



# Teddington Direct River Abstraction Non-statutory Public Consultation 2023 Our Statement of Response



## Contents

Executive Summary .....	3
1. Introduction .....	4
1.1. Purpose of report .....	4
1.2. Structure of report .....	4
1.3. Background to the Project .....	4
1.4. About Thames Water .....	6
2. Overview of the non-statutory consultation .....	7
2.1. Purpose and scope of consultation .....	7
2.2. Promotion and engagement .....	7
2.3. Consultation events .....	9
2.4. Consultation material .....	9
3. Response to the consultation .....	11
3.1. Responses .....	11
4. Main themes raised through the consultation. ....	12
4.1. Introduction .....	12
4.2. Key Project themes .....	13
Theme: Site selection process and site options .....	13
Theme: Potential construction impacts .....	19
Theme: Potential operational impacts .....	21
5. Summary of key amendments to the Project .....	24

## List of tables

Table 2-1: Public information events .....	9
Table 2-2: Consultation material .....	9

## List of figures

Figure 1-1: Teddington DRA project timeline (subject to change) .....	5
Figure 2-1: An overview of the promotion and engagement activities we carried out to support the public consultation .....	7
Figure 2-2: Map showing the area used for our mailing zone .....	8
Figure 3-1: Summary of consultation responses .....	11
Figure 4-1: Map illustrating the proposed tunnel corridor and associated infrastructure .....	18
Figure 4-2: Map showing the potential route corridor between Mogden and the River Thames .....	20

## Glossary

Term	Description
Abstraction	The removal of water from the ground or rivers. Abstractions are licensed by the Environment Agency.
Environment Agency (EA)	UK government agency whose principal aim is to protect and enhance the environment in England and Wales.
Leakage	Loss of water from water mains (including trunk mains, distribution mains and communication pipes), and customers' pipes.
Leakage reduction	Measures to control the loss of treated water through leaks in the distribution pipework, either by active leakage control or by replacing whole sections of pipe referred to as mains replacement.
Planning Inspectorate (PINS)	The Planning Inspectorate deals with planning appeals, national infrastructure planning applications, examinations of local plans and other planning-related and specialist casework in England.
Water reuse or water recycling	The use of treated wastewater as a water resource for drinking water supply, subject to the necessary treatment requirements.
Statement of Response (SoR)	A document produced in response to the public consultation on site options associated with the Teddington DRA project. The document outlines the comments received during the public consultation and revisions to the Teddington DRA design as a result of these representations.
Teddington Direct River Abstraction (DRA)	A new river abstraction in west London close to Teddington Weir supported by water recycling.
Water Resources Management Plan (WRMP)	A statutory plan which sets out how a water company intends to provide a secure and sustainable supply of water to customers over at least a 25-year period.
Water Resources South East (WRSE) Group	The South East water companies working together to determine programmes of water resource options and water sharing opportunities in the South East of England to ensure a secure and sustainable water supply for future generations.

## Executive Summary

The Teddington Direct River Abstraction (DRA) project is a vital drought resilience project for London.

The project is intended to secure additional supplies of water for the capital during periods of prolonged dry weather; water could be drawn (abstracted) from the River Thames close to Teddington Weir, and conveyed via a short new section of tunnel to an existing tunnel, called the Thames Lee Tunnel, connecting this part of South West London with our reservoirs in the Lee Valley (North East London). The water that's drawn from the river would need to be replaced, and we're proposing to do this using highly treated recycled water from a new water recycling facility at Mogden Sewage Treatment Works in Isleworth.

In the autumn of 2023, we held a public non-statutory consultation on potential site options for new structures, pipelines and shafts for the Teddington DRA project. Feedback was sought from anyone with an interest in the Project.

In total, 2,312 responses were received. Feedback was analysed by the independent research agency Ipsos. All responses have been read and considered, and Ipsos have presented their findings in a Feedback Report available on our website at [www.thames-sro.co.uk/supportingdocuments](http://www.thames-sro.co.uk/supportingdocuments).

Many respondents took the opportunity to express their opposition to the project overall, rather than to comment specifically on the site options presented. The main themes raised by respondents to the consultation included concerns relating to:

- the need for the project;
- a lack of trust in Thames Water and its ability to design, construct and operate the project safely;
- negative impacts of the project (both during construction and operation of the project) on the environment, including the quality and composition of the water being discharged into the River Thames; and
- negative impacts of the project (both during construction and operation of the project) on the community, both residents and recreational users of the river.

As a result of the feedback we have received, several key amendments have been made to the Project. These include a proposed change to the way we construct the tunnel by using a tunnel boring machine (TBM). Using a TBM means that we can build a larger tunnel, which removes the need for as many intermediate shafts. It also means that construction is quicker, thereby limiting the construction impacts the project would have on nearby residents and communities.

We have also confirmed the location of the discharge of the 'sweetening flow' which is required to keep the Tertiary Treatment Facility at Mogden Sewage Treatment Works operational. Originally we considered a potential discharge near Teddington Weir, however we are now proposing to discharge this sweetening flow using existing infrastructure at Isleworth Ait.

# 1. Introduction

## 1.1. Purpose of report

1.1.1. The purpose of this report, our Statement of Response, is to share the wide range of feedback we received during the non-statutory public consultation in 2023 and to explain how we are using this feedback to inform the ongoing design of the project.

1.1.2. This document is a summary of the feedback we received. A detailed breakdown of feedback can be viewed in the Feedback Report prepared by Ipsos, which is available on our website at [www.thames-sro.co.uk/supportingdocuments](http://www.thames-sro.co.uk/supportingdocuments)

## 1.2. Structure of report

1.2.1. The structure of this document is as follows:

- Section 1: Introduction (this section)
- Section 2: Overview of the non-statutory public consultation
- Section 3: Response to the consultation
- Section 4: Main themes raised through the consultation
- Section 5: Summary of key amendments to the Project

## 1.3. Background to the Project

1.3.1. Through Water Resources South East (WRSE) we have been working with the five other water companies that supply drinking water across the south east to develop a regional plan that addresses the climate and environmental emergency facing our water environment and to secure the region's future water supplies.

1.3.2. Our Water Resources Management Plan 2024 (WRMP24) reflects this regional plan and sets out our plans to secure a water supply for our growing population, protect against the growing risk of drought and water shortages, and improve the environment. Our revised Plan, which has been given approval by the Secretary of State for the Environment, Food, and Rural Affairs to be published, 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.

1.3.3. Our adaptive plan forecasts that we'll need an additional billion litres of water every day by 2050. In addition to tackling leaks, and reducing the demand for water, we'll need to invest in new water sources. These include new and extended groundwater sources, a new reservoir in Oxfordshire and a new abstraction point in west London that's supported by water recycling (the Teddington Direct River Abstraction (DRA) project).

1.3.4. The Teddington DRA project is a new river abstraction on the River Thames close to Teddington Weir. We plan to transfer water abstracted from the river via an existing underground tunnel to the Lee Valley reservoirs in East London. We'd then pump highly treated recycled water from Mogden Sewage Treatment Works (STW) to compensate for the additional water taken from the river to protect the environment and wildlife.

1.3.5. As a drought resilience project this would provide up to 75 million litres per day. 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 - roughly once every two years. 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".

1.3.6. We carried out our first project-specific non-statutory public consultation for Teddington DRA in the autumn of 2023.

1.3.7. Comments were sought on the potential site options for infrastructure, including the proposed Tertiary Treatment Facility, intermediate shaft locations, and abstraction and outfall sites.

1.3.8. Views on the connection to the Thames Lee Tunnel were also sought, as well as the site identification process overall.

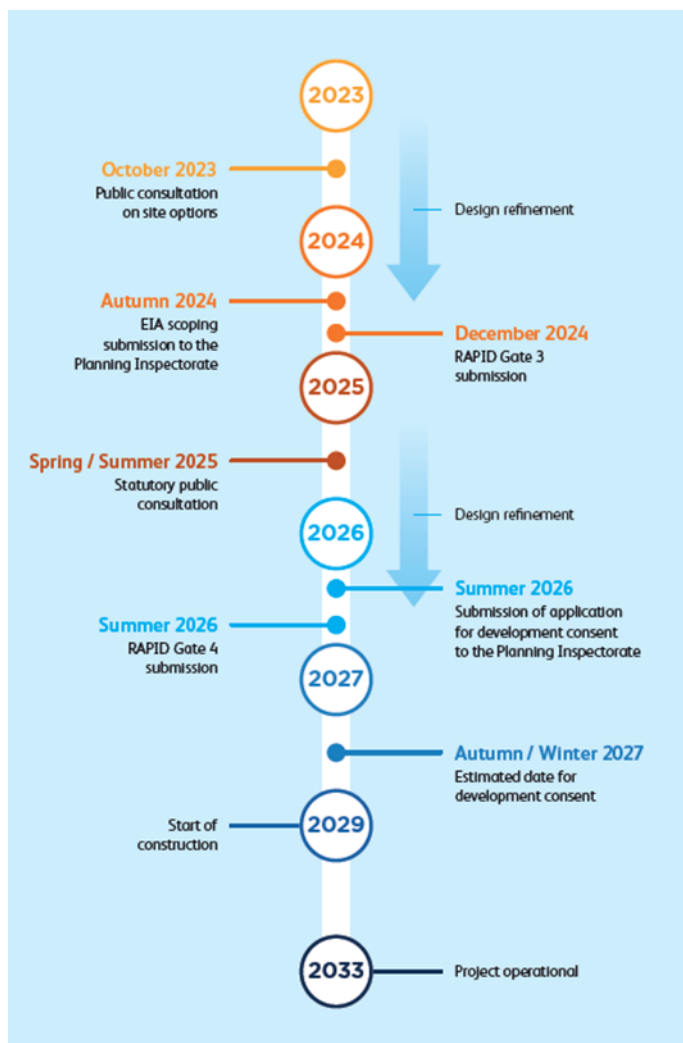


Figure 1-1: Teddington DRA project timeline (subject to change)



## 1.4. About Thames Water

1.4.1 Water is essential for all our lives. It is essential for everything we do at home and at work. We rely on water to run our schools, hospitals and businesses. It is also essential for a healthy environment. We provide a reliable supply of safe drinking water to around 10 million household customers and 216,000 businesses in London and across the Thames Valley.

1.4.2 Many people think that there is plenty of water in the UK, but the South East of England is one of its driest regions and is classified by the Environment Agency (EA) as “seriously water stressed”. Our changing climate, the need to protect the environment, alongside accommodating future growth are all putting pressure on our water resources. Without action, we forecast a substantial shortfall of around one billion litres of water a day in the next 50 years. The consequences of not having a secure water supply for our economy, society and the environment are huge.

1.4.3 There are no quick fix solutions. We need to plan ahead to make sure we use our available water resources wisely, modernise our infrastructure and invest in new sources of water to safeguard supplies and reduce the risk of us running dry during prolonged periods of drought.

1.4.4 Our revised Water Resources Management Plan (WRMP) sets out the challenge we face for water supply and the solutions to ensure we have a secure and sustainable water supply for the next 50 years, while protecting the environment.

1.4.5 The need for the Teddington DRA project has been established through the WRMP. We carried out public consultation on our draft WRMP in 2023 and it was approved for publication by the government in August 2024.

## 2. Overview of the non-statutory consultation

### 2.1. Purpose and scope of consultation

2.1.1. Building on early work to establish the feasibility of the Teddington DRA project, we've been carrying out evaluations of potential locations for the new structures that we think would be required, including a proposed tertiary treatment facility, a new pipeline and shafts, and intake and outfall structures.

2.1.2. We undertook non-statutory public consultation from 17 October 2023 to 11 December 2023 to seek feedback about the site options for shafts and infrastructure associated with the project, as well as feedback on the potential pipeline alignment.

2.1.3. We sought to collect feedback from all those likely to be interested in the project such as landowners, residents, businesses, local authorities and other statutory bodies who might be affected by or interested in the project to help develop the proposals.

### 2.2. Promotion and engagement

2.2.1. A detailed description of how we promoted our consultation is provided in the Feedback Report available on our website at [www.thames-sro.co.uk/supportingdocuments](http://www.thames-sro.co.uk/supportingdocuments).



Figure 2-1: An overview of the promotion and engagement activities we carried out to support the public consultation

2.2.2. A postcard was posted to every address within 2km of any potential infrastructure at the start of the consultation, over 31000 addresses across Richmond, Kingston and Hounslow. The postcard outlined where to find further information about the project, and how to respond to the consultation.



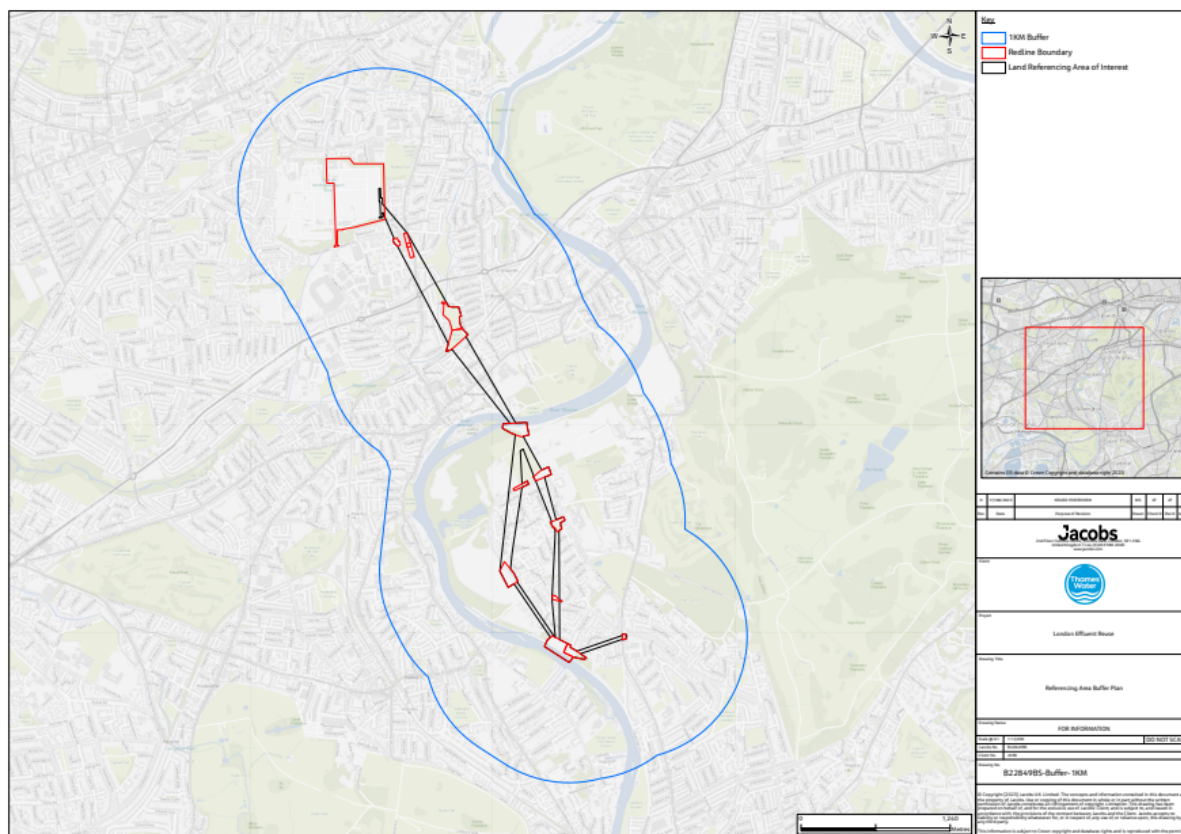


Figure 2-2: Map showing the area used for our mailing zone

2.2.3. We engaged with national and local media throughout the consultation period both proactively to raise awareness of the consultation and also to reactively respond to media enquiries.

2.2.4. We promoted the public consultation through social media on Facebook using both organic posts and paid-for geotargeted advertising. Nine posts were published between October and November 2023, resulting in 1.8 million impressions and a reach of 322k.

2.2.5. We briefed MPs whose constituencies are in the vicinity of the project, as well as elected councillors and officers from the three local authorities of Hounslow, Richmond and Kingston.

2.2.6. We published our consultation material on our website [www.thames-sro.co.uk](http://www.thames-sro.co.uk) along with details about the public consultation, how to participate and the information events planned during the consultation period. The website went live on 17 October 2023 and the documents can still be viewed on this site. Paper copies of all materials were available throughout the consultation period upon request and at the information events.

2.2.7. Consultees were able to provide feedback using an online survey, by email, or post. Hard copies of the questionnaire were also available upon request, or at consultation events. A freepost envelope was provided with the feedback form.

2.2.8. We set up a dedicated email address to answer any questions in relation to the project [info.TDRA@thameswater.co.uk](mailto:info.TDRA@thameswater.co.uk)

## 2.3. Consultation events

Table 2-1: Public information events

Date	Location	Attendance
3 November 2023, 2-8pm	York House	205
9 November 2023, 2-8pm	Peter and Paul Centre	125
13 November 2023, 2-8pm	Twickenham Stadium	83
20 November 2023, 2-8pm	YMCA Hawker	330

2.3.1. Public information events were held in the vicinity of the project to give the local community the opportunity to find out more about the project. Details of the events are set out in Table 2-1.

2.3.2. Local MPs and senior leaders from local authorities were invited to attend the York House event early. Here they were given an opportunity to familiarise themselves with the consultation materials as well as the chance to speak with members of Thames Water's senior leadership and project teams.

## 2.4. Consultation material

2.4.1. Written information of a technical and non-technical nature about the project was made available, both on our website and in hard copy at events, and upon request. The details of the material, and its purpose are outlined in Table 2-2.

Table 2-2: Consultation material

Consultation material	Purpose
Questionnaire	To enable feedback to be collected on the site options, our methodology, and the project
Summary brochure	Provides an overview of our consultation, with a summary of our proposals, where to find out more and how to take part in the consultation
Site Options consultation document	Provides an overview of each of the site options we have considered and the process we followed to identify our preferred options
Map book	Maps showing each of the site options during and after construction
Site Appraisal report	Provides a detailed description of each of the site options that have been considered, explains the stages of our appraisal process and the outcome of that appraisal process

Consultation material	Purpose
Site Options methodology	An explanation of the process we have followed to identify and appraise each of the site options
Factsheets	Supporting information about our approach to a range of issues

### 3. Response to the consultation

#### 3.1. Responses

3.1.1. We received 2,312 responses to the consultation. The feedback analysis was conducted by the independent research agency Ipsos on behalf of Thames Water and is described in the Feedback Report available on our website at [www.thames-sro.co.uk/supportingdocuments](http://www.thames-sro.co.uk/supportingdocuments).

3.1.2. Responses were received from 2,312 people, businesses and organisations, and the infographic below provides a summary.



Figure 3-1: Summary of consultation responses

## 4. Main themes raised through the consultation.

### 4.1. Introduction

4.1.1. In this chapter we have presented the main Project themes that were raised through the 2023 site options appraisal consultation. We received feedback about the site options specifically and about the potential construction and operational concerns of the Project for local communities and people that use the local area and river. We have broken these themes down in Section 4.2 and set out what we are doing to address.

4.1.2. We also received feedback more broadly about Thames Water such as the need for the Project, water resource planning, investigations into alternatives and a lack of trust in Thames Water and regulators that the Project would not be properly regulated, operated or monitored.

4.1.3. We understand the concerns and questions you have about the need for the Project. The Project need is set through Water Resources Management Plans (WRMP) which all water companies must produce at least every five years. Our WRMP 2024 was published in draft in 2023 and the final plan has now been given government approval for Thames Water to publish. The Plan sets out how we intend to achieve a secure supply of water for customers while protecting and enhancing the environment. The need for the Project is made within the WRMP and in arriving at this position we have been through a statutory process involving optioneering, investigation of feasible schemes, modelling, assessment and public consultation. Further information and reports about the WRMP and the water resource planning process can be found on our website at [Water resources | Regulation | About us | Thames Water](#). Details of all options and alternatives considered through the WRMP process can be found at <https://dn9cxogfaqr3n.cloudfront.net/revised-draft/Supplementary+Reports/rdWRMP24+-+Demand+Management+Options+Screening+Report.pdf>

4.1.4. A number of responses included feedback relating to a limited amount of information available on the Project and wanted more information specifically relating to the process of water recycling with a number of respondents stating the process is outdated or too complicated.

4.1.5. The Project is at an early stage in the design process; the site options consultation was based on information available at the time of writing. We are committed to working in an open and transparent way and will share new information about the Project as we move through the design, assessment and planning process. Earlier this year we developed a dedicated Project website ([Teddington Direct River Abstraction \(TDRA\) - Thames Water Resources Management Plan \(thames-wrmp.co.uk\)](#)) where information and reports we publish about the Project can be found. There is also the ability to contact us at [info.TDRA@thameswater.co.uk](mailto:info.TDRA@thameswater.co.uk) with any queries or questions you may have about the Project.

4.1.6. The feedback received about the Project and the type and availability of information we prepared for consultation will be used to inform how we engage and consult in the future. We understand from the scale and type of responses the desire to understand more technical detail about the Project. We are committed to ensuring that we provide clear, concise and timely information about the Project that would enable stakeholders to understand the design and

potential benefits and impacts of the Project and facilitate scrutiny where appropriate and necessary within the statutory framework of the planning process.

4.1.7. We have set up a number of public community information events that will run through October 2024 across Hounslow, Richmond and Kingston where we and our consultants will be available to talk about the latest project design and any design changes we have made in response to the 2023 site options appraisal consultation.

4.1.8. As part of the community information events, we have prepared and updated a number of factsheets which cover the most prevalent subjects raised, including:

- Environmental Impact Assessment
- The tertiary treatment process
- The tunnelling process
- Information for Land and Property Owners

We will continue to enhance our ways of sharing information about the Project as we develop it and progress over the next couple of years. All the latest published information will be provided on our website at [www.thames-sro.co.uk/TDRA](http://www.thames-sro.co.uk/TDRA).

## 4.2. Key Project themes

Theme: Site selection process and site options

### *Background*

4.2.1. We developed our site options presented in the 2023 consultation through a five-stage appraisal process. A full description of the options appraisal process is provided in the Site Options Appraisal Report, with a summary of this process provided in the brochure on our website (<http://thames-sro.co.uk/supportingdocuments>).

4.2.2. We appraised 23 sites in total covering all potential above ground sites potentially required for the delivery of the Project. We appraised one site each for the Tertiary Treatment Facility (TTF), recycled water discharge and River Thames abstraction locations as other options or approaches had been discounted through Stage 1 of the appraisal process. For potential intermediate shaft locations along the conveyance route to the River Thames, multiple combinations derived from 17 potential sites were appraised based on the requirements that were set for the chosen construction technology: pipejacking with 1.8m internal diameter (ID) pipe which would require the provision of intermediate shaft sites no more than approximately 1,000m apart.

### *Representations and feedback*

4.2.3. The majority of feedback and representations to the consultation focused on the 23 site options appraised and specifically on the locations identified as preferred. Many respondents expressed concern about the potential for adverse impacts from the Project, in particular during the construction phase. A high proportion of responses opposed the Project in general, stating that all site options were of concern due to the potential environmental impacts the Project would create.



4.2.4. We received over 500 responses about the location of the TTF and start of the conveyance at Mogden STW. The majority of comments received raised concern about potential adverse environmental impacts, impacts on local communities and impacts from construction traffic.

4.2.5. We received over 600 responses about the location of the recycled water discharge and river water abstraction, south of Burnell Avenue. Key concerns specifically raised included environmental impacts and impacts to local communities. A number of responses raised concerns about sewage being released into the River Thames and potential impact to water users and quality. A number of responses suggested relocating the outfall and abstraction away from the Burnell Avenue site.

4.2.6. We received over 300 responses about the location of Shaft 1 at Ivybridge Retail Park and options in the surrounding area. Of these, 30 responses were in favour of utilising a car park over developing on green space. Some 270 responses raised concerns about the preferred location of Shaft 1 citing potential impacts to local communities, impacts on local businesses and impacts to local traffic.

4.2.7. We received 550 responses about the location of Shaft 2 at Moormead and Bandy Recreation Ground with 95% of the comments raising concern about how local communities and schools would be impacted through the construction phase of the Project.

4.2.8. We received nearly 500 responses about the location of Shaft 3 at Ham Street Car Park and options in the surrounding area. The key concerns raised were about potential impacts on local communities and businesses, leisure activities and travel disruption.

4.2.9. We received over 450 responses about the location of Shaft 4 on land west of Riverside Drive playground and options in the vicinity. Key concerns were the potential impact on local businesses, local schools and children using the play park and disruption to local residents. A number of responses also raised concern about impacts to biodiversity within Ham Lands and Ham Lands Local Nature Reserve.

4.2.10. We received over 500 responses about the location options for Shaft 5 in and around Ham. Key concerns were impacts to biodiversity and general impacts through construction.

4.2.11. We received over 300 responses about the location options for the connection shaft to the Thames Lee Tunnel (TLT) at either land south of Northweald Lane or Tudor Drive, with the majority of responses concerned about impacts to local communities, environmental effects, specifically to the trees at the land south of Northweald Lane, and impact of increased traffic and congestion on local roads.

#### *Our consideration to the feedback*

4.2.12. One of the key themes from consultation responses was the concern over the construction and operation effects of the Project at the locations identified. This led to over a quarter of respondents suggesting alternatives to the design. This section focusses on the site options and alternative designs for the Project with paragraphs 4.2.33 – 4.2.41 and 4.2.42 – 4.2.58 setting out our consideration and responses to the potential construction and operational effects respectively.

#### TTF location

4.2.13. Mogden STW has been identified as the only practical location for creating the recycled water required by the Project. Co-locating the TTF within Mogden reduces the distance that final effluent, produced at the site and discharged to the River Thames, is transferred prior to its treatment to generate recycled water. It also allows any by-products to remain and be managed within the STW and removes the need for an additional offsite development on which to site the TTF which would increase the environmental impacts of the Project. The TTF, despite being co-located at Mogden STW, would not be physically connected to the sewage treatment process and as such there would be no pathway for untreated sewage, wastewater or storm overflows to enter the TTF or new conveyance to the River Thames.

4.2.14. We recognise there are close neighbours to Mogden STW and the potential impacts that could be caused as part of the construction activities. These effects will be carefully considered in our technical assessments as we progress and where needed mitigation included to minimise impacts.

#### Discharge and abstraction location

4.2.15. The current design of the Project ensures that the water we would abstract from the River Thames during drought conditions is replaced immediately downstream by recycled water. This ensures flows and levels remain unchanged. The location of abstraction and discharge is mainly governed by the need to abstract river water (as opposed to brackish tidal water), the need to discharge recycled water in relatively close proximity to the abstraction, the ability to connect with the TLT to take water to the Lee Valley reservoirs and the location of other abstraction facilities on the River Thames.

4.2.16. There are only two points at which the TLT and the freshwater River Thames converge, the first at the start of the TLT at Hampton which is upstream of another raw water intake and so is not suitable due to the demands this would place on water flow in addition to limitations and constraints on available land. The second is approximately 2-300m upstream of Teddington Weir adjacent to land south of Burnell Avenue.

4.2.17. Moving the abstraction and discharge downstream of Teddington Weir would mean we are abstracting saline water from the tidal Thames and therefore would require additional treatment at a new facility prior to discharge into the Lockwood Reservoir. Moving the abstraction and discharge further upstream and away from the TLT would result in longer tunnels and greater impacts.

4.2.18. We have investigated the possibility of discharging the recycled water we create directly into the TLT, therefore avoiding the need for infrastructure within the River Thames. However, to achieve this the recycled water would need to undergo greater levels of treatment to comply with drinking water standards compared to the environmental standards required to discharge to the River Thames. Drinking water is self-evidently treated to a far higher standard than that required by the environmental legislation covering discharges to rivers; although the latter is still rigorous, these permit limits are distinct and different. To achieve the required drinking water quality we would require a full advanced treatment process, which would result in a significant increase in carbon, cost and environmental impacts with the requirement to develop facilities outside of the Mogden STW site boundary owing to insufficient space for this advanced treatment process.

#### Intermediate shaft locations

4.2.19. We have carefully considered the construction methods and sizing of the pipeline following the feedback from our site options consultation. One of the key areas we have looked to refine is how the conveyance route between Mogden STW and the River Thames is constructed, including the requirement for the provision of intermediate shafts at 1,000m intervals or less (which is necessary from a health and safety perspective for tunnels sizes up to c. 2.2m). We have re-investigated alternative possible tunnel diameters and construction techniques and have sought construction advice from specialist contractors. As a result of this work, we have been able to re-design key aspects which, we believe, addresses a significant number of concerns raised through the consultation.

4.2.20. The changes to the design and construction technique we will take forward include:

- Constructing a 3.5m ID tunnel between Mogden STW and the River Thames compared to the 1.8m ID pipe shown in our site options appraisal consultation.
- Construction of the tunnel using a tunnel boring machine (TBM) rather than by way of pipejacking.

4.2.21. Whilst these changes will lead to the construction of a tunnel that will be oversized for the desired flow and volume, the Project will still be set to operate at a maximum of 75MI/d in accordance with the need identified in WRMP24.

4.2.22. These changes to the design also mean the majority of the preferred intermediate shafts between Mogden STW and the River Thames have been removed from the design, including sites at:

- Ivybridge Retail Park Car Park (North) (identified as Site 1);
- Moormead and Bandy Recreation Ground (identified as Site 2);
- Land to the west of Riverside Drive Playground (identified as Site 4); and,
- Ham Lands, west of Riverside Drive (identified as Site 6).

4.2.23. The removal of these shafts also eliminates the need for construction compounds and construction areas previously identified in these locations. Critically, our latest design, which we intend to take forward through the planning process, will not be seeking any form of above ground development between the boundary of Mogden STW to the River Thames at Ham Street car park as well as the removal of a number of potential sites within Ham. In total this addresses over 50% of the responses raised through our consultation.

4.2.24. A single intermediate shaft will continue to be required along the recycled water conveyance route, and our preferred location for this is on land at Ham Playing Fields (Shaft 3, Option 2 identified in our site options appraisal consultation). A retained alternative shaft site at Ham Street Car Park (Shaft 3, Option 1) is still under consideration should our preferred option not be viable following findings from our upcoming ground investigation studies.

4.2.25. A consequence of this design change is that more material will need to be excavated for the larger tunnel. Excavating more material will mean an increase of Project costs; however, by reducing the number of intermediate shafts this will enable us to minimise localised impacts associated with the construction of those shafts in public areas which has been one of the key concerns raised. The Project still represents best value to our customers when updated costs are included.

4.2.26. A further consequence of the change is that all excavated tunnel spoil will be removed from a drive shaft located within Mogden STW rather than from a combination of shaft sites across the route corridor which provides another advantage in further reducing potential impacts on local communities, especially from increased construction traffic. However, overall HGV movements associated with construction materials and excavated materials will be greater as a result of the bigger tunnel. This will need to be controlled and managed carefully to minimise potential impacts around Mogden.

4.2.27. As a result of utilising a TBM, construction of the tunnel would be quicker than by pipejacking, but we would need to relocate the tunnel drive shaft from the east side of Mogden STW to the west side where more space is available. We are able to take a more direct route to the River Thames from Mogden STW meaning the total length of tunnel is shorter than previously proposed. The end point of the tunnel and the location of the discharge and abstraction remain unchanged from the design set out in the site options appraisal consultation for the reasons explained in paragraphs 4.2.15 - 4.2.18.

4.2.28. The connection into the TLT is a critical component of the Project. It utilises existing infrastructure already in operation to minimise environmental impacts and reduce project costs. Further work is required to identify the optimal location for the connection which will include developing plans to minimise impacts on the environment and local communities. This summer we have undertaken engineering surveys within the TLT to understand its integrity and develop methods to connect into it. Later this year we will be undertaking ground investigation studies to understand subsoil ground conditions around the tunnel. Once we identify a preferred connection location, we will focus our impact assessments and identify mitigation measures to address concerns raised relating to impacts on local communities, the environment and traffic.

#### *Overview of Project changes*

4.2.29. The revised design will therefore include up to six shaft sites rather than the nine identified during the site options consultation. There will be two shafts in public areas associated with the tunnel from Mogden STW to the River Thames and two shafts associated with the abstraction of river water and connection to the TLT. The remaining two shafts will be located within Mogden STW.

4.2.30. The revised shaft locations are shown in the below figure and identified as follows:

- The tunnel drive shaft (Shaft 1), where the TBM will enter, all tunnel excavated material will be removed and all tunnel segments will be delivered to and transported into the tunnel; this will be located within Mogden STW and most likely on the western side of the site.
- A recycled water interception shaft (Shaft 2) to connect into the TTF, which will be located within Mogden STW most likely on the eastern side of the site.
- An intermediate shaft (Shaft 3) for construction ventilation, maintenance, emergency access, and future inspection purposes, for which our preferred location is a shaft site presented in our site options appraisal consultation on land at Ham Playing Fields (Shaft 3, option 2) which is off Ham Street. Despite the underground tunnel being larger in diameter, the inspection cover on the surface remains small and in-line with the information we shared during our consultation.



- A tunnel reception and conveyance connection shaft (Shaft 4) as previously proposed south of Burnell Avenue. This location would be where the TBM is removed but no tunnel spoil will be removed ensuring minimal impact on local communities from traffic.
- An abstracted water conveyance shaft (Shaft 5) located to the north of the proposed abstraction facility and south of Burnell Avenue as previously proposed in our site options consultation and in the same construction area as Shaft 4.
- A connection shaft (Shaft 6) to facilitate conveyance of the abstracted water into the TLT, as previously proposed in our site options consultation and to be located at one of two possible locations; land south of Northweald Land or Tudor Drive.

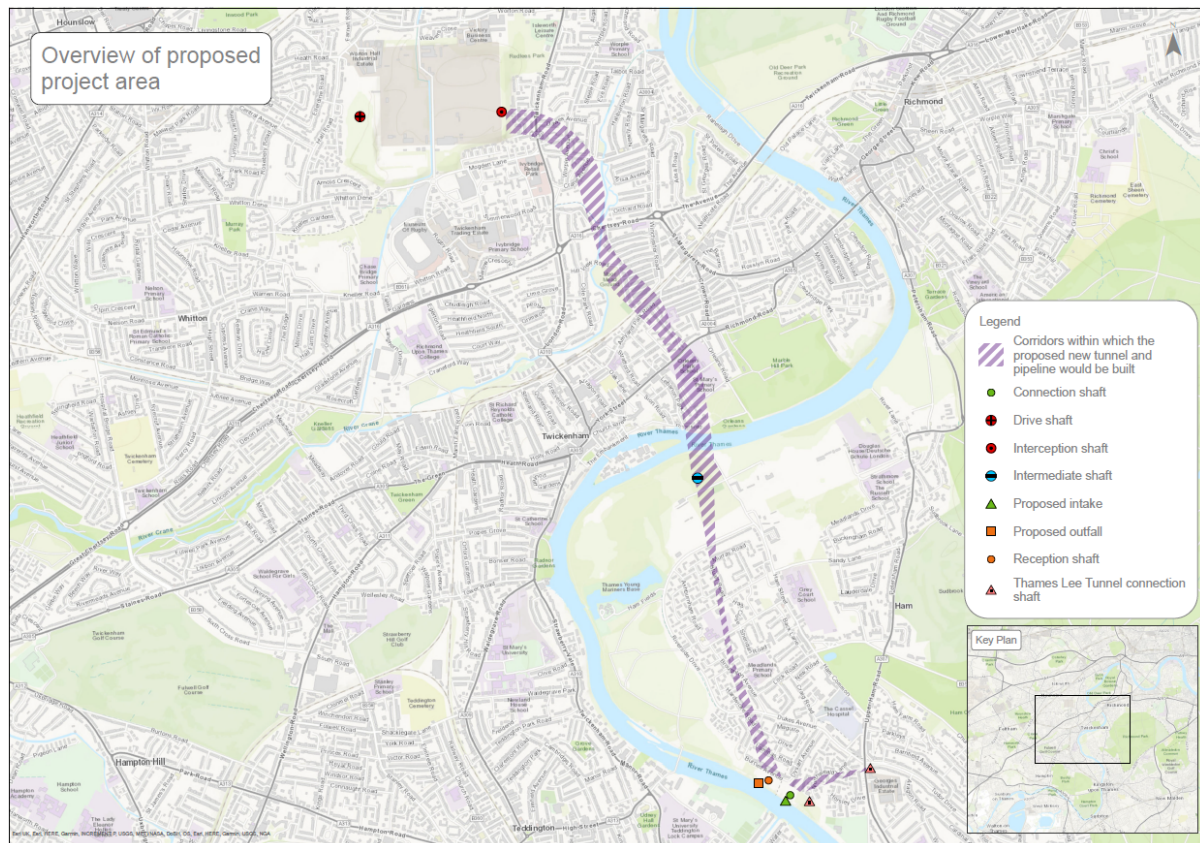


Figure 4-1: Map illustrating the proposed tunnel corridor and associated infrastructure

#### Next steps

4.2.31. These changes to both the design of the Project and the combination of sites required to support its delivery as described above are now intended to inform what is referred to as the scope of the Project for which we plan to seek a Scoping Opinion from the Planning Inspectorate in late 2024. The Scoping Opinion will set out the scope of the Environmental Impact Assessment (EIA) which will be prepared and submitted with a development consent order application, likely in mid-2026.

4.2.32. Prior to our application we will develop a preliminary environmental impact assessment, which will be set out in a Preliminary Environmental Information Report (PEIR) for the Project and will cover all construction and operational aspects including the latest design changes. We will consult on the PEIR through a Statutory Consultation in 2025.

## Theme: Potential construction impacts

### *Background*

4.2.33. Information published for the site options appraisal consultation provided details on the proposed location and size of construction areas, construction techniques, design considerations and requirements along with indicative timelines for construction. This was to support feedback on site options presented.

### *Representations and feedback*

4.2.34. A large proportion of the responses and feedback from the consultation were associated with the concerns regarding potential adverse construction impacts on a number of factors and receptors, including but not limited to the following:

- Negative impacts on designated areas for nature and heritage aspects.
- Negative impacts on biodiversity and ecology.
- Negative impacts on open and green spaces along with visual effects.
- Negative impacts on local economy.
- Negative impact on local traffic, transport and parking.
- Negative impacts on the community and recreation areas including amenities and leisure facilities.
- Increases in light, noise and dust pollution during construction.

### *Our consideration to the feedback and next steps*

4.2.35. We continue to progress developing the Project design while taking into consideration the concerns raised through the consultation. We have been exploring opportunities to reduce further the potential construction impacts of the Project. A design change in construction methodology, set out in paragraph 4.2.20 allows us to remove four shaft locations from the Project which eliminates any potential impacts on biodiversity, ecology, green space, recreation, traffic and local communities in those areas, which directly addresses a significant amount of the representations made.

4.2.36. We have been able to remove these impacts by constructing a large diameter tunnel. This has allowed us to increase the safe distance between shafts and results in the removal of those shafts identified in paragraph 4.2.22.

4.2.37. As we progress through the planning process, we will start to assess the environmental effects of the revised design and will include mitigation, compensation and enhancement where it is required. We recognise that our proposals have the potential to impact local communities and the surrounding environment in a number of ways. There are likely to be impacts, both beneficial and adverse, which may occur during the construction of the Project which we will need to assess fully. However, it is important to also note that many of the potential construction related impacts will be temporary and localised.

4.2.38. We are currently developing an EIA Scoping Report to set out the proposed scope of the Environmental Impact Assessment (EIA) and methods of assessment that we intend to use. We plan to submit this report to the Planning Inspectorate (PINS) in late 2024 for its consideration. The Scoping Opinion received from PINS will be used to form the basis of the assessments required for the EIA. We have been engaging with the local planning authorities and regulators to develop and agree on the aspects to be scoped in to and out of assessments, along with the



appropriate methodologies and approaches in line with current legislation and industry good practice.

4.2.39. We plan to hold a Statutory Consultation in 2025 which will include consulting on a preliminary impact assessment for the Project. It will be an opportunity for all stakeholders including members of the public, local communities, land owners, businesses, regulatory and statutory bodies and other interested parties to get involved and make comments on all aspects of the Project prior to submitting our DCO application in 2026.

As part of preparing our DCO application we will prepare a number of documents that will set out how we will manage our impacts upon ecology, noise, lighting, air quality, traffic, heritage, recreation and water quality during construction and during operation.

#### Design development

4.2.40. We've identified a corridor between Mogden STW and the River Thames, within which the tunnel would be built, shown in Figure 4-2. We will be undertaking ground investigation works over the next few months to better understand the geology, hydrogeology and ground conditions which will then feed into the development of a more defined route for the tunnel and shafts.

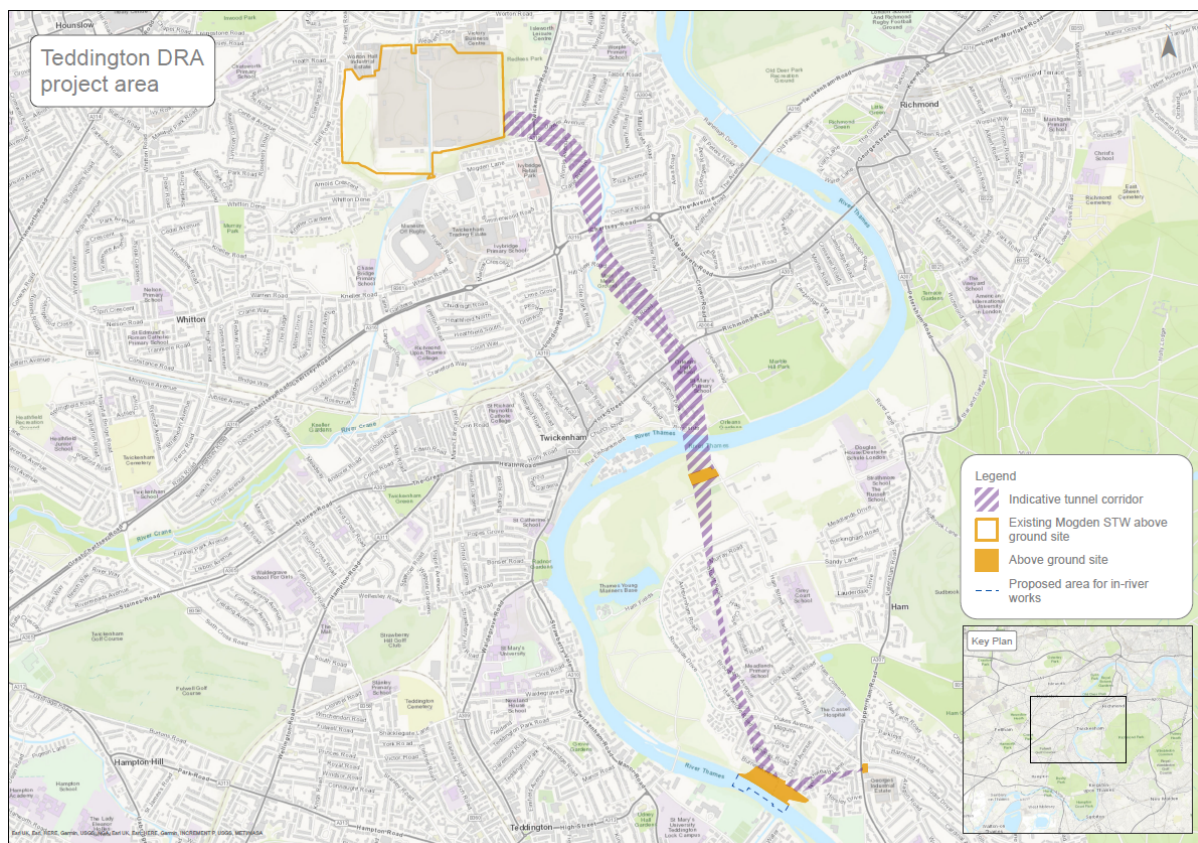


Figure 4-2: Map showing the potential route corridor between Mogden and the River Thames

4.2.41. The current design will continue to be developed throughout the next two years, taking into consideration the outcomes of survey data, input from regulators and other stakeholders, whilst also considering the need to reduce and negate environmental effects, reduce carbon and maintain health and safety and the operability of the project. We will also be continuing with

a number of key surveys and assessments this year and beyond related to construction; including but not limited to the following:

- Recreation and community access surveys and assessments.
- Terrestrial and aquatic ecology surveys and assessments.
- Water and groundwater quality surveys, modelling and assessments.
- Landscape and visual appraisals.
- Heritage and historic environment assessments.
- Noise, traffic and air quality surveys, modelling and assessments.
- Ground investigations.

## Theme: Potential operational impacts

### *Background*

4.2.42. The Project would allow for the abstraction of river water upstream of Teddington Weir and its transfer to reservoirs in the Lee Valley for further treatment and distribution across London in times of drought. To minimise environmental impacts associated with abstracting river water during drought conditions, there would be an equivalent volume of recycled water discharged just downstream of the abstraction to balance water levels and flows.

4.2.43. The Project could provide up to 75MI/d, equivalent of supplying over 500,000 people per day, when water is most needed, and would be operational when river flows and reservoir storage reaches a set level which will be licenced by the Environment Agency. Outside of drought periods the Project would run in a maintenance mode, producing a sweetening flow which could produce up to 19MI/d.

### *Representations and feedback*

4.2.44. We received a large number of responses raising concern about adverse water quality impacts from the Project during operation and the potential implications on local ecology, local amenities and recreational and leisure activities and public health. Respondents also took the opportunity to make comments about the need to maintain or improve water quality in the River Thames. Key aspects raised were ensuring flow, oxygen levels, temperature and freshwater status (i.e. no salinity) of the river were not negatively impacted as a result of the Project. Concern was also raised about the requirement for a continuous low-level discharge (sweetening or maintenance flow) to the River Thames during non-drought periods as a consequence of the maintenance mode.

4.2.45. A number of responses also raised concern around recycled water being safe and suitable for a range of flora, fauna and biodiversity of the river and concerns from light, noise, dust and odours during operation.

4.2.46. Multiple representations stated that the Project would result in the discharge of sewage to the River Thames.

### *Our consideration to the feedback and next steps*

#### *Water quality considerations*

4.2.47. We are committed to ensuring this Project does not deteriorate water quality within the river, and our treatment processes are being tested through a pilot study at Mogden STW this year to ensure this will be the case. The pilot study will run for between 12 and 18 months and provide real-world data about the effectiveness of what we're proposing. The initial results from

the pilot study will be captured within the Statutory Consultation documentation issued next year.

4.2.48. We have been working closely with the Environment Agency to establish the discharge limits for substances and other determinands, and continue to advance the understanding of the 'make-up' of the River Thames including understanding levels of 'forever' chemicals so that robust assessments and permit limits can be applied to the Project. Once operational, regular monitoring of the water quality of the discharge will be undertaken to ensure it meets the requirements set by our permit and safeguards put in place to ensure compliance.

#### Duration of operation

4.2.49. As a drought scheme the Project would operate during periods of prolonged dry weather. Operational periods are estimated at, on average, just under once every two years and generally between August and November when the effects of drought conditions are most likely. When not operational the TTF at Mogden STW would run in a maintenance mode producing a sweetening flow to ensure the tertiary treatment facility is ready for full operation when required at short notice. To achieve this, we would likely operate the TTF with a proportion of the total capacity flow (up to 25% equivalent of up to 19Ml/d) throughout the year to keep it running to the required standard. This recycled water would then be discharged back to the environment.

#### Sweetening flow discharge location

4.2.50. Following feedback we have been investigating an alternative location to discharge the sweetening flow of recycled water generated during the maintenance mode. Whereas previously we had intended this to be discharged through the new tunnel into the River Thames at the new discharge point south of Burnell Avenue, we have amended our design and propose a diversion of the sweetening flow to Isleworth Ait using the existing discharge infrastructure from Mogden STW. This means that the new Project tunnel would only be discharging to the River Thames upstream of Teddington Weir when the Project is required to operate in drought conditions, once every two years for about four months. When not operational there would be no discharge and no potential impacts on ecology, water quality, health or recreational users.

4.2.51. This Project design change will further support one of the benefits of the Project by improving the quality of the water and the dissolved oxygen concentrations in the Thames Tideway, downstream of Teddington Weir. This is achieved as a result of a) a reduction in secondary treated effluent being discharged at Isleworth Ait and applying a tertiary level of treatment to produce 75Ml/d of recycled water for discharge upstream during drought conditions and b) treating a smaller proportion of final effluent through the TTF for discharge at Isleworth Ait as part of the sweetening flow at all times that the Project is not fully operational.

#### Engagement with the community

4.2.52. We continue to develop our design as we create an evidence base to understand the environment, its water quality and ecology and how the river is used. A key focus following feedback from the site options appraisal consultation is investigating how the river is used. We have been undertaking recreational surveys this summer and sending out questionnaires to local, regional and national river-based groups to ask about them and their members and find out how they use the local area and facilities. This information is critical to understanding potential impacts and how we can avoid or minimise them and allows us to explore possible enhancements through the Project. We will continue over the next two years to build an evidence base and undertake impact assessments. We are committed to environmental

protection and environmental enhancement and as we work through the planning process will put in place mitigation measures wherever we identify unacceptable impacts.

#### Other operational considerations

4.2.53. Aside from water quality concerns described above, a number of other operational concerns were raised through the consultation which we have considered and responded to below.

4.2.54. We received multiple comments about the impacts caused from changes to river levels during operation. Our concept design ensures that there is a balance of water between the volume abstracted and volume discharged. This ensures there is no change in river levels or flows during operation of the Project above Teddington Weir and therefore no pathway to impact on local ecology of the river or river users.

4.2.55. We have contracted expert aquatic modellers to understand the potential for increases and decreases to ambient water temperature, and changes to salinity during operation. Work is still underway; however, we are confident that any small changes in temperature during intermittent operation of the Project will be very localised, not exceed thresholds set out in legislation and not significantly impact biodiversity. Saline water is not introduced by the Project to the River Thames so there is no pathway to impact local ecology and no risk of the lower River Thames becoming brackish as a consequence of the Project.

4.2.56. The Project does not allow for the discharge of storm overflow or untreated or treated wastewater or sewage into the River Thames. The design of the Project will allow for only recycled water, treated in the new TTF to pass through the tunnel, and then be discharged into the River Thames. The quality of water discharged will be odourless and safe for those who use the river and will not pose any additional health risks.

4.2.57. We are still developing the detailed design requirements of the abstraction facility on land south of Burnell Avenue. Consideration will need to be given to maintenance and security of the structure including the provision of lighting. The facility will be unmanned, and operation will be automatically triggered. As a result there will be limited and only very occasional staff visiting the site and generally only during the working day. We do not anticipate any adverse impact from staff or vehicle movements or any localised increase in dust or emissions during operation.

4.2.58. The specification of motors or pumps required to operate the abstraction facility is not currently known and will be established as part of the ongoing design development through 2024 and 2025. Once identified full assessments will be undertaken and where impacts are recognised mitigation will be applied. Typical measures will include for the provision of low noise machinery with acoustic barriers. Where reasonably practicable, equipment will be buried to ensure any noise generated during operation is not discernible above the background ambient noise levels. We will include more information and consult on the latest design and preliminary impact assessments in our Statutory Consultation next year.



## 5. Summary of key amendments to the Project

5.1.1. The 2023 site options appraisal consultation received 2,312 responses in total. The feedback raised significant concerns on a number of aspects of the Project that we have considered. This has resulted in a re-evaluation of our design and site options, and we have responded by making fundamental changes. As the design and our assessments progress through the pre-application planning phases, we will continue to review decisions against the feedback from the site options appraisal consultation and will also consult further on both the latest design and likely environmental effects from the Project in 2025.

5.1.2. A significant number of responses focused on localised and above ground impacts of the Project at the sites presented. Through this we have looked into how the conveyance route between Mogden STW and the River Thames is constructed, including the need for intermediate shafts at 1,000m or less intervals. We've re-investigated possible diameters and construction techniques and have sought advice from specialist construction contractors. As a result, we have been able to re-design key aspects which addresses a number of the concerns raised through the consultation.

5.1.3. The changes to design include:

- Constructing a 3.5m ID tunnel between Mogden STW and the River Thames compared to the 1.8m ID pipe shown in our site option consultation.
- Construction of the tunnel using a tunnel boring machine rather than by way of pipejacking.

5.1.4. These changes mean the majority of the preferred intermediate shafts between Mogden STW and the River Thames have been removed from the design, including sites at:

- Ivybridge Retail Park Car Park (North) (identified as Site 1);
- Moormead and Bandy Recreation Ground (identified as Site 2);
- Land to the west of Riverside Drive Playground (identified as Site 4); and
- Ham Lands, west of Riverside Drive (identified as Site 6).

5.1.5. A single intermediate shaft will continue to be required and our preferred location for this is on land at Ham Playing Fields (Shaft 3).

5.1.6. The above change also results in the following amendments to the Project:

- The tunnel drive shaft will be re-located from the east side of Mogden STW to the west side of the site where more space is available.
- All tunnel spoil and material will be taken out via the drive shaft at Mogden STW where it will be stored temporarily before being transported, rather than the tunnel spoil being retrieved and transported from the intermediate shaft sites along the tunnel route.
- The tunnel alignment will alter slightly to reflect the change in construction technique and be more direct and shorter to the River Thames, although the end point on land to the south of Burnell Avenue remains unchanged.

5.1.7. We have also investigated an alternative location to discharge the recycled water generated during the Project's maintenance mode. Whereas previously we had intended this to be discharged through the new tunnel into the River Thames, we have amended our design and are proposing to divert the sweetening flow to Isleworth Ait using the existing discharge infrastructure for Mogden STW.

This means that the new Project tunnel would only be discharging to the River Thames upstream of Teddington Weir when the project is required to operate in drought conditions, once every two years for about four months. When not operational there would be no discharge and no potential pathways to impact on ecology, water quality, health or recreational users within the lower River Thames.

5.1.8. This Project design change will further support one of the benefits of the Project by improving the quality of the water and the dissolved oxygen concentrations in the Thames Tideway, downstream of Teddington Weir.





This document has been produced to support the September 2023 project update on the Teddington Direct River Abstraction project. The information presented represents the current stage of the project design. It comprises material or data which is still in the course of completion, pending consultation, engagement and further design and technical development.