Thames Water Draft Water Resources Management Plan 2024 Statement of Response

Appendix B: Response to Ofwat Representations

August 2023

Introduction

The Ofwat representation to the consultation on our draft WRMP24 comprised two documents:

- A letter from Ofwat to the Secretary of State for the Environment, Food and Rural Affairs in which they describe their overall consideration of Water Resources Management Plans submitted across the country
- A letter from Ofwat to the Secretary of State for the Environment, Food and Rural Affairs in which they describe their consideration of Thames Water's draft WRMP24. This document contains an executive summary, followed by an Annex in which Ofwat's comments on our dWRMP are explained in more detail.

We have considered all of the points raised by Ofwat in relation to the draft Water Resources Management Plan. In this appendix we present a table in which we set out the points raised in the Ofwat's representation to our draft Water Resources Management Plan.

We have copied the text from the Ofwat representation directly and have responded to individual points raised in the table below. Ofwat have, in some cases, raised an issue in the executive summary/introduction, and then elaborated in further sections. As we have copied all text in the Ofwat consultation response directly to ensure that we have considered all points raised, this has resulted in some repetition in the table below.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Introductory Remarks		
Long-term water resources planning is a key business planning activity and essential for the efficient delivery of resilient water services for customers and protecting and enhancing the water environment. Ofwat has a key role to play in enabling this by funding through the 2024 price review (PR24). Therefore, it is vitally important that we consider whether water companies are identifying the best value approaches and delivering these, to ensure the best outcomes in terms of targeted investment to address challenges. The water resource management planning process is essential to help Ofwat and water companies get this right. As a statutory consultee, we welcome the opportunity to comment on Thames Water's draft water resource management plan (WRMP), which it published in December 2022	We recognise the importance of long-term water resources planning in developing a resilient and sustainable water supply for the future, and appreciate Ofwat's role in agreeing appropriate funding for our plans. We are grateful for Ofwat's input into the development of our plan through guidance provided, pre-consultation and the consultation response submitted in response to our plan. Ofwat has been more engaged in WRMP24 as compared to WRMP19 and this has brought with it benefits to the WRMP process, with the role of RAPID being of particular value.	None - no change requested
Thames Water supplies water to a population of approximately 10.6 million across six water resources zones (WRZs) in southeast England including London and areas to the west of London. Thames Water forecasts that several of its WRZs will be in deficit by 2050, without additional action to reduce demand or provide additional supplies. This means there would be insufficient water in those WRZs to maintain supply to customers in some severe drought conditions. The scale of the challenge	Thank you for your comments on our water resources situation and system, which we consider to be accurate.	None - no change requested

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and complexity of the issues means that effective action is needed to meet the needs of customers and the environment.		
Overall, there are some areas of Thames Water's plan that are in line with our expectations for this stage of a draft WRMP. In particular, Thames Water's plan delivers on expectations by: • setting out drivers of the water resource challenges faced across the planning horizon; • undertaking a best value assessment that follows best practice and links across to the Water Resources South East (WRSE) draft regional plan.	Thank you for these positive comments on the areas of our WRMP which meet your expectations. We have worked hard as part of the Water Resources South East Regional Group to develop a Best Value plan for the South East of England, and positive feedback in this respect is welcomed.	None - no change requested
However, there are several material areas we have identified from our assessment where the plan does not yet provide sufficient and convincing evidence that it delivers the best value plan in the interest of customers and the environment. The annex to this letter provides detail on the specific areas of the company plan that we consider need further work and evidence.	Thank you also for highlighting those areas of our plan which you think that we could improve. We have carefully considered the points that you have raised and have responded to individual points raised.	None - no specific change requested

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water should quantify and justify changes between WRMP19 and the WRMP24 starting point that may otherwise be attributed to non-delivery of WRMP19 funded schemes and targets. Thames Water should ensure it delivers on its PR19 funded supply and demand schemes to ensure PR19 performance commitment targets are met and the WRMP24 forecast is correct	We acknowledge this request and have included additional information as a result in our rdWRMP24.	In Section 6 of the revised draft WRMP, we have, in rdWRMP24, included a description of the changes which have occurred between WRMP19 and rdWRMP24 supply-demand balances, presented in a similar manner to the data provided in response to the Ofwat query on our dWRMP24.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water should review baseline deployable output (DO) to ensure that it is consistent with the water resources planning guidelines (WRPG) and that it appropriately accounts for the Gateway desalination (at Beckton) outage. This will give confidence the forecast supply demand balance is reflective of the challenges that Thames Water must address	In the draft WRMP, we stated our baseline Deployable Output as being subject to a time-variant Level of Service (1 in 100-year resilience up to 2031, 1 in 200-year resilience up to 2039, and 1 in 500-year resilience from 2040 onwards). While we recognise that this was not fully aligned with the Water Resources Planning Guideline, we did this in order to present a Baseline supply-demand balance in a manner which would be least confusing for stakeholders. We are not currently planning to have a '1 in 500-year' Level of Service in all Water Resource Zones from the start of the planning period and thought that it would be confusing for stakeholders to see large deficits in several WRZs from the beginning of the planning period. We understand that Ofwat and the Environment Agency wish for our Baseline Deployable Output to be stated as being subject to a 1 in 500-year Level of Service throughout the planning period, and that the Water Resources Planning Guideline has been updated, strengthening the wording around this point. As such, we have made this amendment in our Revised Draft WRMP24. In respect of the Gateway desalination plant, in the Draft WRMP, we presented the Deployable Output reduction from the Gateway desalination plant as a 'Change in DO from prolonged Outage' (line 7.4BL) as we consider that this was the most appropriate classification. The Baseline DO before forecast changes (6BL) adopted for the Gateway desalination plant was 100 Ml/d. We used figures of -25 Ml/d and -50 Ml/d in the line 7.4BL to represent periods during which we wished to present Gateway DOs of 75 Ml/d and 50 Ml/d respectively. We will continue to use this presentation of Gateway's Deployable Output, as we feel it is the most transparent way of reflecting our view of	In respect of changing the way that our baseline DO is presented, the DO figures presented in our baseline supply-demand balance are aligned with presenting a 1 in 500-year Level of Service throughout the planning period. In respect of the presentation of the Deployable Output of the Gateway desalination plant, we have made no amendments to the WRMP tables, as we consider that the current representation is correct and transparent.

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	the long-term capability of the plant. While the DO reduction associated with a 25 Ml/d DO drop is likely to be slightly less than 25 Ml/d, using capability reduction as equivalent, as there is minimal 'system' influence from the Gateway desalination plant.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water should revise ambitions against the governments demand management targets, including meeting the 2050 110 litres per head per day per capita consumption target, and reducing distribution input by 20% by 2037. These targets are not currently stated to be met	Environmental Improvement Plan Guidance on DI figures states: "Reduce the use of public water supply in England per head of population by 20% from the 2019 to 2020 baseline reporting figures, by 31 March 2038, with interim targets of 9% by 31 March 2027 and 14% by 31 March 2032". Whilst we are not reducing DI by 20%, we are planning to reduce DI per capita by 20% as stated, along with interim targets. We interpret that government policy and the WRPG require us to assume the 110 l/h/d PCC by 2050 goal as a policy led target and then manage the risk of hitting this target through sensitivity testing and an adaptive plan. This is the approach we have taken for the revised draft plan, and we have revised our demand management profiles and conducted additional sensitivity testing of both company and government-led demand reductions. A “high” DM profile is now selected that, along with assumptions of faster action from government, hits the PCC target of 110 in 2050.	Between dWRMP24 and rdWRMP, we have amended actions in our demand management plan such that we are planning on the basis of achievement of EIP targets at the company level. The exception to this is that our plan does not include the 122 l/h/d target by 2037/38 plan, as we do not consider that the pace and scale of reduction required to achieve this target is a robust basis on which to plan.

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Thames Water should provide transparent and consistently applied criteria for unconstrained option screening, to give confidence that options selected for the preferred plan from feasible lists are justifiable as best value options. This includes fair treatment of third party options.	In both dWRMP and rdWRMP we have applied a robust feasibility screening process across the options in our Unconstrained List to develop our Feasible List. The screening criteria have been applied by option type and have been applied consistently across all options, including third party options, as set out in Section 7 of the WRMP. Following feasibility assessment Further Screening has been carried out where either options are subject to a combined limit (e.g. cumulative limit on desalination and reuse options in the Middle Tideway, or options of different types that are mutually exclusive (e.g. selecting between Teddington DRA and reuse options that are dependent on the same water source). Details of the options screened out at Further Screening, and the reasons for rejecting them, are included in Section 7.	In response to this comment, Section 7 has been updated to include more information about the feasibility assessment methodology and criteria adopted. The outcome of the feasibility screening process is reported in the Feasibility Addendums.
Thames Water should include more evidence on utilisation in the final WRMP, including the interaction between interrelated strategic resource options and how this influences their utilisation	As a result of this comment we have expanded the range of information presented in Section 11 of the WRMP to show utilisation of different options under “dry year annual average” and “peak” scenarios.	Changes made as per comments made in our consideration.
Thames Water should carry out sensitivity analysis on the timing of adaptive plan branches to explore the tradeoffs and justify the timings, and different glidepaths on water efficiency and leakage to enable presentation of the implications	We carried out extensive sensitivity testing (50+ runs) ahead of the draft WRMP and have repeated and extended it further (100+ runs) for the revised draft WRMP. This includes exploration of alternative policy dates, option availability and base supply risk tests. It also includes alternative savings profiles for both company-led and government-led demand management activity.	Sensitivity testing and its consideration in identifying the overall Best Value Plan is included in the re-written section 10 and section 11 (respectively).

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Thames Water should present a core pathway in line with the WRPG definition that includes low-regret investment to meet future uncertainties and additional option value for future flexibility. Demonstrate that scenario testing, including the common reference scenarios, has been used to identify low-regret investment that is required in all or most plausible futures	Between Draft WRMP and Revised Draft WRMP both Thames Water and the WRSE Regional Group have engaged with Ofwat to establish how we can better align our investment modelling with the Long Term Delivery Strategy framework. WRSE have conducted a range of investment model runs which allow us to better align with the requirements of the Long Term Delivery Strategy guidance, and the outputs of these runs are included in our WRMP Tables.	Our WRMP tables include presentation of information which includes non-adaptive run outputs for combinations of scenarios Ofwat defined in LTDS guidance.
Thames Water should include the value of additional benefits within the WRMP planning tables for investment beyond least cost. It should continue to refine bottom-up cost profiles and ensure costs are reliable, efficient, and appropriately allocated for areas of significant investment	We do not consider that valuation of the benefit of the Best Value plan as compared to the Least Cost plan can be presented in the WRMP Tables, as there is nowhere to present this information. We have continued to ensure that our costs are reliable, efficient, and appropriately allocated.	No changes made to the dWRMP, for the reasons stated in our consideration.
We thank Thames Water for its hard work and effort in producing a detailed draft WRMP, and responding to queries throughout the consultation process. It should now focus on delivering the expected outcomes of the current plan (WRMP19 funded via PR19) and considering the responses to this draft	Thank you for these comments. We also look forward to continuing to work together.	No changes requested

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consultation in its final plan. We look forward to continuing to work together as final WRMPs are prepared, to protect water resources now and in the future.		
Demand Management Ambition and Outcomes		

The government's strategic priorities for Ofwat state reducing demand for water can relieve pressures on water supply and increase our resilience to extreme drought. Water companies must act to reduce demand for water in a way that represents value for money in the long term. We expect all companies to use their WRMPs to show how they will meet long-term water demand targets, including: • halving leakage across the industry by 2050, in comparison to 2017-18 levels. • reducing per capita consumption (PCC) to 110 litres per head per day (l/h/d) by 2050 In addition to the Environmental Targets (Water) (England) Regulations 2023 setting out the targets above, the regulations also set out a target for the reduction of potable water supplied by water undertakers in England to people in England. This states that the volume supplied per day per head of population should be at least 20% lower than the 2019-20 baseline by 31 March 2038. We expect companies to demonstrate how they will deliver against this target in their final WRMP.	Between dWRMP and rdWRMP we have revised our demand management plan to align with the requirements of the newly published Environmental Improvement Plan and changes to the Water resources planning guideline.	Between dWRMP24 and rdWRMP, we have amended actions in our demand management plan such that we are planning on the basis of achievement of EIP targets at the company level. The exception to this is that our plan does not include the 122 l/h/d target by 2037/38 plan, as we do not consider that the pace and scale of reduction required to achieve this target is a robust basis on which to plan.

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We welcome Thames Water's plans to reduce leakage by 50% by 2050. However, in line with the PR24 final methodology we expect companies with higher relative leakage levels to challenge themselves to go beyond the 50% reduction target. The company should provide sufficient and convincing evidence that a 50% reduction is appropriate for its circumstances, as it would still be a relatively poor performer compared to others across the industry even with a 50% reduction from 2019-20 levels. Thames Water should also ensure its 2050 target is optimum in the context of its long term supply demand balance position, and significant proposed investment in supply-side schemes.	Since the draft WRMP, we have slightly revised our leakage forecast for AMP7 and early AMP8, leading to a further reduction by 2049/50 of 52.5% under our low, medium and high demand management profiles. For our final plan, we have simplified the Low/Med/High/High+ demand targeting profiles and between the high (hitting 52.5% reduction at 2049/50) and high+ (hitting 57.8% reduction at 2049/50), an additional £2.5B on mains Rehab, and £230M on Leakage Innovation would need to be spent. At the already ambitious level of leakage reduction that 50% represents, it is strongly cost inefficient to reduce leakage further, and should only be considered should further supply issues arise than have been forecast, or if significant (currently unforeseeable) advancements are made which make mains rehabilitation a more cost-effective option. The five-yearly updates to the statutory WRMP will facilitate frequent revision of the cost effectiveness of leakage control options and it should be recognised that the WRMP24 reflects the best available cost information at this point in time. Within the WRSE programme optimiser, we have generally found that if we allow the model to choose less than the 50% target, then it will do so. This implies that the target is beyond the sustainable economic level of leakage (as is to be expected).	We have updated our description of the outcomes of our demand management plans in Section 8 of our WRMP.

We are concerned that the company is not proposing to meet the per capita consumption (PCC) target of 110 l/h/d by 2050. The company only proposes to reduce PCC to 123 l/h/d by 2050. It proposes a three-year average PCC (normal year) over 2025-30 period that will deliver a level of PCC that is 8.3% below the 2019-20 baseline by 2029-30. This is only a small additional reduction of 2% beyond the company's 2024-25 performance commitment level of a 6.3% reduction. For the final WRMP we expect the company to set out a more ambitious plan that meets PCC target of 110 l/h/d by 2050 and identifies activities and quantified benefits to achieve this. The company should provide sufficient and convincing evidence of target testing, an explanation of its decision-making process and full justification for the selected PCC reduction in its final WRMP	As described in our dWRMP, our rationale for not planning on the basis of the 110 l/h/d target was that we had significant concerns around reaching a 110 l/h/d PCC target by 2050 and that we could not demonstrate with confidence how this target would be achieved. We all have a part to play in reducing demand and our programme was already demonstrating that significant government-led intervention was required on top of company-led activity in order to reduce demand towards the target. We remain concerned with regard to Ofwat's language around the PCC target , which appears to indicate that their stance is that PCC is wholly within company control, and that measures which water companies can take will govern whether or not this target will be achieved. We urge Ofwat to consider the language used in reference to hitting PCC targets, reflecting that Ofwat should hold companies to account for their contribution towards achievement of this target, but should not place sole responsibility on water companies and recognise the joint accountability with regulators and government and the vital role that they also have to play in this important area. The 110 l/h/d target did not feature in the Water Resources Planning Guideline at the time of publication of the draft WRMP, and neither was the EIP published at this time. The Water Resources Planning Guideline was updated between publication of our Draft WRMP and the Revised Draft WRMP. The Water Resources Planning Guideline now states that a company's "preferred programme should deliver a PCC of 110 litres per person per day by 2050 under your dry year annual average scenario." , and that "by exception" if a company determines that it cannot meet the 110 l/h/d by 2050 target, it would be acceptable not to plan on this basis, but that a company should provide "	We have re-formulated our demand management programmes and have adopted a different set of government-led policies in our preferred programme in order that the 110 l/h/d target is met by 2050. This is described in Section 8 and Section 11 of our rdWRMP24.

	clear evidence and justification to customers and stakeholders through your plan, explaining why it is not possible". We interpret that government policy and the WRPG require us to assume the 110 l/h/d PCC by 2050 goal as a policy led target and then manage the risk of hitting this target through sensitivity testing and an adaptive plan. This is the approach we have taken for the revised draft plan, and we have revised our demand management profiles and conducted additional sensitivity testing of both company and government-led demand reductions. A "high" DM profile is now selected that, along with assumptions of faster action from government, hits the PCC target of 110 in 2050.	

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The company's final WRMP should reference the target to reduce distribution input by 20% by 2037-38 and demonstrate how it plans to deliver this through a combination of reductions in the key demand components, leakage, household consumption and non-household consumption.	Guidance on DI figures states: "Reduce the use of public water supply in England per head of population by 20% from the 2019 to 2020 baseline reporting figures, by 31 March 2038, with interim targets of 9% by 31 March 2027 and 14% by 31 March 2032" - Environmental Improvement Plan. Whilst we are not reducing DI by 20%, we are planning to reduce DI per capita by 20% as stated.	Between dWRMP24 and rdWRMP, we have amended actions in our demand management plan such that we are planning on the basis of achievement of EIP targets at the company level. The exception to this is that our plan does not include the 122 l/h/d target by 2037/38 plan, as we do not consider that the pace and scale of reduction required to achieve this target is a robust basis on which to plan.

We are concerned that the company's draft WRMP provides insufficient evidence of demand reduction target testing and optimisation and how this has influenced its decision-making process. Further explanation of decision making and justification for the selected demand reductions and subsequent strategy is required in its final WRMP	Our demand options are considered differently in the optimization depending on cost efficiency and remaining potential. For example, our metering programmes are constrained mainly by overall programme deliverability. In AMP8 and AMP9 we aim to meter as many properties as we can, and our programme reflects this. In AMP9 and AMP10 we increasingly focus on “metering innovation”, an option which involves metering currently unmeterable properties. There remains a number of unmeterable properties in our supply area. Much of our water efficiency programme is associated with the “Smarter Home Visit” (SHV) intervention. When we install meters, our experience shows that a proportion of metered properties have wastage issues and our SHV intervention involves visiting homes with wastage issues, and thus our water efficiency programme is pegged to the metering programme. Another aspect of our water efficiency programme is the “Digital Engagement” intervention – again, making digital intervention is reliant on a meter having been installed. When a sufficiently high proportion of our customers are metered, we will introduce tariffs, which we consider will have a considerable impact on customers’ PCC. As such, there is a link between our metering programme and PCC reduction profile in this respect. Similarly, some parts of our leakage optimization are constrained by deliverability (CSL from metering, Advanced DMA intervention). The main constraint here is realistic delivery. These interventions are very cost effective, and so have been considered to be necessary (and such aren’t	While our approach to derivation of company-led demand management programmes has not changed significantly between dWRMP24 and rdWRMP24, we have provided explanation in Section 8 of our rdWRMP to provide a greater level of explanation regarding how our demand management programme represents an optimal strategy.

	variable in the optimization). For other parts of our demand management programme (leakage innovation, mains rehabilitation), we have used DMA-level data on distribution main reduction potential to derive assumptions (innovation) or estimated savings vs cost (rehabilitation). We provide further supporting evidence for the optimization and targeting profiles of our demand management policies in Section 8 our final WRMP.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
We are concerned that, based on the draft WRMP data tables, the company does not forecast to deliver its PR19 performance commitment levels for leakage and PCC by 2024-25. We expect the company to deliver its targets for both PR19 performance commitments and do not consider it is valid for companies to expect additional customer funding to address deficits resulting from under delivery in the current or previous periods. We expect the company to review its proposals in these areas for its final WRMP.	The appearance of TW not planning to hit PR19 Performance Commitment levels for leakage in the dWRMP is due to a misunderstanding regarding the requirements of Table 2a. We have amended our submission for Table 2a to align with Ofwat's expectations for Table 2a.	Table 2a has been amended to reflect Ofwat's expectations. Our AMP7 plans for PCC and leakage are reflected in our rdWRMP.
We welcome Thames Water's proposal to reduce business demand levels by 7.2% by 2029-30 when compared to 2019-20 baseline levels. The company proposes to achieve this via the installation of smart meters on non-household properties and water efficiency savings enabled by its Smarter Business Visits. We have previously highlighted the opportunity for companies to deliver non-household demand reductions and our expectations for WRMPs that deliver significantly improved levels of water efficiency in the business sector. We expect the company to clearly justify an ambitious strategy for non-household demand reduction in its final WRMP.	Since our draft WRMP was published, further activities for business demand reductions have been discussed and are expected for our final plan, including business tariffs, further water efficiency business visits, and retailer coordination. We have updated our revised draft plan with these activities and added justification for the methods.	Changes have been made to Section 8 and Section 11 of our WRMP, aligned with our consideration.

Thames Water is not proposing to meet the per capita consumption (PCC) target of 110 l/h/d by 2050. The company states that meeting this target would not be realistic, nor would it represent best value to customers. It further states that achieving the target would require government-led or unproven company-led actions. However, the company does not test a scenario whereby it does meet the government target, and as such the plan does not provide sufficient and convincing evidence why it views its chosen 2050 target as optimum. The company should test a scenario of meeting the 110l/h/d target under the dry year scenario for its final WRMP. As the company further develops its forecast PCC performance trend from draft WRMP to final WRMP it should include the reasons for changes and explain the impact of any revisions on the optimisation and best value option selection in its preferred plan. We expect the company to provide sufficient and convincing evidence in its final WRMP to justify why its selected targets for demand reduction represents the best value approach to meeting a supply-demand balance or delivering long-term strategic outcomes.	The Water Resources Planning Guideline was updated between publication of our Draft WRMP and the Revised Draft WRMP. It now states that a company's "preferred programme should deliver a PCC of 110 litres per person per day by 2050 under your dry year annual average scenario." This is a significant change from what was originally a national level expectation. As described in our dWRMP, our rationale for not planning on the basis of the 110 l/h/d target was that we had significant concerns around reaching a 110 l/h/d PCC target by 2050 and that we could not demonstrate with confidence how this target would be achieved. We all have a part to play in reducing demand and our programme was already demonstrating that significant government-led intervention was required on top of company-led activity in order to reduce demand towards the target. We interpret that government policy and the WRPG require us to assume the 110 l/h/d PCC by 2050 goal as a policy led target and then manage the risk of hitting this target through sensitivity testing and an adaptive plan. This is the approach we have taken for the revised draft plan, and we have revised our demand management profiles and conducted additional sensitivity testing of both company and government-led demand reductions. A “high” DM profile is now selected that, along with assumptions of faster action from government, hits the PCC target of 110 in 2050. We remain concerned with regard to Ofwat's language around the PCC target, which appears to indicate that their stance is that PCC is wholly within company control, and that measures which water companies can take will govern whether or not this target will be achieved. We urge Ofwat	As noted in our consideration, we interpret that government policy and the WRPG require us to assume the 110 l/h/d PCC by 2050 goal as a policy led target and then manage the risk of hitting this target through sensitivity testing and an adaptive plan. We have re-formulated our demand management programmes and have adopted a different set of government-led policies in our preferred programme in order that the 110 l/h/d target is met by 2050. Section 10 of our WRMP describes the implication for our plan of different PCC reduction profiles, and how this has led us to arrive at our preferred plan.

	to consider the language used in reference to hitting PCC targets, reflecting that Ofwat should hold companies to account for their contribution towards achievement of this target, but should not place sole responsibility on water companies and recognise the joint accountability that regulators and government also have in this vitally important area.	

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Thames Water proposes a three-year leakage reduction over 2025-30 period that will deliver a level of leakage that is 29.8% below the 2019-20 baseline by 2029-30. This represents an additional reduction of 9.4% beyond the company's PR19 performance commitment level of a 20.4% reduction by 2024-25. This is a significant reduction in stretch and ambition compared to PR19 targets and is set in the context of Thames Water still being the worst performing company for leakage rates. The company should provide sufficient and convincing evidence of target testing for 2025-30 delivery, and an explanation of its decision-making process and a justification for the selected leakage reduction in its final WRMP.	Our path to hit the interim and 2050 targets for leakage is frontloaded, with the majority of savings delivered in the earlier years. This is because we consider that we can deliver a relatively large amount of savings through relatively low-cost means (such as meter installations and CSL fixes). At some point, leakage reduction will require widespread mains rehabilitation, and at that point costs will significantly increase. An additional point to raise is that, as leakage levels reduce it is more difficult to reduce leakage further. Leakage reduction options have largely been modelled using a bottom-up approach, where individual interventions are developed considering deliverability, cost, and benefit. These individual options were then aggregated into portfolios to detail demand management programmes. Our best value options were then chosen first, to ascertain a profile for leakage reductions that is both realistic, and swift. For our revised draft plan, it is clear that we need more detail of the approach used around the leakage reductions and we have included this in Section 8.	We have added additional detail into Section 8 of our WRMP to describe how our demand management programmes have been developed.

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Setting a glidepath to meet optimum long-term targets and outcomes should enable an efficient and deliverable long-term programme to be identified. The company's plan only considers a single leakage profile to achieve its 2050 target. The company should present sufficient and convincing evidence of testing of profiles and explain more robustly why this profile – rather than doing more or less in the near term – is optimal from a timing of investment perspective. This is particularly important given that the company is proposing to carry out high-cost mains and supply pipe renewals during the 2025-30 period.	As a result of this comment, for our revised draft plan, our demand management report (Section 8 of the WRMP) provides more explanation as to why we have chosen each demand management target profile and provides clarity on why these were chosen to explain which is preferred. For our revised draft plan, 3 of the 4 demand profiles are identical (low, medium, high) for leakage targets, due to the expectation that we will hit the ambitious 50% leakage reduction target. Risks around under delivery and other sensitivities are explored through the further WRSE modelling. In addition, we have considered a “High Plus” demand reduction programme as an option within our programme appraisal which delivers a higher level of leakage reduction, in order to ascertain whether aiming for greater leakage reduction would be a ‘Best Value’ decision. Under our “High Plus” programme (hitting 57.8% reduction at 2049/50), an additional £2.5B on mains Rehab, and £230M on Leakage Innovation would need to be spent. At the already ambitious level of leakage reduction that 50% represents, it is strongly cost inefficient to reduce leakage further, and should only be considered should further supply issues arise than have been forecast, or if significant (currently unforeseeable) advancements are made which make mains rehabilitation a more cost-effective option.	We have added additional detail into Section 8 of our WRMP to describe how our demand management programmes have been developed.

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The range of options for leakage reduction considered by the company include active leakage control, mains renewal and supply pipe renewals. However, the plan contains insufficient evidence and disaggregated costs and benefits of activities to fully understand whether these are long term best value. Three active leakage control options are presented in data tables. It is unclear what these options are made up of. Appendix P (Options list tables) suggests that these options cover actions including replacement of service pipes, pressure management and fixing leaks but no description of the scale and timing of these actions is provided. We expect the company to present further evidence of options and disaggregate the costs and benefits of these leakage actions in its final WRMP.	Demand Management activities have been described within Section 8 of our draft plan. For the final plan, we have provided greater clarity around these activities with respect to both the measures taken, and the process used to determine costs and benefits.	We consider that we provided an adequate description of the interventions which make up the leakage control options in the dWRMP. We have however expanded this description in Section 8 of the rdWRMP.
Of the three feasible active leakage control options presented in the data one of these (Advanced DMA medium) has been included in the preferred plan. It is unclear why this option was selected. An alternative feasible option (Advanced DMA high plus) seems to deliver the same leakage reduction but at a lower unit cost. In its final WRMP, the company should present sufficient and convincing evidence of why the preferred active leakage control options are long-term best value.	The lower unit cost for Advanced DMA high plus is likely an oversight from how the assumptions were applied in our dWRMP. Within the high plus scenario, leakage reductions (including that of the Advanced DMA option) are accelerated, however the high-level assumptions for cost go up over time, meaning that more leakage reduction happens in the lower cost band. In our final WRMP, we have reassessed how the demand management target profiles (low, medium, high & high plus) are applied and justified.	Changes have been made to Section 8 of the WRMP as noted in our consideration.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Although Thames Water proposes to replace supply pipes to reduce leakage it does not discuss its policy with regards to customer supply pipe leakage. We are encouraging companies to evaluate the benefits of a common industry approach to addressing leakage on customers own pipes. We expect companies to provide a view on the benefits of a common industry approach in their statements of response and final WRMPs. We will support companies in the development of a common approach but expect the industry to lead on the development. The Water UK leakage route map to 2050 committed to an informed debate on customer supply pipe strategy by December 2022	We acknowledge that a common industry approach would be beneficial, and we fully intend to support conversation around this issue. As far as we are aware, this informed debate has not yet happened, and as such we have not built this into our WRMP plan. Thames Water's policy is currently free CSL repairs for customers subject to a number of conditions. It is assumed that this will continue going forward, with costs from CSL repairs and replacement as a result of metering being accounted for in our WRMP cost profiles.	We have clarified within Section 8 of our WRMP that free CSL repairs will be offered in AMP8.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
The company chooses mains renewal which has a high unit cost for delivery in the near term (including for 2025-30). Mains renewal selection may be a consequence of the company setting a sub-optimal leakage glidepath or not considering a wide enough range of options and sub-options. This results in a leakage reduction enhancement expenditure unit cost of £5.9 million per Ml/d for the 2025-30 period. This unit cost is higher than the requested rate by the company at PR19. The plan contains insufficient evidence that this is a credible cost increase. The company has the highest relative leakage levels in the industry and therefore there is likely to be scope for it to deliver more efficiently including through active leakage control and pressure management. We expect the company to review its leakage reduction proposals and provide sufficient and convincing evidence it is presenting a best value solution based on efficient activity costs.	In our plan we have limited the total savings possible from both ALC and Pressure Management activities due to the expectations around how much there remains to reduce with these policies, i.e., we consider that there is an upper limit to the amount of ALC and pressure management that we can do. In our plan, savings from these activities have been aggregated with the DMA enhancement (ALC & PM reductions realised by enhancement) and Leakage Innovation (ALC reductions from improvements to advanced detection and repairs methods) options. Whilst expectations of cost of these two options are lower than the equivalent Mains Renewal savings, we have assumed fixed amounts that can be achieved through each, meaning that for the remaining leakage reductions required to hit the 50% target (and interim targets), mains renewal needs to be considered. In particular, pressure management is currently close to maximum implementation, so there is relatively little potential remaining for future planning. The PR24 business plan will provide evidence regarding the cost efficiency of our programme.	We have added additional detail into Section 8 of our WRMP to describe how our demand management programmes have been developed.
Meter penetration is forecast to increase from 65% in 2024-25 to 73% by 2030 and to 91% by 2040. Thames Water is planning to continue with its existing smart metering programme. Smart meter penetration is planned to increase from 21% in 2024-25 to 39% by 2030 and 57% by 2040	Ofwat have correctly identified the meter penetration forecast in our dWRMP.	No changes have been made, as there is no request for changes to be made.

The interaction between metering options and the PCC glidepath to 110l/h/d is also not explored. The company should present sufficient and convincing evidence to explain this. The decision-making process identifying how outputs from models and optimisation tools are developed into recommendations for executive team and Board sign off is not clearly explained in the draft WRMP. For the final WRMP the company should provide further detail of this decision-making framework, as well as evidence to justify why the preferred metering option is best value from a technology and timing of investment perspective	Informed assumptions have been placed on the consumption savings made by metering in order to estimate the savings expected from future activities. Our metering programmes are constrained mainly by overall programme deliverability. In AMP8 and AMP9 we aim to meter as many properties as we can, and our programme reflects this. In AMP9 and AMP10 we increasingly focus on "metering innovation", an option which involves metering currently unmeterable properties. There remains a number of unmeterable properties in our supply area. Much of our water efficiency programme is associated with the "Smarter Home Visit" (SHV) intervention. When we install meters, our experience shows that a proportion of metered properties have wastage issues and our SHV intervention involves visiting, and thus our water efficiency programme is pegged to the metering programme. Another aspect of our water efficiency programme is the "Digital Engagement" intervention – again, making intervention reliant on a meter having been installed. When a sufficiently high proportion of our customers are metered, we will introduce tariffs, which we believe will have a considerable impact on customers PCC. As such, there is a link between our metering programme and PCC reduction profile in this respect. The three points discussed above demonstrate that our PCC glidepath is heavily dependent on the installation of smart meters. Given that our metering programme is initially constrained by deliverability, our water efficiency programme and PCC glidepath is similarly constrained.	We have added content in Section 8 to provide a greater level of detail, with key points referenced in our consideration of this response.

	Our Executive and Board have been engaged throughout the development of our WRMP. This is detailed in Section 1 of the WRMP.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
A high-level comparison of company costs and benefits for metering activity across the 2025- 30 and 2025-50 periods indicates that for Thames Water the costs of delivering metering benefits are higher than for other companies. This may be influenced by the company presenting high AMI smart meter installation costs. The company needs to provide sufficient and convincing evidence that the unit costs of its smart meter installations are efficient with the costs currently presented being higher than PR19 unit costs and current outturn.	Informed assumptions have been placed on the consumption savings made by metering in order to estimate the savings expected from future activities. Our PR24 business plan will make the case regarding why our costs are efficient and robust.	No change – PR24 plan will justify efficiency
Assessment of Water Needs		
A robust assessment of current and future water needs is critical as it drives the gap between supply and demand and therefore the scale of investment for the 2025-30 period and beyond. We provided detailed feedback on Thames Water's assessment of water needs in our pre-consultation feedback in 2022. Some of our previous feedback has not been fully addressed in the draft WRMP and has been raised again below. Thames Water should provide sufficient and convincing evidence that the feedback has been addressed in the final WRMP.	Thank you for this feedback. Our consideration is detailed below, in response to the individual points raised.	None – Introductory paragraph to subsequent points

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
The company's supply demand balance starting point for the draft WRMP24 is lower than its forecast for the same point in the final WRMP19. The reduction in available water for 2025-26 is equivalent to 8% of company water demand (distribution input). Although some of the changes are due to supply-demand balance reporting updates, there is still insufficient evidence to understand changes in some areas. This may point to non-delivery or underperformance as the cause, including not meeting expected WRMP19 PCC levels and non-delivery of PR19 funded supply schemes. It is important that Thames Water steps up effort on WRMP19 supply- and demand-side options delivery and meeting PR19 commitments ahead of WRMP24. We expect the company to make substantial efforts on demand reduction for the rest of 2025-30, to ensure that WRMP19 forecast, and PR19 performance commitment targets are met annually, and to set firm foundations for delivering WRMP24.	The queries raised in regard of changes between the WRMP19 and WRMP24 baseline supply-demand balance were helpful in highlighting information which it would be useful to include in Section 6 of our WRMP. We have incorporated the material provided in response to this query (updated to align with our rdWRMP supply-demand balance position, where material provided in response to the query was aligned with the dWRMP supply-demand balance) in Section 6. We have ambitious plans for leakage and usage reduction in AMP7 and AMP8 to ensure the resilience of our supply-demand balance.	In Section 6 of the WRMP, we have included a description of the changes which have occurred between WRMP19 and rdWRMP24 supply-demand balances, presented in a similar manner to the data provided in response to the Ofwat query. We have revised our baseline demand forecast to reflect our current position and plans for the remainder for AMP7. We have also revised our demand management programmes to reflect our proposals for AMP8. A summary of changes between draft and Revised Draft is given in Section 8 of our WRMP.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water has reduced the expected outputs from some works resulting in a reduction in deployable output of 26Ml/d across small sites when compared to WRMP19. The company has also reduced the sustainable output of its Gateway desalination plant resulting in a reduction to the supply-demand balance of a further 90Ml/d in 2025-26 (based on a query response). Target headroom (uncertainty allowance) has also increased in 2025-26 by 57Ml/d (an increase of 34%) when compared to the same point in its WRMP19 plan. This means that there are significant concerns whether the overall outcome of the WRMP19 as funded at PR19 has been delivered in the round. Companies should not expect additional customer funding to address deficits resulting from under delivery in the current or previous periods. The company should fully quantify and justify the reasoning for changes between WRMP19 and the starting point for WRMP24 at a supply-demand balance component level with sufficient and convincing evidence.	The interpretation of changes between our forecast WRMP19 and WRMP24 positions is correct, however this does not in all cases point to non-delivery of our plans. On the supply-side, some DO reductions between WRMP19 and WRMP24 are on the basis of Deployable Output reassessment, rather than non-delivery or poor maintenance. On the supply side, we have also deferred delivery of several small schemes. We have also faced significant difficulty in maintaining and using the Gateway desalination plant and so have reduced the Deployable Output from this source in WRMP24. The changes made to our Target Headroom allowance are in no way related to non-delivery of our WRMP19 or PR19 plans. When producing WRMP24, we considered that the allowance for uncertainty that we have previously made for Target Headroom in the short-term was too small for our surface water sources, for two key reasons. Firstly, the prediction of what '1 in 100', '1 in 200' and '1 in 500' year droughts would entail is fraught with uncertainty, given a 100-year historical record (our WRMP19 assessment was based primarily on a 'worst historical' DO assessment). Secondly, modelling river flows brings with it significant uncertainty. In WRMP19, the allowance made for surface water DO uncertainty was +/- 2%; we have conducted a more thorough investigation into surface water DO assessment uncertainty and have determined an alternative profile with a considerably greater range. This is described in Section 6 of our rdWRMP and was present in Section 6 of the dWRMP. We feel that it is also important to note that, while our Target Headroom allowance is greater in the short-term (to be more certain that we are providing an adequate level of resilience to our customers), the long-	In Section 6 of the WRMP, we have included a description of the changes which have occurred between WRMP19 and rdWRMP24 supply-demand balances, presented in a similar manner to the data provided in response to the Ofwat query, in order to provide better clarity on under-delivery compared to our previous plans, as opposed to changes outside of management control.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
	term allowance that we have made for Target Headroom has not increased.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
There is limited evidence provided that the benefits of funded PR19 activities have been appropriately factored into the draft WRMP24 baseline supply-demand balance. This includes the zonal water available for use (WAFU) benefits of the relevant supply-side and demand-side green recovery schemes. The company should provide details of the benefits of funded schemes and how and when these have benefitted the baseline supply-demand balance. Where a step change in supply-demand balance between WRMP19 and WRMP24 is not sufficiently justified by scenario drivers and may instead be as a result of non-delivery or underperformance, considerations will be made at PR24 in the assessment of enhancement funding	We have accounted appropriately for planned delivery of schemes funded in our baseline SDB in both the dWRMP and rdWRMP. Regarding the leakage conditional allowance and green economic recovery, our consideration is that our dWRMP made explicitly clear the benefits that we anticipate will be delivered from funded interventions. Table 3-22 in our dWRMP explicitly states the benefit from the conditional allowance for leakage and Table 3-21 of the dWRMP explicitly states the meter installations included in the dWRMP associated with the Green Economic Recovery funded allowance. The dWRMP also explicitly states in paragraph 3.142 that the demand reduction values in Table 3-20 include demand reductions associated with these schemes. Thames Water has not received any funding for supply-side Green Economic Recovery schemes, and so we do not reference any. We acknowledge that the delivery/non-delivery of supply-side schemes funded through WRMP19/PR19 was not made explicitly clear in the dWRMP, although this information has been referenced several times in Annual Review publications[1]. In Section 6 of the rdWRMP, we have included a description of the changes which have occurred between WRMP19 and rdWRMP24 supply-demand balances, presented in a similar manner to the data provided in response to the Ofwat query on this topic,	In Section 6 of the WRMP, we have included a description of the changes which have occurred between WRMP19 and rdWRMP24 supply-demand balances, presented in a similar manner to the data provided in response to the Ofwat query, in order to provide better clarity on under-delivery compared to our previous plans, as opposed to changes outside of management control.

[1]Thames Water, 2022, Water Resources Management Plan Annual Review 2021-22, https://www.thameswater.co.uk/media-library/home/about-us/regulation/water-resources/annual-review.pdf

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
	including commentary on the supply-demand balance impact of having delivered/not delivered schemes.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Within the current draft WRMP, Thames Water has used methods and data appropriate to the scale and complexity of the problem that it needs to address and has recognised the different problems across its area. The company's problem characterisation is clearly presented. The company's draft WRMP has been informed by the Water Resources South East regional plan. Thames Water has used a 50-year planning horizon. This exceeds the minimum planning horizon requirements in the planning guidelines, and the company has clearly explained their rationale for the chosen planning period.	Thank you for this feedback. We appreciate the active role that Ofwat has taken in pre-consultation with Thames Water, and as part of the WRSE Regional Group.	No changes – this is a general statement and so none are requested
The key changes to the planning problem are described; sustainability reductions and increased drought resilience are key drivers of investment for this plan. Thames Water have provided assurance that abstraction reductions are not double counted when licence capping is combined with environmental destination scenarios. However, the company should clarify the reasoning for environmental destination abstraction reductions impacting deployable output by over 20Ml/d from 2029-30. These reductions are expected to be long term and uncertain (not confirmed by investigations or data) therefore the inclusion early in the planning period and impact on investment in the 2025-30 should be discussed with the Environment Agency and explained in the final WRMP.	At the dWRMP stage, we had not had confirmation of those sustainability reductions which would be included in the WINEP for AMP8, with all licence reductions subject to the outcome of investigations which were/are incomplete. As such, we included these in the 'Environmental Destination' reductions line (7.3BL) rather than the "Total confirmed DO reductions to restore sustainable abstraction" (7.2BL). We have now submitted a draft WINEP submission, and have received preliminary feedback. As such, we have reallocated those licence reductions which we anticipate to be included in the final WINEP requirements to the "known sustainability reductions" line.	Our WRMP Tables have been amended to ensure that DO reductions associated with AMP8 WINEP items are listed against line 7.2BL.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
We welcome that the cost and resource impact of moving from a 1-in-200 year to 1-in-500 year drought resilience for emergency drought orders is presented in Thames Water's plan. This includes providing high level outputs testing the date for achieving the 1-in-500 year drought resilience. It states that moving the date to 2050 from 2040 reduces the average cost across the adaptive branches by £900 million net present value (NPV). The resource impact on the London water resource zone requires the company to find an additional 150Ml/d for the supply demand balance. The company chooses a 2039-40 delivery date but does not use the costs and benefits of alternative dates to optimise and justify this. We expect further details in the final WRMP of how the different costs of the programme (in the short and long term, in non-discounted costs for each pathway) justify the policy choice.	The Water Resources Planning Guideline states: - [Referring to achievement of 1 in 500-year resilience] You should aim to achieve this level of resilience by 2039 - You should determine an optimum timing for achieving this through the regional groups - Some flexibility in the timescales for achieving a resilience of '1 in 500 year' is possible, where costs are exceptionally high locally in comparison to benefits. For example, at a water resource zone level. Where more flexibility is considered appropriate, you should present meeting a '1 in 500 year' by 2050 scenario We consider that this places a requirement on us to determine an optimum delivery profile for dates up to 2039, and to explore the cost impacts of delaying up to 2050, but that delivery after 2039 would only be acceptable if costs are exceptionally high, i.e., the determination of 'optimum' timing does not apply to dates prior to 2039.	We have explored the programme implications of delivering alternative 1 in 500-year resilience dates and have presented the results of this analysis in Section 10 of our WRMP.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water currently has a 1-in-20 year level of service for imposing temporary use bans TUBs) as defined by the final WRMP19. The draft plan for WRMP24 demonstrates that customers accept the current frequency of restrictions for TUBs and non-essential use bans (NEUBs), and also support reducing the frequency of emergency drought orders to the 1-in500-year resilience level. However, elsewhere the draft WRMP (as confirmed by a query) indicates that TUB level of service is planned to reduce to 1-in-10 years. This is a brief mention and is not discussed in any detail. Full testing and optimising the frequency of imposing this change in restriction is not explored within the plan, in particular in the context of the experiences of the 2022 drought. The company should provide sufficient and convincing evidence that the change to 1-in-10 year TUB frequency has been discussed with customers and has taken account of their preferences.	We undertook research with customers on Levels of Service for water use restrictions for our previous plan. This research highlighted that customers were more concerned about the frequency of severe restrictions rather than sprinkler and hosepipe bans, as these were not perceived to have significant impacts on customers' day-to-day activities and as such were not a significant concern. For WRMP19 we maintained our Levels of Service which included a staggered implementation of Temporary Use Ban (TUB) restrictions, with an equivalent of an unattended hosepipe and sprinkler ban being introduced at Level 2 and a full TUB at level 3. However in updating our Drought Plan and developing draft WRMP24, we worked across the SE, and found we were not aligned with the other SE water companies and therefore undertook a review. WRSE put forward a policy ambition statement regarding Levels of Service in which WRSE water company members committed to work towards a common service level for customers in the South East for Temporary Use Bans and potentially Non-essential use bans. This policy statement was consulted on in August 2020, and respondents were supportive of this policy ambition. We updated our Levels of Service for Temporary Use Bans from 1 in 20 to 1 in 10 in our Drought Plan, which was subject to public consultation, and was reported in the	We have not made changes to our WRMP pursuant to this point, as the change to our Level of Service has been subject to public consultation.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
	2022 Annual Review of our WRMP19, paragraph 404[2]. All water companies across the SE are now aligned to implement TUBs as a level 2 drought measure.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
The company's headroom allowance is high compared to most other companies, being an average of 9.4% of the company distribution input (demand) during 2025-30, rising to 10.1% during 2030-35. Therefore, this planning assumption contributes significantly to the company supply-demand balance and proposal for investment. In its final plan, the company should present sufficient and convincing evidence that the headroom allowance is appropriate in both the short and long term, is not driving unnecessary and high regret investment, and that it has properly accounted for interactions with adaptive planning.	We have increased our short-term Target Headroom allowance primarily due to an increased allowance associated with the uncertainty of our surface water Deployable Output. This is due to a more evidence-based approach in determining the uncertainty associated with determining water available under severe drought conditions. Our London WRZ is primarily reliant on surface water from the River Thames and River Lee, and under/over-estimating the volume of water available during drought conditions would have major implications for our customers. We have taken care to ensure that the magnitude of our Target Headroom allowance is appropriate when considering the uncertainties that we are faced with, and the timescales on which we can take action. In the short term we believe that we should take a precautionary approach to ensure that we are confident in the level of resilience afforded to our customers, but we do not wish to build infrastructure simply to offset uncertainty. Our large water resources options have lead times of between 7 and 15 years. As such, we have maintained a low tolerance for risk in the first 8 years, with a significant increase in our risk tolerance by 2040 (15 years into the planning period).	We have not made changes to our WRMP pursuant to this point, as we consider that we provided sufficient justification for our Target Headroom allowances in Section 6 of the WRMP. In our dWRMP the relevant paragraphs are Section 6.155-6.160 (justifying our risk tolerance profile) and 6.41-6.54 (justifying the enhanced consideration of surface water DO uncertainty).

[2] Thames Water, 2022, Water Resources Management Plan Annual Review 2021-22, https://www.thameswater.co.uk/media-library/home/about-us/regulation/water-resources/annual-review.pdf

The company has used a high emission scenario (50th percentile of the Representative Concentration Pathway (RCP) 8.5 probabilistic projections) when planning for the impact of climate change. This is potentially driving investment in the near term to meet an extreme climate scenario which may not occur if international emission targets are met. The difference between the RCP8.5 and company's stated low forecast is 36Ml/d in 2030-31 with climate change uncertainty also contributing 31Ml/d to target headroom in the same year. The company should consider using a less extreme forecast to plan to, in particular post 2030, where any residual risks can be managed through adaptive planning. The justification for the final WRMP approach to climate change scenarios and subsequent investment to achieve it should be supported by sufficient and convincing evidence.	Our dWRMP24 preferred plan follows a path in which we initially use the median climate change impact from the scenarios modelled and then adopt a 'high' scenario from 2040 onwards. Our adaptive plan also incorporates consideration of a 'low' scenario. We have conducted modelling using probabilistic projections from RCP2.6, RCP4.5, RCP6.0 and RCP8.5, as well as the 28 spatially coherent projections (RCP8.5), all using UKCP18 data. This has involved consideration of a total of over 3000 climate change scenarios. The profile of values adopted for the median scenario is calculated by finding the median impact of the 28 spatially coherent projections, and scaling the value found by the ratio of the median of the RCP8.5 probabilistic projections to the median of the 28 spatially coherent probabilistic projections. The value used in this scenario thus represents the 50th percentile of the RCP8.5 probabilistic projections. This is also approximately equal to the 50th percentile of all projections considered. The profile of values adopted for the 'high' scenario is calculated using the 'CC06' scenario (one of the 28 RCM projections). This scenario is approximately a 75th percentile value of the 28 RCM projections (RCP8.5). We have then scaled this value by the ratio of the median of the RCP8.5 probabilistic projections to the median of the 28 spatially coherent probabilistic projections. The resultant value is approximately a 75th percentile value of the RCP8.5 probabilistic projections (and is approximately a 75th percentile value of all scenarios modelled). The scenario that we have adopted as a 'low' scenario is selected as approximately a 10-15th percentile of the spatially coherent projections. We have then scaled this	We have included additional narrative within Appendix U, using the text provided in this consultation response.

	value by the ratio of the median of the RCP8.5 probabilistic projections to the median of the 28 spatially coherent probabilistic projections. The resultant value is approximately a 25th percentile impact across the full range of projections modelled. As such, this response demonstrates that we have considered scenarios which are approximately the 25th, 50th, and 75th percentile impacts calculated when considering all emissions scenarios across the UKCP18 data. While each scenario comes initially from an RCP8.5 output, we have mapped these scenarios to the wider range of UKCP18 data available and have demonstrated that use of RCP8.5 has not biased our modelling. Ofwat's consultation response expresses particular concern over our adoption of a 50th percentile value from RCP8.5 in the short term. As discussed above, this is very close to a 50th percentile when considering all projections and so does not indicate that we have considered an extreme scenario in terms of Deployable Output impact, nor does it imply a risk of unnecessary investment.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Demand forecast and deployable output assessment methodologies have been described and the company states they are in line with water resource planning guidelines. However, following the long running Gateway desalination plant outage identified through the WRMP19 annual review, Thames Water have carried out a supply demand balance 'fix' to reduce the London WRZ WAFU by 50 Ml/d rather than the deployable output by 50Ml/d. This action was requested by regulators in order for the planned risks to be representative of outturn. In the final plan, the company should recalculate its baseline deployable output modelling for the London WRZ to determine the impacts to the wider London supply system and supply system enhancement for WRMP24. It should also explain how any resultant impact on the supply-demand balance, contributing to WAFU and outage, is aligned to the query responses received on this issue.	We have undertaken Deployable Output modelling which indicates that there is a near 1:1 relationship between the capability of the Gateway Desalination Plant and London Deployable Output impact. In the Draft WRMP, we presented the Deployable Output reduction from the Gateway desalination plant as a 'Change in DO from prolonged Outage' (line 7.4BL) as we felt that this was the most appropriate classification. The Baseline DO before forecast changes (6BL) adopted for the Gateway desalination plant was 100 Ml/d. We used figures of -25 Ml/d and -50 Ml/d in the line 7.4BL to represent periods during which we wished to present Gateway DOs of 75 Ml/d and 50 Ml/d respectively. We will continue to use this presentation of Gateway's Deployable Output, as we feel it is the most transparent way of reflecting our view of the long-term capability of the plant. While the DO reduction associated with a 25 Ml/d DO drop is likely to be slightly less than 25 Ml/d, using capability reduction as equivalent, as there is minimal 'system' influence from the Gateway desalination plant.	We have made no amendments to the way that we have presented DO changes at the Gateway desalination plant within our WRMP tables, as we feel that the current representation is correct and transparent.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Options to Meet Water Needs		
The final preferred plan has identified a twin-track range of supply and demand management options and results in a company and water resource zone level supply demand balance / surplus from 2025 to 2075. Thames Water has considered feasible supply and demand options which provide a reasonable volume of WAFU. The feasible option list provides a total WAFU benefit representing 279% of the supply-demand balance deficit forecast for 2050. Feasible option types include, reservoirs (32%), demand management (25%), river abstraction (17%) and desalination (15%). We consider this a volume and range of options that reflects the size of the challenge faced by Thames Water.	Ofwat have correctly identified options considered within our dWRMP.	No response required - statement

While the feasible options list includes options that provide a volume of water in total appropriate to the challenge faced, the company has not provided sufficient and convincing evidence that it has explored a broad enough range of alternative large options to those selected in its preferred plan, including transfers from other regions, new reservoirs and large-scale effluent recycling options. The company has focussed on strategic regional water resource solutions identified in PR19, however the final plan would benefit from justification that new large options were also sought for WRMP24 as part of the optioneering process, and that large options have been screened consistently and transparently. For example, Longdon Marsh reservoir was identified during WRMP19 as being a potential alternative to other large options and was identified in the Regulators Alliance for Progressing Infrastructure Development (RAPID) gap analysis. The reservoir features as a feasible option in the Severn Trent Water draft WRMP but is rejected by Thames Water during the screening of its unconstrained list. Thames Water should work with Severn Trent Water to understand the differences in each company's assessment of the feasibility of this option.	In addition to the strategic regional water resource (SRO) solutions identified in PR19, we have also considered other large reservoir, recycling and desalination options. We consider that our options screening process ensures that we have considered a sufficiently wide range of options for our plan to be robust. Our WRMP24 options screening has followed on from a robust process of option identification and screening followed at WRMP19. Options rejected in WRMP19 have been reviewed to identify any options which should be revisited due to potential for regional benefits, particularly in light of changes in requirements to plan for 1:500 drought resilience (previously 1:200 at WRMP19) and the need to plan for a long-term environmental destination that achieves and maintains a sustainable level of abstraction by 2050. In addition to Abingdon Reservoir (SESRO) which is included in the SRO programme, we have reassessed 5 reservoir sites that were previously rejected (on the basis of Abingdon being a preferable reservoir site) at WRMP19 and included 2 of these sites, Marsh Gibbon and Chinnor, in our Constrained List. The conceptual design and cost estimates for these two non-SRO reservoirs have been further developed and are included in the regional modelling. The options feeding into the upper Thames River are subject to a combined discharge limit of 600 Ml/d, Marsh Gibbon, Chinnor and SESRO in combination provide reservoir options up to the discharge limit. Beckton Recycling, Mogden Recycling and Teddington DRA are included in the London Effluent Recycling SRO; in addition we have considered a further 190 Ml/d non-SRO recycling option at Crossness. WRMP19 investigations identified that the decrease in freshwater inputs to the Tideway, arising from water reuse, desalination and DRA	We have not made changes to our WRMP following this consultation response point, as we consider that we have examined the feasibility of a wide range of large options.

	options, should be limited to no more than 275-366 Ml/d in order to mitigate impacts on potentially sensitive ecological receptors. A cumulative limit on the total additional capacity of water reuse and desalination options, that decrease in freshwater inputs to the Tideway, of 366 Ml/d has therefore been included in the WRSE regional modelling. Beckton Reuse, Crossness Reuse and Deephams Reuse capacity are included within this cumulative limit. The combined maximum capacity of Beckton and Deephams reuse options (identified as preferable to Crossness Reuse) approaches the 366 Ml/d combined limit. and therefore Crossness reuse has been rejected on the basis that there are more water reuse options than could reasonably be delivered and it is the least favourable reuse option measured against the cost dimension on the Feasible List. No Thames Water desalination options are included in the SRO programme; we have included 2 large options in our Constrained List; up to 150 Ml/d at Beckton (in addition to the existing plant) and up to 300 Ml/d at Crossness. The Beckton and Crossness desalination options can be selected in phases of 50 or 100 Ml/d to provide flexibility and adaptability within the programme appraisal. In combination these options exceed the 366 Ml/d combined limit. Longdon Marsh reservoir has been considered in our WRMP as an option to support the Severn to Thames Transfer (STT). We have rejected it in our plan because of comparatively poor performance in comparison to other STT support options, particularly with regard to land acquisition cost, floodplain encroachment, impact on residential dwellings and archaeology and the historic environment. In Severn Trent's plan this option is a	

	reservoir to capture and store water for use locally, rather than a way to support a cross-catchment transfer and therefore is included as a feasible option in their draft WRMP24. This option has not been proposed by Severn Trent as a support option for STT and was not selected in their draft WRMP as a local option either. WRSE has also considered large SRO transfers from Wessex Water, including a transfer supported by Mendips Quarry. The Mendips Quarry option would have the potential to provide additional water in the River Thames which could benefit Thames Water. The GUC SRO which transfers water to Affinity Water would allow licence trading with Affinity which could provide up to 50 Ml/d benefit to Thames Water. All options, both SRO and non-SRO, have been screened consistently and the results of the screening are presented in the Feasibility Report Addendums. We have described our screening process, and the criteria used, in more detail in our revised draft WRMP to provide greater transparency.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
The company applies a screening and optimisation process moving from an unconstrained to feasible list, from which the preferred programme of options is selected. Although multiple stages of screening are applied, no clearly defined and consistently used criteria are presented in the draft plan. The rejection log shows that options have been screened out for a range of reasons, however, without explanation of the application of criteria and comparison of outcomes between options there is a risk of inconsistent treatment between options. This raises concerns that the options selected for the preferred plan from the feasible list may not represent best value for customers and the environment in the long term. In its final WRMP, the company should provide sufficient and convincing evidence that appropriate screening criteria have been applied consistently to options at each stage of the process. Concerns around the quality of the optioneering process at the final WRMP may lead to further analysis being undertaken at PR24 and decisions on appropriate funding made accordingly.	We have applied a robust feasibility screening process across the options in our Unconstrained List to develop our Feasible List. The screening criteria have been applied by option type and have been applied consistently across all options, including third party options. Section 7 has been updated to include more information about the feasibility assessment methodology and criteria adopted. The outcome of the feasibility screening process is reported in the Feasibility Addendums, which are published on our website. Following feasibility assessment, further screening has been carried out where either options are subject to a combined limit (e.g. cumulative limit on desalination and reuse options in the Middle Tideway, or options of different types that are mutually exclusive (e.g. selecting between DRA and reuse options that are dependent on the same water source). Details of the options screened out at Further Screening, and the reasons for rejecting them, are included in Section 7.	In response to this comment, Section 7 has been updated to include more information about the feasibility assessment methodology and criteria adopted.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water has described the process the company has undertaken to identify third party options, and third party options also appear on the unconstrained list. However, the final plan should provide further detail on proactive engagement, and support for third parties to develop options and fair treatment of opportunities. For example, third party options with canal infrastructure have been identified, including the Oxford Canal option which featured in the company's WRMP19 and is again selected in WRMP24 but late in the planning period beyond current investment cycles. The Cotswold Canal conveyance route as part of the Severn to Thames Transfer (STT) scheme was also considered but is rejected based on cost and best value metrics. Thames Water should be clear in its final plan how best value assessments have resulted in the decisions made on third party options. For STT, this may include explaining evidence that has been set out in submissions for RAPID's gate two on best value decisions pipeline and canal routing sub-options.	In Section 7 of our rdWRMP24, as a result of this comment, we have included further detail on how third party options have been assessed as part of our options appraisal process on an equal basis with our in-house options. This includes how these options have been judged against BVP criteria. We have included further information on our process followed to engage with suppliers and provide them with fair and equal support to develop their options as compared with that provided for in-house options, as per our Bid Assessment Framework. Section 7 and Appendix Q of our dWRMP included discussion regarding the screening decisions around STT interconnector options (canal and pipeline options), and further detail is given in Gate 2 documentation.	Changes have been made to Section 7 in line with our consideration of this comment.

There are some discrepancies between company and regional plans on the representation of STT, particularly when elements of it are needed to support Severn Trent Water and Water Resources South East (WRSE). While we recognise timing of change requests have limited the co-sponsor company's ability to reconcile some discrepancies for the draft plan, we expect all companies and regional groups involved to represent the STT option consistently in their final WRMPs. Final plans should consider STT as an integrated solution, ensuring end-to-end consistency and engagement. All plans representing STT, should also adhere to Welsh legislation and engage Welsh stakeholders and customers where relevant.	The Severn Thames Transfer (STT) is a strategic resource option that would facilitate the transfer of water from the River Severn to the River Thames. This would be supported by several sources of water from United Utilities and Severn Trent. During the development of the draft regional plans and Water Resource Management Plans the STT was selected as part of the WRSE regional solution, in conjunction with other schemes, in 2050. This was also reflected in WRW's plans. Whilst the STT featured in both regions' draft preferred plans, a series of sensitivity tests at the time showed that the STT could be selected as early as 2039, if the South East Strategic Reservoir Option (SESRO) could not be developed, or not at all if government water efficiency policies resulted in a lower demand forecast due to increased water efficiency. We have worked hard as part of the STT SRO group, and as part of the WRSE Regional Group (which undertakes 'Regional Reconciliation'), to ensure that our view of the STT option is as aligned as it can be in our respective Regional Plans and WRMPs. It has been very difficult, given the challenging timescales for production and publication of RPs and WRMPs, to ensure full alignment. As an example of these difficulties, Water Resources West stated a need for a confirmed position on the Severn-Thames Transfer options selected in the WRSE region's final plan before the end of the Thames Water WRMP consultation, in order to facilitate the development of the WRW plan - something which WRSE and TW could clearly not provide with confidence. We feel that a degree of misalignment in WRW/WRSE RPs and associated companies' WRMPs is to be expected given the exceptionally challenging timescales and complex methods used in the development of WRMPs and Regional Plans, and that the degree of misalignment would not impact the robustness of either company's	We are working with WRW to ensure consistency in option representation in plans. With our rdWRMP24 being based around the 110 l/h/d PCC target being achieved, our revised programme appraisal (rdWRMP24 Section 10) demonstrates that the STT is no longer needed in our preferred programme. The STT still forms a key part of our adaptive plan, being our alternative option to SESRO (SESRO being our preferred option for delivery of 1 in 500-year resilience – should SESRO be found to be infeasible or be denied planning consent, we will proceed with the development of the STT), and perhaps being required if the 110 l/h/d target is not achieved.

	WRMP (e.g., the misalignment in the dWRMP was relatively minor). We have worked with the WRW Regional Group, United Utilities and Severn Trent Water to work towards an aligned approach for the revised draft WRMP. In March 2023 the regional reconciliation process began its third round. At this time none of the regions had finalised a preferred revised regional plan, and Thames Water's dWRMP24 consultation had not ended. Therefore, sensitivity runs were undertaken to explore what might happen under certain scenarios. This scenario modelling used updated STT data, but some other information in the WRSE model was based on the draft plan. The scenario testing approach confirmed that if the WRSE companies met the 110 l/p/d PCC target by 2050 then the STT was not selected in the reported pathway (preferred plan). Sensitivity tests also confirmed the need for the STT in scenarios without SESRO or with government water efficiency interventions not reducing demand to the levels anticipated. Therefore, the need for STT inclusion in an adaptive plan was confirmed. Given that the revised draft plan was still under development for WRSE, but we knew that the revised regional plan would seek to achieve the 110 l/p/d PCC guidance target, the more likely scenario was that the STT would not be required in the preferred plan for WRSE or WRW. This was the agreed outcome of reconciliation for inclusion in the revised draft WRMPs, which includes adaptive pathways to deal with potential changes. There is a need to progress development of the STT system in the next 5 years so it can be delivered by 2039 if required (the STT being our alternative scheme to SESRO, and so being required if SESRO is found to be infeasible).	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water has provided clear, additional details in response to our query on option utilisation. We expect to see more robust evidence on utilisation presented in the final plan itself, including clarifying how options would be fully utilised ahead of the use of drought permits, particularly in early years of the preferred plan. The draft WRMP also does not provide utilisation detail in line with feedback in our pre-consultation feedback letters. This includes fully explaining and justifying the utilisation rates given and providing evidence that modularity and scalability in optioneering has been fully considered and explored to manage low utilisation situations. We also require more evidence in the final plan that operational interventions have been considered.	As a result of this comment we have expanded the range of information presented in Section 11 of the WRMP to show utilisation of different options under “dry year annual average” and “peak” scenarios. Very few drought permits were selected in our dWRMP. Drought permits would not be used in preference to new sources of water, either in our dWRMP or rdWRMP. As a response to this comment, in Section 11 of our rdWRMP we justify our preferred programme with reference to utilisation rates. Principally, our preferred programme involves the selection of two options with low operating costs, SESRO and Teddington DRA. Under scenarios where modelling indicates low utilisation, Section 11 of our plan explains that we would use these resources and that resilience to a range of risks would result. We are unclear as to the operational interventions which Ofwat would expect. We have included demand savings measures as options which would be implemented in our plan.	Changes made as per comments made in our consideration.
Further explanation should be given in the final plan on the interaction between interlinked strategic resource options (SROs) that Thames Water co-sponsor in the RAPID programme (STT; South East Strategic Reservoir Option (SESRO); Thames to Affinity Transfer; Thames to Southern Transfer). This should particularly focus on how the SRO selection timing and interaction impacts utilisation.	We appreciate that the decisions taken in the WRSE Regional Plan are strongly interrelated. Our consideration is that the justification of the regional plan, considering the interlinked nature of options’ selection to provide supplies for multiple companies, is an issue to be addressed primarily in the WRSE Regional Plan and that the detail presented in our dWRMP is sufficient.	We have not made changes following this comment, as our consideration is that the level of detail presented in the dWRMP was appropriate.

Investment model utilisation outputs should be sense checked using expert judgement to ensure that they make sense from a water resource planning perspective. It has not been demonstrated explicitly that the outputs of the WRSE modelling have been fully explored to understand if utilisation of options can be better developed. The company should provide further explanation on utilisation of new supply options (such as the Strategic Resource Options) by return periods, to understand how the solutions may be used in different events.	We confirm that investment model outputs have been explored to establish option utilisation. A significant amount of detail is presented in Appendix X of our WRMP. As a result of this comment we have expanded the range of information presented in Section 11 of the WRMP to show utilisation of different options under “dry year annual average” and “peak” scenarios. It is important to acknowledge that investment model outputs are one source of option utilisation information, but that water resources simulation model outputs are a better guide to true option utilisation. Work is being undertaken for the RAPID Gate 3 requirements, to understand the utilisation of SROs, and how they work together. As an example, investment model outputs can be misleading when taken out of context - London's supply system is such that, in order to derive supply-demand balance benefit in an extreme drought situation, options must be utilised throughout the duration of a drought event, not just at the point at which failure is about to occur (due to London's supply system involving very large reservoirs with long-duration drawdown periods); as such, while investment model outputs may suggest that an option does not need to be used in a 1 in 10-year event to ensure supply-demand balance in a 1 in 10-year event, the option delivering a given Deployable Output benefit in a 1 in 500-year drought event will require that the option is utilised in a 1 in 10-year event.	Changes have been made as noted in our consideration of this comment.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Decision Making and Prioritisation		
The preferred programme decision making approach has been clearly explained. The explanation around decision making is clearly set out and standalone at the company level. The plan also demonstrates how the company best value plan is informed by the WRSE best value regional plan. Thames Water refers to the WRSE Best Value Planning Method Statement while also including an abridged version to make the WRMP standalone which is a welcome approach. For the final plan Thames Water should continue to ensure that the narrative contains a complete and standalone explanation of decision making at the company level	The revised plan continues to provide a stand-alone assessment of programme appraisal at a company-level, that is consistent with the decisions made and approaches used at regional level.	No changes – none requested
Thames Water has adopted a regional best value adaptive planning approach using regional decision making tools, including an extended / complex risk-based approach (integrated multi-metric and multi-future investment regional model with regional supply capability assessed using a regional system simulation model). A clear explanation is provided of the optimisation process across nine adaptive pathways used to derive the preferred programme.	The revised plan narrative continues to include standalone explanation of the best value planning process and adaptive planning.	No changes – none requested

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water is using an adaptive planning approach and an explanation of the approach to managing uncertainty and adaptive planning has been included in the draft plan. The company has a baseline deficit under the different scenarios until 2029-30 and the complexity of the planning problem justifies the need for adaptive planning. The company has identified constraints it has imposed on its decision-making process. The scenario analysis used to test the preferred and alternative programmes has been presented including 1-in-200 and 1-in-500 year drought resilience timing.	The revised plan continues to provide this assessment.	No changes – none requested
Whilst the position of decision and trigger points for adaptive plan branches have been explained in the draft plan, sensitivity analysis has not been carried out on the timing of all the points to explore the potential trade-offs and justify the timings selected. Thames Water should undertake this in the final plan. Currently branch points appear to be driven by the 5-year planning and investment cycle, rather than the lead-in time for specific enhancements. Refining this analysis will help to demonstrate that decision making has not been influenced by artificial constraints and that constraints are appropriate in the final plan.	The adaptive plan branches in our investment model have been placed at 5-year intervals to recognise the regulatory environment in which we operate, whereby planning is undertaken, and funding allowances are determined, on a 5-yearly basis. As part of the WRSE Regional Group we have explored the implication of moving our adaptive plan branch points to different points in the plan, but we have not considered adopting branch points other than at 5-year intervals given the 5 year regulatory planning cycle for both the WRMP and Price Review.	No changes have been made as our consideration is that the methods applied in our dWRMP and the timing of branch points is appropriate.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water sets out a monitoring plan including measurable metrics for some areas such as growth but not for other areas such as climate change. For the final WRMP, Thames Water should develop a monitoring plan for all decision points and clearly explain the conditions that would cause one pathway to be adopted over another using clear observable metrics.	We have improved and expanded our monitoring plan to include more metrics and to provide better explanation of when/how we would make a decision about changing pathways.	Section 11 of our rdWRMP includes a monitoring plan which is enhanced compared to that set out in the dWRMP.
Best value metrics have a line of sight to the draft WRMP objectives, however, it would be beneficial to extend this to sub-metrics and outcomes. This would help structure and justify the preferred plan selected. Thames Water has considered a range of economic, social and environmental benefits that the options can deliver. Thames Water has not referred to Ofwat's public value principles. The company should use these, and reflect expectations referred to in the PR24 final methodology, within its best value planning process in its final plan and explain how these have been used to inform best value decision making.	We recognise that explaining more fully the outcomes that would be derived from the Best Value plan would be helpful in justifying the plan. Our consideration, however, is that inclusion of sub-metrics in presentation of Best Value metrics would add detail but could obfuscate the message. We have reflected on Ofwat's public value principles and have referred to these in our rdWRMP	We have not included sub-metrics within presentation of our programme appraisal for the reasons highlighted in our consideration. Changes have been made within section 11 of our to include reference to Ofwat's public value principles.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water presents several component parts of options within its data tables and draft WRMP narrative. For example, Teddington direct river abstraction is comprised of Thames Lee tunnel extension, Teddington to Thames Lee tunnel, and Teddington indirect effluent reuse. One of these options is erroneously given an 800Ml/d WAFU benefit, and we interpret all subcomponents being necessary at a cost of £498 million to deliver 75Ml/d of benefit. This makes it difficult for stakeholders to fully understand the full costs and benefits of these options and therefore the logic of their selection. The company should ensure the benefits it has identified for these schemes are well evidenced and clearly presented.	In Section 7 and Appendix R, the relationship between the Options names and IDs is highlighted as set out in the data tables. Table 4 includes for 'WRSE Options List' and 'Interdependent Options' to facilitate alignment with options described in further detail in Appendix R. While we acknowledge that it would be ideal to aggregate option components into a single option for ease of presentation, however, in some cases this is not achievable as the same 'system' element could be used to facilitate use of multiple 'resource' options. As an example from our dWRMP, in the dWRMP the "Lockwood to King George V' tunnel extension was deemed to be required in order to facilitate the development of either the Teddington DRA or Beckton Water Recycling schemes. As such, aggregation of the 'system' option with the 'resource' option was not possible in this case.	Amendments have been made to our WRMP24 tables, in order to represent 'system' elements as part of a parent 'resource' element, where feasible.

Where interconnectors are necessary to deliver new supplies to areas of demand these should be evaluated by combining the costs of developing the new supply with the interconnector costs as a single option, to produce an optimised best value plan. When presenting such enhancement schemes, companies should clearly identify how they have assessed the degree of overlap with activities they are funded to deliver through base expenditure. Companies should not expect additional customer funding to address risks resulting from under delivery in the current or previous price control periods.	Thank you for your response. In Section 7 we have set out the potential system reinforcements that may be required for raw water systems, water treatment works and network reinforcement. Some of these system reinforcements are linked to specific water resource options, e.g. the tunnel from Beckton to Coppermills WTW for blending of water from Beckton and Crossness desalination options, whereas other reinforcements are dependent on the combination and quantum of new water resources. For example, the increase in required abstraction capacity on the River Thames is dependent on the amount of additional water that is available in the River Thames from new reservoirs, transfers and licence trading. There are a number of considerations which led to us including raw water systems and network reinforcement elements in the investment model separately to the resource elements. - Many system elements are applicable to multiple resources elements or are required as a result of the selection of a combination of resource elements meaning that integrating a single resource element and a single network element may be not possible. Including these elements separately to the resource elements allows us to reflect these complexities without adding additional complexity to the investment model. - The WRSE investment model (WRSE IM) requires modelling of 2000 separate resource elements, this is a very complex process. One step taken to ensure this runs smoothly was to focus the modelling on selection of the best resource elements, thereby avoid the model needing to take account of the full complexity of the relationship between resource and system elements described above. - It is important to ensure that all WRSE options are considered in a consistent way, we have therefore agreed the approach to including resource elements and system	Amendments have been made to our WRMP24 tables, in order to represent ‘system’ elements as part of a parent ‘resource’ element, where feasible. In some cases, for the reasons set out, this has not been feasible.

	elements separately with all other WRSE companies. - where possible dependencies are included in the WRSE IM between the resource elements and the system elements, where this is not possible the system element requirements are reviewed and incorporated post modelling. To identify network reinforcement and raw water systems required to allow resource elements to be utilised we have modelled the raw water and treated water networks. These models consider the additional water in the network resulting directly from the selected resource and water treatment works elements. As a result, all investment reflected in the plan is directly related to the resource options selected to meet the supply / demand shortfall identified in the WRMP.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
In combination assessments have been included for environment but not for deployable output at the programme level as part of best value plan assessment. These should be completed for the final plan.	We recognise the need to undertake this assessment, and have done so for the rdWRMP. The results can be seen in Table 2f of the WRMP Tables	As referenced in our consideration, we have undertaken simulation model runs required to complete Table 2f.
We welcome that the company has presented the costs and benefits of the least cost plan against its preferred best value plan and other plans, including best environment and society plan and best resilience plan. A comparison of the cost difference between the least cost and best value programmes has been provided and evidenced, and the difference in expenditure is stated and cost drivers are explained. However, where investment is needed beyond least cost, the value of the additional benefit needs to be presented within the WRMP planning tables. The robustness of this valuation data in the WRMP planning tables is important for significant areas of investment, and will be used during PR24 analysis to validate and justify funding decisions between least cost and best value plans.	There is no scope within the WRMP tables for this information to be presented, and not all benefits associated with Best Value Planning can be monetised/quantified. We have discussed through narrative in Sections 10 and 11 how our plan presents best value to customers.	We have not made changes pursuant to this consultation feedback.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
The feedback Thames Water and WRSE receive on their draft plans, and potential changes to the estimated cost of SESRO over time, have the potential to influence the need for, timing and sizing of this option further. While SESRO is currently selected consistently across scenarios within the WRSE draft plan the choice of size is presented as a close decision with small differences in associated best value metrics. The smaller reservoir option (100 Mm3 capacity) is currently selected as it is assessed as performing better against some of the best value criteria, particularly those that provide additional benefits to the environment and society. The plan suggests that the larger reservoir option (150 Mm^3) performs better against the resilience criteria and biodiversity net gain. Overall, the scaling of SESRO appears to be a finely balanced decision, and sensitivity testing and sufficient and convincing evidence should be provided in the final plan over the decision.	We agree with the analysis of the status of SESRO within the draft plan, and that the choice on SESRO size is an important decision in the context of our WRMP. We have revised several datasets used as inputs in our WRMP between the draft and revised draft plans, resulting from various factors including consultation feedback, updated information, and to changes in the Water Resources Planning Guideline. Revision to the underlying datasets has caused changes in our plan and changes in the justification for the inclusion of different options within the plan. We understand that conducting and presenting sensitivity results is an important part of justifying our plan and so, as part of the WRSE regional group, have conducted and explored a range of sensitivity runs to build the case for our preferred plan.	We have made the following changes: Re-written Section 10 and Section 11 of the WRMP in response to the changes in guidance and updated datasets. In Section 10 of our rdWRMP we have included description of our rdWRMP24 programme appraisal. The outcomes of this programme appraisal and justification of the Overall Best Value Plan are then summarised in Section 11. The case for SESRO as part of a regional solution for the South East of England remains strong. Regarding the choice of SESRO size, we justify why a SESRO of 150Mm^3 (which is also identified as the least cost adaptive solution) remains the most appropriate in best value terms along a future pathway that best reflects the requirements of the WRPG.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
The size of SESRO selected is sensitive to the size of the 'Hampshire Water Transfer and Water Recycling' selected. The water recycling plant was sized at 15 Ml/d within the RAPID accelerated gate two submission and has since been increased to 60 Ml/d following WRSE investment model outputs selecting this option. Such an increase in size raises deliverability risks that Thames Water working with WRSE needs to consider. To understand the impact of the 60 Ml/d water recycling plant not being deliverable we understand that WRSE is in the process of running sensitivity analysis to explore sizes less than 60Ml/d and modular options. Thames Water should include this analysis and consideration of these risks in its final plan.	We appreciate that the decisions taken in the WRSE Regional Plan are strongly interrelated. WRSE have conducted a wide range of sensitivity tests in order to produce a robust regional plan. Our consideration is that the justification of the regional plan, considering the interlinked nature of options' selection to provide supplies for multiple companies, is an issue to be addressed primarily in the WRSE Regional Plan and that the detail presented in our dWRMP is sufficient.	We have not made changes following this comment, as our consideration is that the level of detail presented in the dWRMP was appropriate.
Thames Water adopts the WRSE approach for adaptive planning. The plan selects nine alternative pathways which diverge in 2030 and 2035 based on decision points around population and environmental destination/climate change, respectively. The method combines the Ofwat common reference scenarios with a wider range of climate and demand scenarios to explore a range of futures. The method combines multiple scenarios, for example, high climate and high environmental improvement, then seeks to optimise the option selection in 2025-30 to ensure a surplus supply under all future pathways.	This is a correct interpretation of the adaptive planning framework adopted by WRSE.	No changes - none requested.

Thames Water does not present a core adaptive pathway in line with our definition. As a result, we have concerns that there is a risk of over-investment in 2025-30 because the options are chosen based on scenarios that are more severe than the Ofwat common reference scenarios and have been combined. Since the Ofwat common reference scenarios represent 'plausible extremes', combining them risks producing a very low probability scenario. This means Thames Water may be investing in some options that have a low chance of being needed or could have low rates of utilisation. Furthermore, it is unclear which options would be selected in the different pathways, and when they would first be utilised	We understand that the Ofwat LTDS team did not consider that either TW's draft WRMP or the WRSE Regional Plan had adequately presented a 'core' investment pathway. The WRSE team has engaged with the Ofwat LTDS team to best adapt to the requirements set out in the LTDS framework. This has included consideration of the impact of the impact of each uncertain factor in isolation. While this consultation response indicates that Ofwat considers that combining the "High" scenarios outlined in Ofwat's LTDS guidance produces an unlikely outcome, this does not appear to be a view shared across our regulators or reflected in the WRPG and National Framework for Water Resources. The two principal drivers of uncertainty in our Water Resources Management Plan are forecasts of abstraction reductions required through "Environmental Destination" and population growth, with climate change also playing a role. The National Framework for Water Resources, published in March 2020 sets the environmental ambition required to address unsustainable abstraction between 2025 and 2050 on a national scale. The Framework sets out that Regional Water Resource Plans are required to develop an agreed environmental destination to achieve sustainable abstraction by 2050. WRSE worked with the Environment Agency and all water companies in the South East region to develop agreed Environmental Destination scenarios. They developed five scenarios, Low, Medium, High, BAU+ and Enhanced. We have integrated the Low, Medium and High, into our supply forecast. These scenarios are known as scenarios of 'Environmental Destination'. For Thames Water the High scenario equates with the Enhanced scenario, and this is common with most of the WRSE water companies.	Elements of the WRMP and WRSE Programme Appraisal have been updated to better align with Ofwat's new LTDS framework. We continue to explain the regional and company plans for water resources based on the programme appraisal processes developed for the draft. However, we are now able to model and produce table output to meet the requirements of the LTDS framework for use in our discussions with Ofwat.

	The guidance document, “Long term water resources environmental destination” states, “use the 2050 BAU scenario as the starting point to ensure you comply with current statutory and regulatory requirements in the future” and “use the enhanced scenario to identify where it may be necessary to provide enhanced protection to buffer from predicted climate change impacts”. Given that the DO reductions which result from the BAU+ scenario and Enhanced scenario are very similar, we have used the Enhanced scenario in our preferred plan and placed most weight on this scenario which is reflected in Pathway 4 (our preferred programme), as well as pathways 1 and 7. Given that there is a degree of uncertainty in the volume of licence reductions required in the future, we have also considered two lower scenarios in our adaptive plan, which are reflected in pathways 5 and 6, 2 and 3, and 8 and 9 of our plan. Whilst we consider that there is a degree of uncertainty involved in predicting the volume of licence reductions which may be required in the future, we consider that using the high scenario this is the correct approach for the purposes of long-term planning. The "High" LTDS scenario for population growth (being based on local authority plans) is one which the Water Resources Planning Guideline explicitly states should be the basis of our planning. "Situation 4" - our reported pathway - is one which we should use when deriving the WRMP, and is one which combines these two scenarios. We recognise that we have adopted a climate change forecast which may, at first sight, go beyond the requirements set out in Ofwat's LTDS guidance. However, as explained in pre-consultation discussions with Ofwat and as demonstrated in Appendix U of our dWRMP, this is because, in Thames Water's case, the scenarios covered	

	by Ofwat's common reference scenario are inadequate for considering the range of uncertainty presented by climate change. The three scenarios adopted in our adaptive planning are approximately 25th, 50th, and 75th percentile scenarios when considering all available data from the UKCP18 projections, and so present a reasonable range rather than plausible extremes. The three scenarios highlighted by Ofwat all sit very close to the 50th percentile of outcomes when viewing UKCP18 projections in full. Moreover, the abstraction reduction scenarios set out in Appendix 4 of the National Framework for Water Resources include climate change impacts consistent with a severe climate change projection (see p.20 of Appendix 4 of the National Framework for Water Resources). As such, our consideration is that it is consistent to align the "High" environmental destination scenario (developed to comply with the scenarios from Appendix 4 of the National Framework for Water Resources) with the "High" climate change scenario.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
It is important that the company manages the uncertainty around population growth effectively to make sure its programme delivers secure supplies to meet demands in the short and long term while also not overinvesting in potentially sub-optimal solutions that ultimately may not be necessary or needed to the same scale. This is important as, in response to a query, Thames Water confirmed that the ONS growth scenario is 4.7%, 5.9% and 7.1% lower in 2029-30, 2034-35 and 2039-40 respectively than the population planned for by the company in its preferred pathway. This may be driving unnecessary investment in the short term that can be better managed through adaptive planning and more modular solutions. We expect the company to provide sufficient and convincing evidence that uncertain population growth especially post-2030 is not driving significant amounts of uncertain investment in the 2025-30 period.	The WRPG requires us to forecast for planned growth and also states that our WRMP should not constrain planned growth. We acknowledge that currently, trend-based forecasts (such as provided by the ONS) are lower than plan-based ones. Our response is to use information produced by expert consultants at the regional level and to develop an adaptive planning approach that includes both types of projection. We continue to receive regular updates from our data providers and we have updated our projections between draft and revised draft plan. Growth remains part of the monitoring plan. The risk of underinvestment having followed a low projection is as unpalatable as the risk of overinvestment, which is why the regular review and update built into the WRMP process is important.	We continue in the revised WRMP to manage uncertainty around population growth by adaptively planning using both plan and trend-based projections. Solutions cognisant of both projection types are included in Section 10 of the WRMP Main Report.
The company discusses the wider context of this draft WRMP in relation to other long term plans including drought plans and local authority plans. To a limited extent, it explains the link between the WRMP and PR24 business plan in the introduction including use of common approaches and data. The company briefly explains the difference in scale of investment between WRMP19 and WRMP24 and the bill impact for customers.	No comments – these are general comments on what has been done	No changes – none requested

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
In its final plan, we expect Thames Water to present a core pathway in line with the WRPG definition that includes low-regret investment to meet future uncertainties and additional option value to allow further flexibility in the future. Thames Water needs to demonstrate that scenario testing, including the common reference scenarios, has been used to identify low-regret investment that is required in all or most plausible futures. This should expose what investment should be undertaken regardless of future circumstances.	Between Draft WRMP and Revised Draft WRMP both Thames Water and the WRSE Regional Group have engaged with Ofwat to establish how we can better align our investment modelling with the Long Term Delivery Strategy framework. WRSE have conducted a range of investment model runs which allow us to better align with the requirements of the Long Term Delivery Strategy guidance, and outputs are included in our WRMP Tables. Our consideration is that the adaptive planning framework adopted by WRSE allows for the identification of a plan which involves the “least regrets” options.	The WRSE Regional Group has not made fundamental changes to its overall programme appraisal approach, as this approach allows for identification of a plan involving “least-regrets” options across the wide range of potential futures that we may encounter. We have included outputs in the WRMP tables which consider non-adaptive EBSD solutions to combinations of Ofwat LTDS scenarios, in response to Ofwat’s desire for information in this regard.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
As part of this evidence, Thames Water should clearly set out the impact of the Ofwat common reference scenarios compared to the 'most likely' scenarios on which the preferred plan is based. This should include quantifying the impact on demand of the low and high scenarios for climate change, demand, and abstraction reductions across the planning period. The company should also quantify the estimated impact on the expenditure requirement of: 1) planning based on the high scenarios for climate change, demand, and abstraction reductions, and the slower scenario for technology; and 2) planning based on the low scenarios for climate change, demand, and abstraction reductions, and the faster scenario for technology. This will allow for improved understanding of the drivers of investment, the sensitivity of the plan to future scenarios and confidence in the investments being proposed. The company should use the results of this testing to identify and justify, with sufficient and convincing evidence, low regret investments, rather than just those that meet both high and low planning needs in a non-adaptive way.	Between Draft WRMP and Revised Draft WRMP both Thames Water and the WRSE Regional Group have engaged with Ofwat to establish how we can better align our investment modelling with the Long Term Delivery Strategy framework. WRSE have conducted a range of investment model runs which allow us to better align with the requirements of the Long Term Delivery Strategy guidance, and outputs are included in our WRMP Tables. This includes quantifying the different investments that would be made when comparing "most likely" scenarios with those highlighted as "high" and "low" in the Ofwat LTDS guidance. Points to be cognisant of when reviewing the investment required in 'single pathway' investment model runs are that excluding consideration of alternative supply-demand balance pathways (as occurs in single pathway runs) risks an investment plan which prohibits achievement of supply-demand balance in challenging future pathways, and that these runs do not highlight the potentially high cost of relying on interventions which can be implemented on a short timescale if we do not invest now and encounter an adverse future (i.e., the “regret” cost of delaying decisions).	The WRSE Regional Group has not made fundamental changes to its overall programme appraisal approach and how it explains its plan. However, it has revisited its modelling to enable outputs to be generated that is more in line with LTDS principals, which will be used in discussions with Ofwat and which are presented in the WRMP tables.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
We expect the company to test the Ofwat common reference scenario for low abstraction reductions, which is to 'assume only currently known legal requirements for abstraction reductions up to 2050'. Following the approach agreed between Ofwat, the Environment Agency and the regional water resources planning groups, companies should: • include agreed WINEP changes and licence capping; and • use the agreed BAU+ scenario to form a long-term view, but use local reviews to remove licence reductions with significant uncertainty, to form a plausible 'extreme low' scenario.	We are grateful for this written definition of the "Low" scenario, as this consultation response is the first written confirmation that we have had of the intended meaning of the Low LTDS scenario "assume only currently known legal requirements for abstraction reductions up to 2050" For Thames Water, the BAU+ and Enhanced scenarios result in very similar scenarios of required abstraction reduction, and as such we did not consider that starting from the BAU+ scenario was a reasonable approach. As such, we engaged with the Environment Agency to present and receive endorsement of a plausible "low" and plausible "medium" scenario for consideration within our investment planning.	We have changed Section 5 of the WRMP to explain in greater detail how we have derived the scenarios of licence reduction.
Long Term Best Value Programme		
The company has identified £1.2 billion (in 2021-22 prices) of enhancement expenditure relating to the delivery of its WRMP24 in the 2025-30 period. This is an increase on the £846 million of supply demand balance enhancement expenditure the company requested for the 2020-25 period at PR19. Over the 2025-50 period, the company has identified over £12.6 billion of enhancement expenditure.	We agree with the identification of expenditure identified by Ofwat for the draft plan. We highlight that, in the dWRMP, investment required to reduce leakage below current levels is highlighted as being "enhancement" expenditure (resulting in an enhancement to the supply-demand balance) but that this expenditure was denied in PR19. We recognise that the investment identified is significant. This is because the planning challenges which we face in the future are significant.	Our rdWRMP24 programme is different to the identified dWRMP24 programme and thus the expenditure required is different. Our WRMP Tables and Section 11 of the rdWRMP highlight the expenditure required, as before.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
For this investment, Thames Water plans to deliver 308 Ml/d of WAFU benefit between 2025 and 2030. The company proposes to deliver benefits at a higher cost compared to other companies. We have some concern over the company's proposed investment in metering improvements, which make up approximately 27% of its 2025-30 requested expenditure. The company proposes to deliver metering improvements at a unit rate of 13.6 £m/Ml/day in 2025- 30 period, which is higher when compared to the industry median of 7.5 £m/Ml/day. Thames Water should demonstrate how its costs are efficient in its final WRMP	Our consideration of this point is that we should identify how each of the individual investment items have been costed efficiently and robustly as comparison of whole programme WAFU figures in £m/Ml/d may prove misleading. The justification for cost efficiency will be made primarily in the PR24 business plan, but the costing approach as described in Sections 7 and 8 of the WRMP describe the costing process undertaken which is robust.	We have not made changes following this consultation response point, as we consider that the PR24 business plan addresses this matter.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Unit costs of metering options are noted to be high, in particular a large metering innovation project is presented with a total Net Present Cost (NPC) of £103.8 million. Although costs tend to be high in this category, this still compares unfavorably against the industry average. Thames Water needs to demonstrate why high unit cost options are selected and measures it has taken to ensure costs are efficient. For example, the Thames to Southern transfer would cost £810 million, which when combined with 29% of SESRO's costs generates a unit cost of 25 £m/Ml/d for just 53Ml/d. Given the high unit costs, Thames Water should also consider the implications of partner companies not selecting SESRO and its transfer as part of its final WRMP, and implications this would have on the Thames Water programme costs and benefits.	Metering costs use unit rate costs per meter, and we use informed assumptions on savings per meter to derive expected reductions in consumption for each activity. Our PR24 business plan will make the case regarding the efficiency of costs in our plan. Our "metering innovation" option involves installation of internal meters and meter installation in currently unmeterable properties. These activities are known to be costly, and as such a high cost for such a programme is justified. While metering on its own can appear an expensive option, it facilitates water efficiency efforts, will allow for the introduction of tariffs, and allows for CSL/wastage fixes to be targeted. As such, when viewed as part of a programme, metering (whether internal or external) is an efficient option. Thames Water is not responsible for the cost estimates of the Thames to Southern transfer. The SESRO option has, through the WRSE regional plan, been shown to be a cost-efficient option for providing supply to our customers and those across the South East. Various sensitivity runs were undertaken in the WRSE optimiser. The results of these sensitivity tests are presented in Section 10.	We have made clearer in our rdWRMP24 (Section 8) what the "metering innovation" option entails, in order to justify the relatively high cost of this option. We have also provided a justification of our demand management at the programme level in Section 8. The results of sensitivity tests are presented in Section 10 of the WRMP.

Several of Thames Water's supply-side options proposed for delivery in 2025-30 have significantly higher unit costs when compared to PR19 allowances. These include its proposed 41% share of SESRO and Teddington reuse (and associated infrastructure) which have unit costs of 9.6 and 6.6 £m/Ml/d respectively. The company should provide sufficient and convincing evidence that the costs and supply-demand benefits of these schemes and others in its 2025-30 programme are robust and efficient. The reason why the strategic and multi-period schemes have higher cost than smaller localised options, which is counter to our expectations that economies of scale efficiencies can be achieved through regional options, should be justified in the final WRMP. The company should justify the selection in this context, further noting that there are a number of feasible options with lower AICs than SESRO not selected or selected much later in the planning period.	In accordance with RAPID guidance, the Thames Water SRO costs have undergone independent assurance to review and challenge the WRMP24 costs and design, this review fed into the Board's assurance of the Gate 2 reports for SESRO, STT and London Recycling. The Board confirmed, subject to any material circumstances or issues noted, that they: • support the recommendation for the solution progression made in this submission and the recommendations for which options with the solution should be progressed; • are satisfied that progress on the solution is commensurate with the solution being "construction ready" for 2025-2030, should it be required. • are satisfied that the work carried out to date is of sufficient scope, detail and quality as would be expected of a large infrastructure scheme of this nature at this stage. • are satisfied that expenditure has been incurred on activities that are appropriate for Gate two and is efficient. Further information on this assurance can be found in the Board Assurance Report for each of the SROs published as part of the Gate 2 reports. We do not consider that we are required to provide an explanation regarding the expectation that large options may be more efficient than small options on a £m/Ml/d basis. This is because option costing is based on engineering design, rather than top-down economic analysis. Our options have been costed using robust methods and have undergone appropriate assurance. It is noted that some of the smaller options involve expanded use of existing sources, which will clearly represent a lower-cost option. We are concerned by the comment regarding surprise at non-selection of low-AIC options. Significant advancements	We have not made changes to the WRMP following this consultation response point as we consider that our dWRMP provided adequate information in this regard. Our WRMP programme has changed between dWRMP and rdWRMP and we have updated the narrative around programme selection according to changes that have been made between dWRMP and rdWRMP.

	have been made in programme appraisal which surpass AIC ranking of solutions. The WRSE investment modelling process solves problems that it is posed with using an objective of lowest Net Present Cost, and has been the subject of independent technical assurance which has confirmed that it achieves this.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
On the whole, the company should provide sufficient and convincing evidence that the preferred options being selected, across all areas of its plan, are best value in its final plan. It should ensure costs are reliable, efficient, and appropriately allocated, as well as continue to refine and develop detailed bottom up cost profiles to ensure a greater level of maturity of costings. We encourage engagement with the market further to support this work.	Our consideration it that we have provided sufficient and convincing evidence that the preferred options being selected are best value through our programme appraisal explanation, Section 10 and Section 11. Regarding option costs, we have ensured that costs have been estimated according to robust methods. We have continued to develop costs for those options which we intend to develop, as we have improved upon our bottom up cost profiles to ensure a greater level of maturity of costings.	No specific changes are requested. Both our dWRMP and rdWRMP met the requirements of this comment, in our consideration.

The selection of SESRO is based on current costs which we note have not changed in over five years and may do so as the option development work progresses. Thames Water should work with WRSE and Affinity Water, to further evidence the robustness and reliability of SESRO costs given their static nature is unusual for a project of this scale. Considering the additional customer funding provided at PR19 to support its development, we expect robust and up to date costs, presented transparently for all customers and stakeholders to engage with. We expect a level of maturity in costings to be developed from market engagement to help reduce uncertainty. Further evidence will need to be provided in final plans, to provide assurance around costs, and impacts any changes may have on the options selection.	At Gate 1, estimates of base Capex and Opex were derived following the guidance given in the All Company Working Group (ACWG) cost consistency method. The capital cost estimates were primarily based on refinement of those developed for previous WRMP submissions. The WRMP09 cost estimate was developed as a 'bottom-up' contractor's estimate, and this same cost estimate was reviewed, refined and utilised for Gate 1. This means that the costs provided at Gate 1 (as per previous WRMP option costings) were based upon a high degree of detail, being based upon a contractor's bottom-up estimate and outline construction phase programme. Additionally, the costed risk register was updated to reflect the Gate 1 design and environmental appraisal, to provide an updated estimate of the P50 risk. Optimism Bias was calculated alongside the costed risk analysis, as detailed in the ACWG Cost Consistency Methodology, resulting in a scaled back Optimism Bias figure. In combination, therefore, due to this maturity of the scheme, the SESRO costs at Gate 1 already reflect a high degree of engineering and risk definition compared to other water resource options. At Gate 1, we undertook an independent cost benchmarking exercise on the capex costs. Jacobs were requested to prepare an independent Capex cost benchmark against the notional solutions for the South East Strategic Reservoir Option (SESRO) Strategic Resource Option (SRO) in support of the RAPID Gate 1 submission. The cost benchmark is based upon the reference design and quantities prepared by Jacobs in 2009. The Capex benchmark was primarily undertaken by Bam who have reviewed the unit rates for the civils aspects of the project. Some of the larger M&E elements were benchmarked by ChandlerKBS using UK Water Company data, adjusted to the South East region. Over 70% of the principal items	No changes have been made following this response, although cost estimates for many options were updates between dWRMP and rdWRMP appraisal processes, due to ongoing cost estimate updates. We continue to regularly update cost estimates as we progress through the Gated process.

	associated with the scheme were benchmarked. Overall, a variance of just over 5% was found between the SESRO base capex estimate and the benchmark position. The same approach to the bottom-up cost estimate has been used at Gate 1 and Gate 2, and therefore the benchmarking carried out at Gate 1 is still considered applicable to the Gate 2 cost estimate. Further review is planned to take place at the next stage of design development, to inform Gate 3. At Gate 2, the engineering design and costs for the SESRO scheme were reviewed and refined. As defined in SESRO Gate 2, Supporting Document A-2, a number of changes were applied to the cost build-up to provide the latest estimates. As well as updating quantity estimates for key components of the 150Mm3 scheme, the quantities for the other SESRO size variants have been estimated for all cost items. Overall, at Gate 2, these changes resulted in an increase in the base capital cost for the SESRO variants following updates to quantity estimates. The changes are summarised in Gate 2, Supporting Document A-2, amounting to an increase of between ~6% and ~8% for the single phase variants. The key risks within the Quantitative Costed Risk Assessment were revisited with expert judgement used to estimate the likelihood of occurrence and the potential minimum and maximum cost impact. Therefore, the costs have not varied on SESRO due to the maturity and detail in the original estimate. However, this estimate has been reviewed and updated regularly throughout the process to ensure that the base scope, associated quantities, costed risk and optimism bias all	

	reflect the latest design iteration of the project. Costs will continue to be reviewed and refined as we approach RAPID Gate 3.	

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Thames Water has assessed the draft WRMP's impact on customer bills, stating the estimated bill increases to deliver its preferred plan. We welcome this being presented, however, the bill increase impacts do not appear to have been tested with customers, nor is any context provided to show that there will be other costs impacting bills at PR24. We expect the company to provide sufficient and convincing evidence that the estimated bill impacts of the programme (and other areas of investment for PR24) has informed customer engagement and choices around policy drivers and therefore scheduling of investment in the final WRMP	Customer engagement has been an integral part of the development of our draft plan. A summary of the customer research undertaken to inform the draft plan was presented in Section 1 and Appendix T. We have continued to engage with customers and have undertaken further research to explore their preferences with the context of the proposed bill increases for water resources, and other costs for PR24. We have presented this work in the revised draft plan. The further research studies are noted below. 1. Qualitative research with a representative sample of Thames Water's customers to seek feedback on the draft plan, using the questions asked as part of the public consultation as a framework. The purpose of this research is to ensure we understood the views of our customers alongside the views of stakeholders. 2. Quantitative research as part of Water Resources South East to explore customers' preferences for alternative plans taking account of, and testing the sensitivity to, the bill impact. This research was designed to include a representative sample of Thames Water's customers. 3. Acceptability testing to inform the development of the Business Plan, which includes proposals for water resources, to test whether the plan is 'acceptable' to customers as well as their views on the affordability of the proposed bills.	Section 1 and Appendix T have been updated in the revised draft plan to include the further research undertaken with customers.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Customer and Stakeholder Engagement		
We welcome that Thames Water has presented an approach to customer and stakeholder engagement that incorporates end-to-end engagement through the best value decision making process and incorporates customer views throughout the plan. An explanation of the engagement approach with neighbouring water companies, and third parties is also given. Thames Water host a regular Water Resources Forum in conjunction with Affinity Water, as there is overlap in stakeholder communities.	We welcome the positive feedback provided for the customer and stakeholder engagement completed to inform the development of the draft plan.	Positive feedback. No changes required to the draft plan.
Thames Water held pre-consultation discussions with water suppliers, water companies with bulk supply or shared resource agreements and neighbouring water companies. The company has also held engagement with regional groups, including accounting for any regional water resource strategies and regional stakeholder engagement strategies. Through WRSE, this has included emerging plan briefings with, and participation from, wider stakeholders	We welcome the commentary on the pre-consultation engagement undertaken with a wide range of stakeholders as part of WRSE and Thames Water led activities.	Positive feedback. No changes required to the draft plan.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
representing industry, the environment, customers, and local focus groups.		
We welcome that the company has engaged with retailers to develop the plan. It has worked with the non-household retail sector to pilot a water efficiency scheme, aimed to reward retailers for providing evidence of water efficiency interventions on business sites.	We welcome the commentary on the engagement with Retailers and the work with the non-household sector to encourage the efficient use of water.	Positive feedback. No changes required to the draft plan.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
However, there are some areas where Thames Water could improve its approach to customer and stakeholder engagement. Although Thames Water has provided a breakdown of engagement with customers and what topics were discussed, the research conducted relies heavily on WRSE. This therefore lacks the sufficient and convincing evidence needed that Thames Water's own customers support the investment put forward in the plan. This should be rectified in the final plan.	We have worked closely with WRSE, and the other SE water companies, in developing the draft South East regional plan, which has informed our draft WRMP, and as such we have undertaken coordinated activity with customers and stakeholders. For the collaborative regional research we have ensured that a representative sample of Thames Water customers are included in the research design so that we hear the views of our customers, and can consider any differences in their views compared to the wider region. We have also commissioned Thames Water specific research including research with London customers on water recycling who may be the recipients of recycled water in the future; research to seek feedback on the draft plan as part of the public consultation; and research to inform the business plan including acceptability testing of the proposals and the proposed bill impact. We note the comment and will ensure that whilst working collaboratively we have clear and sufficient evidence of our own customers' preferences and priorities and report this in our revised draft plan.	Section 1 and Appendix T have been updated in the revised draft plan to include the further research undertaken with customers.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
Customer's attitudes towards different strategic resource options and scheme types were surveyed with a breakdown of concerns. However, it is not clear whether customers have been provided with enough information on proposed solutions (including alternatives and context) to draw conclusions and confirm their support.	We have undertaken a number of research studies to explore aspects of the Water Resources Management Plan including customer views on the strategic resource options. We work with independent research agencies to design the research to ensure it is clear, unbiased and understandable to customers and that sufficient information is provided on a topic or scheme to enable participants to provide informed feedback. We also have engaged the regional Customer Challenge Group on the research that was undertaken for WRSE, they scrutinised the approach, the content and design of the materials, and the presentation of the output. We have also engaged with Thames Water's Customer Challenge Group on some of the research and engagement undertaken specifically for Thames Water again to provide the opportunity for scrutiny and challenge. We will ensure we include the research reports, including the information provided to customers, in the revised draft plan which we hope will address the concern raised. There will be ongoing work with customers and local communities as part of the development of the strategic resource options as these are taken forwards to ensure their views are taken into account in the design and development of the schemes.	We have provided additional information in Appendix T of the revised draft plan.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
A list of key stakeholders is provided but the final plan should make clear whether partnership opportunities have been identified to enable co-funding and co-delivery.	Throughout the development of the regional plan and our WRMP we have worked closely with a wide range of stakeholders, including other water companies; water using sectors, including the energy, horticulture and farming sectors; environmental organisations and catchment partnerships to inform the environmental destination; interest groups such as Chalk Streams First. This engagement has helped to shape the draft plans. We also work in partnership with other sectors and organisations to deliver objectives and initiatives for example with retailers and developers to promote and incentivise the efficient use of water, and catchment organisations through the smarter water catchment projects, which, include co-funding arrangements. Furthermore, we are working in partnership with other water companies to examine and develop future water resources schemes and there will be opportunities for more detailed and wider partnership working if these schemes are taken forwards, to ensure these schemes not only deliver a secure supply of water but also are designed to provide wider public value.	We note Ofwat's ambitions for partnership working and are working collaboratively with a range of organisations. Funding and delivery models are specific to the activity. We have not made any specific changes to the plan in response to the comment but have noted this.
A statement setting out board involvement in the plan has been provided in the main report, and a query confirms that a full board assurance statement will be provided when the approved final plan is published. A diagram has been provided showing the governance structure used to ensure robust decision making.	The TW Board have remained engaged in the development of the WRMP between draft and revised draft.	None - no change requested.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
The draft WRMP programme for 2025-30 represents a significant uplift in expenditure compared to the PR19 programme. For its final WRMP we expect the company to provide sufficient and convincing evidence that the Board has challenged and satisfied itself that the WRMP and the expenditure proposals within them are deliverable in the context of the wider PR24 business plan proposals. The company should also demonstrate that it has put in place measures to ensure that the plans, of which the WRMP forms a key part, can be delivered	We agree that we have seen a significant increase in investment between our PR19 programme and that which will form the investment programme for 2025 to 2030. When comparing the PR19 investment there are clear reasons for the change in investment levels, the first being scope. From 2025 we have included the required investment to initiate the delivery of strategic resource options in our dWRMP, including Teddington DRA, a further tunnel to feed water to the larger reservoirs in north London and the first stages of SESRO. We also included options to meter the more difficult properties under our metering innovation option, which has increased unit costs. In terms of unit costs, we have seen an increase in the current delivery costs due to inflation and other external factors. This has been taken into account in the unit costs of the options. The costs utilised in the WRMP have been signed off by the business and the case for efficiency will be made in our PR24 business plan. Key costs such as mains rehabilitation are informed by the current programme of work, with costs of our current and past projects informing the unit costs database, called the Engineering Estimation System (EES). The EES gives a history of similar projects to provide pricing estimates. As well as being used in determining the cost of demand management options, for smaller supply options the costs also generally come from EES. The larger strategic resource options have been costed through a combination EES-based costs alongside bottom-up costing by external consultants, checked internally and externally, and also then provided to RAPID for review. Bill impacts were reviewed by the Board, and bill impacts of the WRMP have been published along with the detailed tables within the draft WRMP and through the RAPID gated process. Both are available on our website.	We consider that we have provided sufficient detail regarding Board engagement in our dWRMP and so have not made additional references to this in the rdWRMP. RAPID Gate 2 documentation clearly demonstrates that we have detailed plans for the further development and construction of the options within our plan, and so we do not feel it necessary to provide additional detail in our rdWRMP.

Ofwat Consultation Response	Our consideration	Changes to the draft WRMP, or if no changes are made, why not
	Throughout the development of our WRMP we take account of deliverability. This is clearly seen in the roll out of the metering programmes, where the number of smart meters expected to be installed per 5 year period has been constrained to ensure it is deliverable and the installation quality is not affected. The mains rehabilitation programme is small compared to future years in our WRMP due to the unit costs against the benefit achieved. In 2025 to 2030 we focus on completing the smart metering roll out programme that provides further benefits of allowing targeted action in water efficiency activity and fixing customer-side leaks, and which will allow targeting future mains programmes. Regarding supply options, we have reviewed the timetable for delivery. We have employed external experts to assist in the development of planning, development and construction profiles of the large options, and are now forming an experienced internal team, many of whom have worked on other key national projects such as Crossrail, the Heathrow third runway, and HS2. This team will continue developing the plan and ensure a successful outcome.	

It's everyone's water