

South East Strategic Reservoir Option Preliminary Environmental Information Report

Non-Technical Summary

Date: October 2025

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1 Introduction

1.1 Overview

1.1.1 This document, prepared by Thames Water, is the Non-Technical Summary of the Preliminary Environmental Information (PEI) Report for the South East Strategic Reservoir Option, hereafter referred to as 'SESRO' or 'the Project'.

1.2 Who is Thames Water?

1.2.1 Thames Water is the largest water company in the UK, with legal responsibility to supply water and provide wastewater services to its 16 million customers across South East England.

1.3 Background to the Project

- 1.3.1 South East England gets the majority of its drinking water supply from groundwater. However, it has a large and growing population and is one of the UK's driest regions, classified by the Environment Agency as 'seriously water stressed'.
- 1.3.2 Pressures from climate change, population growth and environmental objectives to reduce the amount of water removed (abstracted) from water bodies for water supply mean that, without action, by 2050 there could be one million cubic metres of water per day less than what is needed to supply Thames Water's customers (that is a shortfall of about 400 Olympic sized swimming pools of water per day). It is estimated that having insufficient water to support growth in the region would cost London's economy alone around £500 million each day. Severe restrictions on water use during times of very low rainfall (i.e. drought) could disrupt daily life and cause long-term damage to the environment and public health.
- 1.3.3 To address the pressures on the amount of water available for supply, Thames Water has produced a Water Resources Management Plan (WRMP) that confirms the need for a new reservoir near Abingdon. The reservoir would have an operational capacity of 150 million cubic metres of water and would supply Thames Water, Southern Water (including onward transfer to South East Water) and Affinity Water customers. Thames Water is leading the development of the reservoir on behalf of these companies. Further information on the WRMP can be found in Section 3 of this Non-Technical Summary.
- 1.3.4 The new reservoir would help to secure water for millions supplying up to 271,000 cubic metres of water per day, to 15 million customers for the next century and beyond. It would also help protect the environment by reducing the amount of water taken from sensitive rivers and groundwater during times of low rainfall.
- 1.3.5 Key facts about the reservoir are included in Plate 1.

Plate 1 Key facts about the reservoir



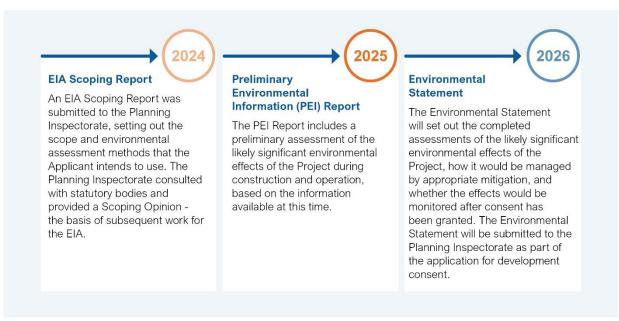
1.4 How will the Project be delivered?

- 1.4.1 Due to its size, the Secretary of State for Environment, Food and Rural Affairs has directed that SESRO is a project of national significance under section 35 of the Planning Act 2008.
- 1.4.2 This means that Thames Water needs to apply for a type of planning consent called a Development Consent Order (DCO) to build and operate it. The DCO application for the Project will be submitted to the Planning Inspectorate, the government body responsible for examining DCO applications. Following acceptance, examination and recommendation by the Planning Inspectorate, the application will then be decided by the Secretary of State for Environment, Food and Rural Affairs the final decision on whether to grant the DCO is expected in 2028.
- 1.4.3 To provide best value for customers, the Project would be delivered by an Infrastructure Provider (infrastructure being the structures and facilities of the Project). The Infrastructure Provider will be selected through a bidding process, to deliver the detailed design, construction, finance and potentially some maintenance activities for the reservoir. Thames Water would operate the reservoir as part of its network. In addition, Southern Water will appoint contractors to deliver certain parts of the Project infrastructure that it will operate and maintain.

1.5 What is the Preliminary Environmental Information (PEI) Report?

- 1.5.1 The PEI Report is a key consultation tool to explain the current understanding of the Project's likely significant environmental effects. Its purpose is to enable the public and other stakeholders to make informed and meaningful consultation responses on the effects of the Project as part of Statutory Consultation. This Non-Technical Summary of the PEI Report is also available in an interactive website format, which can be accessed via www.thames-sro.co.uk/sesro/statcon2025.
- 1.5.2 You can find out more information about the proposals by viewing the consultation materials that have been developed to help people understand the proposals for the Project. These can also be accessed via the link above. Section 8 of this Non-Technical Summary explains how feedback can be made during the Statutory Consultation period.
- 1.5.3 The PEI Report forms part of the Environmental Impact Assessment (EIA), which is a process to protect the environment by ensuring that planning decisions are made with knowledge of the likely significant environmental effects of a proposed development. Plate 2 provides an overview of the EIA timeline for the Project, with the three key applicant documents being an EIA Scoping Report, the PEI Report and an Environmental Statement. The EIA process is explained further in Section 5.1 of this Non-Technical Summary.
- 1.5.4 The PEI Report provides an update on the ongoing EIA, engagement and emerging design of the Project. The assessment of effects reported in the PEI Report is preliminary and considered a reasonable 'worst-case'. This is because a precautionary approach has been taken where design, construction or environmental information is being developed, and therefore some uncertainty remains. 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 environment. Ongoing design, survey and assessment work, as well as feedback received during the Statutory Consultation and ongoing engagement, will be used to refine the Project and improve understanding of its potential effects, which will be reported in the Environmental Statement.

Plate 2 Overview of EIA timeline



2 What is SESRO?

- 2.1 What is the vision for the Project?
- 2.1.1 The Project vision is illustrated in Plate 3.
- 2.1.2 SESRO is vital infrastructure designed to provide a **reliable and sustainable source of water** for millions of customers served by Thames Water, Affinity Water and Southern Water in Oxfordshire and the wider South East region. Located approximately 5km south-west of Abingdon in Oxfordshire, the reservoir and strategic inter-company water transfers will play a pivotal role in strengthening the region's resilience to (i.e. its ability to cope with) climate change, population growth, and drought risk.
- 2.1.3 The project is aiming to deliver **more than a reservoir**; it will provide:
 - A place for people including engaging, multi-functional spaces to enable new opportunities for walking, cycling, birdwatching, and education through enhanced public access and connectivity with local communities, integrated with recreational facilities and visitor parking.
 - A space for nature including creation of new aquatic and terrestrial habitats, which will
 connect to natural systems across and beyond the reservoir site to support nature
 recovery and natural flood management.

Plate 3 The Project vision

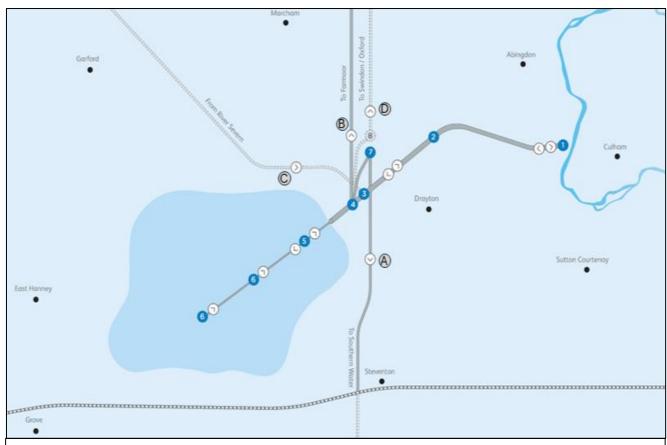


2.2 Project overview

- 2.2.1 The proposed reservoir site is set within the area bounded by the A415 and the village of Marcham to the north, the A34 and the village of Steventon to the east, the Great Western Railway Line (London to Bristol) to the south, and the A338 and the village of East Hanney to the west.
- 2.2.2 The Project would include the following water infrastructure:
 - A reservoir with an operational capacity of 150 million cubic metres of untreated water available for use when the reservoir is full.
 - A pumping station at the base of the north-east side of the proposed reservoir embankment.

- A river tunnel to transfer water between the new pumping station and the River Thames via a new structure that takes water out of (abstracts) and returns water to (discharges) the River Thames near Culham (this is referred to as the intake / outfall structure).
- Reservoir tunnels to transfer flows between the reservoir and the pumping station.
- A new 'Thames to Southern Transfer' (T2ST) water treatment works, and a section of an associated water transfer pipeline.
- Sections of pipeline to facilitate transfers from the reservoir to Southern Water via the T2ST and to Farmoor via the Farmoor Transfer pipeline, and infrastructure to allow connection to future transfer projects.
- 2.2.3 Key connections between SESRO and other water supply projects in the area are shown in Plate 4.

Plate 4 Overview of SESRO with other linked projects and key features (not to scale)



- 1. Intake / outfall structure and shaft
- 2. River tunnel intermediate shaft
- 3. River tunnel Severn to Thames Transfer shaft
- 4. Pumping station
- 5. Primary reservoir tower
- 6. Secondary reservoir towers
- 7. Thames to Southern Transfer (T2ST) water treatment works
- 8. Safeguarded area for Swindon and Oxfordshire (SWOX) potable (i.e. drinking) water transfer water treatment works
- A. T2ST pipeline
- B. Farmoor Transfer pipeline
- C. Safeguarded area for STT pipeline
- D. Safeguarded area for SWOX potable water transfer pipeline

- 2.2.4 The Project would also include:
 - A main access road into the Site from the A415 Marcham Road
 - Diversion of the existing Steventon to East Hanney Road
 - Public access and parking
 - Improvements to highways outside of the main Project site, including the A34 Marcham Interchange
 - Two recreational lakes
 - Recreational facilities, including a Recreational Lakes Centre, Water Sports Centre,
 Nature Education Centre and active travel provision
 - A network of new Project Priority Areas for Biodiversity
 - Diversion of existing watercourses to both the east and west of the reservoir
 - Provision for the Wilts and Berks Canal, this would be provided as a water channel
 - Creation of additional floodplain on the east bank of the River Thames and alongside the diverted watercourses in the Ock catchment
 - A groundwater drain encircling the reservoir
 - New renewable energy infrastructure; including floating solar, solar panels on structures and hydro-electric turbines. In addition, there is the potential for ground mounted solar panels to replace the three existing solar farms that would be lost because of the Project
 - Temporary rail sidings during construction, to be removed upon Project completion.
- 2.2.5 Plate 5 illustrates the overall design concept for the Project as an example masterplan. It should be recognised that this has been developed to help illustrate the design direction, but that features shown in it are not fixed, as the design is still being developed, particularly the habitat proposals.
- 2.2.6 An understanding of the local landscape, its environmental features and character has shaped the masterplanning work (referred to as a landscape-led design) to fit into the local environment as far as possible, with the inclusion of recreational and nature educational facilities for communities, and areas of wildlife habitats for biodiversity as outlined above.

Plate 5 Illustrative masterplan of the overall design concept for SESRO (not to scale)



2.3 What and where are the draft Order limits?

- As part of the DCO application, the maximum area of land needed to build and operate the Project will be confirmed, and will be referred to as the 'Order limits'. Draft Order limits have been identified for the PEI Report which show all the land known at this stage that is potentially needed to deliver the Project. The draft Order limits are referred to as 'the Site' throughout the rest of this document (see Plate 6 The Site).
- 2.3.2 This includes land needed temporarily for construction and land needed permanently for any new infrastructure, including below ground such as the reservoir and river tunnels. The Site also includes land that is proposed to be used for landscaping and other ecological works.
- 2.3.3 The Site has been extended since the EIA Scoping Report was prepared. This has largely been driven by the identification of areas needed for habitat creation and/or enhancement and protected species mitigation.
- 2.3.4 The Site is 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.
- 2.3.5 The reservoir and associated infrastructure would mostly be situated within an area bounded by the River Ock to the north, the A34 and the village of Steventon to the east, the Great Western Main Line railway to the south and, the A338 and village of East Hanney to the west (this is known as the 'Core Project Area'). The Site extends east of the A34 for the intake/outfall structures on the River Thames and to the north, south and west for habitat provision.
- 2.3.6 There are also a number of isolated locations within the Site where works are proposed to support the Project. These are on the A34 to the east of Harwell at Rowstock and extending approximately 5.5km west from the southern part of the Site along a corridor following the Great Western Main Line railway.
- 2.3.7 The area within the Site is generally flat agricultural land, with some gentle slopes. The agricultural fields are interspersed with houses and farmsteads and bisected by hedgerows and ditches with some small areas of woodland. There is a small industrial area in the south associated with Steventon Depot, and three existing operational solar farms, two located to the north of Hanney Road in the centre of the Site and one to the east of the A338 in the west of the Site. The nearest centres of population are Marcham to the north, Drayton to the east, Steventon to the south-east, and East Hanney to the south-west and these are outside of the Site. Key environmental features in proximity to the Site are shown on Plate 7 Key existing water and ecological features, Plate 8 Key existing landscape and historic environment features and Plate 9 Key existing human environment features.

Plate 6 The Site

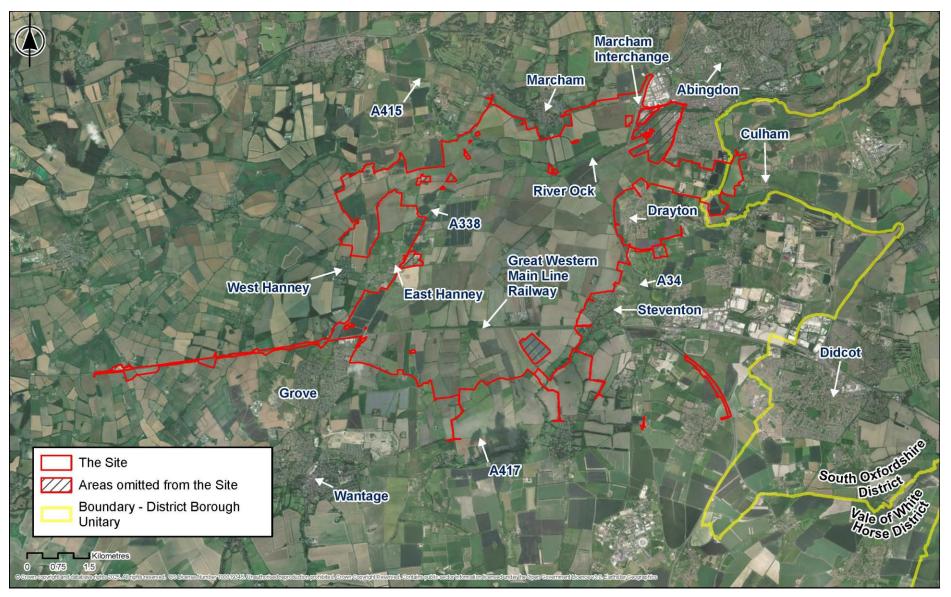


Plate 7 Key existing water and ecological features

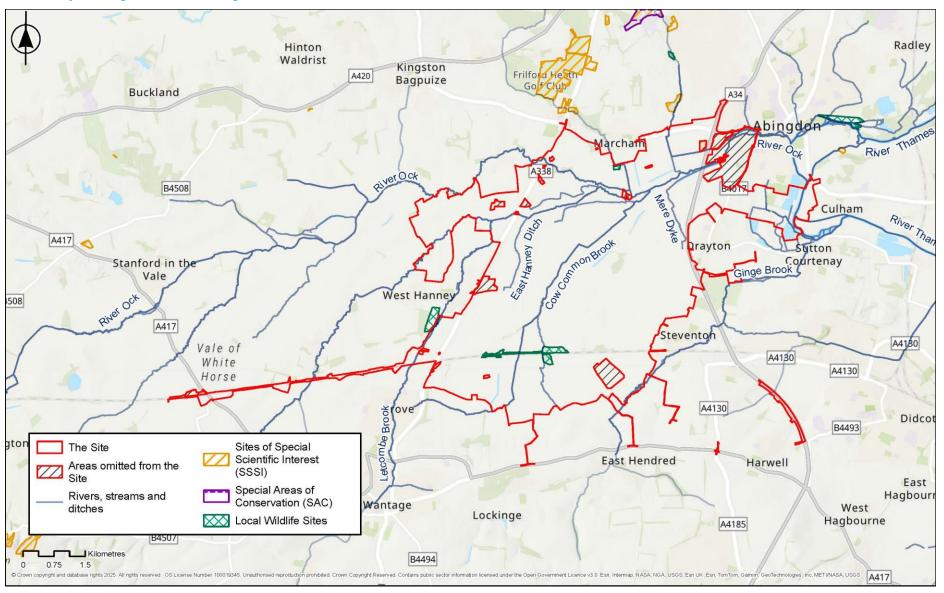


Plate 8 Key existing landscape and historic environment features

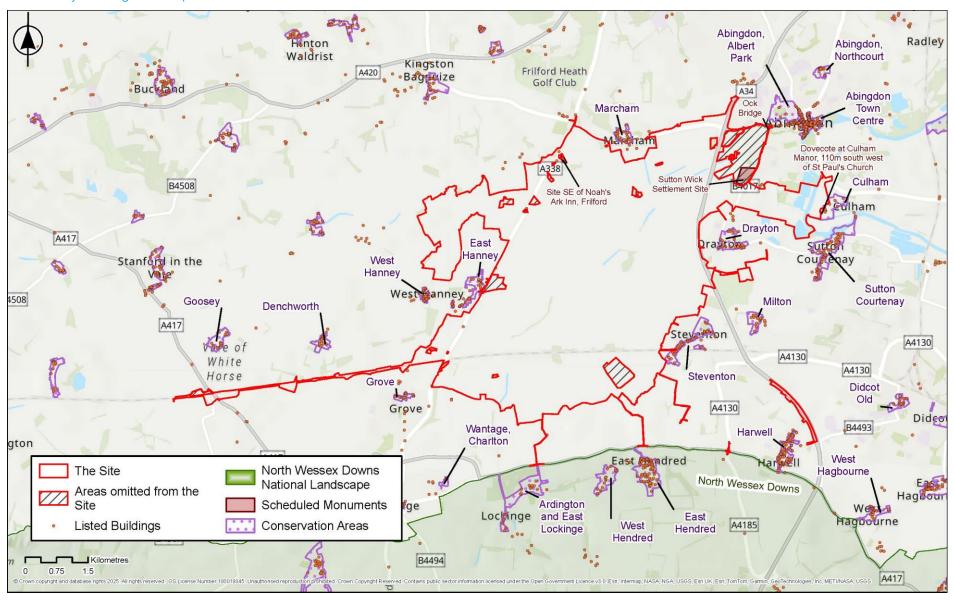
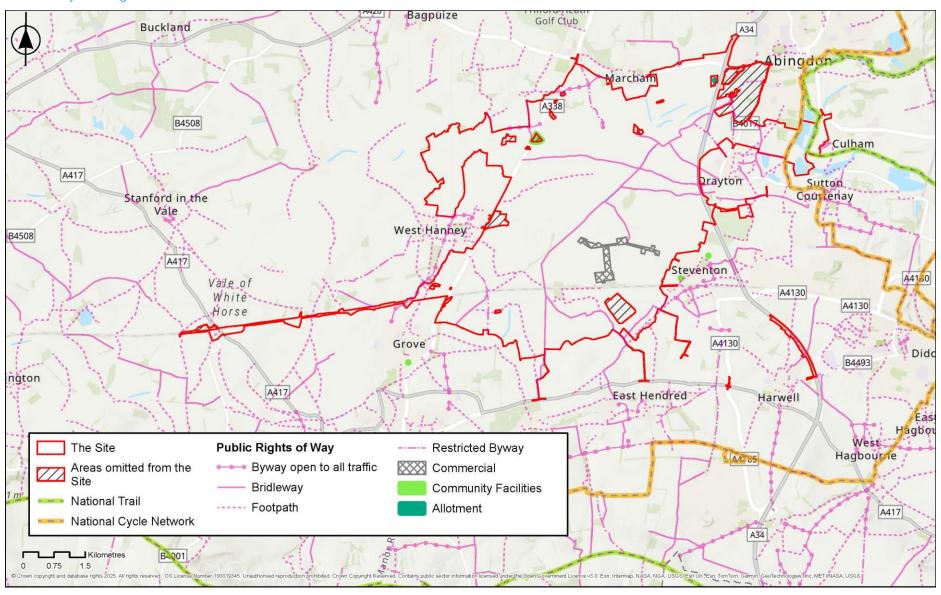


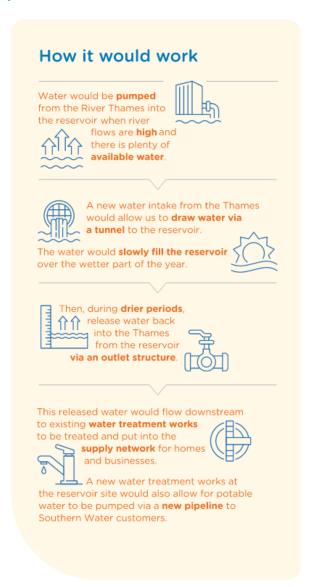
Plate 9 Key existing human environment features



2.4 How will it work?

- 2.4.1 Plate 10 shows how the Project will operate.
- 2.4.2 Water would be abstracted through a new intake/outfall structure from the River Thames near Culham (and potentially from a future Severn to Thames Transfer project) during high flow periods via new tunnels and a pumping station and be stored in the newly provided reservoir.
- 2.4.3 Water from the reservoir would then be released back into the River Thames during periods of low water flows in the River Thames or during periods of high demand for abstraction further downstream, thereby providing additional water in the River Thames available for abstraction during drought conditions.
- 2.4.4 A new underground tunnel would provide the main connection between the reservoir and the River Thames. This would also serve as an emergency release, allowing safe and controlled removal of water from the reservoir in the unlikely event that this is needed.

Plate 10 How would the Project work?



- 2.4.5 The Project would link to other new water supply projects locally and in the wider region as set out in the respective water company Water Resources Management Plans, these are shown in Plate 4 (see page 6) and include:
 - The Thames to Southern Transfer project, which is expected to come forward by 2040. The Thames to Southern Transfer project would provide drinking water via a new water treatment works and water transfer pipeline to Berkshire and Hampshire. The water treatment works is included within the SESRO Project design along with a section of the pipeline that falls within the Site (these would be operated by Southern Water). The remainder of the works are not part of SESRO and would be delivered as a separate project by Southern Water.
 - The Farmoor Transfer, which is expected to come forward by 2040 and would deliver a
 water transfer pipeline from SESRO to the existing Farmoor Reservoir to the north. A
 pump and a section of the pipeline would be delivered by SESRO between the new
 reservoir and Marcham Road. The remainder of the pipeline would be delivered as a
 separate project.
 - The Severn to Thames Transfer is potentially required in the future. This would transfer water from the North West and the Midlands regions via a pipeline from the River Severn to the River Thames. The Project would provide a shaft for a future pipeline connection from the Severn to Thames Transfer, to facilitate a future pipe connection without taking the Project out of operation. SESRO would reserve a corridor for a future pipeline within the Site and allow space for equipment in the proposed pumping station. The Severn to Thames Transfer is not part of SESRO and would be delivered as a separate project.
 - The Swindon and Oxfordshire (SWOX) Potable (i.e. drinking) Water Transfer is potentially required in the future, depending on the need for further water supplies in the region. Space would be reserved within the Site for a future SWOX water treatment works, water pipeline and for equipment within the pumping station. The SWOX potable water transfer is not part of SESRO and would be delivered as a separate project.
- 2.4.6 The release of water from the new reservoir into the River Thames would provide water for downstream removal (abstraction) to Affinity Water's Thames to Affinity Transfer project, as well as for Thames Water customers. This would not require any further works as part of the SESRO Project.

2.5 What are the main components of the Project?

- 2.5.1 Plate 11 provides a schematic overview of the main water infrastructure included within the Project.
- 2.5.2 Where the design is still developing, Thames Water has applied 'parameters' for the design, construction and operation of the Project for the purposes of the preliminary assessment of effects. Parameters are reasonable worst-case assumptions of, in particular, the maximum or minimum size of Project components and the range of potential uses and locations these are factored into the description of the Project in sections 2 and 4 of this Non-Technical Summary. These parameters and assumptions about Project components have allowed the preliminary assessment to adopt a precautionary approach to ensure all reasonable worst-case likely significant effects are considered.

- 2.5.3 The measurements noted in this Non-Technical Summary may read as very specific and suggest accuracy in design; however, these include an extra percentage e.g. additional length or height to allow for design development which is ongoing.
- 2.5.4 Some of the environmental aspects (i.e. topics such as Terrestrial ecology or Geology and soils) assessed within the PEI Report have documented parameters and assumptions specific to their assessments.

Maximum height *Image not to scale above average existing ground level 26.8m V Severn to Pumping station Ground level Intake/outfall River TOWER above ground Thames transfer structure Thames structure PRIMARY Intake/outfall Pipelines from Reservoir Pumpina River tunnel tunnels shaft secondary towers

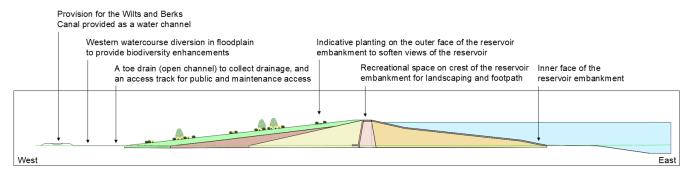
Plate 11 Schematic overview of water infrastructure included within the Project (not to scale)

Reservoir

- 2.5.5 Water flows to fill the reservoir would mainly come from the River Thames. Water may potentially also come from the River Severn, through the Severn to Thames Transfer project, if that project is progressed (see Section 2.4.5 for further information). Pumped flows to the reservoir would be limited to 1,000 million litres each day (Ml/d). Flow would stop when the reservoir is full, with fail-safe measures to ensure this happens.
- 2.5.6 The reservoir would have a capacity of 150 million cubic metres of water when full (referred to as the 'operational capacity'). A volume of approximately 9 million cubic metres would exist below the operational volume to store sediments that enter the reservoir without affecting operational capacity.
- 2.5.7 The reservoir embankments would be between approximately 14.9m and 26.8m in height above existing ground levels. This range in embankment height occurs because existing ground levels vary across the Site, being higher in the north and sloping to lower ground by the railway in the south. Typically the reservoir embankments would be between 20.5m and 21.9m in height. The bottom of the reservoir embankment would be approximately 400m wide on average, varying to take account of existing ground levels and topography.
- 2.5.8 The embankments would be built from layers of compacted clay, with other materials such as soil or gravels used for the drainage system and landscaping. There are two faces to the reservoir embankment; the inner face, which is in contact with the reservoir water; and the outer face, on the dry side. The inner face would be protected by large, durable stones (referred to as rip rap) or asphalt (typically used for road surfacing). Other materials may be required, for example concrete slipways for boat launching.

- 2.5.9 The reservoir would hold water both above and below existing ground levels.
- 2.5.10 The top of the embankment would typically be around 17m wide. This would include space for tree planting and an access track for the public to use for walking and cycling, which would also be used for maintenance, inspection and emergency access.
- 2.5.11 In places the top of the embankment would be wider to accommodate facilities such as a sailing club or visitors centre or larger areas of tree planting. See Plate 12 for a typical cross-section.

Plate 12 Typical cross-section of reservoir embankment



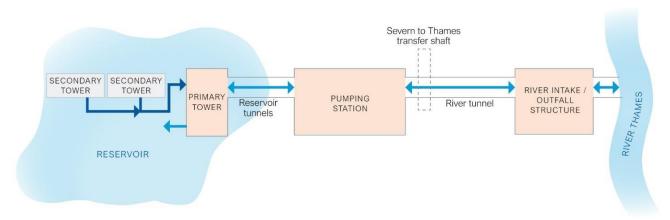
- 2.5.12 An open channel, referred to as the toe drain, is located at the bottom of the embankment and this would collect water from the embankment's drainage system. An access track would also be in place around the bottom of the embankment for public recreational use as well as maintenance, inspection and emergency access. Access ramps will be provided to connect the tracks at the top and bottom of the embankment.
- 2.5.13 Up to four reservoir towers would be required to control water entering and leaving the reservoir. The largest would be the primary tower, which is closest to the pumping station would be approximately 32m wide and extend up to 23.7m above the height of the embankment. This would be used for transferring water into the reservoir. Up to three secondary towers would be approximately 15m wide and extend approximately 17.7m above the height of the embankments. These would be used for removing water from the reservoir. The secondary towers would include screens to reduce the risk of harming fish.
- 2.5.14 Water in the reservoir would be mixed by pumping air into the water, to prevent water from separating into layers with different temperatures, densities and oxygen levels.
- 2.5.15 Six to twelve electricity substations around the bottom of the reservoir embankment would power recreational facilities, instrumentation and collect power from floating solar panels and other renewable energy on Site.
- 2.5.16 Vehicular access to the reservoir and embankments would be restricted for security purposes.

Reservoir tunnels

2.5.17 There would be two underground reservoir tunnels. One would carry pumped water from the pumping station into the reservoir. The other would transfer water from the reservoir back to the pumping station. They would be approximately 625m long and 7.7m wide. Plate 13 provides a schematic showing how water would be transferred into and out of the reservoir through these tunnels.

2.5.18 In the unlikely event of an emergency, both reservoir tunnels and the river tunnel (see paragraphs 2.5.22 to 2.5.24 below) would be used to remove water from the reservoir in a controlled manner and release it into the River Thames.

Plate 13 Schematic showing how water would be transferred into and out of the reservoir (not to scale)



Pumping station

- 2.5.19 The pumping station would house equipment needed to move water into the reservoir and to / from other linked projects (see paragraph 2.4.5). The main pumping station structure is expected to be up to 153m long, 73m wide and be positioned 20m below ground level.
- Above ground, a building and compound would be required to house equipment, welfare and maintenance facilities. The building would be up to 120m long, 75m wide and up to 23m high. Other equipment such as generators, transformers and parking spaces would be required within the pumping station compound.
- 2.5.21 A foul pumping station would control foul water flows from the Thames to Southern Transfer water treatment works and the Project via a pipeline. Associated upgrade works may need to be carried out at either Abingdon Sewage Treatment Works or Drayton Sewage Treatment Works within the existing sewage treatment works boundary.

River tunnel

- 2.5.22 The river tunnel would transfer flows from the pumping station to and from the intake/outfall structure on the River Thames (see paragraphs 2.5.25 to 2.5.27).
- 2.5.23 The river tunnel would be approximately 3.5 kilometres (km) long, up to 23.5m deep and approximately 7m wide.
- 2.5.24 There would be three shafts on the river tunnel, one connecting to the intake/outfall structure, one for operation access, and a third for connection to a future Severn to Thames Transfer project.

River Thames intake/outfall structure

2.5.25 The intake / outfall structure is the point at which water is taken from, and released to, the River Thames. It would be situated on the west bank of the River Thames near Culham, alongside an associated compound, shaft and buildings for control and housing equipment.

A section of the west bank of the River Thames would need to be lowered to install these structures.

- 2.5.26 Posts that protrude above the water level, buoys and signage would be installed to protect or prevent unauthorised access to the intake area. It is envisaged that these would extend approximately 10m into the River Thames. The outfall structure would consist of a weir and spillway of approximately 40m width and 65m in length.
- 2.5.27 Erosion protection would be installed along a length of approximately 160m (10m width) on both the eastern and western sides of the River Thames. This would be required to protect the bed and the banks of the River Thames. A 10-15m stretch of the eastern bank may require reinforcing with concrete or stone.
- 2.5.28 To mitigate effects of the works on upstream flood levels, a section of the eastern bank of the River Thames approximately 500m long and 90m wide would be lowered by approximately 2m and planted to match the existing adjacent floodplain. The Thames Path (a rough grass track in this location) would be reinstated on its present route at the reduced level with an additional path provided around the edge of the lowered area to maintain access in times of high river flow.
- 2.5.29 No water would be taken from or discharged back to the River Ock.

Thames to Southern Transfer water treatment works

- 2.5.30 The Thames to Southern Transfer water treatment works would be required to treat water from the reservoir which would be transferred via pumps and a pipeline approximately 1.5km in length. The design would consist of a series of buildings up to 16m high, a water control tower building up to 26m high and other associated facilities and equipment. There would also be a new access road from the main reservoir site access road.
- 2.5.31 Once treated, water would be transferred to Southern Water's supply zone in Hampshire via further pumps and an approximately 4.5km pipeline from the water treatment works to an area close to the railway.
- 2.5.32 Southern Water (under a separate project) would install the remainder of the pipeline, which would be approximately 80-85km, ending in Hampshire.
- 2.5.33 A wastewater pipeline would take foul drainage from the water treatment works to a foul pumping station within the pumping station compound. This would then connect to either Abingdon Sewage Treatment Works through a further pipeline up to 4.25km in length, or to Drayton Sewage Treatment Works through a pipeline up to 3.3km in length.

Watercourse diversions

- 2.5.34 Construction of the Project would require diversion of existing watercourses around both the eastern and western sides of the reservoir, before building the reservoir in order to provide replacement watercourses and floodplain.
- 2.5.35 The design of the watercourse diversions would aim to copy the natural flow of water, to accommodate water flows (including during times of flood), minimise erosion and provide benefits for biodiversity.

Wilts and Berks Canal

- 2.5.36 The historic route of the Wilts and Berks Canal lies within the area of land that would be needed for the new reservoir and would be lost during construction. To safeguard the route through the Site, the Project would create a new channel, which would hold water within it, to allow for the future provision of a canal. The new channel would be constructed on a realigned route through the Site.
- 2.5.37 The design of the new channel would respect the canal's heritage but also allow for future navigation if locks were added later (i.e. no locks are proposed to be installed). The channel would be wide enough for two narrowboats to pass, with a towpath running alongside, with crossing points where the route meets roads, paths and cycleways.

Access roads

- 2.5.38 The main access road to the reservoir for public and workforce vehicles would be via a new road that would connect to the A415 to the west of the A34 Marcham Interchange via a proposed new 3-arm roundabout.
- 2.5.39 This 3km road would provide the main access route to the main visitors' car park, Water Sports Centre, recreational lakes centre, pumping station and water treatment works.

Steventon to East Hanney Road diversion

- 2.5.40 The existing Steventon to East Hanney Road is made up of the Steventon Road (to the west) and Hanney Road (to the east). This would be realigned to the north of the Great Western Main Line railway to ensure connectivity between East Hanney, Steventon, and beyond is maintained during construction and operation of the Project.
- 2.5.41 The route would consist of approximately 5km of new highway with a proposed 3-arm roundabout connecting to the A338 at the western end and merging into the existing alignment on the approach to Steventon village at the eastern end. Noise bunds approximately 4m in height would be provided on the southern side of the new road, close to the road, to reduce noise from the road to local people.
- 2.5.42 The newly diverted road would open whilst the reservoir is under construction and remain in place following completion of the works.

Recreational and educational facilities

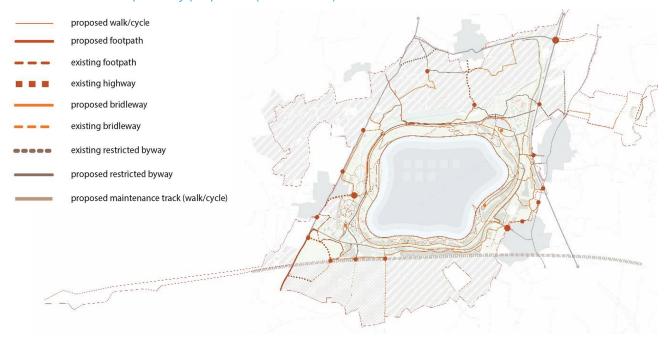
- 2.5.43 Recreational buildings will be located on the outer face of the embankment where appropriate. The size of these would vary depending on their function but the tallest is likely to be a reception building and visitor centre approximately 14m in height.
- 2.5.44 Two recreational lakes are proposed in the north-east of the Site. One of these would be approximately 3 hectares in size would be provided for nature and fishing. The other would be approximately 5.5 hectares and would allow activities such as swimming, paddleboarding and sailing. An illustrative view of this is provided in Plate 14.





- 2.5.45 A Water Sports Centre would be provided adjacent to the reservoir, facilitating use of the reservoir by non-motorised craft and would be designed in accordance Royal Yachting Association and Sport England best practice.
- 2.5.46 A Nature Education Centre would be located to the south-west of the reservoir. This may include the provision of a new wetland, which could also serve to treat foul water from the proposed buildings in a natural way.
- 2.5.47 The Project also includes other buildings such as public toilet blocks and bird hides in the parts of the Site that would be publicly accessible.
- 2.5.48 The proposed recreational facilities and reservoir would be connected to local villages and the existing Public Right of Way network through the provision of active travel routes for walkers, cyclists, other wheelers, and horse riders. This would be designed as a safe, effective, and attractive network to link together the local areas of population. Indicative proposals for this are shown on Plate 15 below and are subject to ongoing design.

Plate 15 Indicative pathway proposals (not to scale)



- 2.5.49 Active travel provision could also include:
 - Provision for walkers, wheelers and cyclists alongside the Steventon to East Hanney road diversion.
 - Provision along the water channel for the Wilts and Berks Canal of a towpath.
 - Footway improvements connecting to the Site along Hanney Road in Steventon
 - Improvements to active travel facilities at the A34 Marcham Interchange and alongside the A415.
 - A range of connections and upgrades to the existing Public Rights of Way network.
 - Walking and cycling provision as part of junction designs to ensure safety.

Project Priority Areas for Biodiversity

- 2.5.50 The Project includes a network of Project Priority Areas for Biodiversity, which are designed to support local wildlife and ecosystems and mitigate for any habitats that are lost or damaged as a result of the Project.
- 2.5.51 The Project Priority Areas for Biodiversity include creation and enhancement of habitats in various places throughout the Site. They would blend different types of habitats in line with the county-wide plans to restore nature and biodiversity. This would help to reduce adverse effects from the Project and assist with the incoming legal requirement to provide measurable improvements to biodiversity. Thames Water is committed to delivering at least 10% Biodiversity Net Gain with the Project.
- 2.5.52 New habitats will be created or existing ones improved as early in construction as possible to support wildlife and reduce the visual effect of the infrastructure. These include woodlands, hedgerows, wetlands, and water channels, with features like ditches to support species such as otters and water voles. Some areas will be open to the public, while others will be protected for nature.

2.5.53 The reservoir design includes the provision of floating islands, which would be planted with a range of different native species to provide further habitat for (nesting) birdlife.

Renewable energy infrastructure

- 2.5.54 The Project's integrated energy strategy includes several renewable energy features. Floating solar panels would be installed on about 6% of the reservoir's surface, generating around 40MW at peak. Solar panels would also be added to buildings and carports, supported by a battery storage system expected to hold 6MWh of energy.
- 2.5.55 Consideration is being given to providing ground-mounted solar panels to replace existing solar farms that would be removed during construction. This would be placed to the north-west of the reservoir and provide up to 69.5MW of energy. The panels would be up to 4.5m high, and require other equipment to be installed alongside them such as a substation and cabling.
- 2.5.56 Additionally, energy recovery turbines within the pumping station will be used to generate energy when water is released from the reservoir.

Temporary rail sidings

- 2.5.57 A temporary rail siding would be required to allow delivery of certain materials by rail freight and thereby reduce the amount of material brought to or removed from the Site by road. This would incorporate an adjacent material handling area for the loading and offloading of materials. This would be designed and used in close liaison with Network Rail and may require upgrades to existing rail infrastructure such as overhead lines and signalling equipment.
- 2.5.58 After the Project is constructed, it is anticipated that the material bays and handling equipment would be deconstructed, with materials reused or recycled where possible. Some assets may be adopted by Network Rail for ongoing use and maintenance.

3 What options have been considered?

3.1 How does Thames Water work with other water companies?

- 3.1.1 Every water company is legally required to prepare and maintain a Water Resources Management Plan (WRMP). These are updated every five years and set out how companies will achieve a secure long-term supply of water for customers whilst protecting the environment.
- 3.1.2 Thames Water, Southern Water and Affinity Water have been working together to develop a regional strategy for water supplies as part of Water Resources South East (WRSE), which is an alliance of six water companies that supply drinking water across South East England. This approach ignores water company 'boundaries' to identify the best long term regional plan for the whole of the South East that presents the best value to customers, society and the environment. The approach has worked alongside the WRMP preparation process to address water supply challenges on a regional scale.

How was SESRO selected as the preferred approach to provide water supply resilience?

- 3.2.1 The WRSE partners have worked together to identify ways to improve the regional resilience of water supplies. Different options to achieve this have been considered both individually by the water companies and by WRSE to develop a regional plan that provides the best value to customers. This was published in June 2025.
- 3.2.2 Many hundreds of options have been considered to provide water supply resilience.

 Options considered include water supply solutions (recycling, transfer, desalination, reservoirs, groundwater storage, sharing water) and reducing demand for water (reducing leaks, using water wisely and temporary drought measures).
- 3.2.3 As part of the development of these options, a variety of reservoir sites were considered, providing a range of locations and storage size options. These were considered alongside the full list of other solutions.
- 3.2.4 The options were considered for the Thames Water WRMP using a phased approach to consider a range of technical, environmental, planning, social and economic criteria to identify the best value plan. This included consideration of future population growth, potential climate change effects, drought risk and potential abstraction licence reductions. As part of this, assessments to identify the environmental effects and opportunities were undertaken, including a Strategic Environmental Assessment (SEA), a Habitats Regulations Assessment, a Water Framework Directive (WFD) Assessment, a Biodiversity Net Gain and Natural Capital Assessment, and an Invasive Non-native Species (INNS) Assessment.

3.3 Why was the site near Abingdon selected for the reservoir?

3.3.1 Following review of alternative locations for a new reservoir, the Project location near Abingdon was selected because:

- It is close to the River Thames (<5 km) and is upstream of existing water abstraction points used by Thames Water, Affinity Water, and South East Water.
- It has reasonably flat land
- It has the right geology and ground conditions for a reservoir
- There are very few environmentally designated sites within the area
- Initial Habitats Regulations Assessment screening assessments indicated that no likely significant effects are anticipated to arise
- The Site has the potential to deliver a Biodiversity Net Gain.
- It is near to a railway line (the Great Western Main Line railway London to Bristol) and major roads to deliver construction materials

3.4 How was the location of the Thames to Southern Transfer Water Treatment Works selected?

- 3.4.1 The Thames to Southern Transfer project is designed to move water from the River Thames to areas in Hampshire and the Thames Valley. Studies have been undertaken by Southern Water to find the best location from which to take water, treat it and move it; taking into account considerations including cost, environmental effects, and the risk of spreading INNS.
- 3.4.2 The study found that treating the water at one site to make it suitable for drinking was better than using untreated water, which would need several treatment locations and more land, resulting in higher costs, higher carbon footprints and causing greater effects to people and the environment.
- 3.4.3 It was concluded that the most appropriate source of the transfer is the reservoir, with a water treatment works near to the start of the water pipeline route within the Site. This spot was chosen to protect sensitive areas like the North Wessex Downs National Landscape, whilst treating water before it crosses the River Lambourn Site of Special Scientific Interest which would be sensitive to INNS. No other locations outside the Site were found suitable due to higher costs and carbon footprint. The chosen location also allows flexibility in design reducing harm to the surrounding environment and without adversely affecting the delivery of the Project. Further studies were prepared to determine the location of the water treatment works within the Site.

3.5 How has the design developed?

- 3.5.1 Following reviews and assessments, and building on feedback received from stakeholders and the local community, the Project has developed and evolved, including through consideration of alternatives in terms of the Project's scale, location, technology, and design.
- 3.5.2 Design development has been undertaken for various components of the Project as outlined below.

Reservoir shape and position

- 3.5.3 The shape, form, and embankment footprint of the reservoir has been developed through considering key limitations such as geology, ground conditions and the surrounding land uses.
- 3.5.4 The Site is bound by the physical features of A roads to the west and east, the village of Steventon to the south-east, the village of East Hanney to the south-west, the main line railway to the south and the floodplain of the River Ock to the north (see Plate 16). The location of the reservoir within the Site is also limited to the area with enough thickness of clay in the ground to hold large volumes of water. Furthermore, there is a need to balance the amount of material removed and placed to create the reservoir so that the amount of soil that needs to be brought to or removed from the Site is reduced.

Abingdon
River Ock
Culham
Drayton

East Hanney

Great Western Main Line railway

Steventon

Indicative view of the proposed new reservoir

Plate 16 Indicative view of reservoir in relation to local features

Watercourse diversions

3.5.5 Given the scale and nature of the Project, the only option for watercourse diversions is to move their route to be around the outside of the reservoir embankments. The diversion locations were therefore set by considering the technical limitations and environmental conditions.

Option studies for other project components

3.5.6 Various other studies of design options have been undertaken to help refine the design of the Project based on, for example, technical, environmental, ease of construction and cost considerations. This has included considering alternative options relating to:

- The need to be able to quickly lower water levels in the reservoir in an emergency (known as the emergency drawdown function).
- The layout of the reservoir tunnels including size, number of tunnels, pipe arrangements and construction methodologies.
- The layout of the river tunnel and the position of the water intake/outfall structure at the River Thames, the location of which determines the end point for the river tunnel.
- The location of the main access road, which would be used during construction and operation.
- The realignment of the Steventon to East Hanney Road which currently sits within the proposed reservoir footprint.
- The alignment and provision of a water channel for the historic Wilts and Berks Canal
- The diversion of an existing 132Kv overhead electricity cable
- The location and size of a proposed rail siding and material handling facility to support construction
- The provision of renewable energy, including consideration of ground mounted solar panels, floating solar panels and wind turbines.

4 Construction and operation

4.1 How will the Project be built?

- 4.1.1 Construction is expected to take place over three phases (early works, enabling works, and main works). This would be followed by commissioning and filling of the reservoir. The order of construction activities is still being developed. It is expected that timeframes of the phases would overlap, such that some areas of the Site might be within different phases at any one time. Plate 17 summarises the expected project timeline.
- 4.1.2 An early works phase would commence in 2027, consisting of early ecological habitat creation or enhancement, and where appropriate, the removal of protected species. It is currently proposed that this would be undertaken prior to the DCO being consented by the Secretary of State, subject to separate consents as required.
- 4.1.3 The enabling works phase would take place after the DCO is consented (expected to be in 2028), which would see the continuation of early works activities, plus demolition, site clearance, utility diversions, watercourse diversions, access roads, establishment of the main compounds and any works required to reduce effects on archaeology. This phase would also include establishing a temporary rail siding and materials handling facility by 2032 and providing the Steventon to East Hanney Road diversion early in the phase. This phase is expected to conclude in 2034.
- 4.1.4 The main works phase would commence in 2032, starting with watercourse diversions at the same time on the eastern and western sides of the reservoir location over a period of approximately two years. This would be followed by earthworks and construction activities associated with the reservoir embankments, the pumping station, the reservoir and river tunnels, the River Thames intake/outfall structure and Thames to Southern Transfer water treatment works.
- 4.1.5 The reservoir commissioning and filling period would take place during the main works phase between 2039 and 2041. This would only commence once the reservoir embankment is certified as being safe to fill and would consist of filling the reservoir using water from the River Thames. Water from the reservoir would be available for use after one year of filling (expected to be 2040).
- 4.1.6 Construction of the public and recreational facilities, and landscaping, would continue after a reservoir commissioning and filling period. Completion of the main works phase is expected to be reached by 2043.

Plate 17 Project timeline



- 4.1.7 There would be a need for up to 20 compounds during the construction stage of various sizes and in differing locations to support the different phases of construction and the different works. A series of haul roads would also be required during different sequences of the construction works. The provision of permanent access and internal roads would be in place as early as possible within the sequencing. Detailed consideration is being given to access points, watercourse crossings, and mitigating disruption to the local Public Rights of Way network.
- 4.1.8 Based on the emerging design information, approximately 65.8 million cubic metres of material would be excavated during construction of the Project. The design allows for 94.4% of this to be reused on the Site, with approximately 3.7 million cubic metres that would need to go offsite as waste, mostly topsoil. However, this volume will continue to be reviewed to explore opportunities for reusing material on or offsite. This material would be removed from the Site via the rail siding and materials handling facility or by road. Approximately 9.7 million tonnes of materials would need to be brought to the Site for construction, mostly sand and gravel, recycled materials, plus rip rap for the reservoir.
- 4.1.9 A Draft Code of Construction Practice has been prepared to support the PEI Report. This outlines how control measures and standards will be implemented throughout the construction works to mitigate effects on the local community and the environment.

4.2 How will the Project be used?

- 4.2.1 Detailed procedures would be agreed to ensure safe and efficient operation of the reservoir and associated infrastructure based on regulatory requirements and best practice guidance.
- 4.2.2 Abstraction of water from the River Thames into the reservoir and discharge of water back into the River Thames would be subject to the conditions of a licence/permit from the Environment Agency. This would include the need to comply with measures in order to avoid adversely affecting flows and water quality within the River Thames and further downstream.

Maintenance requirements

4.2.3 Regular maintenance would be required for all elements of the Project. This includes the intake / outfall structure, the reservoir draw-off towers and tunnel, habitat management and maintenance of roads and rail. Although the Project's operational life is understood to be

indefinite for its defined purpose, components will require maintenance, repair or replacement at some point.

Workforce and visitors

- 4.2.4 It is expected that approximately 100 staff would travel to and from the Site per day once operational.
- 4.2.5 It is estimated that over one million visitors could visit the Site per year. Daily visitor numbers are expected to peak at approximately 8,000, for example on a typical August weekend day.

Security

4.2.6 A security strategy for the Project would be prepared and implemented during operation to manage and monitor identified risks and maintain water supply in the interests of national security. Security measures will include security fencing around key infrastructure, controlled vehicular access to maintenance access roads and the reservoir crest, security measures for buildings, intruder detection systems, alarms and video surveillance.

Inspections and monitoring

- 4.2.7 Routine inspection of assets would be undertaken in line with appropriate standards and legislation. The Project would have a Reservoir Safety Management Plan in place. This would set out what surveillance, monitoring, and maintenance is required and how it would be operated.
- 4.2.8 Other parts of the project would require routine inspections. This may include the use of cranes to inspect the reservoir towers and floating islands and walking visual inspections of the tunnels. Furthermore, during operation, regular monitoring will be done for water flow, water levels and quality, movement of the reservoir structure, flow rates of water transfers, river conditions, gas levels in tunnels, and vehicle traffic to ensure safety, efficiency and environmental protection.

Reservoir safety and emergency planning

- 4.2.9 Any work related to the design, construction and operation of large reservoirs such as SESRO must align with the Reservoirs Act 1975 (as updated and amended) which provides a comprehensive legal framework for ensuring reservoir safety. The reservoir embankment and associated structures would be designed to national and international guidance documents, standards and best practice.
- 4.2.10 It is considered highly unlikely that there would ever be an emergency that requires the reservoir to be emptied and there are strict legal requirements that require water companies to be fully prepared and have emergency plans in place before filling the reservoir. The plans will ensure the right people can prevent, control and respond to any threat from the reservoir that could endanger life or property.
- 4.2.11 These plans would be prepared in accordance with Environment Agency guidance and include all site emergency measures for the reservoir and an on-site emergency flood plan determining the access routes and the location of water control points (e.g. ponds, channels or berms). The emergency systems would be tested at least once a year in line

with legislative requirements. The tests would typically last for approximately 15-20 minutes and take place over a one or two day period, with water being released into the river tunnel. Where necessary tests will be timed to avoid high flows in the River Thames.

Decommissioning

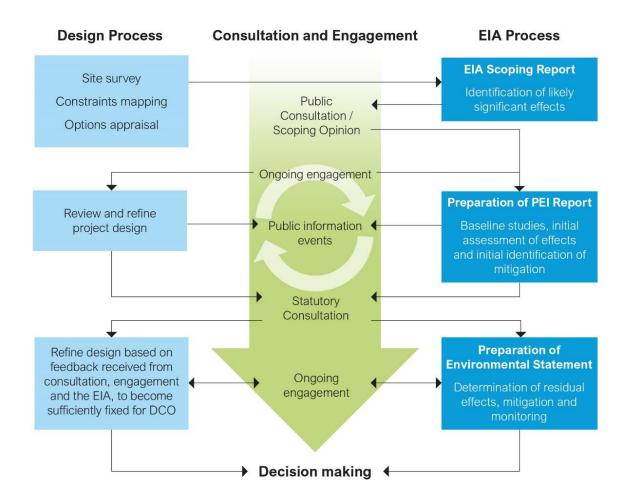
4.2.12 The Project would form a long-term solution to ensure a secure and sustainable future water supply for the South East region. Although some elements of the Project would have a defined design life, all elements would be subject to continued maintenance / replacement in line with the management of the reservoir as a whole. Therefore, the Project, once operational, would form a permanent reservoir and associated infrastructure. No activities are proposed that would require decommissioning or associated decommissioning plans.

5 Approach to the Environmental Impact Assessment

5.1 What is EIA and why is it important?

- 5.1.1 An EIA is a process to protect the environment by ensuring that planning decisions are made with full knowledge of the likely significant environmental effects of a proposed development. Plate 18 summarises the elements of the EIA and design processes and shows how these are refined through consultation and engagement.
- 5.1.2 The focus of the EIA process is to identify and avoid, reduce or offset (i.e. mitigate) significant adverse effects as much as practicable through the design process and then report on the likely significant effects to help the Secretary of State decide whether construction of the Project should be approved. Using the Oxford English Dictionary definition for 'significant', significant effects are defined as those that are 'sufficiently great or important to be worthy of attention; noteworthy'.
- 5.1.3 An EIA is required for the Project under the Infrastructure Planning (EIA) Regulations 2017, because it falls into a project category that could cause significant environmental effects.
- 5.1.4 The outcome of the EIA process will be reported in an Environmental Statement that will be submitted as part of the DCO application for the Project. The Environmental Statement will be informed by ongoing design, survey and assessment work, as well as feedback received during the Statutory Consultation and ongoing engagement, and will build on the information set out in the PEI Report.

Plate 18 Summary of the EIA process



5.2 What effects have been considered?

- 5.2.1 The overall benefit of the WRMP (including SESRO and T2ST) to communities, human health and the economy 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.
- An EIA Scoping Report was issued to the Planning Inspectorate in August 2024 (this is available to review on the Planning Inspectorate national infrastructure website: South East Strategic Reservoir Option (SESRO) Project information). The EIA Scoping Report proposed the scope and methodology to be used for the EIA. 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'.
- 5.2.3 The Planning Inspectorate provided an EIA Scoping Opinion in October 2024, which included feedback from consultation bodies that were formally consulted. This process was used to agree which potential effects should be scoped in to the EIA and therefore would

need to be reported in the Environmental Statement. A preliminary assessment of those effects is included in the PEI Report. This is broken down into the following environmental aspects in the PEI Report:

- Water environment
- Aquatic ecology
- Terrestrial ecology
- Historic environment
- Landscape and visual
- Geology and soils
- Materials and waste
- Traffic and transport
- Air quality
- Noise and vibration
- Socio-economics and communities
- Human health
- Greenhouse gases
- Climate resilience
- Major accidents and disasters
- Cumulative effects

5.3 How have effects been assessed in the PEI Report?

- 5.3.1 A preliminary assessment of environmental effects has been completed for the PEI Report. Each environmental aspect chapter within the PEI Report considers whether the effects scoped into the assessment are anticipated to be temporary or permanent, the duration of the effect (short, medium or long-term) and whether effects are likely to be significant or not. Effects from both the construction and operation phases of the Project are considered within the aspect chapters (where applicable). Effects from construction are typically expected to be temporary in nature. Each aspect chapter has a specific study area within which the potential for likely significant effects is considered; this generally includes an additional area beyond the Site.
- 5.3.2 Whilst the methods used to determine likely significant effects are specific to each aspect chapter, in general the following have been considered:
 - Legislative and policy requirements
 - Guidelines, standards and codes of practice including those published by the Planning Inspectorate and professional bodies
 - Advice and feedback from statutory consultees, other interested parties and independent experts
- 5.3.3 For most aspects, the following three-step process has been used to understand the significance of effects:

Step one – determine the sensitivity of the environment

5.3.4 This looks at the sensitivity of the environmental feature that would be affected (this is known as the environmental receptor). Sensitivity means how easily a receptor could be

affected by change. Each receptor is classified as having either very high, high, moderate, low or negligible sensitivity.

Step two – determine the magnitude of impact

5.3.5 This step considers the likely magnitude of the impact (i.e. scale of change) from an activity associated with the Project. This is measured as the degree of change from the environmental baseline, i.e. the starting point for comparison of effects from the Project, and the nature of the impact (including whether it is beneficial, adverse or neutral). The magnitude of impact factors in any committed mitigation that the Project is applying to reduce changes to the environmental baseline. The magnitude of impact on each receptor is classified as either very large, large, medium, small or negligible/no change.

Step three – determine the significance of effect

- 5.3.6 This step uses a matrix approach and professional judgement to combine the receptor sensitivity versus the magnitude of impact to categorise the significance of effect (i.e. major, moderate, minor, neutral or none). Effects categorised as moderate or major are considered likely to be significant in the EIA.
- 5.3.7 A typical significance matrix is shown in Table 1 below.

Table 1 Typical matrix used to determine the significance of environmental effects (Receptor sensitivity and magnitude of impact)

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

- 5.3.8 Where more appropriate for some aspects, a specific approach, following industry good practice, has been used to assess the environmental effects. Where this is the case, it is set out within the relevant aspect chapter of the PEI Report.
- For some aspects it has not been possible to confidently categorise the significance of effects in the PEI Report due to uncertainty about design, construction, or baseline information at this stage. For these, the effects have been assessed as either 'significant' or 'not significant' based on professional judgement and will be assessed further as part of the Environmental Statement once further information is available.

5.4 How has the baseline environment been defined?

- 5.4.1 The existing environmental baseline is established by measuring the current environmental conditions. Information has been obtained and carefully examined from many sources. This includes using public datasets, data obtained from stakeholders such as the Environment Agency, Natural England or Local Authorities, desk-based assessments, walkover surveys, ground investigations and other appropriate surveys, assessments and investigations.
- In addition, the EIA identifies the future baseline conditions to be considered in the assessment, which includes the conditions that would exist in the future if the Project does not get built. This includes, for example, changes that may occur as a result of other planned development and the effects of climate change. The EIA assesses the magnitude of impact from Project activities on the existing and future baseline environment.

5.5 How are adverse environmental effects reduced?

- 5.5.1 A Project of this nature is likely to have both beneficial and adverse effects on the environment.
- Thames Water is committed to including mitigation measures as necessary to address likely significant adverse environmental effects as far as practicable. Proposed mitigation follows the mitigation hierarchy to avoid and reduce significant adverse effects on receptors. Where it is not possible to avoid or reduce significant effects, compensation for effects, offsite enhancement and/or remediation of effects will be considered where appropriate. This is known as the mitigation hierarchy and is summarised in Plate 19.
- 5.5.3 The PEI Report refers to three distinct categories of mitigation. These are:
 - Embedded design mitigation. These are changes that have been made to the location or design of the Project to avoid, prevent or reduce likely significant effects. Examples of this include managing construction material quantities to reduce changes in traffic flows, or including areas of habitat planting in the design to mitigate ecological effects.
 - Standard good practice mitigation. This includes actions that will be taken to meet legal obligations, or actions that are considered to be standard practice used to manage commonly occurring environmental effects. This includes, for example, considerate contractors' practices that manage activities which have potential nuisance such as noise and environmental effects, such as the spillage of fuels, oils or other chemicals.
 - Additional mitigation. This includes actions that require further activity in order to
 manage significant environmental effects. This includes, 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.
- 5.5.4 Both embedded design mitigation and standard good practice are considered to form part of the Project at this stage. All proposed embedded design mitigation and standard good practice measures that have been developed to reduce adverse environmental effects are listed in a Draft commitments register, which has been appended to the PEI Report. An initial assessment of likely significant effects has therefore been done on the basis that embedded design mitigation and standard good practice mitigation are in place.
- 5.5.5 Additional mitigation that may reduce any identified likely significant adverse effects is currently being explored but has not been applied for the preliminary assessment in the PEI

Report, as the viability, nature and extent of these measures 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), will be reported in the Environmental Statement.

Plate 19 The mitigation hierarchy

Mitigation factored

in before considering
if an effect is initially
anticipated to be significant
in the preliminary assessment
of effects for the PEI Report.

AVOID

Embedded design mitigation is embedded within the design seeking consent, and requires action at the top of the hierarchy, with greater ability to avoid effects.

Standard good practice mitigation is undertaken to meet legislative requirements, or are standard practices used to manage commonly used occurring effects.

Most

Measures subject to further exploration as

the design and EIA progress, which have not been factored into the preliminary assessment of effects for the PEI Report.

MITIGATE

Additional mitigation identifies additional actions that focus on the middle of the hierarchy to reduce the significance or likelihood of effects.

COMPENSATE

Compensation required for residual environmental effects could include the creation of new (or improvement of existing) features of at least equivalent (often better) value than those lost. Required when mitigation does not reduce effects to acceptable levels.

Least

- 5.5.6 Mitigation will be kept under consideration and refined as the design and EIA progresses. The commitments register is being refined and developed throughout the EIA process, and an updated version will be submitted as part of the DCO application.
- 5.5.7 Opportunities for environmental enhancements are also being explored and will be reported in the Environmental Statement, where appropriate.

6 What are the likely significant effects?

6.1 Overview

- 6.1.1 A preliminary assessment of environmental effects has been completed for the PEI Report, based on the 'worst-case' parameters for the Project design, construction and operation as set out in sections 2 and 4 of this Non-Technical Summary.
- 6.1.2 All proposed embedded design mitigation and standard good practice measures that would form part of the Project are listed in a Draft commitments register, which has been appended to the PEI Report.
- An initial assessment of likely significant effects has been done on the basis that embedded design mitigation and standard good practice mitigation are in place. Embedded design mitigation and standard good practice measures that would be key in reducing adverse effects are identified below alongside the likely significant effects that have initially been identified. Additional mitigation that may further reduce identified likely significant adverse effects is also noted below, but this has not been applied for the preliminary assessment in the PEI Report, as further work is being done to develop this.
- The PEI Report is based on the current design parameters and assumptions, and the information available on the current environment in the Site (the baseline). It is expected that as further understanding of the current environmental baseline is gained, and the design and mitigation are further developed, adverse environmental effects for the majority of likely significant adverse effects can be reduced. The next steps, which will be taken as part of the assessment which will be reported in the Environmental Statement are summarised below.
- 6.1.5 The Environmental Statement will be submitted with the DCO application and will provide the final assessment of likely significant effects. This will be informed by the ongoing EIA process, consultation and engagement.

6.2 Water environment

- 6.2.1 The preliminary assessment of effects on the Water environment considers how construction and operation of the Project affects the following:
 - Flows and movement of river water.
 - The physical characteristics (shape and form, known as the geomorphology) of rivers and other watercourses.
 - Water quality of surface waters including rivers, streams, ditches, lakes and reservoirs.
 - The flows, quality and processes associated with water underground (groundwater).
 - Risks associated with flooding, including surface water flooding, flooding from rivers and groundwater flooding.
- The current understanding of the baseline Water environment, and the assessment of effects that the Project may have on this, are being informed by ongoing engagement with the stakeholders such as the Environment Agency, Natural England and Local Authorities, the collection of data from various sources (including from these consultees and others),

- the outputs of available computer modelling, and a range of recent and ongoing surveys and water monitoring.
- The main surface waters present are the River Thames and the River Ock (see Plate 7), plus other smaller watercourses, ditches, lakes and ponds. The main groundwater features present are aquifers (underground layers of rock or soil that hold water). There are also several surface and groundwater sites being studied in the study area that are legally protected for environmental or drinking water quality reasons.
- 6.2.4 Parts of the study area are at risk of flooding from either groundwater, over land flows and/or from rivers.
- 6.2.5 Measures that have already been developed and included in the Project to reduce adverse effects on the Water environment include:
 - Measures to contain and manage surface water from the construction site to manage potential flow and water quality impacts to surface and groundwater quality, including collection and appropriate treatment of water before discharge to receiving waterbodies.
 - Measures to manage silt deposition or release of pollution during construction, to manage potential impacts to the flow, movement and physical characteristics of rivers, including use of sediment settlement tanks and drainage systems that intercept pollution.
 - Measures to manage potential impact to groundwater flows and levels to reduce risk of groundwater flooding such as early construction of the groundwater drain and appropriate design of (underground) drains and tunnels to direct and manage groundwater flows.
 - Measures to ensure that there is no increase in flood risk to surrounding communities
 during construction and operation, such as through designing the Project and drainage
 systems to account for future increases in flows associated with climate change, and
 provision of replacement floodplain storage.
 - Measures to manage water quality in the reservoir, including water quality monitoring and alarm systems at the intake at the River Thames and in the reservoir, and use of mixing and aeration systems within the reservoir.
- The western and eastern watercourse diversion channels will be constructed early in the construction programme to remove the area proposed for the reservoir embankment from the floodplain. The same approach will be taken to ensure early provision of replacement floodplain storage and other flood mitigation structures associated with the inlet/outlet structure on the River Thames. These measures will help ensure that there are no significant flood risk effects during construction or operation.
- The key causes of likely significant effects on the Water environment from construction are the diversion of two watercourses, creation of floodplain, and the provision of a water channel for the Wilts and Berks Canal. Other construction activities such as excavations, dewatering, tunnelling, and watercourse crossings, plus construction of the intake/outfall structure on the River Thames will also cause effects on the Water environment.
- 6.2.8 There are likely to be some temporary significant adverse effects from construction on surface water quality, flows and the physical characteristics of watercourses, including in sections of the River Thames, River Ock and in other smaller watercourses and ditches.

- Ground disturbance during construction may cause changes in interactions between groundwater and surface water. Some construction works such as those requiring dewatering, excavation, tunnelling, piling or trenching may also result in changes to groundwater levels and flows. These activities may cause temporary significant adverse effects to aquifers in the study area.
- Once constructed, the Water environment may be affected by the Project through changes in local land use. In addition, the reservoir will also interact with the River Thames, particularly through water abstraction and discharge to the river, as well as the necessary infrequent operational testing of emergency systems associated with these activities.
- 6.2.11 There would likely be permanent significant beneficial effects at Childrey and Woodhill Brooks, Letcombe Brook and Ginge Brook and Mill Brook due to land use changes through creating Project Priority Areas for Biodiversity, which would improve flows and the physical characteristics of the brooks.
- That said, the preliminary assessment identifies that there is a potential for some permanent significant adverse effects, which will be assessed further. This includes changes to the physical characteristics and flows in the River Ock and in other smaller watercourses and ditches due to loss of catchment area (i.e. the area of land where rainwater collects before flowing into a common water source), watercourse creation/diversions and changes to flows of water over land.
- 6.2.13 There may also likely be significant adverse temporary effects on water quality, flows and the physical characteristics of the River Thames associated with the abstraction and discharge regime, including periodic testing of emergency systems for reservoir abstractions and discharges, which will happen at least once a year.
- 6.2.14 Significant adverse effects on groundwater and flood risk are not anticipated during operation because of the embedded design measures to reduce these, outlined above.
- 6.2.15 Additional mitigation that is being explored to avoid or reduce significant adverse effects on the Water environment include for example adding erosion protection on affected watercourses, and water quality monitoring after construction on water bodies sensitive to changes, and, if required, subsequent activities to address effects.
- 6.2.16 Ongoing assessment and design work is being undertaken to help better understand the potential effects that the Project may have on the Water environment and refine the design to mitigate potential significant adverse effects and identify opportunities to enhance the Water environment.
- 6.2.17 Other steps that are continuing or are planned to be undertaken to support the Water environment assessment for the Environmental Statement include:
 - Surveys and collation of additional information on the Water environment will continue, including ground investigations and information on private water abstractions.
 - Specific engagement with key stakeholders survey methods, environmental modelling and assessments, and consents and permitting requirements.
 - Specialist studies and modelling, including modelling of flood risks, flows, groundwater, water quality, and other abstractions. This will help with understanding how to refine the design and additional mitigation.
 - Continue associated assessments to inform the Water environment assessment including a Water Framework Directive Compliance Assessment, Hydrogeology Impact

- Assessment, Flood Risk Assessment, Water Resources Assessment and Water Quality Assessment.
- Explore opportunities to improve the natural characteristics of watercourses in the Site.

6.3 Aquatic ecology

- 6.3.1 The preliminary assessment of effects on Aquatic ecology considers how construction and operation of the Project affects the following:
 - Statutory and non-statutory designated sites and notable (priority) habitats
 - Aquatic habitats (including watercourses, ponds, lakes and the reservoir)
 - Fish
 - Macroinvertebrates (e.g. insects in their nymph and larval stages, snails, worms, etc.)
 - Large freshwater plants (macrophytes)
 - Small plants or algae that live on the bottom of waterbodies (phytobenthos)
 - Free floating plant and animal-like organisms (phytoplankton and zooplankton).
- The assessment considers the species and habitats of all rivers, streams, and other surface water features within the Site. It also includes species and habitats in nearby waterbodies that could be affected by changes in water flow caused by the reservoir, or by water being taken from or released into them. There are three Local Wildlife Sites within or connected to the Site that are important for their aquatic habitats or species. Additionally, five more Local Wildlife Sites and part of Little Wittenham Site of Special Scientific Interest are particularly relevant due to their connectivity with the River Thames (see Plate 7).
- 6.3.3 The current understanding of the baseline Aquatic ecology environment, and the assessment of effects that the Project may have on this, are being informed by ongoing engagement with Natural England, the Environment Agency and other key organisations. It is also being informed by a wide range of ongoing habitat and species surveys and other data collection for aquatic ecology species and their habitats, including, for example, surveys for fish, invertebrates, aquatic plants, algae, INNS, and environmental DNA monitoring.
- 6.3.4 Measures that have already been developed and included in the Project to reduce adverse effects on Aquatic ecology include:
 - Design and maintenance of reservoir infrastructure to reduce effects on Aquatic ecology (e.g. screens on intake structure to prevent fish entering pipelines).
 - Provision of Project Priority Areas for Biodiversity which will include improvements to, or creation of, aquatic habitats.
 - Measures to inspect and clean infrastructure to prevent the spread of aquatic INNS during operation.
 - Measures to manage the release of silt or other materials into watercourses during construction.
- 6.3.5 Key causes of likely significant effects on Aquatic ecology during construction may be from construction works which interact with the existing Water environment, including the construction of the eastern and western watercourses diversions and the construction of the intake / outfall structure on the River Thames.

- There are likely to be significant adverse effects on Aquatic ecology from construction, including the potential for direct harm, loss or disturbance to aquatic species or habitats from works within or adjacent to waterbodies in the Ock catchment and on the River Thames. Also, certain construction activities, such as piling, are likely to cause noise and vibration disturbance and changes to water levels and flows could introduce pollution into waterbodies and have subsequent effects on habitats or species. There will also be temporary losses or changes to habitats whilst the new watercourse diversions are established that are likely to cause significant adverse effects.
- 6.3.7 Furthermore, changes to the river banks and the channel of the River Thames associated with proposed erosion protection, flood compensation (eastern bank) and the intake/outfall structure would result in localised losses of habitat for species that live in and around the river, that may cause significant adverse effects. Also, there may be significant adverse effects on macroinvertebrates in the River Thames and potentially on a very small part of Little Wittenham Site of Special Scientific Interest downstream adjacent to the River Thames due to a risk of INNS being spread during construction.
- A key cause of likely significant effects on Aquatic ecology during operation is the presence of the reservoir and its interaction with the River Thames including the way in which water is abstracted from, and discharged to the river, as well as periodic emergency drawdown testing. The presence of the new watercourse diversions, the water channel for the Wilts and Berks Canal, Project Priority Areas for Biodiversity and recreational lakes have also been identified as potential causes of effects.
- Once operational it is planned for the overall nature and extent of aquatic habitats, including rivers, other watercourses, lakes and ponds, to be improved compared to the current baseline. At least 10% Biodiversity Net Gain will be achieved in part by the creation of, or improvements to, extensive areas of aquatic habitat in the River Ock catchment, which would provide likely significant long term beneficial effects to water quality and habitats here.
- 6.3.10 Generally, there would also be improvements to water quality in the River Thames downstream of the outfall which would benefit a very small part of Little Wittenham Site of Special Scientific Interest. However, the placement and operation of the intake / outfall structure at the River Thames, as well as the need for emergency testing, may pose risk to certain aquatic species from changes in flows, habitat loss or disturbance to aquatic communities. The potential introduction or spread of INNS may also pose a risk to aquatic habitats within the River Thames. Risks of effects on fish and eels will require further assessment to determine the potential extent of effects.
- 6.3.11 Additional mitigation that is being explored to avoid or reduce significant adverse effects on Aquatic ecology includes for example specific species and habitat mitigation strategies, and management of water abstractions when the River Thames has lower flows, to reduce effects on Aquatic ecology that this supports.
- 6.3.12 Further surveys are planned to better understand the aquatic environment alongside further stakeholder engagement, data analysis, modelling and assessment to address uncertainties from this preliminary assessment and refine the design to mitigate adverse effects. Engagement with regulators and stakeholders will also continue to inform ongoing survey approaches and findings and the development of mitigation (for example in relation to fish screens). Further detailed risk assessment and engagement will also be completed in relation to aquatic INNS.

6.4 Terrestrial ecology

- Terrestrial ecology focuses on the diversity of land-based plants and animals, and their interactions with each other and their environment. The preliminary assessment of effects on Terrestrial ecology considers how construction and operation of the Project affects sites designated for their ecological value and other protected or notable habitats and species. Due to the way in which different species live and move, effects have been considered beyond the Site in certain cases.
- The current understanding of the baseline Terrestrial ecology environment, and the assessment of effects that the Project may have on this, are being informed by ongoing engagement with key stakeholders including Natural England, the Environment Agency, Oxfordshire County Council and the Vale of White Horse District Council. Data has been collated from numerous sources and where appropriate has been supplemented by surveys for habitats and species. These include surveys for vegetation / plant communities, birds, mammals, amphibians, reptiles, and terrestrial invertebrates.
- Ongoing and future surveys will be reported in the Environmental Statement. As these are not yet complete, it is not possible to confirm which species may have a greater risk of significant effects than others. The below text summarises the key likely significant effects, which may adversely affect all identified species/habitats but this is dependent on the outcome of the surveys.
- There are several designated sites close to the Site including Sites of Special Scientific Interest and Special Areas of Conservation. There are also a variety of Local Wildlife Sites, some of which are within the Site itself (see Plate 7). Surveys conducted for the Project have identified the presence of several protected and notable species, including badgers, bats, barn owls, otters, water voles, amphibians, reptiles, and various invertebrates.
- 6.4.5 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - Measures for managing ecological effects, including the preparation, display of, and briefing to the construction workforce of potential ecological issues and procedures that must be followed.
 - The provision of Project Priority Areas for Biodiversity which will include new or improved habitats developed in alignment with the Local Nature Recovery Strategy.
 These are proposed to be delivered early in the construction stage, where feasible, to provide most benefit to habitats and species including improved connectivity.
 - Timing of construction works to reduce ecological effects, for example by avoiding sensitive periods of the year for certain species.
- 6.4.6 At this stage, all construction activities, including vegetation removal, are considered to have the potential to cause effects to Terrestrial ecology.
- 6.4.7 These construction activities could lead to significant adverse effects, including changes to habitats within the Site, potentially leading to declines in local populations, displacement from territories, changes in feeding activity and elevated stress to species.
- There may also be potential for physical harm from construction activities such as demolition or vegetation removal and disturbance from noise, vibration or lighting which may disrupt foraging, nesting, and breeding behaviour. Air quality changes and air pollution during construction may also lead to reduced habitat quality, biodiversity loss and

- ecosystem disruption. Furthermore, some of the changes to the Water environment described above, such as changes in water levels and flows could affect habitat for species such as otters and water voles or in the case of designated sites affect the general ecological health and resilience to change of those sites.
- Once operational the key cause of likely significant effects is the increased presence of people, vehicles, and potentially lighting, due to a regular workforce, visitors to the site, and maintenance activities. There will also be changes to land management, which could change Water environment conditions and affect some habitats or species.
- 6.4.10 The creation of the reservoir and surrounding land may benefit certain species of bats and birds, by enhancing habitat availability for these species and therefore supporting population growth. The Project is also anticipated to have some beneficial effects during operation by offering recreational opportunities, as an alternative open space to areas that are designated for ecology, therefore potentially reducing pressure on those protected areas. These beneficial effects will be further explored in the Environmental Statement.
- The preliminary assessment has identified likely significant adverse operation effects on Terrestrial ecology including potential harm or disturbance resulting from the introduction of new public recreational access, new permanent highways and associated vehicle movements and routine land management operations, such as mowing.
- 6.4.12 Changes in water flows and levels (above and below ground) may alter the specific plant species within a community, reduce suitability for specialist (and therefore rarer) species, and encourage intrusion by INNS.
- There may be some changes in air quality at designated ecological features that are sensitive to air pollution. This could result from emissions associated with the Project and could alter habitats, with knock-on effects for plant health and regeneration. As part of the DCO application for the project, alongside considering these effects as part of the assessment that informs the Environmental Statement, a report will be prepared to inform a Habitats Regulations Assessment, that considers the potential for effects on internationally designated features.
- 6.4.14 The locations of Project Priority Areas for Biodiversity have been designed to support the movement of species into land adjacent to the reservoir at the appropriate stage of construction and landscaping works.
- 6.4.15 Additional mitigation to support Project Priority Areas for Biodiversity includes targeted species mitigation measures. These aim to provide an overall net increase in available habitat for species where feasible, in the long term. Further additional mitigation measures are being actively explored in order to reduce likely significant construction and operational effects on Terrestrial ecology where possible. During construction some of these measures will need to be controlled by protected species licences and/or specific method statements.
- During operation, additional measures being explored may include, for example, the management of public access to some habitat areas, long-term management and maintenance of planting and habitats, and the provision of compensation for the loss of ancient and veteran trees. The provision of space on Site for biodiversity mitigation, including the Project Priority Areas for Biodiversity, provides high confidence in delivering successful mitigation. Where appropriate, monitoring may also be required to understand where further activities need to be undertaken to address effects.

6.4.17 Further detailed surveys, engagement and assessments will be undertaken prior to the submission of the DCO application to gain a better understanding of the existing ecology and the likely significant effects of the Project. In line with this, the design of habitats will be developed in order to increase the benefits provided to biodiversity within the Site, plus ensure connections to other habitats beyond the Site. These measures will provide a more robust assessment and deliver better ecological outcomes that are anticipated to reduce most adverse effects to Terrestrial ecology.

6.5 Historic environment

- 6.5.1 The preliminary assessment of effects on the Historic environment considers how construction and operation of the Project affects Scheduled Monuments, listed buildings, registered parks and gardens, conservation areas, and features of heritage interest, including historic buildings and buried archaeological remains.
- The current understanding of the baseline Historic environment, and the assessment of effects that the Project may have on this, are being informed by ongoing engagement with key stakeholders including Oxfordshire County Council and Historic England, collection of data from a range of sources and a series of walkover surveys and setting appraisals. Furthermore, extensive archaeological investigations (geophysical survey and trial trenching) are also ongoing within the Site and will be reported in the Environmental Statement.
- 6.5.3 There are four Scheduled Monuments within, or partially within the Site, and a further 10 within 2km of the Site. There are seven listed buildings located within the Site and three Conservation Areas which partially overlap with the Site, plus numerous more within 2km of the Site (see Plate 8). There are also hundreds of other archaeological features recorded on the South Oxfordshire Historic Environment Record within and near to the Site. Surveys undertaken to date have identified a rich agricultural and settlement landscape with activity recorded from the Bronze Age to the post-medieval period. There are various other buildings and landscapes of historic interest in the wider area.
- 6.5.4 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - Avoiding physical disturbance to the four Scheduled Monuments that are within, or partially within the Site.
 - Measures to protect buried archaeological remains during construction such as the use of track matting to avoid or reduce impacts from the movement of plant or other machinery.
 - Strategically locating vegetation, habitats, and/or landforms to help reduce visual impacts of new infrastructure.
- 6.5.5 The key cause of likely significant effects on the Historic environment during the construction phase is the potential disturbance or loss of heritage assets from construction activities, including for example, piling and excavation works and the requirement to demolish the mid-20th century Steventon Depot. Furthermore, other effects may also be caused by planting and landscaping works.
- 6.5.6 The preliminary assessment has identified some likely significant effects on the Historic environment during construction. Heritage assets, including buried paleoenvironmental

remains (archaeological deposits containing materials that can be used to understand past climates, landscapes, and the way humans interacted with them) and other, buried remains from the Prehistoric periods (approximately 1,000,000 BCE -10,000 BCE) to the 20th century are likely to be partially or entirely removed by direct construction activities. The demolition and removal of the existing Steventon Depot and the former route of the Wiltshire and Berkshire Canal would also be required.

- 6.5.7 To mitigate these effects, additional mitigation is being explored and will include recording all buried and above ground heritage assets affected by construction, to provide an accurate record in the public domain for future research. This would typically be done through archaeological excavation before or during construction. The works will form part of a detailed archaeological mitigation strategy, which would also identify any opportunities for further research and sharing of the findings with local communities.
- Operational effects on the Historic environment may be caused by the presence of structures which could change the setting of historic features due to changes in views, lighting or noise, particularly those closest to the Site. There would also be a loss of some historic field patterns and changes in groundwater levels and flows which could lead to 'drying out' of waterlogged ground, which can be harmful to buried heritage assets.
- The preliminary assessment has identified some potential significant adverse effects during operation. This includes changes to the settings of some listed buildings, Conservation Areas and Scheduled Monuments within and close to the Site, and the potential drying out (and degradation) of below ground remains.
- The presence, nature, and significance of archaeological remains within the Site will be fully assessed in the Environmental Statement following the completion of site evaluations.
- The next steps in relation to the Historic environment assessment before completion of the Environmental Statement and submission of the DCO application include:
 - Further engagement with Historic England and the local authority Conservation Officer
 - Assessment of the settings of heritage assets
 - Site walkover surveys of known above ground heritage assets
 - Further targeted surveys to assess buried archaeological remains and inform Project design
 - Preparation of an Archaeological Mitigation Strategy and overarching Written Scheme of Investigation, in consultation with the local authority Archaeological Advisor.

6.6 Landscape and visual amenity

- 6.6.1 Landscape effects refer to how proposed development changes the character and quality of the landscape itself including consideration of how natural features (such as hills, rivers or trees) and man-made features (such as buildings) come together and give a place its distinct identity. Assessment of visual amenity considers how a proposed development changes what people can see from different places.
- The current understanding of the baseline landscape character and visual amenity, and the assessment of effects that the Project may have on these, is being informed by photography from key viewpoints, located up to 10km from the reservoir. This also includes consideration of the North Wessex Downs National Landscape (formerly known as an Area of Outstanding Natural Beauty) (see Plate 8) and its setting, consideration of night-time

conditions, and dark skies. Consideration is given to people most sensitive to visual effects, including those living and working nearby, users of public footpaths and trails, users of local public roads and other specific important groups that have been identified such as people working at or visiting the South Oxfordshire Crematorium and Memorial Park or recreational users of the River Thames.

- 6.6.3 The preliminary assessment of effects is also being informed by ongoing engagement with key stakeholders including Natural England, the North Wessex Downs National Landscape, and the Local Authorities.
- In addition, desk and site-based assessments have been carried out to identify landscape character areas and people whose views might be affected by the Project. This has included walkover and photographic surveys, which were undertaken during the winter of 2024/2025 and spring 2025 to understand the landscape characteristics, features and views of and around the Site at different times of the year.
- 6.6.5 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - Planning construction activities to limit their visibility from surrounding areas.
 - A 'landscape-led' approach to design, so that landscape character, a sense of place and identity, and integration of the Project into its wider setting are given high priority.
 - Strategically locating vegetation, habitats, and/or landforms to help reduce visual impacts of new infrastructure.
 - Measures to protect trees (that are to be retained) during construction, prioritising the landscape and visual, ecological, and arboricultural benefits.
- 6.6.6 Effects on Landscape and visual amenity during construction are caused by construction activities including the introduction of temporary compounds, haul roads, construction traffic, rail sidings, stockpiles, fencing and signage. In particular, the excavation and appearance of the earthworks might be expected to contrast with the surrounding green rural landscape. Construction areas are also likely to require lighting, particularly during winter evenings which will impact views, particularly in relation to the darker skies on the western side of the Project area.
- 6.6.7 This may result in some temporary likely significant effects on Landscape and visual amenity. These include changes in views for some people living or working in Drayton, Steventon, East Hanney, Frilford, Garford, Culham, Marcham, West Hanney and Grove and other individual properties, and users of Public Rights of Way and local roads close to construction works. People using the River Thames for recreation and users of the Thames Path, the Vale Way and other nearby paths close to the proposed intake/outfall construction are also likely to experience significant changes in views. There are also likely to be changes in views for people at other identified sensitive viewpoints such as a memorial bench in the North Wessex Downs National Landscape, and a change in the character of the landscape in the Ock Lower Vale and other nearby landscape character areas.
- 6.6.8 Additional measures are being considered to reduce these effects, which may include phasing the works to enable early establishment of woodland and other planting between construction and sensitive views.
- Key causes of likely significant effects on Landscape and visual amenity during operation are the appearance and form of new infrastructure including the reservoir and its raised

- embankments and the other associated infrastructure including buildings and the intake/outfall structure on the River Thames. Other causes include the proposed solar farm, changes in land use and field patterns and operational lighting, particularly in relation to dark skies on the western side of the Project.
- There is likely to be a significant beneficial operation effect for users of Public Rights of Way within the area of the proposed reservoir, because the replacement walking routes along the embankment are considered likely to provide more varied and elevated visual experiences than at present, with more expansive views across the vale and toward the North Wessex Down (see Plate 20).





- 6.6.11 Likely adverse significant operation effects are expected to be permanent and include visual effects to the same places experiencing temporary effects in construction (see 6.6.6 above) due to the appearance of the Project. Visual effects of the intake/outfall structure from the Thames Path near Culham are shown in Plate 21. Visual effects at Steventon are shown in Plate 22, at East Hanney in Plate 23, and at Drayton in Plate 24. Other landscapes including Western Middle Vale and Abingdon-Didcot Lower Vale would also experience effects.
- The final appearance of the Project is subject to ongoing design and mitigation development, including consideration of landscape and visual appearance. The visualisations below noted as 'not photo-realistic' show the basic form of the proposed infrastructure, which is represented accurately in terms of its location and scale, but with no illustration of likely appearance in terms of surface colours, textures, or associated details such as landscaping. The visualisations noted as 'photo realistic' include the same accurate representation of the location and scale of the Project, but do also illustrate its likely appearance through the addition of surface colours, textures, and associated details such as landscaping.

Plate 21 View of proposed intake/outfall structure from the Thames Path near Culham (not photorealistic)



Plate 22 View of proposed reservoir from Steventon (photo-realistic)



Plate 23 View of proposed reservoir from East Hanney (photo-realistic)



Plate 24 View of proposed reservoir from Drayton (not photo-realistic)



- 6.6.13 There will also be a large number of views that are considered neutral (i.e. neither adverse or beneficial). These include visual effects to residents at Venn Mill which would experience a mixture of adverse and beneficial effects and an effect on the landscape in the Ock Lower Vale and the Wantage to Didcot Vale Edge Slopes.
- Whilst the above effects have been identified as potentially significant, it is important to note that many other effects on Landscape and visual amenity have been assessed as not having a significant change (adverse or beneficial), with no effects being found significant at distances beyond 5km from the Project. Importantly, although there are likely to be some significant Landscape and visual effects within the wider setting of the North Wessex Downs National Landscape, and there may be some significant effects on a small number of views during construction from within the National Landscape, these are not expected to amount to significant effects on the National Landscape itself. This is mainly due to the distance and visual separation between the Project and the National Landscape, coupled with the effective mitigation that has been designed in; as seen in Plate 25 and Plate 26.

Plate 25 Illustrative view of proposed reservoir from the northern boundary of the North Wessex Downs National Park (not photo-realistic)



Plate 26 Illustrative view of proposed reservoir from the Ridgeway National Trail within the North Wessex Downs National Park (not photo-realistic)



Additional mitigation is being explored to reduce likely significant adverse effects on Landscape and visual amenity. This may include phasing the works to enable early establishment of woodland and other planting or other design measures to reduce Landscape and visual effects. Other next steps for the Landscape and visual assessment, to inform the Environmental Statement and submission of the DCO application include:

- Further engagement and consultation with local communities and stakeholders on the assessment of impacts, design and mitigation.
- Continued development of design and mitigation, to ensure that the findings of the
 preliminary landscape and visual assessment help to steer the ongoing design and
 further mitigate adverse effects of the Project wherever possible, during both
 construction and operation, including through an Outline Landscape and Ecological
 Management Plan.
- Further detailed assessment work supported by more sophisticated visual analysis tools and more detailed design information, with additional photographic viewpoint survey and site appraisal work.
- Further tree surveys and work to update the arboricultural impact assessment and mitigation and compensation strategies. This includes consideration of ancient and veteran trees, of which a small number have been identified to date. These strategies will include consideration of ecology, landscape and arboriculture.

6.7 Geology and soils

- 6.7.1 The preliminary assessment of effects on Geology and soils considers how construction and operation of the Project affect the following:
 - Geology: designated and non-designated geological sites
 - Soils: agricultural land, biodiversity and soil carbon
 - Land contamination (i.e. pollution): effects on human health, surface water and groundwater
- The current understanding of the baseline Geology and soils, and the assessment of effects that the Project may have on these, are being informed by ongoing engagement with key stakeholders including the Environment Agency, Natural England, Oxfordshire County Council and the Vale of White Horse District Council. Baseline data from various sources such as the British Geological Survey, Natural England and the government website MAGIC has been reviewed and supplemented by previous reports for the Project, including desk studies, ground investigations and risk assessments.
- 6.7.3 Sensitive receptors identified within the study area include agricultural land classified as best and most versatile, as well as groundwater aquifers that support local water supplies and may contribute to river base flow. The study area contains various public open spaces, parks, and open land, plus residential areas, allotments, and commercial and industrial sites, which are considered in the assessment of potential effects on human health.
- 6.7.4 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - Carrying out measures to prevent, and control the risk of, pollution from construction
 activities including proactive management practices to ensure that any existing
 contamination or pollution incident that may occur is controlled, reported to relevant
 parties and remediated as necessary.
 - Management of soil resources during construction including measures in relation to their handling, storage and beneficial reuse.
 - Measures to increase reuse of excavated materials on site where practicable including consideration of temporary on-site storage of excavated material for reuse.

- 6.7.5 With the implementation of these and other measures construction effects on geology, including effects on human health, groundwater and surface water receptors are not expected to be significant.
- 6.7.6 The key causes of likely significant effects on soils during construction are temporary land take required for construction and the permanent loss associated with the excavation works and construction activities. Permanent works would result in the permanent physical removal of shallow soil resources, and a loss of some soil functions.
- 6.7.7 The preliminary assessment has identified construction effects that are likely to be significant and adverse. These include the permanent loss of agricultural land some of which is classified as being the best and most versatile agricultural land. There may also be adverse effects on some soil functions through degradation during soil handling, remediation, or land use change as a result of the construction works.
- 6.7.8 The key causes of likely significant beneficial effects during operation are the improvement of specific soil functions or structure through the provision of new habitats. Soil functions may be beneficially affected through the appropriate reuse of suitable soils for specific end uses and to support new habitats.
- Based on significant desk-based assessment, most of the land on the Site is expected to be uncontaminated. If any contamination is identified by proposed investigations, or during construction, remediation would be required. Remediation provides long term benefits after construction leading to potentially significant improvements in ground or groundwater contamination conditions and dealing with the historic legacy of previously contaminated uses in a small proportion of the site.
- 6.7.10 Mitigation will continue to be developed to avoid or reduce adverse effects to Geology and soils. This includes exploring measures to ensure the efficient and sustainable use of surplus topsoil and subsoils.
- 6.7.11 Further surveys and engagement are planned to be undertaken to better understand existing land uses. The ongoing agricultural soil survey would provide a better understanding of the quality and grade of agricultural land distribution across the Project and inform on the quality of topsoil and subsoil for reuse in new habitats. The geoenvironmental ground investigation would provide a better understanding of the chemical quality, concentration and distribution of potential contamination in the ground and groundwater. The findings from ongoing and future surveys including some targeted geoenvironmental investigations would further inform the design and development of mitigation, and will be reported in the Environmental Statement. Further detailed ground investigation and assessment would follow after submission of the DCO application.

6.8 Materials and waste

- The preliminary assessment of effects on Materials and waste considers how construction and operation of the Project affects the following:
 - The availability of key materials required to construct the Project.
 - The potential to prevent or otherwise hinder future working of mineral resources within the Site (known as mineral sterilisation).

- The space available in landfills to put waste from the Project generated during construction.
- As noted in paragraph 4.1.8, to construct the Project approximately 3.7 million cubic metres of excavated material that would need to go offsite as waste (mostly topsoil), and approximately 9.7 million tonnes of materials would need to be brought to the Site.
- The current understanding of the baseline environment for Materials and waste, and the assessment of effects that the Project may have on these, are being informed by ongoing engagement with Oxfordshire County Council and the Vale of White Horse District Council and review of various data sources such as the British Geological Society, the Environment Agency and Oxfordshire County Council, including detail on landfill capacity, construction projects, waste and minerals statistics and planning.
- The availability of key construction materials across the region and country, like sand and gravel, concrete and steel has been reviewed to understand how much is available for the Project. Areas where future extraction of sands, gravel and soft rock are intended to occur within and close to the Site has been reviewed to understand what resources are present. This includes consideration of areas, known as Mineral Safeguarding Areas, that contain minerals which are desired to be protected from unnecessary sterilisation by developments.
- The amount of space available in landfills was also reviewed to understand whether there would be enough room for construction waste from the Project. There are different types of landfills depending on how hazardous the waste to be disposed of is.
- 6.8.6 No assessment of operation effects for Materials and waste is required, because those effects are not expected to be significant.
- 6.8.7 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - Increasing the reuse of excavated materials on-site where practicable, for example, by using materials from within the Site to construct the reservoir embankment.
 - Designing the Project to reduce the need to import material as far as practicable.
 - Managing material resources during construction by complying with relevant industry codes of practice for waste.
- 6.8.8 The key causes of likely significant effects on Materials and waste may result from general construction activities, preparatory and enabling works and material stockpiling. This could affect material demand and deplete natural resources, and create waste for disposal.
- 6.8.9 Significant quantities of key construction materials (such as crushed rock, sand, gravel, asphalt, concrete and steel) are required for the construction of the Project. The preliminary assessment has identified that the consumption of these by the Project would have an impact on the supply and stocks of these materials, which for recycled/ secondary aggregates is likely to be significant.
- 6.8.10 There is likely to be a reduction in future available space in non-hazardous and hazardous landfills because of waste generated by the Project, which is likely to be a significant effect on void capacity. However, there is expected to be enough space in landfills for other waste producers to dispose of waste as needed after completion of the Project.

- 6.8.11 Construction activities, potential highway works at Frilford Junction and/or changes associated with habitat works could have an adverse effect on access to important mineral resources at the Site (known as sterilisation), however this is not considered to be significant because the quality and availability of mineral resources is considered limited.
- 6.8.12 Mitigation will continue to be developed to avoid or reduce adverse effects identified in this assessment. The Project is committed to pioneering sustainable soil management by proactively identifying opportunities for the off-site reuse of surplus excavated material. Current trends also show increasing resource efficiency and better waste management. It is therefore anticipated that reliance on landfill as a means of managing waste will decline, in future. Taking these trends into account, it is likely that this effect will actually be less than that reported within the PEI Report.
- 6.8.13 The Project will continue to engage with Oxfordshire County Council and Vale of White Horse District Council to agree a robust assessment for the Environmental Statement. At an early stage of the Project potential opportunities for waste prevention, reuse, recycling and recovery of construction, demolition and excavation waste will be identified and implemented.

6.9 Traffic and transport

- 6.9.1 The preliminary assessment of effects on Traffic and transport considers how traffic associated with construction and operation of the Project affects traffic on local roads, the adjacent road network, and pedestrian, cycle and public transport routes and riverboat users within the surrounding area. This includes consideration of how communities may be affected by construction or operation of the Project, the potential for delays, changes to amenity and consideration of people's perception to changes in traffic.
- The current understanding of baseline Traffic and transport, and the assessment of effects that the Project may have on these, are being informed by ongoing engagement with Oxfordshire County Council, National Highways and the Vale of White Horse District Council as appropriate. Relevant data from these stakeholders and other sources have been interrogated and have been supplemented by surveys including junction counts (of both motorised and non-motorised users), automatic traffic counts, and use of Public Rights of Way and rivers. Furthermore, widely used tools for transport planning and forecasting have also been used to help predict future demand for travel.
- 6.9.3 In general, the Traffic and transport assessment considers the following features:
 - The highway network including the A34, A415, A420, A338 and other locally significant roads such as the B4017 Abingdon Road / Drayton Road and the Steventon to East Hanney Road.
 - Public transport including the rail and bus routes.
 - Active travel modes including pedestrian footways and crossings, the Thames Path National Trail, Public Rights of Way, the National Cycle Network and other cycleways.
 - River navigation on the River Thames.
- 6.9.4 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:

- Measures to reduce effects of construction traffic on communities and the environment including the implementation of a Construction Traffic Management Strategy that will include management, safety and control measures.
- Highway improvements to reduce effects on the wider road network including improvements to the A34 Marcham Interchange.
- Reducing transport disruption between Steventon and East Hanney through the provision of a realigned road throughout construction and operation.
- 6.9.5 Key causes of likely significant effects during construction include any construction activities, including those associated with the construction of the reservoir and associated infrastructure, that result in a change in traffic flows or affect Public Rights of Way or other pedestrian provision. Construction activities which may affect navigation on the River Thames are also considered.
- These construction activities could lead to significant effects from increased traffic at the A415/A34 Marcham Interchange. There are also likely to be delays to some non-motorised users due to changes in the Public Right of Way network in construction areas. There would also be likely significant severance effects due to changes in traffic flows which would be felt by non-motorised users on the A415 Marcham Road between Marcham and Faringdon Road (east of the proposed Site access).
- 6.9.7 Construction of the intake/outfall structure will also result in a reduction in the navigable width of the River Thames, thereby potentially affecting recreational users of the river through reducing the ability of riverboats to travel or moor along the river. This effect will continue in operation due to the permanent presence of the structure.
- 6.9.8 The Project intends to use the railway to transport construction materials as far as is practicable. However, there may be reasons why rail transport might not be available at certain times or why the amount of material transported by rail might vary from that assessed in the PEI Report. The Environmental Statement will contain further analysis to consider the potential for increased risks and associated significant effects to occur from this.
- 6.9.9 Key causes of likely significant operation effects on Traffic and transport include the use of publicly accessible areas and recreational facilities and operation of the intake/outfall structure mentioned above.
- 6.9.10 During the operation phase there would be changes in various sections of the Public Right of Way network including between the A338 and Drayton, between Abingdon and Reading Road, between Marcham and Drayton and between East Hanney and Steventon.
- 6.9.11 The potential for the Project to lead to additional frost or fog events during operation and therefore lead to an increase in frost- or fog-related road traffic accidents is not expected to be significant. Further modelling or assessment in respect of micro-climate is not proposed due to the limited additional information this would be able to provide.
- Thames Water will continue to develop mitigation to ensure adverse effects relating to Traffic and transport are avoided or reduced as much as possible. This will include undertaking a detailed Transport Assessment and a Navigational Risk Assessment. Opportunities for highway improvements to reduce effects on the wider transport network are being explored, such as improved crossing points or upgrades to the Marcham Interchange. The construction workforce may also be encouraged to use sustainable modes of transport to help reduce the number of car trips generated by construction.

- Similarly, measures will be implemented to encourage sustainable travel by visitors and staff during the operational stage.
- 6.9.13 Where necessary, the Environmental Statement will be informed by ongoing engagement with key stakeholders and more detailed surveys and modelling. These will help to inform the ongoing design to help reduce potential effects on the highway network. Where initial likely significant effects are identified at this stage, these may ultimately be determined as not being significant following these further actions.

6.10 Air quality

- 6.10.1 The preliminary assessment of effects on Air quality evaluates the potential effects of Project emissions during construction, including dust generation from demolition and construction activities, vehicle movements, use of construction plant and machinery, and odour; as well as from the operation phase, including vehicle movements, operation plant and machinery.
- The current understanding of the baseline Air quality conditions, and the assessment of effects that the Project may have on these, are being informed by the interrogation of relevant data sources, including reports of the air quality monitoring and assessments by the Vale of White Horse and South Oxfordshire District Councils. Information on industrial emissions held by the Environment Agency and various other datasets have also been used.
- 6.10.3 Potential Air quality effects are assessed with respect to human receptors such as local residents, schools, hospitals, care homes and areas where the public or businesses could be affected by dust or pollution, as well as ecological receptors including designated ecological sites.
- 6.10.4 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - Measures to reduce construction dust such as planning the site layout so that
 machinery and dust causing activities are as far away from people as feasible and
 using water for dust suppression.
 - Measures for reducing vehicle, plant and machinery emissions, for example consideration of the use of electric or low emission vehicles and ensuring that engines are not left running unnecessarily when not in use.
 - Designing the Project to reduce the need for material to be brought to site as far as practicable.
- 6.10.5 The preliminary assessment of effects for Air quality has concluded that the Project will have no likely significant effects during construction or operation with the implementation of standard good practice and embedded design mitigation.
- During preparation of the Environmental Statement, consideration will be given to whether more detailed Air quality modelling or assessment is required, based on updated traffic information for the Project. Construction site equipment will also be assessed when additional information is available. If any further information on potential odour generation becomes available, this will be re-visited and assessed as appropriate.

6.10.7 Ongoing engagement with Natural England will be carried out to refine the methodology for assessing effects on sensitive ecological receptors from Project emissions.

6.11 Noise and vibration

- 6.11.1 The preliminary assessment of Noise and vibration considers how noise and vibration during construction and operation of the Project affects people including residential, educational, medical properties and public areas.
- The current understanding of the baseline Noise and vibration conditions, and the assessment of effects that the Project may have on these, are being informed by the interrogation of Ordnance Survey data strategic noise mapping, site visits and feedback from local authorities. Noise monitoring surveys at sensitive locations will be undertaken and reported in the Environmental Statement.
- 6.11.3 The Project area is primarily characterised by road traffic noise, particularly along the A34 to the east of the Site, the A338 to the west of the Site and Marcham Road and Frilford Road to the north of the Site. Hanney Road and Steventon Road pass through the south side of the Site. Additional existing noise sources include trains along the Great Western Main Line that crosses through the south of the Site, between Steventon/Milton and Grove.
- 6.11.4 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - Doing everything reasonably practicable to reduce construction noise. This is known in the assessment as Best Practicable Means and includes measures such as selection of quiet and low vibration equipment, locating equipment in less sensitive parts of the site, or carrying out construction works during standard working hours wherever practicable.
 - The creation of permanent bunds as part of the Project design to reduce road traffic noise levels for existing noise sensitive receptors around the Site.
- 6.11.5 Likely significant effects have been identified in relation to a broad range of construction activities including the construction of site compounds; highway works including the A34 Marcham Interchange, the Steventon to East Hanney Road diversion and provision of site access points; construction of the intake/outfall structure on the River Thames; the rail sidings and materials handling facility and associated rail modifications; utilities and the western watercourse diversion.
- The preliminary assessment has identified that likely significant effects would be temporary and are typically expected to result from airborne noise causing a temporary disturbance to residential and non-residential receptors near construction areas. Further bespoke measures will be explored for the Environmental Statement with the aim to reduce construction Noise and vibration effects where significant effects have been identified.
- 6.11.7 During operation, there is the potential for Noise and vibration effects including noise from the pumping station, recreational lakes centre (including the visitor centre), Water Sports Centre and Nature Education Centre. However, the preliminary assessment of effects has concluded none of these effects are likely significant effects during operation.
- 6.11.8 Following the completion of noise surveys and when more information is known about proposed construction activities, a more detailed assessment of Noise and vibration will be

carried out and reported in the Environmental Statement. This will include further consideration of any bespoke mitigation measures to reduce effects to people.

6.12 Socio-economics and communities

- The preliminary assessment of effects on socio-economic conditions and communities considers how construction and operation of the Project causes potential effects associated with the disruption of access, amenity (how pleasant a place is to use), potential land take and economic effects from the construction and operation of the Project. Potential effects are considered in respect to local residents, communities, businesses, community facilities, walking/cycling/horse riding provision, and economic receptors.
- 6.12.2 As noted in paragraph 5.2.1, the overall benefit of the WRMP, 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.
- 6.12.3 The current understanding of the baseline socio-economic conditions and communities, and the assessment of effects that the Project may have on these, are being informed by ongoing engagement with Environment Agency, Oxfordshire County Council and the Vale of White Horse District Council. The preliminary assessment has also relied on various local and national data sources including Census data, OS mapping and formal footpath and cycleway registers, plus data collated for other environmental aspects.
- There are multiple settlements close to the Site, consisting of residential, commercial, education, health and other facilities. There are also some residential, community, and commercial properties and facilities within the Site. The Site and its surrounding area also contain various community facilities, a large network pathways and open spaces including registered common land and allotments (as shown on Plate 9).
- 6.12.5 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - Reinstating land that is only required temporarily for construction.
 - Liaison with communities during construction.
 - Permanent realignment or reinstatement of Public Rights of Way where feasible.
- 6.12.6 Likely significant adverse effects from construction are expected to be caused by general construction activities. In particular, there will be demolition of residential and commercial buildings and loss of some land within the Site, which will affect the commercial viability of those properties or facilities. General construction will also cause temporary, likely significant adverse effects from closures and diversions of some (sections of) Public Rights of Way, including part of the National Cycle Network close to the River Thames, plus effects on amenity due to increased noise and visual effects.
- 6.12.7 There is also likely to be a significant adverse economic effect due to reduced availability of accommodation and public services for communities, because these will be used by construction workers moving into the area. That said, during construction, a significant beneficial effect is expected from a boost to the local economy due to an increase in employment.

- 6.12.8 As noted in paragraph 6.9.7, construction and operation of the intake / outfall structure will also result in a permanent reduction in the navigable width of the River Thames, thereby causing a likely significant adverse effect on recreational users of riverboats on the river during both construction and operation.
- 6.12.9 The key causes of likely significant effects during operation are from the provision of new recreational and leisure facilities (such as the Water Sports Centre), the permanent diversions or improvements to existing and new Public Rights of Way and from employment.
- During operation, the provision of new recreational and leisure facilities as part of the Project (such as the recreational lakes, Nature Education Centre, Water Sports Centre, active travel provision and connections into existing Public Rights of Way) will lead to likely significant beneficial effect for local residents. That said, there will be likely significant adverse effects to users of four groups of existing Public Rights of Way due to the increased journey distances on the permanently diverted routes.
- 6.12.11 Permanent beneficial effects on local employment and the local housing market and tourism market are also anticipated from operation of the Project, although these are not expected to be significant.
- 6.12.12 Additional mitigation that is being explored to avoid or reduce adverse effects on Socioeconomics and communities include for example completing a navigational risk assessment to better understand the potential effects on recreational users of the River Thames.
- 6.12.13 Other steps that are continuing or are planned to be undertaken to support the Socioeconomics and communities assessment for the Environmental Statement include:
 - Surveys to provide further detail on receptors
 - Further research on potential job losses due to the closure of community or commercial facilities
 - Measuring changes in economic performance
 - Further work to better understand likely visitor numbers and construction worker accommodation requirements
 - Further consideration of opportunities to create lasting legacy benefits in education, recreation, community and amenity during operation as the Project develops

6.13 Human health

- 6.13.1 The preliminary assessment of effects on Human health considers how the construction and operation of the Project affects health and wellbeing through changes to the following factors:
 - Healthy lifestyles (such as the use of active travel, open space, leisure and play)
 - Safe and cohesive communities (such as the provision of housing, transport, and community safety
 - Socio-economic conditions (such as education, health and social care)
 - Environmental conditions (for example, air quality, noise and visual effects)

- 6.13.2 Health effects consider the whole population potentially affected, but where relevant also give special consideration to vulnerable groups such as children, the elderly, people living in deprived areas, and people with disabilities who may experience worse effects.
- 6.13.3 The current understanding of the baseline Human health conditions, and the assessment of effects that the Project may have on these, are being informed by the collation of health data from relevant local and national sources, along with data collated for other environmental aspects, and walkover surveys.
- The study area encompasses a range of urban and rural areas with varied characteristics, but overall the area has high levels of economic activity and high levels of good health, and low levels of deprivation (deprivation being reduced access to fundamental resources, opportunities or social interactions, typically due to factors such as poverty, poor health or isolation). There are pockets of higher deprivation and poorer health, in and around Abingdon and Didcot.
- 6.13.5 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - A commitment to liaise with communities prior to and during construction
 - Measures to reduce effects of construction traffic on communities and the environment that will be set out in a Construction Traffic Management Plan, with measures to address safety hazards on local roads
 - Temporary mitigation (such as suitable diversions, where possible) for Public Rights of Way and active travel routes
- 6.13.6 The key causes of likely significant effects on Human health during construction are anticipated to result from the loss of residential properties and other buildings in order to construct the Project, general construction activities (including off-site traffic movements, job creation and the arrival of large numbers of site staff), and the loss of a part of the West End Allotments.
- 6.13.7 The preliminary assessment has identified the following key likely significant adverse construction effects:
 - Potential pre-construction uncertainty and anxiety, particularly amongst residents affected by involuntary relocation, and vulnerable groups that are less resilient to change. These groups may experience effects on mental wellbeing.
 - There is likely to be decreased participation in active travel due to construction traffic, road works and diversions, particularly by vulnerable groups such as children and the elderly.
 - Residents within the Site will be permanently and adversely affected by involuntary relocation due to potential stress and uncertainty in advance of relocation, and practical, work, or social difficulties associated with the move itself.
 - Users of the West End Allotments will likely experience significant adverse effects as some will permanently lose plots and others may experience a loss, or reduction, of the mental and physical health benefits gained from using the allotments.
 - Vulnerable groups in the community, including rural populations, may experience
 adverse effects on mental wellbeing from decreased connection to community assets
 and services and an increase in social isolation, due to changes in journey times and
 demand for services.

- A decrease in housing availability due to in-migration of the construction workforce could lead to adverse health effects on local residents.
- Some schools and education facilities may experience a significant adverse effects on the quality and accessibility of educational facilities as a result of construction traffic.
- Communities in Drayton and Steventon may experience adverse effects on environmental amenity (being how pleasant a place is to use), affecting quality of life, sense of place and mental wellbeing. Furthermore, users of the South Oxfordshire Crematorium and Memorial Park may experience a temporary adverse effect on mental wellbeing due to changes to environmental amenity and to the peaceful setting of the facility.
- 6.13.8 Communities may also experience a temporary beneficial effect on health and wellbeing outcomes associated with employment, income and skills, due to construction employment opportunities and wider economic effects.
- 6.13.9 The key causes of likely significant effects on Human health during operation of the Project is the physical and visual presence of the reservoir and the provision of new recreational facilities, which provide new resources for visitors, including from the local community.
- 6.13.10 Identified likely significant adverse operation effects include permanent changes in access to community assets and services, primarily due to increased visitor numbers to the local area and additional traffic. Also, permanent effects from an increase in actual and/or perceived crime and anti-social behaviour due to increased visitors in the local area during busy periods. This may include anti-social use of local facilities and parking.
- 6.13.11 Identified likely significant beneficial operation effects include a permanent, beneficial effect from increased active travel and physical activity for regular visitors to the Site, due to the provision of new on-site recreational routes and facilities (particularly the Recreational Lakes Centre). Also, children and young people visiting the Nature Education Centre are likely to experience a permanent, beneficial effect from the provision of on-site outdoor education opportunities.
- 6.13.12 Mitigation will continue to be developed to avoid and reduce adverse effects on Human health, informed by ongoing assessment and consultation. This will include exploring and developing measures to support the community prior to and during construction.
- 6.13.13 Additional mitigation that is being explored to avoid or reduce adverse effects on Human health includes for example measures to reduce the demand on local facilities from the large construction workforce and provision of alternative land to address land losses at West End Allotments.
- 6.13.14 Other steps that are continuing or are planned to be undertaken to support the Human health assessment for the Environmental Statement include:
 - Update of the assessment of effects based on additional or updated modelling and surveys undertaken by other aspects, in particular those related to Air quality, Noise and vibration, and Traffic and transport, so that the assessment reflects the latest available information.
 - Update of economic, employment and on-site education effects once additional analysis is available for the Environmental Statement.
 - Update of the assessment of effects as informed by ongoing engagement and consultation, to understand local needs and priorities.

• Development of a health strategy to reduce adverse effects and increase opportunities through the design and operation of the Project.

6.14 Greenhouse gases

- 6.14.1 Greenhouse gases are atmospheric gases that trap heat, playing a vital role in maintaining the Earth's natural greenhouse effect. While essential for life, excessive concentrations of these gases primarily driven by human activity are intensifying global warming and accelerating climate change. Major sources include carbon dioxide from fossil fuel combustion in energy production, transportation and industrial process; methane from agricultural practices and waste; and nitrous oxides from vehicles and intensive farming techniques.
- 6.14.2 All greenhouse gas emissions, regardless of where they occur, contribute to global climate change. The preliminary assessment of effects, therefore, considers greenhouse gases across the full lifecycle of the Project, from construction through to long-term operation. The assessment considers the Project's emissions in the context of national efforts to reduce emissions, including the UK's legally binding Net Zero target and associated Carbon Budgets.
- The assessment compares predicted emissions from the Project with those expected from the Site without the Project. This alternative, comparison scenario is termed the Future Baseline. This includes emissions from ongoing farming, as well as the maintenance of existing buildings and infrastructure, including roads and solar farms.
- 6.14.4 Measures that have already been developed and included in the Project to reduce adverse effects on this aspect include:
 - The reuse of excavated material on the Site where practicable.
 - Inclusion of renewable energy technologies, including energy recovery turbines and floating solar arrays across the Site, reducing reliance on grid electricity.
 - The provision of infrastructure to support sustainable and active travel, including for example electric vehicle charging.
 - Using rail infrastructure to transport construction materials, reducing the reliance on road haulage and associated emissions.
- 6.14.5 Construction emissions estimates are expected to change between the PEI Report and the Environmental Statement, however on a precautionary basis greenhouse gas emissions associated with the construction of the Project are currently considered to have a likely significant adverse effect. Additional opportunities to mitigate greenhouse gas emissions during construction are being actively explored, including low-carbon materials and design optimisation, as well as the extent to which alternative fuels and low-emission vehicles can be used during the construction process. These will be assessed in more detail in the Environmental Statement.
- 6.14.6 Operational emissions are not expected to result in significant adverse effects. This is due to the Project's relatively low emissions profile during the operational phase, supported by embedded mitigation, including renewable energy generation and efficient infrastructure design.
- 6.14.7 Thames Water is actively continuing to develop and embed mitigation measures into the evolving design. These include energy efficiency strategies, low-carbon material

procurement, and nature-based solutions. As these measures are assessed and integrated into the design, the Project's overall greenhouse gas emissions may reduce. The Environmental Statement will include a more detailed evaluation.

6.15 Climate resilience

- 6.15.1 The preliminary assessment of climate resilience considers the effects of climate change on construction and operation of the Project. It also considers the potential for climate change to alter other effects assessed in the PEI Report (known as in-combination climate change impacts).
- The current understanding of the baseline environment, and the assessment of effects of climate change upon the Project, are being informed by ongoing engagement with the Environment Agency, Oxfordshire County Council and the Vale of White Horse Direct Council, particularly in relation to flood risk associated with climate change. The preliminary assessment is also being informed by the collection of baseline data on available climate observations and environmental baseline data collated for other aspects.
- 6.15.3 Without the Project the Site will still experience changes in climate. The Climate resilience assessment uses projections of how climate conditions are expected to change over time developed by the UK Met Office.
- 6.15.4 These projections indicate overall trends of warmer temperatures, wetter winters and hotter, drier summers. These trends will be experienced during the construction period and will continue to increase through the operational life of the Project. The assessment has considered average and maximum climate variables for different future time slices, emission scenarios and confidence levels. There is also an associated likely increase in heat stress days and wildfire risk.
- 6.15.5 Measures that have already been developed and included in the Project to reduce adverse effects of climate change upon the Project include:
 - Measures to reduce vulnerability to increased temperatures and drought during construction, including avoiding human exposure to extreme temperatures and measures to improve the efficiency of water use.
 - Measures to address the impact of increased temperatures, including prolonged periods of hot weather, and drought during operation including consideration of the management of the Site during extreme weather and future proofing of buildings to accommodate climate change.
 - A range of measures integrated into design and operational plans to address the
 impacts of increased precipitation and frequency and intensity of flooding to address.
 This may include, for example, appropriate storage of materials in locations with a
 lower risk of flooding. Appropriate climate change allowances in line with Environment
 Agency requirements are applied to drainage design and flood risk assessments.
- 6.15.6 The preliminary assessment has not identified any likely significant in-combination climate change impacts, or significant effects from climate change during construction when taking into account the above measures.
- 6.15.7 During operation the preliminary assessment has identified likely significant effects as a result of higher temperatures which could lead to damage or operational stress to buildings

- and other vulnerable project components. Hotter summers, heatwaves, and prolonged dry conditions could also increase the risk of spontaneous grassland and woodland fires in and around the Site during its operational life.
- Thames Water will continue to develop mitigation to avoid and reduce adverse effects from climate change. This includes measures to address the risks of wildfire such as the integration of fire breaks within the design and the implementation of a severe weather management plan which may include, for example, restrictions on the use of BBQs and the installation of early warning systems. The design of the Project will continue to be developed alongside the EIA process to fully consider mitigation measures further.

6.16 Major accidents and disasters

- 6.16.1 The preliminary assessment of likely and expected significant effects from Major accidents and disasters covers both vulnerability of the Project to hazards, and risks arising from the Project to people, the environment and infrastructure. The assessment covers events that are unlikely but have potential to cause harm beyond the effects covered in the other aspects above.
- 6.16.2 A major accident is an event that can cause immediate or delayed serious environmental effects to human health, welfare and/or the environment and could require the use of additional resources to manage.
- 6.16.3 A disaster is a man-made/external hazard (such as an act of terrorism) or a natural hazard (such as an earthquake) with the potential to cause a major accident.
- 6.16.4 As part of the assessment potential hazards have been identified and a preliminary risk assessment has been carried out, informed by responses to the EIA Scoping Report.
- The assessment identifies how potential events and hazards may affect the environment, people or infrastructure using professional judgement; and how risks can be avoided or reduced. The assessment considers whether mitigation to reduce the likelihood of major accidents and disasters or the severity of the effect is sufficient to mean it is 'as low as reasonably practicable'.
- 6.16.6 Measures that have already been developed and included in the Project to reduce adverse effects in relation to Major accidents and disasters are:
 - The application of relevant legislative requirements and international standards for the design, construction, operation, maintenance and inspection of the reservoir.
 - Design of the reservoir to withstand climate events including heavy rain, high winds and drought.
- 6.16.7 No expected or likely significant effects have been identified from Major accidents and disasters in construction and operation as risks have been designed out, mitigated or managed throughout the Project. The application of legislative requirements and international standards for the design, construction, operation, maintenance and inspection of the reservoir, means that risks are effectively designed out, mitigated or managed throughout the Project. For example, the reservoir is designed to withstand climate events including heavy rain, high winds and drought.

6.17 Cumulative effects

- 6.17.1 The preliminary assessment of Cumulative effects assesses the effects of the Project from:
 - Combined effects from the Project and other developments on the same environmental features; including from T2ST, the Farmoor Transfer and Severn to Thames Transfer.
 - Combined effects from multiple environmental aspects on a particular feature.
- 6.17.2 The Cumulative effects assessment relies on the understanding of the baseline environment from each of the other aspects, for example, whether ecological features might experience multiple effects from either other developments or multiple effects within the Project that could combine together to increase the significance of the effect (such as changes to air quality and habitat loss). A list of other developments was gathered from a range of sources, including local planning authorities. This was refined considering the nature and scale of other developments and their potential to result in likely significant effects. The list of other developments assessed included other developments related to the SESRO (for example, water supply projects like the Severn to Thames Transfer), large other developments within 3km of the Project (such as Dalton Barracks) and other developments which are within or directly adjacent to the Site.
- 6.17.3 The assessment accounts for embedded design measures and standard good practice mitigation that has already been developed and included in the Project to reduce adverse effects on each of the environmental aspects is applied when considering the potential for Cumulative effects.
- 6.17.4 Likely significant Cumulative effects associated with the following aspects have been identified:
 - Water environment: Adverse effects during construction due to changes in water quality and conditions from proposed flood alleviation schemes at Steventon and East Hanney. There could also be potential beneficial effects during operation due to the reduction in flood risk, for example, associated with those schemes and the Abingdon Flood Alleviation Scheme. There would be a beneficial effect from the Project alone from providing a water channel for the Wilts and Berks Canal, however this benefit would be reduced when changed into a working canal but would remain beneficial.
 - Aquatic ecology: Adverse effects due to potential transfer or spread of invasive nonnative species during construction and operation due changes in water quality and conditions and new watercourse connections. There would be a beneficial effect from the Project alone from providing a water channel for the Wilts and Berks Canal, however this benefit would be reduced when changed into a working canal but would remain beneficial.
 - Terrestrial ecology: Adverse effects due to the construction programme overlapping with that of other developments causing loss, damage or disturbance to habitats and species.
 - Historic environment: Potential effects on the setting of heritage assets with nearby other developments.
 - Landscape and visual: Adverse effects during operation from a number of solar developments being located next to each other.
 - Traffic and transport: Adverse effects during construction and operation due to increased traffic from the Project and other developments together.
 - Noise and vibration: Adverse effects during construction from increased noise associated with other nearby developments.

- Socio-economics and communities: Adverse effects on local amenity during
 construction due to increased transport and noise effects, and adverse effects during
 construction due to combined closures and diversions of Public Rights of Way with
 nearby other developments. Beneficial effects are expected from changing the water
 channel for the Wilts and Berks Canal to a working canal and from additional
 employment created across projects.
- Health: Adverse effects to health and wellbeing of school communities at education facilities near the A34 with Dalton Barracks Garden Village development, and adverse effects due to changes in environmental amenity affecting the health and wellbeing of the local communities during construction and operation with nearby developments. Beneficial effects are expected from changing the water channel for the Wilts and Berks Canal to a working canal.
- Geology and soils: Cumulative loss of agricultural land with other developments.
- 6.17.5 Thames Water will continue to develop mitigation to reduce and avoid adverse effects from cumulative interactions as much as possible, informed by further technical assessments. This is likely to include measures such as collaborating and cooperating with third-party developers to understand how shared effects can be managed.

7 Next steps

- 7.1.1 The assessment of effects reported in the PEI Report is preliminary and considered a reasonable 'worst case' as a precautionary approach has been applied. As part of the next steps to inform the Environmental Statement, Thames Water will continue to survey in and around the Site and prepare specialist modelling to increase the understanding of the baseline environmental conditions. This will inform the Project's design development and the parameters for the Environmental Statement and DCO submission.
- 7.1.2 Thames Water is committed to including mitigation measures as necessary to reduce adverse environmental effects as far as practicable. Discussion about potential effects, mitigation measures, and opportunities to enhance the environment will continue, including with the Environment Agency, Natural England, Historic England, National Highways, local authorities, and local communities. Additional mitigation measures will also continue to be explored to reduce likely significant environmental effects.
- 7.1.3 It is expected that as further understanding of the current environmental baseline is gained, and the design and mitigation are further developed, adverse environmental effects for the majority of likely significant adverse effects can be reduced.
- 7.1.4 Specific next steps and areas of additional mitigation to be explored are noted for each of the assessment aspects in section 6.
- 7.1.5 The Environmental Statement will be produced in volumes and will be supported by a series of technical appendices or standalone Application Documents. A Non-Technical Summary of the Environmental Statement will provide a summary of each of the assessed environmental aspects.

8 How can you give feedback?

- 8.1.1 It is a statutory requirement to prepare a Statement of Community Consultation (SoCC) to state how Thames Water intends to publicise and consult on its PEI Report and carry out its Statutory Consultation activities more generally. Following consultation on it with LPAs, Thames Water has published a SoCC, which sets out how it proposes to carry out Statutory Consultation.
- 8.1.2 The Statutory Consultation period for the Project will run from 28th October 2025 until 13th January 2026.
- 8.1.3 Thames Water will prepare a Consultation Report following the consultation, recording the feedback received and its responses for how this feedback will be taken into consideration. This report will be published with the DCO application.
- 8.1.4 If Thames Water's application for a DCO is accepted by the Planning Inspectorate, on behalf of the Secretary of State, an Examining Authority will review the application. During the six-month examination stage, anybody with an interest in the project can participate and make representations in writing, or verbally at hearings.
- 8.1.5 After the end of examination, the Examining Authority will have three months to report its recommendation to the Secretary of State, who has a further three months to make a final decision whether or not to grant a DCO for the project.
- 8.1.6 This Non-Technical Summary of the PEI Report is also available in an interactive website format. You can view this and find out more information about the proposals by viewing the consultation materials that have been developed to help people understand the proposals for the Project. These can be accessed via the following link: www.thames-sro.co.uk/sesro/statcon2025.
- 8.1.7 Thames Water is holding in person and virtual information events to allow attendees to explore the proposals and ask questions of the project team. Printed consultation materials will be available at events and at locations within the local area, details of which can be found at www.thames-sro.co.uk/sesro/statcon2025.
- 8.1.8 A feedback form is available for stakeholders and the public to formally respond to the consultation. Thames Water is seeking feedback on the proposed design and approaches. The feedback form provides a series of questions that request information on particular elements of the proposals, however, all feedback will be considered.
- 8.1.9 Your feedback is important. It will help Thames Water to determine its final proposals, which will be submitted as part of the DCO application. You can respond in any of the following ways:
 - Online: https://www.ipsos.uk/SESRO
 - Email: <u>SESRO@ipsos.com</u>
 - Post: Freepost SESRO CONSULTATION

9 **Glossary**

Term	Definition
Abstraction	The process of taking water from a river, lake, or groundwater source for human use, such as drinking, farming, or industrial activities.
Additional (secondary) mitigation	Additional (secondary) mitigation includes actions that require further activity 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 Environmental Statement. 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.
Applicant	The party who seeks development consent on an EIA project. In the case of SESRO, this is Thames Water.
Archaeology	The physical remains of human activity.
Aquifer	An aquifer is an underground layer of rock or soil that holds water.
Baseline	The existing nature of the environment at a fixed point in time.
Biodiversity Net Gain	Biodiversity Net Gain is an approach to development. It makes sure that habitats for wildlife are left in a measurably better state than they were before the development.
Catchment	The area of land where rainwater and streams flow into a particular river, lake, or reservoir. It acts like a natural drainage system, collecting water that eventually ends up in one main water body.
Climate change	Change in global, national, or regional climate patterns (such as temperature, precipitation and wind).
Code of Construction Practice (CoCP)	A set of guidelines or principles that will be adhered to during the construction of the Project.
Commitments Register	From an early stage of the DCO application process through to the end of examination, commitments to a number of measures are likely to be required to ensure that good design objectives will be secured and implemented. This is to ensure that potential environmental effects arising from the project are mitigated as far as possible and in accordance with the mitigation hierarchy. These commitments are recorded on a Commitments Register.
Core Project Area	The reservoir and associated infrastructure would mostly be situated within an area bounded by the A415 and the village of Marcham to the north, the A34 and the village of Steventon to the east, the Great Western Main Line railway to the south and, the A338 and village of East Hanney to the west (this is known as the 'Core Project Area').
Conservation Area	An area of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance.
Construction phase	The period during which construction activities are undertaken and prior to the asset or system becoming operational. Construction is expected

Term	Definition
	to take place over three phases (early works, enabling works and main works).
Contractor	An entity that undertakes a contract to provide materials and/or labour to construct, build, maintain, repair, replace, disassemble or demolish an asset.
Discharge	The release or outflow of substances (such as water, wastewater, or pollutants) from a source - such as a pipe - into the environment, typically into a water body such as a river. Discharges can be controlled or uncontrolled and can have effects on ecosystems and human health.
Draft Order limits	All the land potentially needed to deliver the Project. Referred to as 'the Site'.
Embedded design mitigation	Modifications to the location or design of the Project which are a result of design evolution. Modifications which are an inherent part of the Project design for the purpose of avoiding, preventing or reducing likely significant environmental effects. For example, managing construction material quantities to reduce changes in traffic flows, or including areas of habitat planting in the design to mitigate ecological effects.
Environment Agency	Regulatory Agency in England responsible for licences and consents relevant to flooding, discharge consents, waste licences and the protection of the environment.
Environmental Impact Assessment (EIA)	A process by which information about environmental effects of a proposed development is collected, assessed and used to inform decision making.
Environmental Statement	A document that describes the results of an Environmental Impact Assessment and its effects on the environment.
Greenhouse gases	Greenhouse gases refer to gaseous compounds that absorb infrared radiation and trap heat in the atmosphere and include, for example, carbon dioxide (CO ₂), methane (CH ₄) and nitrous oxide (N ₂ O).
Ground Investigation	An investigation into the below-ground characteristics of a site.
Habitats Regulations Assessment (HRA)	An assessment which must be undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) if a plan or project may affect the protected features of a habitats site, before a decision can be made on whether to authorise it.
Haul road	A term for roads designed for heavy or bulk transfer of materials by construction vehicles
Historic environment	All aspects of the environment resulting from human activity over time, often broken down into three main areas: archaeological remains, historic buildings and structures and historic landscapes, designed or otherwise
Infrastructure	The basic network or foundation of capital facilities or community investments which are necessary to support economic and community activities.

Term	Definition
Invasive Non-Native Species (INNS)	Species that have been released either deliberately or accidentally outside of their natural range, where they have become established and cause adverse ecological, environmental, or economic effects.
Landscape and Visual Impact Assessment	A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape [townscape] as an environmental resource in its own right and on people's views and visual amenity.
Landscape Character Areas	Unique areas which are the discrete geographical areas of a particular landscape type.
Listed Building	A building officially designated as being of special architectural or historic interest. Listed Buildings are protected by law, and any alterations, extensions, or demolitions require special permission to ensure their character and significance are preserved. They are graded as Grade I, Grade II*, or Grade II, depending on their importance.
Magnitude	Refers to the size, amount, intensity and volume of a Project impact, in quantitative terms where feasible
Major accident	A major accidents an event or situation that threatens serious damage (loss of life or permanent injury or long-lasting damage to an environmental receptor) and for which a response would require the use of resources beyond those available to the Project (e.g., the emergency services, the Environment Agency etc.)
Mitigation measures	Actions that are taken to reduce, prevent or compensate for adverse effects of a development
Natural England	A public body responsible for ensuring that England's natural environment is protected and improved
Non-motorised users	Including pedestrians, cyclists, wheelers and horse riders
Operation phase	The period over which the Project is assumed to operate.
Planning Inspectorate	The Planning Inspectorate (sometimes referred to as PINS) is an executive agency of the UK government that deals with planning appeals, national infrastructure planning applications, and examinations of local plans in England. They act on behalf of the Secretary of State, making decisions and recommendations on a range of planning-related matters, including everything from small household extensions to large infrastructure projects.
Preliminary Environmental Information	Initial environmental data and assessments provided early in the Development Consent Order process to inform decision making.
Protected and notable species	Species of plant and animal protected by legislation, and species of conservation importance such as priority species.
Public Rights of Way (PRoW)	Routes that the public have the legal right to pass and re-pass. This includes footpaths (for pedestrian use), bridleways (for pedestrian, cyclist and horse-rider use), restricted byways (any transport without a

Term	Definition
	motor), and byways open to all traffic (any kind of transport, including cars).
Residual effect	The predicted consequential change on the environment from the effect of development after mitigation
Scheduled Monument	A nationally important archaeological site or historic building that has been given legal protection. Scheduled Monuments are designated under the Ancient Monuments and Archaeological Areas Act 1979 and are preserved due to their cultural, historical, or architectural significance. Any works affecting them require special consent to ensure their conservation.
Sensitivity (of a receptor)	A judgement regarding the susceptibility of a receptor to the change arising because of the Project and the value attached to the receptor.
Site of Special Scientific Interest (SSSI)	A site designated as being of special interest for its flora, fauna or geological or physiographical features and protected under the Wildlife and Countryside Act 1981.
Special Areas of Conservation (SAC)	An area within the UK which has been identified as being important for a range of vulnerable habitats, plant and animal species within Europe and is designated under the Conservation of Habitats and Species Regulations 2017.
Standard good practice mitigation	Standard good practice measures or actions to reduce effects, regardless of the design process and EIA assessment. These include actions that will be undertaken to meet existing legislative requirements, and/or actions that are considered to be standard good practice used to manage commonly occurring environmental effects during the construction and operation phases. For example, 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.
Study area	Each environmental aspect chapter within the PEI Report (Chapters 5 to 20) has defined a specific 'study area' that has been considered in the assessment of likely significant effects.
Waste	Any substance or object which the holder disposes of or is required to dispose of in accordance with the law.
Water Framework Directive	The Water Framework Directive (2000/60/EC) is an EU directive which was transposed into law in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 ('the WFD Regulations'). It aims to achieve good status of all water bodies (surface waters, groundwaters and the sites that depend on them, estuaries and near-shore coastal waters) and prevent any deterioration to these water bodies. It has introduced a comprehensive River Basin Management Plan system to protect and improve the ecological quality of the water environment.

Term	Definition
Water Resources Management Plan (WRMP)	Regulatory requirement that sets out how water companies intend to achieve a secure supply of water for their customers and protect and enhance the environment.
Water Resources South East (WRSE)	This is an alliance of the six water companies that supply drinking water across South East England – Affinity Water, Portsmouth Water, SES Water, South East Water, Southern Water and Thames Water. It is one of the five regional groups across England, each of which is preparing a strategic water resource plan for its region.
Water treatment works	A facility where water is treated to remove contaminants and ensure it meets drinking water standards.

10 **Abbreviations**

Abbreviation	Definition
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
EIA	Environmental Impact Assessment
INNS	Invasive Non-Native Species
PEI	Preliminary Environmental Information
PINS	Planning Inspectorate
PRoW	Public Rights of Way
SAC	Special Area of Conservation
SESRO	South East Strategic Reservoir Option
SoCC	Statement of Statutory Consultation
SSSI	Site of Special Scientific Interest
SWOX	Swindon to Oxfordshire
WFD	Water Framework Directive
WRMP	Water Resource Management Plan
WRSE	Water Resources South East

