



South East Strategic Reservoir Option
Preliminary Environmental Information Report

Chapter 4 - Approach to the environmental assessment

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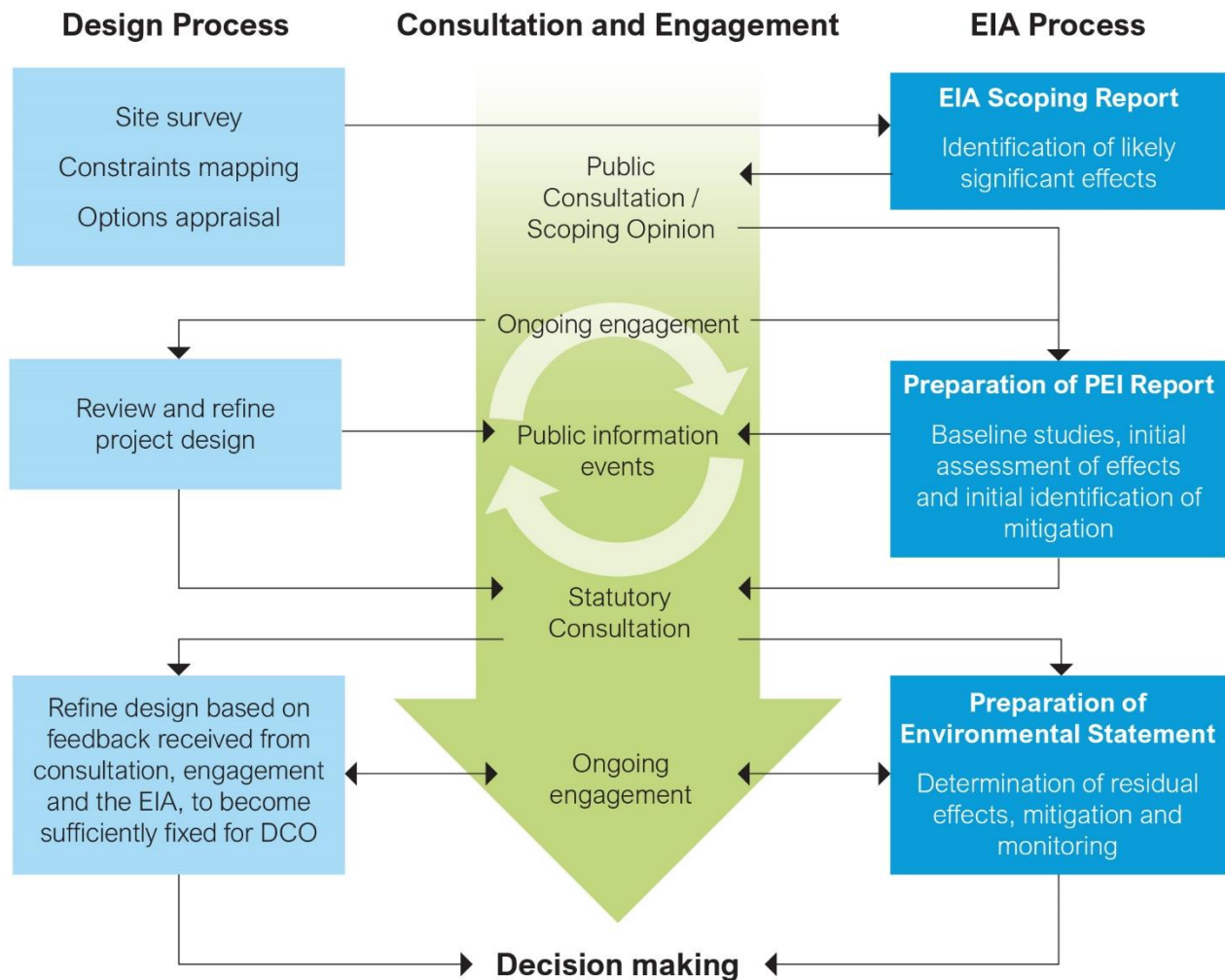
4 Approach to the environmental assessment

4.1 Introduction

- 4.1.1 The purpose of Environmental Impact Assessment (EIA) is to protect the environment by ensuring that decision makers, when deciding whether to grant consent for a project which is likely to have significant effects on the environment, do so in the full knowledge of the likely effects and take this into account in the decision-making process (Department for Levelling Up, Housing and Communities, 2020).
- 4.1.2 EIA is a systematic process that identifies the key environmental effects of a development and proposes ways that these effects can be avoided, reduced or managed. EIA is a requirement of UK law for certain developments that are likely to cause significant environmental effects. 'Significant' effects are those that are 'sufficiently great or important to be worthy of attention; noteworthy'.
- 4.1.3 For the Project the applicable legislation is the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations 2017). Schedule 1.15 of the EIA Regulations 2017, states that '*dams and other installations designed for the holding back or permanent storage of water, where a new or additional amount of water held back or stored exceeds 10 million cubic metres*' constitute 'Schedule 1 development', requiring an EIA. The Project would deliver a new reservoir with an operational capacity of 150 million cubic metres – fifteen times greater than the threshold for a Schedule 1 development.
- 4.1.4 Three main EIA documents are produced by the Applicant as part of the pre-application and application process for developments requiring a development consent order (DCO) under the Planning Act 2008 (as amended). These are:
- The EIA Scoping Report: The EIA Scoping Report sets out the proposed scope and assessment methodologies to be used during the EIA. The EIA Scoping Report for the Project (Thames Water, 2024a) was issued to the Planning Inspectorate (PINS) and consultation bodies in August 2024 in order to gain its Scoping Opinion (Planning Inspectorate, 2024). It is available to review on the PINS national infrastructure website: [South East Strategic Reservoir Option \(SESRO\) - Project information](#)
 - The Preliminary Environmental Information (PEI) Report: The PEI Report (this document) is produced as a key consultation tool for statutory consultation during the pre-application stage. It provides an update on the ongoing EIA - including consideration of the PINS Scoping Opinion (Planning Inspectorate, 2024), consultation and engagements, and the evolving design. The PEI Report documents the preliminary assessment of effects to provide the information reasonably required for consultees, including the public, to develop an informed view of the likely significant environmental effects of the Project, as understood at this stage. The PEI Report is not a draft of the final key document, the Environmental Statement (ES).
 - The ES: The ES will present the results of the EIA undertaken. It will identify the likely significant effects that would result if the Project were implemented, and any proposed mitigation to reduce those significant effects. The ES will be submitted as part of the application for development consent and will be considered during the decision-making process.

4.1.5 Plate 4.1 summarises the EIA and design processes for developments requiring a DCO under the Planning Act 2008, and shows how these are refined through consultation and engagement, as well as baseline studies and preliminary assessment of effects and mitigation.

Plate 4.1 Summary of the EIA process



4.1.6 This chapter presents the key elements of the EIA process that have been used to inform the preliminary assessment of effects documented in this PEI Report. An overview is provided of the following:

- Consultation and engagement
- The scope of the assessment
- The assessment methodology including the assessment criteria, approach to defining the current and future baseline environment
- The approach to limitations and uncertainties
- The approach to mitigation
- The approach to consideration of complex and cumulative effects
- Consideration of transboundary effects

- Use of artificial intelligence (AI)

- 4.1.7 The EIA Regulations 2017 set out the environmental ‘aspects’ that need to be considered during the EIA process. The preliminary assessment of effects is reported in PEI Report Chapter 5: Water environment through to Chapter 20: Cumulative effects, that cover these environmental aspects. Each of these chapters provides aspect-specific information on relevant legislation policy and guidance, consultation and engagement, effects scoped into the assessment, the assessment methodology, study area and baseline, parameters, assumptions and limitations, embedded design mitigation and standard good practice, preliminary assessment of likely significant effects, additional mitigation, and next steps.
- 4.1.8 This PEI Report has been prepared by competent experts who hold relevant qualifications and experience in their technical area. Appendix 4.2: Competent expert evidence summarises the relevant expertise, qualifications and experience of the key competent persons responsible for the preparation of this PEI Report.

4.2 Consultation and engagement

- 4.2.1 Stakeholder consultation and engagement are a key part of the preparation of DCO applications and the EIA process. Consultation is a formal process that seeks formal feedback on the Project in line with the Applicant’s duties under sections 42 and 49 of the Planning Act 2008. Engagement is a more informal provision of information and discussion. 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 ensure mitigation measures are in place to avoid, prevent and reduce likely environmental effects (the approach to mitigation is provided in Section 4.6: Approach to mitigation). Details of proposed embedded design mitigation and standard good practice mitigation measures relevant to the aspect assessments are provided in the relevant aspect chapters.
- 4.2.2 To date, key stakeholder engagement on the Project has comprised:
- Engagement on the needs case: This has involved engagement on the Water Resources South East regional plan (Water Resources South East, 2023) and Thames Water’s revised draft Water Resources Management Plan (Thames Water, 2024b). Consultation on the revised draft Water Resources Management Plan was undertaken from 13 December 2022 for 14 weeks to 21 March 2023 seeking feedback from customers, stakeholders and regulators on the proposals. The consultation included the identification of SESRO as one of the preferred options to meet the water resources need, amongst a range of other solutions and policies. This identified the size of the Project in water resources planning terms and its proposed location, but no assessment was undertaken, or decisions made, on the preferred configuration of the Project, including related water infrastructure and non-water infrastructure. The consultation on the Water Resources Management Plan received 1,687 responses from a wide range of local, regional and national stakeholders.
 - Engagement through the Regulators’ Alliance for Progressing Infrastructure Development (RAPID¹): This includes gated report submissions to Ofwat, the

¹ Ofwat established RAPID to ensure a smooth regulatory path for strategic water infrastructure like joint reservoir projects and inter-regional water transfers.

Environment Agency and the Drinking Water Inspectorate. Consultation and engagement with a range of stakeholders and the public has been carried out since RAPID Gate 1 (2020) and the Project is now between Gates 3 and 4.

- Non-statutory public consultation from 5 June to 28 August 2024: This included a programme of seven consultation events in locations near to the proposed reservoir site to gather feedback from local landowners, residents, businesses, authorities, statutory bodies, and others impacted by or interested in the project. In addition, information about the project, including both technical and non-technical aspects, was made available on the Thames Water website, as hard copies at events and on request. More than 1,200 people attended, and nearly 1,600 responses were received, which enabled the Applicant to understand the priorities of those groups and consider how this would shape the proposal of the Project. The feedback received has been incorporated into the development of the Project. Formal responses to this non-statutory consultation feedback have been provided within the Statement of Response (Thames Water, 2025), which also provides an overview of the non-statutory public consultation.
- Consultation on the EIA Scoping Report: The EIA Scoping Report (Thames Water, 2024a) was issued to PINS on 28 August 2024. PINS provided its Scoping Opinion (Planning Inspectorate, 2024a) on the scope of the EIA on 8 October 2024, which included feedback from consultation bodies that it formally consulted.
- Public information events in the summer of 2025: These events were held at four locations in the local area to share changes to the Project proposals based on stakeholder feedback, ongoing investigations and design work. More than 600 people attended.
- Engagement with key stakeholders on environmental aspects: Ongoing engagement has been undertaken through Technical Liaison Groups (TLG), in particular with the Environment Agency, Natural England, Historic England and local planning authorities, North Wessex Downs National Landscape, Office for Health Information and Disparities (OHID), UK Health Security Agency (UKHSA), National Highways, and Network Rail.
- Technical engagement with stakeholders has been ongoing since 2021 covering approaches to the following key areas of interest to inform the EIA and design process:
 - a. Engineering design
 - b. Terrestrial ecology and biodiversity net gain (BNG)
 - c. Landscape and visual amenity
 - d. Water quality
 - e. Aquatic ecology
 - f. Regulatory assessments
 - g. Historic environment
- Landowners across the draft Order limits have been identified, written to and offered individual meetings at key stages of the project, including for survey access, ahead of our public information events and for our non-statutory consultation held in the summer 2024. To support our discussions, we have produced a land and property owners' factsheet which is hosted on our project website, explaining the land survey and land purchase process. For the Autumn 2025 statutory consultation, alongside inviting landowners to our public information events, we will be hosting two dedicated events for landowners. The two sessions will be appointment-only events for landowners who

wish to talk to the lands team for the Project in more detail about it affects their property.

- 4.2.3 Further information on aspect-specific consultation and engagement undertaken to date is provided in the 'Consultation, engagement and scoping' sub-section in each of the aspect chapters of the PEI Report (i.e. Chapter 5: Water environment through to Chapter 20: Cumulative effects).
- 4.2.4 The PEI Report is part of a suite of documents which have been made available for statutory consultation on the Project and has been prepared to support consultees in developing an informed view of the potential likely significant environment effects of the Project. Throughout the development of the PEI Report, stakeholder engagement has continued to inform the EIA process.
- 4.2.5 The statutory consultation runs to 23:59 pm on 13 January 2026 to allow stakeholders the opportunity to review the proposal and provide feedback. Thames Water invites comments on the Project and the environmental issues that have been presented in the PEI Report.
- 4.2.6 Following the consultation, all comments made by stakeholders, including the regulatory authorities and affected communities, will be recorded and catalogued. Each comment will be reviewed by relevant members of the Project team and consideration will be given to the action needed to address the comment.
- 4.2.7 The comments received will also be used to produce a Consultation Report in accordance with section 37 of the Planning Act 2008. The report will state how changes have been made in response to feedback received and where this information can be found in the DCO application documentation (for example, in the Environmental Statement (ES)). It will also explain why it has not been possible to make the changes suggested, where applicable. This report will be made available on the project website and will be submitted as part of the DCO application.
- 4.2.8 The Project will continue to use feedback from consultation and engagement to proactively develop the design, refine the construction approach and continue to define the environmental baseline. These activities will inform the EIA process and provide a robust evidence base for the ES.

4.3 Scope of the assessment

EIA scoping

- 4.3.1 It should be noted that the overall benefit of Thames Water's Water Resources Management Plan (WRMP, explained in Chapter 3: Consideration of alternatives), including SESRO and T2ST, to the economy, communities and human health is recognised in terms of delivering long term reliable and resilient water supply to customers across the South East region. The EIA for the Project does not revisit these regional beneficial effects.
- 4.3.2 The EIA scoping process identified the environmental 'aspects' and 'matters' to be scoped in to the EIA and the 'receptors' that are likely to experience significant effects as a result of construction and/or operation of the Project. For clarity, these terms are defined in this document as:

- Aspects - the overarching environmental features being technically assessed in the EIA in Chapter 5: Water environment through to Chapter 20: Cumulative effects (for example, air quality and socio-economics).
- Matters - collective construction or operation effects/issues scoped into the assessment (for example, operational noise effects from traffic movements, water quality effects).
- Receptor - an element of the environment that responds to change and is the subject of an effect (for example, a particular species, a built heritage conservation area, or users of a particular road).

- 4.3.3 The scoping process is important as it aims to focus the scope of the EIA (including attention, time and resources) on the likely and significant environmental effects of the Project. Effects that are considered to be not relevant, not likely to occur, or not likely to be significant, are 'scoped out' of the assessment. Effects which are considered relevant, reasonably likely to occur, and to have the potential to be significant, are 'scoped in'.
- 4.3.4 All receptors that have been assessed within this preliminary assessment are listed in the Baseline conditions subsection of Chapter 5: Water environment through to Chapter 20: Cumulative effects. Unique area IDs have been assigned to receptors that have been spatially defined for the preliminary assessment, to indicate the spatial extent of the receptor assessed. These area IDs are then shown on corresponding figures associated with relevant aspect chapters. Nevertheless, in some instances it has not been possible or appropriate to define the spatial extent of receptors for the preliminary assessment.
- 4.3.5 The Project EIA Scoping Report was submitted to PINS on 28 August 2024 with a request for a statutory Scoping Opinion. The EIA Scoping Report set out the environmental baseline, proposed assessment methodologies, and effects proposed to be 'scoped in' and 'scoped out' of the assessment.
- 4.3.6 PINS provided and adopted its Scoping Opinion (Planning Inspectorate, 2024a) on the scope of the EIA on 8 October 2024 on behalf of the Secretary of State. The Applicant has taken the PINS Scoping Opinion into account in preparing this PEI Report, and will use it to inform which aspects and matters the ES will report on. The key points from the PINS Scoping Opinion and feedback from consultation bodies are provided in the 'Consultation, engagement and scoping' sub-section in each of the aspect chapters of the PEI Report (i.e. Chapter 5: Water environment through to Chapter 20: Cumulative effects), along with project responses explaining how these issues are being proactively addressed within the assessment. The Project responses capture the position at the time of preparation of the PEI Report and reflect the ongoing nature of the continual engagement to reach an agreed position and resolve each matter with the relevant stakeholder.
- 4.3.7 The comments relating to the EIA, where they are not specific to aspect chapters, are provided in Table 4.1 along with PINS' unique scoping opinion identification number (ID) and the Project responses.

Table 4.1 Key EIA-wide Scoping feedback for the Project

PINS Scoping Opinion ID and PINS comment	Project response
2.1.1 - Scoping Report paragraph 2.7.6 states that points of connections for utilities may extend beyond the scoping boundary following agreement with	Additional utilities connections have been identified, although some are still subject to agreement with network owners and

PINS Scoping Opinion ID and PINS comment	Project response
network owners and operators. Where this is the case, the Applicant should extend the red line boundary of the Proposed Development site to account for these connections, identify the changes in the red line boundary and their extent and determine if and how this alters the scope of the ES assessments.	operators. The draft Order limits has been extended to incorporate all utilities diversions, new connections and removals that are expected to be required. This will be confirmed within the DCO application.
2.1.2 - Scoping Report paragraph 2.7.7 states that renewable energy is proposed to enable a net zero operation and that this would require an export connection and/or energy storage on site. However, the Scoping Report does not discuss potential impacts from grid connection or energy storage options or anticipated energy generation capacity/use. Should these elements form part of the Proposed Development in the ES, the parameters for capacity and any import/export should be described, and associated likely significant effects should be assessed in the relevant aspect chapters across all phases. The ES should describe any associated mitigation measures and explain how they are secured e.g. an emergency fire management plan for battery storage systems. In the ES consideration of alternatives, this should demonstrate how environmental constraints, viability and consultation have refined options and locations.	The assessment presented in the PEI Report has considered the likely significant effects associated with renewable energy provision that is proposed as part of the Project. Battery storage is assumed to be required, although the exact size and location is being assessed as part of site wide energy strategy. The final details of this will be assessed by the EIA and reported in the ES.
2.1.3 - The Scoping Report identifies potential renewable energy options but does not specify what options are being considered. Each renewable energy option will have its own associated likely significant effects which have not been discussed or considered in the Scoping Report. The ES should assess associated likely significant effects of the option or options presented as part of the description of the Proposed Development across all phases. In the ES consideration of alternatives, this should demonstrate how environmental constraints, viability and consultation have refined options and locations.	The Project would provide renewable energy provision as described in Chapter 2: Project description. This is expected to include floating solar panels on the main reservoir waterbody, solar panels on structures (such as the T2ST WTW or potentially on canopies at car parks), ground-mounted solar panels and hydropower turbines within the pumping station. Preliminary significant environmental effects have been reported in Chapter 5: Water environment, through to Chapter 20: Cumulative effects. Chapter 3: Consideration of alternatives notes how the design has been developed to incorporate these, including consideration of environmental constraints.
2.1.4 - The Scoping Report refers to the Water Resources Management Plans (WRMP) 2019 and 2024 which identify the most feasible options for water supplies under the Water Industry Act 1991.	Chapter 3: Consideration of alternatives provides a brief overview of the WRMP process and explains how the feasibility of

PINS Scoping Opinion ID and PINS comment	Project response
However, the outcomes and conclusions of these plans are not summarised in the Scoping Report. The ES should include a high level summary of the WRMPs to demonstrate why alternative approaches were not considered to be feasible.	alternative approaches was considered as part of this process.
2.1.5 - The Scoping Report refers to the need for lighting during construction and operation, however there is limited detail regarding the type of lighting and when it might be required. The ES should describe the lighting strategy and assess significant effects on sensitive receptors from lighting during construction and operation where they are likely to occur.	The PEI Report provides further information in relation to the emerging lighting strategies for construction and operation. This information can be found in Chapter 2: Project description. The parameters for lighting noted in Chapter 2 have been used to prepare a preliminary assessment documented in Chapter 9: Landscape and visual impact assessment.
2.2.1 - The Inspectorate on behalf of the SoS has considered the Proposed Development and concludes that the Proposed Development is unlikely to have a significant effect either alone or cumulatively on the environment in a European Economic Area State. In reaching this conclusion the Inspectorate has identified and considered the Proposed Development's likely impacts including consideration of potential pathways and the extent, magnitude, probability, duration, frequency and reversibility of the impacts. The Inspectorate considers that the likelihood of transboundary effects resulting from the Proposed Development is so low that it does not warrant the issue of a detailed transboundary screening. However, this position will remain under review and will have regard to any new or materially different information coming to light which may alter that decision. Note: The SoS' duty under Regulation 32 of the EIA Regulations 2017 continues throughout the application process. The Inspectorate's screening of transboundary issues is based on the relevant considerations specified in the Annex to its Advice Page Twelve, links for which can be found in paragraph 1.0.7 above.	As effects on the environment of another European Economic Area State (transboundary effects) were agreed to be scoped out, and no material changes that might bring about new transboundary effects have been made, the PEI Report has not considered transboundary effects further.
2.2.2 - Scoping Report states in paragraphs 15.5.16 to 15.5.18 that decommissioning of the Proposed Development is not envisaged so will not be included in the EIA. The Inspectorate considers that this is a reasonable approach taking into account the information provided in the Scoping Report and the specific characteristics of the Proposed Development	Requirements for the maintenance are still being confirmed, with some preliminary information regarding maintenance noted within the Chapter 2: Project description. The consideration of the design life for key Project features has been considered within the aspect assessments where relevant.

PINS Scoping Opinion ID and PINS comment	Project response
as a whole. However, paragraphs 5.5.9 and 5.5.10 highlight the need for ongoing maintenance and replacement in line with ongoing reservoir management. The Inspectorate considers that any decommissioning associated with dismantling and replacing particular elements of the Proposed Development should be assessed in the ES.	
3.1.3 - The ES should set out how the proposed mitigation measures identified in the Scoping Report is to be secured, for example through the DCO.	A draft of the Project commitments register has been prepared as part of the PEI Report. This demonstrates how embedded design mitigation and standard good practice mitigation as considered within the assessment, is expected to be secured. The Draft commitments register will be revised to show how mitigation reported within the ES would be secured. This version will be submitted with the DCO application.
3.6.5 - The Scoping Report states that the Proposed Development requires construction activity on an operational rail line and the introduction of temporary sidings on the Great Western Rail line which would result in an increase in train movements. It is unclear from the wording of the Scoping Report whether impacts to railways are proposed to be assessed. For clarity, the ES should assess significant effects on railway infrastructure and safety during construction and operation where they are likely to occur; this should include consideration of impacts from vehicles that may utilise railway assets, such as bridges and level crossings.	At this stage, the detail of the proposed construction of the Rail Sidings and Materials Handling Facility is not sufficient to provide certainty on the number or nature of railway possessions that may be required to deliver that facility. Once there is greater certainty, effects on rail users resulting from any disruption to the rail service can be assessed and this will be reported in the ES. Matters relating to railway infrastructure and safety are not covered in the PEI Report because the design of the Project is still in development. These issues will be discussed with Network Rail as part of ongoing technical engagement and will be covered in the ES or other relevant documents in the DCO application.

Effects 'scoped in' to the assessment

- 4.3.8 The PINS Scoping Opinion agreed with all of the likely significant effects that had been proposed to be 'scoped in' to the assessment within the EIA Scoping Report, and did not recommend that any effects should instead be scoped out.
- 4.3.9 The Applicant proposed to scope out the following effects within the EIA Scoping Report, however, they have subsequently been 'scoped in' following comments provided within the PINS Scoping Opinion - the 'Consultation, engagement and scoping' sub-section in each of

the aspect chapters of the PEI Report (i.e. Chapter 5: Water environment through to Chapter 20: Cumulative effects) provides further detail:

- Effects arising from on-site renewable energy generation and associated infrastructure (this affects multiple aspect assessments).
- Effects to Great Crested Newt (*Triturus cristatus*), Natterjack Toad (*Epidalea calamita*), other amphibians and reptiles during operation (see Chapter 7: Terrestrial ecology)
- Operational effects to ancient/veteran trees (see Chapter 7: Terrestrial ecology) and Scheduled Monuments (see Chapter 8: Historic environment).
- Users of waterways and navigation infrastructure (see Chapter 12: Traffic and transport).
- Significant effects to railway infrastructure and safety (see Chapter 12: Traffic and transport for impacts to 'users' of railway infrastructure and Chapter 19: Major accidents and disasters for impacts associated with rail accidents). Table 4.2 provides justification for why effects on railway infrastructure as a receptor itself is not scoped in to the EIA.
- Construction vibration effects to flood assets (see Chapter 5: Water environment).
- Noise and vibration effects from operation of diverted 132 kilovolts (kV) (and lower height) overhead powerlines (see Chapter 14: Noise and vibration).
- Air quality effects from emissions from construction site plant and machinery, emissions from off-site traffic and odour from operational activities (see Chapter 13: Air quality).
- Vulnerability to climate change - projected changes in temperature, dry periods, precipitation, extreme events and flooding during construction (see Chapter 18: Climate resilience).
- Vulnerability to climate change - in combination climate assessment during construction (see Chapter 18: Climate resilience).
- Effects on drinking water quality during construction and operation (see Chapter 16: Human health).
- Human health environmental conditions: Climate change during construction (see Chapter 16: Human health).
- Human health Environmental conditions: air quality during operation (see Chapter 16: Human health).
- Major accidents and disasters: effects from electricity storage (operation), severe weather events (heatwaves, drought, rain, high winds) (operation), landslides/mass movements and ground instability (construction), sinkholes (construction and operation), reservoir/dam collapse (operation) (see Chapter 19: Major accidents and disasters).

4.3.10 Furthermore, since the submission of the EIA Scoping Report, further design information has become available, and the maximum area of land required to construct and operate the Project has expanded (this is defined by the draft Order limits). The increase in the extent of the draft Order limits has primarily been driven by the proposed location for potential ground-mounted solar energy infrastructure and the enhancement of existing habitats or creation of new habitats to support protected species mitigation and biodiversity net gain. In addition, design development has confirmed the proposed location for the T2ST WTW (see Chapter 3: Consideration of alternatives), expanded proposed temporary construction accesses to the six general locations identified in Figure 2.2: Construction elements, includes utilities diversions, new connections and removals anticipated to be require, and has confirmed the intention to introduce floating solar energy infrastructure on

the reservoir. The use of the Rail Sidings and Material Handling facility to export materials from the Site has been further considered. All of these design developments have been factored into the preliminary assessment of effects.

- 4.3.11 The potential ground-mounted solar energy reposition would introduce potential glint and glare effects from proposed solar panels. At this stage, no specialist glint and glare study has been undertaken because the level of design information available is too limited to enable one to be undertaken. Consideration of glint and glare within the assessment reported in Chapter 9: Landscape and visual is therefore limited to a precautionary qualitative assessment at this stage; this will be reviewed at the ES stage. The methodology used for the PEI Report assessment has been consulted upon with relevant stakeholders as reported in Chapter 9: Landscape and visual.
- 4.3.12 The increase draft Order limits has brought additional potential receptors into the study areas of the respective assessments. Specifically, effects on Local Nature Reserves have been scoped in to the assessment of effects on terrestrial ecology on a precautionary basis where these sites are close to the study area extent.
- 4.3.13 The Geology and soils assessment incorporates the assessment of operational effects on soil biomass production, supporting ecological sites of importance and soil carbon which are anticipated to be beneficial effects.
- 4.3.14 In relation to the other changes noted above, the scope of likely significant effects from the Project is considered to remain the same as reported in the EIA Scoping Report, and these changes and design development are not considered to amend the scope of the EIA.
- 4.3.15 The 'Assessment methodology' sub-section in each of the applicable aspect chapters of the PEI Report (Chapter 5: Water environment through to Chapter 20: Cumulative effects) provides further detail.

Effects 'scoped out' of the assessment

- 4.3.16 The PINS Scoping Opinion highlights the proposed environmental aspects and matters that it agrees can be scoped out of the assessment on the basis of the information provided in the EIA Scoping Report.
- 4.3.17 The PINS Scoping Opinion also states, in paragraph 1.0.4, that it is content that the receipt of the Scoping Opinion should not prevent the Applicant from subsequently agreeing with the relevant consultation bodies to scope further environmental aspects and matters out of the assessment where further information is provided to justify the approach. Where this is the case, this will be explained and justified within the ES.
- 4.3.18 Matters scoped out of the assessment are listed within Appendix 4.1: Matters scoped of the EIA.

Effects proposed to be scoped out subsequent to the PINS Scoping Opinion

- 4.3.19 Effects noted in Table 4.2 below were 'scoped in' in the PINS Scoping Opinion, but are since proposed to be scoped out based upon discussions with key stakeholders and additional design information. Further justification is provided in the relevant aspect chapters.

Table 4.2 Effects scoped in by PINS that are not proposed to be assessed in the PEI Report/ES

Aspect (and PINS Scoping Opinion ID)	Summary of PINS comment	Project response
PINS ID 3.6.5 Potential environmental effects - railway safety	The Inspectorate commented that 'the ES should assess significant effects on railway infrastructure and safety during construction and operation where they are likely to occur; this should include consideration of impacts from vehicles that may utilise railway assets, such as bridges and level crossings'.	Structures and similar physical assets cannot be considered as 'environmental receptors' as they do not 'experience' effects. Necessary information about the potential impact of construction traffic on Network Rail's assets, including principally asset protection and safety, will be provided separately to the EIA. The assessment is likely to be undertaken and presented through a suitable technical engineering / safety report, which will be presented in the ES or other relevant DCO application documents. As noted in 4.3.9 above, Chapter 12: Traffic and transport considers impacts to users of railway infrastructure and Chapter 19: Major accidents and disasters considers impacts associated with rail accidents.

4.4 Assessment methodology

Legislation, policy and guidance

- 4.4.1 The EIA Regulations 2017 provide the regulatory framework for the EIA process for applications requiring a DCO. This PEI Report has been prepared in accordance with these Regulations.
- 4.4.2 Under Section 5(1) of the Planning Act 2008, National Policy Statements (NPS) are designated by the relevant Secretary of State. These set out national policy in relation to specified descriptions of development. The NPS applicable to the Project is the National Policy Statement for Water Resources Infrastructure (Department for Environment, Food & Rural Affairs (Defra)).
- 4.4.3 Compliance of the Project with relevant policy will be documented in the DCO application and is not detailed in this PEI Report. Although the PEI Report does not provide an assessment of policy compliance, it does outline relevant legislation, policy, and guidance within the 'Legislation, policy and guidance' section of the aspect chapters, and these have been considered as part of the EIA process where applicable.
- 4.4.4 The following PINS Advice Notes have been used to inform the approach to the PEI Report:
- Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements (Planning Inspectorate, 2020)
 - Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018)

- Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Planning Inspectorate, 2024b)
- Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process (Planning Inspectorate, 2024c)

4.4.5 Alongside the EIA process, several supporting assessments will be undertaken and included as part of the application for development consent. Some of these assessments will form separate reports, either corresponding to separate legislative or good practice requirements, whilst others will be integrated in the EIA process. These other assessments include for example a report to inform a Habitats Regulation Assessment to comply with the Conservation of Habitats and Species Regulations 2017, a Water Framework Directive compliance assessment report under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, a Flood Risk Assessment and an Equality Impact Assessment (EqIA), which will provide information in terms of groups with protected characteristics under the Equality Act 2010 and social inequalities. Work on supporting assessments is ongoing and the PEI Report summarises progress on these in relevant aspect chapters.

Study area

- 4.4.6 The study area for the PEI Report has been developed to reflect the current Project design and to accommodate the guidance provided in Advice Note Nine: 'Rochdale Envelope' (Planning Inspectorate, 2018 (version 3, updated March 2025)). The advice note discusses the degree of flexibility that will be considered appropriate to address uncertainties within an application for development consent under the Planning Act. The advice note states that the assessment of likely significant effects should establish relevant and reasonable parameters (i.e. assumptions) for the purposes of the assessment '*likely to result in the maximum adverse effect (the worst-case scenario) and be undertaken accordingly to determine significance*'.
- 4.4.7 The design is still evolving and continues to be informed by consultation and ongoing technical surveys and assessments. To allow design flexibility whilst ensuring a precautionary approach to the preliminary assessment documented within this PEI Report, reasonable 'worst case' parameters and assumptions about the design, construction and operation of the Project have been established. The design parameters and assumptions are described in Chapter 2: Project description.
- 4.4.8 The 'draft Order limits' form the current anticipated boundary of the land which would be required to construct and operate the Project, including temporary and permanent works. As the design progresses up to the point of submitting the application for development consent, the boundary will be refined. The draft DCO and ES will present a refined set of Order limits. The draft Order limits are shown on Figure 1.1: Location plan and Figure 1.2: Draft Order limits.
- 4.4.9 The technical assessments for each environmental aspect defined a specific study area or series of study areas within the EIA Scoping Report. These necessarily differ between aspects and have been defined using professional judgement to include areas within the zone of influence of the Project. Where study areas partially include a potential receptor, that receptor has been considered within the preliminary assessment of the relevant aspect. Chapter 5: Water environment through to Chapter 20: Cumulative effects provide further commentary on the aspect-specific study areas, including any changes due to the

expansion of the draft Order limits for the PEI Report or other changes, for example, as a result of the PINS Scoping Opinion.

- 4.4.10 The design of the Project, EIA and engagement and consultation is ongoing, hence the study area for aspects may change to accommodate new information. Any changes to aspect study areas will be reported and explained within the ES.

Existing baseline

- 4.4.11 In order to identify likely significant environmental effects of the Project, it is important to understand the current environmental conditions that would be affected by the Project (i.e. 'the baseline'). Understanding the baseline allows the value of the environment (i.e. the sensitivity of receptors) and extent of changes (i.e. the magnitude of impacts) that would be caused by the Project to be fully appreciated.
- 4.4.12 The PEI Report presents the baseline as understood at the time of writing. Each aspect chapter (Chapter 5: Water environment through to Chapter 20: Cumulative effects) provides a summary of the key baseline receptors for each of the matters scoped into the PEI Report. Each aspect chapter has used appropriate information to inform the baseline understanding of the defined study areas. Where appropriate, the aspect chapters present additional baseline information to align with the PINS Scoping Opinion or other information that has become available since the publication of the EIA Scoping Report (for example the results of recent surveys, where available).
- 4.4.13 Where applicable, each aspect chapter outlines further work required to inform the ongoing EIA and ES, including the requirement for further baseline surveys, modelling or other studies to further enhance understanding.

Future baseline

- 4.4.14 The PEI Report considers the likely evolution of the baseline without the implementation of the Project (known as the 'future baseline'). The future baseline may differ from the existing baseline as a result of any changes to and arising from local plans or policies, new legal obligations that may drive change or wider changes to the environment, such as changes in population or climate change. The aspect chapters (Chapter 5: Water environment through to Chapter 20: Cumulative effects) provide a summary of the future baseline conditions to be considered in the assessment, for each of the matters scoped into the PEI Report.

Assessment of effects and determination of significance

Assessment of effects

- 4.4.15 The EIA process requires the identification of the likely significant effects of a proposed development, as required by the EIA Regulations 2017. For the Project, this includes consideration of the likely significant effects from the construction and operation phases - Decommissioning of the Project is not envisaged, and so related effects are not included in the EIA.
- 4.4.16 The timeframes for construction and commencement of operation that have been used in the preliminary assessment of effects are described in the Construction programming,

sequencing and phasing subsection in Section 2.5 of Chapter 2: Project description. In summary these are:

- ‘Early works’ commencing in 2027.
- ‘Enabling works’ commencing upon grant of the DCO (expected to be in 2028) – this would last approximately seven years, concluding in 2034.
- ‘Main works’ commencing in 2032 – this would last approximately 12 years, concluding in 2043.
- Reservoir commissioning and filling between 2039 and 2041 to enable water being available for use from the end of the first fill year (expected to be 2040).
- Operation of the Project would be phased, with some parts operational from 2040 and the remainder becoming operational between then and 2043.

4.4.17 ‘Impacts’ are defined as changes to aspects of the baseline environment that would be brought about by the Project. ‘Effects’ are defined as the reasonably foreseeable consequences of the identified change in the context of sensitivity to change of the receptor or environment. ‘Sensitivity’ (or value) can be defined as how easily a receptor is affected by change or as a measure of its inherent worth.

4.4.18 Impacts and effects are differentiated for the purpose of EIA, as not all changes in baseline resulting from the Project will necessarily have a significant consequence on the environment. Impacts and effects are only considered material where there is a clear linkage from ‘source’ through ‘pathway’ to ‘receptor’.

4.4.19 Types and characteristics of potential impacts are set out in Schedule 3 Paragraph 3 of the EIA Regulations 2017 as follows:

- ‘(a) the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected)*
- (b) the nature of the impact*
- (c) the transboundary nature of the impact*
- (d) the intensity and complexity of the impact*
- (e) the probability of the impact*
- (f) the expected onset, duration, frequency and reversibility of the impact*
- (g) the cumulation of the impact with the impact of other existing and/or approved development*
- (h) the possibility of effectively reducing the impact’*

4.4.20 Types of potential effects are set out in Schedule 4 Paragraph 5 of the EIA Regulations 2017 as follows:

- ‘A description of the likely significant effects of the development on the environment resulting from, inter alia—*
- (a) the construction and existence of the development, including, where relevant, demolition works;*
- (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;*
- (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;*
- (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);*

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

(f) the impact of the Project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the Project to climate change;

(g) the technologies and the substances used.

The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union level (as they had effect immediately before exit day) or United Kingdom level which are relevant to the Project, including in particular those established under the law of any part of the United Kingdom that implemented Council Directive 92/43/EEC(1) and Directive 2009/147/EC(2).'

- 4.4.21 For the preliminary assessment documented in the PEI Report, effects have been classified as either permanent or temporary. Permanent changes are those which are irreversible (e.g. permanent land take) or will last for the foreseeable future (e.g. emissions from generated road traffic). The duration of temporary environmental effects is defined as short, medium or long term based on the likely durations of the construction and operational phases of the Project. Unless otherwise defined by aspect-specific guidance these are broadly defined as follows:
- Temporary effects
 - Short term: Effects with durations that extend for up to one year
 - Medium term: Effects with durations that extends longer than one and less than five years
 - Long term: Effects with durations that extend longer than five years
 - Permanent effects
 - Due to the subjectivity of human receptors to timeframes, those effects that continue for greater than 15 years following construction can be defined as permanent.
- 4.4.22 The ES may further refine the defined durations, possibly using aspect-specific approaches.
- 4.4.23 For the ES, effects will also be classified as one of the following:
- Direct effects, which arise from the impact of activities that form an integral part of the Project (e.g. loss of habitat for reservoir embankment construction).
 - Indirect effects, which result from impacts on the environment that are not a direct result of the Project, often produced away from or as a result of a complex pathway (sometimes referred to as secondary effects).

Determination of significance

- 4.4.24 The EIA is undertaken on an environmental aspect basis and involves characterising the likely significance of 'scoped in' effects. There is no statutory definition of what constitutes a

significant effect. The Oxford English Dictionary defines significant as *sufficiently great or important to be worthy of attention; noteworthy* – this definition is applied to this assessment of effects.

- 4.4.25 For the majority of aspects, the assessment of significance of effects is determined by identifying a receptor's sensitivity, assessing the magnitude of impact the Project would have on the receptor, and then combining these two elements to identify the significance of effect.
- 4.4.26 Each chapter outlines the aspect-specific assessment methodology used to identify likely significant effects. Where there have been any changes or clarifications to the proposed methodology since the EIA Scoping Report (e.g. as a result of the PINS Scoping Opinion or any change to relevant guidance), this is outlined within the relevant aspect chapters with narrative explaining who this has been discussed and agreed with, where applicable. Where the assessment methodology for the preliminary assessment reported in the PEI Report is different from that which will be used for the final assessment for the ES, this is also set out.
- 4.4.27 For some aspects, the terminology for categorising significance of effects, and the associated terms to categorise receptor sensitivity and magnitude of impacts used at EIA Scoping have been adjusted to provide consistent terminology across all aspects for the preliminary assessment (for example where aspects referred to 'medium' sensitivity at EIA Scoping, this is consistently referred to as being 'moderate' sensitivity across all aspects in the PEI Report). Whilst terms have been adjusted for certain aspects since EIA Scoping, what these represent in the PEI Report remain in alignment with the terms used in the EIA Scoping Report.
- 4.4.28 Where applicable and possible, aspect chapters have categorised the sensitivity of a receptor as very high, high, moderate, low or negligible; the number of categories used varies between aspects. Table 4.3 shows typical descriptors for each categorisation of sensitivity used in the assessment of effects. Sensitivity categorisation and supporting narrative are included alongside each receptor considered in the aspect-specific assessments in section x.6 Baseline conditions of Chapter 5: Water environment through to Chapter 17: Greenhouse gases.

Table 4.3 Categorisation of receptor sensitivity and typical descriptors

Sensitivity of receptor	Typical descriptors
Negligible	Very low importance and rarity, local scale
Low	Low or medium importance and rarity, local scale
Moderate	Medium or high importance and rarity, regional scale, limited potential for substitution
High	High importance and rarity, national scale and limited potential for substitution
Very high	Very high importance and rarity, international or national scale and limited potential for substitution

- 4.4.29 Where applicable and possible, aspect chapters have categorised the magnitude of an impact as very large, large, medium, small, negligible or no change; as with sensitivity, the

number of categories used varies between aspects. The magnitude of impact considers the scale of the change caused to the baseline conditions, taking account of the characteristics of impacts noted under paragraph 4.4.19, including considering both the degree of change and the duration and/or reversibility of the effect. Table 4.4 Categorisation of magnitude of impact and typical descriptors shows typical descriptors for each categorisation of magnitude used in the assessment of effects, either beneficial, adverse or neutral.

- 4.4.30 Due to the general assessment assumptions and limitations set out in Section 4.5 and aspect-specific assumptions and limitations set out in certain aspect chapters, it has not been possible to confidently assign the magnitude of each impact for every aspect assessed within this preliminary assessment of likely significant effects. This is the case for Chapter 5: Water environment, Chapter 6: Aquatic ecology, Chapter 7: Terrestrial ecology, effects on above-ground assets covered in Chapter 8: Historic environment, Chapter 10: Geology and soils, Chapter 14: Noise and vibration and Chapter 17: Greenhouse gases. For these aspects, 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. 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 applicable criteria for determining magnitude of impact has been undertaken in some cases, although the magnitude of impact is not reported for the above-named aspects.
- 4.4.31 Reporting the magnitude of impacts is not an issue for Chapter 18: Climate resilience through to Chapter 20: Cumulative effects, as the assessment methods for these do not rely on categorising the magnitude of impacts.

Table 4.4 Categorisation of magnitude of impact and typical descriptors

Magnitude of impact	Typical descriptors
No change	No change to environmental characteristics, features or elements
Negligible	Adverse: Very minor or no loss or detrimental alteration to one or more characteristics, features or elements Beneficial: Very minor or no benefit to or positive addition of one or more characteristics, features or elements
Small	Adverse: Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements Beneficial: Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring
Medium	Adverse: Loss of resource, but not adversely affecting integrity; partial loss of/damage to key characteristics, features or elements Beneficial: Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality
Large	Adverse: Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements

Magnitude of impact	Typical descriptors
	Beneficial: Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality
Very large	Adverse: Loss of resource and/or quality and integrity of resource over an extensive area; total damage to key characteristics, features or elements Beneficial: Large scale or major improvement of resource quality over an extensive area; extensive restoration; major improvement of attribute quality

- 4.4.32 The parts of the Project have been categorised into key project components and activities (as noted in Chapter 2: Project description). Each effect noted within the 'Preliminary assessment of likely significant effects' sub-section of the aspect chapters has been assigned to relevant project components and activities. Each effect has also either been categorised as construction or operation, adverse or beneficial, and significant or not significant.
- 4.4.33 For aspect chapters that have categorised magnitude of impact within this preliminary assessment, the resulting significance of effects has been categorised based on a combination of receptor sensitivity and magnitude of impact, with the significance categories being major, moderate, minor, neutral or none, as shown in Table 4.5.
- 4.4.34 Allocating significance requires the application of professional judgement. In general, however, a significant effect is defined as any effect that is categorised as likely to be of 'moderate' or 'major' significance, whereas effects categorised as 'minor', 'neutral' or 'none' are not significant in the context of the EIA Regulations 2017 and as such are not reported in detail in this PEI Report. The exception to this is where the combination of multiple minor effects has the potential to lead to a significant (i.e. moderate or above) cumulative effect. For this EIA, any effects with a significance category of major or moderate are deemed 'significant', and any effects with a significance category of minor, neutral or none are deemed 'non-significant'.
- 4.4.35 For aspect chapters that have not categorised magnitude of impact, no associated categorisation of effect significance has been made. Instead, the preliminary assessment purely reports if likely effects are anticipated to be 'significant' or not 'significant'. For these aspects, the full significance categorisation will be used in the ES once further information is available.
- 4.4.36 Importantly, for the preliminary assessment in the PEI Report, an initial assessment of significance of effect has been made assuming that embedded design mitigation and standard good practice mitigation relevant to each aspect have been applied in determining the magnitude of impacts. Further detail on mitigation is provided in Section 4.6: Approach to mitigation, and aspect-specific mitigation are noted in Section x.8 of the aspect chapters and provided in detail in Appendix 2.2: Draft commitments register. Where the initial significance of effect is assessed as significant and adverse, the possibility of additional mitigation that may further reduce these effects is being explored. Nevertheless, the preliminary assessment assumes that additional mitigation is not applied, as the viability, nature and extent of these is not confirmed at this stage in the EIA process. Additional mitigation that is being explored is presented in the Next Steps sub-sections of Chapter 5: Water environment through to Chapter 20: Cumulative effects.

Table 4.5 Significance matrix

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

4.4.37 The key likely significant effects relevant to each environmental aspects are summarised in the ‘Preliminary assessment of likely significant effects’ sub-section of the aspect chapters alongside an explanation of why certain effects are consider non-significant. The full suite of likely significant and likely non-significant effects considered in the preliminary assessment for the PEI Report is provided in an appendix to each associated aspect chapter. The appendices set out the preliminary assessment of effects, receptor by receptor, for construction and operation phases respectively and are 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 the Next steps sub-sections of the aspect chapters).

4.4.38 The ES will comply with regulation 14 of the EIA Regulations 2017, which sets out the information that an ES accompanying a DCO application must include. The ES will describe the full assessment of the likely significant effects that have been scoped in. It will provide the information reasonably required to reach a conclusion on the significant environmental effects of the Project, which takes account of current knowledge and assessment methods.

4.5 Approach to limitations and uncertainties

- 4.5.1 Assessments reported within the PEI Report are considered a reasonable 'worst case' as a precautionary approach has been taken where design, construction or baseline information is being developed, for example, if further surveys or design are required.
- 4.5.2 The PEI Report is based on the latest design parameters and the available construction information. As such, the findings of the preliminary assessment presented within the PEI Report may be subject to change as the design progresses or information from further studies becomes available. Where initial likely significant adverse 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.
- 4.5.3 Gaps in information identified within the PEI Report will be considered and addressed as part of the ongoing EIA and design process. The final assessment of effects, reported within the ES, will be informed by the updated design, plus consultation and engagement. Chapter 21: Next steps provides a summary of engagement and further work that will be undertaken to inform the ES, including a summary of the proposed structure of the ES.

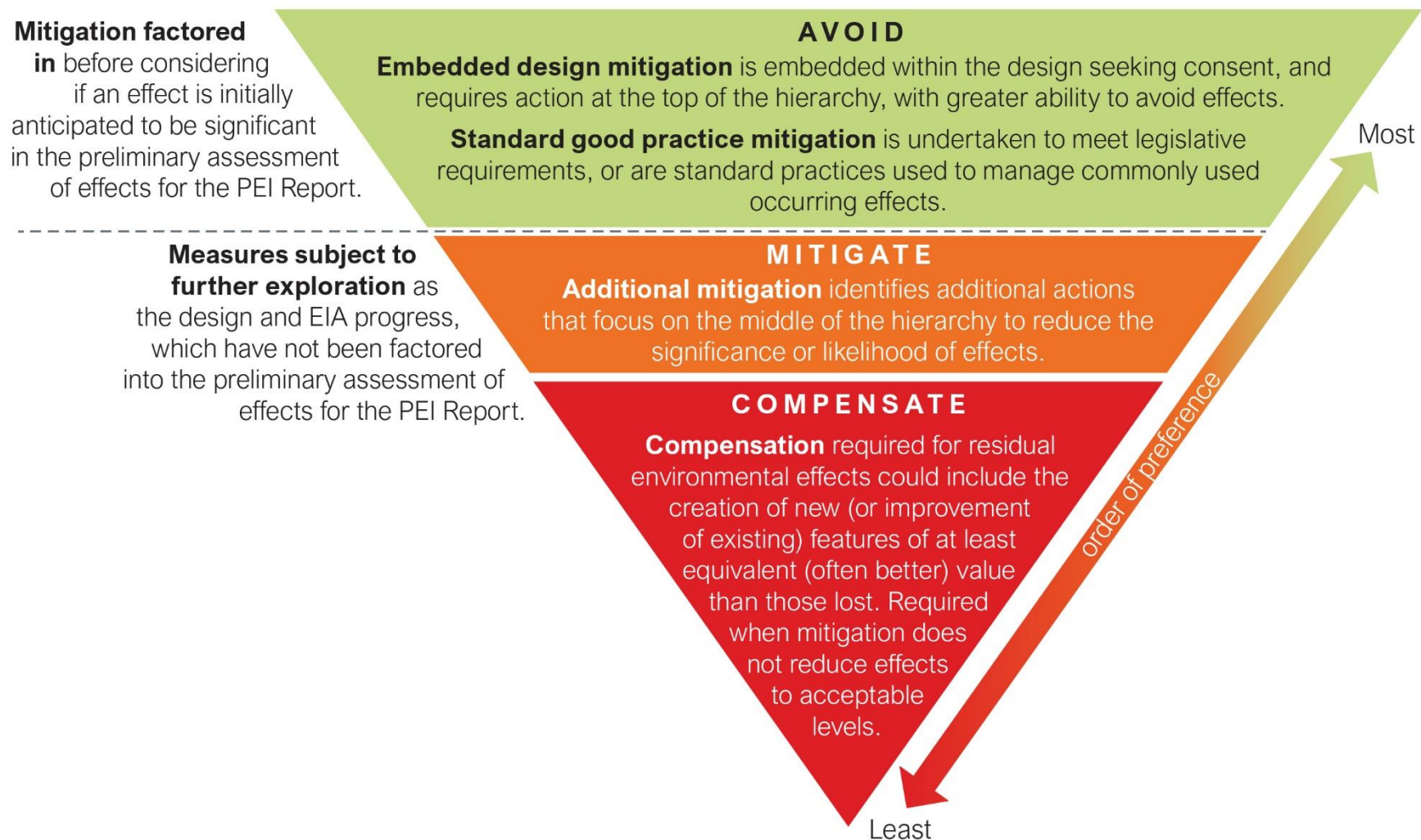
4.6 Approach to mitigation

- 4.6.1 The Applicant is committed to including mitigation measures as necessary to address likely significant adverse environmental effects as far as reasonably practicable. Mitigation proposed will follow the mitigation hierarchy to avoid and reduce significant adverse effects on receptors. Where it is not reasonably possible to avoid or reduce significant effects, compensation for effects, offsite enhancement and/or remediation of effects will be considered.
- 4.6.2 Where adverse effects are identified, mitigation may be proposed to reduce these. In accordance with Institute of Environmental Management and Assessment (IEMA) guidance: Environmental Impact Assessment Guide to: Delivering Quality Development (IEMA, 2016) mitigation is classified into three broad categories:
- Embedded design mitigation (primary mitigation): This constitutes modifications to the location or design of the development made during the pre-application phase and that are an inherent part of the Project and do not require additional action to be taken. The mitigation is embedded into the design. For example: reducing the height of a development to reduce visual impacts or inclusion of areas of habitat planting in the design to mitigate ecological impacts.
 - Standard good practice (tertiary mitigation): This consists of actions that would occur with or without input from the EIA feeding into the design process. This includes actions that will be taken to meet other legislative requirements, or actions that are considered to be standard practice used to manage commonly occurring environmental effects. For example avoiding work in root protection zones when working near trees and considerate contractors' practices that manage activities which have potential nuisance and environmental effects, such as the spillage of fuels, oils or other chemicals.
 - Additional mitigation (secondary mitigation): This includes actions that require further activity in order to achieve the anticipated outcome. These may be secured as part of the DCO consenting process or be identified as necessary through the EIA and

therefore included within the ES. For example additional noise screening at individual properties above that provided as part of the design or provision of ecological mitigation e.g. bat boxes.

- 4.6.3 Whilst the terminology used for the types of mitigation has been amended since scoping – previous terms used were primary, secondary and tertiary mitigation, the approach in the PEI Report remains in alignment with the approach outlined in the EIA Scoping Report.
- 4.6.4 Plate 4.2 illustrates the mitigation hierarchy to avoid, mitigate, or compensate for effects, and identifies where each category of mitigation described above typically sits within this hierarchy.

Plate 4.2 Illustration of the mitigation hierarchy and categories of mitigation



- 4.6.5 Both embedded design mitigation and standard good practice are considered to form part of the Project. The preliminary assessment of effects has therefore been done on the basis that these are implemented to reduce identified adverse environmental effects, where applicable. Hence, an initial assessment of significance of effect has been made assuming that embedded design mitigation and standard good practice mitigation relevant to each aspect have been applied in determining the magnitude of impacts. Each of the aspect chapters, Chapter 5: Water environment through to Chapter 20: Cumulative effects, includes a section titled 'Embedded design mitigation and standard good practice', this section outlines the aspect-specific embedded design and standard good practice mitigation measures that have been factored into the aspect assessment. The full list of embedded design mitigation and standard good practice that has been applied to the preliminary assessment in the PEI Report is given in Appendix 2.2: Draft commitments register. The register includes:
- The unique commitment ID for each mitigation measure
 - The name of the mitigation measure
 - A description of the mitigation measure
 - Whether the measure is embedded design mitigation or standard good practice
 - Project phase
 - Which aspects have applied the mitigation to the preliminary assessment of effects.
 - The indicative securing mechanism
 - Associated supporting documentation
- 4.6.6 Standard good practice mitigation to be applied during construction of the Project is also documented in the draft Code of Construction Practice (CoCP) in Appendix: 2.1: Draft CoCP. The draft CoCP outlines how control measures and standards will be implemented throughout the construction works to mitigate effects on the local community and the environment.
- 4.6.7 The indicative securing mechanisms noted in the Draft commitments register and in the aspect chapters identify the likely mechanisms that will be used to ensure each mitigation is delivered, as understood at this stage of the Project. At this stage, the Securing Mechanisms are indicative, and typically noted as being either the Design Principles, the CoCP, a requirement of the terms of the DCO, or a requirement of existing legislation. Regarding requirements of the terms of the DCO, the precise securing mechanism for delivery is not yet decided upon, but the DCO can secure the commitment in various ways including for example through articles, approved plans, or requirements. It is intended that this approach allows an understanding of current thinking, notwithstanding that details will continue to evolve as work continues to inform the drafting of the DCO and supporting documentation for the DCO application.
- 4.6.8 As noted in paragraph 4.4.36, where the initial significance of effect is assessed as significant and adverse, the potential for additional mitigation has been considered in order to reduce the effects. Nevertheless, the assessment assumes that additional mitigation is not applied, as the viability, nature and extent of these are not confirmed at this stage in the EIA. Additional mitigation that is being explored is presented in the Next Steps sub-sections of Chapter 5: Water environment through to Chapter 20: Cumulative effects.
- 4.6.9 The Applicant will continue to develop the embedded design (primary), standard good practice (tertiary), and additional (secondary) mitigation measures through ongoing design and assessment. It is therefore possible that the additional (secondary) mitigation

measures suggested in the PEI Report may form part of the embedded design (primary) or standard good practice (tertiary) mitigation measures set out in the ES or, indeed, may not be required.

- 4.6.10 Effects that remain after the implementation of all mitigation (including additional 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 in the preliminary 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.
- 4.6.11 In some cases, EIA professionals and stakeholders involved in the EIA process will also identify or recommend opportunities for the Project to achieve environmental outcomes (i.e. enhancements). It is therefore important that the EIA process takes place alongside the development of the Project design in order to make the most of such opportunities. Relevant enhancement measures are set out for each aspect where they have been identified in Chapter 5: Water environment through to Chapter 20: Cumulative effects.

4.7 Complex and cumulative effects

- 4.7.1 Specific methodologies are used for certain complex effects, these include:

- Impact Interactions
- Indirect effects
- Cumulative Effects
- In-Combination Climate Impacts
- Major Accidents and Disasters

Impact interactions

- 4.7.2 The EIA Regulations 2017 (Regulation 5, (2)(e) state that '*the EIA must identify, describe and assess in an appropriate manner the direct and indirect significant effects of the proposed development arising from the interaction between the following factors: population and human health; biodiversity; land, soil, water, air and climate; material assets, cultural heritage and the landscape.*' For this assessment, impact interactions have been considered in two ways:

- Impact interactions which are not explicitly on the same receptor are identified as indirect effects (see example below), these interactions to other aspects are signposted through Section X.1 Introduction in each aspect chapter.
- Impact interactions which are explicitly on the same receptor between aspects are identified as intra-project cumulative effects (see further definition below).

Indirect effects

- 4.7.3 Indirect effects are defined above as 'resulting from impacts on the environment that are not a direct result of the Project, often produced away from or as a result of a complex pathway'. These indirect effects often result in an interface between aspects within an EIA. One example would be the impact of dewatering which is reported within Chapter 5: Water environment where the receptor is the Ock Catchment, and how this dewatering impact could then go on to result in an effect to ecological designated sites within Chapter 6: Aquatic ecology. These effects have been identified through the EIA Scoping exercise and

are assessed within each of the relevant aspect chapters. As noted in paragraph 4.4.23, for the ES, effects will be clearly categorised as direct or indirect.

- 4.7.4 The recent Supreme Court judgment on the Finch case (Finch v Surrey County Council [2024] UKSC 20) has been considered in the preparation of this PEI Report and the proposed scope and methodology for each aspect, with particular attention to potential upstream and downstream direct and indirect effects where practicable and appropriate. In this context, the terms 'upstream' and 'downstream' refer respectively to effects arising from activities that are required to facilitate the development of the Project and activities that are consequential to the Project (i.e. inputs to and outputs from the Project).
- 4.7.5 It should be noted that in this PEI Report, certain environmental aspects, such as water resources and flood risk and aquatic ecology consider 'downstream' effects from a water flow perspective, for example, effects from releases of water from the Project, with downstream meaning down from the outfall point along the River Thames. However, this is not the same as the 'downstream' considerations in relation to the Finch case. In this PEI Report, upstream and downstream effects are referred to in the general sense of effects associated with the inputs and outputs of the Project.

Cumulative effects

- 4.7.6 Cumulative effects are the result of multiple individual effects on a specific environmental receptor or resource. For the purposes of this assessment, cumulative effects have been further subdivided into:
- Intra-project effects: Multiple individual effects on a specific environmental receptor or resource resulting from the Project.
 - Inter-project effects: Multiple individual effects on a specific environmental receptor or resource resulting from the Project and future other developments that are currently known.
- 4.7.7 The methodology for the assessment of inter-project cumulative effects is set out in Chapter 20: Cumulative effects, which also reports the outcome of the inter-project cumulative effects assessment. The assessment of intra-project cumulative effects is also set out in Chapter 20: Cumulative effects. For the purposes of the PEI Report, a preliminary assessment of cumulative effects is provided.

In combination climate impacts

- 4.7.8 Consideration of 'In-Combination Climate Impact' (ICCI) has been undertaken for the PEI Report in accordance with IEMA guidance Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (IEMA, 2020). The ICCI assesses how future climate scenarios may influence the effects of the Project. This assessment is fully explained in Chapter 18: Climate resilience and will be considered further in the ES. The ICCI assessment will consider climate change influences on indirect and cumulative effects.

Major accidents and disasters

- 4.7.9 Major accidents and disasters covers the assessment of potentially significant adverse effects of a development on the environment deriving from its vulnerability to risks of

relevant major accidents and/or disasters. A major accident is defined as *‘an event... that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the use of resources beyond those of the client or its appointed representatives (i.e. contractors) to manage’* (p.3, IEMA, 2020). A disaster is defined as *‘a man-made/external hazard (such as an act of terrorism) or a natural hazard (such as an earthquake) with the potential to cause an event or situation that meets the definition of a major accident’* (p. 3, IEMA, 2020).

- 4.7.10 The Major accidents and disasters assessment relies on the outcomes of the other aspect assessments and assesses potential external sources of risk (including those associated with other developments). Therefore, indirect and cumulative effects are inherently assessed within the Major accidents and disasters assessment.

4.8 Consideration of transboundary effects

- 4.8.1 Effects on the environment of another European Economic Area State (transboundary effects) were proposed to be scoped out in the EIA Scoping Report due to the Project's location (in the centre of England), scale and nature (with limited atmospheric emissions). The PINS Scoping Opinion also found that the likelihood of transboundary effects was *‘so low that it does not warrant the issue of a detailed transboundary screening’*. It noted, however, that *‘this position will remain under review and will have regard to any new or materially different information coming to light which may alter that decision’*. The PEI Report therefore, does not consider transboundary effects at this stage. This position will remain under review and reconfirmed in the ES.

4.9 Declaration on usage of artificial intelligence (AI)

- 4.9.1 AI is technology that enables a computer or other machine to exhibit ‘intelligence’ normally associated with people. Recent advances mean that AI can now be used to create new content in the form of text, images, videos, audio, computer code and other types of data. It can also be used to alter or enhance existing content.
- 4.9.2 No AI has been used in creating this PEI Report or its appendices.

References

It should be noted that the Institute of Environmental Management and Assessment (IEMA) has recently rebranded as the Institute of Sustainability and Environmental Professionals (ISEP). Guidance that was historically published by IEMA is still referenced under that institute name.

Department for Environment, Food & Rural Affairs (2025) National Policy Statement for water resources infrastructure. Accessed August 2025.

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