

By email

Secretary of State for Environment,
Food & Rural Affairs

24 March 2023

Dear Secretary of State,

Thames Water – draft water resources management plan 2024 consultation response

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. This letter provides a summary of our assessment of Thames Water's draft WRMP and should be read alongside [our letter setting out the wider context of our review and the general approach to the assessment](#) of companies' draft WRMPs.

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 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.

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

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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. In particular, in its final WRMP 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;
- review its 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;
- 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;
- 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;
- include more evidence on utilisation in the final WRMP, including the interaction between interrelated strategic resource options and how this influences their utilisation;
- carry out sensitivity analysis on the timing of adaptive plan branches to explore the trade-offs and justify the timings, and different glidepaths on water efficiency and leakage to enable presentation of the implications;
- 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;
- 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 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 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.

Yours sincerely



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Annex

In this annex we outline further details on the points raised in our main letter alongside more detailed comments on different areas of the draft plan. Our points reflect our assessment approach and focus on:

- **Demand management ambition and outcomes** - alignment with government targets and statutory requirements for water demand.
- **Assessment of water needs** - including key drivers for WRMP24 and the supply demand balance forecast and the need for enhancement investment.
- **Options to meet water needs** - the approach taken to identifying and screening options for both supply and demand, review of demand management and supply side proposals including sensitivity testing for key areas, sufficiency of options and option utilisation under normal and peak scenarios, including scalability and modularity.
- **Decision making and prioritisation** - best value decision making for customers and the environment, how the company has approached strategic planning frameworks and alignment with Ofwat's long-term delivery strategies and common reference scenarios¹.
- **Long term best value programme** - cost efficiency, bill impact and affordability of the plan.
- **Customer and stakeholder engagement** - the type and quality of interaction with customers and stakeholders and the impact this has had on the draft plan formulation and proposals.
- **Board assurance** - company assurance and governance processes, including Board engagement and sign-off.

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;² and

¹ Ofwat, [PR24 and beyond: Final guidance on long-term delivery strategies](#), April 2022

² For example, Defra, ['The government's strategic priorities for Ofwat'](#), March 2022.

- reducing per capita consumption (PCC) to 110 litres per head per day (l/h/d) by 2050.³

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.⁴ 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.

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.

We are concerned that the company is not proposing to meet the per capita consumption (PCC) target of 110 l/h/d by 2050⁵. 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.

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.

Demand reduction strategy development

³ For example, Defra, ['The government's strategic priorities for Ofwat'](#), March 2022.

⁴ Defra, ['Environment Act 2021'](#), December 2021.

⁵ 110 l/h/d is a dry year target

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.⁶

Delivery of PR19 performance commitments and WRMP19 targets

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.

Business demand

We welcome Thames Water's proposal to reduce business demand levels by 7.2% by 2029–30 when compared to 2019–20 baseline levels.⁷ 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.

Per capita consumption (PCC)

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.

⁶ Ofwat, [PR24 final methodology – Appendix 9: Setting expenditure allowances](#), December 2022

⁷ Combining measured and unmeasured non-household consumption figures, business demand is expressed as a three year average. The average of the reporting year and the two previous years.

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.

Leakage

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.

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.

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.

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.

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 2022.⁸

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 industry⁹ 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.¹⁰

Metering

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.

It is unclear how Thames Water has developed its metering strategy and optimised the pace for smart metering delivery. The company appears to have appraised three metering profiles (medium, high and high plus). This has been done separately for unmeasured and measured households. However, it is unclear what these three options are and how they vary as they are not described in Appendix P – Options list table, and the data tables suggest that they offer similar amounts of water savings. Thames Water should consider a wider set of metering

⁸ Water UK, 'A Leakage Routemap To 2050', March 2022.

⁹ Ofwat analysis based on 2021-22 annual performance report levels of average annual leakage normalised against mains length and connected properties

¹⁰ Note the Ofwat analysis undertaken adjusted all costs to the 2020-21 price base.

delivery options, explain what these options are and justify the selection of the preferred option in the final WRMP.

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.

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.

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.

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.

Thames Water has reduced the expected outputs from some works resulting in a reduction in deployable output of 26MI/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 90MI/d in 2025-26 (based on a query response). Target headroom (uncertainty allowance) has also increased in 2025-26 by 57MI/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.

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.¹¹

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.

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 20MI/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.

¹¹ Ofwat, [PR24 final methodology: Appendix 9 – Setting expenditure allowances](#), December 2022, pp86- 87.
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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 150MI/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.

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-in-500-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.

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.

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 36MI/d in 2030-31 with climate change uncertainty also contributing 31MI/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.

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 MI/d rather than the deployable output by 50MI/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.

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.

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 analysis¹². 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.

¹² Jacobs, Meeting regional and national water resources needs: gap analysis of the current strategic infrastructure scheme portfolio, August 2020.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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 sub-components 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. 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.¹³ Companies should not expect additional customer funding to address risks resulting from under delivery in the current or previous price control periods.

¹³ Ofwat, 'Creating tomorrow, together: Our final methodology for PR24 Appendix 9 – Setting expenditure allowances', Annex A1.

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 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.

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 Mm³) 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.

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.

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.

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.

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 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.

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.

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.

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.

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 PR19¹⁴. Over the 2025–50 period, the company has identified over £12.6 billion of enhancement expenditure.

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 companies¹⁵. 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.

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

¹⁴ This total for PR19 includes requests for supply demand balance expenditure including metering and strategic regional schemes

¹⁵ Based on the data submitted by companies in their draft plans and comparison against the industry median

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/MI/d for just 53MI/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.

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/MI/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.

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.

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.

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 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.

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 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.

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.

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.

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.

Assurance

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 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.¹⁶

¹⁶ Ofwat, ['Creating tomorrow, together: Our final methodology for PR24. Appendix 9 – Setting expenditure allowances'](#), December 2022, p 122.