

Portsmouth Water



FINAL WATER RESOURCES MANAGEMENT PLAN 2024

APPENDIX 10A – ADAPTIVE PATHWAY MONITORING PLAN

Portsmouth Water Ltd
PO Box 8
West Street
Havant
Hants
PO9 1LG

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1 INTRODUCTION

In this appendix we detail our Monitoring Plan which we will use to track key metrics which will indicate which of the adaptive planning pathways most accurately reflects the real world scenario, and as such will inform our investment decisions through the planning period.

This monitoring plan has been developed in conjunction with WRSE to ensure a regionally consistent approach is taken to monitor our adaptive planning approach and identifies the metrics that will be monitored at both a regional and water company level.

We have set-out the thresholds, triggers, actions and timelines that apply at our company level.

1.1 What is adaptive planning?

Adaptive planning is an approach to developing flexible long-term delivery strategies in an uncertain future, by setting out investment options for a wide range of plausible future scenarios or alternative pathways (Figure 1).

The purpose of adaptive planning is to identify flexible low-regret options based on the comparison of optimal solutions for each plausible pathway. Adaptive planning has decision points (where you decide to switch paths) and trigger points (where the investment programme shifts to another pathway).

Figure 1 provides a conceptual diagram demonstrating the approach to adaptive planning but please refer to Section 2 of the WRMP24 main statutory document for further information.

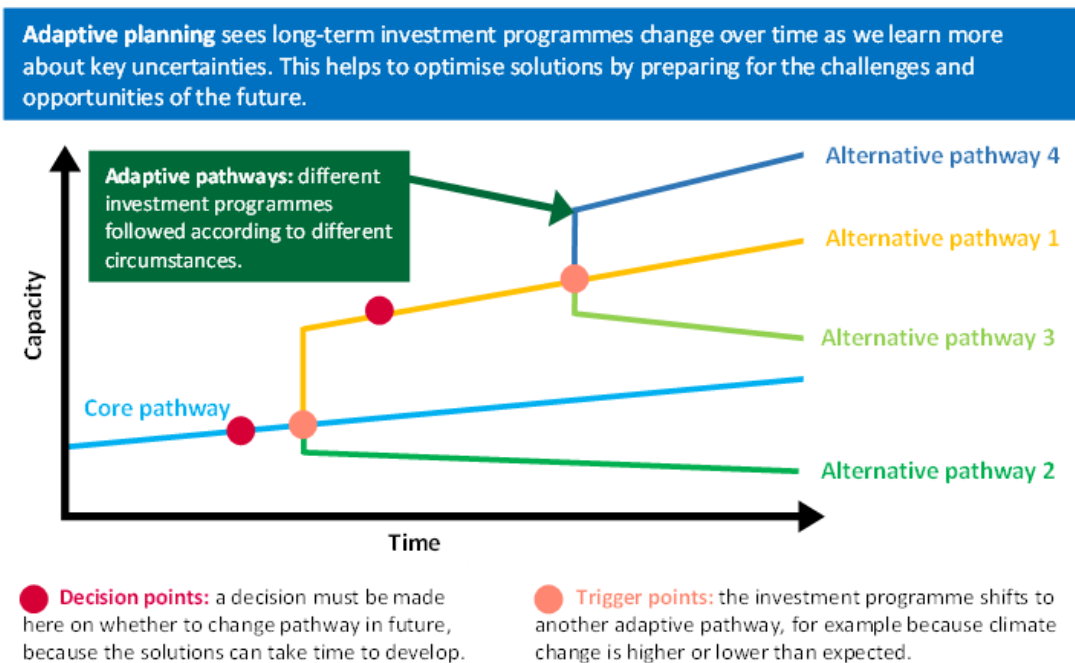


Figure 1: Conceptual diagram demonstrating the approach to adaptive planning and definitions for key concepts of adaptive pathways, decision points and trigger points. Adapted from sources: [Ofwat, May 2022](#); [Ofwat, April 2022](#).

1.2 [WRSE adaptive planning pathways for South East England](#)

WRSE have set out a regional best value adaptive plan which schedules a set of investments to meet a range of future challenges across the region. There are nine pathways in the WRSE adaptive plan (see Figure 2). Each represents one discrete combination of deterministic forecasts for growth, climate change and environmental destination (abstraction reduction). The combination of these forecasts allows us to estimate the possible deficit in water that would occur in each future scenario.

The Adaptive Plan comprises:

- **Stage 1: The root branch (2025/26 to 2034/35)** the first five years of the plan have a common set of forecasts comprising housing growth that reflects local planning authority housing plans, a medium climate change scenario and the current statutory environmental requirements (i.e. modifications to abstraction licence volumes that are already identified).
- **Stage 2: The next three branches (2035/36 to 2039/40)** include the same environmental ambition and climate change projections but cover a wider range of potential population and household growth scenarios.

Uncertainty within the predictions of future economic and demographic futures presents a challenge for water resource management. The UK government has stated aspirations to accelerate the rate of house building to 300,000 new homes per year. However, the UK's exit of the European Union and the global restrictions on migration presented by the Coronavirus pandemic means that the UK is facing a unique period of uncertainty politically, economically and demographically. The need for robust evidence on future housing growth and demographic change are key requirements to the WRMP24.

- **Stage 3: The final set of branches (2040/41 to 2074/75)** focus on how alternative environmental ambition scenarios and climate change forecasts could continue to impact on the future availability of water.

Sustainably abstracted water bodies are more resilient to climate change and drought (EA, March 2020). There is rising awareness that the water bodies in our supply area are under increasing pressure with the assumption that the abstraction of water for public water supply is a component of that pressure. In close consultation with the Environment Agency, we have sought to understand the possible range of reductions in abstraction we might foresee in the future to raise the resilience of water bodies in our area. Exact site by site reduction levels have yet to be established, but to allow this plan to account for this significant pressure, we have modelled the possible impact of reductions as 'environmental destinations'.

In the future, the climate will change. We are facing hotter, drier summers, and warmer wetter winters, bringing new challenges to delivering and securing resilience of water resources. Scenarios based on high, medium and low climate change future scenarios have been considered.

Whilst there are nine different future scenarios reflected in the adaptive pathways, one 'reported' pathway is used to identify the investment plan required for South East England. This is 'situation 4', which is based on the planned growth projections for housing, high levels of environmental protection, and a high climate change scenario (see Figure 2). This pathway aligns most closely with the requirements of the Water Resources Planning Guideline. Reviewing the solutions identified in response to applying the other pathways serve to show the sensitivity of the plan should alternative scenarios be closer to reality.

The WRMPs of the six WRSE member companies all reflect the nine adaptive pathways of the regional plan. The investment programme derived from the ‘reported’ pathway has been included in water company business plans for 2025 to 2030.

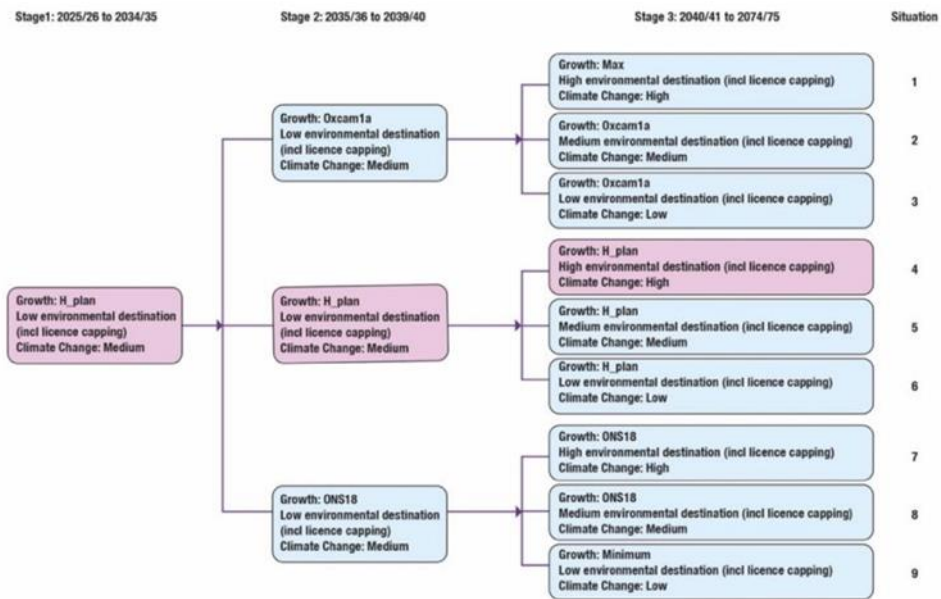


Figure 2: WRSE and Portsmouth Water’s Adaptive Planning branches with the reported pathway highlighted.

2 CORE AND ADAPTIVE OPTIONS

2.1 WRSE core and adaptive options

The regional plan identifies a set of “core” and “adaptive” options that secure water supplies in each of the nine future scenarios. “Core” options are needed in **all** future scenarios, appearing in all nine pathways and therefore progressing these schemes is a requirement. The majority of these options are identified in the first 15 years of the plan.

“Adaptive” options are schemes that have been identified in some, but not all, of the pathways. These adaptive options could be needed if **different** future scenarios play out in real life and would help us to react to those future challenges.

At a regional scale WRSE has compared the options identified in situation / pathway 4 with those in the other pathways, illustrated in Figure 2 below. Each situation is represented by a grey line and the different coloured dots on each pathway represents a scheme. The distribution or recurrence of dots across the pathways show us the core schemes as well as which adaptive schemes may be required or which adaptive schemes might no longer be required, depending on how the future unfolds.



Figure 3: WRSE Core and adaptive options.

There are also options available to the investment model, which are not currently selected in any of the 9 scenarios, but which could be used as supplementary schemes should any of the options selected prove to be less effective than anticipated or to be undeliverable. These are referred to as “what-if scenarios”. WRSE has compared the results of different investment model runs and sensitivity testing, which show which options are identified if others are excluded (i.e. simulating an undeliverable scheme) to show how the regional plan would have to change to include these “what-ifs” under those circumstances.

2.2 Portsmouth Water core and adaptive options

Our core and adaptive options are shown on Figure 4. The **core** options selected within all adaptive pathways, including the WRMP reported pathway Situation 4 are:

- **Demand management options:** Both our ‘High plus’ demand management basket with universal smart metering and the Government initiative led savings.
- **Drought plan options:** Source S drought permit and demand side drought orders (Temporary Use Bans and Non-Essential Use Bans).
- **Havant Thicket Reservoir approved scheme:** Construction of the reservoir, filling with spring water and the provision of a 21 MI/d bulk supply to Southern Water.
- **Source O Booster Upgrade:** A scheme that unlocks conjunctive use deployable output associated with Havant Thicket Reservoir.

For us there are no differences in the investments identified for Stage 1 and Stage 2 resulting from the adaptive pathways and therefore the key adaptive trigger point for Portsmouth Water is 2039/40.

Our first adaptive option in 2039/40 comprises:

- **New import from Southern Water:** This is utilised in six of the nine adaptive planning pathways, including the WRMP24 reported pathway Situation 4. Therefore it has a relatively high probability of being required.

Our second set of adaptive options are first utilised in the 2040s and they comprise:

- **Additional treatment capacity at existing Works A WTW to receive additional water from Havant Thicket Reservoir, supported by water recycling:** This is utilised in four of the nine adaptive planning pathways, including the WRMP24 reported pathway

Situation 4. These pathways are largely associated with a future where we anticipate the 'High' environmental destination scenario.

- **New WTW at the location of service Reservoir C:** This is utilised in two of the nine adaptive planning pathways, including the WRMP24 reported pathway Situation 4. These pathways are associated with a future where we anticipate both the 'High' environmental destination scenario and higher population growth.

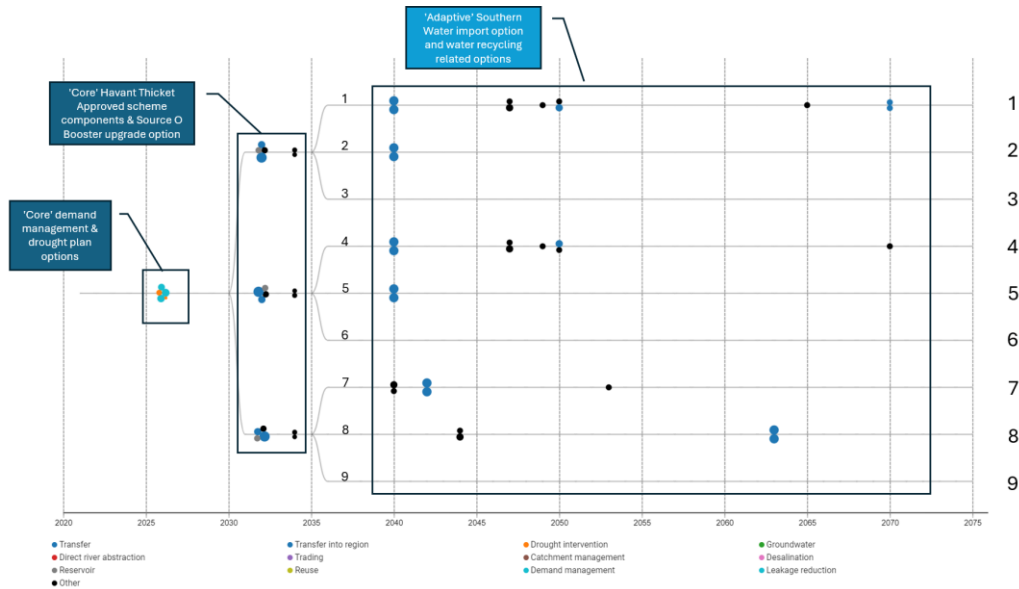


Figure 4 Portsmouth Water core and adaptive options

As described above, WRSE has referred to “what if scenarios” to identify further adaptive options in the event that certain schemes cannot be delivered or if they do not achieve their expected benefit. Our “what if scenarios”, or sensitivity tests, are described in Appendix 9A of our WRMP24.

None of the sensitivity tests resulted in the selection of additional Portsmouth Water WRMP options. This means that to some degree, the options already identified in our WRMP24 adaptive planning pathways can flex as necessary to meet the challenges posed by the sensitivity tests i.e. the utilisation of certain options can be increased, or the start date of an option can be brought forward. A few of the sensitivity tests required the Source O Booster Upgrade option to be implemented in an earlier year, 2032/33 instead of 2033/34, as shown in Figure 5 (noting it cannot be implemented earlier than 2032/33 due to dependencies on the Havant Thicket Reservoir Approved Scheme). Additionally, the sensitivity testing of reduced demand management activity indicated the need for a larger capacity ‘Thames to Southern Transfer’ (200 MI/d) and ‘Otterbourne WSW to Source A transfer’ (95 MI/d).

Certain sensitivity tests led to a deficit in the supply demand balance towards the end of the 50 year plan. These results demonstrate that we need to develop additional new options for the next WRMP (WRMP29) to meet the increased challenges from population growth, climate change, and in particular, our environmental destination, which we have undertaken to do for WRMP29.

Sensitivity testing around the benefit from our Source S drought permit identified a near-term deficit in 2025/26 and therefore demonstrated our reliance upon this option at the very start of the WRMP24 planning horizon to maintain resilience to extreme drought. To mitigate losing part or all the Source S drought permit benefit, we would seek immediate implementation of the ‘More Before 4’ actions as described within our Drought Plan.

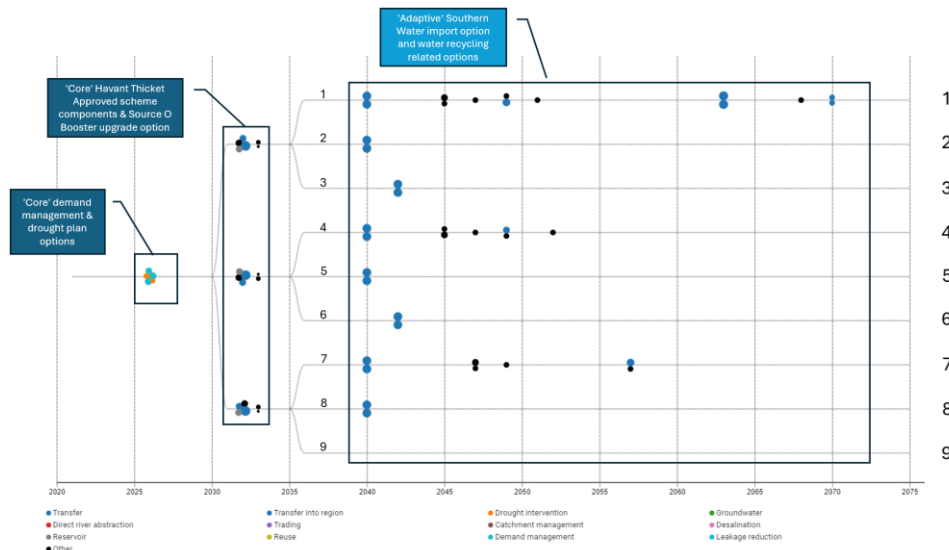


Figure 5 Sensitivity test: Reduced demand reduction from drought interventions

The sections above have described the identification of core and alternative adaptive options. In the next sections we describe the WRSE and company monitoring plans to ensure we trigger alternative options in good time if necessary.

3 MONITORING PLANS

3.1 The WRSE monitoring plan for South East England

The purpose of the WRSE monitoring plan is to track key indicators in order to understand which of the planning scenarios is playing out in real life and to trigger the implementation of alternative, adaptive solutions at a region-wide scale if necessary.

Given the range of different future scenarios it is important to track where we are against the assumptions and forecasts we have made in the planning process. If we begin to experience a future scenario which is better reflected by one of the alternative pathways in our adaptive plan than our reported one, we will need to move to that new pathway and deliver its respective investment programme instead.

In addition, WRSE will monitor the delivery of the investment required by the pathway 4 programme. This includes the delivery of new water resource schemes as well as demand and leakage reduction programmes. If progress is such that it no longer addresses the projected deficit, then an alternative option or options would need to be triggered. For example, if the government water efficiency policies do not deliver the savings that are assumed within pathway 4, then we would need to progress further supply options to ensure sufficient water remains available.

Table 1 sets out the areas that we will monitor at a Regional level, and the method of monitoring them.

WRSE will prepare and publish an Annual Monitoring Report, building upon the content of the company WRMP Annual Reviews (normally published in June of each year).

Table 1 Areas and methods of monitoring

Area of monitoring	Method of monitoring
Population growth	Water company annual reports. WRSE will track these updates every year and commission new regional forecasts in 2027, using any new Census information and ONS data published. These updates will be compared with the forecasts in the regional plan at a water resource zone level.
Housing growth	Water company annual reports and collected through inspection of the local housing plan growth forecasts. We will track how these forecasts compare with those in the regional plan. We will also be monitoring the Oxford Cambridge growth forecasts.
Per Capita Consumption (PCC)	Water company annual returns and will take into account any Government announcements that are made regarding water efficiency commitments from the Government’s Environment Improvement Plan.
Non-household demand	Water company annual reports
Smart metering	Water company annual reports
Government water efficiency interventions	WRSE have tested several different Government water efficiency policies. Government Policy C+ brings the region to 110 l/p/d by 2050 in a dry year, but this puts a lot of onus on Government to deliver a significant component of the plan. This will require careful monitoring as the plan progresses to review Government commitments.
Leakage	Water company annual reports. WRSE will also track the outturn leakage numbers each year at each water resource zones to see how well the zones are tracking against their expected outturns.
Distribution input	Water company annual returns.
Environmental ambition and sustainability investigations	WRSE has worked with the EA and Natural England to develop the existing environmental ambition profiles, and to incorporate licence capping. The profiles will need to be reviewed to ensure they meet policy expectations, particularly regarding licence capping and the results of ongoing WINEP and environmental investigations.
Abstraction reduction delivery	Water company annual reports
Water resource scheme delivery	Water company annual returns
Supply forecasts	Supply forecasts will be updated by WRSE in 2026 and reviewed in 2027. The supply forecast will be updated to take account of the reductions to existing abstraction licences, new schemes coming online and any new information on drought resilience standards. They will also take on board any updates to approaches for generating future droughts.
Climate change	The climate change projections are unlikely to be updated until 2027. In the interim WRSE will use the Met Office annual “state of the climate” reports and Copernicus information to track how global temperatures are comparing to the 28 climate change scenarios WRSE modelled for the regional plan. This temperature proxy will be used to indicate which of the climate change scenarios we are tracking against.
Government policy	Government policy might / could change in the future. WRSE will continue to update the plan where necessary to compare with the known policies in the current plan. This includes levels of drought resilience, the use of demand side drought options (Temporary Use Bans and Non-Essential Use Bans) and future environmental policies.

The purpose of the WRSE monitoring plan is to ensure that the companies can meet their supply duty by ensuring sufficient schemes and interventions are delivered to meet their future supply demand challenges. This means understanding if the interventions and forecasts set out for the reported pathway in the regional plan are on track, but more importantly the

forecast security of supply is not compromised. Given how long some infrastructure schemes take to deliver, it is necessary to continue with their development in parallel with some preferred options.

The metric used to monitor this is “headroom”, which is the amount of water a company has available over the forecast supply demand balance position for each water resource zone (WRZ). Each company must maintain a headroom in each of its supply zones and this should always be above a certain threshold, referred to as “target headroom”. The plan has been derived to ensure that companies can meet their target headroom position across all the zones in order to give a level of resilience for each of the zones.

Target headroom is a composite measure that brings together the supply and demand forecasts coupled with the program delivery of schemes. When schemes are delivered, they either improve the supply forecast (water recycling, reservoirs, transfers, etc) or decrease the demand (water efficiency and leakage schemes). Outperformance of some schemes can be countered with late delivery of other schemes. Likewise, if population growth does not increase at the forecast rates used in situation 4 this could be countered by an increase in climate change impacts. Therefore, this composite measure better reflects the actual position companies are in for ensuring security of water to their customers on an annual basis.

If the actual headroom in a zone falls below target headroom, then action is required to improve the situation. If actual headroom is higher than target headroom, then no immediate action is required but companies should continue to monitor the situation. This is shown in the schematic diagram below in Figure 6.

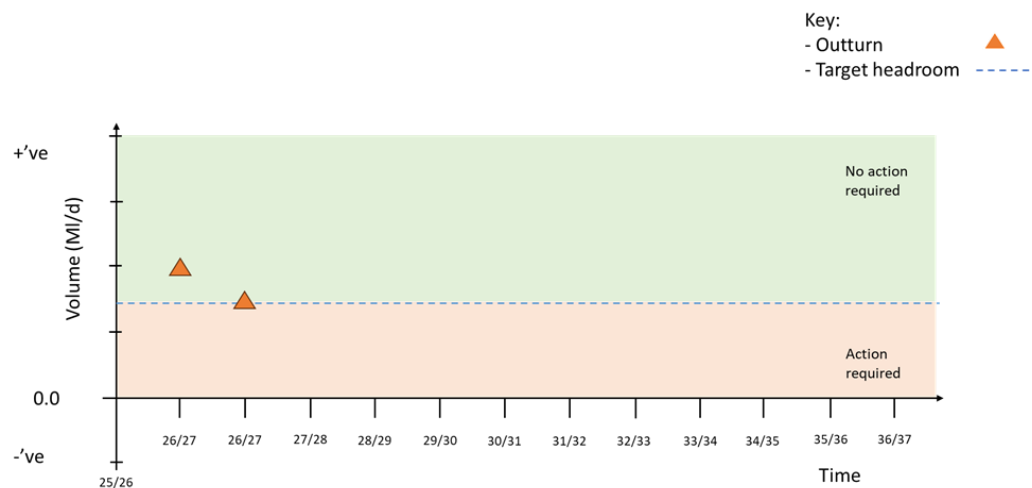


Figure 6 Monitoring of outturn / actual headroom against WRMP target headroom

Looking at annual return data is helpful, but the underlying indicators also provide an insight into the future position and therefore WRSE will use the outturn data coupled with the forecast information to estimate future headroom capacity for each of the zones, as illustrated below in Figure 7.

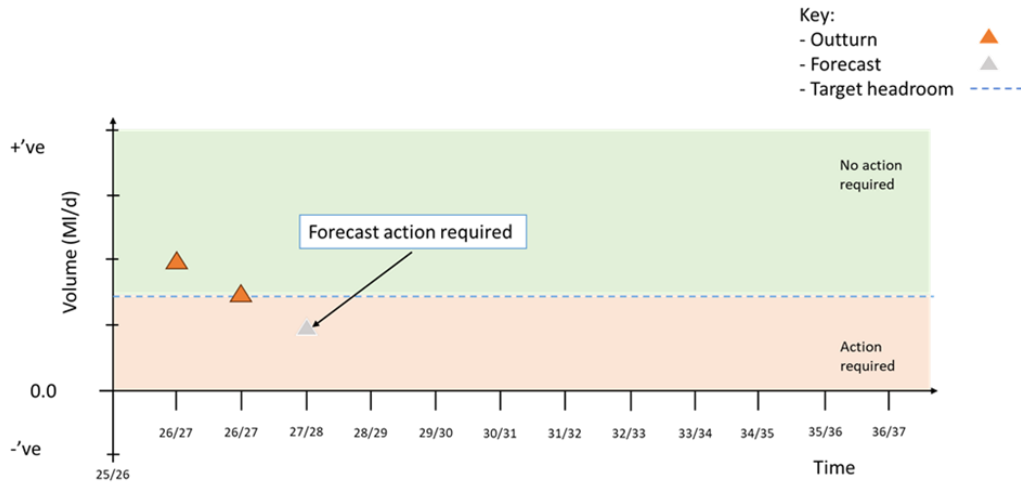


Figure 7 Forecast of headroom against WRMP target headroom

The forecast headroom position is calculated by dividing (hybrid Deployable Output profile + resource schemes) by the (Demand forecast adjusted by the Dry Year Distribution Input). Where the Dry Year Distribution Input is the annual Distribution Input uplifted for a dry year.

The annual water balance provides an insight into the amount of water put into supply each year (distribution input) and is broken down into the various components such as consumption, leakage, non-household consumption, etc. A schematic of an illustrative water balance is shown in Figure 8 below.

Distribution Input 100%	Consumption 81%	Household 61%	Unmetered (11%)
			Metered (50%)
	System Losses 19%	Non-household 20%	Unmetered (1%)
			Metered (19%)
		Leakage 17%	Distribution losses (14%)
			Supply pipe leakage (3%)
		Distribution System Operational Use 1%	
	Water taken unbilled 2%	Legally (1%)	
		Illegally (>1%)	

Figure 8 Illustrative Schematic of a water balance

The schematic in Figure 8 shows how the overall amount of water put into supply (distribution input) is made up of many different components. The percentage breakdowns in the table are illustrative only but show this approach clearly identifies where water entering supply ends up. Comparing these annual values with those set out in a water company's water resource planning tables provides WRSE with a useful indication as to which areas of demand are in line with the expected performance and the areas which are falling behind.

This water balance is completed each year by the individual water companies. Other information included in the annual return includes the progress of delivering any WRMP

schemes, both for supply or demand benefit. Therefore the annual return information provides key insights on:

- The supply demand balance position in each zone through the actual headroom assessment
- Progression on company schemes and government policies; and
- Progression of the adaptive options and the decision points

WRSE will prepare and publish an Annual Monitoring Report, building upon the content of the individual company WRMP Annual Reviews (normally published in June of each year). Based on the headroom trigger level we will indicate to companies which of their WRZ's are at risk. As WRSE is not a delivery organisation it will rely on the companies and government to undertake any remedial actions required.

3.2 [Portsmouth Water monitoring plan](#)

Introduction:

Portsmouth Water's WRMP24 Monitoring Plan has been informed by:

- adaptive plan pathways and trigger points set out in Section 2 of the WRMP24 main statutory document (i.e., population growth, environmental destination, and climate change),
- WRMP preferred and alternative options set out in Section 10 of the WRMP24 main statutory document, and
- Sensitivity testing set out in Section 9 of the WRMP24 main statutory document (i.e. demand benefits not arriving).
- the WRSE regional monitoring plan

The Monitoring Plan would be reported and updated annually via the WRMP annual review. This will be reported to Regulators and published on our website. The reason for this frequency of monitoring is to accurately and efficiently share the updated position with regulators and stakeholders.

Beyond our own monitoring, and as identified in the WRSE monitoring plan above, we will provide WRSE with the outputs of our WRMP annual review. These will typically be available in July of each year. We will support WRSE on the development of each regional Annual Monitoring Report to help identify progress on our WRMP schemes and the status of our available headroom versus target headroom.

The sections below provide further detail on the monitoring plan, summarised via the diagram on Figure 9. The components and frequency of monitoring are detailed in Table 2.

Drought Plan triggers and actions (2024/25 and 2025/26):

A key decision that might need to be made prior to the development of the next WRMP (WRMP29), is the need to potentially trigger 'More Before 4' drought plan actions in 2025/26 in the event of a severe drought.

Sensitivity testing around the benefit from our Source S drought permit has identified the risk of a near-term deficit in 2025/26, should a severe drought develop. If groundwater level forecasting in the winter of 2024/25 identifies a risk of breaching our Level 3 drought plan trigger and needing to implement our Source S drought permit later in 2025, this will trigger the need for us to work with our regulators on the 'More Before 4' Options in our drought plan to ensure that we can maintain the levels of service identified in our drought plan.

We are entering the groundwater recharge season at the beginning of 2024/25 with groundwater levels slightly above average levels, so we calculate this risk of needing to enact this scenario as low.

WRMP24 annual review: Southern Water WRMP triggers and actions (2024/25 and 2025/26):

A further decision that needs to be made prior to the development of the next WRMP (WRMP29), is regarding the need to update our final WRMP24 to ensure consistency with Southern Water's final WRMP24. If it is concluded that there are material differences between the plans (e.g. bulk transfer assumptions), then we commit to reviewing and updating our final WRMP24 with Southern Water to achieve that consistency.

In the process of developing our respective WRMP's we have worked closely with Southern Water and co-authored an appendix included in both our plans that detail our common understanding of the integration points of our plans. So we consider this risk to be low.

WRMP24 annual review: abstraction triggers and actions (2024/25 and 2025/26):

We have provided information in Appendix 5B to describe how we will manage short term Water Framework Directive (WFD) 'no deterioration' related risks. This includes monitoring our levels of abstraction from the Meon catchment and the QRST licence group prior to the conclusion of WINEP investigations in AMP8.

It is important to recognise that:

- Our recent levels of abstraction are compliant with limits on our abstraction licences.
- We need to maintain flexibility in our abstraction operations to ensure we are able to carry out the necessary maintenance works at our sites, to maintain safe treatment ability and operational resilience. This means abstraction rates from catchments will flex over the short term and potential risks caused by the volume of abstraction should be considered in the context of longer term trends.
- Whilst maintenance works are on-going and certain sites are out of supply, abstraction must be increased at other operational sites to make up any shortfall in supply.
- We aim to provide Southern Water with any bulk supplies when requested. In response to urgent requests from Southern Water we have also been able to supply volumes of water in excess of those identified in the WRMP and contractual obligations. We will always do what we are physically and legally able to do in order to minimise the risk of supply interruptions to Southern water's customers.

We recognise that abstraction levels in the Meon catchment and at the QRST Group are approaching or exceeding levels defined by the Environment Agency as 'recent actual abstraction' (the average annual abstraction between 2010 and 2015), which they consider to be a trigger to consider the risk water body deterioration. If recent abstraction levels in these locations continue, we will consider the following actions to reduce abstraction:

- We will take into consideration the WFD no deterioration thresholds (2010 to 2015 average annual abstraction) within our production planning for the Meon catchment and QRST Group sites. We will review, and if possible, adjust our programme of maintenance works to mitigate WFD no deterioration risks.
- If the Southern Water forecast for bulk supplies is likely to push our abstraction levels above WFD no deterioration thresholds, we will raise this with Southern Water to explore potential solutions to reduce the bulk supply requirement.

WRMP24 annual review: demand management triggers and actions:

The WRMP Annual Review will make a comparison between outturn data for household consumption, business use and leakage and the values forecast within our WRMP24 tables.

These data are in mega litres per day and at a resource zone level. If the outturn data for a given metric demonstrate there is a materially adverse difference relative to the forecast in our WRMP24 tables, then we will set-out an action plan within the Annual Review and implement it to make improvements (e.g. a leakage recovery plan or a smart meter installation recovery plan). In this way the forecast values in the WRMP24 tables for household consumption, business use and leakage will act as approximate triggers for the development of action plans within our WRMP Annual Review.

Whilst it is important to monitor individual demand management metrics and make improvements where necessary, the overall level of concern will be established by comparing the sum of all WRMP components (i.e. the supply demand balance with headroom allowance in mega litres per day), with that forecast in the WRMP24 tables. This is described further below.

WRMP24 annual review: available headroom triggers and actions:

The monitoring plan and supply demand balance would be reviewed in its entirety each year to ensure the balance of components are assessed in the round. Therefore, a key focus of our monitoring plan reporting will be identifying how our outturn headroom compares with the WRMP target headroom, mirroring Figure 6 within the WRSE monitoring plan. This will confirm the overarching health of our supply and demand balance and the potential need for additional corrective actions.

The longevity of changes to the supply demand balance should be considered when reviewing an adaptive plan pathway. An operational event may look like a significant change in the short term but lose its significance when looked at as part of the annual picture. Therefore, a second key focus of our monitoring plan reporting will be on identifying how our forecast headroom for the next year compares with the WRMP target headroom, mirroring Figure 7 within the WRSE monitoring plan. This forecast headroom will include the estimated effectiveness of any corrective actions identified at the individual demand management metric level described above (e.g. leakage recovery plan). If our forecast headroom is lower than our target headroom this will trigger enhanced review and engagement with our regulators, which will include consideration of:

- the need to re-base the WRMP24 demand forecast to reflect a revised starting position.
- the need to update investment strategies.

If actual annual reported outturn figures indicate that the supply demand balance is outside the range that has been considered in the plan or for the preferred pathway, we will flag how the investment strategies might need to be updated (as detailed in the adaptive pathway). In most cases it is anticipated that updated investment strategies can be developed, and decisions made, via the usual 5-year WRMP and business planning cycles as summarised on Figure 9. This includes:

- decision making around a larger capacity 'Thames to Southern Transfer' and 'Otterbourne WSW to Source A transfer' (a potential need that is demonstrated by our demand management sensitivity test).

Source O Booster Upgrade:

The Source O Booster Upgrade scheme would unlock conjunctive use benefit associated with the Havant Thicket Reservoir Approved scheme. Within our revised draft WRMP24 it was identified as one of our adaptive options. However in the final WRMP24 it is a core option (i.e. selected in all adaptive planning pathways) for implementation in 2033/34.

We will need to re-confirm the need to implement the Source O Booster Upgrade in 2033/34 via the next plan, WRMP29, considering new data sets, the outcomes of AMP8 WINEP

investigations and updated WRSE investment modelling. We expect to consult on a draft WRMP29 in spring 2028 and if WRMP29 re-confirms the need for Source O Booster Upgrade, we will seek funding via the PR29 business plan and commence a programme of work to deliver detailed design and planning.

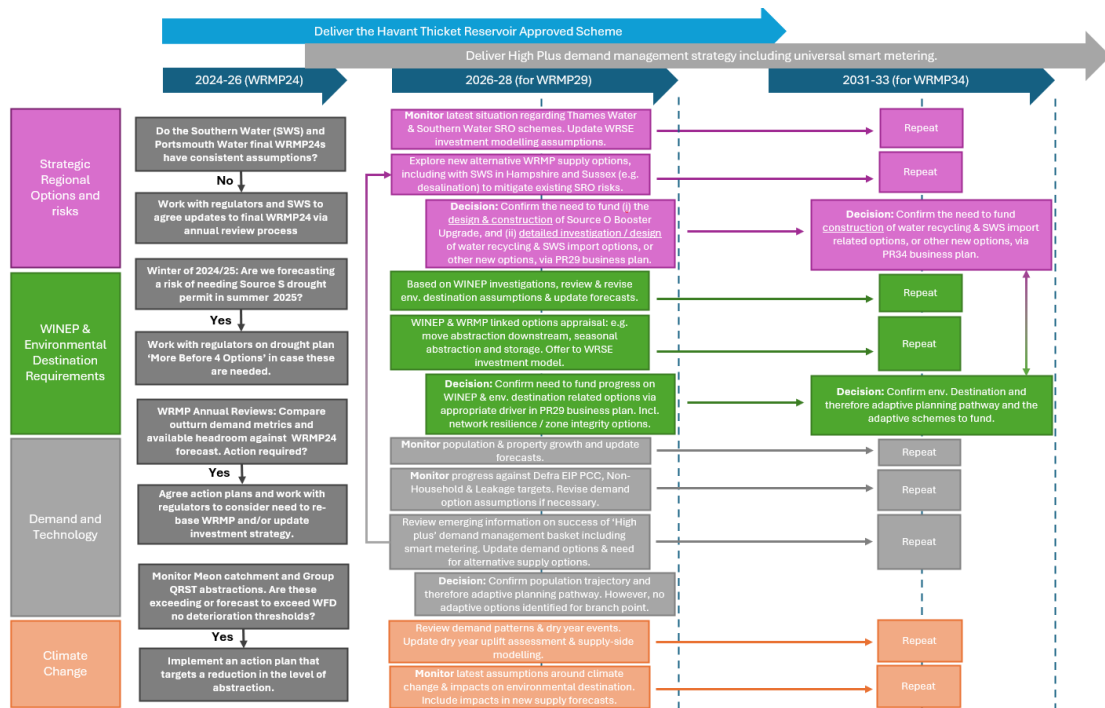


Figure 9: Portsmouth Water Monitoring Plan: Reviews, monitoring, and decisions.

Table 2: Portsmouth Water WRMP24 Monitoring Plan

Component and metrics	Metrics	Why monitor?	Annual Review*	WRMP planning cycles**
<p>Supply Demand Balance (including imports and exports)</p>	<p>MI/d deficit or surplus relative to target headroom.</p>	<p>Key metric to trigger the development of corrective action plans and/or a shift to an alternative WRMP24 adaptive planning pathway.</p>	<p>The WRMP Annual Review reports a supply demand balance which would be updated in line with components detailed in this table. The reports will also provide a forecast of the supply demand balance in the next year. This would support in informing risks of a supply demand balance and the corrective actions that might be required e.g. a leakage recovery plan including increased resourcing levels.</p> <p>We will also review the imports and exports, linked to potential WFD risks detailed in Appendix 5B.</p>	<p>Supply and demand forecasts will be produced for WRMP29 and WRMP34 based on latest available information and guidance.</p> <p>Impact on WRMP24 adaptive planning pathway to be identified.</p>

Component and metrics	Metrics	Why monitor?	Annual Review*	WRMP planning cycles**
Measured and forecast population growth and consequential supply-demand impact of changes to distribution input (in MI/d). This includes property numbers and our customer population.	<ul style="list-style-type: none"> Measured volume to households and non-households, property counts, and population 	Supporting metric to improve our understanding of underperformance or overperformance relative to the WRMP24 reported pathway.	This component will be reviewed annually via the annual water balance and regulatory reporting. Actual reported figures will be compared to WRMP forecasted figures to determine which adaptive pathway is emerging as closer to reality as it unfolds.	Our forecasted assumptions will be reviewed via the 5-year updates based on ONS and local planning updates as part of the WRMP development.
Climate change impact on deployable output	Percentage impact on deployable output	To provide the best view of future impacts when developing the next WRMPs.	N/A	<p>Review demand patterns & dry year events. Update dry year uplift assessment.</p> <p>Forecast impacts of climate change on deployable output (in MI/d) as updated for WRMP29 and WRMP34 consistent with the latest UK climate projections at the time of forecast.</p>

Component and metrics	Metrics	Why monitor?	Annual Review*	WRMP planning cycles**
<p>Environmental Policy (including licence capping) with respect to the timing and prioritisation of the long-term Environmental Destination which in turn will affect forecast impacts to deployable output after the 2035 decision point.</p>	<p>Total MI/d loss of licence reduction and deployable output loss based on investigation outputs.</p>	<p>To provide the best view of future impacts when developing the next WRMPs.</p>	<p>This can be monitored through the AMP8 and AMP9 Water Industry National Environment Programme (WINEP) investigations and options appraisal programme and use this reporting mechanism. The WINEP outputs will detail the scale of the abstraction licence reductions required which in turn informs which of the post 2035 adaptive pathways is the most appropriate.</p>	<p>The AMP8 and AMP9 WINEP investigations will inform future WRMP planning cycles based on sustainability reductions implemented and those which may be required.</p> <p>Future WRMP planning scenarios would also need to consider emerging regulations which may inform future forecasts.</p>

Component and metrics	Metrics	Why monitor?	Annual Review*	WRMP planning cycles**
Source S Drought Permit – yield and assessments	MI/d of yield in a 1-in-500 drought	A key component of our drought plan, and sensitivity testing has indicated we would be particularly reliant upon this permit in an extreme drought event near the start of the WRMP24 period.	<p>In the lead up to the 2025 annual review (winter of 2024/25) we will identify the likelihood of Level 3 drought plan restrictions and work with regulators on ‘more before 4’ actions as necessary.</p> <p>Our 2022 Drought Plan identifies three local ‘more before 4’ actions that we could consider in more detail as drought escalates: Option A- Recommissioning of Source U; Option B- Recommissioning unused private boreholes; Option C- Increasing pump capacity and lowering pump levels at sources Q and R.</p>	WINEP investigations will inform WRMP29 onwards.
Level of abstraction in the Meon catchment and at QRST sources.	MI/d average abstraction during AMP7	To manage short term WFD no deterioration risks until WINEP investigations are completed.	<p>We will report the average abstraction at relevant sites and compare it with WFD no deterioration thresholds (average abstraction 2010 to 2015) to understand the level of risk.</p> <p>We will implement actions to help control the level of abstraction if the WFD thresholds are being exceeded or forecast to exceed.</p>	WINEP investigations will inform WRMP29 onwards.

Component and metrics	Metrics	Why monitor?	Annual Review*	WRMP planning cycles**
Time limited licence variations (currently assumed to be renewed in the baseline)	Ml/d of deployable output change	Non-renewal of the licence conditions has the potential to impact our supply demand balance and therefore the amount of water we can export to Southern Water.	Assessments will be undertaken in AMP8. Progress will be reported in the WRMP Annual Return	The outcome will be known ahead of WRMP29.

<p>Progress with demand side options (e.g. we are proposing universal smart metering, leakage).</p> <p>This will also include a review of Southern Water progress with demand reductions which link to the future import of water.</p>	<p>MI/d demand savings delivered from various interventions.</p> <p>This will include the demand savings per actions (i.e. metering, water efficiency etc) which allows us to understand areas of under or over performance and forecast forward based on planned interventions.</p>	<p>Supporting metric to improve our understanding of underperformance or overperformance relative to the WRMP24 reported pathway.</p> <p>Track progress against Defra Environmental Improvement Plan targets.</p>	<p>The annual water balance would establish performance with demand reductions. This would be reported via the Annual Review. This would confirm if proposed actions were translating into the MI/d forecast profiles in the WRMP24 tables for household consumption, business use and leakage. If there are material differences between outturn data and the forecast in the WRMP24 tables, action plans will be identified.</p> <p>In line with the Annual Performance Review we would report metering, leakage and water efficiency demand reductions separately to ensure we can determine performance of each measure separately.</p> <p>Whilst not part of the monitoring plan our Water Efficiency Strategy (Appendix 10B, Section 6) and our Leakage Strategy (Appendix 10C, Section 7), detail the in-year monitoring of our strategies to ensure we are on track.</p>	<p>We would review future demand reductions against learning achieved in AMP8. This would inform future demand options and what other interventions are needed.</p> <p>Sensitivity testing has indicated we would review the need for a larger capacity 'Thames to Southern Transfer' and 'Otterbourne WSW to Source A transfer' via the WRMP29, to mitigate a significant reduction in the assumed effectiveness of demand management activities.</p>
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Component and metrics	Metrics	Why monitor?	Annual Review*	WRMP planning cycles**
<p>Drought resilience with respect to progress on supply schemes and how delivery is impacting the supply-demand balance (Ml/d). Our key supply side scheme for AMP8 is Havant Thicket Reservoir.</p> <p>This will also include collaboration with Southern Water due to the interlinked nature of our plans.</p>	<p>Delivery dates Expected Ml/d benefits.</p> <p>This will include a review of the key stages of the project programme (i.e. design, construction etc). We will also review the project risk register to inform of potential future risks.</p>	<p>Delayed delivery date will negatively impact Southern Water's supply demand balance.</p>	<p>Our annual WRMP review will also confirm drought plan assumptions and if there is any new data to improve assumptions around the efficacy of TUBs, NEUBs, Emergency Drought Order and supply side permits/orders.</p>	<p>The annual reviews would inform future planning assumptions.</p>
<p>Level of outage</p>	<p>Ml/d outage</p>	<p>Supporting metric to improve our understanding of underperformance or overperformance relative to the WRMP24 reported pathway.</p>	<p>In year outage would be reviewed via Planned and Unplanned Outage metrics which are reported as part of the Annual Performance Review</p>	<p>Outage assumptions would be refreshed for WRMP29 and WRMP34. This would be informed via previous outage reporting.</p>

Component and metrics	Metrics	Why monitor?	Annual Review*	WRMP planning cycles**
Consistency with Southern Water WRMP	Bulk transfer agreements and utilisation (year and MI/d) Implementation year. Strategic Regional Options and utilisation (year and MI/d)	To ensure that the regional plan assumptions are being consistently applied at a WRMP level.	We are committed to reviewing Southern Water’s final WRMP24 prior to it being published. It is anticipated that our final WRMP24 will already be published. We will draw attention to, and discuss, any discrepancies between the plans with Southern Water and the Environment Agency. If it is concluded that there are material differences between the plans (e.g. bulk transfer assumptions), then we commit to updating our final WRMP24, as necessary and agreed with the Environment Agency, via the annual review process in 2025.	Continue to work closely with Southern Water and WRSE during the development of future WRMPs to ensure consistency between plans when presenting information.

Component and metrics	Metrics	Why monitor?	Annual Review*	WRMP planning cycles**
<p>Progress on Strategic Regional Options and new alternative options</p>	<p>Strategic Regional Options and forecast delivery year and capacity.</p> <p>Thames Water South East Strategic Reservoir Option (SESRO) (MI/d and year).</p> <p>Thames to Southern Transfer (T2ST) SRO (MI/d and year).</p> <p>Hampshire Water Transfer and Water Recycling Project (HWTWRP) SRO (MI/d and year).</p>	<p>If Southern Water or Thames Water are unable to progress SROs, or if there are delays to the SROs, Southern Water will not be able to provide the bulk supply to Portsmouth Water from 2039-40. This is likely to delay progress towards our environmental destination.</p>	<p>Progress on schemes will be monitored via WRMP annual reviews and as part of the company and WRSE regional monitoring plans.</p>	<p>As new WRMPs are developed, Southern Water and Thames Water will update the WRSE regional investment model to reflect the latest data on the SROs.</p> <p>To actively manage the risk of SRO delays or reduced capacity, and provide mitigation, Portsmouth Water’s key focus will be on a WRMP29 and WINEP linked options appraisal, including options that can be implemented within 10 years. These options will include a change to our Levels of Service for demand side drought orders, managed aquifer recharge, aquifer storage and recovery, movement of existing abstractions downstream, and winter water storage schemes.</p> <p>Portsmouth Water and Southern Water will also work together via regular meetings and workshops to explore the potential for new water recycling, desalination and transfer options.</p>

Component and metrics	Metrics	Why monitor?	Annual Review*	WRMP planning cycles**
				<p>*Annual review related to the annual reporting of key metrics and data to the Environment Agency. Each year of the planning period will provide more data about how the supply and demand WRMP24 forecasts compare with actual data and which adaptive pathway may be emerging.</p> <p>**WRMP planning cycles relate to the 5-yearly Asset Management Planning periods. To produce WRMPs, the datasets contributing to supply and demand forecasts will be refreshed.</p>