Thames Water

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T2AT

Supporting Document E: Procurement Strategy

Notice

Position Statement

- This document has been produced as the part of the process set out by RAPID for the development of the Strategic Resource Options (SROs). This is a regulatory gated process allowing there to be control and appropriate scrutiny on the activities that are undertaken by the water companies to investigate and develop efficient solutions on behalf of customers to meet future drought resilience challenges.

- This report forms part of suite of documents that make up the 'Gate 2 submission.' That submission details all the work undertaken by Thames Water and Affinity Water in the ongoing development of the proposed SROs. The intention of this stage is to provide RAPID with an update on the concept design, feasibility, cost estimates and programme for the schemes, allowing decisions to be made on their progress and future funding requirements.

- Should a scheme be selected and confirmed in the companies' final Water Resources Management Plan, in most cases it would need to enter a separate process to gain permission to build and run the final solution. That could be through either the Town and Country Planning Act 1990 or the Planning Act 2008 development consent order process. Both options require the designs to be fully appraised and in most cases an environmental statement to be produced. Where required that statement sets out the likely environmental impacts and what mitigation is required.

- Community and stakeholder engagement is crucial to the development of the SROs. Some high level activity has been undertaken to date. Much more detailed community engagement and formal consultation is required on all the schemes at the appropriate point. Before applying for permission Thames Water and Affinity Water will need to demonstrate that they have presented information about the proposals to the community, gathered feedback and considered the views of stakeholders. We will have regard to that feedback and, where possible, make changes to the designs as a result.

- The SROs are at a very early stage of development, despite some options having been considered for several years. The details set out in the Gate 2 documents are still at a formative stage and consideration should be given to that when reviewing the proposals. They are for the purposes of allocating further funding not seeking permission.

Disclaimer

This document has been written in line with the requirements of the RAPID Gate 2 Guidance and to comply with the regulatory process pursuant to Thames Water's and Affinity Water's statutory duties. The information presented relates to material or data which is still in the course of completion. Should the solution presented in this document be taken forward, Thames Water and Affinity Water will be subject to the statutory duties pursuant to the necessary consenting process, including environmental assessment and consultation as required. This document should be read with those duties in mind.

GATE 2 PROCUREMENT STRATEGY REPORT FOR THAMES TO AFFINITY TRANSFER (T2AT)

13 October 2022

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Contents

Confidentiality

The content of this document relates to material or data that is still in the course of completion in travel towards future submissions for RAPID governance gateways or future consent applications; and should not be relied upon at this stage of development. We continue to develop our thinking and our approach to the issues raised in the document in preparation for future regulatory submissions.

This document may be referred to by RAPID in support of RAPID's review of the Gate 2 submission. The document may contain sensitive information and is not to be published or shared with third parties independently.

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Purpose and maturity of this document

This document has been produced as the part of the process set out by RAPID for the development of the Strategic Resource Options (SROs). This is a regulatory gated process allowing there to be control and appropriate scrutiny on the activities that are undertaken by the water companies to investigate and develop efficient solutions on behalf of customers to meet future drought resilience challenges.

This report forms part of suite of documents that make up the 'Gate 2 submission.' That submission details all the work undertaken by TWUL and Affinity Water in the ongoing development of the proposed SRO. The intention at this stage is to provide RAPID with an update on the concept design, feasibility, cost estimates and programme for the schemes, allowing decisions to be made on their progress.

Should a scheme be selected and confirmed in the TWUL and Affinity Water final Water Resources Management Plans (WRMPs), in most cases it would need to enter a separate process to gain permission to build and run the final solution. That could be through either the Town and Country Planning Act 1990 or the Planning Act 2008 development consent order process. Both options require the designs to be fully appraised and, in most cases, an environmental statement to be produced. Where required that statement sets out the likely environmental impacts and what mitigation is required.

Community and stakeholder engagement is crucial to the development of the SROs. Some high-level activity has been undertaken to date. Much more detailed community engagement and formal consultation is required on all the schemes at the appropriate point. Before applying for Permission TWUL and/or Affinity Water will need to demonstrate that they have presented information about the proposals to the community, gathered feedback and considered the views of stakeholders. TWUL and/or Affinity Water will have regard to that feedback and, where possible, make changes to the designs as a result.

The SROs are at a very early stage of development, despite some options having been considered for several years. The details set out in the Gate 2 documents are still at a formative stage.

Glossary

Acronym / term	Definition
AMP7	Asset Management Plan 7 - the water sector regulatory period from 2020-2025
AONB	Area of Outstanding Natural Beauty
AWRP	Advanced Water Recycling Plant
BEIS	Department for Business, Energy and Industrial Strategy
CAP	Competitively Appointed Provider (under a DPC arrangement).
Capex	Capital Expenditure – expenditure on fixed assets
CPI-H	Consumer Prices Index including owner occupiers' housing costs (the inflation index used to determine regulated revenues in the UK water sector)
DCO	Development Consent Order
DPC	Direct Procurement for Customers
FY	Financial Year
HARP	Haweswater Aqueduct Resilience Project
IP	Infrastructure Provider (under a SIPR arrangement)
IPA	Infrastructure and Projects Authority
JV	Joint Venture
LER	London Effluent Reuse SRO scheme
MEICA	Mechanical, Electrical, Instrumentation, Control, and Automation
Ml/d	Megalitres per day
OEM	Original equipment manufacturer
OFTO	Offshore transmission owner
Opex	Operating Expenditure – expenditure on operating costs
PR19	Price Review 2019 - the regulatory price review for the AMP7 regulatory cycle in the water sector
RAB	Regulatory Asset Base
RAPID	Regulators' Alliance for the Progression of Infrastructure Development
RCV	Regulatory Capital Value
RO	Reverse osmosis
RY	Regulatory Year
SESRO	South East Strategic Reservoir Option
SIPR	Specified Infrastructure Projects Regime
SoS	Secretary of State
SRO	Strategic Resource Options
STT	River Severn to River Thames Transfer SRO scheme
T2AT	Thames to Affinity Transfer SRO scheme
T2ST	Thames to Southern Transfer SRO scheme
TLT	Thames Lee Tunnel
Totex	Total Expenditure (the sum of Operating and Capital expenditure)
TTT	Thames Tideway Tunnel
TWUL	Thames Water Utilities Limited
UK	United Kingdom
VfM	Value for money
WACC	Weighted Average Cost of Capital
WRMP	Water Resources Management Plan

Acronym / term	Definition
WRSE	Water Resources South East (an alliance of the six water companies that cover the South East region of England, that develops the Regional Plan)
WSR	Water Supply Reservoir
WTW	Water Treatment Works

1 Executive Summary

This document outlines the Gate 2 Procurement Strategy for both of the Thames to Affinity Transfer (T2AT) schemes, to support the Gate 2 Report for submission to the Regulators' Alliance for Progressing Infrastructure Development (RAPID).

There are two potential Strategic Resource Option (SRO) schemes for T2AT:

1. Lower Thames Reservoir; and
2. Beckton Reuse Indirect.

The Gate 1 assessment recommended that both schemes should advance to Gate 2 for further assessment and refinement to inform the WRSE Regional Plan, which indicates which of these schemes will be progressed, and on what timescales. We understand that the most recent Regional Plan indicates that:

- The Lower Thames Reservoir scheme is required with an in-service date of approximately 2040, and
- The Beckton Reuse Indirect scheme is not selected in the preferred plan (we understand that because of this TWUL and Affinity Water do not propose to continue development of this scheme – however, it remains an alternative should the Lower Thames Reservoir or Grand Union Canal[1] schemes become non-viable in future).

The Lower Thames Reservoir and Beckton Reuse Indirect schemes have totex[2,3] of approximately £499m and £503m respectively, construction periods of approximately 4 years each, and an operating life of around 100 years based on the lifetime of the pipelines, the dominant contributor to the overall scheme cost. This means that selecting the appropriate delivery route is important to achieving the best outcome for customers and other stakeholders.

Each T2AT scheme could be delivered under a broad range of possible procurement models for delivery and operation. These include:

1. In-house delivery;
2. Competitively tendered models:
    a. Direct Procurement for Customers (DPC) model[4]; and
    b. Specified Infrastructure Projects Regulations (SIPR) model.

This report builds upon the Gate 1 conclusions, by undertaking a more detailed assessment of each scheme in relation to Ofwat's DPC size, discreteness and value-for-money (VfM) criteria. We have also assessed whether each scheme meets the criteria for SIPR procurement, and developed a procurement plan and commercial strategy that aligns with the wider programme and reflects the latest WRSE modelling, as required under RAPID's Gate 2 guidance.

This report also considers the risks that different procurement approaches could pose to the implementation timescales set out in the draft WRSE Regional Plan. The conclusions of our assessment are set out in Table 1 below.

In summary, this Gate 2 procurement strategy concludes that competitively tendered models such as DPC could offer better value for money than in-house delivery in some circumstances. However, for this to be true, DPC models would need to offer significant levels of capex and opex savings (c.10-15%) and comparable finance costs to In-house delivery. Given the relatively low complexity of construction for both T2AT schemes, it is unclear whether these opex and capex savings are realistic. In addition, the 'standard form' DPC model displays some characteristics (for example, no revenue during construction) that indicate that low finance costs may be challenging to achieve. We recommend that market testing, and the exploration of 'enhanced' DPC models[5] that are more likely to drive low finance costs, is undertaken post-Gate 2 to validate whether the DPC model does drive better value for money than in-house delivery for the T2AT schemes.

In relation to SIPR, we conclude that neither T2AT scheme passes the current SIPR 'size or complexity'[6] test.

We therefore recommend that DPC delivery be taken forward as the preferred procurement model, pending more value for money assessment post-Gate 2, as set out above.

[1] A separate SRO scheme being developed by Affinity Water and Severn Trent Water.
[2] Over 25 years, based on the 100 Ml/d design options for each scheme.
[3] All costs in this report are presented in a 20/21 base year, unless otherwise specified.
[4] For the avoidance of doubt, this report is based on the DPC model characteristics as set out by Ofwat at PR19, which we refer to as the 'Standard Form' DPC model.
[5] Including modifications to the standard DPC model, for example allowing milestone payments during construction.
[6] That the '*project is of a size or complexity that threatens the incumbent undertaker's ability to provide services for its customers*'

Table 1: Summary of Gate 2 assessment for each T2AT scheme

		Lower Thames Reservoir	Beckton Reuse Indirect
DPC	Size	With capex alone of over £300m, both T2AT schemes clearly meet the DPC 'size' criteria as set out at PR19, as well as that set out in the draft guidance for PR24.	
	Discreteness	Both T2AT options pass the discreteness test, as they have well understood, relatively minor interactions with TWUL's and Affinity Water's broader water systems. Some discreteness risks have been identified, primarily around contribution to statutory obligations, interactions with the network (potable water is discharged to a service reservoir), contribution to supply capacity where the volume of contribution is unpredictable (drought related) and that the implications of operational failure could result in unwholesome water entering supply, however we expect these aspects to be able to managed through a DPC contract.	
	Implementation timescales	There are approximately four years from the planned completion of Gate 3 (in late 2029) to the required date of CAP award in early 2034. Therefore, we conclude that there are no material risks relating to the development and procurement of a DPC model within the timescales required.	N/A – scheme not currently selected in the WRSE Regional Plan, and it is therefore unclear when the scheme would be required to be in-service[7].
	Value for money	Both schemes exhibit characteristics that may reduce the opportunity for the DPC model to deliver the comparable cost of finance and significant capex and opex efficiencies needed to drive a lower cost to customers than in-house delivery. Opex is only a small proportion (12-17%) of totex over a typical DPC contract duration period (i.e. the first c.25 years). Therefore, for both options the majority of savings delivered under DPC would need to come from capex, a large proportion of which will be difficult for the CAP to influence at the point of detailed design commencement (for example land acquisitions which accounts for over one third of capex). However, a DPC CAP there could be opportunities to significantly reduce capex and opex by taking a different approach to scheme risk, particularly in trade-offs between availability risk and ongoing opex and resultant changes to scheme design (for example, reducing the pipe diameter and/or operating a 'cold start' regime instead of an ongoing sweetening flow). Further investigation, including detailed commercial risk analysis for the scheme and market engagement to validate the achievability of opex and capex savings and competitive finance costs, supported by more detailed modelling of the likely cost-to-customers, is recommended to conclusively determine whether DPC offers better value for money than in-house delivery.	
SIPR	Size and complexity	Neither scheme is considered large or complex enough to satisfy the SIPR eligibility test i.e. the schemes are not of a size or complexity that threatens the incumbent undertaker's ability to provide services for its customers, whether the incumbent undertaker is considered to be either TWUL or Affinity Water. However, Ofwat has made a recommendation[8] to the Secretary of State for Business, Energy and Industrial Strategy (BEIS) that the 'size or complexity' test be removed from SIPR legislation, so that SIPR can be applied to a broader range of schemes where a licensed approach would offer value for money. Should this recommendation be taken forward, we recommend re-assessing SIPR's suitability for the T2AT schemes accordingly.	

RAG rating definitions	
	Procurement model does not satisfy the criteria and should be dis-counted from consideration post-Gate 2.
	Procurement model satisfies the criteria based on information available at this stage, however there are some challenges to its viability that need further work to conclusively resolve.
	Procurement model satisfies the criteria.

[7] Note that previous iterations of WRSE regional modelling indicated an earliest required date of CAP award in early 2029. This provided approximately four years from the planned completion of Gate 3 (in late 2024) to CAP award, and therefore would introduce no material risks relating to the development and procurement of a DPC model within the timescales required.

[8] Competition stocktake report final (ofwat.gov.uk)

Further detail on our conclusions is included below:

DPC

- Size: With capex alone over £300m, both T2AT schemes clearly meet the DPC 'size' criteria as set out at PR19, as well as that set out in the draft guidance for PR24.
- Discreteness: The two T2AT schemes are each relatively standalone potable water treatment and transfer asset, with well understood, relatively straightforward interactions with Affinity Water's (and TWUL's) broader water supply system. As potable water assets that supply directly into the distribution network, both schemes materially contribute to Affinity Water's statutory obligations, however we expect these obligations to be relatively straightforward to codify and manage contractually. Both schemes pass the DPC 'discreteness' criteria.
- To inform our view of value for money, we have also undertaken initial modelling, using Ofwat's PR19 assumptions, which indicates that DPC has the potential to deliver lower costs to consumers than in-house delivery, *if* DPC delivery can achieve a cost-of-capital at the lower end of the assumed range (WACC of c.2.5%), or significant capex and opex efficiencies (greater than 10%).
- It is not clear how achievable these high levels of efficiency over and above the in-house delivery model are. Assuming delivery of a 'like-for-like' design, high levels of efficiency are likely to be challenging given that the approach to construction of most elements of this scheme (a new water treatment works and laying of a pipeline) is established and mature, and relatively typical for a large water company. On the other hand, there may be opportunities for a DPC provider to take a different view of whole life cost and risk trade-offs, and therefore make different design decisions than a water company would. For example, selecting an alternative design option with a smaller pipeline diameter which would reduce the sweetening volume flow, treatment opex and capex for the pipeline, but increase pumping costs during full flow. These opportunities should be tested as part of market engagement post-Gate 2 (recognising that some opportunities may have been explored and discounted already by TWUL and Affinity Water), to determine the achievability of Ofwat's assumed 10-15% efficiencies under DPC, specifically for the T2AT schemes.
- In summary, our assessment supports the Gate 1 conclusion, that T2AT is potentially suitable for competitive procurement through DPC, dependent on further exploration of value for money benefits. Further work (including market testing and modelling) is required to validate DPC value for money assumptions, as part of post-Gate 2 development. In particular, this will focus on engaging with the construction supply chain and investor landscape to better understand how key scheme risks are likely to be priced under DPC, how a DPC deal would be structured to attract the most competitive finance costs (including enhancements to the 'standard form DPC model as highlighted above), and the opportunity for driving greater T2AT scheme-specific capex, opex, and whole-life-cost efficiencies. This insight will then need to be incorporated into in-depth financial modelling to understand whether DPC models are likely to drive lower costs to customers compared to the in-house delivery route, and if so, to further develop the preferred DPC model for each T2AT scheme.

SIPR

- We do not consider that either T2AT scheme is large or complex enough to satisfy the SIPR criteria that requires schemes to be of a 'size or complexity that threatens the incumbent undertaker's ability to provide services for its customers'.
- Both T2AT schemes have assets located in both TWUL's and Affinity Water's regions, meaning that it is unclear which company would be the 'incumbent undertaker' in the SIPR model. We have therefore considered the 'worst-case' scenario in which each scheme is delivered in its entirety by either TWUL or Affinity Water. We conclude that either TWUL or Affinity Water could deliver either scheme without putting existing services at risk. Our analysis indicates that the T2AT schemes would be financeable by either company, and while large (particularly in relation to Affinity Water), the T2AT schemes are significantly smaller by comparison than the Thames Tideway Tunnel[9] project (for example, each T2AT scheme's value represents c.21% of Affinity Water's AMP7 closing RCV, and c.2% of TWUL's AMP7 closing RCV, in comparison to the Thames Tideway Tunnel which represented 30% of TWUL's RCV). Further, the T2AT schemes do not display the same magnitude of construction, management or regulatory risks used to justify SIPR for the Thames Tideway Tunnel.
- Therefore, under current legislation, we do not consider either T2AT scheme to be applicable for SIPR specification and we do not recommend considering SIPR further beyond Gate 2, given current regulations. However, Ofwat has made a recommendation[10] to the Secretary of State for BEIS that the 'size or complexity' test be removed from SIPR legislation, so that SIPR can be applied to a broader range of schemes where a licensed approach would offer value for money. Should these recommendations be accepted and SIPR legislation modified accordingly, we recommend a reassessment of the T2AT schemes against the revised applicability criteria.

[9] Thames Tideway Tunnel is the only scheme specified under SIPR to date.
[10] Competition stocktake report final (ofwat.gov.uk)

Promoter assessment

- As Affinity Water customers are the main water resource beneficiaries of the T2AT schemes, we understand that Affinity Water will take the lead role in T2AT Promotion post-Gate 2. We recommend that Affinity Water continues to consult with TWUL (and other relevant stakeholders) throughout the ongoing development of the scheme, particularly alongside the development of the South Eastern Strategic Reservoir Option (SESRO) as the potential source for the T2AT schemes.

Operating and commercial arrangements

- The key driver for the T2AT schemes is to provide water supply resilience for Affinity Water customers in times of drought. Both schemes are anticipated to deliver a maximum volume of up to 100 Ml/day at full flow during drought conditions (expected to be a few months every 2-3 years), and operate a 'sweetening' flow of approximately 25% of this volume for the rest of the time. Therefore, its operational requirement is driven by Affinity Water – including both regular, 'business-as-usual' flow and additional flow during drought conditions. Therefore, we recommend that under all but the most extreme conditions, the operation of the scheme is defined and controlled by Affinity Water.
- The ultimate water source for the Lower Thames Reservoir scheme is expected to be either the SESRO or STT schemes, or a combination of both. The capacity of these schemes will be shared with TWUL and Southern Water. Operating arrangements for SESRO and STT are set out in the SESRO and STT Gate 2 Procurement Strategy Reports respectively. During extreme conditions (for example, a more severe than 1 in 500 year drought), there may be a need for the SESRO operator to manage flow through the T2AT scheme to ensure that water resources are most appropriately shared between Southern Water, Affinity Water and TWUL.
- Commercial arrangements for the Lower Thames Reservoir scheme can be broken down into two main elements – arrangements covering the supply and payment for raw water (supplied from SESRO and/or STT), and arrangements covering the Lower Thames Reservoir scheme assets themselves. Commercial arrangements covering the supply and payment for raw water from SESRO and/or STT are likely to include a capacity charge element and a volumetric charge element, with the capacity charge element being divided between TWUL, Affinity Water and Southern Water based mainly on the relative resilience benefits provided to each company. Details of indicative SESRO and STT commercial arrangements are set out in the SESRO and STT Gate 2 Procurement Strategy Reports respectively.
- The water source for the Beckton Reuse Indirect scheme will be the River Lee, but the operation of the scheme is dependent on abstracted water being replaced by recycled water from the Beckton Effluent Reuse option of the London Effluent Reuse SRO. Therefore, commercial arrangements for for the Beckton Reuse Indirect T2AT scheme will include charges for the operation of the Beckton Effluent Reuse scheme.
- Commercial arrangements covering the T2AT assets themselves are relatively straightforward – these assets are created for the benefit of, and as such will be funded solely by, Affinity Water customers.

Risk allocation

- Under a DPC model, we expect the risk allocation to broadly align to the indicative allocation set out in Ofwat's *Direct Procurement for Customers: Technical Review* report (reproduced in Section 6). The T2AT schemes comprise relatively typical water industry assets with little complexity and thus the likely outcome is that this represents relatively low technical risk during construction and operation. Therefore, at this stage we conclude that the CAP and the supply chain should be well-placed and capable of managing these risks.

Forward plan

- We have set out our plan for developing the procurement strategy for the T2AT schemes further through Gate 3, including the Ofwat Control Points B and C. For the Beckton Reuse Indirect scheme, a confirmed procurement strategy is needed relatively quickly to enable delivery to its 2034 in-service date. We therefore recommend that Ofwat 'Control Point B' should be aligned closely to Gate 2 – drawing on the Gate 2 Procurement Strategy to assemble a Strategic Outline Case.
- We also recommend that market engagement with investors and the construction supply chain takes place before Gate 3, to further understand key commercial risks (including how they would be treated and priced under different models) and gain further insight into the potential structure of the DPC model. This would include details of how investors might structure a 'standard form' DPC model (such as gearing), as well as potential enhancements to the standard form DPC (such as offering milestone payments during construction) that might offer improved value-for-money. This should be used to inform more detailed financial modelling to provide robust evidence for the comprehensive value for money assessment required at Control Point C, which would confirm the preferred procurement model and associated plan.

2 Introduction

Ofwat/RAPID requires water companies to consider whether large, discrete water and wastewater projects could be delivered at better value for money for customers by appointing a third party to deliver these projects through a competitive tendering process. The available procurement models for appointment of a third party to design, build, finance and operate (or a subset of those activities) each of these projects are the:

1. Direct Procurement for Customers (DPC) model[11]; and
2. Specified Infrastructure Projects Regulations (SIPR) model.

To assist companies decide the appropriate procurement route to adopt, Ofwat/RAPID has issued guidance to water companies to follow when evaluating whether individual projects should be competitively tendered or not. This guidance sets out a multi-step process, whereby projects proceed through a series of "gates" to determine whether to competitively appoint a third party and the appropriate route for procuring that third party.

TWUL and Affinity Water are considering two potential Strategic Resource Option (SRO) schemes for T2AT (outlined in further detail in Sections 4.1 and 4.2):

1. Lower Thames Reservoir; and
2. Beckton Reuse Indirect.

We understand that the most recent WRSE Regional Plan indicates that:

- The Lower Thames Reservoir scheme is required with an in-service date of approximately 2039-2040, and
- The Beckton Reuse Indirect scheme is not selected in the preferred plan (we understand that because of this TWUL and Affinity Water do not propose to continue development of this scheme – however, it remains an alternative should the Lower Thames Reservoir or Grand Union Canal[12] schemes become non-viable in future).

For the purposes of this report we have considered the earliest likely in-service date for the Lower Thames Reservoir scheme of 2040. While the Beckton Reuse Indirect scheme is unlikely to proceed, we have undertaken an assessment in case it is required as an alternative in the future. We have based this assessment on an in-service date of 2034, as indicated in earlier versions of the WRSE Regional Plan.

The characteristics of each scheme is critical to the decision whether to adopt DPC or SIPR, or to proceed with in-house delivery. Table 2 presents key details on the estimated construction timeline and costs we have used for the assessment of each scheme[13].

Table 2: Construction timeline and project cost estimates used for the assessment of each T2AT scheme

Scheme	Capital expenditure	Fixed opex (per annum)	Variable opex (per annum)	Start detailed design	Begin construction	End construction	Start of operations
Lower Thames Reservoir	£444m	£0.9m	£1.3m	2034	2035	2039	2040
Beckton Reuse Indirect	£453m	£1.0m	£1.0m	2029	2029	2033	2034

Opex is based on the 25% "sweetening flow rate" which represents the operating regime for the majority of the time. The schemes are anticipated to only operate at full flow for c.2-3 months every 2-3 years. We have therefore based our assessment on the 'business-as-usual' operating regime, assuming the sweetening flow only

Background: Gate 1 Assessment

At Gate 1, each T2AT scheme was assessed using the criteria set out by Ofwat for the assessment of DPC suitability (size, 'discreteness' and value-for-money), and using value-for-money and commercial feasibility for alternative models adapted where necessary to assess other models considered. To provide some insight into the value-for-money of different models, a high-level commercial risk and pricing assessment was used.

The assessment against the criteria was then consolidated to provide an overall RAG-rating of the suitability of different models for the T2AT scheme. The summary of the Gate 1 assessment, outlined in Table 3 below, showed

[11] Including the possible application of various Ofwat pre-defined DPC variants (Early, Late, Very Late and Split) to each scheme, or parts of each scheme

[12] A separate SRO scheme being developed by Affinity Water and Severn Trent Water.

[13] Each scheme has been designed and costed to provide either 50 or 100 Ml/d. For the purposes of this report we have used the cost estimates for the 100 Ml/d scheme, as these represent the likely 'worst case'.

that Late/Very Late DPC models, and in-house delivery models were potentially well-suited for delivery of T2AT, based mainly on a very early, high-level assessment of the value for money potential under these models. The Early and Split variants of DPC were considered less suitable, as the transfer of T2AT's planning risks to a third-party provider at this stage of the scheme was considered unlikely to offer value-for-money. Finally, at the time of the Gate 1 Report, the SIPR model was not considered applicable.

Table 3: Summary of the Gate 1 procurement model assessment for T2AT

Procurement Models	Assessment of Procurement Models for T2AT (Gate 1)	Rating (Gate 1)
Typical current models	T2AT is an estimated capital investment significantly greater than £100m, but would be deliverable through traditional procurement routes. It is foreseeable that the function of the pipelines may introduce some challenge in developing the inter-company regulatory, operational, and commercial arrangements due to the interface between the two water companies and the shared use of assets, however, these arrangements are likely to be achievable.	
Early DPC	The assessment concluded that there would need to be significant early involvement from water companies in the early stages of developing this project to enable planning consent. This would be particularly important for overcoming early stakeholder objections, land access/rights, environmental impacts, potential for public enquiry, early design feasibility, and managing public perceptions. Transferring planning risk to a CAP is likely to result in a significant risk premium, reducing value-for-money. It is unclear whether any better capability that the supply chain has over water companies at managing delivery and operational risks for a pipeline will be sufficient to offset the additional planning risk premium.	
Late/Very Late DPC	This scheme may favour a late DPC approach as this would mitigate many of the early planning challenges around such a project. Construction of new pipelines is recognised as a frequent event and well understood process, with a mature supply chain.	
Split DPC	Similar to the early DPC model, the split DPC model would require planning risk to be transferred to the CAP, which is likely to result in a significant risk premium, reducing value-for-money.	
Collaboration JV	Collaboration between water companies through the creation of a Special Purpose Vehicle could 'compartmentalise' scheme risk investment risk and offer some financial protection. It will also enable capability of both water companies to be cooperatively applied, and the flexibility to involve the supply chain where appropriate, through the project life-cycle to overcome the early planning risks through to construction.	
SIPR Model	This would require a licenced service provider which, through the size of the scheme, would need regulatory endorsement. At the time of the Gate 1 report, it was considered unlikely that T2AT would satisfy the SIPR criteria, and therefore this model was not considered feasible.	

RAG rating definitions	
	Major challenges to the viability of the procurement model without obvious, straightforward solutions at this stage
	Minor challenges to the viability of the procurement model without obvious, straightforward solutions at this stage
	No significant challenges to the viability of the procurement model at this stage, or straightforward solutions to challenges are obvious

Our approach and structure of this report

Since Gate 1, Ofwat and HM Government are considering whether the SIPR regime should potentially be modified so that it could be applied to a wider range of projects. Accordingly, while SIPR was not considered applicable at Gate 1, for Gate 2 we have assessed the T2AT schemes' suitability for procurement under SIPR, and whether the T2AT meets the criteria for 'specification' set out in current legislation.

Specifically, to support TWUL's and Affinity Water's Gate 2 application, Jacobs/PA Consulting have been commissioned to undertake the Gate 2 procurement and commercial assessment through the following:

- Undertaking a specific assessment of both T2AT SRO options against In-house, DPC and SIPR models;
- Undertaking a qualitative value-for-money assessment supported by high-level quantitative modelling, to identify the potential value-for-money savings of the DPC model (rated 'green' for suitability at Gate 1);
- Adding further granularity to the viability assessment of different models by evaluating additional criteria including 'Implementation Timescales' and 'Financeability' and dividing 'value-for-money' into two dimensions – 'cost-to-customers' and 'value-to-customers'.

Jacobs/PA Consulting have been asked to simplify the assessment and provide a more focused comparison between in-house delivery and competed delivery models by considering both the 'typical current models' and 'collaboration JV' models considered at Gate 1 within a single 'In-House delivery' model.

To address this scope of work, the remainder of this report is structured as follows:

- **Section 3 – Framework for assessing eligibility for DPC and SIPR:** Describes the criteria against which each T2AT scheme is assessed to decide whether to adopt DPC or SIPR, or to maintain in-house delivery, and the assessment framework and methodology we have used.
- **Section 4 – Assessment of procurement models**: Discusses our assessment of whether the T2AT schemes satisfy the criteria for DPC and SIPR and recommends whether to proceed to Gate 3 or not.
- **Section 5 – Scheme promoter options and operating and commercial arrangements:** Outlines the preferred promoter approach for the schemes, and indicative operating and commercial arrangements.
- **Section 6 – Risk allocation:** setting out the high-level indicative allocation of risks between the undertaker and the contractor for the schemes under the preferred procurement approach.
- **Section 7 – Procurement risks, plan and market engagement:** Key actions to be taken forward beyond Gate 2, including responding to revisions of the WRSE demand requirements, operational constraints, further development of the VfM assessment, and additional market engagement.

3 Framework for assessing eligibility for DPC and SIPR

The eligibility criteria for DPC and SIPR recommended by RAPID are summarised below:

- **Size:** the scheme must be at least £100m totex (based on PR19 guidance – Ofwat's draft PR24 methodology sets the size threshold at £200m totex).
- **Discreteness:** the scheme should be sufficiently discrete from the wider network to support the CAP delivering the contracted outcomes.
- **Value for Money:** DPC should offer the potential to deliver a lower cost to customers (informed by Ofwat's specified assumptions, set out at PR19).

Specific SIPR model assessment criteria:

The criteria for specifying a project under SIPR are set out in The Water Industry (Specified Infrastructure Projects) (English Undertakers) Regulations 2013, as follows:

- *The Secretary of State or the Authority may exercise the power …… if the Secretary of State or the Authority respectively is of the opinion that:*
  - *i. the infrastructure project is of a **size or complexity** that **threatens the incumbent undertaker's ability to provide services for its customers**; and*
  - *ii. specifying the infrastructure project is likely to result in better **value for money** than would be the case if the infrastructure project were not specified, including taking into account:*
    - *i. the charges fixed or likely to be fixed under Chapter 1 of Part 5 of the Act(9) (financial provisions, charges); and*
    - *ii. the powers of the Secretary of State under section 154B of the Act(10) (financial assistance for major works).*

We have used these criteria to assess whether the T2AT schemes are eligible for SIPR specification under current legislation.

We set out below how we have approached assessing whether each scheme meets these criteria or not.

3.1 Size, discreteness, and complexity

Whether a project meets the size criteria for DPC requires calculation of the present value of whole life capex and opex to see if that value exceeds £100m threshold (PR19). We have also considered schemes in relation to the higher £200m threshold set out in draft PR24 guidance.

Whether a project meets the discreteness criteria for DPC requires a more qualitative assessment of various factors, set out in KPMG / Ofwat's 'Direct Procurement for Customers: Technical Review' report[14], including:

1. Stakeholder interactions and statutory obligations;
2. Interactions with the network;
3. Contributions to supply/ capacity and ability to specify outputs; and
4. How well asset and operational failures of the scheme are understood.

We have considered these features when assessing the discreteness of each T2AT scheme.

Whether a project meets the size or complexity criteria for SIPR depends on whether the project "*threatens the incumbent undertaker's ability to provide services for its customers*". We use a similar risk-based approach to that applied for the Thames Tideway Tunnel (TTT) to compare each scheme's 'size or complexity' to that of TTT, the only scheme specified under SIPR to-date. This includes a specific focus on 'scale risk', including an assessment of whether the overall financeability of the incumbent undertaker would be called into question by undertaking the project itself. Both T2AT schemes have assets located both TWUL's and Affinity Water's regions, meaning that it is unclear which company would be the 'incumbent undertaker' in this case. We have therefore considered the 'worst-case' scenario in which each scheme is delivered in its entirety by either TWUL or Affinity Water. To address this issue, we have held discussions with both the Treasury and Finance Teams from TWUL and Affinity Water about the impact of delivering the project in-house on TWUL's and Affinity Water's forecast financeability.

[14] https://www.ofwat.gov.uk/wp-content/uploads/2017/12/DPC-A-technical-review-FINAL_08.12.17.pdf

3.2 Implementation timescales

We have also considered whether there is sufficient time to implement either DPC or SIPR before the scheme's projected in-service date as determined by the draft WRSE Regional Plan. It takes time to set up and run a DPC or SIPR procurement process, so if a scheme is urgently required, a competitive tendering process may put the delivery timescales at risk. To inform our assessment of implementation timescales, we consider the time taken to implement the scheme under each potential procurement model. Based on experience with models similar to DPC, and insight from the Thames Tideway Tunnel and United Utilities' HARP scheme, we assumed a minimum duration of approximately three years to reach CAP award from this point under a DPC model, and approximately three to five years to reach IP award under a SIPR model, starting from confirmation of the preferred procurement model at Gate 3.

3.3 Value for Money

We have assessed VfM through two 'lenses':

- Assessing the 'cost to customers': i.e. the potential impact on customer bills, and
- Water resilience/resource value and broader value: the resilience/resource benefits customers receive from the water asset being able to produce sufficient additional water when required.

To assess the cost to customers, at this stage of scheme development, we have considered how much higher or lower the financing, capex and opex costs would be under DPC and SIPR compared to in-house delivery. We discuss potential opex and capex savings based on an assessment of potential savings for various sub-categories of costs. Our assessment of financing costs is based on high level assumptions, in line with our scope of work. We have not spoken to prospective DPC or SIPR bidders to inform our work at this early stage, so our work is based on desktop analysis, research and discussions with TWUL, Affinity Water and their other advisers.

To assess water resilience/resource value, we have examined the benefits of the scheme to customers through the provision of drought resilience and ongoing water resource supply, and assessed whether there would be a material difference in these benefits under different procurement models.

3.4 Evaluation framework

We have undertaken high level financial modelling of both T2AT schemes to inform our assessment of eligibility for DPC and SIPR, but many of the criteria discussed above can only be assessed qualitatively.

For those criteria we have undertaken a Red-Amber-Green style evaluation, using the definitions below:

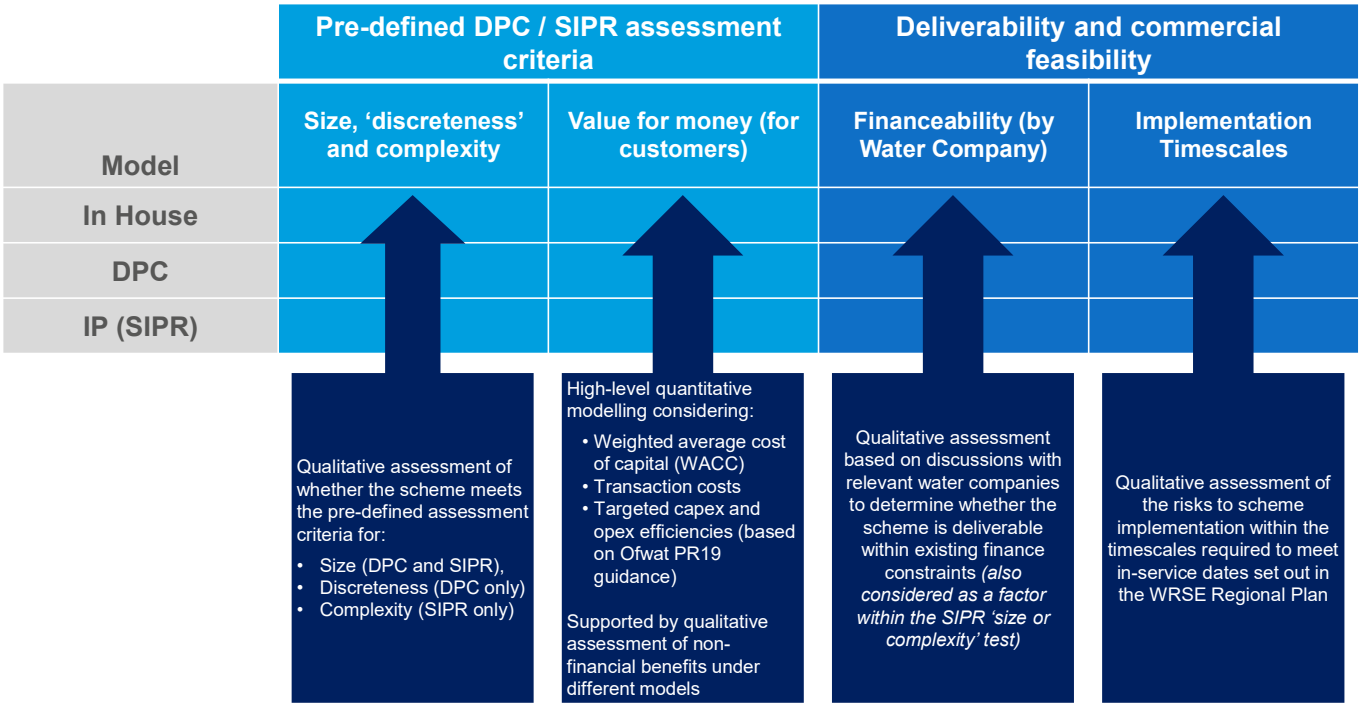
- Red: Procurement model does not satisfy the criteria and should be dis-counted from consideration post-Gate 2.
- Amber: Procurement model satisfies the criteria based on information available at this stage, however there are some challenges to its viability that need further work to conclusively resolve.
- Green: Procurement model satisfies the criteria.

Figure 1 below, which integrates pre-defined assessment criteria for both the DPC[15] and SIPR[16] models with our own defined criteria for deliverability and commercial feasibility, summarises our assessment framework and methodology.

In the following chapters we discuss whether this scheme satisfies the eligibility criteria for DPC and SIPR outlined above using our assessment framework.

[15] As set out in Ofwat's 'Direct Procurement for Customers: Technical Review' report
[16] As defined in the Water Industry (Specified Infrastructure Projects) (English Undertakers) Regulations 2013

Figure 1: Assessment framework for commercial models



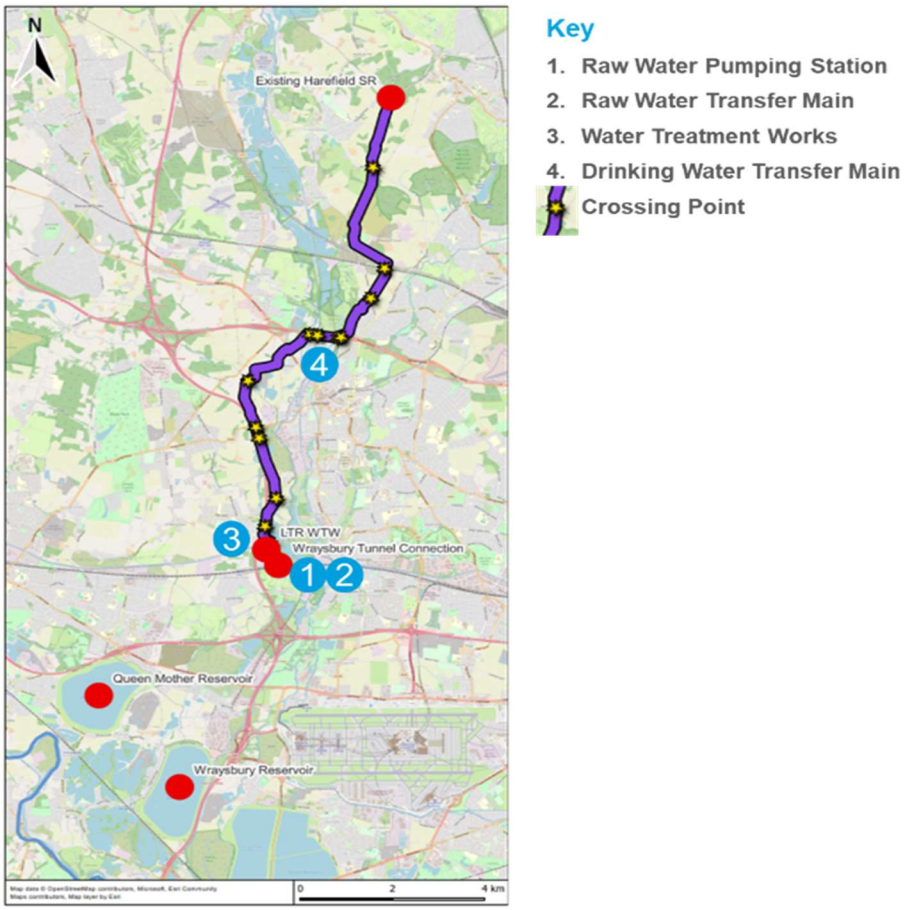
4 Assessment of procurement models

In this section we set our assessment of whether each of the T2AT schemes is eligible for DPC and/or SIPR in turn, starting with the Lower Thames Reservoir and concluding with Beckton Reuse Indirect. Both T2AT schemes provide a transfer of potable water from new water treatment plants from TWUL's London Water Resource Zone to Affinity Water's Central Region.

4.1 Lower Thames Reservoir

This scheme will involve a short transfer main for raw water from the existing Wraysbury tunnel (from the Wraysbury Reservoir) with a connection at Iver water treatment works, a new water treatment works and High Lift Pumping Station to Harefield Service Reservoir. Water will be treated and distributed at a "sweetening flow" of approximately 25% of full capacity under normal conditions, and increase when required, for example during times of drought to support Affinity Water customers. The timing and duration of future full flow requirements depends on future weather conditions and as such is inherently uncertain, however current water resource modelling indicates that the scheme will operate at full flow for a few months approximately every 2 years. Figure 2 provides a schematic of this scheme.

Figure 2: Lower Thames Reservoir scheme



Key elements of this scheme include:

- Source water abstraction point and raw water pumping station at the Wraysbury Tunnel connection (shown as (1) in Figure 2)
- Raw water conveyance from Wraysbury Tunnel connection to new water treatment works (c.500m in length – shown as (2) in Figure 2)
- New water treatment works and High Lift pumping station (shown as (3) in Figure 2)
- Pipeline to Harefield Service Reservoir (c.14km in length) with associated road, rail and river crossings (shown as (4) in Figure 2)

4.1.1 Size, discreteness, and complexity

DPC assessment

In this section we assess this scheme against the key areas outlined in Ofwat's definition of project size and discreteness as set out in their 'Direct Procurement for Customers: Technical Review' report. This assessment covers: i) size; ii) stakeholder interactions and statutory obligations; iii) interactions with the network; iv) contributions

to supply / capacity and ability to specify outputs; and v) asset and operational failures. Our assessment is summarised in the table below.

Table 4: Detail of the Lower Thames Reservoir scheme size and discreteness criteria as measured against Ofwat's 'Direct Procurement for Customers: Technical Review' report

	Size	• Scheme exceeds £100m totex, and therefore meets this requirement
Discreteness	**Stakeholder interactions and statutory obligations**	• The Lower Thames Reservoir scheme js a resilience asset that provides potable water to Affinity Water customers[17] through a continuous 'sweetening flow', with the ability to increase flow during drought conditions to alleviate water supply deficits. Therefore it '*materially contributes towards the appointee meeting statutory obligations*', where the 'appointee' is taken to mean Affinity Water, as it directly impacts Affinity Water's obligations to provide wholesome potable water into the network. For clarity, the scheme involves treatment of water at the upstream end, then transfer of potable water directly into service reservoirs at the downstream end. • These water quality and volume obligations are expected to be able to be written into contractual arrangements between TWUL, Affinity Water and the CAP. • Therefore, these obligations are not a 'blocker' for DPC, but will need to be mitigated through the DPC contract.
	Interactions with the network	• As noted above, potable water will be discharged directly from Lower Thames Reservoir T2AT into service reservoirs at the downstream end of the transfer. Therefore, operations between this scheme and the downstream distribution network will need to be coordinated to manage distribution reservoir levels. • Therefore, Lower Thames Reservoir T2AT has '*Simple or limited, well understood and manageable interactions with the appointees' network*'
	Contributions to supply/ capacity and ability to specify outputs	• Lower Thames Reservoir T2AT is a resilience asset, meaning that full capacity will be needed intermittently, and the exact timing of need is uncertain. Current estimates indicate full capacity will be required for a few months every 2 years. • However, ongoing WSRE water resource modelling will improve the understanding of the demand profile for this scheme, and the operational 'triggers' for its use (for example, water supply shortages) should be relatively straightforward to define and price. • Further, the requirement for ongoing sweetening flows (25%) mitigates the intermittent, irregular nature of asset need, and creates a predictable 'baseload' to make contract requirements easier to define and price.
	Asset and operational failures	• Lower Thames Reservoir T2AT involves the construction and operation of a new water treatment works, transfer pipeline and associated pumping assets. These are typical water industry assets, for which the operational failure risk is well understood and mitigations are well established. • Further, there is a well-developed market and technical supply chains with strong experience of similar project delivery, both in the UK and overseas. This includes delivery of similar assets under DBFOM arrangements (similar to DPC). • In summary – there are no significant asset or operational failure risks inherent in transferring this scheme to a DPC CAP. • Operational failure would expose Affinity Water to water stress (especially during drought conditions), however water supply networks typically have the capability to be rezoned to supply customers from multiple sources, thereby mitigating the risk of temporary operational failure. Furthermore this scheme discharges to a reservoir which provides a time and supply buffer for mitigation actions should the transfer fail.
	Discreteness summary	There are some risks to discreteness against multiple headings, in particular relating to the fact that the Lower Thames Reservoir scheme provides potable water directly into supply, the detailed demand profile will be challenging to define, and failure would result in water stress. However, these risks are manageable and typical for the water sector, and able to be mitigated through a DPC contract. Therefore, **we conclude that the Lower Thames Reservoir scheme passes the discreteness test.**

[17] Thames Water customers are not expected to benefit from this scheme.

SIPR Assessment

As set out in Section 3, a key criteria for a scheme to be specified under SIPR legislation is that it is of '***size or complexity*** *that* ***threatens the incumbent undertaker's ability to provide services for its customers***'. The Lower Thames Reservoir scheme crosses water company boundaries, with assets located in both TWUL's and Affinity Water's regions. Because of this, it is not clear which company would be the 'incumbent undertaker' as referred to in the SIPR legislation or if different parts of the project would be delivered by each of TWUL and Affinity Water. Therefore, for the purposes of this report, we assess the impact of the 'worst case' scenario in which the Lower Thames Reservoir scheme is delivered in its entirety by either TWUL or Affinity Water.

We have used a similar risk-based approach to that applied for the Thames Tideway Tunnel (TTT)[18] to compare the Lower Thames Reservoir scheme's 'size or complexity' to that of TTT, the only scheme specified under SIPR to-date. The specification of TTT under SIPR considered four risks – 'scale risk', 'construction risk', 'management risk' and 'regulatory risk'. In addition to this, we have also undertaken an assessment of whether delivering the scheme in-house would impact TWUL's or Affinity Water's financeability to the extent that it would endanger the ability of the company to deliver services for its customers. We address each of these aspects for the Lower Thames Reservoir scheme below.

- Scale risk – for TWUL to deliver in-house, the Lower Thames Reservoir scheme is much smaller than TTT – its £444m capex would amount to c.3% of TWUL's AMP7 closing RCV, as compared to TTT which represented 30% of TWUL's RCV. By contrast, the Thames Tideway Tunnel project specification reasons notice cited the Lee Tunnel as a project that was delivered in-house by TWUL, which represented 6% of TWUL's RCV at the time – i.e. relatively larger than the Lower Thames Reservoir scheme.

  For Affinity Water to deliver in-house, the Lower Thames Reservoir scheme would represent c.27% of Affinity Water's AMP7 closing RCV. This is large, but still smaller than TTT.

- Construction risk – TTT's construction risk was assessed to be significantly higher than TWUL's 'normal construction works' and the previously delivered Lee Tunnel, due to the requirement to tunnel c.25km under central London, where the impact of any failure would be extraordinarily costly. In comparison, while the Lower Thames Reservoir scheme is a sizable scheme and does involve risk, construction risks are expected to be more manageable than TTT. The Lower Thames Reservoir scheme involves typical pipeline construction techniques rather than large-scale tunnelling, and therefore does not have the inherent uncertainty of tunnelling. Further, for the Lower Thames Reservoir scheme the impact of any issues is likely to be limited to delay and abortive work, as opposed to the potential for catastrophic damage to significant third-party assets as in TTT. Therefore, the Lower Thames Reservoir scheme's construction risk is not considered comparable to that of TTT, and it is unlikely that this could be used as a reason for specification under SIPR.

- Management risk – TTT was had significant management risk, as its size would require such management and governance capacity that it could potentially "*pose an increased risk to TWUL's ability to manage its business to a satisfactory standard*". While the Lower Thames Reservoir scheme is not as large as TTT, it is of sufficient scale to require dedicated management and governance capacity, particularly if delivered by Affinity Water. Therefore, the 'management risk' highlighted for TTT does apply in the case of Affinity Water delivery, albeit at a lesser scale, and we consider that this risk could be mitigated through the procurement or internal development of dedicated management capacity and capability, and is therefore unlikely to be sufficient on its own to justify specification under SIPR.

- Regulatory risk – TTT's construction duration of more than one regulatory period was assessed to impose regulatory risk to TWUL, as "*unless adaptations to the regulatory regime were made, TWUL would need to commit to a substantial proportion of the investment without knowing what return it could expect.*" Lower Thames Reservoir scheme construction is expected to last only four years, which is relatively typical for large capital projects delivered by water companies, and shorter than a regulatory period. Therefore, this 'regulatory risk' (as described in the *Thames Tideway Tunnel project specification reasons notice*) is not considered a material consideration.

To assess whether delivering the Lower Thames Reservoir scheme in-house would impact either TWUL's or Affinity Water's financeability to the extent that it would call into question the ability of the company to deliver services for its customers, we have held discussions with relevant Treasury and/or Finance Teams from TWUL and Affinity Water, and undertaken a desktop exercise to assess each scheme's impact on typical financeability metrics.

Based on our discussions with TWUL and Affinity Water, both companies view the Lower Thames Reservoir scheme as potentially financeable through in-house delivery on a stand-alone basis[19]. To cross check these views provided

[18] As set out in the *Thames Tideway Tunnel project specification reasons notice*, part of the *Thames Tideway Tunnel: project specification and preparatory work notices*, Department for Environment, Food & Rural Affairs, June 2014 Thames Tideway Tunnel: project specification and preparatory work notices - GOV.UK (www.gov.uk)

[19] TWUL indicated that consideration would be required of the cumulative impact of financing this scheme in combination with SROs that are not detailed in this report (for example, SESRO, the Thames to Southern Transfer and London Reuse).

to us by TWUL, we have considered what the impact of adding the project's capex to both net debt (assuming the project was 100% debt financed) and to RCV (assuming the project would be added to the RCV) on TWUL's gearing. The analyses for TWUL[20] and Affinity Water[21] support the view that delivering the scheme in-house would not on its own represent an unmanageable impact to either company's financeability.

The actual impacts on TWUL's and/or Affinity Water's financing will be confirmed as cost estimates and corresponding financing, commercial and contractual structures for the Lower Thames Reservoir scheme are further developed at Gate 3 and beyond (as set out in Section 6).

Based on this analysis, this scheme does not appear to be of the size or complexity that threatens the incumbent undertaker's ability to provide services for its customers.

'Size or complexity' test summary

In summary, based on this analysis, the Lower Thames Reservoir scheme does not display comparable scale or construction risks to the Thames Tideway Tunnel, which is the only scheme specified under SIPR to-date. The scheme does bring management risks, particularly if delivered by Affinity Water, but these could be mitigated through the procurement or internal development of dedicated management capacity and capability. Finally, the Lower Thames Reservoir scheme could be financed in-house by either TWUL or Affinity Water, or by a combination of the two water companies (e.g. each delivering the relevant portions of the project within their licence regions).

Therefore, we do not consider that the Lower Thames Reservoir scheme satisfies the 'size or complexity' criteria required under current SIPR legislation, and recommend that SIPR is not considered in further detail for the Lower Thames Reservoir scheme beyond Gate 2.

However, we understand that the widening of SIPR applicability is being considered by HM Government as part of broader regulatory reform, Ofwat has recommended to the Secretary of State for BEIS that this should include the removal of the 'size or complexity' test. Should this recommendation be taken forward, we recommend re-assessing SIPR's suitability for the Lower Thames Reservoir scheme accordingly.

4.1.2 Implementation timescales

To assess whether there are any challenges with implementing DPC or SIPR within the timescales required, we have compared the current WRSE plan requirement to commence detailed design for Lower Thames Reservoir in 2034 with the estimated time required to establish a DPC model (assumed to be a minimum of approximately 3 years). As shown in our procurement plan in Section 6, there are approximately four years from the planned completion of Gate 3 (in late 2029) to the required date of CAP award in early 2034. Therefore, we conclude that there are no material risks relating to the development and procurement of a DPC model within the timescales required.

4.1.3 Value for Money

Consideration of different DPC variants

There are four Ofwat pre-defined variants of DPC: Early, Late, Very Late and Split. The Early and Split variants involve planning activity being transferred to the CAP. In the case of the Lower Thames Reservoir scheme, significant work has been undertaken by TWUL and Affinity Water already as part of the early RAPID gated process. Further, TWUL and Affinity Water have existing relationships with key stakeholders in the planning process (for example local authorities and customer groups) through their business-as-usual interactions. Conversely, a CAP delivering the scheme would need to build these relationships, spend time and effort developing an understanding of key planning issues identified by TWUL and Affinity Water to-date, and place significant trust in the work undertaken by TWUL/Affinity Water to date. Based on this, we conclude that the CAP is likely to be less capable of managing planning risks than TWUL/Affinity Water, and therefore there is unlikely to be significant benefit in transferring planning responsibility to a CAP. This effectively rules out the Early and Split DPC variants for the Lower Thames Reservoir scheme.

[20] Delivering the scheme in and financing it entirely with debt would increase TWUL's actual gearing close to 81% (an increase of approximately 0.3%), which is slightly higher than the current but in line with TWUL's historical gearing. TWUL's Baa2 rating takes into account the covenant and security package as agreed by the company, with the terms and conditions of its financing arrangements allowing TWUL to increase its indebtedness (on the basis of net debt/ RCV) up to 85% before distribution lock-ups come into effect. Failure to maintain a level of adjusted interest cover of at least 1.1x in any single year (or 1.2x on a three-year rolling average) would also trigger the dividend lock-up mechanism (Moody's Credit Opinion, TWUL, 2020/21). This suggests that delivering the scheme in-house is feasible given TWUL's relatively high RCV and the relatively small size of this scheme. In practice, equity is likely to form a portion within the financing structure, and this would need to be raised to sustain appropriate gearing levels and credit metrics both on notional and actual basis.

[21] if Affinity Water delivered the whole Lower Thames Reservoir scheme, this would increase its gearing level to c.81%, assuming it is financed entirely by debt. Affinity Water's Baa1 rating takes into account the company's covenant and security package, with the stable outlook reflecting Moody's expectation that Affinity's metrics will remain in line with the rating agency's guidance over AMP7, which includes an RCV-gearing ratio no higher than 80% and an AICR of at least 1.3x (Moody's Investors Service Rating Action, April 2021) . Therefore, delivery of this scheme may exceed financeability thresholds set out in Moody's assessment. However, in practice, equity is likely to form a portion within the financing structure, and this would need to be raised to sustain appropriate gearing levels and credit metrics both on notional and actual basis. While Affinity's gearing is higher than some peers, there is sufficient headroom within their financial covenants, which are only triggered at a gearing level of more than 90.0% (Affinity Water Annual Report and Financial Statements, 2021).

The Late DPC model involves the transfer of the scheme to the CAP before the detailed design and construction stage, while Very Late DPC involves the transfer of a completed scheme once it is commissioned and ready for operation. The Very Late DPC model may offer reduced finance costs as the CAP would not have to bear any construction risk, however the Late DPC model offers the greatest opportunity for the CAP to drive improved capex and opex efficiencies. The value for money discussion below focuses on the Late DPC model, as this offers the greatest scope for discussion of different aspects of the DPC model that may influence overall value for money. Should the Late model not offer significant opportunity for improved value for money, the Very Late model could be retained as an option and explored during the procurement and construction phase, and implemented post-construction should it be shown to offer value for money benefits.

Assessing cost to customers

Financing costs

Whether financing costs are higher or lower under DPC, SIPR or in-house will be an important factor in which delivery model delivers best value for money for customers. Financing costs encapsulates the returns to equity investors and the interest and principal repayments to debt investors. It also includes transaction costs (including bid costs) and various other costs such as liquidity costs and the cost of carry.

The costs of debt and equity depend on the risk of the project, which may be higher or lower depending on the delivery route, and on the way in which the project is financed e.g. the gearing, the type and tenor of debt financing the returns required by equity investors (which may differ depending on the risk profile of the investment). It is outside our scope of work to undertake a detailed assessment of these costs for Gate 2. Instead, simplified assumptions have been made for the purposes of this work – these are shown in Table 6 below. We have also undertaken high-level modelling of the financing costs under different models, as shown in Figure 3. Financing costs are discussed in further detail alongside modelling outputs at the end of this section.

Potential finance lease liability

We also note that the DPC arrangements could give rise to a finance lease liability on TWUL's and/or Affinity Water's balance sheet (via IFRS 16). In particular, the finance lease liability would be recognised on company's balance sheet once the related asset has been commissioned. This would represent an unsecured liability and impact gearing and interest cover ratios. TWUL's gearing ratio would deteriorate through net debt increasing while RCV denominator remains the same, and for Adjusted Interest Cover ratio the negative impact will be channelled through an increase in debt interest payable, the denominator, without any offsetting increase in the numerator as TWUL's revenues would not increase as a result of recognising the finance lease. However, all this will be driven by commercial arrangements, and, the impact cannot be concluded upon at this time. Further detailed accounting analysis (i.e., interpretation and opinion from auditor of IFRS 16 condition) will be required in due course.

Further work on financing costs is required for Gate 3 but based on this preliminary analysis for Gate 2 it appears likely that financing costs would be higher under DPC than under SIPR and in-house delivery models, and that SIPR and in-house delivery models would achieve similar financing costs.

Efficiency improvements

Scheme specific capex and opex efficiency could enable the DPC model to deliver a lower cost to customers compared to in-house delivery. The capex and opex (fixed and variable opex) for this scheme is shown in Table 5.

Table 5: Project cost estimates for the Lower Thames Reservoir scheme

Scheme	Capital expenditure	Fixed opex (per annum)	Variable opex (per annum)	Totex (25 years)
Lower Thames Reservoir	£444m	£0.9m	£1.3m	£499m

Opex is based on the 25% "sweetening flow" which represents the operating regime for the majority of the time. For awareness, annual opex if operating continuously at full flow is approximately £7-8m however this is not a realistic value to use for any modelling or other assessment given that the plant is anticipated to only operate at full flow for a few months approximately every 2 years. We have therefore based our assessment on the 'business-as-usual' operating regime, assuming the sweetening flow only.

Ofwat's DPC guidance indicates that water companies should assume efficiency savings of 10-15% on both capex and opex compared to an in-house delivery model, with innovation a significant contributor to achieving this greater level of efficiency. However, these assumptions need to be tested and evaluated in the context of the specific scheme under consideration – we provide our qualitative assessment of this below.

In present value terms over 25 years (a typical CAP period), capex will account for approximately 89% of the totex for this scheme, so the potential to achieve capex efficiencies will be a key determinant of whether DPC will deliver better value for money for consumers. To test the potential construction savings through DPC we have examined different categories of capex spend individually. We note that for this scheme capex is made up of approximately 94% civils construction. Of this, land acquisition and associated planning makes up c.36%, and work in this area will

be advanced at the point that a prospective CAP becomes involved in detailed design and construction. This would limit the CAP's ability to drive efficiency in this area. Therefore, to achieve overall capex savings of 10-15%, a DPC CAP would likely have to drive 15-25% savings from the remaining 64% of spend, made up mostly of large diameter and other pipework, service crossings, civils for the water treatment and pumping plant, buildings and roads.

This kind of civils work, including "no dig" pipeline construction techniques, is a mature construction technique deliverable through a large and established supply chain. Moreover, both TWUL and Affinity Water have experience of procuring pipeline construction activity within their capital programme and as such are likely to be at a high level of efficiency. In summary, whilst this project is large, it is not uniquely complex. Consequently, we consider it unlikely that a DPC CAP would be able to achieve additional 15-25% efficiency savings above that achievable through in-house delivery. The remaining capex spend on mechanical and electrical plant only makes up 6%, and therefore savings on these elements will be relatively minor.

Overall, 10-15% capex efficiency appears to be an ambitious target.

The opex proportion of totex for this scheme is relatively small, and relates to power costs (44%) and chemicals (19%) with the balance spread across maintenance and operations. Power is clearly dominant and the CAP would need to procure power from electricity markets, just as the operating water company would if it developed the project in-house. The opportunities for the CAP to procure electricity more cheaply would only arise through innovative procurement or hedging practices, as the power price is determined by exogenous factors outside of the control of either the water company or the CAP. Water companies routinely procure electricity from the market and are experienced at doing so, plus Ofwat has benchmarked electricity costs as part of its efficiency assessments at PR19 and prior price reviews, so it is not immediately obvious that the CAP would be able to identify a new way of procuring electricity compared to the water company. Hedging strategy may be one opportunity for the CAP to achieve savings, but this would come with the trade off of either higher or lower risk exposure, with the ultimate impact on value for money for customers depending on whether power prices increased or decreased more than expected.

Other routes to significantly impacting costs could be through design or operation of the plant. For example, by taking a different view of the balance between 'business-as-usual' opex of the sweetening flow and the increased opex during increased flow conditions, a DPC CAP could adopt a pipeline design that uses a smaller diameter than currently proposed. This would reduce the sweetening flow opex by reducing the required volume of sweetening water and thereby reducing the required treatment and pumping capacity. The counter to this is that pumping costs during periods of higher flow (i.e. when pumping requirements would be higher to overcome the increased frictional head created by the smaller diameter pipeline). This would therefore be a careful balance based on anticipated usage of the asset, which as we have seen above is difficult to predict in the long term. In this example there would be a capex saving associated with the pipeline, however as a high proportion of capex is linked to securing the pipeline corridor and other non-related civils costs, it would be unlikely to be a significant saving in the context of overall totex.

Through operation, the CAP may be able to reduce ongoing opex by meeting drought demand through a "cold start" of the plant rather than running a continuous sweetening flow. This would require the CAP to take a different view of the trade-off between ongoing opex and availability risk – while day-to-day power costs would be reduced significantly during periods when full-flow is not required, this approach comes with added availability risk, in that the plant may not come online as planned when required. Further, additional costs such as labour, water quality testing and pipe flushing would also need to be taken into account, and the importance of the sweetening flow's contribution to Affinity Water's overall water balance needs consideration.

We also understand that TWUL and Affinity Water have explored and discounted some of these kinds of opportunities through ongoing design development and optioneering of the scheme – however, a DPC CAP, by bringing innovation and a different approach to risk, may make alternative design decisions that reduce overall cost.

In summary, while there are opportunities for a CAP to drive capex and opex efficiencies relative to an in-house delivery model, a 10-15% opex efficiency appears to be an ambitious target without associated increases in risk. Therefore, it is unclear if the CAP could achieve 10-15% capex and opex efficiency savings or not. Based on the above, we recommend engaging with prospective DPC bidders between Gates 2 and 3 to understand the level of efficiency they believe would be achievable, and how these would be achieved to evaluate the likely increases in risk that this would bring. Involving contracting organisations in those discussions would help to get the detailed level of information required to carry out VfM modelling for DPC.

Current regional water resource modelling indicates that the Lower Thames Reservoir scheme is not required until 2039, and it should be recognised that key elements of this project could change in that period. This should be taken into consideration when timing that engagement with supply chain to ensure that insight gained is based on the most up-to-date scheme information available.

Construction risk

Alongside general construction risks inherent with a large project of this nature, a notable construction risk is the number of complex crossings along the pipeline route. There are over ten major crossings including motorways, main roads, HS2 and other rail. While these risks would be similarly felt by an in-house or a DPC delivery route, project risks would form part of a wider portfolio of risk held by the water company across their capital programme, whereas

a CAP would need to manage that risk across this single project. This may result in a higher risk profile for the CAP which may be reflected in higher costs.

We recommend that as part of the engagement with prospective DPC bidders, contracting organisations are engaged in detail between Gates 2 and 3 to understand how these risks would be managed to enable that to be included in the detailed VfM analysis.

Overall assessment of cost to customers

The overall assessment of whether DPC and SIPR would deliver value for money for customers depends on the combination of financing costs, capex and opex under the DPC, SIPR and in-house delivery models. To combine these elements we have undertaken some high level financial modelling of the NPV of the cost to customers of the scheme under the different delivery models. Some of the key assumptions used include:

- Using simplistic discounted cash flow analysis for DPC delivery route;
- Using RAB based models for SIPR & In House delivery;
- Using 80-year recovery period, post-construction

Below we detail the key modelling input assumptions used in each scheme's value for money assessment, showing the relative ranges of cost to customer for the in-house, DPC and SIPR models.

Table 6: Detailed modelling parameters

				Values used for modelling		
Parameter	**Low Case**	**High Case**	**Sources**	**DPC Range**	**SIPR Range**	**In-house Range**
Weighted Avg. Cost of Capital (CPI-H deflated, standard form)	2.5%	3.8%	Bottom range is based on the TTT project. Upper range on OFTOs 2017/18 WACC.[22]	2.5% to 3.8% Based on TTT WACC/STPR 76-125 years rate to OFTOs 17/18 WACC.	2.5% to 3% Based on TTT WACC and Ofwat's PR19 WACC.	2.5% to 3% Based on TTT WACC and Ofwat's PR19 WACC.
Transaction Costs*	0.10% (incl. in reg. WACC)	5% capital spend, additional bidder & transaction costs.	Bottom range is part of Ofwat's WACC. Upper range is sum of Ofwat's bidder and procurement costs within Table A.	2% to 5% of capex	2% to 5% of capex	0.1% (incl in WACC) to 1% of total capital spend (assumed by PA)
capex Efficiency Savings *(Sensitivity)*	-10%	-15%	-10 to -15% saving based on Ofwat's Vfm DPC guidance.	-10% to -15%	-10% to -15%	0%
opex Efficiency Savings *(Sensitivity)*	-10%	-15%	-10 to -15% saving based on Ofwat's Vfm DPC guidance.[23]	-10% to -15%	-10% to -15%	0%
Modelling Mechanics	• DPC contract duration is assumed to be 20 years post-construction after which it enters TWUL's and/or Affinity Water's RCV. • SIPR and in-house models assume recovery starts when assets begin to be constructed, with an 80-year recovery period post-construction • Under all models assets are assumed to fully depreciate by end of the recovery period.					

The results of the modelling are shown in Figure 3 below. The modelling compares the annuitized cost of the scheme under each delivery model. It should be noted that for each model there are three bars, which are an accumulation of the costs to customer (expressed in annuitized terms) layering in the key variables one by one:

- The light blue bar reflects the weighted average cost of capital (WACC) impact only;
- The green bar is the light blue bar with the addition of transaction costs; and
- The dark blue bar is the green bar with the addition of opex and capex efficiency savings.

To indicate scale, the vertical arrow shows that the highest value for DPC is 5% greater than the highest value for in-house delivery.

[22] PA's calculation based on CEPA's Evaluation of OFTO Tender Round 2 and 3 benefits. Source: Table 4.1 of '*Review of cost of capital ranges for new assets for Ofgem's Networks Division*', Ofgem, 2018 (cepareport_newassets_23jan2018.pdf (ofgem.gov.uk)) (values adjusted for inflation (CPI-H) and to exclude tax)
https://www.ofgem.gov.uk/sites/default/files/docs/2016/03/ofgem_tr2_tr3_evaluation_final_report.pdf

[23] See for example Table A published by Ofwat for detailed assumptions.

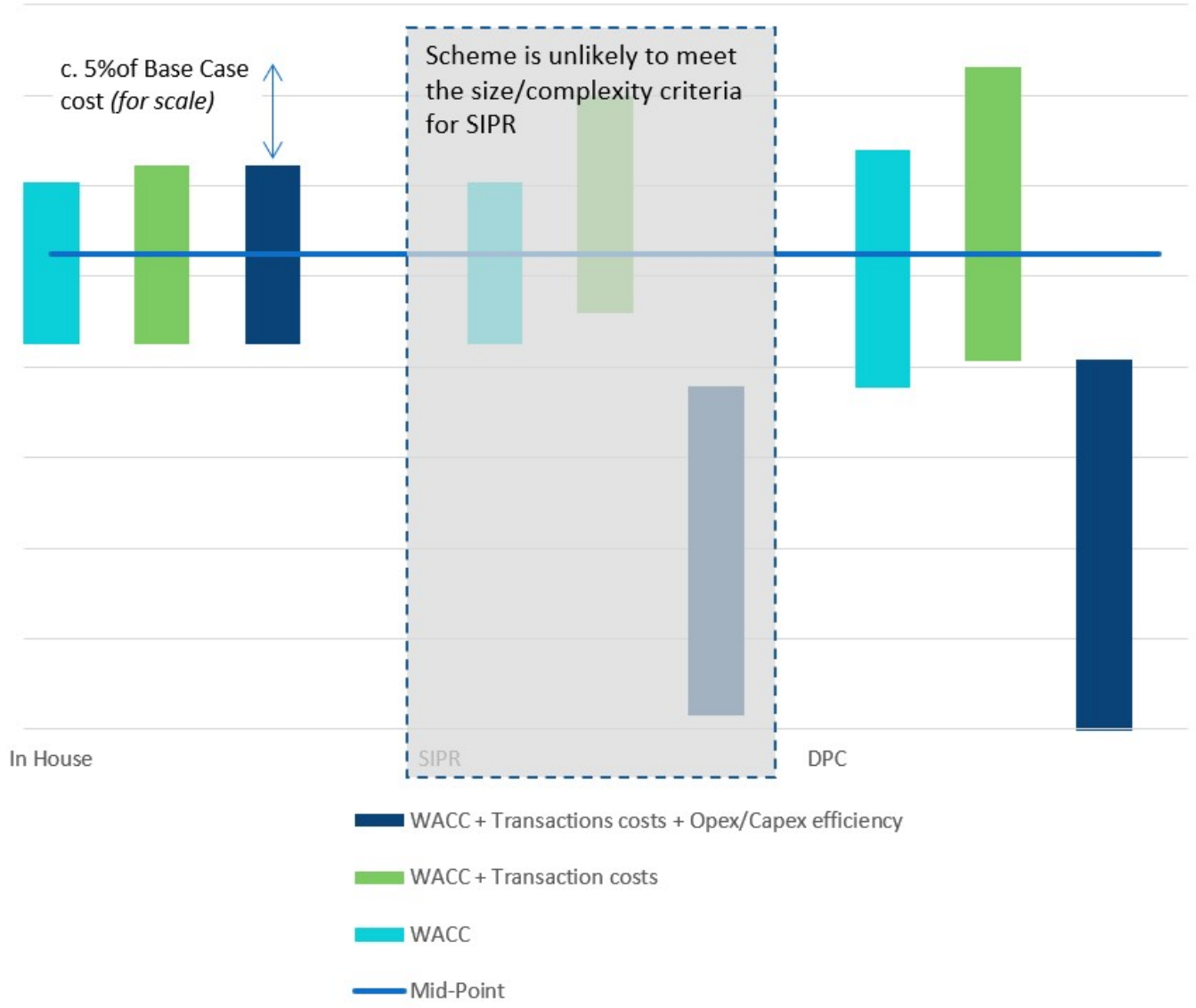


Figure 3: Lower Thames Reservoir scheme – High Level Modelling Outputs

Modelling outputs indicate that the DPC model could offer the lowest cost to customers if it achieves the same WACC as in-house delivery (even if it does not achieve any capex/opex savings). This is due to the fact that the modelling assumes that after the first DPC period (20 years) the remaining asset value transfers to TWUL's/Affinity Water's RCV and is then treated similar to an in-house model. To ensure a like-for-like comparison, we have assumed that under all models the asset value fully depreciates to zero over the 80-year recovery period. Therefore, under DPC as modelled, there is only a 60-year period over which RCV return is earned on the asset value, while under in-house delivery and SIPR, there is a full 80-year period. At the low-end of the WACC range for DPC, this results in an overall lower cost to customers than in-house delivery.

On the other hand, the range of potential costs to customers under DPC is much wider than for in-house or SIPR models. This is a result of the different gearing ratios assumed for the upper and lower DPC WACC values. For DPC procurement, we have assumed a range of 2.5 - 3.8% WACC (Vanilla, CPI-H deflated) based on a range of evidence available.[24] This includes a modest gearing range of c. 40% (for the low WACC scenario) to c.60% (in the high WACC scenario). Our DPC modelling approach assumes that equity investors will achieve an Internal Rate of Return (IRR), meaning project IRR will equal the cost of equity. Holding all else constant, we note that increasing the gearing level would result in a lower WACC. This in turn would improve the VfM outcome for customers:

- Considering the difference between potential delivery models, we note that increasing the gearing level from c. 60% to 80% would result in the marginally improved outcome for the DPC route relative to in house delivery that is currently depicted in Figure 3.
- Our modelling indicates that opex and capex efficiencies savings in accordance with PR19 assumptions (c.10-15% savings) would have an approximately equivalent effect on the indicative cost to consumers as a lower WACC, thus implying that both areas are of similar importance in driving a greater VfM.

[24] For example, see Thames Tideway Tunnel WACC decision; Offshore Transmission Operators 2017/18 WACC

However, it is unlikely that increasing the gearing ratio while holding all else constant is realistic – increased gearing is likely to increase the cost of debt, which would therefore counteract some of the potential cost reductions brought about by higher gearing.

In summary, our early modelling suggests that DPC may offer lower cost to customers than in-house delivery. However, these results are dependent to a significant degree on the input assumptions – for example, DPC is only likely to offer lower costs if DPC delivery can achieve a cost-of-capital at the lower end of the assumed range (WACC of c.2.5%), or significant capex and opex efficiencies (greater than 10%), and assuming the total length of the recovery period is the same across both in-house and DPC models. On the other hand, variations on the standard DPC framework may also need to be considered, as these could potentially lead to better value for money for customers. For example, for Gate 3 it may be appropriate to further explore the use of staged payments during construction – rather than assuming a flat revenue profile, this could bring revenue sooner and in pre-agreed lump sum amounts, therefore strengthening the overall case for the DPC delivery route. More detailed exploration of potential DPC model parameters such as gearing, cost of debt and equity and achievability of capex and opex efficiencies is recommended for Gate 3. This should be undertaken through market engagement to ensure that parameters are based on realistic, up-to-date information, and supported by comprehensive financial modelling to determine the overall cost to customers under DPC.

Finally, our early modelling suggests that the SIPR model may lead to comparable VfM to DPC, and (if the best-case modelled DPC finance costs cannot be achieved) may deliver better VfM, i.e. lowest costs. While SIPR is not currently a viable option as the scheme is not considered to meet the SIPR size/complexity criteria, these indicative results show that the SIPR model should be reconsidered if SIPR regulations are modified in future to broaden its applicability to the Lower Thames Reservoir scheme.

Assessing water resilience/resource value

The Lower Thames Reservoir scheme creates a resilience asset that will ensure that water deficits are not experienced in a drought situation. This determines the core 'water resource value' delivered to customers from this scheme. Further, this scheme operates an ongoing, 'business-as-usual' flow, initially for operational purposes (for example "sweetening" and to keep the water treatment works running), but which over time will likely become an integral part of Affinity Water's broader water supply system.

Future flexibility of this scheme's capacity and operating regime may be desirable for the reasons given below.

- The required capacity of the treatment and pumping plant may increase. For example, the scheme is being designed for 115 Ml/day but may be required to be uprated in the future depending on drought demand, or the 'business-as-usual' flow may increase should Affinity Water need to increase supply from this source.
- Potable treatment and pumping are energy intensive. Changes in energy costs would impact opex costs, and while these may not be significant in terms of overall totex, pressures on water companies to achieve net zero carbon in the future may require all such operations to be reviewed.

If the Lower Thames Reservoir was delivered through an in-house model, then the company delivering the scheme (TWUL and/or Affinity Water) would have the flexibility to modify the scheme or its operations as part of each company's wider system of water resources. Through the five-yearly price control process, TWUL/Affinity Water would be able to apply to Ofwat for additional revenue to fund the cost of these modifications. However, it is unlikely that the same degree of flexibility would be available under a DPC contract. If this flexibility was required within the DPC contract period, this would likely require a change to the CAP contract, as well as justification to Ofwat that the change is necessary such that the revenue the CAP could recoup from customers could be increased. Whilst DPC contract changes are possible, they would come at a cost, thereby eroding value for money in comparison to an in-house model.

At this stage it is not clear whether the need for future flexibility is a material consideration when assessing the potential value for money under DPC vs. In-house delivery. Therefore it is difficult to value the benefit of the additional flexibility to customers, but qualitatively it reduces the case for DPC relative to an in-house delivery model. Further detailed modelling and scenario-analysis post-Gate 2 will help to understand the potential materiality of any future changes to the scheme, and therefore the value of future flexibility.

Summary assessment of value for money

Our analysis shows that for the Lower Thames Reservoir scheme:

- DPC may offer lower costs to customers than in-house delivery, if a WACC of approximately 2.5% can be achieved. To help achieve lower finance costs, there are opportunities to adapt the 'standard form' DPC model (for example, introducing staged payments during construction or recovering costs over a longer period). Notwithstanding, it is likely that capex and opex efficiencies of around 10-15% will be needed for DPC to achieve significantly lower costs to customers than in-house delivery.

- The Lower Thames Reservoir scheme comprises reasonably typical water industry work-types and assets, and relatively low opex as a proportion of totex. Therefore, achieving 10-15% capex and opex efficiencies under DPC appears ambitious.
- There may be value-for-money benefits associated with retaining flexibility to adapt the scheme's future operating regime and capacity in response to changing needs. This would favour in-house delivery over DPC – however at this stage further analysis of the likelihood and impact of future change is required to validate the materiality of this flexibility.

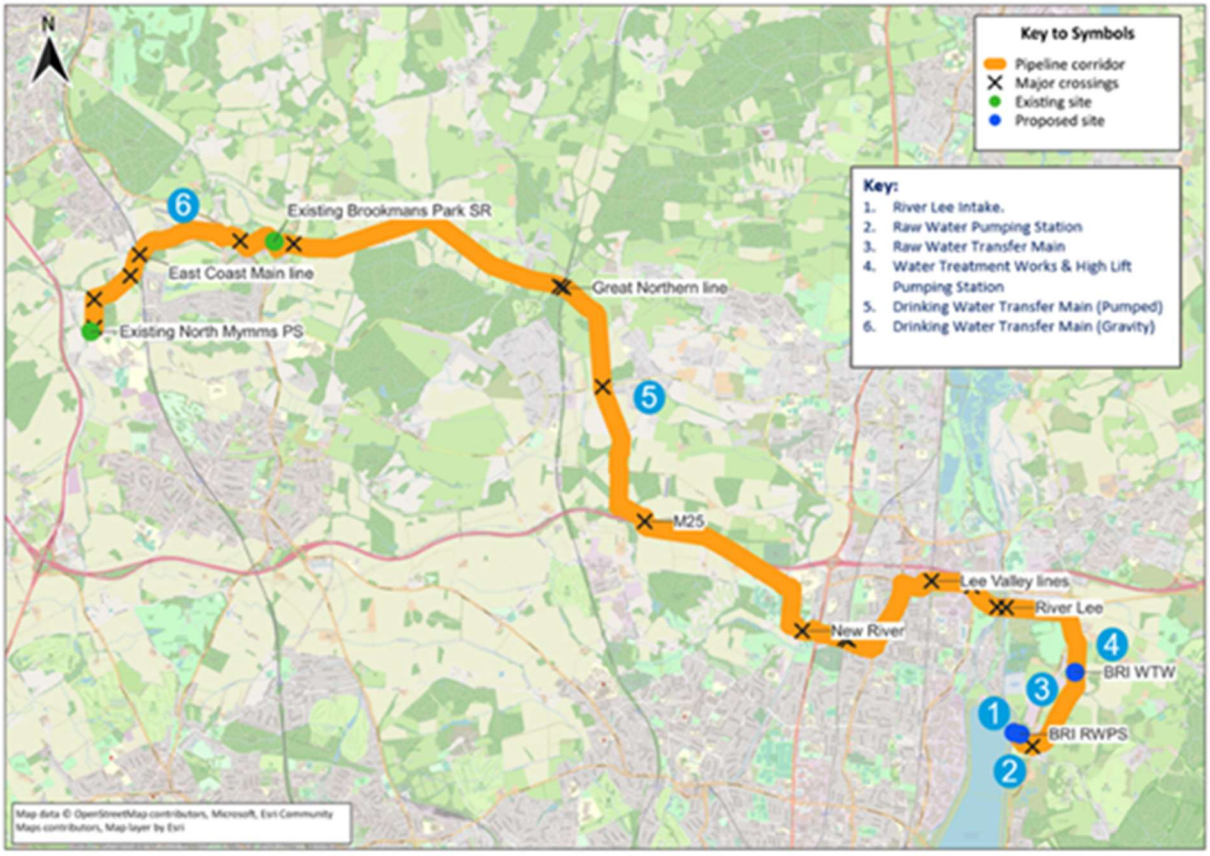
We recommend further investigation of these indicative findings, including detailed commercial risk analysis, market engagement with both potential investors and the construction supply chain, to inform more realistic parameters to include in detailed financial modelling of costs to customers under DPC and in-house models required for Gate 3.

4.2 Beckton Reuse Indirect

In this scheme water will be abstracted from the River Lee adjacent to the King George V Reservoir. Water will be treated locally to create a potable supply to Brookman's Park Service Reservoir (an existing Affinity site) from where it will gravitate to North Mymms during times of drought for Affinity Water customers. Figure 4 provides a schematic of this scheme.

As the natural flow in the River Lee is insufficient to provide the full abstraction volume required, abstracted water will need to be replaced by recycled water fed into the river from the Beckton Effluent Reuse option of the London Effluent Reuse SRO scheme. Therefore, the Beckton Reuse Indirect T2AT scheme is dependent upon the Beckton Effluent Reuse option. Details of the Beckton Effluent Reuse option can be found in the London Effluent Reuse SRO Gate 2 Report.

Figure 4: Beckton Reuse Indirect scheme



Key elements of this scheme include:

- Source water abstraction point at the River Lee (shown as (1) in Figure 4)
- Raw water pumping station and c.2km pipeline to new WTW (shown as (2) and (3) in Figure 4)
- New WTW and High Lift Pumping Station (shown as (4) in Figure 4)
- Potable water transfer main to Brookman's Park (c.19 km) with associated crossings (shown as (5) in Figure 4)
- Gravity pipeline to North Mymms (c.4 km) (shown as (6) in Figure 4)

4.2.1 Size, discreteness, and complexity

DPC

In this section we assess this scheme against the key areas outlined in Ofwat's definition of project size and discreteness as set out in their 'Direct Procurement for Customers: Technical Review' report. This assessment covers: i) size; ii) stakeholder interactions and statutory obligations; iii) interactions with the network; iv) contributions to supply / capacity and ability to specify outputs; and v) asset and operational failures. Our assessment is summarised in the table below.

Table 7: Detail of the Beckton Reuse Indirect project size and discreteness criteria as measured against Ofwat's 'Direct Procurement for Customers: Technical Review' report

Size		• Scheme exceeds £100m totex, and therefore meets this requirement
Discreteness	**Stakeholder interactions and statutory obligations**	• The Beckton Reuse Indirect scheme is a resilience asset that provides potable water to Affinity Water customers[25] through a continuous 'sweetening flow', with the ability to increase flow during drought conditions to alleviate water supply deficits. Therefore it '*materially contributes towards the appointee meeting statutory obligations*', where the 'appointee' is taken to mean Affinity Water, as it directly impacts Affinity Water's obligations to provide wholesome potable water into the network. For clarity, the scheme involves treatment of water at the upstream end, then transfer of potable water directly into service reservoirs at the downstream end. • These water quality and volume obligations are expected to be able to be written into contractual arrangements between TWUL, Affinity Water and the CAP. • Therefore, these obligations are not a 'blocker' for DPC, but will need to be mitigated through the DPC contract.
	Interactions with the network	• As noted above, potable water will be discharged directly from the Beckton Reuse Indirect scheme into service reservoirs at the downstream end of the transfer. Therefore, operations between this scheme and the downstream distribution network will need to be coordinated to manage distribution reservoir levels. • Therefore, Beckton Reuse Indirect T2AT has '*Simple or limited, well understood and manageable interactions with the appointees' network*'
	Contributions to supply/ capacity and ability to specify outputs	• The Beckton Reuse Indirect scheme is a resilience asset, meaning that full capacity will be needed intermittently, and the exact timing of need is uncertain. Current estimates indicate full capacity will be required for a few months every 2 years. • However, ongoing WSRE water resource modelling will improve the understanding of the demand profile for this scheme, and the operational 'triggers' for its use (for example, water supply shortages) should be relatively straightforward to define and price. • Further, the requirement for ongoing sweetening flows (25%) mitigates the intermittent, irregular nature of asset need, and creates a predictable 'baseload' to make contract requirements easier to define and price.
	Asset and operational failures	• The Beckton Reuse Indirect T2AT scheme involves the construction and operation of a new water treatment works, transfer pipeline and associated pumping assets. These are typical water industry assets, for which the operational failure risk is well understood and mitigations are well established. • Further, there is a well-developed market and technical supply chains with strong experience of similar project delivery, both in the UK and overseas. This includes delivery of similar assets under DBFOM arrangements (similar to DPC). • Operational failure would expose Affinity Water to water stress (especially during drought conditions), however water supply networks typically have the capability to be rezoned to supply customers from multiple sources, thereby mitigating the risk of temporary operational failure. Furthermore this scheme discharges to a reservoir which provides a time and supply buffer for mitigation actions should the transfer fail.
Discreteness summary		There are some risks to discreteness against multiple headings, in particular relating to the fact that the Beckton Reuse Indirect scheme provides potable water directly into supply, the detailed demand profile will be challenging to define, and failure would result in water stress. However, these risks are manageable and typical for the water sector, and able to be mitigated through a DPC contract. Therefore, **we conclude that the Beckton Reuse Indirect scheme passes the discreteness test.**

[25] Thames Water customers are not expected to benefit from this scheme.

SIPR

As set out in Section 3, a key criteria for a scheme to be specified under SIPR legislation is that it is of '***size or complexity*** *that* ***threatens the incumbent undertaker's ability to provide services for its customers***'. The Beckton Reuse Indirect scheme crosses water company boundaries, with assets located in both TWUL's and Affinity Water's regions. Because of this, it is not clear which company would be the 'incumbent undertaker' as referred to in the SIPR legislation. Therefore, for the purposes of this report, we assess the impact of the 'worst case' scenario in which the scheme is delivered in its entirety by either TWUL or Affinity Water.

The Beckton Reuse Indirect scheme has similar capex and opex, comprises broadly similar assets and has a similar operating profile to the Lower Thames Reservoir scheme. As a result, the SIPR assessment of the Beckton Reuse Indirect scheme is similar to that for the Lower Thames Reservoir scheme, and therefore we do not repeat it in full here.

In summary, based on our assessment, the Beckton Reuse Indirect scheme could be financed in-house by either TWUL or Affinity Water. Further, the Beckton Reuse Indirect scheme does not display comparable scale or construction risks to the Thames Tideway Tunnel, which is the only scheme specified under SIPR to-date. Due to its size the scheme does bring management risks, particularly if delivered by Affinity Water, but these could be mitigated through the procurement or internal development of dedicated management capacity and capability and are therefore unlikely to be sufficient on their own to justify specification under SIPR.

Therefore, we do not consider that the Beckton Reuse Indirect scheme satisfies the 'size or complexity' criteria required under current SIPR legislation, and recommend that SIPR is not considered in further detail for this scheme beyond Gate 2.

However, we understand that the widening of SIPR applicability is being considered by HM Government as part of broader regulatory reform, Ofwat has recommended to the Secretary of State for BEIS that this should include the removal of the 'size or complexity' test. Should this recommendation be taken forward, we recommend re-assessing SIPR's suitability for the Beckton Reuse Indirect scheme accordingly.

4.2.2 Implementation timescales

The Beckton Reuse Indirect is not currently selected in the WRSE Regional Plan, and it is therefore unclear when the scheme would be required to be in-service, if at all. However, previous iterations of WRSE regional modelling indicated an earliest required date of CAP award in early 2029. This provided approximately four years from the planned completion of Gate 3 (in late 2024) to CAP award, and therefore would introduce no material risks relating to the development and procurement of a DPC model within the timescales required.

4.2.3 Value for Money

Consideration of different DPC variants

As above, the similarities between the Lower Thames Reservoir and Beckton Reuse Indirect schemes means that the discussion for the Lower Thames Reservoir scheme (Section 4.1.3) also applies here.

Assessing cost to customers

Financing costs

As above, the similarities between the Lower Thames Reservoir and Beckton Reuse Indirect schemes means that the issues relating to finance costs for the Lower Thames Reservoir scheme (Section 4.1.3) also apply here.

Efficiency improvements

Scheme specific capex and opex efficiency could enable the DPC model to deliver a lower cost to customers compared to in-house delivery. The capex and opex (fixed and variable opex) for this scheme is shown in Table 8.

Table 8: Project cost estimates for the Beckton Reuse Indirect scheme

Scheme	Capital expenditure	Fixed opex (per annum)	Variable opex (per annum)	Totex (25 years)
Beckton Reuse Indirect	£453m	£0.6m	£1.0m	£503m

Opex is based on the 25% "sweetening flow rate" which represents the operating regime for the majority of the time. For awareness, annual opex if operating continuously at full flow is approximately £5m however this is not a realistic value to use for any modelling or other assessment given that the plant is anticipated to only operate at full flow for a few months approximately every 2 years.

Ofwat's DPC guidance indicates that water companies should assume efficiency savings of 10-15% on both capex and opex compared to an in-house delivery model, with innovation a significant contributor to achieving this greater level of efficiency. However, these assumptions need to be tested and evaluated in the context of the specific scheme under consideration.

In present value terms over 25 years (a typical CAP period), capex will account for approximately 91% of the totex for this scheme, so the potential to achieve capex efficiencies will be a key determinant of whether DPC will deliver better value for money for consumers. To test the potential construction savings through DPC we have examined different categories of capex spend individually. We note that for this scheme capex is made up of approximately 96% civils construction. Of this, land acquisition and associated planning makes up c.37%, and work in this area will be advanced at the point that a prospective CAP becomes involved in detailed design and construction. This would limit the CAP's ability to drive efficiency in this area. Therefore, to achieve overall capex savings of 10-15%, a DPC CAP would likely have to drive 15-25% savings from the remaining 63% of spend, made up of mostly of large diameter and other pipework, service crossings, civils for the water treatment and pumping plant, buildings and roads.

As noted above, the Beckton Reuse Indirect scheme comprises broadly similar assets and has a similar operating profile to the Lower Thames Reservoir scheme. As a result, our assessment of the DPC model's ability to drive capex and opex savings for the Beckton Reuse Indirect scheme is similar to that for the Lower Thames Reservoir scheme, and therefore we do not repeat it in full here.

In summary, while there are opportunities for a CAP to drive capex and opex efficiencies relative to an in-house delivery model, a 10-15% opex efficiency appears to be an ambitious target without associated increases in risk. Therefore, it is unclear if the CAP could achieve 10-15% capex and opex efficiency savings or not. Based on the above, we recommend engaging with prospective DPC bidders between Gates 2 and 3 to understand the level of efficiency they believe would be achievable, and how these would be achieved to evaluate the likely increases in risk that this would bring. Involving contracting organisations in those discussions would help to get the detailed level of information required to carry out VfM modelling for DPC.

Construction risk

Alongside general construction risk inherent with a large project of this nature, a notable construction risk is the number of complex crossings along the pipeline route. There are over 15 major crossings including motorways, main roads, and rail. While these risks would be similarly felt by an in-house or a DPC delivery route, project risks would form part of a wider portfolio of risk held by the water company across their capital programme, whereas a CAP would need to manage that risk across this single project. This is likely to result in a different risk profile for the CAP which would be reflected in costs to customers.

We recommend that as part of the engagement with prospective DPC bidders, contracting organisations are engaged in detail between Gates 2 and 3 to understand how these risks would be managed to enable that to be included in the detailed VfM analysis.

Overall assessment of cost to customers

As with the Lower Thames Reservoir scheme, we have undertaken high level financial modelling to provide an initial overall indication of value for money, taking into account the impact of DPC on financing, capex and opex costs. However, given the similar input assumptions applicable to each scheme, the results of the modelling are broadly similar for both schemes and hence we do not present separate modelling results for the Beckton Reuse Indirect scheme.

Water resilience/resource value

The water resilience value delivered by the Beckton Reuse Indirect scheme is similar to that of the Lower Thames Reservoir scheme, and the issues discussed for the Lower Thames Reservoir scheme also apply here.

Summary assessment of value for money

Our analysis shows that for the Beckton Reuse Indirect scheme:

- DPC may offer lower costs to customers than in-house delivery, if a WACC of approximately 2.5% can be achieved. To help achieve lower finance costs, there are opportunities to adapt the 'standard form' DPC model (for example, introducing staged payments during construction or recovering costs over a longer period). Notwithstanding, it is likely that capex and opex efficiencies of around 10-15% will be needed for DPC to achieve significantly lower costs to customers than in-house delivery.
- The Beckton Reuse Indirect scheme comprises reasonably typical water industry work-types and assets, and relatively low opex as a proportion of totex. Therefore, achieving 10-15% capex and opex efficiencies under DPC appears ambitious.
- There may be value-for-money benefits associated with retaining flexibility to adapt the scheme's future operating regime and capacity in response to changing needs. This would favour in-house delivery over DPC – however at this stage further analysis of the likelihood and impact of future change is required to validate the materiality of this flexibility.

We recommend further investigation of these indicative findings, including detailed commercial risk analysis, market engagement with both potential investors and the construction supply chain, to inform more realistic parameters to include in detailed financial modelling of costs to customers under DPC and in-house models required for Gate 3.

4.3 Procurement Model Assessment Conclusion

Table 9 summarises the assessment of the eligibility of both T2AT schemes for DPC and SIPR.

At this stage, it is considered that neither T2AT scheme option would pass the SIPR 'size and complexity' test, and we also do not consider that the additional effort or up-front cost required to apply SIPR would be justified. We therefore recommend ruling out SIPR at Gate 2 for both T2AT schemes, although we recommend re-assessment should the 'size or complexity' test be removed from SIPR legislation, as recommended by Ofwat.

As set out in this report, there are no critical impediments to the application of DPC for either T2AT scheme based on size, discreteness, or other commercial feasibility parameters.

Therefore, the defining factor between in-house and DPC delivery for each scheme will be VfM. At this stage, VfM assessments set out in this report are inconclusive, but suggest that if the DPC model can drive capex and opex savings of c.15%, and relatively low finance costs (based on a WACC of 2.5%), then DPC could deliver better VfM than in-house delivery. Our assessment at this stage indicates that given the relatively low complexity of T2AT construction, achieving these levels of capex and opex savings may be challenging, and that modifications to the 'standard form' DPC model, for example introducing staged milestone payments during construction, or procuring finance separately from main works contracts, may be required to drive down the cost of finance.

Consequently, further work is required between Gate 2 and 3 to provide a more robust assessment of whether the DPC model is able to offer improved value for money for customers when compared to in-house delivery. This includes detailed investigation of the likely operating regime for the scheme; and market engagement to inform more detailed modelling of the likely cost-to-customers under different models, including the consideration of any modifications to the standard DPC model.

Table 9: Summary of Gate 2 assessment for each T2AT scheme

		Lower Thames Reservoir	Beckton Reuse Indirect
DPC	Size	With capex alone of over £300m, both T2AT schemes clearly meet the DPC 'size' criteria as set out at PR19, as well as that set out in the draft guidance for PR24.	
	Discreteness	Both T2AT options pass the discreteness test, as they have well understood, relatively minor interactions with TWUL's and Affinity Water's broader water systems. Some discreteness risks have been identified, primarily around contribution to statutory obligations, interactions with the network (potable water is discharged to a service reservoir), contribution to supply capacity where the volume of contribution is unpredictable (drought related) and that the implications of operational failure could result in unwholesome water entering supply, however we expect these aspects to be able to managed through a DPC contract.	
	Implementation timescales	There are approximately four years from the planned completion of Gate 3 (in late 2029) to the required date of CAP award in early 2034. Therefore, we conclude that there are no material risks relating to the development and procurement of a DPC model within the timescales required.	N/A – scheme not currently selected in the WRSE Regional Plan, and it is therefore unclear when the scheme would be required to be in-service[26].
	Value for money	Both schemes exhibit characteristics that may reduce the opportunity for the DPC model to deliver the comparable cost of finance and significant capex and opex efficiencies needed to drive a lower cost to customers than in-house delivery. Opex is only a small proportion (12-17%) of totex over a typical DPC contract duration period (i.e. the first c.25 years). Therefore, for both options the majority of savings delivered under DPC would need to come from capex, a large proportion of which will be difficult for the CAP to influence at the point of detailed design commencement (for example land acquisitions which accounts for over one third of capex). However, a DPC CAP there could be opportunities to significantly reduce capex and opex by taking a different approach to scheme risk, particularly in trade-offs between availability risk and ongoing opex and resultant changes to scheme design (for example, reducing the pipe diameter and/or operating a 'cold start' regime instead of an ongoing sweetening flow). Further investigation, including detailed commercial risk analysis for the scheme and market engagement to validate the achievability of opex and capex savings and competitive finance costs, supported by more detailed modelling of the likely cost-to-customers, is recommended to conclusively determine whether DPC offers better value for money than in-house delivery.	
SIPR	Size and complexity	Neither scheme is considered large or complex enough to satisfy the SIPR eligibility test i.e. the schemes are not of a size or complexity that threatens the incumbent undertaker's ability to provide services for its customers, whether the incumbent undertaker is considered to be either TWUL or Affinity Water. However, Ofwat has made a recommendation[27] to the Secretary of State for Business, Energy and Industrial Strategy (BEIS) that the 'size or complexity' test be removed from SIPR legislation, so that SIPR can be applied to a broader range of schemes where a licensed approach would offer value for money. Should this recommendation be taken forward, we recommend re-assessing SIPR's suitability for the T2AT schemes accordingly.	

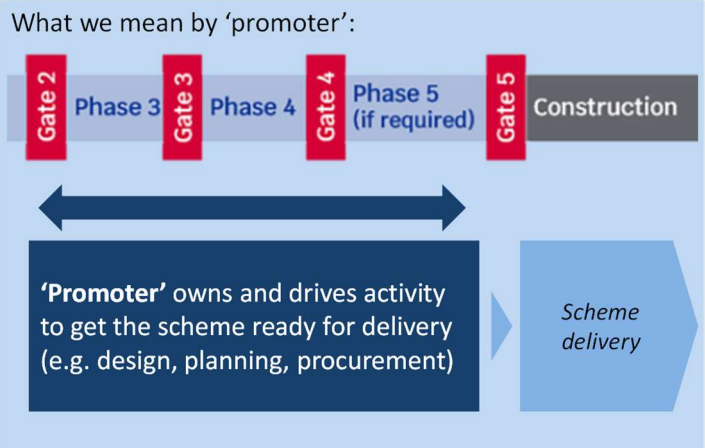
[26] Note that previous iterations of WRSE regional modelling indicated an earliest required date of CAP award in early 2029. This provided approximately four years from the planned completion of Gate 3 (in late 2024) to CAP award, and therefore would introduce no material risks relating to the development and procurement of a DPC model within the timescales required.
[27] Competition stocktake report final (ofwat.gov.uk)

5 Scheme 'promoter' options, operating and commercial arrangements

5.1 Promoter options

The scheme 'promoter' will own and drive activity to prepare the scheme ready for delivery from Gate 2 to Gate 5. Promoter responsibilities span the following key areas: preliminary design and feasibility activity; stakeholder engagement and consultation; planning activity; and procurement; as shown in the diagram below.

Figure 5: Overview of promoter activity within the RAPID gated process



Clear governance is needed between all involved parties to make robust decisions on critical elements such as the funding and delivery model, the commercial approach, ongoing technical support to wider development activity, negotiation of commercial issues during procurement, and development and management of mitigations for key planning, technical and construction risks.

In addition, under the RAPID gated process, pre-planning activities need to be undertaken prior to Gate 3, and planning applications prior to Gate 5.

Current Promoter arrangements

As set out in the PR19 Final Determinations, for the AMP7 SRO gated development process, TWUL and Affinity Water are currently jointly developing both T2AT schemes, with a 50:50 funding allocation between the two companies respectively. As a result, TWUL and Affinity Water have been operating a joint promotion role since 2020.

Promoter options beyond Gate 2

Using the definitions set out in the RAPID / Ofwat December 2021 consultation document[28], an SRO scheme Promoter could be one of the following:

- the provider/exporting company
- company where the assets are located
- the importing/beneficiary company
- a joint venture between the above
- a third party
- a hybrid option where one company leads with defined involvement from the others

Table 10 below sets out the specific companies that hold these roles for both T2AT schemes.

[28] https://www.ofwat.gov.uk/wp-content/uploads/2021/12/RAPID-Autumn-2021-condoc.pdf

Table 10: Promoter mapping for both proposed T2AT schemes

	TWUL	Affinity Water
Provider / exporting company	✓ *Source water extracted in TWUL area*	
Company where the assets are located	✓ *Some assets located in TWUL area*	✓ *Some assets located in Affinity Water area*
Importing / beneficiary company		✓ *Water supplied for the benefit of Affinity Water customers*

This table shows that Affinity Water customers are the key beneficiaries of the scheme, and Affinity Water also has a significant proportion of assets located within its region.

TWUL is the exporting company, and also has T2AT assets in its region. However, TWUL is not a beneficiary of T2AT, and will be promoting or jointly promoting several other SRO schemes post-Gate 2. Therefore, we support the recommendation made by TWUL and Affinity Water, that Affinity Water, as the key beneficiary of the scheme, and the company with the greatest need for the scheme's successful delivery, should become the sole promoter of T2AT post-Gate 2

5.2 Operating arrangements

As set out above, the T2AT schemes are being constructed solely for the benefit of Affinity Water customers. The key driver for the T2AT schemes is to provide water supply resilience for Affinity Water customers in times of drought, while both schemes will also operate a 'sweetening' flow of approximately 25% of the full volume for the rest of the time. Therefore, its operational requirement is driven by Affinity Water – including both regular, 'business-as-usual' flow and additional flow during drought conditions. Therefore, we recommend that under all but the most extreme conditions, the operation of the scheme is defined and controlled by Affinity Water.

'Business-as-usual' operations

Currently, the detailed operating requirements for scheme are still under development. There may be potential 'automated' operating regimes under which increased flows are triggered by external factors, such as constraints on supply from alternative sources, and Affinity Water's involvement is limited to 'arms-length', passive oversight. These are likely to be more suited to scenarios in which T2AT schemes remain purely as resilience assets, only 'ramped up' in times of drought. On the other hand, T2AT schemes could become a more actively used part of Affinity Water's supply system, with flow-rates changed regularly in response to a range of parameters including the relative cost of alternative sources (as long as required T2AT sweetening flows are maintained at all times). Therefore, 'business-as-usual' operating regimes could range from scenarios where Affinity Water plays an 'arms-length' oversight role, to where it has active, day-to-day control.

The business-as-usual operating regime will have implications on the arrangements under DPC, as operational responsibilities and accountabilities of Affinity Water vs. the CAP will need to be clearly delineated. Between Gate 2 and Gate 3. We recommend further detailed investigation of the operating regimes of the T2AT schemes, including scenario-testing, to inform the most appropriate operating arrangements to be incorporated into future DPC commercial arrangements (expanded further in Section 5.3).

Operations during extreme conditions

The water sources for the T2AT schemes will be provided by TWUL, with the Lower Thames Reservoir scheme having a significant dependency on either SESRO, STT or both. During extreme conditions (for example, a more severe than 1 in 500 year drought), there is likely to be a need for TWUL, and potentially the SESRO operator, to manage flow through the T2AT schemes to ensure that water resources are most appropriately shared between Affinity Water, TWUL and Southern Water. Therefore, TWUL will need to have some level of control over the T2AT schemes, to be triggered under specifically defined extreme scenarios.

5.3 Commercial arrangements

Commercial arrangements for the T2AT schemes can be broken down into two main elements – arrangements covering the supply and payment for raw water, and arrangements covering the T2AT assets themselves. For both T2AT schemes, raw water supply is anticipated to be managed through a bi-lateral Bulk Supply Agreement (BSA) between TWUL and Affinity Water. For the Lower Thames Reservoir scheme, which depends on the provision of capacity in SESRO, the BSA may include elements of payment for the SESRO scheme - likely to include a capacity charge element and a volumetric charge element, with the capacity charge element being divided between TWUL,

Affinity Water and Southern Water based mainly on the relative resilience benefits provided to each company. Details of indicative SESRO commercial arrangements are set out in the SESRO Gate 2 Procurement Strategy Report.

The Beckton Reuse Indirect scheme is dependent on water abstracted from the River Lee being replaced by recycled water from the Beckton Effluent Reuse (BER) option of the London Effluent Reuse SRO scheme. Therefore, the BSA for the Beckton Reuse Indirect T2AT scheme will include charges for the operation of the BER scheme.

Commercial arrangements covering the T2AT arrangements themselves are much simpler – these assets are created for the benefit of, and as such will be funded solely by, Affinity Water customers. As set out above, under a DPC model the detailed commercial arrangements will have a significant dependency on the operating arrangements, as these will define the level of control the CAP has over the use of the asset, and therefore its ability to manage, for example, maintenance risks. Further, T2AT commercial arrangements will need to consider treatment of losses incurred during transfer (for example leakage from the pipeline), such that the CAP is incentivised to optimise the cost of losses (both financial and environmental) against the cost of loss minimisation (for example maintenance of the pipeline).

6 Risk allocation

This section sets out the current early thoughts on potential risk allocation between Affinity Water (as the promoter), the CAP/IP and Affinity Water customers for the T2AT schemes, based on delivery under a DPC model. Figure 9 of Ofwat's *Direct Procurement for Customers: Technical Review* report (reproduced in Figure 6 for reference) sets out indicative risk allocations for a typical project under the DPC model.

The construction risk profile for the T2AT schemes is relatively typical for a water industry project. As such we expect risk allocation to reflect that set out in Figure 9 of the Ofwat report, which includes risk sharing between the CAP/IP and customers during the 'Delivery' and 'Operations' phases. This should be limited to unforeseen costs or delays outside the CAP's control, and could be enacted by allowing the CAP to recoup efficient additional costs through the future DPC revenue stream.

As the project develops and specific risks and costs become clearer towards Gate 3 and beyond, we recommend a more granular approach to the transfer of specific risks, following the principle, set out in the HM Treasury Green Book and reflected in the IPA Project Routemap, that '*responsibility for management of risk should be allocated to the organisation best placed to manage it*'.

Figure 9: Potential risk allocation under the DPC model

Key Risks in Project Life Cycle	Stakeholder			Comments
	Appointee	CAP	Consumer	
1. Solution Development				
Data	✓		✓	— Allocation of early design and solution development risks likely to be similar under DPC to existing models. Especially for later tender models. — Early tender model may allow some greater sharing of risk with CAP.
Uncertainty	✓		✓	
Constraints	✓	✓	✓	
2. Planning				
Land purchase and site risk	✓		✓	
Environmental and social risk			✓	
Planning / Consent permission	✓		✓	
Third Party Consideration	✓	✓	✓	
3. Design				
Design process		✓	✓	— Allocation of design risks likely to be similar under DPC to existing models. Especially for later tender models. — Early tender model may allow some greater sharing of risk with CAP.
Design for construction	✓		✓	
Design for maintenance	✓		✓	
Resource availability and expertise	✓	✓		
Change in design required due to external influences	✓	✓	✓	
Materials and plant		✓		
4. Delivery				
Time and cost overrun risk		✓	✓	— Allocation of construction or delivery risks to the CAP from the appointed company is anticipated under the DPC model but assumed to generally be a direct transfer.
Resource availability of contractors		✓	✓	
Unforeseen ground or existing building conditions		✓	✓	
Third party claims		✓	✓	— Some opportunity for risk transfer from customers may be possible in the competitive tender process albeit that this is likely to be priced in the bid. — We assume that some re-openers to CAP revenue continue for material changes that are outside of management control (see section 4).
Subcontractor default / bankruptcy		✓		
Poor project management		✓		
Commissioning overruns		✓		
Availability of facilities	✓	✓	✓	
Legislative / regulatory change	✓		✓	
5. Operation				
Service performance risk	✓	✓	✓	— Allocation of operational risks to the CAP from the appointed company is anticipated under the DPC model but some service related risks may be difficult to transfer where they relate to statutory obligations. — Some opportunity for risk transfer from customers may be possible in the competitive tender process albeit that this is likely to be priced in the bid. — We assume that some re-openers to CAP revenue continue for material changes that are outside of management control (see section 4).
Resource or input risk		✓	✓	
Demand risk		✓	✓	
Maintenance risk		✓	✓	
External and third party impact		✓		
6. Transfer				
Asset condition and performance at handback	✓	✓		— Introduction of DPC model creates new asset transfer and hand-back risk which we assume is shared across appointed company and CAP. DPC contract would need to include requirements for asset transfer and hand-back.
7. Tender model specific risks				
Procurement failure	✓		✓	— Assume procurement risk is faced by both companies and customers where this results in delays or cost increases.

Figure 6 Indicative allocation of technical risks under DPC delivery models (reproduced from Figure 9 of* Direct Procurement for Customers: Technical Review*, KPMG, 2017)

7 Procurement risks, plan and market engagement

7.1 Procurement risks

This section sets out the key risks associated with procurement of the T2AT schemes. The procurement strategy for these schemes is at an early stage, and as such a detailed procurement risk appraisal is not possible at this stage. However, the Infrastructure and Project Authority's *Project Routemap: Procurement* module[29] sets out some typical high-level procurement-related issues that are often encountered on major projects. As shown in Appendix 8.1, these issues can be simplified to four summary procurement risks – these risks, and their mitigations, are shown in Table 11 below. The mitigation actions are addressed in the market engagement and forward procurement plan, outlined in Section 7.2.1.

Table 11: Summary procurement risks and mitigations

Procurement risk	Mitigation
Sub-optimal detailed procurement/contract strategy and/or plan	Implementation of a robust procurement and contract strategy development process, including a detailed understanding of key scheme commercial risks, informed by comprehensive market engagement, and developed with the support of specialist advisors (e.g. legal) where necessary.
Misunderstanding of or insufficient promoter capability	Ensuring the required resources are in-place to deliver the procurement strategy are in-place, including specialist advisors, and that the required operating model (capabilities, organisation structure and supporting processes) is in place to manage the delivery and future operation of the scheme.
Misunderstanding of supply chain capability and/or appetite	Undertaking a rigorous market engagement process, and using this to inform the detailed procurement, commercial and contract strategy.
Misalignment between project requirements and what's procured	Ensuring the procurement, commercial and contract strategy is developed with an in-depth understanding of project technical and engineering requirements and risks, and any constraints driven through the planning process. This can be achieved by involving technical teams in the procurement, commercial and contract strategy development process, and through running a comprehensive market engagement process whereby prospective bidders are asked to provide feedback on the alignment between the procurement approach and desired project outcomes.

7.2 Market engagement and forward procurement plan

This report concludes that DPC may have potential to deliver enhanced value for money for customers for both T2AT schemes, and as such should be considered further post-Gate 2. Further work is required to explore the potential financing, capex and opex savings in more detail to demonstrate that that is the case. Such work might include for example: exploration of the likelihood and practicalities of a CAP bringing innovation and a different approach to risk to enable a different scheme design, and whether this would lead to significant opex and capex savings. Scenario-testing should also be considered to assess how well different DPC and In-house models respond to different circumstances (e.g. drought conditions, where other SROs are delayed or don't deliver as expected, significant delays during construction, significant changes in future energy costs).

The value for money and scenario analysis should be updated to take into account relevant changes in circumstances between Gate 2 and Gate 3. For example:

- This report is based on the current eligibility criteria for specifying projects under SIPR, specifically that *"…the infrastructure project is of a size or complexity that threatens the incumbent undertaker's ability to provide services for its customers."*. We have concluded in this report that neither T2AT scheme meets the current SIPR criteria. This may require reconsideration, should

- This report is based on the standard DPC model as described in Ofwat guidance. However, during the course of this project discussions have been held with RAPID to understand the appetite to make changes to the current DPC approach e.g. the possible introduction of stage payments to create a revenue stream during construction, and using a higher gearing ratio to reduce WACC. Further, we understand that updated DPC guidance is to be published as part of the PR24 methodology development process. Where this results in

[29] Procurement - FINAL.pdf (publishing.service.gov.uk)
[30] Competition stocktake report final (ofwat.gov.uk)

changes to the standard DPC model, it would be appropriate to consider these possible changes, and the implications for the value for money of applying DPC procurement to the T2AT schemes.

- Since financial markets are also evolving, the assessment of financing costs used in the value for money calculations should also be updated to take into account updated information.

Ofwat requires a procurement plan for each T2AT scheme as part of the Gate 2 submission. The procurement plan needs to consider the whole period until the CAP has been appointed, not just the period between Gate 2 and Gate 3. To assist Affinity Water and TWUL in the preparation of that plan we have considered the activities required to complete the evaluation of the preferred model for each scheme, and the activities to prepare for the DPC procurement process (should this be the preferred model).

7.2.1 Market engagement and forward procurement activities

These include:

- **Commercial risk analysis –** there likely to be a range of scheme specific risks that will need to be identified and discussed with potential suppliers and financiers**.** Subsequently, these will need to be captured and reflected in any detailed modelling activities.
- **Market engagement (with the construction supply chain) –** structured engagement with key construction contracting organisations to better understand their views on the scheme, including:
    - Project risks and dependencies (as above), including their materiality, how they would be mitigated, and how they would be priced and treated contractually;
    - Potential construction methodologies and programming, including whether there are any opportunities to expedite or de-risk construction, and any specific construction or supply chain risks;
    - If/how T2AT schemes would be priced or contracted differently under different procurement models, for example contracting with an investor as opposed to either Affinity Water or TWUL, and what modifications to each model would mitigate this; and
    - Understanding the attractiveness of T2AT schemes as regionally significant, sustainability-driven projects – including whether this is genuinely attractive or seen as inviting extra scrutiny and therefore risk. This should be undertaken with the aim of making the schemes more attractive to the supply chain to increase competition when it comes to the future procurement event.
- **Market engagement (with potential investors) –** structured engagement with investor organisations to better understand their views on the scheme, including:
    - Project risks and dependencies (as above), including their materiality, how they would be mitigated, and how they would be priced and treated contractually, and how easily these could be passed to the construction supply chain;
    - Understanding the attractiveness of T2AT schemes as regionally significant, sustainability-driven projects – including whether this is genuinely attractive or seen as inviting extra scrutiny and therefore risk. This should be undertaken with the aim of making the schemes more attractive to investors to increase competition when it comes to the future procurement event;
    - Early views on potential deal structuring and financing arrangements including gearing, cost of equity and cost of debt.

  (Market engagement is divided into three progressive stages; ‘early market sounding’, ‘soft market testing’, and ‘formal market testing’, as detailed further below)
- **DPC Modelling Activities** –building a more detailed financial model that incorporates insight from the above risk analysis and market engagement activities, in order to make a robust VfM recommendation on the preferred delivery model at the Control Point C. Additions to the model may include debt refinancing repayment schedules, equity and debt financeability metrics (i.e. dividend cover, AICR), functionality for stress testing as well as refining financial, capex and opex assumptions following soft market engagement activities and expert input. In addition, this will include modelling of any identified modifications to the DPC model that may improve value for money, to ensure a robust and representative comparison between In-house and the ‘enhanced’ DPC model (rather than the ‘standard form’ model assessed in this report).
- **Development and negotiation of commercial arrangements between TWUL and Affinity Water** – agreement of contractual obligations between TWUL as the ‘provider’ and Affinity Water as the ‘beneficiary’ of the scheme, likely to take the form of a bulk supply agreement. Includes consideration and negotiation of contractual terms such as pricing, volume requirements, quality requirements, availability, and any exclusions that apply. Depending on the arrangements relating to SESRO (as a key dependency for the Lower Thames Reservoir scheme), these negotiations may also involve Southern Water.

- **Engagement with Ofwat and RAPID** – successful outcome at the gates and control points will be dependent on appropriate and proportionate engagement with Ofwat and RAPID. This should help in identifying potential issues before the submission takes place, as well as providing the regulator with the opportunity to have input into the overall process. This is especially relevant for Control Point C where the preferred delivery route would need to be identified, and in between Control Point C and E where a number interrelated drafting, planning and modelling activities will be taking place. Any proposed modifications to the DPC model to improve value for money, as identified through market engagement and detailed modelling activities outlined above, will also need to be presented and agreed with Ofwat through this process. In addition, it would be beneficial to engage Ofwat as appropriate in relation to the terms of the commercial arrangements between TWUL and Affinity Water.
- **Engagement with other stakeholders** – the scheme delivery programme will also be highly dependent on getting the external and internal right expertise and inputs at the required times. For example, the scheme Promoter will likely require input from legal and commercial advisors when drafting contractual agreements between TWUL and Affinity Water as needed, appropriate outputs of the engagement with Drinking Water Inspectorate, output of the engagement with local/regional authorities for obtaining required consents for the scheme.
- **DPC/in-house delivery contract drafting** – once the preferred procurement model has been determined, and relevant risks are sufficiently understood and quantified, an appropriate contractual agreement will need to be drafted. Risks will need to be appropriately apportioned between the water company, and investors/supply chain as appropriate, so that risks are allocated to the party that is best placed to manage them. Contractual documentation is likely to undertake a number of iterations between Control Point B and D and will be dependent (and inform) the outputs within detailed modelling and market engagement.
- **Procurement Strategy detailed development** – in parallel to contract drafting, a good oversight will need to be obtained around the design of tendering activities. Activities may involve drafting tender scoring methodology, planning detailed activities around each of the tendering stages, and ensuring the right resources are in place to manage the process.
- **Additional internal activities** – includes design, technical and delivery activities appropriate for a scheme of the T2AT schemes' magnitude, including finalising design and technical readiness plans, undertaking benefits and risk appraisals and engineering activities to determine outputs and service levels.
- **Tender process:** following Ofwat's Gate 4/OBC approval, call for competition would be issued, and formal market engagement can start. During PQQ stage (~6-months) bidders will be evaluated according to commercial and/or technical criteria and few shortlisted bidders will be allowed to proceed. During ITT stage (~12months) shortlisted bidders to comment on contract, and preferred bidder is selected. During preferred bidder stage commercial contract is finalised and agreed, financial close is reached and FBC submission is made to the regulator. Tender activities are likely to require 18 to 24 months in total given the size of the scheme, and depending on the preferred procurement model selected[31].

The schemes will need to be discussed with potential investors, construction and O&M contractors as well as with the supply chain in order to establish how best to design the DPC process, and the role of the CAP, to maximise competitive tension and value for money. A comprehensive, robust engagement process could include:

- **Early Market Sounding:** this is an optional stage for Ofwat's control point B and could include both investors and the construction supply chain to inform views on scheme timelines, key risks and opportunities, as well as 'warming up' the market.
- **Soft Market Testing**: This would take place with potential investors and construction contractors, and include Affinity Water engaging with potential investors and construction contractors to present the scheme, timings, scheme-specific risks, dependencies and constraints The purpose would be to gather feedback on the optimal structure of the deal, financing arrangements including gearing, cost of equity and cost of debt, as well as how risks are allocated and to enable a more informed appraisal of how risks would be priced. This will help to inform input parameters for the detailed modelling needed for the VfM case at Control Point C. This is likely to use a combination of presentations, workshops and bilateral meetings to communicate with the investor and supply chain community. This stage may last between 6 to 18 months.
- **Formal Market Testing**: during formal market testing stage (which would commence after publication of the Prior Information Notice (PIN)), we would expect a number of targeted workshops taking place with potential investors and supply chain organisations, as appropriate to the preferred procurement model. These may cover scheme optioneering, procurement approach, contract details, construction and operations of the

[31] For comparison, United Utilities' HARP scheme, currently out for procurement under DPC, has a planned procurement event duration of c.23.5 months from commencement to financial close (PQQ – c.4 months, ITN c.15 months, Award c.4.5 months).

asset, ground investigation, finance & legal activities etc. Formal market engagement may last 12 to 24 months.

A forward-looking procurement plan for each scheme is presented below. These plans are part of the broader Project Delivery Plan (Appendix F-1), and are based on the best information that is currently available. However, as these schemes proceed beyond Gate 2, further updates to the plans may be required in light of feedback obtained through market engagement and WRSE activities (which could influence the timing of when schemes need to be delivered by). These procurement plans will be developed further, into fully detailed plans, as required for Control Point C.

7.3 Procurement Plans

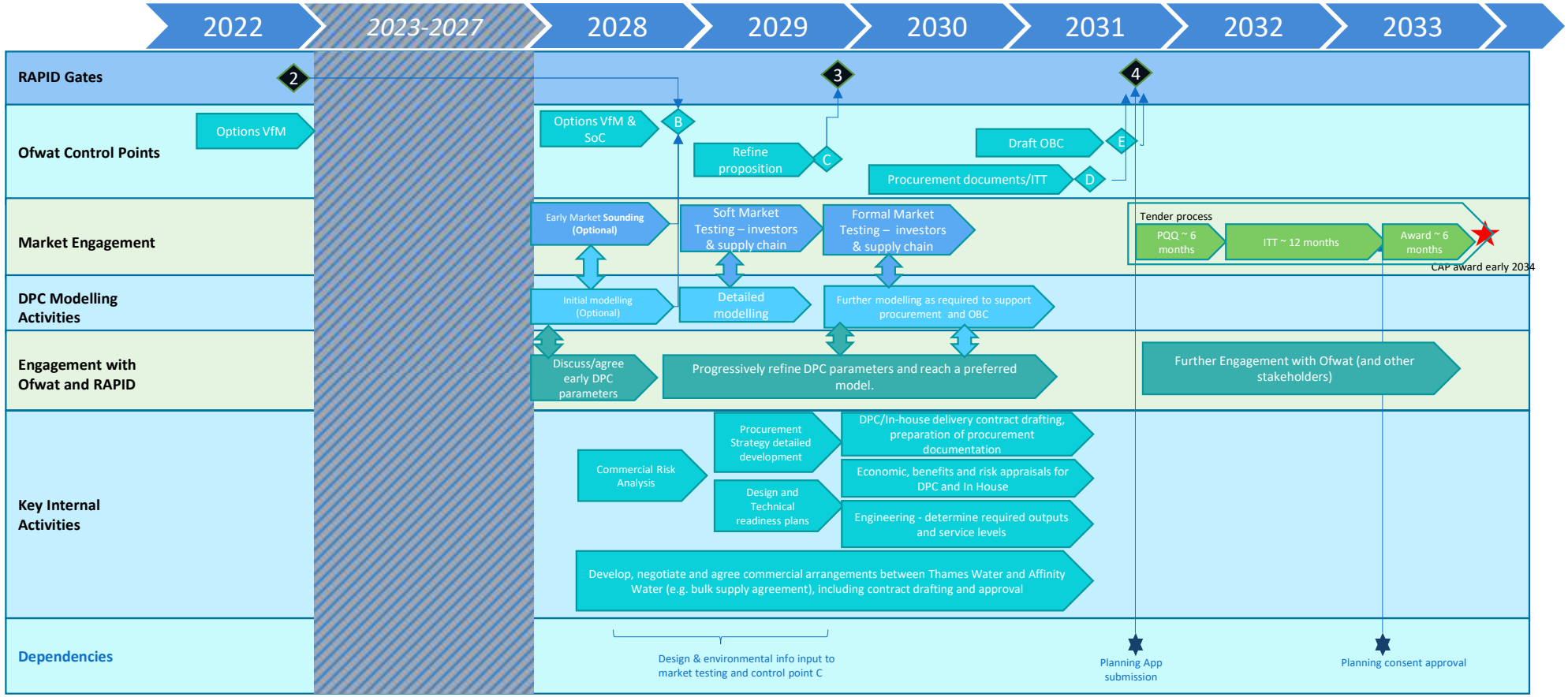
7.3.1 Procurement Plan – Lower Thames Reservoir Scheme

The plan below depicts key procurement activities that will need to take place in order to meet CAP award date, currently scheduled for early 2034.

Besides passing relevant Ofwat's control points, achieving the 2034 CAP award date will be dependent on getting planning consent approved by the time of CAP award, which implies a planning application submission date of late-2031. Given the lengthy duration of time between Gate 2 and the Lower Thames Reservoir scheme's required in-service date, there is a period between 2023 to 2027 where procurement-related work on the scheme is minimal.

No market engagement has been undertaken so far on this scheme.

Figure 7: Procurement plan for Lower Thames Reservoir



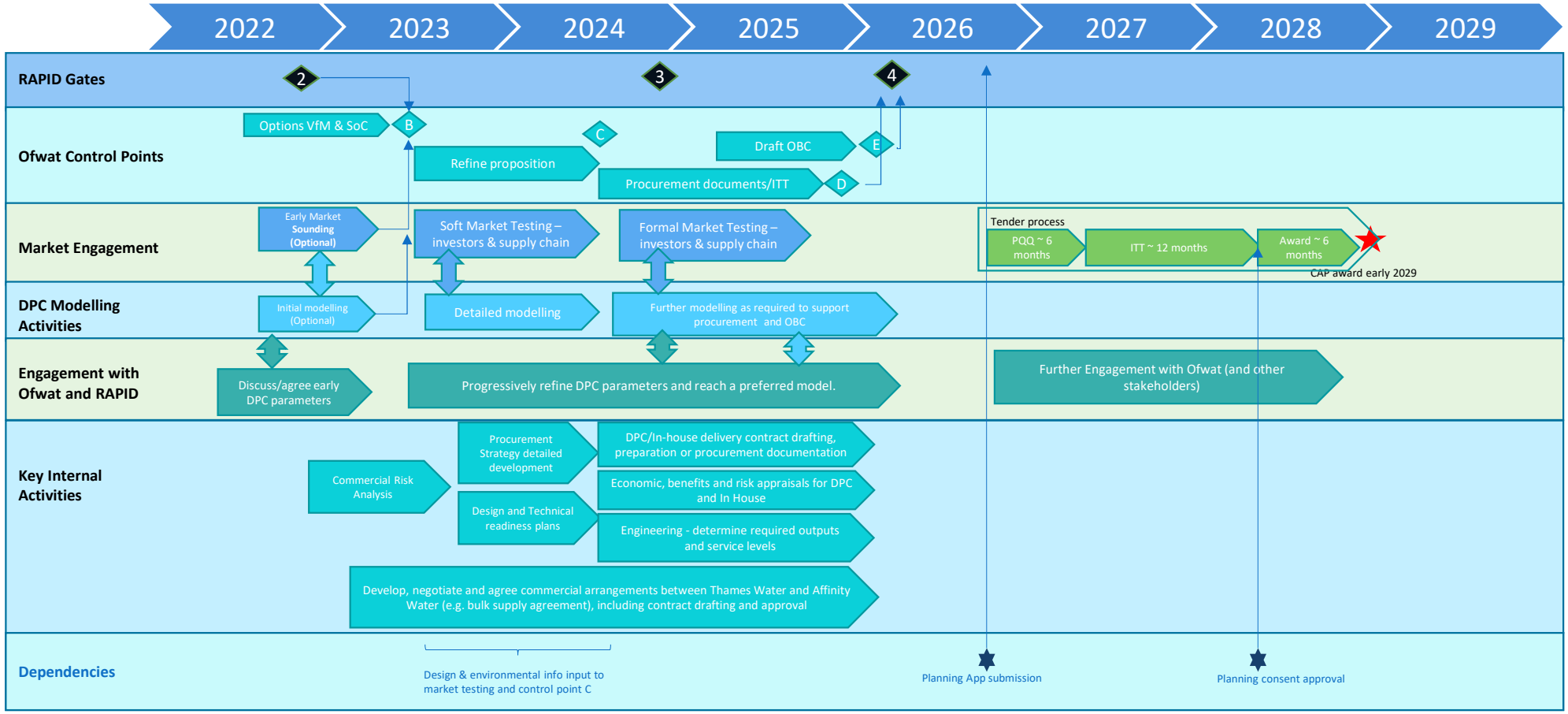
7.3.2 Procurement Plan – Beckton Reuse Indirect Scheme

As noted earlier in this report, the Beckton Reuse Indirect scheme is not selected in the draft WRSE Regional Plan, and it is therefore unclear when the scheme would be required to be in-service, if at all. However, previous iterations of WRSE regional modelling indicated an earliest required date of CAP award in early 2029, and we have based the below plan on meeting this date.

Besides passing relevant Ofwat's control points, achieving the 2029 CAP award date will be dependent on achieving planning application submission by mid- to late-2026 as well as getting a planning consent approved during first half of 2028, to enable the CAP award to be finalised. Additionally, the years 2024 and 2025 are anticipated to be particularly busy with number of different CAP and Market Engagement related activities taking place concurrently.

No market engagement has been undertaken so far on this scheme.

Figure 8: Procurement plan for the Beckton Reuse Indirect scheme



8 Appendices

8.1 Typical procurement risks

Procurement risks are based on the Infrastructure and Project Authority's *Project Routemap: Procurement Module*[32]

(reproduced from Project Routemap: Procurement Module, *Infrastructure and Projects Authority*

Typical findings relating to procurement	Summary procurement risks			
This list describes situations that might arise and would indicate that the approach to developing project procurement needs improvement. Other relevant modules may also help you close identified capability gaps.	Sub-optimal detailed procurement and contract strategy	Misunderstanding of promoter capability	Misunderstanding of supply chain capability and/or appetite	Misalignment between project requirement and what's procured
There is a disjointed relationship between the sponsor, client, asset manager and market with no clear understanding of risk allocation and no incentive for collaborative working.	✓	✓	✓	✓
A new client model (for example, establishing a fully integrated team) is being proposed, which the client/supply chain organisations do not have previous experience of applying successfully.	✓		✓	
The client model is not aligned with the proposed procurement strategy. For example, adoption of a thin client model with significant retained obligations.	✓	✓		
The requirements are poorly articulated or conflicting, so the purpose of the project and/or what it needs to deliver is confusing.				✓
The client does not understand the capacity, capability nor the market appetite to deliver the project.			✓	
The current supply chain structure is overly complex resulting in inefficiencies and failure of suppliers to work together to meet client needs.	✓			✓
Inadequate time has been allowed for the tender process, and tender documentation issued to the market is incomplete. This risks rushed solutions and poor-quality bids leading to problems downstream during delivery.	✓			
The client over-prescribes how the supply chain should do the work, which limits opportunities for the supply chain to innovate or add value.	✓			✓
The tender process and contract performance indicators are disproportionate to the size and complexity of the project, potentially reducing the pool of bidders and stifling competition and innovation.	✓			✓
Elements of the contracting model (risk allocation, incentivisation) have not been fully stress tested to identify potential unintended consequences, for example, limiting innovation or social value.	✓			✓
The evaluation criteria (technical, behavioural, ESG) are not structured in a manner to differentiate between suppliers. This causes price to become the determining factor obscuring the original intent of a balanced tender process.	✓			
The asset manager is not engaged in the development of asset information requirements, meaning they are not effectively built into the tender documentation and contract model. This results in issues handing over the asset and effective transition into operations and maintenance.	✓			✓

[32] Procurement_-_FINAL.pdf (publishing.service.gov.uk)