorporated into DCO are sufficiently sized and appropriately located to avoid net loss of biodiversity, provide effective mitigation, including to support translocations resulting from the main Works programme, and to provide ecology mitigation and contribute to BNG.<br>It is assumed that the design of habitat will evolve prior to ES and DCO submission to reflect the outcome of environmental surveys. |
| Western watercourses diversion (Cow Common Brook, Portobello Ditch, East Hanney Ditch) and Eastern watercourses diversion (Mere Dyke, Drayton North Ditch, River Ock and Landmead Ditch) | It is assumed that the flow regime within the diverted watercourses will be the same as that of the existing watercourses.<br>It is assumed that a 'fully constructed' channel (following a period of establishment) includes (but is not limited to) channel bed material, hydro- and geomorphological diversity, habitat heterogeneity and suitable vegetation.<br>It is assumed that the eastern watercourse diversion and western watercourse diversion designs to support aquatic species and communities are appropriate for these watercourse typologies.<br>Watercourse diversion will be completed as part of Early Works, within the first seven years of construction. It is assumed that the establishment of watercourse diversions will take two growing seasons. It is assumed that construction will be completed followed by a growing season to allow establishment straight away).<br>It is assumed that pumping out of the newly constructed channel would be needed during construction due to groundwater ingress. This would be |

| Project parameter / component / activity | Assumption (basis of assessment) |
|---|---|
| | over-pumped into existing watercourses downstream of the construction activity.<br>Periphery drainage (around the reservoir) and realigned watercourses would be constructed at the same time on each side of the reservoir (eastern and western). This excavation would move north to the south (downstream to upstream) and would connect to existing ditches as the construction moved into the location of existing ditches sequentially. |
| Eastern and Western Watercourse Diversions - Species | It is assumed that the enhancement of aquatic habitats includes the provision (either initially or through planned succession) of key habitats required for all fish species expected to be present to complete their life stages sustainably.<br>It is assumed that all fish species to inhabit the new channels are either introduced or naturally recruited/attracted following the recommendations of the TW/EA TLG on this issue. This includes the key points of fish welfare, minimal disturbance or movement, sufficient habitat and food present and control of any potential fish pathogens.<br>It is assumed that the fish species to be translocated into the new watercourses remain in the same sub catchment. to be translocated into the new watercourses remain in the same sub catchment. |
| Wilts and Berks Canal | It is anticipated that 90,000$m^3$ of water will be required to initially fill the canal. It is assumed that water to fill the canal will be from groundwater and surface water pumping undertaken during the construction phase. Studies are currently ongoing to determine sweetening flows and sources required to be used to fill the canal during the construction phase and sweetening flows and sources required to top up water levels in the canal during the operational phase. The canal will be constructed with clay lining and as such it is assumed that there will be no infiltration/leakage impacts and therefore water will only be lost through evaporation.<br>It is assumed that fish will colonise naturally, and any designs will consider wider ecological habitats so that fish can establish and form a key part of the newly created ecosystem.<br>The canal will provide extensive new aquatic habitat and will include naturalised channel banks, margins and bed to support vegetation and provide habitat for species and communities. |
| Ditch system | It is assumed that plants and animals, including fish and eels, will be able to colonise the ditch system and that the ditches will provide suitable habitat. |
| Reservoir and larger recreational lake | It is assumed that the reservoir and larger recreational lake could contain fish species and other aquatic life that may enter through natural pathways or unsolicited means. |
| Stocking of the smaller fishing lake | There are currently no plans for the fishing lake to be stocked, and it is anticipated that it will ultimately contain fish that are present through natural immigration. |
| Recreational lakes | It is assumed that the angling site will be registered with Defra, maintained with a site permit, and stocked with suitable native fish species, with a |

| Project parameter / component / activity | Assumption (basis of assessment) |
|---|---|
| | clear health check in place. It is also assumed that all angling guidance and rules follow best practice, prioritising fish welfare. |
| Recreational lakes (east and west) | The recreational lakes, whilst designed for recreation, amenities and activities, will also provide biodiversity benefits through creation of aquatic habitats supporting aquatic species and communities. The lakes will generally be natural in terms of their morphology, hydrology and water quality. |
| Floating Islands | It is assumed that the floating islands will cover less than 2% of the reservoir surface area. |
| Lagoons on reservoir embankment crest | Lagoons will be designed to optimise benefits for biodiversity. They will connect to the main reservoir at high water levels and be designed to retain water as the reservoir water levels recede, providing supplementary wetland habitat. |
| South West visitor centre foul drainage solution | Waste water (foul) from the visitors centre is proposed to be treated using an integrated constructed wetland. An alternative harder-engineered approach may be adopted as the final design solution at this location. |
| Thames to Southern Water Transfer (T2ST) Water Treatment Works (WTW) and pipelines | The T2ST component of SESRO will not include full connection and therefore effects associated with transfer of water and creation of a new hydrological connection on aquatic receptors is not within the scope of this assessment. |
| River Thames Erosion Protection | Scour and erosion protection may degrade riverine habitats but this will be localised to river margins and the bank face. the bank face. |
| River Thames Flood Compensation (Eastern Bank) | Berm on the eastern bank will require loss of in-channel, bank face and bank top habitats. The berm will minimise hard engineered surfaces and reinstate lost habitats as far as practicable. |
| Modifications to mainline railway to allow exit west (switch and crossing) | It is assumed that this component will not require change to watercourse crossing structures. Temporary compounds will be designed to ensure that a sufficient buffer around any watercourse or waterbody is implemented. |
| Steventon to East Hanney road diversion, Intermediate shaft road upgrade, A34 Marcham Interchange, Construction access from A34 layby and Upgrade to A34 layby south of SESRO | It is assumed that highways drainage including dry swales and retention ponds are designed to ensure there is a negligible degradation in water quality from pollutants associated with the highway on nearby or connected downflow waterbodies. |

### Assessment assumptions and limitations

6.7.3 This section identifies the aspect-specific assumptions and limitations made for the preliminary Aquatic ecology assessment including those related to the availability of data to inform the assessment and assumptions used in the methodology. All assessed effects in this chapter are preliminary and will be revisited in the ES in light of data available at that time and the design taken forward for submission. Assessments reported with 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 6.10: Next steps.

6.7.4 Assumptions and limitations identified in relation to the preliminary Aquatic ecology assessment comprise:

- Baseline surveys for all ecological receptors are in progress, and the baseline evidence presented in this PEI Report is acknowledged to be incomplete. In some instances, the incomplete status is due to a lack of full site coverage of field surveys; in others, the limitation is that the baseline is not yet sufficient to confirm the presence or likely absence of a scoped-in receptor. All assessments presented in this PEI Report take a precautionary approach, based on reasonable assumptions that suitable baseline environmental conditions may be present, until sufficient survey and assessment effort can robustly conclude otherwise.
- As the Project design develops, the assessment of impact pathways remains under review. For the purposes of the PEI Report a precautionary approach has been taken to assumptions relating to impact pathways, including the potential for the source of Project impacts to be widely dispersed within the draft Order limits, or to occur in proximity to sensitive receptors (this relates to the above limitation and uncertainty).
- Biological records obtained from Biological Records Centres (specifically, Thames Valley Environmental Records Centre) and Environment Agency open source data are regularly updated. For the purposes of this PEI Report, these records were obtained before the draft Order limits were expanded following EIA Scoping (as noted in paragraph 6.5.2). Therefore, these records are not consistently available in all locations to support the aquatic ecology study area for all receptors. This is addressed by the precautionary approach to baseline uncertainty set out above.
- All assessments presented as part of the PEI Report will be updated fully as part of the EIA process and development of the ES and other supporting assessments. Where information on Project parameters, receptor baselines or impact pathways updates the potential for ecological effects, contrary to that presented as part of the PEI Report, the most up-to-date and robust information will be applied.
- Horizon scanning for emerging INNS risk is in progress and will be completed to inform the ES. As such, this assessment for the PEI Report has been developed without a full understanding of potential future INNS risks during both the construction and operational phases of SESRO. Consequently, certain risks are not fully explored, and the assessment is based on limited information.
- Currently, INNS risks have been assessed using the SAI-RAT tool, as required under the Water Industry Strategic Environmental Requirements (WISER) framework. risks

are evaluated by pathway rather than on a species-specific basis, per the WISER requirements. The assessment covers the draft Order limits and the River Thames, a wider catchment assessment is in progress and the results will inform the ES. This exercise will reduce the data gap in understanding potential INNS that could enter the draft Order limits during the consenting timeframe for SESRO. As a result, risks associated with INNS from the broader catchment have not been fully addressed, and the current assessment reflects this limitation. The Applicant has taken a precautionary approach to the assessment and assumed that all INNS may have an opportunity to enter or leave watercourses and waterbodies associated with the SESRO development. Desk-based assessments of the wider catchment will be undertaken to inform the ES. This use of this data is considered to be a proportionate approach and is acceptable to inform the assessment.

## 6.8 Embedded design mitigation and standard good practice

6.8.1 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.

6.8.2 Embedded design mitigation identified for the Project at this stage is noted in Chapter 2: Project description. These, and standard good practice measures to be applied, are described in greater detail within the Draft commitments register in Appendix 2.2.

6.8.3 Table 6.10 and Table 6.11 list the embedded design mitigation and standard good practice measures applicable to the preliminary Aquatic 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 states the purpose of each mitigation and the applicable securing mechanism.

Table 6.10 Construction: Relevant embedded design mitigation and standard good practice measures, their purpose and securing mechanisms

| Embedded design mitigation or standard good practice measure (unique commitment ID) | Purpose of mitigation measure | Indicative securing mechanism |
|---|---|---|
| Provide floodplain conveyance and compensation before construction of the reservoir and the intake/outfall structure(ED-01) | This mitigation ensures that new floodplain storage and diversion channels are established prior to reservoir construction, maintaining natural floodplain functions. This supports aquatic ecology by allowing habitats to form and stabilise, enabling colonisation by aquatic species. | Under the terms of the DCO<br>Design Principle |
| Manage water quality at the SESRO intake (ED-02) | Relocating the Abingdon STW outfall to be downstream of the intake structure, and monitoring water quality at the intake, helps prevent the abstraction of poor-quality water. This protects aquatic ecology in the reservoir by reducing the risk of harmful pollutants entering sensitive aquatic environments. | Under the terms of the DCO |
| Provision of Project Priority Areas for Biodiversity (ED-27) | The provision of areas of habitat creation, enhancement and beneficial management for nature conservation are required to provide opportunities to provide replacement habitats, deliver biodiversity net gain and reinforce landscape connectivity for the species dependent upon these habitats. | Under the terms of the DCO |
| Construction stage surface water management (ED-41) | Surface water is collected, treated, and discharged at controlled rates to maintain the local water balance. This protects aquatic ecology by preventing changes in flow regimes and water quality that could harm aquatic habitats. | CoCP |
| Designated 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 |
| Measures to minimise new watercourse crossings (ED-51) | The design avoids new watercourse crossings where possible and uses bridge structures or where appropriate, oversized culverts to maintain flow and habitat continuity (appropriately designed and installed to ensure migration routes for key species and functional groups are maintained or improved). This benefits aquatic ecology by reducing habitat fragmentation and preserving natural hydromorphological processes. | Under the terms of the DCO |
| Standard good practice measures to reduce the impacts to surface and | Implementing standard good practice measures for drainage (e.g. by constructing drainage systems early), pollution control (e.g. installing drainage shut off valves), and watercourse crossings (e.g. sizing them appropriately based on annual flood probability)minimises disruption to hydrology | CoCP |

| Embedded design mitigation or standard good practice measure (unique commitment ID) | Purpose of mitigation measure | Indicative securing mechanism |
|---|---|---|
| groundwater resources (SGP-02) | and water quality. This safeguards aquatic ecology by preserving flow regimes, habitat continuity, and water conditions essential for aquatic life. | |
| Standard good practice measures for works within or adjacent to waterbodies (SGP-03) | These measures aim to control pollution (e.g. by removing material from runoff pathways), sedimentation (e.g. undertaking construction during periods of low flow to reduce risk of scour and erosion), and hydrological disruption during works near waterbodies (e.g. through the use of watercourse buffers). This protects aquatic ecology by maintaining water quality, flow conditions, and habitat continuity during construction. | CoCP |
| Control and management of foul water (SGP-04) | Proper foul water management (e.g. via temporary foul drainage facilities) prevents untreated sewage from entering the environment during construction. This safeguards aquatic ecology by avoiding contamination that could harm aquatic organisms and degrade habitats. | CoCP |
| Managing construction works within flood zones (SGP-05) | Flood risk management during construction (e.g. avoiding placement of site compounds or materials within active floodplains) helps prevent site runoff and disruption to natural floodplain functions. This supports aquatic ecology by maintaining stable hydrological conditions and reducing the risk of pollution during flood events. | CoCP |
| Standard good practice measures for managing ecology impacts (SGP-06) | These measures (such as specific placement of fencing/barriers, appropriate watching briefs, covering excavations overnight and using construction by-products to enhance mitigation), aim to avoid or reduce ecological harm during construction through planning, training, monitoring, and habitat reinstatement. This supports aquatic ecology by protecting aquatic habitats, enabling species relocation, and ensuring continuity of ecological function during and after construction. | CoCP |
| Timing of construction works to minimise ecological impacts (SGP-07) | Construction activities are scheduled to avoid sensitive periods for species and habitats. This reduces disturbance to aquatic ecology by protecting life cycles and minimising disruption to aquatic organisms. | CoCP |
| Standard good practice measures for controlling and treating INNS (SGP-08) | INNS control measures (such as bio-security protocols and restrictions on vehicular movement) are implemented to prevent the spread of invasive species and associated pathogens. This protects aquatic ecology by maintaining the integrity of native aquatic species and communities. | CoCP |
| Apply measures including Best Practicable Means to | Measures (such as quieter piling techniques and temporary screening bunds) will reduce construction noise and vibration effects at nearby receptors. This will include for | CoCP |

| Embedded design mitigation or standard good practice measure (unique commitment ID) | Purpose of mitigation measure | Indicative securing mechanism |
|---|---|---|
| reduce construction noise and vibration (SGP-25) | example, consideration of quieter piling techniques where practicable, and timing of works, to reduce disturbance to aquatic species. | |
| Design of temporary crossings during construction to maintain function and integrity of watercourses (SGP-35) | Temporary crossings are designed to preserve flow, sediment transport, and species movement. This ensures aquatic ecology is maintained by avoiding fragmentation and disruption of aquatic habitats. | Under the terms of the DCO |
| Protection of riparian zone during construction (SGP-46) | Exclusion zones (e.g. buffer strips) are established along retained watercourses to protect riparian habitats from construction disturbance. This supports aquatic ecology by preserving buffer zones that contribute to water quality, shading, and habitat complexity. | CoCP |
| Reduce light spill from construction (SGP-51) | Lighting is carefully controlled (e.g. via temporary shieling and using minimum lux levels) to reduce unnecessary illumination and avoid light pollution. This protects aquatic ecology by minimising disruption to light-sensitive aquatic species and maintaining natural behavioural patterns. | CoCP |

Table 6.11 Operation: Relevant embedded design mitigation and standard good practice measures, their purpose and securing mechanisms

| Embedded design mitigation or standard good practice measure (unique commitment ID) | Purpose of mitigation measure | Indicative securing mechanism |
|---|---|---|
| Provision of Project Priority Areas for Biodiversity (ED-27) | The provision of areas of habitat creation, enhancement and beneficial management for nature conservation are required to provide opportunities to provide replacement habitats, deliver biodiversity net gain and reinforce landscape connectivity for the species dependent upon these habitats. | Under the terms of the DCO |
| Management of aquatic INNS (ED-32) | Design features and site-wide facilities are included to inspect, clean, and prevent the spread of aquatic invasive species. This helps safeguard aquatic ecology by reducing the risk of invasive species colonising and disrupting aquatic ecosystems.<br><br>Measures will include management provisions across the site to promote biosecurity and reduce the risk of spreading | Under the terms of the DCO |

| Embedded design mitigation or standard good practice measure (unique commitment ID) | Purpose of mitigation measure | Indicative securing mechanism |
|---|---|---|
| | INNS and pathogens as a consequence of the Project. Measures may include, but are not limited to, washdown facilities for boats, angling dip tanks and stations for boot cleaning, and facilities for the inspection and cleaning of pipework/river tunnel for the removal of non-native mussel species (includes the provision of an intermediate shaft along the river tunnel). | |
| Design and maintenance of reservoir infrastructure to reduce effects on aquatic ecology (ED-37) | Reservoir infrastructure is designed to maintain flow conditions and prevent harm to species such as eels through compliant screening and maintenance. This supports aquatic ecology by preserving habitat quality and enabling safe species movement. | Under the terms of the DCO |
| Operation stage surface water management (ED-42) | To manage and maintain water quality and flows during operation which may affect aquatic ecology receptors. | 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 |
| Operational management of surface and groundwater quality and quantity at the Water Treatment Works (SGP-36) | Operational controls (such as routine maintenance and inspection) for chemical storage and water quality monitoring ensure compliance with safety and environmental standards. This protects aquatic ecology by preventing contamination of water sources that support aquatic habitats. | Requirement of existing legislation |

## 6.9 Preliminary assessment of likely significant effects

### Introduction

6.9.1 This section summarises the findings of the preliminary assessment of effects for aquatic 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 aquatic ecology is applied (these are noted in Table 6.10 and Table 6.11 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.

6.9.2 As noted in paragraphs 6.1.5 and 6.1.6, 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. The next steps for the Aquatic ecology assessment, including further exploration of relevant additional mitigation, are set out in Section 6.10: Next steps.

6.9.3 Appendix 6.2: Preliminary assessment of effects for Aquatic ecology, sets out the preliminary assessment of effects, receptor by receptor, for construction and operation 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 6.10: Next steps)

6.9.4 Surveys undertaken to date indicate that the range of aquatic habitats and species likely to be present within the draft Order limits is typical of the River Thames and its tributaries in this area.

6.9.5 European eel and Priority River Habitat have been identified as of 'very high' sensitivity. Due to the sensitivity of these receptors, it is therefore more likely that they will experience significant effects, if they are found to be present.

## Summary of likely significant construction effects

6.9.6 This section summarises the construction effects that are initially anticipated to be 'significant' through the preliminary assessment of effects for aquatic ecology. It pulls out the key potential causes and receptors affected.

### *Key potential causes of effects*

6.9.7 Chapter 2: Project description explains the construction components and activities for the Project. Key effects on aquatic ecology may result from the following:

- The diversion of two watercourses within the draft Order limits, has the potential to cause effects on aquatic ecology receptors known to be present within the watercourses to be removed.
- In addition, where construction works interact with the existing water environment, there are key activities which may result in effects. Excavations, dewatering, tunnelling, below ground works and watercourse crossings all risk affecting the water balance and water quality of waterbodies in the catchments within the study area, which may subsequently cause effects to aquatic ecology habitats and species.
- The construction of the intake/outfall structure on the River Thames and associated infrastructure also risks causing effects on the water environment and subsequently affecting aquatic ecology in the River Thames.

*Key likely significant construction effects*

6.9.8 The likely significant construction effects on aquatic ecology receptors are summarised below and provided in full in Appendix 6.2: Preliminary assessment of effects for Aquatic ecology.

- Likely significant adverse construction effects have been identified in relation to the watercourse diversions. It is anticipated that the Project may result in temporary adverse effects on aquatic species and habitats in the Ock catchment, when the existing watercourses are removed and flow is diverted into the proposed new channels. There is a risk of adverse effects from habitat loss, and severance whilst the new channels establish themselves, this could affect the distribution and composition of aquatic species and communities in the catchment. However, this effect will be temporary, and it is anticipated that within two growing seasons the aquatic ecology receptors will have re-established in the diversion channels
- General construction activities, such as excavations and dewatering may cause changes in the surface water / groundwater interactions, altering water levels and flow pathways and potential for introducing contaminants into the aquatic environment within the Ock catchment, causing pollution, which may lead to likely significant adverse effects on water quality, and therefore aquatic ecology in the catchment.
- There is potential for INNS to be introduced or spread during construction works, through plant and vehicle movements, import or export of soils and other material, by contractors, staff or visitors, and on equipment and PPE. Potential spread of INNS may result in likely significant effects on macroinvertebrates in the River Thames and part of Little Wittenham Site of Special Scientific Interest downstream adjacent to the River Thames.
- Aquatic species and communities could be disturbed, injured or killed during construction works in both the Ock and River Thames catchments. This includes, but is not limited to, construction activities to divert and realign watercourses around the reservoir location, as well as disturbance caused by noise and vibration from construction activities, including piling. Such disturbance could cause direct damage, a reduction in feeding success, and fitness and breeding success, and consequently a loss in abundance and diversity through time.
- In addition to the potential significant adverse effects resulting from the watercourse diversions, likely significant adverse effects have been identified on aquatic ecology receptors in the River Thames. In the River Thames, modifications to river banks and channels associated with erosion protection, flood compensation (eastern bank), and

the intake/outfall structure are anticipated to result in localised loss of marginal habitat for macroinvertebrates, fish, eels, birds and riparian mammals. It will also reduce habitat availability for plants.

### Summary of likely non-significant construction effects

6.9.9 This section summarises the justification for construction effects that are initially anticipated to be 'non-significant' through the preliminary assessment of effects for aquatic ecology receptors. In particular, it pulls out the key embedded design mitigation and standard good practice mitigation that will be applied and are anticipated to reduce certain adverse effects to be non-significant.

6.9.10 The preliminary assessment of effects has identified the risk of adverse effects on aquatic ecology receptors from changes in river flows and water levels, habitat loss / gain and/or severance, species disturbance, injury or mortality and the introduction / spread of INNS. However, with the implementation of standard good practice measures to reduce the impacts on surface water (which will minimise changes in flow volumes, level and water quality), and standard good practice measures for managing ecology impacts (likely to include, for example, fish translocation, method statements for pollution prevention, and protected species licenses), effects are not anticipated to be significant. The categorisation of significance is dependent on the sensitivity of the ecological receptor.

6.9.11 Furthermore, construction works will be programmed / timed to take account of ecological good practice guidance, as far as practicable, to avoid sensitive periods for relevant species. Also, standard good practice measures for the treatment and control of INNS will be implemented during construction activities.

6.9.12 All standard good practices measures will be implemented in accordance with the biodiversity section of the draft CoCP (Appendix 2.1: Draft Code of Construction Practice).

### Summary of likely significant operation effects

6.9.13 This section summarises the operation effects that are initially anticipated to be 'significant' through the preliminary assessment of effects for aquatic ecology. It pulls out the key potential causes and receptors affected.

**Key potential causes of effects:**

6.9.14 Chapter 2: Project description explains the operation components and activities for the Project. Key effects on aquatic ecology receptors may result from the following:

- During the operation of the Project, the existence of the reservoir and its interaction with the River Thames risk causing effects on aquatic ecology receptors. Specifically, the abstraction and discharge regime, as well as the periodic emergency drawdown testing, will risk causing changes to the flows, levels and water quality in the River Thames downstream, which will alter the conditions for aquatic species and habitats.
- Within the Ock catchment, the existence of the new watercourse diversions, the new section of the Wilts and Berks Canal, Project PABs, and recreational lakes are all anticipated to cause effects on aquatic ecology.

*Key likely significant operation effects*

6.9.15 The likely significant operation effects on aquatic ecology receptors are summarised below and provided in full in Appendix 6.2: Preliminary assessment of effects for Aquatic ecology.

- Once the Project is operational, it is anticipated that there will be some likely significant, long-term, beneficial effects on aquatic ecology receptors. Initial analysis of water quality conditions in the River Thames downstream of the reservoir outfall indicates that water quality will improve as a result of the Project, which will likely be beneficial to aquatic ecology receptors in the River Thames catchment, including receptors in part of Little Wittenham Site of Special Scientific Interest. The determination of whether effects are significant for individual receptors depends on the sensitivity of each.
- The Project will provide at least 10 % Biodiversity Net Gain, including area habitat (lakes and ponds) and linear watercourses (rivers, streams and ditches) which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic communities and providing likely significant long-term beneficial effects. The habitats which are anticipated to deliver the greatest benefit to aquatic ecology include the reservoir (incorporating floating islands and lagoons), recreational lakes, ponds, watercourse diversions, ditches, and canals. Furthermore, the proposed watercourse diversions aim to not only replace the existing watercourse network but also improve upon it.
- However, taking a precautionary approach, the operation of the intake / outfall structure on the River Thames, as well as releases from SESRO and emergency draw-down testing, may result likely significant adverse effects as a result of increased fish (and potentially eel) impingement/entrainment (and potential mortality) relative to existing baseline conditions. Embedded mitigation already includes 2mm fish screens and no abstractions below Q50, which will assist in minimising effects. Further studies will be completed to inform the ES to understand the level of risk these Project components may have on fish and eel populations on the River Thames, which will inform the design of additional mitigation measures.
- In addition, aquatic habitats on the River Thames are at risk of being affected by INNS introduction, spread and/or proliferation. Although INNS are already known to be present and spreading within watercourses in the River Thames catchment, it is possible that the reservoir may become colonised by INNS, which may lead to INNS subsequently being re-released into the River Thames. INNS may also be spread to watercourses and waterbodies through the planned recreational activities included in the Project. The extent to which other watercourses and waterbodies may be affected is uncertain, and further study to better understand the extent of these risks is being undertaken.

6.9.16 Other factors which may lead to likely significant effects include changes in flow/level of the River Thames, associated with the abstraction and release of water to and from SESRO (further modelling to understand these impacts is being conducted); Direct habitat loss and /or severance associated with the placement of abstraction and discharge infrastructure and associated scour protection works within the River Thames (for which mitigation is being developed); Changes in community structure/function caused by primary productivity changes (further modelling and surveys are being undertaken to better understand this risk), and changes to barrier porosity and the function of existing fish

passes, for which a review of previous study will be undertaken (informed by updated modelling data).

### Summary of likely non-significant operation effects

6.9.17 This section summarises the justification for operation effects that are initially anticipated to be 'non-significant' through the preliminary assessment of effects for aquatic ecology. In particular, it pulls out the key embedded design mitigation and standard good practice mitigation that will be applied and are anticipated to reduce certain adverse effects to be non-significant.

6.9.18 Similarly to the likely significant operation effects, it is anticipated that there will be some likely non-significant, long-term, beneficial effects on aquatic ecology receptors from the creation of new habitats. This will include lakes and ponds, rivers, streams and ditches which will include creation or improvements of extensive areas of aquatic habitat supporting aquatic communities and providing long-term beneficial effects. Furthermore, initial analysis of water quality conditions in the River Thames downstream of the reservoir outfall indicates that water quality will improve, which will likely be beneficial to aquatic ecology receptors in the River Thames catchment. The categorisation of significance is dependent on the sensitivity of the ecological receptor.

6.9.19 It is anticipated that there will be adverse effects on aquatic ecology receptors from changes in water flows / levels and water quality, habitat loss / severance and the introduction and spread of INNS. However, these are not anticipated to be significant due to the implementation of embedded design measures, including the provision of the Project PABs, the design and maintenance of the reservoir infrastructure to reduce effects on aquatic ecology. There will also be careful design to ensure protected sites within the draft Order limits are integrated into the site plan and Project PABs, which will either result in the retention or where possible enhancement. In particular, there will be no reduction in footprint of protected sites and appropriate planning of drainage systems from hydrologically connected infrastructure to ensure that water quality and quantity in aquatic habitats does not deteriorate.

6.9.20 In relation to the sensitivity of the receptor, and similar to the possible significant effects outlined above, other factors which may lead to likely significant effects include changes in community structure/function caused by primary productivity changes (further modelling and surveys are being undertaken to better understand this risk), and changes to barrier porosity and the function of existing fish passes, for which a review of previous study will be undertaken (informed by updated modelling data).

## 6.10 Next steps

6.10.1 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.

6.10.2 The next steps anticipated to be undertaken in relation to the Aquatic ecology assessment prior to completion of the ES and submission of the DCO application are explained below.

### Further exploration of additional mitigation

6.10.3 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 Aquatic ecology assessment is noted against relevant likely significant effects in Appendix 6.2: Preliminary assessment of effects for Aquatic ecology. All additional mitigation that has been identified in relation to the Aquatic ecology assessment to date is listed below in Table 6.1212 along with a description of what each measure entails. Each measure has a unique Additional Mitigation ID to enable cross reference between Appendix 6.2: Preliminary assessment of effects for Aquatic ecology and Table 6.1212. 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 6.1212 Additional mitigation identified to date in relation to the Aquatic ecology assessment

| Additional mitigation ID | Additional mitigation name | Description of additional mitigation measure |
|---|---|---|
| AM-17 | Measures to manage and protect water flows in the watercourses | Measures are being explored to manage and protect water flows within the River Thames during water abstraction and augmentation. Example measures may include:<br>- 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.<br>- 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-19 | Measures to offset any residual effects on water quality within the Ock Catchment | Catchment or point source measures could be developed to offset any residual effects on water quality within the Ock Catchment (e.g. the lowermost Childrey Brook, Letcombe Brook to the upper reaches of the Cow Common Brook). This may include exploring opportunities to change land use such as modifications to agricultural practices, changes to point source loads and/or development of nature based solutions for pollution mitigation (e.g. reed beds). |

| Additional mitigation ID | Additional mitigation name | Description of additional mitigation measure |
|---|---|---|
| AM-20 | Measures to reduce effects on aquatic ecology during operation | Where practicable, example measures to reduce adverse ecological effects during reservoir operation could include:<br>- 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.<br>- Access management along diverted watercourses.<br>- Sensitive lighting design along new river corridors and reservoir.<br>- Consideration of the mesh screen size at the intake structure to reduce risk of juvenile/larval fish entrainment at intake.<br>- 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.<br>- Consideration of the outfall design and discharge operation to reduce risk of fish attraction to the outfall.<br>- 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.<br>- 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-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:<br>- The aeration of waterbodies<br>- Planting vegetation<br>- Silt removal<br>- Biomanipulation techniques and circulation measures<br>- Use of additional chemicals to manage water quality in the event algal load increases. |
| AM-49 | Measures to reduce INNS dispersal resulting from abstraction and discharge | Additional mitigation is likely to be required to reduce INNS transfer into and out of the reservoir via the intake and outfall. The extent of practicable mitigation is to be determined and will be informed by CIRIA C811 and other INNS specific technical guidance as well as further study and design development ahead of the ES. Measures are likely to include a roadmap outlining seasonal abstraction controls, screening and monitoring protocols for INNS management and plans to reduce entrainment of juvenile/larval fish and INNS (see also AM-20). |

| Additional mitigation ID | Additional mitigation name | Description of additional mitigation measure |
|---|---|---|
| AM-75 | Species / habitat specific mitigation strategy | 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. |

### Other next steps

6.10.4 Other steps that are continuing or are planned to be undertaken to support the Aquatic 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:

- Undertake detailed baseline ecological surveys for all receptors scoped into assessment in order to develop a thorough and consistent baseline to: a) inform the assessment of sensitivity of individual receptors or receptor groups, b) inform the evaluation of potential impacts, and c) develop and inform the assessment of the effectiveness of additional mitigation measures.
- Undertake further data analysis and assessment to address uncertainty regarding the magnitude of impacts from the Project. This will include, but is not limited to updates to water quality and flow modelling within the aquatic ecology study area; and further detailed risk assessment regarding INNS.
- Carry out detailed assessment following the methodology set out in Section 6.4: 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 6.4.2.
- Engagement with regulators and stakeholders to inform ongoing survey approaches and findings; the development of mitigation (for example in relation to INNS, fish screens, and translocations of species and functional groups) and enhancement opportunities; and the emerging results of assessments.
- Engagement with relevant stakeholders on updating the strategy for managing the recreational lakes proposed by the Project, particularly in relation to fisheries management and fish stocking.

# References


Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Version 1.2. CIEEM. Accessed February 2025. https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf

Chartered Institute of Ecology and Environmental Management (2024). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.3. CIEEM. Accessed January 2025. https://cieem.net/wp-content/uploads/2018/08/EcIA-Guidelines-v1.3-Sept-2024.pdf

Countryside and Rights of Way Act 2000. Accessed February 2025. https://www.legislation.gov.uk/ukpga/2000/37/contents

Department for Environment, Food & Rural Affairs (Defra) (2025) National Policy Statement for water resources infrastructure. Accessed August 2025. https://www.gov.uk/government/publications/national-policy-statement-water-resources-infrastructure

Defra (2025). Multi-Agency Geography Information for the Countryside (MAGIC). Accessed January 2025. https://magic.defra.gov.uk/

East Hanney Parish Council (2021). East Hanney Neighbourhood Plan 2021–2031. Accessed February 2025. https://www.whitehorsedc.gov.uk/wp-content/uploads/sites/3/2023/04/East-Hanney-Neighbourhood-Plan.pdf

Eels (England and Wales) Regulations 2009. Accessed February 2025. https://www.legislation.gov.uk/uksi/2009/3344/contents

Environment Act 2021. Accessed February 2025. https://www.legislation.gov.uk/ukpga/2021/30/contents

Environment Agency (2009). Thames Catchment Flood Management Plan. Accessed February 2025. https://assets.publishing.service.gov.uk/media/5a7c7f4fed915d6969f454a4/Thames_Catchment_Flood_Management_Plan.pdf

Environment Agency (2022). Thames River Basin District Management Plan: updated 2022. Accessed February 2025. https://www.gov.uk/guidance/thames-river-basin-district-river-basin-management-plan-updated-2022

Environment Agency (2024). Ecology and Fish Data Explorer. Accessed August 2024. https://environment.data.gov.uk/ecology/explorer/

Environment Agency (2025a) Main River Map for England. Accessed August 2024. https://www.gov.uk/government/collections/main-river-map-for-england-proposed-changes-and-decisions#main-river-map

Environment Agency (2025b) Salmonid Main Rivers Map. Accessed August 2024. https://assets.publishing.service.gov.uk/media/5a8186c0e5274a2e8ab5476f/LIT10363_Salmonid_main_rivers_map.pdf

Environmental Protection Act 1990. Accessed February 2025. https://www.legislation.gov.uk/ukpga/1990/43/contents

HM Government (2018). A Green Future: Our 25 Year Plan to Improve the Environment. https://assets.publishing.service.gov.uk/media/65fd713d65ca2f00117da89e/CD1.H_HM_Government_A_Green_Future_Our_25_Year_Plan_to_Improve_the_Environment.pdf

Invasive Alien Species (Enforcement and Permitting) Order 2019. Accessed February 2025. https://www.legislation.gov.uk/uksi/2019/527/contents

Lyons, J., Hateley, J., Peirson, G., Eley, F., Manwaring, S., and Twine, K. (2021) 'An Assessment of Hydroacoustic and Electric Fishing Data to Evaluate Long Term Spatial and Temporal Fish Population Change in the River Thames, UK'. Water, 13(20), 2932. Accessed February 2025. https://doi.org/10.3390/w13202932

Ministry of Housing, Communities & Local Government (2024). National Planning Policy Framework (NPPF): Paragraphs 180–188. Accessed February 2025. https://www.gov.uk/government/publications/national-planning-policy-framework--2

Natural England (2023) Data on Chalk Rivers. Accessed: August 202 https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::chalk-rivers-england/explore

Natural England (2024a) Data on Priority Rivers. Accessed: August 2024 https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::priority-river-habitat-rivers-england/about

Natural England (2024b) Data on Priority River Habitat – Headwater Areas (England). Accessed: August 2024.https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::priority-river-habitat-headwater-areas-england/about

Natural Environment and Rural Communities (NERC) Act 2006. Accessed February 2025. https://www.legislation.gov.uk/ukpga/2006/16/contents

Ordnance Survey (2025). Ordnance Survey maps. Accessed February 2025. https://maps.nls.uk/os/

Oxford City Council (2020). Oxford Local Plan 2036. Accessed February 2025. https://www.oxford.gov.uk/local-plan/local-plan-2016-2036

Oxfordshire County Council (2024). Draft Local Nature Recovery Strategy (LNRS). Accessed February 2025. https://www.oxfordshire.gov.uk/residents/environment-and-planning/local-nature-recovery-strategy

Oxfordshire County Council, Berkshire Buckinghamshire and Oxfordshire Wildlife Trusts and Thames Valley Environmental Records Centre (2014). Biodiversity and Planning in Oxfordshire. Accessed February 2025. https://www.oxfordshire.gov.uk/sites/default/files/file/countryside-access/wholedocument.pdf

Planning Inspectorate (2018). Nationally Significant Infrastructure Projects: Advice Note Nine – Rochdale Envelope. Accessed June 2025. https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope

Planning Inspectorate (2024). Scoping Opinion: Proposed South East Strategic Reservoir Option (SESRO). Accessed January 2025. https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/WA010005/WA010005-000017-SESRO%20Scoping%20Opinion%202017%20EIA%20Regs%20FINAL.pdf

Salmon and Freshwater Fisheries Act 1975. Accessed February 2025. https://www.legislation.gov.uk/ukpga/1975/51/contents

South Oxfordshire District Council (2020). Joint Local Plan 2011–2035.

South Oxfordshire District Council and Vale of White Horse District Council (2024). Joint Local Plan 2041 (Publication version). Accessed February 2025. https://www.whitehorsedc.gov.uk/vale-of-white-horse-district-council/planning-and-development/local-plan-and-planning-policies/local-plan-2041/

Thames Water (2024a). South East Strategic Reservoir Option: Environmental Impact Assessment Scoping Report. Accessed January 2025. https://nsip-documents.planninginspectorate.gov.uk/published-documents/WA010005-000010-SESRO%20EIA%20Scoping%20Report.pdf

Thames Water (2025). Biodiversity and Heritage Policy. Policy no. POL014. Accessed June 2025. https://www.thameswater.co.uk/media-library/qfnnx4mb/biodiversity-and-heritage-policy.pdf

Thames Water (2025). South East Strategic Reservoir Option (SESRO) – Non-statutory Public Consultation 2024 - Our Statement of Response. Accessed May 2025. https://thames-sro.co.uk/media/mpicfw51/sesro-statement-of-response-to-our-non-statutory-public-consultation-2024.pdf

The Conservation of Habitats and Species Regulations 2017. Accessed February 2025. https://www.legislation.gov.uk/uksi/2017/1012/contents/made

The Thames Conservancy Act 1932. Accessed February 2025. https://www.legislation.gov.uk/ukla/1932/37/contents/enacted

Vale of White Horse District Council (2016). Local Plan 2031 Part 1. Accessed February 2025. https://www.whitehorsedc.gov.uk/wp-content/uploads/sites/3/2020/10/Local-Plan-2031-Part-1.pdf

Vale of White Horse District Council (2019). Local Plan 2031 Part 2. Accessed February 2025. https://www.whitehorsedc.gov.uk/wp-content/uploads/sites/3/2019/07/Lo-res-Local-Plan-2031-Part-2-LPP2PS.pdf

Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Accessed February 2025. https://www.legislation.gov.uk/uksi/2017/407/contents

Wildlife and Countryside Act 1981 (as amended). Accessed February 2025. https://www.legislation.gov.uk/ukpga/1981/69/contents


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