

**Thames to Affinity Transfer  
Strategic Resource Option -  
Water Framework Directive  
Assessment**

Rapid Gate 1 submission Annex B3

May 2021



Mott MacDonald  
10 Temple Back  
Bristol BS1 6FL  
United Kingdom

T +44 (0)117 906 9500  
mottmac.com



# **Thames to Affinity Transfer Strategic Resource Option - Water Framework Directive Assessment**

Rapid Gate 1 submission Annex B3

May 2021

# Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
P01 DRAFT	26/02/2021	J Barlow	M Durrant	I Scott	Initial draft for internal (within technical workstream) check and review
P02	10/03/2021	K Gareau	I Scott	Q Rea	Final draft following client's comments
P03	01/04/2021	J Barlow / M Durrant	K Gareau	Q Rea	Updated draft following assurance stage review comments
P04	12/05/2021	J Barlow / M Durrant	K Gareau / I Scott	Q Rea	Updated draft following audit meeting comments
P05	19/05/2021	J Barlow	M Durrant	Q Rea	Updated draft following NAU comments and workshop

**Document reference:** 100420176 | 420176-MMD-T2-00-Y-RP-0202 | P05

**Information class:** Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it

# Contents

1	Introduction	1
1.1	Overview	1
1.2	T2AT Options	1
1.3	Methodology	1
2	Scheme description	4
2.1	Overview	4
2.2	Option descriptions	4
2.3	Updates to the scheme since WRSE undertook their review	7
3	WRSE Water Framework Directive findings (Level 1 WFD)	9
3.1	Sunnymeads 1	9
3.2	Sunnymeads 2a	10
3.3	Maidenhead	<b>Error! Bookmark not defined.</b>
3.4	Teddington DRA	12
3.5	Walton 2b	14
3.6	Lower Thames Reservoir Transfer 2a	15
3.7	Beckton Reuse Indirect	17
4	Level 2 Water Framework Directive assessments	19
4.1	Maidenhead	<b>Error! Bookmark not defined</b>
4.2	Teddington DRA	19
4.3	Walton 2b	19
4.4	Summary tables	19
5	Conclusions	23
5.1	Summary	23
5.2	Further assessment	23
A.	WRSE output tables	25
B.	Further assessment output tables	26

## Tables

Table 1 1: T2AT Options	1
Table 2 1: T2AT Gate 1 options	4
Table 2.2: Overview of the changes made to the options since WRSE assessment	7
Table 3.1: WRSE WFD Level 1 assessment outcomes for Sunnymeads 1 option	9
Table 3.2: WRSE WFD Level 1 assessment outcomes for Sunnymeads 2a option	10
Table 3.3: WRSE WFD Level 1 assessment outcomes for Maidenhead option	11
Table 3.4: WRSE WFD Level 1 assessment outcomes for Teddington DRA option	13
Table 3.5: WRSE WFD Level 1 assessment outcomes for Walton 2b option	14
Table 3.6: WRSE WFD Level 1 assessment outcomes for Lower Thames Reservoir Transfer 2a option	15
Table 3.7: WRSE WFD Level 1 assessment outcomes for Beckton Reuse Indirect option	17
Table 4.1: Maidenhead (50MI/d and 100MI/d options) Level 2 WFD summary	20
Table 4.2: Teddington DRA (50MI/d and 100MI/d options) Level 2 WFD summary	21
Table 4.3: Walton 2b (50MI/d and 100MI/d options) Level 2 WFD summary	22

## Figures

Figure 2.1: Map of the T2AT options	6
-------------------------------------	---

# 1 Introduction

## 1.1 Overview

This annex supports the Environment Assessment Report (EAR) that accompanies the Gate 1 submission to Regulators' Alliance for Progressing Infrastructure Development (RAPID) for the Thames to Affinity Transfer (T2AT) Strategic Regional Option (SRO). The annex presents the findings of a Water Framework Directive (WFD) assessment applied to the T2AT options

**The content of this report is draft and relates to material [or data] which is still in the course of completion in travel to Gate 2 and should not be relied upon at this early stage of development. We continue to develop our thinking and our approach to the issues raised in the document in preparation for Gate 2**

## 1.2 T2AT Options

The outputs of the initial route options appraisal identified seven distinct options for transferring water from the Thames Water (TW) region to the Affinity Water (AFW) region. An eighth option, Mogden Reuse Indirect 3, is identical in terms of environmental assessment to Walton 2b and so has not been assessed separately. Throughout this report, the assessment applied to the Walton 2b option applies equally to Mogden Reuse Indirect 3. These options are shown in Table 1.1. Further details on the options are set out in Section 2: Scheme Description.

**Table 1.1: T2AT Options**

Option name	Description overview
Sunnymeads 1	Abstraction of raw water at the [REDACTED] and conveyance to a new Water Treatment Works (WTW) at the existing [REDACTED] (SR) site. Available treated water storage capacity at the [REDACTED] will be utilised for this option.
Maidenhead	Abstraction of raw water at a new [REDACTED] intake, conveyance to a new WTW at [REDACTED], and utilisation of available storage capacity at the existing [REDACTED].
Teddington Direct River Abstraction (DRA)	Abstraction of raw water at a new intake at [REDACTED], conveyance to a new WTW at [REDACTED], and utilisation of the available storage capacity at the existing [REDACTED].
Sunnymeads 2a	Abstraction of raw water at the [REDACTED] and conveyance to a new WTW at [REDACTED] (2), near to the existing [REDACTED] WTW. The potable water is then conveyed to the existing [REDACTED].
Walton 2b (and Mogden Reuse Indirect 3)	Abstraction of raw water at the [REDACTED] and conveyance to new [REDACTED] 2 WTW. The potable water is then conveyed to the existing [REDACTED].
Lower Thames Reservoir Transfer 2a	Water from [REDACTED] is abstracted via a proposed connection into Affinity Water's existing [REDACTED] at the existing [REDACTED]. This raw water is then diverted to the proposed [REDACTED] 2 WTW. The potable water is subsequently conveyed to the existing [REDACTED].
Beckton Reuse Indirect	Indirect transfer of reuse water from [REDACTED] to a new WTW near [REDACTED]. The proposed abstraction point would be located on the [REDACTED].

## 1.3 Methodology

### 1.3.1 Approach to WFD assessment for SROs

The WFD requires all waterbodies (both surface and groundwater) to achieve 'good status'. The Directive also requires that the waterbodies experience no deterioration in status. Good status is a function of good ecological status (biological, physico-chemical and hydromorphological).

elements and specific pollutants) and good chemical status (Priority Substances and Priority Hazardous Substances).

The All Company Working Group (ACWG) has developed a consistent framework for undertaking WFD assessments for SROs to demonstrate that options will not cause deterioration in status of any WFD waterbodies. The assessment considers mitigation that would need to be put in place to protect waterbody status. The assessment also considers WFD future objectives

Two stages of assessment are completed under the ACWG WFD approach, an initial Level 1 basic screening and a Level 2 detailed impact screening. These are conducted/reported using a spreadsheet assessment tool which is automated based on option information for Level 1 and expert judgment based for Level 2. Further information on WFD classification and the approach adopted can be found in *ACWG, WFD: Consistent framework for undertaking no deterioration assessments, Nov 2020*

### 1.3.2 Level 1 – basic screening

The first stage of WFD assessment was completed by Water Resources South East (WRSE) in January 2021 for all WRSE options. Level 1 assessment follows these steps:

- Identify affected waterbodies;
- Review SRO options;
- Identify possible impacts;
- Apply 'embedded' mitigation measures; and
- Calculate screening score (using a 6-point scale) to 'screen out' waterbodies and options with no or very minor potential impacts from further assessment.

The outcomes for T2AT options are summarised in Section 3 and Appendix A. Where waterbodies and option impacts were 'screened in', they have been taken forward to Level 2 assessment.

### 1.3.3 Level 2 – detailed impact screening

The second stage of WFD assessment has been completed for T2AT SRO options that were screened in at Level 1, following the steps:

- Waterbody scale detailed assessment of impacts to each WFD quality element for each activity proposed as part of an SRO option;
- Assessment of data confidence level and design certainty – confidence levels are assigned for each assessment, based on the quality and availability of both physical data and design information about the option at the time of assessment (*note, confidence/certainty expected to be low at initial Gate 1 assessment and increase over time*). Where the confidence levels are medium or low, the requirements for further data or design information in order to raise this confidence level for future gates will be listed;
- Identification of further mitigation needs;
- Assessment of impacts after mitigation (scoring on a 6-point scale); and
- Identification of activities to improve certainty of assessment outcomes.

The outcomes of the Level 2 assessments are summarised in Section 4 and Appendix B.

## 1.3.4 Limitations and assumptions

As the project is still in the early stages of design development a precautionary approach has been exercised because of residual uncertainty. The WFD assessment has the following limitations and assumptions:



- The ACWG approach uses WFD 2015 data, as it is the current officially reported baseline in the 2015-2021 Cycle 2 RBMP. The RBMPs are anticipated to be updated in 2021, and 2019 WFD baseline data released in late 2020 would then become the new baseline. To make sure of consistency, the 2015 data has been used at Gate 1, but acknowledge that this will need to be updated to the 2019 status as soon as the RBMPs are published (proposed for Gate 2)
- Assessment assumes pipelines are underground (directionally drilled or pipe jacked beneath any watercourses) and therefore will not cross watercourses above ground or cause direct impacts.
- This assessment has only considered the impacts associated directly with the T2AT SRO options at this stage, and does not include the impacts of inter-reliant source water SROs such as South East Strategic Reservoir Option (SESRO) and London Reuse SRO
- The geographical extent of the WFD assessment has been limited to the waterbodies where abstractions take place. There is potential for some effects continuing downstream of the abstraction point, although it is assumed these would become increasingly limited to 'negligible' with distance. This assumption will need to be reviewed as additional hydrological studies are undertaken.

### 1.3.5 WFD for Gate 2 and beyond

Where waterbodies and option impacts have been identified, recommendations have been made for increasing the confidence in the assessment. This is expected to be through increasing the level of detail available during later stages of option development for subsequent gateways if the relevant options are progressed. In combination assessments where different SRO option delivery is interdependent would also be required. Recommendations are included in Section 5.2

## 2 Scheme description

### 2.1 Overview

The T2AT scheme is a prospective project with the objective of abstracting available raw water from the Thames Water catchment in west, south, and east London; treating it to potable water standards; and delivering to Affinity Water customers in the area to the north and north east of London. Potential sources of raw water are the River Thames (supported by the SESRO and/or the Severn Thames Transfer (STT) schemes) and reuse options within the London Reuse SRO scheme. Treated water would be delivered to an existing distribution hub, either the existing [REDACTED] or a new SR near [REDACTED].

A full scheme description can be found in the Gate 1 submission report to RAPID, however a summary of the main aspects of the options are included below.

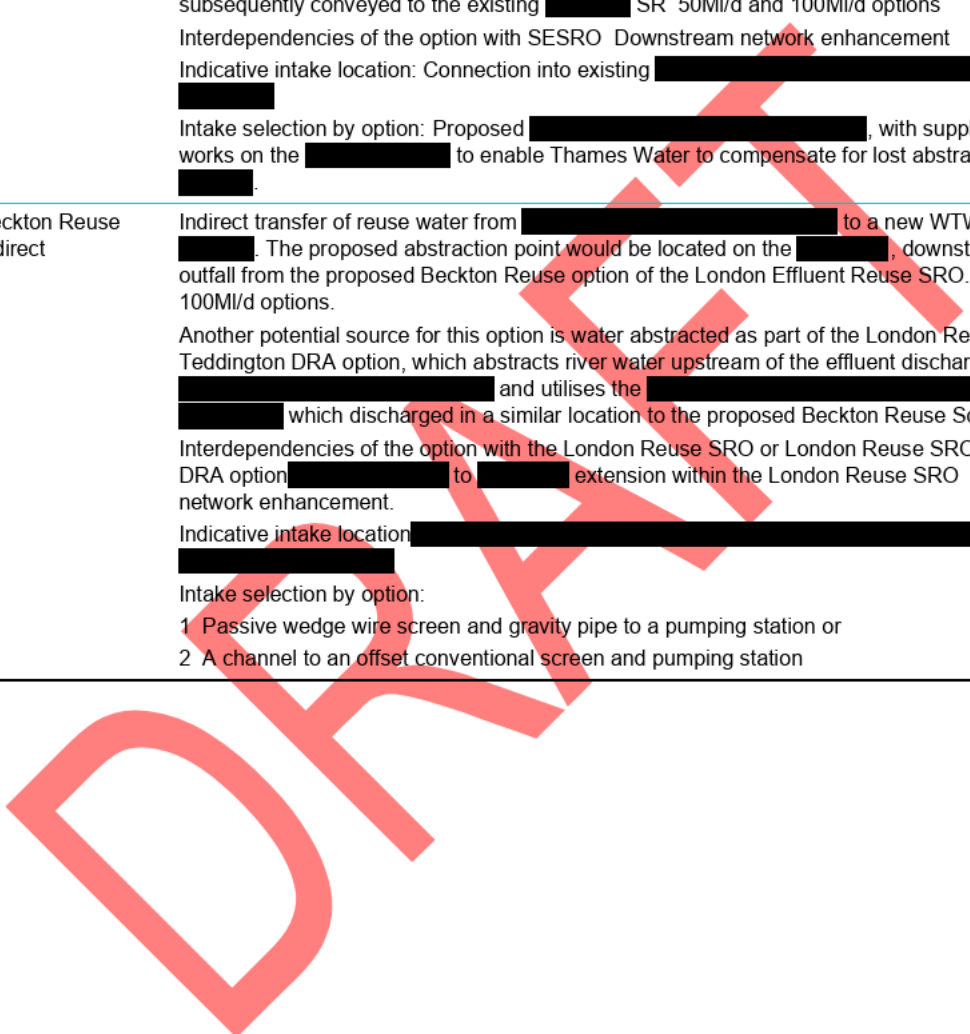
### 2.2 Option descriptions

For Gate 1, there are seven distinct options for T2AT as described in Table 2.1. A map of the options is shown in Figure 2.1.

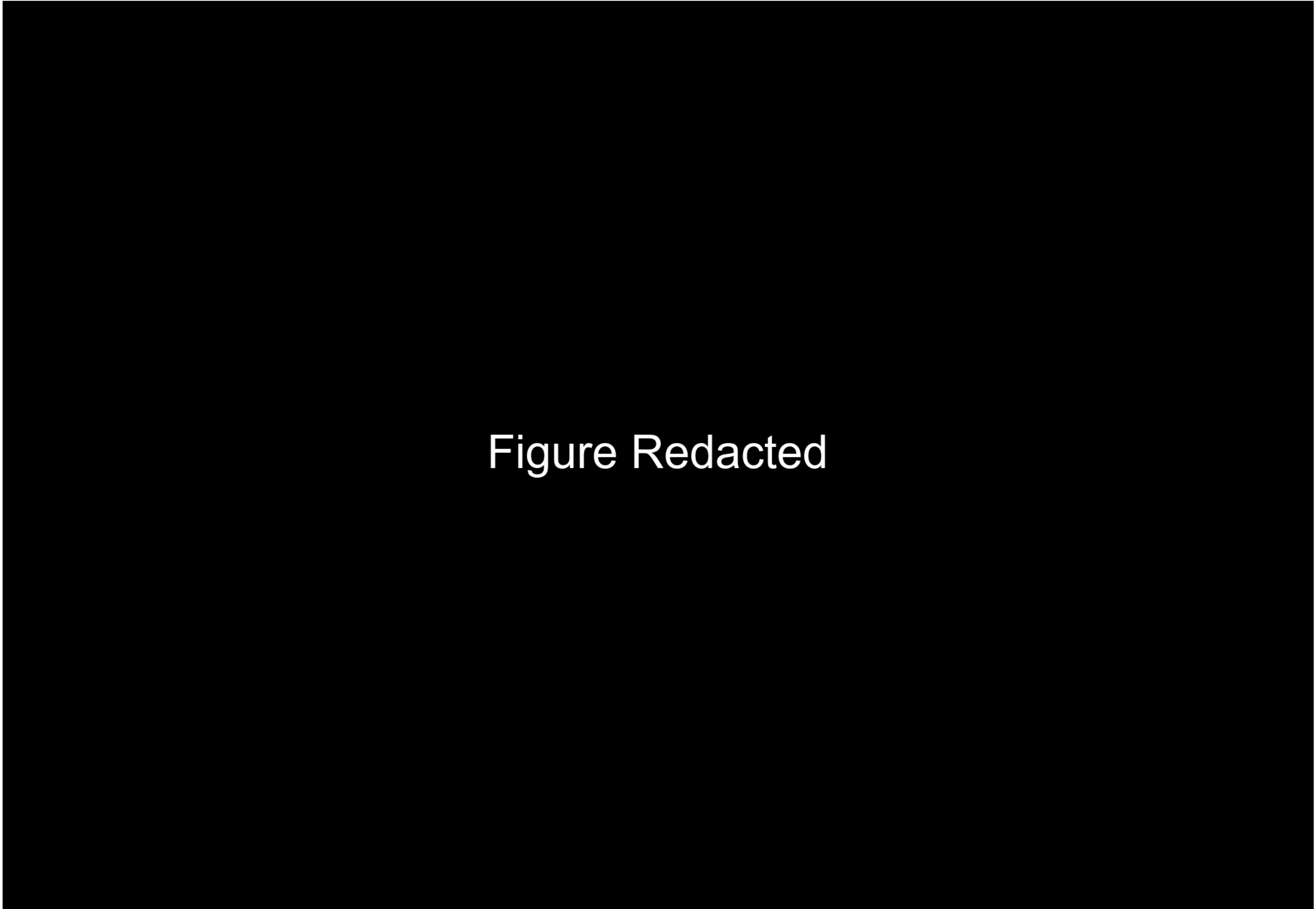
**Table 2.1: T2AT Gate 1 options**

Option name	Option description
Sunnymeads 1	Abstraction of raw water at the [REDACTED] and conveyance to a new WTW at the existing [REDACTED]. Available treated water storage capacity at the [REDACTED] will be utilised for this option. 50MI/d and 100MI/d options Interdependencies of the option with SESRO or STT Downstream network enhancement Indicative intake location: [REDACTED] Intake selection by option: Conventional screens.
Sunnymeads 2a	Abstraction of raw water at the [REDACTED] and conveyance to a new WTW at [REDACTED] (2), near to the existing [REDACTED] WTW. The potable water is then conveyed to the existing [REDACTED] 50MI/d and 100MI/d options Interdependencies of the option with SESRO or STT. Downstream network enhancement. Indicative intake location: [REDACTED] Intake selection by option: Conventional screens.
Maidenhead	Abstraction of raw water at a new [REDACTED] intake, conveyance to a new WTW at [REDACTED], and utilisation of available storage capacity at the existing [REDACTED] 50MI/d and 100MI/d options. Interdependencies of the option with SESRO or STT. Downstream network enhancement. Indicative intake location: [REDACTED] Intake selection by option: Passive wedge wire screen intake within the river and a gravity pipe to an offset pumping station
Teddington DRA	Abstraction of raw water at a new intake at [REDACTED], conveyance to a new WTW at [REDACTED], and utilisation of the available storage capacity at the existing [REDACTED] 50MI/d and 100MI/d options Interdependencies of the option with London Reuse SRO Teddington DRA option. Downstream network enhancement Indicative intake location: [REDACTED] Intake selection by option: Passive wedge wire screen intake within the river and a gravity pipe to an offset pumping station.
Walton 2b (and Mogden Reuse Indirect 3)	Abstraction of raw water at the existing [REDACTED] and conveyance to new [REDACTED] 2 WTW. The potable water is then conveyed to the existing [REDACTED] 50MI/d and 100MI/d options. Interdependencies of the option with SESRO or STT. Downstream network enhancement.

Option name	Option description
	<p>Another option, referred to as 'Mogden Reuse Indirect 3' comprises the same infrastructure as Walton 2b, but utilises water from the proposed London Reuse SRO (Mogden Reuse option). The environmental assessments for the alternative sources are covered by the source SROs; SESRO and STT for Walton 2b and London Effluent Reuse SRO for the Mogden Reuse Indirect 3 option. In this report, wherever Walton 2b is mentioned as an option, the associated narrative applies equally to the Mogden Reuse Indirect 3 option.</p> <p>Indicative intake location: [REDACTED].</p> <p>Intake selection by option: Conventional screens</p>
<p>Lower Thames Reservoir Transfer 2a</p>	<p>Water from [REDACTED] is abstracted via a proposed connection into [REDACTED] at the existing [REDACTED]. This raw water is then diverted to the proposed [REDACTED] 2 WTW. The potable water is subsequently conveyed to the existing [REDACTED] SR 50MI/d and 100MI/d options</p> <p>Interdependencies of the option with SESRO Downstream network enhancement</p> <p>Indicative intake location: Connection into existing [REDACTED]</p> <p>Intake selection by option: Proposed [REDACTED], with supplementary works on the [REDACTED] to enable Thames Water to compensate for lost abstraction at [REDACTED].</p>
<p>Beckton Reuse Indirect</p>	<p>Indirect transfer of reuse water from [REDACTED] to a new WTW near [REDACTED]. The proposed abstraction point would be located on the [REDACTED], downstream of the outfall from the proposed Beckton Reuse option of the London Effluent Reuse SRO. 50MI/d and 100MI/d options.</p> <p>Another potential source for this option is water abstracted as part of the London Reuse SRO Teddington DRA option, which abstracts river water upstream of the effluent discharge from [REDACTED] and utilises the [REDACTED] which discharged in a similar location to the proposed Beckton Reuse Scheme</p> <p>Interdependencies of the option with the London Reuse SRO or London Reuse SRO Teddington DRA option [REDACTED] to [REDACTED] extension within the London Reuse SRO Downstream network enhancement.</p> <p>Indicative intake location [REDACTED]</p> <p>Intake selection by option:</p> <ol style="list-style-type: none"> <li>1 Passive wedge wire screen and gravity pipe to a pumping station or</li> <li>2 A channel to an offset conventional screen and pumping station</li> </ol>



**Figure 2.1: Map of the T2AT options**



### 2.3 Updates to the scheme since WRSE undertook their review

The WRSE assessment was undertaken on an early iteration of the options. Further changes have been made to the options since these were assessed by WRSE in order to optimise the options and to minimise the impact on the environment.

An overview of the changes made to the routes are presented in Table 2.2. No significant changes were made to the routes assessed by WRSE.

As a result of the optimisation of the options, the location of some of the pipeline crossings have changed. However, while some locations have changed, it does not change the list of WFD waterbodies reviewed as part of the level 1 screening. Therefore, the findings from the WRSE level 1 screening assessment remain valid.

**Table 2.2: Overview of the changes made to the options since WRSE assessment**

Option name	Changes since WRSE assessment
Sunnymeads 1	<ul style="list-style-type: none"> <li>Optimised route limits the number of crossings of the motorway and adjacent A-roads – as a result of this the total pipeline length was reduced (near the proposed [REDACTED] 2 WTW)</li> <li>Pipeline carefully routed closer to field boundaries between the proposed [REDACTED] 2 and the existing [REDACTED] to minimise the impact on land.</li> <li>The route south of the [REDACTED] was amended for a slightly longer route which crosses the railway track and requires an additional river crossing. While this resulted in a small increase in pipe length, this change in the route means that it no longer routes through the town of [REDACTED]</li> </ul>
Maidenhead	<ul style="list-style-type: none"> <li>A longer section of the optimised route goes through the [REDACTED]</li> <li>Avoid an area of Grade 2 land ([REDACTED])</li> </ul>
Teddington DRA	<ul style="list-style-type: none"> <li>First part of the route has been modified as a result of the change in the proposed abstraction location. This results in a slight increase in the length of the pipeline, and a short section of the optimised route running along [REDACTED] Sports Ground.</li> <li>Short sections of the route located between Uxbridge and the A40 have been amended to follow the roads where possible</li> <li>Section of the route between [REDACTED] has also be optimised to follow the roads more closely</li> <li>Section of the route between South [REDACTED] and the existing [REDACTED] SR has moved to the south east therefore no longer adjacent to some ancient woodland</li> </ul>
Sunnymeads 2a	<ul style="list-style-type: none"> <li>The option follows largely the same route as Sunnymeads 1. The only difference between the routes is that this option diverges east from Sunnymeads 1 near the proposed [REDACTED] 2 WTW for treatment before joining back. Refer to 'Sunnymeads 1' for the changes made to the route.</li> </ul>
Walton 2b	<ul style="list-style-type: none"> <li>South of the [REDACTED], the optimised route would follow the [REDACTED]. While the route would need to cross the [REDACTED] at that point, the optimised route avoids landfills sites, priority habitats, [REDACTED], a golf course and green spaces. The optimised route also results in fewer motorway crossings</li> <li>As the optimised route intercepts the Sunnymeads 1 route [REDACTED] to the proposed [REDACTED] 2 WTW and then follows the same route to the existing [REDACTED] SR, refer to 'Sunnymeads 1' for the changes made to that section of the Walton 2b route</li> </ul>
Lower Thames Reservoir Transfer 2a	<ul style="list-style-type: none"> <li>As the option conveys water from the [REDACTED] to the proposed [REDACTED] 2 WTW and from there follows the same route as the Sunnymeads 1 option, refer to 'Sunnymeads 1' for the changes made to that section of the Lower Thames Reservoir transfer 2a route.</li> </ul>

Option name	Changes since WRSE assessment
Beckton Reuse Indirect	<ul style="list-style-type: none"><li>• South of the [REDACTED], the optimised pipeline runs on the [REDACTED] and passes through [REDACTED]</li><li>• The route crosses the [REDACTED] and routes through fields and the north end of the town of [REDACTED] to end at the proposed [REDACTED] WTW and Reservoir instead of along the [REDACTED]</li></ul>

DRAFT

## 3 WRSE Water Framework Directive findings (Level 1 WFD)

### 3.1 Sunnymeads 1

The WRSE Stage 1 WFD assessment covered four components of the option. The outcomes indicated no further assessment would be necessary for the option, because the types of activities do not present a risk to WFD status or objectives for any waterbodies. Further information on WFD classification and the approach adopted can be found in *ACWG, WFD: Consistent framework for undertaking no deterioration assessments, Nov 2020*

**Table 3 1: WRSE WFD Level 1 assessment outcomes for Sunnymeads 1 option**

<b>Sunnymeads 1 100MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-TFR_SWX_CNO Sunnymeads_1_conv100
<b>Option Description</b>	Sunnymeads 1 100MI/d option. Abstraction of water at [REDACTED] to an expanded [REDACTED] treatment works and then conveyed to the [REDACTED].
<b>Number of waterbodies passing WFD assessment</b>	8
<b>Waterbodies passing WFD assessment</b>	GB106039023231: Thames (Cookham to Egham) GB106039023520: Datchet Common Brook GB106039023040: Horton Brook GB106039023010: Colne Brook GB106039023080: Alderbourne GB106039023090: Colne (Confluence with Chess to River Thames) GB106039023070: Pinn GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>Sunnymeads 1 50MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI TFR_SWX_CNO Sunnymeads_1_conv50
<b>Option Description</b>	Sunnymeads 1 50MI/d option. Abstraction of water at [REDACTED] to an expanded [REDACTED] treatment works and then conveyed to the [REDACTED].
<b>Number of waterbodies passing WFD assessment</b>	8
<b>Waterbodies passing WFD assessment</b>	GB106039023231: Thames (Cookham to Egham) GB106039023520: Datchet Common Brook GB106039023040: Horton Brook GB106039023010: Colne Brook GB106039023080: Alderbourne GB106039023090: Colne (Confluence with Chess to River Thames) GB106039023070: Pinn GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>New [REDACTED] WTW 50MI/d Phase 1</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-ROC_WT1_CNO [REDACTED] wtw
<b>Option Description</b>	New [REDACTED] WTW 50MI/d Phase 1
<b>Number of waterbodies passing WFD assessment</b>	1

<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>New [REDACTED] WTW 50MI/d Phase 2</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-ROC_WT2_ALL [REDACTED] wtw 50p2
<b>Option Description</b>	New [REDACTED] WTW 50MI/d Phase 2
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0

### 3.2 Sunnymeads 2a

The WRSE Stage 1 WFD assessment covered six components of the option. The outcomes indicated no further assessment would be necessary for the option, because the types of activities do not present a risk to WFD status or objectives for any waterbodies. Further information on WFD classification and the approach adopted can be found in *ACWG, WFD: Consistent framework for undertaking no deterioration assessments, Nov 2020*

**Table 3.2: WRSE WFD Level 1 assessment outcomes for Sunnymeads 2a option**

<b>Sunnymeads 2a 100MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI TFR_SWX_CNO Sunnymeads2a_conv100
<b>Option Description</b>	Sunnymeads 2a 100MI/d option. Abstraction of water at [REDACTED] to a new [REDACTED] 2 treatment works site and then conveyed to the [REDACTED]
<b>Number of waterbodies passing WFD assessment</b>	8
<b>Waterbodies passing WFD assessment</b>	GB106039023231: Thames (Cookham to Egham) GB106039023520: Datchet Common Brook GB106039023040: Horton Brook GB106039023010: Colne Brook GB106039023080: Alderbourne GB106039023090: Colne (Confluence with Chess to River Thames) GB106039023070: Pinn GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>Sunnymeads 2a 50MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-TFR_SWX_CNO Sunnymeads2a_conv50
<b>Option Description</b>	Sunnymeads 2a 50MI/d option Abstraction of water at [REDACTED] to a new [REDACTED] 2 treatment works site and then conveyed to the [REDACTED]
<b>Number of waterbodies passing WFD assessment</b>	8
<b>Waterbodies passing WFD assessment</b>	GB106039023231: Thames (Cookham to Egham) GB106039023520: Datchet Common Brook GB106039023040: Horton Brook GB106039023010: Colne Brook GB106039023080: Alderbourne GB106039023090: Colne (Confluence with Chess to River Thames) GB106039023070: Pinn GB106039023090: Colne (Confluence with Chess to River Thames)



<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>New [REDACTED] 2 WTW 50MI/d Phase 1</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-ROC WT1 CNO [REDACTED] 2 wtw
<b>Option Description</b>	New [REDACTED] 2 WTW 50MI/d Phase 1
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>New [REDACTED] 2 WTW 50MI/d Phase 2</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-ROC_WT2_ALL [REDACTED] 2_wtw_50p2
<b>Option Description</b>	New [REDACTED] 2 WTW 50MI/d Phase 2
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>[REDACTED] to [REDACTED] 100MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI TFR_AZ4 CNO [REDACTED] conv100
<b>Option Description</b>	[REDACTED] 100MI/d
<b>Number of waterbodies passing WFD assessment</b>	2
<b>Waterbodies passing WFD assessment</b>	GB106039023010: Colne Brook GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>[REDACTED] to [REDACTED] 50MI/d</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-TFR AZ4 CNO [REDACTED] conv50
<b>Option Description</b>	[REDACTED] 50MI/d
<b>Number of waterbodies passing WFD assessment</b>	2
<b>Waterbodies passing WFD assessment</b>	GB106039023010: Colne Brook GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0

### 3.3 Maidenhead

The WRSE Stage 1 WFD assessment covered four components of the option. Further information on WFD classification and the approach adopted can be found in *ACWG, WFD: Consistent framework for undertaking no deterioration assessments, Nov 2020*.

The outcomes indicated a Level 2 assessment would be required for both the 100MI/d and 50MI/d proposed [REDACTED] intake and abstraction elements of the option on the 'Thames (Reading to Cookham)' WFD waterbody (ID GB106039023233), because the abstraction related activities presented some risk to WFD status or objectives to this waterbody.

**Table 3.3: WRSE WFD Level 1 assessment outcomes for Maidenhead option**

<b>Maidenhead 100MI/d</b>
---------------------------

<b>WRSE Option ID</b>	AFW_AZ4_HI TFR SWX_CNO Maidenhead_conv100
<b>Option Description</b>	Maidenhead 100MI/d option. Abstraction of raw water at [REDACTED] to [REDACTED]
<b>Number of waterbodies passing WFD assessment</b>	4
<b>Waterbodies passing WFD assessment</b>	GB106039023880: Wye (High Wycombe fire station to Thames) GB106039023080: Alderbourne GB106039029830: Misbourne GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	1
<b>Waterbodies requiring further WFD assessment</b>	GB106039023233: Thames (Reading to Cookham)
<b>Maidenhead 50MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI TFR SWX_CNO Maidenhead_conv50
<b>Option Description</b>	[REDACTED] 50MI/d option. Abstraction of raw water at [REDACTED] to [REDACTED]
<b>Number of waterbodies passing WFD assessment</b>	4
<b>Waterbodies passing WFD assessment</b>	GB106039023880: Wye (High Wycombe fire station to Thames) GB106039023080: Alderbourne GB106039029830: Misbourne GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	1
<b>Waterbodies requiring further WFD assessment</b>	GB106039023233: Thames (Reading to Cookham)
<b>New [REDACTED] WTW 50MI/d Phase 1</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-ROC_WT1_CNO [REDACTED] wtw
<b>Option Description</b>	New [REDACTED] WTW 50MI/d Phase 1
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>New [REDACTED] WTW [REDACTED] Phase 2</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-ROC_WT2_ALL [REDACTED] wtw 50p2
<b>Option Description</b>	New [REDACTED] WTW 50MI/d Phase 2
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0

### 3.4 Teddington DRA

The WRSE Stage 1 WFD assessment covered four components of the option. Further information on WFD classification and the approach adopted can be found in *ACWG, WFD: Consistent framework for undertaking no deterioration assessments, Nov 2020*.

The outcomes indicated a Level 2 assessment would be required for both the 100MI/d and 50MI/d proposed piped routes (from [REDACTED]) elements of the option, on the THAMES UPPER (transitional waterbody) WFD waterbody (ID GB530603911403), because the abstraction related activities presented some risk to WFD status or objectives to this waterbody.

**Table 3.4: WRSE WFD Level 1 assessment outcomes for Teddington DRA option**

<b>Teddington DRA 100MI/d</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-TFR LON CNO tedd dra conv100
<b>Option Description</b>	Teddington DRA 100MI/d option. Piped route from the [REDACTED] to a new [REDACTED] WTW and then to the existing [REDACTED] (Raw water is abstracted from the Thames and replaced by effluent from Mogden as part of the Teddington DRA option within London Effluent Reuse SRO).
<b>Number of waterbodies passing WFD assessment</b>	3
<b>Waterbodies passing WFD assessment</b>	GB106039023030: Crane GB106039023070: Pinn GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	1
<b>Waterbodies requiring further WFD assessment</b>	GB106039023232: Thames (Egham to Teddington)
<b>Teddington DRA 50MI/d</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-TFR LON CNO tedd dra conv50
<b>Option Description</b>	Teddington DRA 50MI/d option Piped route from the DRA abstraction point at [REDACTED] to a new [REDACTED] WTW and then to the existing [REDACTED] (Raw water is abstracted from the Thames and replaced by effluent from Mogden as part of the Teddington DRA option within London Effluent Reuse SRO)
<b>Number of waterbodies passing WFD assessment</b>	3
<b>Waterbodies passing WFD assessment</b>	GB106039023030: Crane GB106039023070: Pinn GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	1
<b>Waterbodies requiring further WFD assessment</b>	GB106039023232: Thames (Egham to Teddington)
<b>New [REDACTED] WTW 50MI/d Phase 1</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI ROC WT1 CNO [REDACTED] wtw
<b>Option Description</b>	New [REDACTED] WTW 50MI/d Phase 1
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>New [REDACTED] WTW 50MI/d Phase 2</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-ROC WT2 ALL [REDACTED] wtw 50p2
<b>Option Description</b>	New [REDACTED] WTW 50MI/d Phase 2
<b>Number of waterbodies passing WFD assessment</b>	1

<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0

### 3.5 Walton 2b

The WRSE Stage 1 WFD assessment covered six components of the option. Further information on WFD classification and the approach adopted can be found in *ACWG, WFD: Consistent framework for undertaking no deterioration assessments, Nov 2020*

The outcomes indicated a Level 2 assessment would be required for both the proposed 100MI/d and 50MI/d Walton abstraction elements of the option on the ‘Thames (Egham to Teddington)’ WFD waterbody (ID GB106039023232), because the abstraction related activities presented some risk to WFD status or objectives to this waterbody.

**Table 3.5: WRSE WFD Level 1 assessment outcomes for [REDACTED] 2b option**

<b>Walton 2b 100MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-TFR_LON_CNO_Walton_conv100
<b>Option Description</b>	Walton 2b 100MI/d option. Abstraction of raw water at [REDACTED] to new [REDACTED] 2 treatment works and then to [REDACTED]
<b>Number of waterbodies passing WFD assessment</b>	7
<b>Waterbodies passing WFD assessment</b>	GB106039017060: The Moat at Egham GB106039017070: Chertsey Bourne (Virginia Water to Chertsey) GB106039023231: Thames (Cookham to Egham) GB106039023090: Colne (Confluence with Chess to River Thames) GB106039023010: Colne Brook GB106039023080: Alderbourne GB106039023070: Pinn
<b>Number of waterbodies requiring further WFD assessment</b>	1
<b>Waterbodies requiring further WFD assessment</b>	GB106039023232: Thames (Egham to Teddington)
<b>Walton 2b 50MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-TFR_LON_CNO [REDACTED] conv50
<b>Option Description</b>	Walton 2b 50MI/d option. Abstraction of raw water at [REDACTED] to new [REDACTED] 2 treatment works and then to [REDACTED]
<b>Number of waterbodies passing WFD assessment</b>	7
<b>Waterbodies passing WFD assessment</b>	GB106039017060: The Moat at Egham GB106039017070: Chertsey Bourne (Virginia Water to Chertsey) GB106039023231: Thames (Cookham to Egham) GB106039023090: Colne (Confluence with Chess to River Thames) GB106039023010: Colne Brook GB106039023080: Alderbourne GB106039023070: Pinn
<b>Number of waterbodies requiring further WFD assessment</b>	1
<b>Waterbodies requiring further WFD assessment</b>	GB106039023232: Thames (Egham to Teddington);
<b>New [REDACTED] 2 WTW 50MI/d Phase 1</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-ROC_WT1_CNO [REDACTED]_2_wtw

<b>Option Description</b>	New [REDACTED] 2 WTW 50MI/d Phase 1
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>New [REDACTED] 2 WTW 50MI/d Phase 2</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-ROC W2 ALL [REDACTED] 2 wtw 50p2
<b>Option Description</b>	New [REDACTED] 2 WTW 50MI/d Phase 2
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>[REDACTED] to [REDACTED] 100MI/d</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-TFR AZ4 CNO [REDACTED] conv100
<b>Option Description</b>	[REDACTED] to [REDACTED] 100MI/d
<b>Number of waterbodies passing WFD assessment</b>	2
<b>Waterbodies passing WFD assessment</b>	GB106039023010: Colne Brook; GB106039023090: Colne (Confluence with Chess to River Thames);
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>[REDACTED] to [REDACTED] 50MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI TFR_AZ4 CNO [REDACTED] conv50
<b>Option Description</b>	[REDACTED] to [REDACTED] 50MI/d
<b>Number of waterbodies passing WFD assessment</b>	2
<b>Waterbodies passing WFD assessment</b>	GB106039023010: Colne Brook GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0

### 3.6 Lower Thames Reservoir Transfer 2a

The WRSE Stage 1 WFD assessment covered six components of the option. The outcomes indicated no further assessment would be necessary for the option, because the types of activities do not present a risk to WFD status or objectives for any waterbodies. Further information on WFD classification and the approach adopted can be found in *ACWG, WFD: Consistent framework for undertaking no deterioration assessments, Nov 2020*

**Table 3.6: WRSE WFD Level 1 assessment outcomes for Lower Thames Reservoir Transfer 2a option**

<b>Lower Thames Reservoir Transfer 2a 100MI/d</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-TFR SWX CNO ltr 2a conv100
<b>Option Description</b>	Lower Thames Reservoir Transfer 2a 100MI/d option Transfer direct from [REDACTED] to treatment works at [REDACTED] and then to [REDACTED].
<b>Number of waterbodies passing WFD assessment</b>	4

<b>Waterbodies passing WFD assessment</b>	GB106039023010: Colne Brook GB106039023090: Colne (Confluence with Chess to River Thames) GB106039023070: Pinn GB106039023080: Alderbourne
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>Lower Thames Reservoir Transfer 2a 50MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI TFR_SWX_CNO ltr 2a_conv50
<b>Option Description</b>	Lower Thames Reservoir Transfer 2a 50MI/d option. Transfer direct from Thames owned reservoir to treatment works at [REDACTED] and then to [REDACTED] SR
<b>Number of waterbodies passing WFD assessment</b>	4
<b>Waterbodies passing WFD assessment</b>	GB106039023010: Colne Brook GB106039023090: Colne (Confluence with Chess to River Thames) GB106039023070: Pinn GB106039023080: Alderbourne
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>New [REDACTED] 2 WTW 50MI/d Phase 1</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-ROC WT1 CNO [REDACTED] 2 wtw
<b>Option Description</b>	New [REDACTED] 2 WTW 50MI/d Phase 1
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>New [REDACTED] 2 WTW 50MI/d Phase 2</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI-ROC_WT2_ALL [REDACTED] 2_wtw_50p2
<b>Option Description</b>	New [REDACTED] 2 WTW 50MI/d Phase 2
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>[REDACTED] to [REDACTED] 100MI/d</b>	
<b>WRSE Option ID</b>	AFW_AZ4_HI TFR_AZ4 CNO [REDACTED]_to_hfld_conv100
<b>Option Description</b>	[REDACTED] to [REDACTED] 100MI/d
<b>Number of waterbodies passing WFD assessment</b>	2
<b>Waterbodies passing WFD assessment</b>	GB106039023010: Colne Brook GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0
<b>[REDACTED] to [REDACTED] 50MI/d</b>	
<b>WRSE Option ID</b>	AFW AZ4 HI-TFR AZ4 CNO [REDACTED] conv50
<b>Option Description</b>	[REDACTED] to [REDACTED] 50MI/d
<b>Number of waterbodies passing WFD assessment</b>	2

<b>Waterbodies passing WFD assessment</b>	GB106039023010: Colne Brook GB106039023090: Colne (Confluence with Chess to River Thames)
<b>Number of waterbodies requiring further WFD assessment</b>	0

### 3.7 Beckton Reuse Indirect

The WRSE Stage 1 WFD assessment covered four components of the option. The outcomes indicated no further assessment would be necessary for the option, because the types of activities do not present a risk to WFD status or objectives for any waterbodies. Further information on WFD classification and the approach adopted can be found in *ACWG, WFD: Consistent framework for undertaking no deterioration assessments, Nov 2020*.

**Table 3.7: WRSE WFD Level 1 assessment outcomes for Beckton Reuse Indirect option**

Beckton Reuse Indirect 100MI/d	
<b>WRSE Option ID</b>	AFW_AZ3_HI-TFR_LON_CNO_beckton_conv100
<b>Option Description</b>	Indirect transfer of Beckton reuse water from [REDACTED] to [REDACTED] Treatment works (New site) to the [REDACTED] Beckton 100MI/d option.
<b>Number of waterbodies passing WFD assessment</b>	4
<b>Waterbodies passing WFD assessment</b>	GB106039029850: Colne (upper east arm including Mimshall Brook) GB106038033180: Turkey Brook and Cuffley Brook GB106038033200: Small River Lee (and tributaries) GB106038027950: Lea Navigation Enfield Lock to Tottenham Locks
<b>Number of waterbodies requiring further WFD assessment</b>	0
Beckton Reuse Indirect 50MI/d	
<b>WRSE Option ID</b>	AFW_AZ3_HI-TFR_LON_CNO_beckton_conv50
<b>Option Description</b>	Indirect transfer of Beckton reuse water from [REDACTED] to [REDACTED] Treatment works (New site) to the [REDACTED] Beckton 50MI/d option.
<b>Number of waterbodies passing WFD assessment</b>	4
<b>Waterbodies passing WFD assessment</b>	GB106039029850: Colne (upper east arm including Mimshall Brook) GB106038033180: Turkey Brook and Cuffley Brook GB106038033200: Small River Lee (and tributaries) GB106038077851: Lea Navigation (Fieldes Weir to Enfield Lock)
<b>Number of waterbodies requiring further WFD assessment</b>	0
New [REDACTED] WTW 50MI/d Phase 1	
<b>WRSE Option ID</b>	AFW_AZ3_HI ROC_WT1_CNO [REDACTED] wtw
<b>Option Description</b>	New [REDACTED] WTW 50MI/d Phase 1
<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039029850: Colne (upper east arm including Mimshall Brook)
<b>Number of waterbodies requiring further WFD assessment</b>	0
New [REDACTED] WTW 50MI/d Phase 2	
<b>WRSE Option ID</b>	AFW_AZ3_HI-ROC_WT2_ALL [REDACTED] wtw 50p2
<b>Option Description</b>	New [REDACTED] WTW 50MI/d Phase 2

<b>Number of waterbodies passing WFD assessment</b>	1
<b>Waterbodies passing WFD assessment</b>	GB106039029850: Colne (upper east arm including Mimshall Brook)
<b>Number of waterbodies requiring further WFD assessment</b>	0

The Level 1 WFD assessment completed for Gate 1 by WRSE indicated that a number of options are anticipated to have very low risks of being non compliant with WFD objectives, and do not require further assessment:

- Sunnymeads 1
- Sunnymeads 2a
- Lower Thames Reservoir Transfer 2a
- Beckton Reuse Indirect

The Level 1 WFD assessment identified the need to undertake Level 2 WFD assessments for the below options, due to the potential for some WFD effects related to new abstraction infrastructure or the operation of abstraction directly from the waterbody:

- Maidenhead
- Teddington DRA
- Walton 2b

DRAFT



## 4 Level 2 Water Framework Directive assessments

The second stage of WFD assessment has been completed for T2AT SRO options that were screened in at Level 1. Further information on WFD classification and the approach adopted can be found in *ACWG, WFD: Consistent framework for undertaking no deterioration assessments, Nov 2020*.

Section **Error! Reference source not found.** to Section 4.3 provide an overview of the Level 2 WFD assessments undertaken for Maidenhead, Teddington DRA and Walton 2b. Section 4.4 provides a summary table for each option assessed.

### 4.1 Maidenhead

The Level 2 WFD assessment identified possible deterioration risks to fish, invertebrates, hydrological regime, dissolved oxygen and phosphate. These are primarily due to a potential risk of reduced flow due to increased abstraction, and the additional intake structure required. It also identified potential impediments to meeting Good Ecological Status, if the hydrological regime of the waterbody was affected to the extent that phosphate concentrations could increase, as this element is currently below good. A summary of the Level 2 WFD assessment is included in Table 4.1 and detailed outputs are presented in Appendix B.

### 4.2 Teddington DRA

The Level 2 WFD assessment identified possible deterioration risks to fish, macrophytes and phytobenthos, hydrological regime, dissolved oxygen and phosphate. These are primarily due to the potential for reduced flow due to increased abstraction and the additional intake structure required, although it is noted that the impacts may be spatially limited when considered at the scale of the waterbody given the location at the downstream extent/boundary. It also identified potential impediments to meeting Good Ecological Status, as the hydrological regime of the waterbody does not support good status, due in part to changes in natural flow of the waterbody attributed to water industry activities. A summary of the Level 2 WFD assessment is included in Table 4.2 and detailed outputs are presented in Appendix B.

### 4.3 Walton 2b

The Level 2 WFD assessment identified possible deterioration risks to fish, macrophytes and phytobenthos, hydrological regime, dissolved oxygen and phosphate. These are primarily due to the potential for reduced flow due to increased abstraction. It also identified potential impediments to meeting Good Ecological Status, as the hydrological regime of the waterbody does not support good status, due in part to changes in natural flow of the waterbody attributed to water industry activities. A summary of the Level 2 WFD assessment is included in Table 4.3 and detailed outputs are presented in Appendix B.

### 4.4 Summary tables

Summary tables of the Level 2 WFD outcomes are provided below and detailed outputs are presented in Appendix B.

**Table 4.1: Maidenhead (50MI/d and 100MI/d options) Level 2 WFD summary**

Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Mitigation measures	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Further comments
GB106039023233	Thames (Reading to Cookham)	Low	Moderate	<p>Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for T2AT and other prospective schemes (e.g. macrophyte and fish surveys).</p> <p>Detailed hydrological assessment of the impacts of 50 or 100MI/d abstractions on water quality / concentration of key physicochemical parameters.</p> <p>Further information about option.</p>	<p>Fish and eel screening at new intake.</p> <p>Abstraction conditions to be set to minimise changes to hydrological regime that could cause deterioration of biological and physicochemical WFD elements.</p>	Possible	Possible	No	<p>100MI/d option potentially higher risk if hydrological change more pronounced due to greater abstracted volume.</p> <p>T2AT SRO assumes additional source water within Thames Water catchment which can be transferred into Affinity Water catchment. If this is the case, the hydrological effects identified at this stage may be precautionary.</p>

**Table 4.2: Teddington DRA (50MI/d and 100MI/d options) Level 2 WFD summary**

Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Mitigation measures	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Further comments
GB106039023232	Thames (Egham to Teddington)	Low	Moderate	<p>Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for T2AT and other prospective schemes (e.g. macrophyte and fish surveys).</p> <p>Detailed hydrological assessment of the impacts of 50 or 100MI/d abstractions on water quality / concentration of key physicochemical parameters.</p> <p>Further information about options.</p>	<p>Fish and eel screening at new intake.</p> <p>Abstraction conditions to be set to minimise changes to hydrological regime that could cause deterioration of biological and physicochemical WFD elements.</p>	Possible	Possible	No	<p>100MI/d option potentially higher risk if hydrological change more pronounced due to greater abstracted volume.</p> <p>Option relies on delivery of London Reuse SRO [REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>The effects of the London Reuse SRO have not been assessed in this WFD stage.</p>

**Table 4.3: Walton 2b (50MI/d and 100MI/d options) Level 2 WFD summary**

Waterbody ID	Waterbody Name	Confidence in WFD data	Confidence in option design	Requirements to improve confidence	Mitigation measures	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Further comments
GB106039023232	Thames (Egham to Teddington)	Low	Moderate	<p>Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for T2AT and other prospective schemes (e.g. macrophyte and fish surveys).</p> <p>Detailed hydrological assessment of the impacts of 50 or 100MI/d abstractions on water quality / concentration of key physicochemical parameters.</p> <p>Further information about options.</p>	<p>Fish and eel screening at new intake.</p> <p>Abstraction conditions to be set to minimise changes to hydrological regime that could cause deterioration of biological and physicochemical WFD elements.</p>	Possible	Possible	No	<p>100MI/d option potentially higher risk if hydrological change more pronounced due to greater abstracted volume.</p> <p>T2AT SRO assumes additional source water within Thames Water catchment which can be transferred into Affinity Water catchment. If this is the case, the hydrological effects identified at this stage may be precautionary.</p>

## 5 Conclusions

### 5.1 Summary

For the T2AT scheme, seven distinct options have been subject to a WFD assessment.

The Level 1 WFD assessment completed for Gate 1 by WRSE indicated that a number of options are anticipated to have very low risks of being non-compliant with WFD objectives, and do not require further assessment:

- Sunnymeads 1
- Sunnymeads 2a
- Lower Thames Reservoir Transfer 2a
- Beckton Reuse Indirect

Level 2 WFD assessments were completed for components of the below options:

- Maidenhead
- Teddington DRA
- Walton 2b

The findings indicate that there are precautionary WFD compliance risks associated primarily with the operation of either 50MI/d or 100MI/d additional/new abstractions (see summary provided in Section 4.4). The potential hydrological effects could conflict with achieving WFD status objectives. This is particularly the case where hydrology/river flow is an existing limiting factor, recorded in WFD baseline data as a 'reason for not achieving good'. The potential biological effects, particularly on fish, and physico-chemical changes (for example, reduced dilution) would require further assessment to improve certainty of the scale of effects as outlined in Section 5.2.

For new or modified intakes, it is recognised that appropriate fish and eel screening would be required to prevent entrainment. At Gate 1, this has been considered as likely mitigation, but moderate/amber risks have been maintained until option designs and assessments are further progressed.

### 5.2 Further assessment

Subject to their progression through the approvals process, further WFD assessment would be required for the following options, to improve the certainty of the levels of WFD risk outlined in the Gate 1 WFD Level 2 assessments:

- Maidenhead
- Teddington DRA
- Walton 2b

Areas for future focus include:

- Consultation with the Environment Agency to present and discuss key WFD risks and proposed approach to improving certainty of assessments;
- Collation and review of Heavily Modified Waterbody (HMWB) measures information from the Environment Agency for inclusion into the assessment of potential impediment to obtaining Good Ecological Potential (GEP);

- Collation and review of detailed baseline data concerning WFD biological, physicochemical and hydromorphological elements identified as being at yellow, amber, or red risk in the Level 2 assessments. This may include existing Environment Agency and Thames Water long term WFD and water quality monitoring data within the relevant waterbodies, and targeted baseline surveys being undertaken specifically for the SRO assessments;
- Hydrological / water balance assessment of the scale of change for either 50MI/d or 100MI/d abstractions on the River Thames in relation to gauged flows;
- Development of a conceptual model linking together how potential hydrological changes could influence water quality and the sensitivity of aquatic communities to those changes. This will include a diagrammatic/visual presentation of linkages between abstraction impacts and the direct and indirect effects on physico-chemical and biological WFD status elements, indicating thresholds of WFD classes or tolerance to change. This step would aid consultation and discussion with stakeholders and the requirement for/scoping of any detailed modelling;
- Further information on the design and operation of the options;
- Assessment of the combined potential WFD effects/risks of inter-reliant multiple options (where T2AT is reliant on other SROs being delivered);
- Update to Level 2 WFD assessments to incorporate additional information;
- Outlining further work or modelling required to demonstrate compliance into Gate 3.

It is noted that there may be potential changes to WFD-related legislation related to Britain's exit from the European Union (EU). The EU WFD legislation is transposed in England and Wales by *The Water Environment (WFD) (England and Wales) Regulations 2017*<sup>1</sup>. The Cycle 3 River Basin Management Plans (RBMPs) are also due to be published in 2021, which may bring about changes in the baseline status and objectives for waterbodies. Where necessary, changes will need to be accounted for in updates to the WFD assessments at each Gate stage.

---

<sup>1</sup> <https://www.legislation.gov.uk/uksi/2017/407/made>

## A. WRSE output tables

The WRSE WFD outputs are available on the [REDACTED]  
[REDACTED]

DRAFT

## B. Further assessment output tables



DRAFT



