SESRO Project
Earthworks
Early Market Engagement
Market Briefing

Thames Water Utilities Limited

Strategic Resource Options (SRO) Directorate

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1. Introduction

1.1. Purpose of this Document

Thames Water Utilities Limited's ("Thames Water") Strategic Resource Options (SRO) portfolio forms part of a national programme of water resource projects, facilitated by RAPID[1] and designed to ensure the resilience of the UK's water supply in the event of a 1 in 500 years drought - in response to population growth, climate change and a need to reduce the amount of water abstracted from the environment.

As part of the Thames Water SRO portfolio, we are proposing to build a new reservoir near Abingdon in Oxfordshire known as the South East Strategic Reservoir Option (SESRO). The reservoir is designed to meet the long term needs of 15 million customers served by Thames Water, Affinity Water and Southern Water. The project involves the construction of a new bunded reservoir with a capacity of up to 150Mm^3 and a surface area of approximately 7km^2, estimated to cost of approximately £2.2 billion in 2022 prices[2] (CAPEX only, including land and client costs). You can find more information about SESRO by following this link.

As part of our early market engagement programme, we are seeking to engage with suppliers operating in the UK earthworks and earthmoving market to enable Thames Water to share information on the SESRO project and, through a short market sounding questionnaire, we wish to secure insights regarding potential market capacity and appetite for the earthworks opportunities that the delivery of SESRO will create.

This market briefing document provides developing information related to the earthworks scope required for the SESRO project. The accompanying market sounding questionnaire provides an opportunity for the earthworks supply chain to contribute their views on current thinking and share information on their potential capacity, capability and appetite for the works. The market sounding questionnaire can be found by following this link[3].

We ask that you **complete the Market Sounding Questionnaire by 30th of August 2024**. Should you have any queries or comments, please feel free to contact us at SRO.supplychain@thameswater.co.uk.

1.2. Important Notes

All aspects of the SESRO Procurement Strategy remain under consideration by Thames Water, and the views of the market will assist in the further development of the strategy.

Thames Water welcomes feedback from any supplier interested in the SESRO works. Suppliers of any type and size, and irrespective of whether your company has ever supplied Thames Water, are encouraged to consider and engage with this market consultation exercise.

All responses to this market consultation will be carefully considered but will not bind Thames Water to any approach. This briefing and questionnaire are not a call for competition. Any

[1] Regulators' Alliance for Promotion of Infrastructure Development, Comprising Ofwat, Environment Agency and the Drinking Water Inspectorate
[2] Standard gate two submission for South East Strategic Reservoir Option (SESRO), November 2022
[3] https://www.smartsurvey.co.uk/s/SESRO_Earthworks_Market_Engagement/

expenditure, work or effort undertaken by your organisation in relation to this consultation exercise will not be reimbursed by Thames Water.

2. Background

2.1. SESRO Scope and Requirements

The draft Water Resources South East Regional Plan and Thames Water's revised draft Water Resources Management Plan (rdWRMP) both include the proposed SESRO project. Thames Water is currently developing a Procurement Strategy as part of its preparations for project procurement and delivery.

Our project remains in the early stages of planning, design and stakeholder engagement and is still subject to change through the DCO process and approval of the rdWRMP. Our dedicated project website provides details about the project.

The key scope elements for the SESRO project in delivery phase are shown in Figure 1 overleaf and described below.

The Key Delivery Scope Elements[4] for the SESRO project comprise:

- Project Management & Design
- **Earthworks (including bulk excavation, handling and disposal, engineered embankment construction, and watercourse diversions)**
- Pumping and M&E (including pumping stations, river abstraction intake and outfalls)
- Water Transfer Tunnels, Pipework and Drawdown Channels
- Road works (e.g. new access roads and diversions)
- Railway works & Logistics (e.g. railheads and sidings)
- Hard & Soft Landscaping (including wetland habitat creation and laydown areas)
- Handover & Commissioning.

Further detail on the indicative earthworks scope is included in section 3.

[4] The project is subject to ongoing design development, engagement and consultation and therefore elements may change.

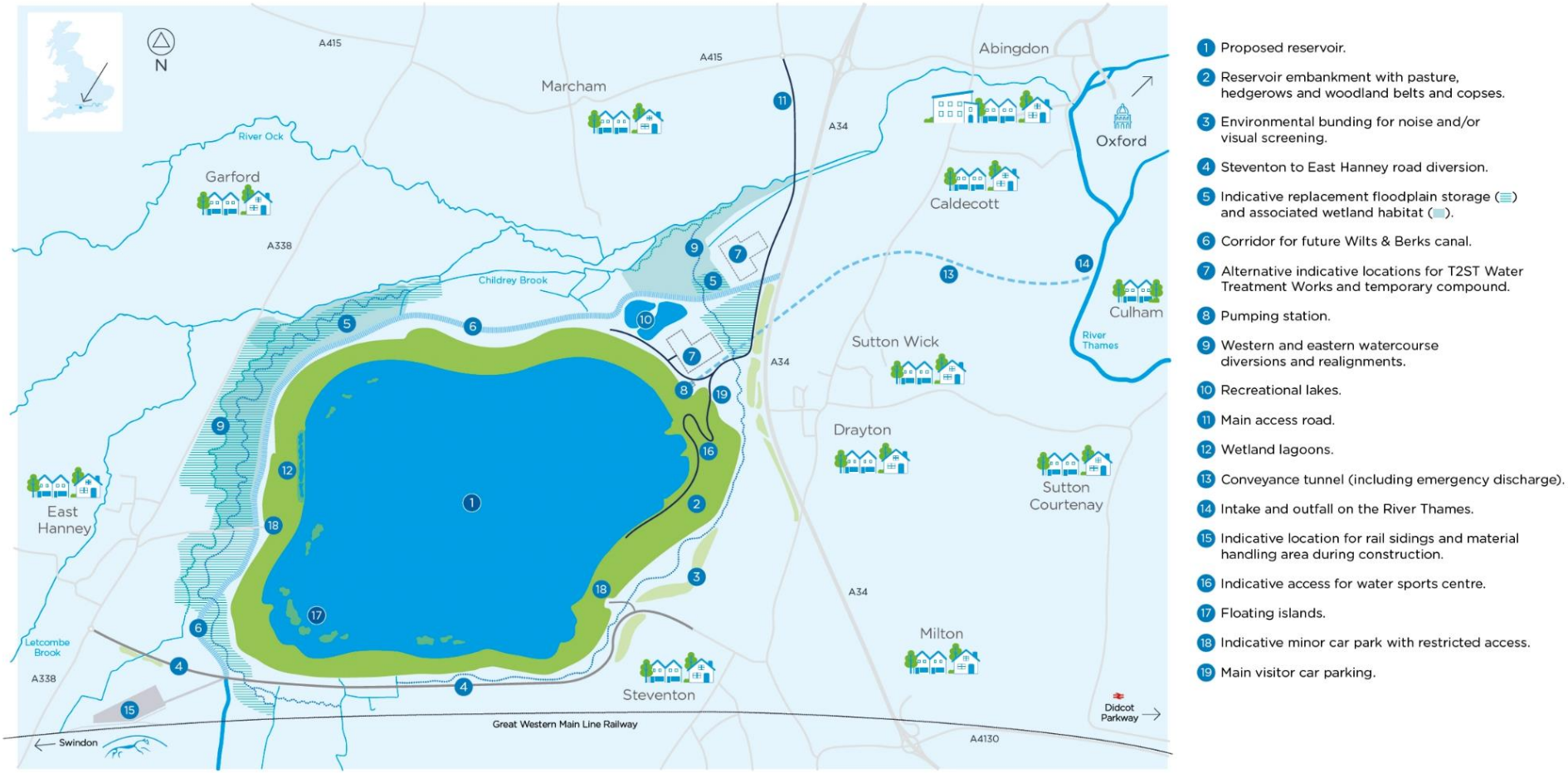

Figure 1: SESRO location)

The site for the proposed new reservoir (SESRO) is in Oxfordshire in the South East region of England, near Abingdon and circa 15km (9.3 miles) southeast of the centre of Oxford. The site is bounded by the A34 to the east, the Great Western Main Line railway (London to Bristol) to the south, the A338 to the west, and the River Ock to the north.

2.2. Schedule

The Indicative project timeline is as follows:

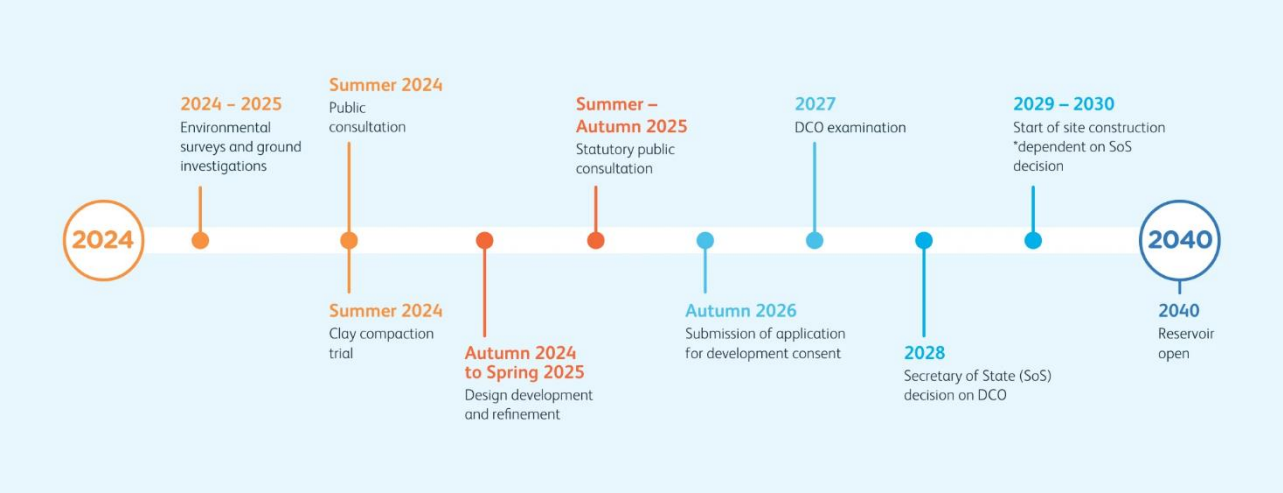

Figure 2: Indicative project timeline

The indicative programme has been developed for the purposes of strategy development and market engagement. Milestone dates are wholly dependent on the finalisation of the Water Resources Management Plan, securing the SESRO Development Consent Order, progressing through the RAPID[5] gates and other processes. A detailed schedule will be developed as part of the finalisation of the Procurement Strategy.

2.3. Delivery approach

Thames Water is the lead developer for the SESRO project and is responsible for delivering the preliminary services (DCO reference design and consenting), and for running the procurement processes for the delivery phase. The current proposed delivery approach will see a new Infrastructure Provider (IP), independent of Thames Water, being appointed, taking over (from Thames Water) responsibility for the overall design, build, finance and potentially the operation and maintenance of the project. The IP would be appointed following a competitive procurement process.

The draft outline Procurement Strategy for SESRO proposes the appointment of a single construction partner for the main works construction of SESRO. It is anticipated that enabling/advanced works contracts may be required for certain critical path activities, but these are not yet defined. Thames Water would procure the construction partner and the IP would be responsible for funding and managing the delivery of the main works by the construction partner after the IP is appointed.

In accordance with the draft Procurement Strategy, it is expected that the main earthworks packages required for the delivery of SESRO would be procured by the appointed construction partner as a subcontractor.

[5] Regulators' Alliance for Progressing Infrastructure Development (RAPID)

3. SESRO earthworks scope

3.1. Main Earthworks

The excavation of the reservoir and subsequent placement of the excavated material to form the reservoir embankments (with a height above existing ground level of 15-25m), is the most considerable earthworks activity and would require a large fleet of excavators, rollers, graders and dumper trucks. It is proposed that the majority of the works would be carried out across six main summer working seasons (March to October) to avoid the risk of poor winter weather affecting clay handling. The reservoir embankment and borrow pit has been designed with an aim to balance excavation and fill volumes, thus avoiding the need to import or export clay from the site. There will be other excavation requirements, such as for water course diversions and replacement flood storage areas.

3.2. Site topology and geology

The topography of the site is gently sloping from south to north with the ground level dropping by around 10m from the south to the north. The geology of the site is characterised by a thin layer of topsoil, overlying a varying depth of superficial deposits, overlying bedrock strata.

The Kimmeridge and Gault clays which are to form the structural zones of the reservoir embankment will be sourced from borrow pit(s) which will take up most of the reservoir footprint beyond the inner toe of the perimeter embankment. To access this clay, other materials would need to be excavated, namely the superficial/quaternary deposits above the bedrock clay, and a thin layer of Lower Greensand, a bedrock stratum which lies between the Kimmeridge and Gault Clays. These other materials (along with a small proportion of the Kimmeridge and Gault Clays) are expected to be unsuitable for inclusion within the structural zones of the embankment and are proposed to be placed as landscape fill, avoiding undertaking haulage activity taking materials away from the site.

3.3. Borrow Pit Excavation

Archaeological investigations will precede the stripping of topsoil and vegetation from the borrow pit(s) and embankment footprint. The superficial deposits (overburden) encountered within the top of the borrow pit excavation are expected to only be suitable as landscaping fill, whilst the clay strata below is expected to be used for structural fill. A deep working face would be established to allow both to be excavated concurrently as required to suit the embankment construction and avoid the need for double handling.

3.4. Embankment Construction

It is envisaged that the embankment would be constructed with multiple work faces on either side of the start point progressing towards each other. The embankments would typically be constructed from the outside face towards the inside face. This enables the outer landscape fill to be placed first (thereby providing visual and noise barrier benefits, as well as avoiding the double handling of superficial deposits). All fill forming the embankment would be laid in thin (~150 mm) horizontal layers and compacted by appropriate roller plant.

3.5. Drainage and Erosion Protection

There are two aspects within the embankment which must be constructed of imported material. One of these is the thin drainage /filter layer to be constructed of suitable sand and gravel, which is not available on site. The other is rip-rap, which consists of stone blocks placed on the upstream face of the dam to prevent wave erosion. It is envisaged that these materials would be

imported to site by rail and then transported to the embankment working face on haul roads for final placement by appropriately skilled operators.

3.6. Watercourse and water storage works

Watercourse diversions and creation of replacement flood storage areas would be required during the enabling works phase. This would involve lowering of ground levels and creation of new watercourse channels, using earth moving vehicles. The current indicative alignments have been designed to provide ~16.5km of diverted or enhanced watercourses and ~24km of ditches.

The borrow pit(s) excavation would need extensive temporary works to control water and store it in lagoons for settlement of fines prior to discharge into adjacent watercourses (or use as dust suppressant during construction and if necessary, for earthworks compaction). It is proposed that the lagoons / settlement ponds would be constructed at the northeast corner of the reservoir and be retained as permanent water features for landscape and biodiversity improvement.

3.7. Earthworks programme

The indicative construction programme for SESRO has a 10-year duration. The main earthworks are programmed to be delivered over six seasons running between March and October from year 4 with site clearance and enabling earthworks, such as watercourse diversions, taking place from year 2.

Year 2	• Start of site clearance activities. • Start of the site drainage works (east watercourse diversion and settlement ponds). • Start of the site drainage works (west watercourse diversion and replacement floodplain storage). • Start construction of temporary rail siding
Year 3	• Continuation of site clearance activities. • Continuation of the site drainage works (east watercourse diversion and settlement ponds). • Continuation of the site drainage works (west watercourse diversion and replacement floodplain storage).
Year 4	• Season 1 of main reservoir earthworks (including drainage within reservoir embankment). • Completion of temporary rail siding
Year 5	• Season 2 of main reservoir earthworks (including drainage within reservoir embankment and erosion protection on reservoir embankment). • Start of landscaping.
Year 6	• Season 3 of main reservoir earthworks (including drainage within reservoir embankment and erosion protection on reservoir embankment). • Start of crest road construction (stabilisation of crest surface) • Continuation of landscaping
Year 7	• Season 4 of main reservoir earthworks (including drainage within reservoir embankment and erosion protection on reservoir embankment).

	• Continuation of crest road construction. • Continuation of landscaping
Year 8	• Season 5, completion of main reservoir earthworks (including drainage within reservoir embankment and erosion protection on reservoir embankment)
Year 9	• Season 6, final landscape shaping of reservoir earthworks.

3.8. Reservoir embankment indicative quantities of materials to be moved.

Typology	Haul distance	Approximate Volume M³
Structural fill	250-500m	710,000
	500-750m	9,400,000
	750-1000m	13,700,000
	1000m-1250m	5,500,000
Landscape fill	250-500m	300,000
	500-750m	6,000,000
	750-1000m	5,000,000
	1000m-1250m	3,200,000

4. Environmental Sustainability

The projected impact of climate change in our region will add to a difficult situation where water resources are already stressed, and the population is increasing. We believe reducing our greenhouse gas (GHG) emissions and managing the impacts of climate change is essential.

In delivering SESRO, we want to ensure that we protect water resources, deliver a resilient project which is adaptable to climate change, support Thames Water's carbon commitments, use resources efficiently and minimise waste, and enhance the environment. To that end the following climate principles[6] shall apply in the design and delivery of SESRO.

4.1. Climate Principles

Actively seek to prevent and minimise whole-life carbon emissions at every stage of project development and support water industry operational net zero ambitions. Seek opportunities to reduce embodied and operational carbon following the carbon management hierarchy such as investing in low carbon solutions, increasing energy efficiency and incorporating carbon sequestration on site, where possible.

Actively explore whether there are any aspects of our designs that can enable our supply chain to reduce climate impacts during construction. Work with other water companies and our

[6] Source: SESRO Draft Design Principles (https://dn9cxogfaqr3n.cloudfront.net/2024/Design+principles.pdf)

supply chain to explore ways to integrate benefits with other projects in the area and wider industry.

Aim to reuse all excavated material on site. The SESRO design is based on using clay excavated on site for reservoir construction and reusing excavated material on site for landscape fill and other beneficial uses where practicable, thereby minimising waste and off-site disposal. It is proposed that soils suitable for re-use (including topsoil) will be managed and stored appropriately for reuse in the final landscape scheme.

Actively seek to use resources efficiently and avoid waste. Specify low carbon, sustainable and responsibly sourced materials where reasonably practicable and consider end of life disassembly, repurposing and re-use of temporary works.

All aspects of the project, including water management, landscaping, recreation and habitat creation will be designed for climate resilience. Explore incorporation of adaptation measures and pathways to address the effects of climate change (such as longer growing seasons, heatwaves, drought and other extreme weather events), based on available long-term projections of future climatic conditions, such as UK Climate Projections 2018 (UKCP18).

It's everyone's water