Teddington Direct River Abstraction

A vital drought resilience project for London

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Contents

Foreword

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Water is essential for life. Every day, we supply top quality drinking water to customers and businesses across London and the Thames Valley.

In the face of the challenges of climate change and population growth, it's more important than ever that we have a plan for the future, to secure our water supplies.

While no one can be absolutely certain how climate change and population growth will impact us over the next 50 to 100 years, and beyond, it's important that we plan for a drier future. As such we've been working with other water companies to develop strategic plans for water supplies for London and the South East.

The Teddington Direct River Abstraction (DRA) project is one of several being taken forward to help secure our future water supplies.

We know that for Londoners the Thames is more than just a river—it's an historical and cultural landmark that has shaped the city's identity for centuries. Moreover, the river and its banks are a home for a remarkable array of species and they provide recreational opportunities for residents and visitors alike.

Our proposals for the Teddington DRA project are at a very early stage and we want to work with our stakeholders and with local communities to shape them. As such, we're holding a public consultation on our initial site options and we'd be very grateful for your feedback.

Thank you.

Planning for the future

Every day we turn on our taps to fill glasses of water, make cups of tea, wash, cook and clean. We rely on water to run our schools, hospitals, essential services, and businesses. We need it to keep the world around us healthy too.

We forecast that we face a shortfall of over 1 billion litres of water every day for our customers in the next 50 years – enough to fill around 400 Olympic-sized swimming pools.

The main factors that affect how much additional water we'll need in the future are:

- a growing population
- a changing climate
- the need to provide increased resilience to droughts
- reductions in the amount of water we take from rivers and groundwater to improve the environment

This is a huge challenge that we're taking very seriously.

Our long-term plan

Under the umbrella of Water Resources South East, we've been working with five other water companies in the south-east, as well as with customers, stakeholders and other water-using sectors, to develop plans to address our future water resources challenges.

We published our revised draft Water Resources Management Plan 2024 in the summer, following a public consultation earlier in the year, and you can find it at **thames-wrmp.co.uk/document-library**

Feedback

We launched a public consultation on our draft Water Resources Management Plan in December 2022 and received over 1,680 responses. Since the consultation closed in March 2023 we've considered all of the feedback received, along with new information and policy requirements, and we've published our Statement of Response, which can be found at **thames-wrmp.co.uk/document-library**

Subject to acceptance by the Secretary of State for Environment, Food and Rural Affairs, our revised draft Plan lays the foundation for a wide range of solutions to plug the shortfall between the amount of water we have and the amount we need. These measures are designed to safeguard supplies and decrease the likelihood of facing water shortages during prolonged drought periods.

Along with setting a target to halve leakage by 2050, and installing a further one million smart water meters in customers' homes, at the centre of our Plan is a vital new water resource for London.

Fixing leaks

We're tackling leakage in our network, with 1,000 leaks fixed per week. However, we recognise that we can do better.

In our revised draft Plan, we've committed to halve the amount of water we lose through leaks by 2050. This is a challenging and ambitious target but one we're determined to meet.

Tackling leakage, though, will not on its own solve the future water supply challenge that we're facing. We also need to work with our customers to make sure we use our water supplies carefully and invest in new sources of water.

A vital new drought resilience project for London

We're proposing a new river abstraction on the River Thames, supported by water recycling.

The Teddington DRA project could provide up to 75 million litres of water each day during periods of prolonged dry weather.

Water would be abstracted from the river upstream of Teddington Weir and transferred along a section of new connecting pipeline to an existing underground tunnel to our reservoirs to become drinking water.

What do we mean by abstraction?

Abstraction is the process of taking water from a river, or groundwater, for various uses, such as drinking water, agricultural and industrial processes.

Abstracting water from rivers is crucial but must be carefully managed to avoid negative impacts on the environment and the river's ecological balance. Sustainable abstraction approaches, like the proposed Teddington DRA project, take into account factors like the river's flow, ecology, water quality, and the potential effects on downstream areas.

Permits are required from the Environment Agency to ensure that abstraction activities do not harm the environment, disrupt natural habitats, or deplete the river's water resources beyond sustainable levels.

The abstracted water would be replaced with recycled water from Mogden Sewage Treatment Works in Isleworth, transferred to the river along a new underground pipeline to an outfall structure upstream of Teddington Weir.

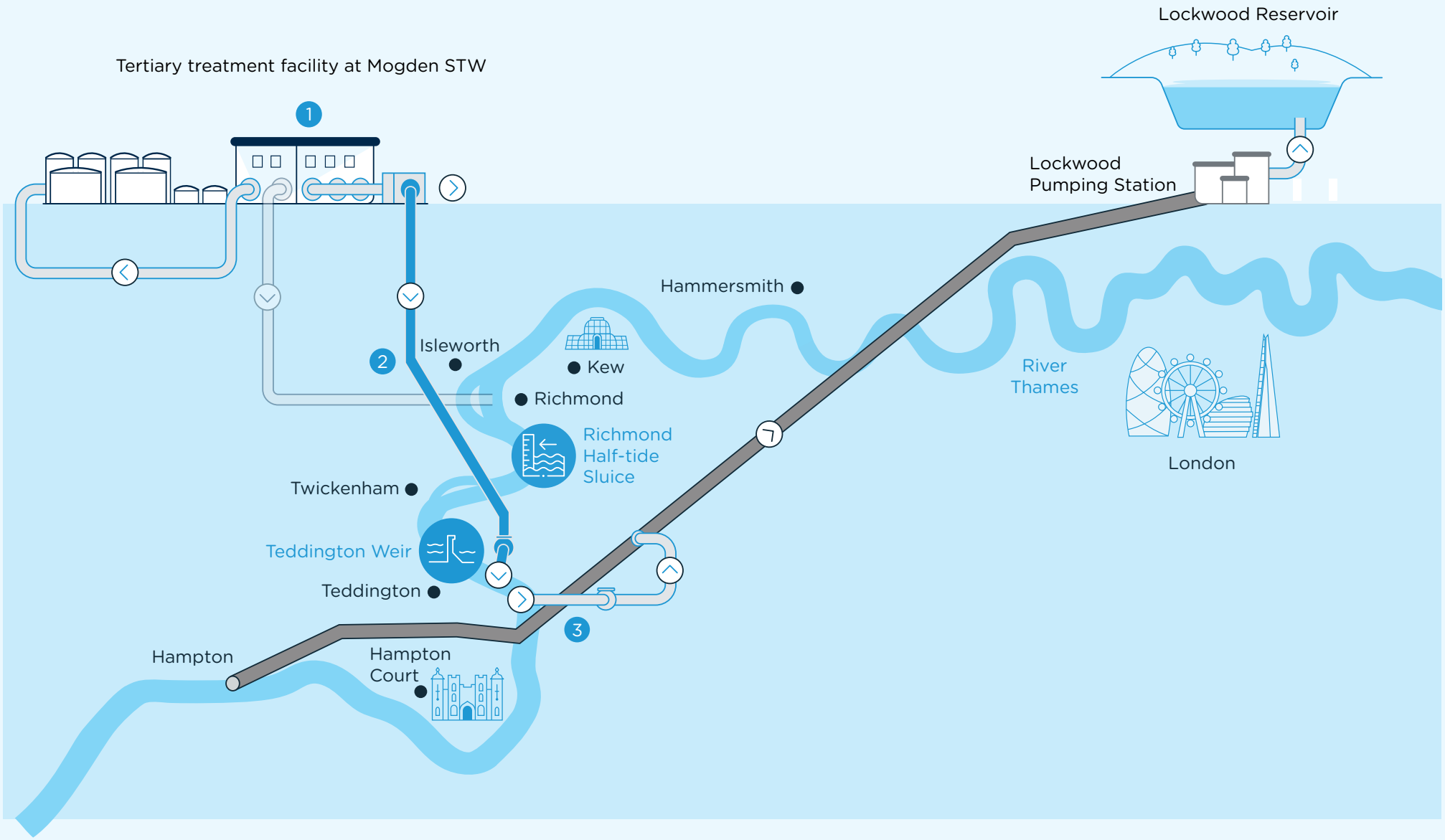
This way, we'd be able to access additional supplies of water from the river, while ensuring river levels are maintained and the river environment and ecology protected.

When would it be used?

There would be rules governing when the project could be used.

We'd only use it during periods of prolonged dry weather, typically between late summer and late autumn, on an intermittent basis.

In order to keep the treatment facility in good working order at other times, we'd need to run water through it, at a low volume, called a "sweetening flow".



1 Tertiary treatment facility.

2 New pipeline from Mogden to River Thames upstream of Teddington Weir and outfall structure.

3 River water abstraction facility and Thames Lee Tunnel connection.

Diagram showing the key features of the Teddington DRA project

Water recycling

At the heart of this project is the use of water recycling, a tried-and-tested method used widely in the UK and other countries, particularly those with low rainfall.

1. Rainfall into rivers.
2. Water abstracted and pumped to Water Treatment Works.
3. Treated water supplied to homes and businesses.
4. Wastewater is transferred to the Sewage Treatment Works for treatment.
5. Treated wastewater discharged to the river and sea.
6. Evaporation and condensation into clouds.

Rainwater flows into our lakes, rivers and streams, as well as being absorbed into the ground. We abstract water from rivers and groundwater sources, and treat it in our water treatment works to turn it into top-quality drinking water. We pump that to your taps via our network of 20,000 miles of water pipes.

Once water's been used, we call it wastewater. It goes down your drain or plughole into our network of sewer pipes. These lead to our sewage treatment works, where we treat the water until it's clean enough to go back into the rivers.

Developing our proposals

Building on early work to establish the feasibility of the project, we've been carrying out evaluations of potential locations for the new structures that we think would be required.

Over the next three years, reflecting on feedback that we receive during our engagement and public consultations, we'll be developing designs for the proposed tertiary treatment facility, new pipelines and shafts, and intake and outfall structures.

You can find out more about these, and a public consultation we're holding on initial site options, by visiting our website at **thames-sro.co.uk/TDRA**

A new tertiary treatment facility

Water recycling is a key part of our Teddington DRA proposal, using a process known as tertiary treatment, which would be carried out within the site of the existing Mogden Sewage Treatment Works. We'd build a brand-new tertiary treatment facility to enable us to carry out enhanced treatment of wastewater to meet strict environmental regulations.

Then, and under permit from the Environment Agency, the recycled water could be transferred to an outfall structure on the River Thames to replace water that had been abstracted to supply our reservoirs to become drinking water.

What is tertiary treated wastewater?

Wastewater is treated so that it can be safely returned to the environment. The Environment Agency determines the level of treatment that is required and to ensure the environment is protected.

The treatment takes place at sewage treatment works, where the wastewater is filtered before undergoing primary and secondary stages of treatment to make it safe to be released into local watercourses.

At some treatment works there is a further stage, called tertiary treatment, that removes finer suspended particles, dissolved organic and inorganic substances, and additional contaminants. Discharging into the lower section of the freshwater River Thames means our treatment process to remove impurities would include as a minimum:

- Coagulant dosing, a process used in water treatment to enhance the removal of suspended particles and impurities.
- Filtration through nitrifying sand filters to reduce suspended particles and impurities.
- Filtrations through mechanical cloth filters as a final step to further remove suspended particles and impurities.

Further treatment may be required, for instance ozonation, but as we're still at an early stage we're still establishing what is needed to meet regulatory and permit requirements. Our final treatment would make sure the River Thames is clean and safe for people to use and for wildlife to thrive.

New pipelines and shafts

New pipelines would be needed to transfer water to and from the intake and outfall structures upstream of Teddington Weir.

- A new pipeline would transfer river water from an intake structure approximately 350 metres upstream of Teddington Weir to the existing Thames Lee Tunnel.
- Another pipeline, approximately 4.5km in length, would transfer recycled water from a newly built tertiary treatment facility located in Mogden Sewage Treatment Works, to an outfall structure approximately 180 metres upstream of Teddington Weir. In most places this pipeline would be between 20 and 30 metres deep and 1.8 metres wide.

Up to six shafts could be required at points along the pipeline route between Mogden Sewage Treatment Works and the outfall structure depending on the route and site options selected following public consultation. The shafts are required for access by the equipment and machinery needed for construction of the pipeline. During construction, each shaft would measure approximately 10.5m in diameter. Once construction is complete, a 2m x 2m cover for the shaft access point would remain.

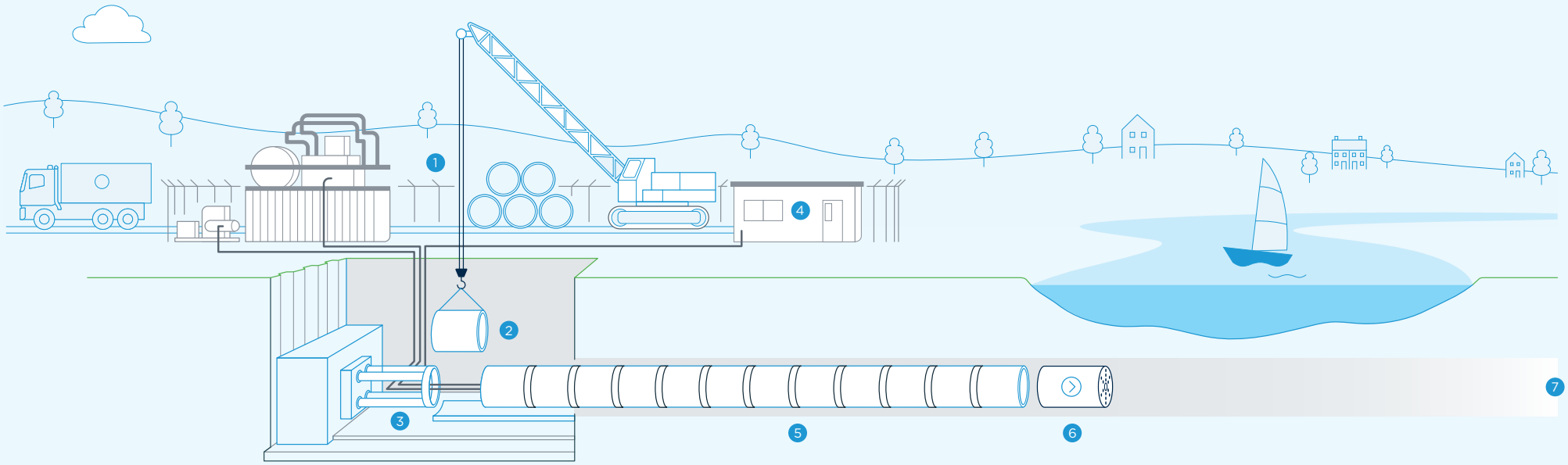
We're likely to install the pipeline using a pipe-jacking method at considerable depth (20m - 30m underground), which would minimise the risk of settlement and damage to structures on the surface.

In the highly unlikely event that damages occur to property as a result of our construction we would pay for repairs.

Pipe-jacking

It is likely that the new pipelines would be created using a method called pipe-jacking. A tried-and-tested method, it involves pushing sections of pipe through the ground whilst tunnelling the ground in front. Pipe-jacking tends to create less noise and dust than other methods. Also because it takes place deep under the ground, potential impacts on existing infrastructure above ground can be avoided.

Installing piipes by pipe-jacking



1. Launch shaft, material removal, pipe delivery, welfare, fenced compound.
2. Pipes lowered into shaft by crane, material removed, material handling and removal from site.
3. Hydraulic jacks and jacking frame.
4. Control cabin steering pipe-jacking machine.
5. Jacking pipes with flush fitting collars.
6. Pipe-jacking machine.
7. Towards reception shaft, for removal of pipe-jacking machine, welfare & fenced compound.

New intake and outfall structures

Intake and outfall structures would be built upstream of Teddington Weir, so that water could be taken from the River Thames and be replaced by recycled water.

Intake structure

The new intake structure would be built upstream of Teddington Weir . It is likely to be around 15m long and up to 4m high (above the level of the river), and consist of a platform extending around 3m into the river, with fish screens, pipes and pumps.

To build it, a temporary cofferdam (an enclosure built within a body of water to allow the enclosed area to be pumped out or drained) would be extended from the riverbank into the river to create a dry worksite.

It's expected that construction of the intake and outfall structures would take around 21 months.

Outfall structure

The outfall structure would be smaller than the intake structure, built into the riverbank at the same level as the river.

A temporary cofferdam would also be needed to build the outfall point. Once built, the surrounding land would be reinstated and diverted footpaths on the riverbank reopened.

Our plans for the project do not allow for the discharge of storm overflow during periods of heavy rainfall or untreated wastewater or sewage into the River Thames. The design will allow for only recycled water treated in the tertiary treatment facility to pass through the new pipe, and then be discharged into the River Thames via the outfall structure upstream of Teddington Weir.

An indicative image showing the intake structure upstream of Teddington Weir

An indicative image showing the outfall structure upstream of Teddington Weir

Managing impacts on the river and surrounding areas

We understand how precious the River Thames and its surroundings are. As such, **we've committed to ensuring that the Teddington Direct River Abstraction project does not cause a deterioration in the quality of the water in the river.**

We've been doing some early work to help build a detailed understanding of the river environment and surrounding areas. This will help us to assess the potential impacts of the project so we can avoid or mitigate them.

We've been carrying out surveys of the river as well as detailed modelling to understand more about its flow, and how and why it fluctuates.

We've also been carrying out surveys of a wide area of the local landscape, fauna and flora. These will continue over the next few years.

We've got lots more work to do, but our early assessments show that there is a low risk of the project causing any significant environmental impacts.

We'll continue to work closely with regulators, local authorities and local community groups as we develop our proposals. There will also be further opportunities to feedback on the project when we consult on our detailed design and preliminary impact assessments.

Environmental impact assessment

We'll carry out an environmental impact assessment to record what the environment is like now and how we predict that it might change in the future – both with and without the Teddington DRA project.

This knowledge will help us to adapt our proposals to ensure we're able to protect the river environment and surrounding areas.

We'll request an opinion from the relevant planning authorities on the scope and level of detail of the environmental impact assessment. The relevant planning authorities will provide this after consultation with technical organisations such as the Environment Agency, Natural England and local authority technical teams. Submission of the scoping request is currently planned for Spring 2024.

Public consultation on site options

We've been going through an initial process to evaluate potential sites for the new structures, pipelines and shafts that we think would be needed for the project, weighing up their relative advantages and disadvantages. In doing so we've considered things like engineering and construction feasibility, environmental impacts and the presence of existing infrastructure.

Our initial preferred sites

As a result of the site evaluation process, we've identified our initial preferred sites, which you can see on the map opposite.

It's important to note that no final decisions have yet been made – we're at an early stage in the development of our proposals and we're keen to get your feedback.

Community information events

We're holding a series of community information events in November. You can find out more about these and register to attend at **thames-sro.co.uk/events**

We're asking those who want to attend to register so that we can keep track of numbers and communicate any changes to the event arrangements. But it is not essential that you register – you'll still be able to attend.

We're holding a public consultation on initial site options.

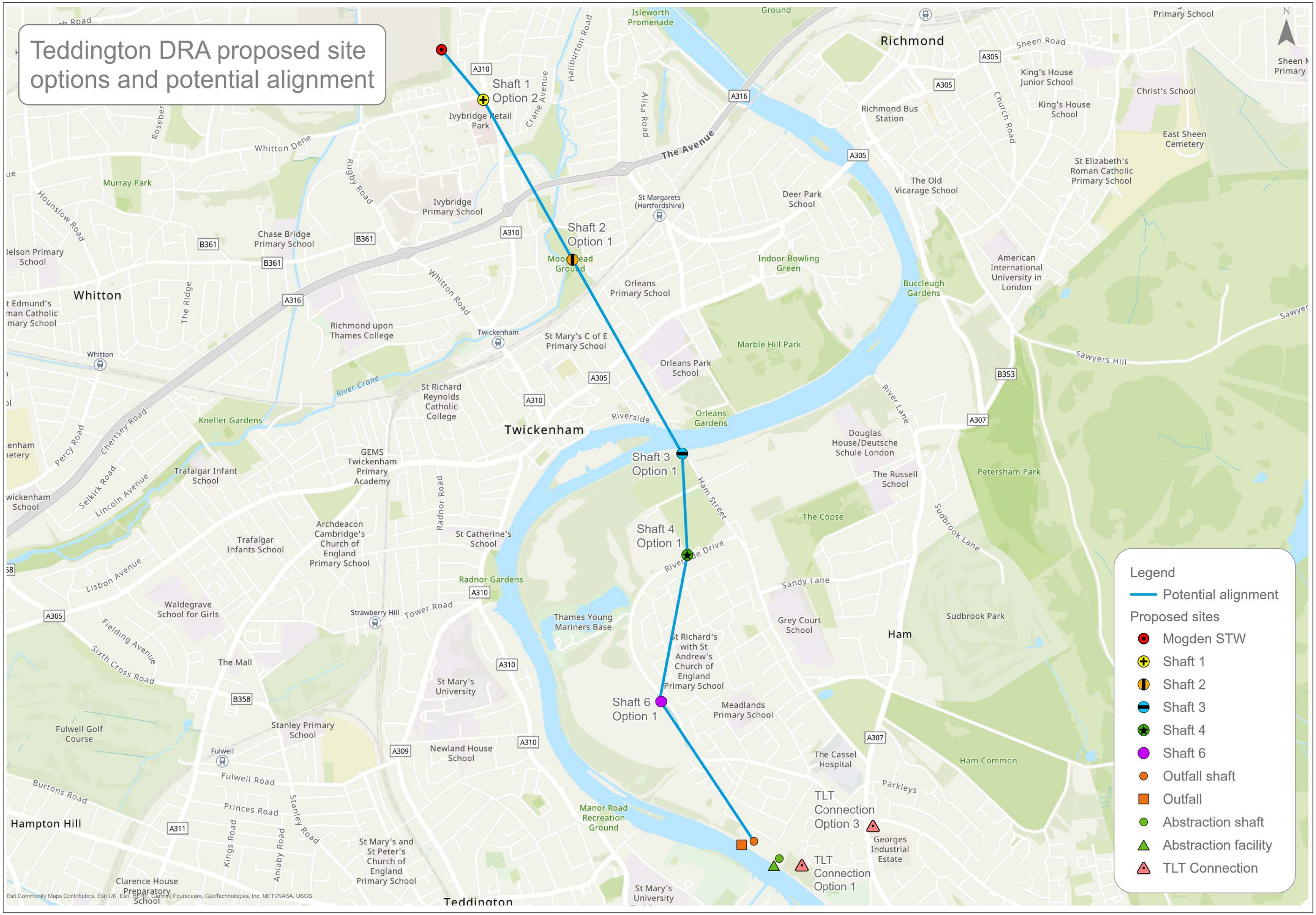
You can find out more about the site options and our evaluation of them in our consultation documents at **thames-sro.co.uk/supportingdocuments**

You can find out more about the consultation at **thames-sro.co.uk/TDRA**

You can request copies of this booklet or any of the public consultation documents by emailing us at **info.TDRA@thameswater.co.uk** or via our Customer Helpline on **0800 316 9800**.

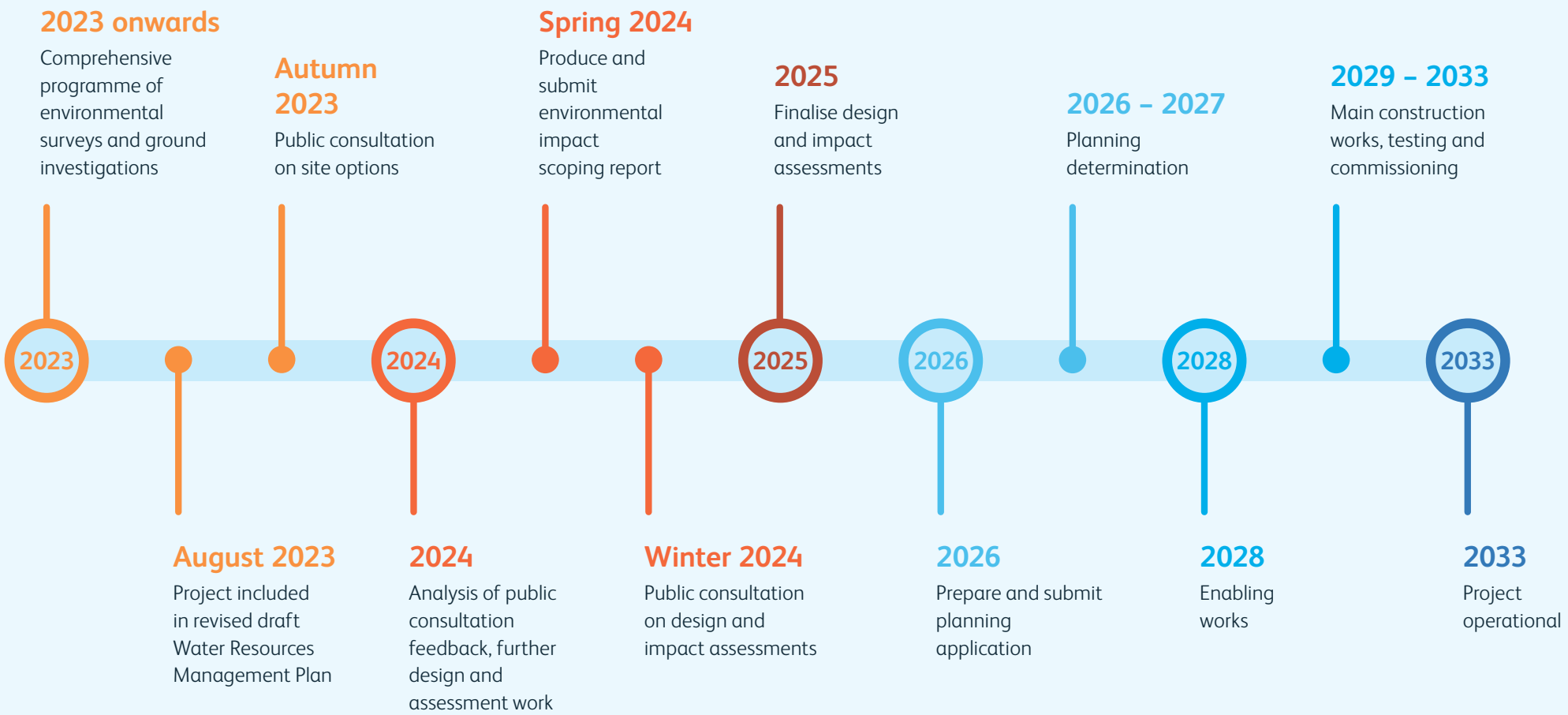
You can respond to the public consultation in the following ways:

- Online: **ipsos.uk/TDRA**
- By email: **TDRA@ipsos.com**
- By post: **FREEPOST TDRA CONSULTATION**


Teddington DRA proposed site options and potential alignment
Shaft 1 Option 2
Shaft 2 Option 1
Shaft 3 Option 1
Shaft 4 Option 1
Shaft 6 Option 1
TLT Connection Option 3
TLT Connection Option 1
Legend
Potential alignment
Proposed sites
Mogden STW
Shaft 1
Shaft 2
Shaft 3
Shaft 4
Shaft 6
Outfall shaft
Outfall
Abstraction shaft
Abstraction facility
TLT Connection
Richmond
Twickenham
Whitton
Ham
Hampton Hill
Teddington
Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Project timeline

Once the Site Options Public Consultation has closed, we'll begin the process of reading and considering all of the feedback received, to inform the next stages of design and impact assessment work.



Engagement and future public consultation

We'll carry out an extensive programme of community engagement and public consultation as we develop proposals for the Teddington Direct River Abstraction project.

- **Dedicated community engagement team** – Our dedicated community engagement team will keep local residents, businesses and river users informed and seek detailed dialogue to understand key priorities and areas of concern. This will help us address the things that matter to people.
- **Public consultation** – We're holding a public consultation on site options. We're planning a further consultation on the project design and impact assessment, which we think will take place in winter 2024-25.
- **Leaving a positive legacy** – As well as providing the vital water resources we need, the development of this project could bring wider community benefits. We want to work with stakeholders and local communities to help find out what these should be and how they should be delivered.
- **Engagement with affected landowners** – We're engaging potentially affected landowners at a very early stage, and we'll keep in close contact as we develop proposals.

Find out more

You can find out more by:

- Visiting our website at **thames-sro.co.uk/TDRA**
- Registering to attend one of our community information events at **thames-sro.co.uk/events**
- Emailing us at **info.TDRA@thameswater.co.uk**