Our draft
Water Resources
Management Plan

11. Our Best Value Plan

Contents

11 Our Best Value Plan

Document purpose:

The previous chapters have set out the results of the customer research, our baseline supply and demand forecasts, the development of possible options and the results of our scenario testing.

This chapter sets out the details of our best value plan and the associated costs, benefits and delivery considerations. We have also set out our monitoring plan to ensure that we adapt our best value plan to future changes.

We show how our best value plan is supported by our stakeholders and complies with the relevant statutory requirements.

Executive Summary

Our aim in publishing this draft plan is to set out how we will evolve our water resources so that future generations can depend on them.

Our Best Value Plan will:

1. Ensure water resources for all, to protect household and business customers from the impacts of climate change and increasingly hot and dry summers
2. Nurture the environment, protect rivers and reservoirs and the wildlife that depends on water habitats
3. Support tourism and the long-term economic health of the region
4. Increase the recycling of water
5. Progress delivery of strategic regional water transfers to respond to forecast challenges

We are committed to **providing water resources to meet all needs** for households, businesses, and the environment. We will develop a diversified mix of water resource solutions including effluent reuse and desalination[2]. Reducing demand through the delivery of water efficiency initiatives, implementing smart metering for all as soon as possible to reduce customer consumption and customer-side leakage, and a continuation of our ambitious leakage management programme. We will build greater capacity by building more water storage and interconnections, implementing new supply schemes and continuing to invest in the three strategic resource options that form part of the West Country Regional Plan.

We are committed to **nurturing the environment.** We will increase our work to restore uplands and moorlands to make the water environment more resilient. We will reduce abstractions at sensitive locations in a sustainable way to protect river flows and wildlife that depends on water habitats.

We will champion **recycling and reuse,** working with stakeholders to encourage home improvement grants that will allow properties to harvest rainwater and grey water, reducing the need for potable water to water gardens. One of our strategic resource options will focus on recycling and treating the water from Poole Harbour wastewater treatment works. Our water efficiency programme will include continued investment in rainwater butts and will be looking for 'Rainshare' opportunities to collect rainwater for use for non-potable applications within homes and businesses.

We are committed to **a resilient infrastructure,** capable of meeting the challenge of climate change, boosted by the decarbonisation of our operations and investments.

And overall, we are committed to **working with customers and stakeholders** to encourage thriving communities across the region, ensuring affordable bills and seeking active participation from our customers and communities to help us understand and address their needs. Working with local partners, and enabling actions from others, we'll deliver our shared objectives together for people and the environment (further details on our Biodiversity Net Gain Fund can be found in Chapter 4).

[1] MLD Benefits are relative to 2025-26 year. Note that we have assumed that Water labelling (Government policy) will contribute 6.9 MLD by 2030 towards reducing demand.

[2] See Chapter 8 Appendix C

Our plan aligns with what our household and business customers have told us is important.

Our customers told us that they:

- View supply-side options as a more reliable way to balance supply and demand because they recognise that the delivery of demand reduction is uncertain and requires a change in customer behaviour (however, support is high for reducing leakage)
- Value a continued, unrestricted supply of water but accept that, during some extreme summer events, some water restrictions may be required
- Regard water efficiency as a higher priority over developing new water resource options
- Also support extending metering and see this as the fairest way to charge (in the Bournemouth region, there is growing support and acceptance of the need for compulsory meters)
- Are supportive of water efficiency initiatives (retail and non-household customers)

Based on our customers' priorities we have produced a plan with a significant focus on demand-side reductions

This means implementing:

Leakage management: an ambitious linear reduction of our leakage levels down to 64.2 Ml/d by 2050 (a 50% reduction), through a blend of mains replacement, active leakage management and pressure management.

Smart metering: The rollout of new smart metering technology to all customers to support reductions in per capita consumption (PCC), target customer side leakage (leakage on customer supply pipes) and identify and address high customer consumption.

Water efficiency: A range of water efficiency activities, to support reducing demand through the information provided via the smart meters, together with home visits, water audits and a variety of education and school visits to promote water efficiency. We have a targeted programme for both the household and the non-household sectors which builds in intensity as we progress towards 2050.

Our assessments of the supply-demand balance challenges show that demand-side options alone are not sufficient to address the future deficit. For this reason, the development of supply-side options is also included in our plan.

A range of new **supply-side options** has been included to give us more resilience against future water restrictions. The strategic resource options, which form part of the Regional Plan and our Plan, will also provide greater resilience in the medium term (in 10 to 15 years' time), compensating for necessary reductions in some of our supply abstractions.

Aligned with our strategy to nurture the environment, we are also proposing to continue carrying out environmental studies to ensure we identify and confirm the level of abstractions that are sustainable for the longer term.

A summary of our best value plan for 2025-30 (AMP8) is shown in Table 1.

In comparison to the current period (2020-25), we are seeing a near doubling of investment to deliver marked improvements in service. Our 2025-30 (AMP7) plan contained no material investment in developing new water resources, compared with £115m in our proposed draft plan for AMP8. Metering costs also increase with an accelerated programme of replacement, introduction of compulsory metering and the move to AMI (Advanced Metering Infrastructure) technology. For leakage, we will see increases in investment of over 15% because the marginal cost of leakage reduction increases as performance improves.

The current macro-economic outlook, in particular the global inflationary environment, is particularly impacting construction material costs, power and chemical costs. Accordingly, the financial estimates in Table 1 will be further reviewed and updated for our final WRMP submission and our PR24 Price Review thereby ensuring we use the very latest cost information to inform our assessment of best value.

While we deliver these improvements, meeting the ambitions set out in this dWRMP24 is not solely within our direct control. We will need support from Government, customers and external stakeholders through

- Implementation of Government policies through water labelling and requirements for low-water products to support delivery of demand management options.
- Customers reducing their potable water use and beginning to use more non-potable water through rainwater harvesting or community schemes.
- Support from the Environment Agency, working with us to develop a shared understanding of constraints and opportunities and exploring new ways of licensing abstraction, such as more dynamic, real-time allowances to abstract more water during high flows (particularly where this would also reduce flood risk).
- Increased innovation in the supply chain to improve options for water reuse and to drive down net carbon. We will need enabling regulation from the DWI to ensure that customers are safeguarded while new initiatives are allowed to progress.

Scheme	Capex: AMP8	Opex: AMP8	Totex : AMP8
Leakage management	£168.0m	£16.6m	£184.6m
Water efficiency: Household	£0.24m	£0.04m	£0.28m
Water efficiency: Non Household	£0.9m	nil	£0.9m
Metering	£40.7m	£16.7m	£57.4m
Supply-side options (including groundwater, river, reservoir and reuse)	£119.3m [3]	£4.1m	£123.4m
Costs excluded from the WRMP tables			
Environmental Studies	£0.86m	Nil	£0.86m
Biodiversity fund	£0	£1.5m	£1.5m
Adaptive Planning – engineering/environment		£3m	£3m
	£329.98m	£37.42m	**£367.41**

Table 1: Summary of our best value plan (AMP8, 2020/21 price base, pre-efficiency)

A biodiversity fund will be used for habitat restoration to achieve biodiversity net gain for our preferred plan.

Greenhouse gas emissions from our plan will be managed through a combination of direct or indirect mitigation[4] to support our net zero ambitions.[5]

We have developed an adaptive strategy. We have analysed a range of future scenarios with varying climate change, population growth, customer demand, technology advancement and environmental ambition (abstraction reductions achieved to protect the environment). This has produced a range of decision points and trigger points that may identify the need to adopt a different more severe or benign pathway with a corresponding change to the number and range of supply and demand management options required to provide a sustainable supply-demand balance.

	What will drive a change in our plan?	How might we react?
Colliford	We are currently looking to implement two drought options permanently in 2023 (Porth and Stannon), but our ability to obtain permanent licences for these schemes may drive an early deficit in our supply demand balance. An increase in climate change or demand impacts may also drive an early change in our plan (2025)	We would need to implement further supply-side options; we have currently identified COL9: Leswidden pool as the most likely option. Additional water would need to be available by 2030.

[3] Supply options summary includes £24.8m for investment in Strategic Resource Options

[4] Through the design process, we will be assessing opportunities for carbon reduction strategies including onsite green-energy generation or use of low carbon construction materials. Wider initiatives such as our “upstream thinking” strategy in combination with our biodiversity fund, will look at ways to offset carbon impacts through initiatives including reducing water-treatment needs through reducing pollution of water sources and tree planting and carbon sequestration.

[5] Net Zero plan (southwestwater.co.uk)

	What will drive a change in our plan?	How might we react?
Wimbleball	A combination of adverse climate change or demand which may drive a decision in 2028.	We would need to implement further supply side options; we have currently identified WIM2 and WIM5 schemes (or alternatives). Water would need to be available by 2033 or 2037 depending on the severity of the deficit.
Roadford	A combination of adverse climate change and demand driving a decision in 2028 or a combination of these with a reduction in abstraction on the River Dart and River Tavy (2042).	We would need to implement further supply side options; we have currently identified the need to implement ROA15: Gatherley 2 scheme by 2034, or two smaller schemes ROA10 or ROA16 (or alternatives) by 2048.
Bournemouth	A combination of higher demand, higher climate change, and the abstraction reduction on the River Avon.	We would need to implement further supply-side options or integrate water from the Cheddar 2 SRO into the Bournemouth region. Additional water would need to be available in 2040.

Table 2: Summary of adaptive strategy

1 Introduction

1.1 Overview of the need

It is our priority to ensure we operate a resilient water-supply system for our customers.

We continue to achieve this by maintaining the balance between supply and demand over the long term.

Our Plan must be risk-based to mitigate the uncertainties that we face in maintaining this balance (e.g., population growth and climate change) and we must listen to our customers and address their preferences on how we should best go about it.

Our stress-testing analysis shows that all the WRZs in the SWW supply area have some sensitivity to one or more of the following three risks:

- Required abstraction reductions
- Climate change
- Demand growth

The baseline supply-demand forecasts show that:

- At the beginning of the planning period, we would need to implement level 4 drought actions in a 1 in 500 year drought event in the Colliford, Roadford and Wimbleball WRZs.
- Bournemouth WRZ starts the planning period in a healthy supply-demand position with sufficient available water even in a severe drought.
- Along with climate change, new environmental requirements to reduce abstractions from some sources act to reduce the water available to us, pushing all of our mainland WRZs into a deficit if no action is taken. For Colliford WRZ, this deficit occurs in 2028/29, and for Bournemouth, Roadford, and Wimbleball it is in the mid-2030s.

The long-term strategy for meeting these challenges is an adaptive plan that incorporates reducing demand while implementing and planning for additional supply-side interventions to bridge the supply demand gap. We refer to this strategy as a 'twin track' approach because it relies on both mechanisms to address the deficits.

1.2 Strategic focus

Our previous WRMPs set out a strategy to do the right thing at the right time. We continue with this philosophy going forward.

However, any strategy to meet supply demand deficits also needs to be focused on delivering specific outcomes to manage future risks. That is to say, we must prepare interventions so as to have schemes ready for implementation when required.

Our WRMP aligns with our strategic direction statement and will work with stakeholders to:

Nurture the environment by protecting rivers and reservoirs and the wildlife that depends on water habitats.

Ensure water resources to meet all needs for households, businesses, the environment and the long-term economic health of the region through:

- Reducing leakage and the future demand for water.
- Providing sustainable water sources and building resilience to climate change.

Promote re-use and recycling

Build a resilient infrastructure, including strategic regional schemes capable of meeting the challenge of climate change, boosted by decarbonisation of our operations and investments.

We have balanced future risks across different interventions with a plan that is flexible and adaptable to future changes.

1.2.1 Nurturing the environment

A 'water quality first' strategy begins in the catchment. We have a water-supply system that depends on storing and using rainfall, but climate change is increasing the risk of algae, nutrients, pesticides and metals in raw-water sources. By 2050, managing drought, floods and water transfers will be an essential part of maintaining high-quality water.

We will adopt practices that are more sustainable to protect rivers. Through our ongoing stakeholder and customer engagement, we are looking to identify catchment-based solutions that protect the environment, provide sustainable sources of water, and have wider benefits to society. We are also committed to identifying nature-based solutions to protect rivers through constructing wetlands and planting a further 2 million trees.

We will inspire thousands of water-quality and efficiency champions in schools and communities to use water wisely and protect rivers and other water bodies.

The work undertaken as part of our National Environment Programme has been used to inform our 'Environmental Destination' and has identified the need to reduce abstractions from key rivers across our region to improve our rivers and environment. As rainfall levels are forecast to reduce in the summer, we must ensure we only take water from rivers where this is sustainable.

Our Environmental Destination has identified where there is a need to take action to protect our important water bodies, but we need a better understanding of what needs to be done. It is therefore critical that we undertake studies to determine how rivers and aquifers are impacted now and in the future, and what actions can be taken to make improvements. The focus so far has been on potential reductions in abstraction, and the size and timing of these reductions need to be driven by evidence to ensure that any changes lead to real benefits for the environment. We also need to consider whether other actions, such as habitat creation or restoration, could meet some of the environmental needs in a way which better supports Net Zero targets and reduces pressure on customer bills.

1.2.2 Water resources for all: reduce leakage and the future demand for water

We are committed to reducing leakage and helping customers use less water. Water companies have also been set targets to reduce leakage to half their 2017/18 levels, and per capita consumption (PCC) to 110 litres per person per day by 2050.

The Government is currently consulting on a new water-efficiency labelling scheme for water-using appliances and fittings. Its implementation will help reduce demand by encouraging more efficient purchases. We have included the possible impact of this scheme within our plan, but further action will be needed to meet our targets.

We will be looking at ways to fix our leaks quicker using new technology. We are also looking at new technology to help us target areas at risk of leaks in the future, to prevent more leaks occurring.

We are targeting 100% smart metering across homes to support water efficiency and reduce customer-side leaks. Simultaneously, we are rolling out smart networks to reduce our own water use and intake.

We will work with households and businesses (including those in the agrifood and tourism sectors), looking for opportunities to build on-site storage and recycling, such as rainwater butts and rainwater harvesting. We will proactively contact customers, using information from smart meters to help them reduce leaks and wastage where possible.

1.2.3 Promoting re-use and recycling of water

Our freshwater resource is limited and, with the impacts of climate change on water supply and increasing demand from population growth, there will be a gap in the water available. Water re-use and recycling is an important response to this challenge.

By 2050, we want customers to use less top-grade drinking water but to still have all their needs met through rainwater harvesting, water recycling and storage at home, supported by home-improvement grants.

By 2050, we will also be recycling more wastewater. Today, most of what we use ends up in our wastewater network, along with the rainwater that falls on roofs and roads that has nowhere else to go. This is then cleaned and released back into the environment, most commonly into the sea. Reused water can be a constant and reliable supply. By building the processes to recycle used water for household and industrial purposes, we will reuse water that would have been discarded into the environment.

As part of the West Country Regional Plan, a strategic scheme is under development to abstract the treated effluent discharged from Poole Wastewater Treatment Works as a source of water for supply further downstream.

1.2.4 Building resilient infrastructure

Our Environmental Destination work has identified that we must reduce the water we take from water bodies across our region, particularly during the summer months.

Demand reductions form a key part in maintaining the supply-demand balance but will not be enough on their own to mitigate the impact of reducing these abstractions.

We must therefore identify options to supplement or balance this reduction. There are limited opportunities for developing sustainable new sources, so we need to consider optimising our existing supplies and moving towards wastewater reuse schemes. In our Plan, we have considered wastewater reuse schemes at three sites, including Poole, which is being developed through RAPID's Strategic Resource Options gated process.

As part of the West Country Regional Plan, new reservoirs are being developed alongside the existing Cheddar Reservoir (Cheddar 2) and in disused quarries in the Mendip Hills to supplement the entire west-country region, in particular the Bournemouth Water area.

Increased interconnection will be planned to boost our ability to move the (new) water around our region in response to changing weather patterns (some of this work sits outside of the WRMP).

To be resilient, we also recognise the need to develop low-carbon solutions including nature-based solutions, to meet our Net Zero commitments.

2 Our supply-side strategy

This section sets out our recommended best value plan. Our recommended plan is based on the 'most likely' future, which assumes

a. Medium climate change (RCP6.0)
b. Medium population growth (medium forecast based on Experian data)
c. Achieving our AMP7 PCC and leakage targets
d. The BAU+ Environmental Destination (see Chapter 4)

This section sets out the supply options within the preferred plan and the additional engineering and environmental studies needed to continue to develop these options and be 'implementation ready'.

Our approach to addressing how we achieve the 10% biodiversity net gain (BNG) is also defined.

To allow us to understand how the strategic resource options may support the availability of water across our region, we will also continue to support the development of a regional network model as part of the Regional Plan.

2.1 Developing local supply options

Demand reductions form an important part of our Plan but are not sufficient on their own to mitigate future risks in all WRZs, and the extent of benefits from them is uncertain. Therefore, we have developed a wide range of supply options to use in parallel. This twin-track approach provides a plan which is more resilient to a wider range of future uncertainties.

The local supply-side options we have included within our best value plan are a mix of new sources, additional storage (SROs and groundwater recharge), increased conjunctive use, and improved flexibility of treatment works (Table 3). In our Bournemouth WRZ, these options are implemented over the planning horizon in response to assumed abstraction reductions to be implemented throughout the period to 2050. In the other zones fewer supply options are required, and these are implemented in AMP8 to provide additional resilience early in the Plan. The additional resilience accelerates 1 in 500-year drought resilience during the AMP8 period and provides headroom to allow environmental destination abstraction changes to be implemented earlier. This increases the benefits of the Plan both to customers and to the environment.

Our plan assumes that we continue to develop a full range of supply options through environmental and engineering studies. These studies will take a catchment-level approach to ensure that we work towards water-neutrality; where we take more water from one location, we will look at how these flows can be compensated elsewhere. As we move through these development stages, some previously feasible schemes may be ruled out and, to be resilient, we must have other implementation-ready schemes to ensure we can maintain a robust supply-demand balance.

Our sensitivity testing in Chapter 10 has shown us that continued focus on environmental and engineering studies are required before the first decision points on our adaptive pathways. We have therefore included an allowance of £3m in AMP8 to develop schemes to a robust outline design level (we have identified 6 to 8 schemes that may be required in a more extreme future). This funding will also enable us to continue to look for other new local supply-side options and undertake appropriate studies and feasibility work. As confirmed with the Environment Agency, these costs are not included in our tables as they do not form part of an option, but rather enable options to be developed to an implementation-ready stage.

Option ID	Title	WAFU benefit Ml/d	Year WAFU benefit delivered.
COL2	Colliford Reservoir Storage Stage 2 – Lower River Camel Abstraction	5.0	2030-31
COL11	Abstraction from Hawk's Tor Pit[6]	1.5	2027-28
COL15	Increase Restormel WTW capacity to 110 Ml/d	5.0	2027-28

[6] NB Our response to the current drought may bring Hawks Tor into supply before publication of final WRMP, the latest situation will be reflected in our final plan.

Option ID	Title	WAFU benefit Ml/d	Year WAFU benefit delivered.
ROA7	Expansion of Northcombe WTW to 60 Ml/d	5.0	2027-28
WIM7	Increase Pynes to licence limit 66.46 Ml/d	3.25	2028-29
WIM8	Brampford Speke borehole	2.0	2027-28
WIM9	Stoke Canon borehole	2.0	2027-28
BNW1	Lymington - Groundwater source development and remedial works	1.0	2026-27
BNW3	Wimborne transfer to Longham - Licence change	4.0	2045-46
BNW6	South Dorset Aquifer Recovery Scheme	10.0	2035-36
BNW7	Mendip Quarries - Raw water transfer to the River Stour	30.0	2043-44
BNW8	Poole Harbour - Final effluent reuse scheme	12.5	2033-34
BNW11	Christchurch WWTW IPR 2 - Transfer to Longham Lakes	10.0	2035-36

Table 3: List of Supply-side Preferred Options – SWW and Bournemouth WRZs

Our schemes are still early in their feasibility work, and therefore specific interventions to restore habitat or improve the biodiversity net gain is still under development. As part of the consultation on our dWRMP we will be engaging with stakeholders on how specific schemes can be developed to increase gains to society and the environment.

As discussed in Chapter 4, we are developing a SWW Nature Fund that will include a WRMP-specific Biodiversity Net Gain Fund (estimated based on the hectares impacted by our selected supply-side schemes) that can be drawn down to achieve the 10% biodiversity net gain for the WRMP programme.

As the schemes move through the design and implementation process, other regional opportunities may also arise to help with providing wider biodiversity net gain for which this fund could be used. The funding mechanism is discussed in Section 5 of Chapter 4. This approach allows flexibility in where the fund can be used to improve biodiversity and deliver wider environmental benefits. These costs have not been included in the options tables, and therefore are not included in Tables 7 & 8.

Our estimated WRMP BNG Fund is **£3.81m** based on the preferred plan (this does not account for additional options selected for more extreme futures). This is based on requiring habitat restoration across 120 hectares. The 2019 Defra Biodiversity Net Gain and Local Nature Recovery Impact Assessment estimated that the cost of 1x BNG Unit would be £11k, but this report also cited another study (National Trust, 2017), which indicated that it could be around £20k per hectare for 30 years' creation and maintenance costs. Other reports (e.g., Savills, 2022), suggest that this could increase to as much as £40k per unit for on-site/off-site restoration in certain situations. We have used this guidance from Defra to determine an average cost per hectare for habitat restoration of **£25k** and then applied an optimism bias of 27.28%.

We have estimated the likely investment based on current scheme implementation dates; in summary, the biodiversity fund investment is estimated as shown below (the fund is profiled to reflect the delivery of new schemes with the majority of investment in early timesteps):

AMP8	AMP9	AMP10	AMP11	AMP12
£1,474,984	**£1,738,899**	**£127,407**	**£459,926**	**£6,650**

Table 4: Biodiversity fund (20/21 prices, pre-efficiency: opex)

The preferred schemes are shown in yellow on the following maps for each WRZ.

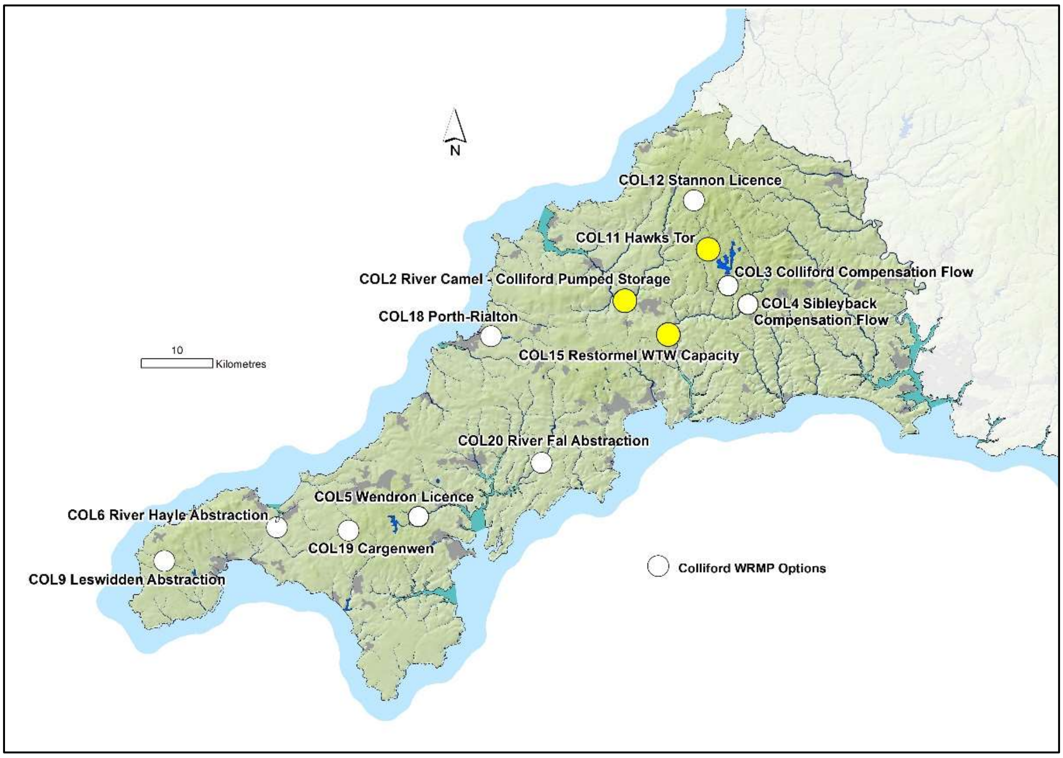

Figure 1: Colliford Preferred Supply-side Options including in Plan (yellow options)

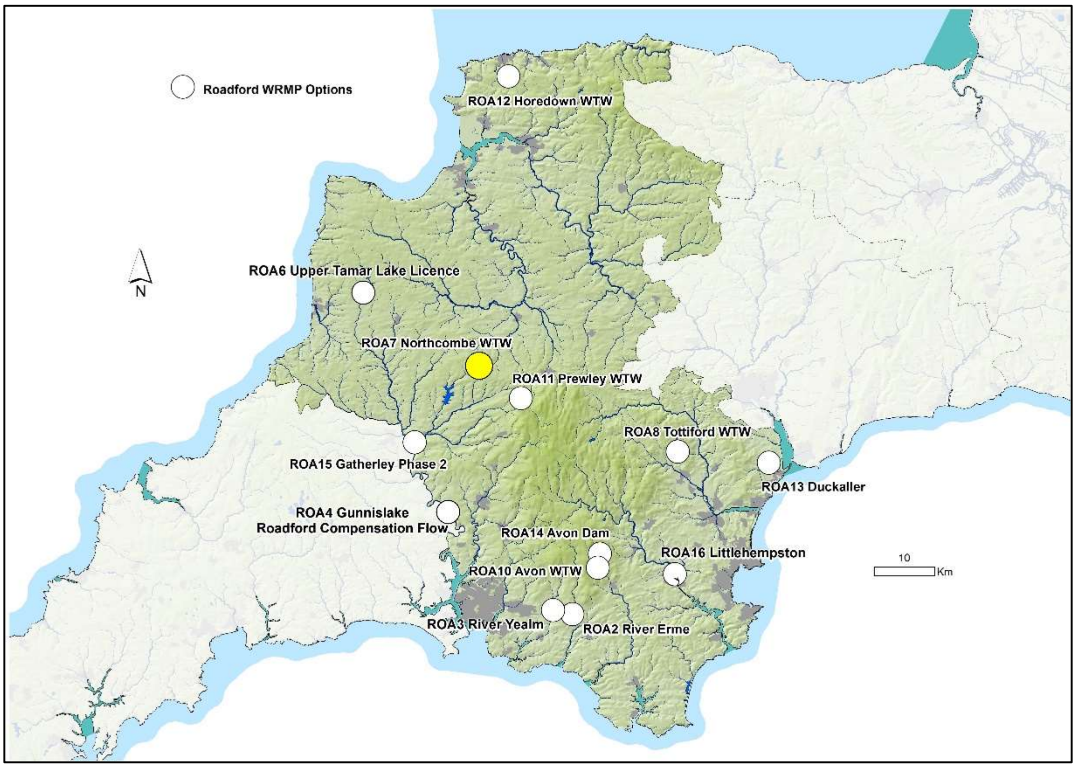

Figure 2: Roadford Preferred Supply-side Options included in Plan (yellow options)

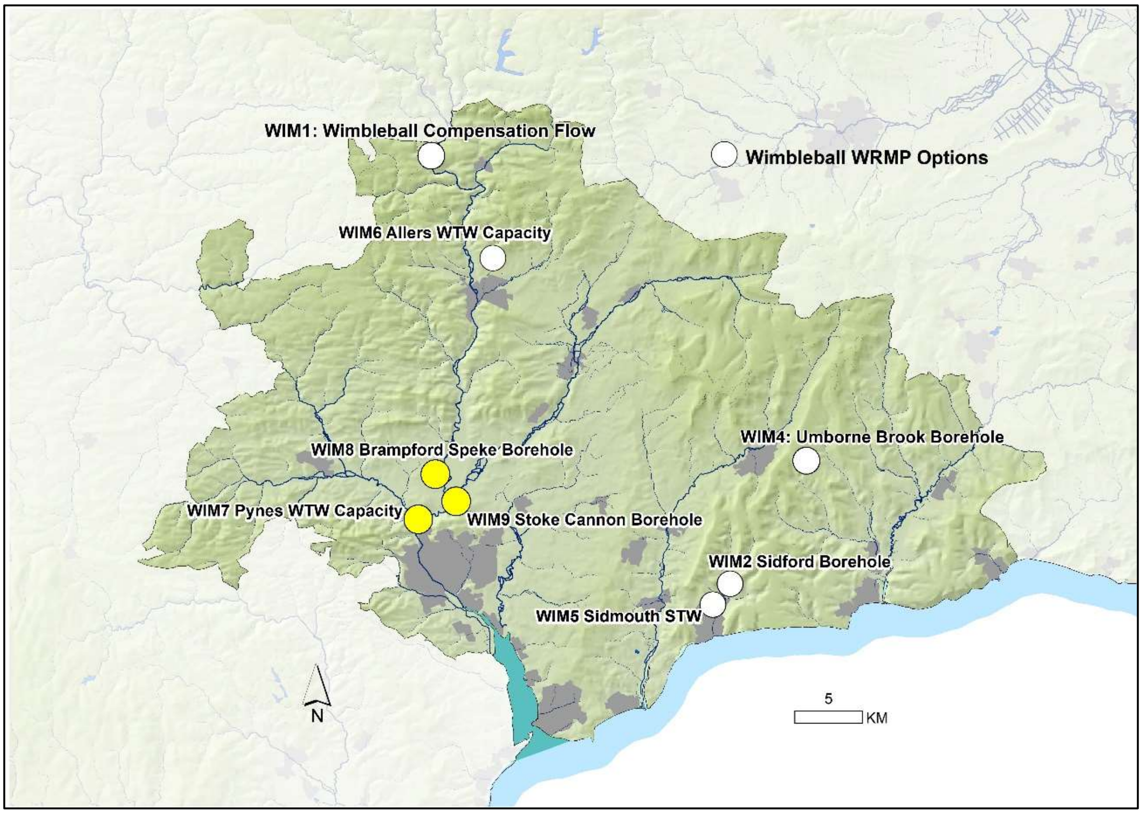

Figure 3: Wimbleball Preferred Supply-side Options included in Plan (yellow options)

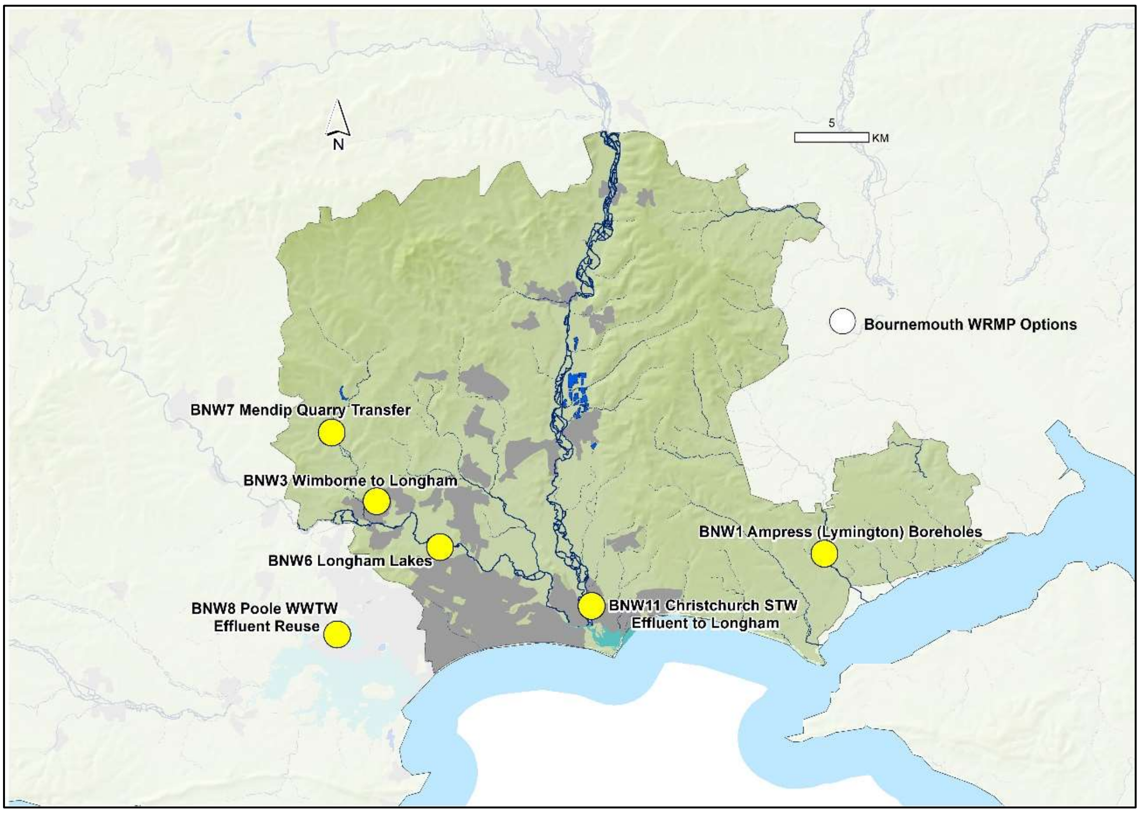

Figure 4: Bournemouth Preferred Supply-side Options included in Plan (yellow options)

Table 5 summarises the benefits that our proposed supply-side options will have in the short and long-term.

WRZ	Benefit (Ml/d) up to 2030	Benefit (Ml/d) In 2050
Bournemouth	1.0	25.0 [7]
Colliford	6.5	11.5
Roadford	5.0	5.0
Wimbleball	7.3	7.3
Total	19.8	48.8

Table 5:Summary of local supply options benefit in 2030 & 2050

2.2 Strategic resource options

As part of our work with the West Country Water Resources Group, we are developing three strategic resource options (SROs) which may provide benefit to our supply area in the future. SROs are large regional or inter-regional schemes which have the potential to provide benefits to multiple water companies.

Mendip Quarries, Poole Effluent Recycling and Cheddar Two Reservoir are all progressing through RAPID's gated process for SRO development. The status of these schemes within this plan are:

- **Mendip Quarries:** Included as an option providing benefit to Bournemouth WRZ and Wessex Water. Through work with the regional group we are currently assuming that one third of the total yield will be available to Bournemouth within the Dry Year Critical Period (DYCP) planning scenario.
- **Poole effluent recycling:** Included as an option providing benefit to Bournemouth WRZ and Wessex Water. We are currently assuming that one half of the total yield will be available to Bournemouth within the DYCP planning scenario.
- **Cheddar Two Reservoir:** Under review for inclusion in our final WRMP once pathways and water share arrangements have been confirmed. This scheme was originally envisaged to provide benefit to Bristol Water, Wessex Water, and Southern Water. Modelling showed that the scheme did not provide sufficient benefit to Southern Water for their further involvement in the SRO. Given the scale of the forecast deficit in the Bournemouth WRZ, we will develop options to use this water within our supply area and include this in the final Plan.[8]

The following diagram shows the ongoing work as part of the Regional Plan, to develop a Regional Water Resources model. The plan is to have this Regional Model developed to inform the dWRMP29 and therefore the 2nd (Final) regional plan. This model will support the identification of the most cost-effective ways to move water around the West Country Region and, in so doing, it will use valuable water sources such as Cheddar 2 in a cost-effective way.

[7] This figure excludes the contribution from the Strategic Resource Options described below.

[8] These options are estimated to provide a further 42.5 MLD by 2050 within the Bournemouth WRZ.

ACTIVITY	Phase 1				Phase 3			
	AMP 7				AMP 8			
Regional Plan (s)	1st Draft Plan		1st Final Plan					2nd Final Plan (?)
Drought 2022/2023(?) lessons								
Alignment of water company WRMPs	dWRMP24		Final WRMP24				dWRMP29	
Regional Water Resource model								
Other activities listed above								
Date	Nov-22		Nov-23	Nov-24	Nov-25	Nov-26	Nov-27	Nov-28

Figure 5: Alignment activities between WRMPs and West Country Regional Plan.

2.3 Overall impact of supply-side options

Supply-side options are essential in developing a balanced plan that mitigates the risk of large-scale demand reductions not being deliverable. We are proposing a range of supply option types within our Plan, and these are shown in Table 6 below. Note this does not include projects currently being developed as part of our Drought and Resilience Programme including, in particular, our desalination programme which will be included in our plan for the final WRMP24.

	Colliford WRZ (Ml/d)	Roadford WRZ (Ml/d)	Wimbleball WRZ (Ml/d)	Bournemouth WRZ (Ml/d)	Total (Ml/d)
New sources	6.5	0.0	4.0	1.0	11.5
New storage	0.0	0.0	0.0	40.0	40.0
Conjunctive use	0.0	0.0	0.0	4.0	4.0
Water treatment improvements	5.0	5.0	3.3	0.0	13.3
Wastewater reuse	0.0	0.0	0.0	22.5	22.5
Total	11.5	5.0	7.3	67.5	91.3

Table 6: Overall impact of supply-side options

2.4 Environmental Studies

To support our environmental destination plan, we need to improve our understanding of the environmental needs of the waterbodies from which we abstract water, so that we can better understand the required level of abstraction reduction to protect the river environment. Our plan includes environmental studies to support this understanding. These will also feature in our WINEP24 programme.

Prior to the WINEP24 study costs being finalised, we have assumed an average cost of a comprehensive environmental study to be £95k per location. We have identified 21 studies to further-investigate the levels of sustainable abstraction for environmental protection. These studies are assumed to be required within the same 5-year period as the abstraction reduction occurs. Prior to submission of our revised draft plan, we will further-develop our supply-options programmes of works and the associated studies to confirm our sustainable abstraction levels, which may revise the timing of these studies.

AMP8	AMP9	AMP10	AMP11	AMP12
£855k	£475k	£285k	£380k	None yet identified

Table 7: Environmental Study costs (Price base 2020/21, pre-efficiency)

3 Our demand-side strategy

3.1 Leakage management

Our Plan sets a stretching long-term target in accordance with the industry-wide commitment to deliver a 50% reduction in leakage by 2050. Against our 2017/18 levels, the planned 50% reduction will reduce leakage by over 34 Ml/d in the next 25 years, which is an important part of ensuring the resilience of our water resources in the future.

Due to the historically low leakage levels that will be achieved, there is inherent uncertainty in delivery activities, so our plan is designed to adapt to changes in climate and socio-economic factors and uses innovation in leakage-management to balance the risk to performance. A pragmatic approach has been taken in the development of each option (and associated assumptions) to address the uncertainty and to recognise potential optimism bias (benefits).

Our recommended plan for AMP8 consists of a comprehensive range of typical and more-advanced active leakage control (ALC) activities. For example, we will be installing a significant number of permanent acoustic loggers as well as reducing the size of our monitored areas to increase the granularity of our network data and improve detection efficiency. We will also be investing in targeted asset renewals, installing more pressure-management schemes and smart metering and improving our understanding of upstream losses.

Our preferred plan, based on best value analysis, is to achieve the 50% reduction in a linear profile to 2050, Figure 6 .

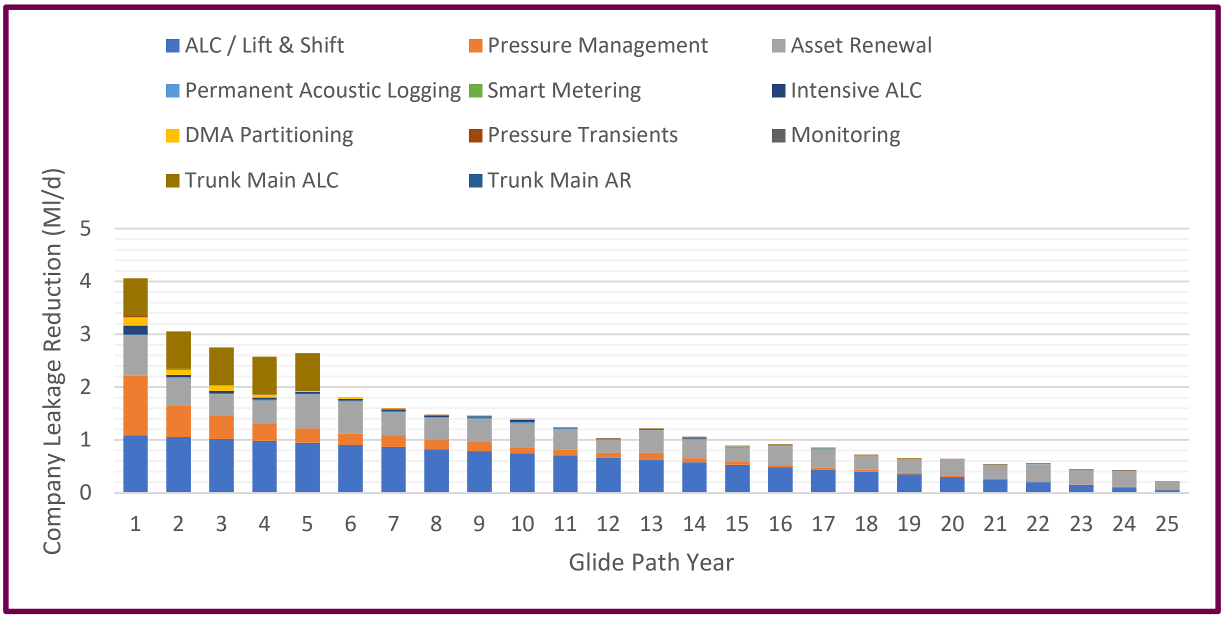

Figure 6: Leakage reduction by year showing leakage management activity contributions

The initial assessment indicates that much of the required savings may be achievable through current leakage-management techniques, although it is forecasted that significant asset renewal will be required, particularly given the projected property growth forecast for the region. The modelling also indicates that early investment in asset renewal may be necessary to overcome background leakage and make the 50% leakage-reduction target more achievable.

Option ID	Option name	Bournemouth	Colliford	Roadford	Wimbleball
LeakLALC	ALC/ Lift & Shift	53.11%	44.51%	43.88%	33.89%
LeakLPM	Pressure Management	0.00%	15.46%	11.03%	26.48%
LeakLAR	Asset Renewal	37.48%	30.00%	23.65%	26.85%
LeakLPAL	Permanent Acoustic Logging	3.84%	0.07%	0.13%	2.69%
LeakLIALC	Intensive ALC	2.67%	1.57%	2.22%	0.00%

Option ID	Option name	Bournemouth	Colliford	Roadford	Wimbleball
LeakLDMASD	DMA Partitioning	1.96%	1.64%	0.37%	4.51%
LeakLPT	Pressure Transients	0.89%	0.00%	0.08%	0.00%
LeakLTMALC	Trunk Main ALC	0.05%	6.75%	18.63%	5.59%

Table 8: Leakage management option contributions to 50% reduction by WRZ

By replacing the problematic parts of the network, we would be tackling the root cause and reducing the background leakage of the system, which in turn makes active leakage control more efficient. This is important as the future costs of ALC resources are a significant uncertainty. Our methodology improves the links between leakage and the network asset-management process.

The optimisation work indicates that further investment in a permanent acoustic logging network and increased monitoring penetration through DMA (District Metered Area) sub-division would be beneficial. The earlier investment and rollout of these technologies align with the OFWAT guidance on the journey towards a high-scenario smart water supply network. Investment in innovation to drive efficiencies in ALC repair and asset-renewal techniques has also been shown to be beneficial.

Pressure management is already good in Bournemouth, but significant pressure reductions in our other WRZs is part of our strategy. New pressure-reducing valves will be installed and existing pressure-management schemes across all WRZs will be fully optimised. Calm networks will also be promoted so that fewer issues will be caused by network operations (to reduce pressure transients) which can lead to leaks occurring.

Further detailed analysis of carbon externalities associated with leakage options, as well as the development of Net Zero carbon scenarios, will be considered for future iterations of the assessment and optimisation process to fully align with Ofwat's common-reference scenarios.

We have very recently established an estimate for our 'base-year' (2021/22) leakage on the Isles of Scilly (Chapter 14) but recognise that this is still an estimate. We have calculated the impact of incorporating the IoS leakage into the water company (WC) DYAA final position (Table 2e) and confirm that this would contribute an additional 0.075 Ml/d leakage reduction target by 2050 at water-company level. This 0.075 Ml/d is a maximum calculated figure for the additional leakage reduction which assumes that there has been no leakage reduction since 2017/18. Some estimate of leakage improvement since 17/18 would reduce the required 2050 leakage reduction. There is inherent uncertainty within the leakage modelling that RPS has calculated through to 2050, and we have considered this small additional leakage reduction is within this level of uncertainty. The numbers in Table 2e Row 5FPW are therefore unchanged based on the leakage modelling work set out in Chapter 9 for our dWRMP.

3.2 Water efficiency: household

We have set an ambitious long-term water efficiency programme, complementing our smart-metering plan, which targets reducing PCC to 110 l/person/day by 2050. The programme of PCC reduction is initially focussed on our ambitious smart metering strategy to 2035, alongside household water-efficiency activities such as home visits and educational visits to schools. Our water-efficiency programme increases across the 25-year planning period as more metering and smart metering is installed, giving us opportunity to engage and work with customers more effectively.

Our overall strategy is to reduce our demand for water and look for opportunities to use rainwater for some household uses; this is aligned with our proposed water-efficiency plan.

The overall programme of water efficiency measures is given in Table 9 below. Our Plan is estimated to deliver 1.6 Ml/d[9] by 2030 and 48.65 Ml/d savings by 2050[10]. As mentioned previously, we focus on expanding and upgrading our smart metering penetration at the start of AMP8 but still deliver an increased water-efficiency programme which increases over the planning period, taking advantage of the opportunities provided by large-scale smart metering.

The table also shows the percentage contribution to meeting the 110 l/person/day PCC provided by each option. We will provide an update on progress on water efficiency in our annual WRMP update each year.

[9] Note that overall demand-side reductions are driven by our metering strategy, combined with 'Watersmart' customer feedback from metering.

[10] Government policy changes will be needed to support the delivery of these benefits.

We assume that the Government Policy of water labelling will contribute a 30% saving by 2050. The impact of water labelling has been informed by the WRSE group report: “Government demand management savings and implementation profiles” (February 2022).

Option ID	Activity	Options in AMP8	Years Active	Programme Totals	
				Water Saving (Ml/d)	Estimated outputs
HH_M_009	Watersmart - customer feedback from metering	Yes	2025 to 2050	15.73 (16%)	129,400 Customer Calls
HH_A_002	Home efficiency visits (HEV) - water efficiency audit with free water efficient device installation - metered	No	2046 to 2050	9.21 (9%)	111,810 Home Efficiency Visits
HH_E_004	Leaky Loos' Wastage Fix: large scale targeted fixes	Yes	2025 to 2050	0.73 (1%)	11,861 Fixes
HH_E_009/ HH_E_010	Home Efficiency Visits (HEVs) - water efficiency audit - local authorities, housing associations etc.)	No	2035 to 2040	6.08 (6%)	16,097 Audits (a 5-year project)
HH_E_013	School visits water efficiency programme	Yes	2025 to 2050	1.23 (2%)	1,375 School Visits
HH_E_017	Water efficiency programmes targeted at specific groups (e.g., community, religious)	Yes	2025 to 2050	0.63 (0.5%)	3,966 Community Groups Engaged
HH_N_001	Rainwater harvesting is included in new developments to meet planning conditions - community developments	No	2033 to 2050	12.84 (13%)	36,082 New Houses with Rainwater Harvesting
HH_N_003	Rainshare - Communities direct harvested rainwater into a centralised shared resource	No	2034 to 2050	2.20 (2%)	6,400 Households in Communities with Shared Rainwater Harvesting

Table 9: Overall Water Efficiency Programme (2050)

Our AMP8 Totex for our preferred water efficiency programme is £0.28m. This investment is above and beyond our baseline activities, and does not include costs for the existing water efficiency team.

This programme is a combination of existing water efficiency activities, such as fixing leaky loos, and schemes that take advantage of increasing meter penetration, such as Watersmart, and innovative ideas using rainwater harvesting. We are proposing a smart metering programme that will deliver a significant proportion of our targeted reduction in PCC (approximately 20%). Further work is planned to develop opportunities with the Agri-food and wider non HH sector to inform our approach. Refer to Chapter 9, Section 2.2 for further information.

The Plan encompasses individual households and communities to ensure it delivers more local and community engagement and wider benefits. The profile of the water efficiency savings is shown in Figure 7.

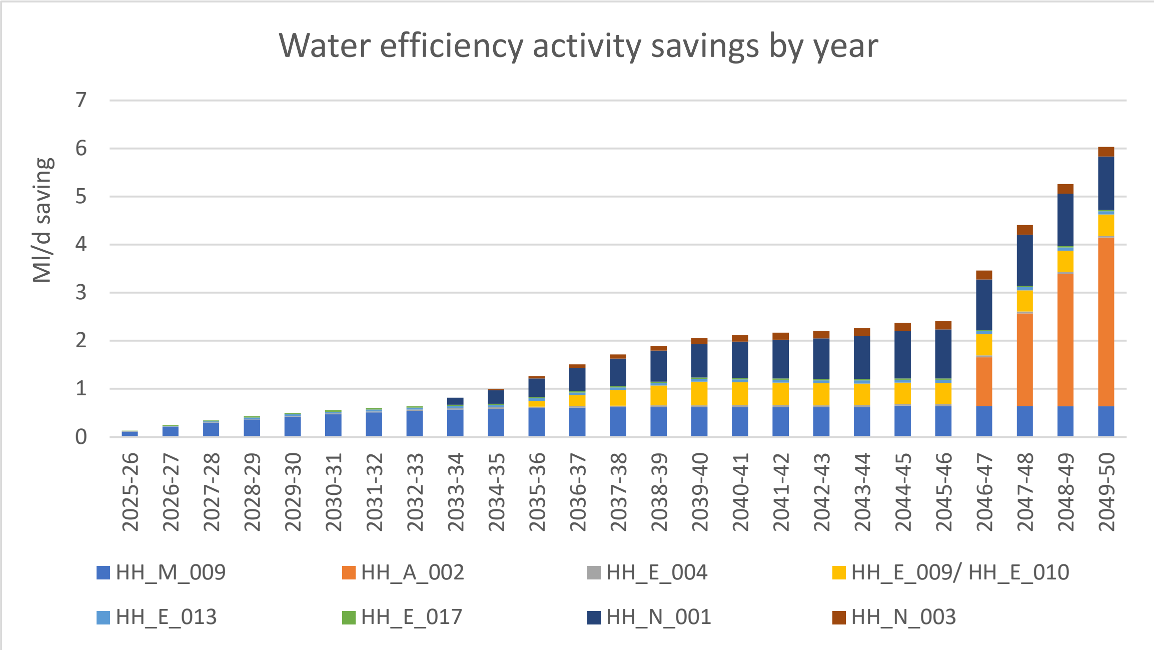

Figure 7: Demand reduction by year showing water efficiency contributions

To ensure we achieve our PCC reduction targets, the water-efficiency programme increases in delivery towards 2050, as the benefits from smart metering reduce. As such, household water-efficiency investment in AMP8 does not show a marked increase.

The combination of metering and water efficiency programmes delivers the following combined PCC reduction profile to 2050 (Figure 8).

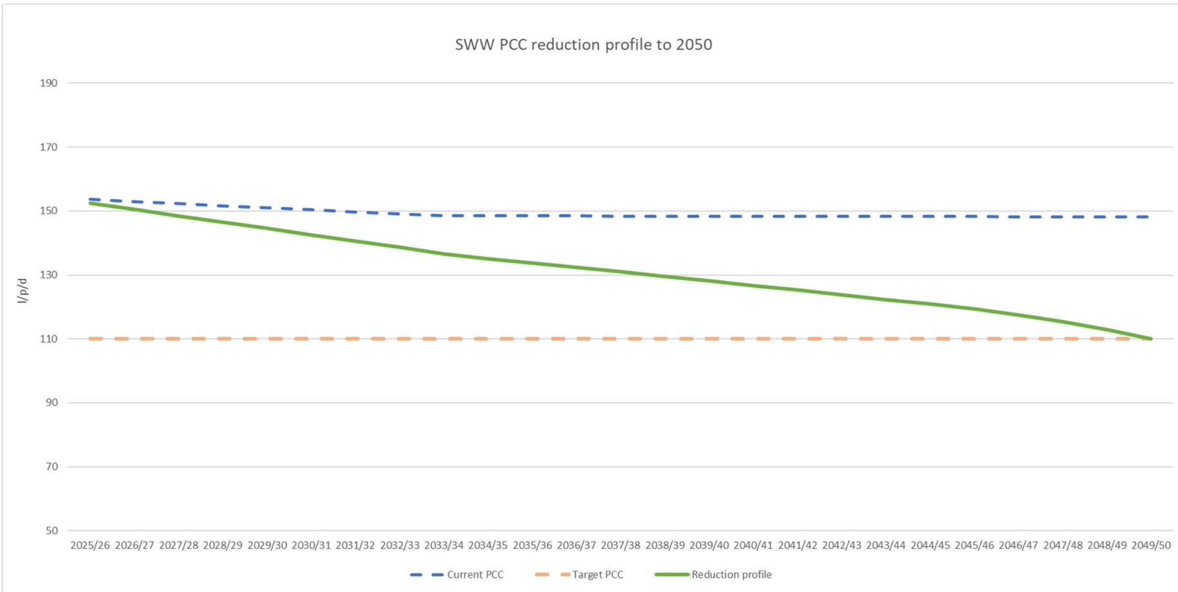

Figure 8:: SWW PCC reduction profile to 2050: Current, Target and reduction profile as a result of our preferred plan.

The cumulative contribution of our smart metering and water-efficiency programmes, along with water labelling, to deliver our PCC reduction profile to 2050 are shown below.

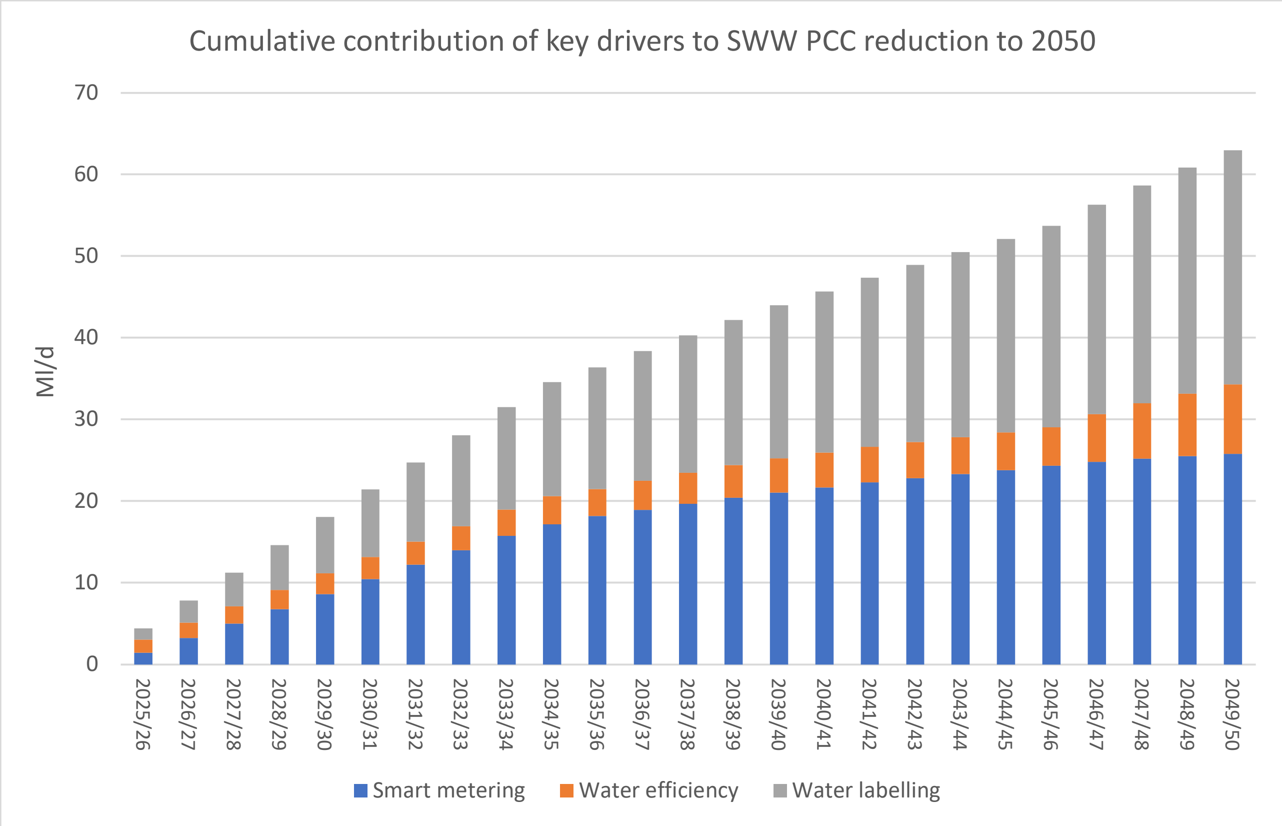

Figure 9: Contribution of different demand side interventions to achieving 2050 PCC reduction.

3.3 Water efficiency: non household

In addition to the household initiatives described above, we are proposing a water-efficiency scheme to target non-household consumption, although this will not impact PCC. This will consist of partnerships with non-household retailers to encourage the delivery of more water-efficiency audits to their customers.

Through our engagement with our non-household customers, we know they are supportive of initiatives that drive greater water efficiency. However, we also recognise there are significant barriers to large-scale delivery and, for this reason, we have included a modest level of water-efficiency initiatives comprised of water efficiency audits, summarised in Table 10 below.

Option ID	Activity	Programme Totals	
		Water Saving (Ml/d)	Estimated outputs
NHH_A_001	NHH home efficiency visits (target sectors, accommodation, health, education)	0.81	825 visits
NHH_A_007	NHH home efficiency visits (target sectors, retail, food, beverage)	0.11	775 visits
NHH_E_001	Holiday rental water efficiency	0.48	30,900 visits

Table 10: Summary of proposed Non-Household Water Efficiency options (2050)

Our AMP8 Totex for our preferred non-household water efficiency programme is £0.913m. This consists of working with 64 commercial customers (in the sectors mentioned above) every year, and an intensive programme of working with over 6,000 holiday rental businesses every year for AMP8.

Further work is ongoing to identify a wider range of non-potable opportunities with agriculture and the wider Non-Household sector, to drive further potable demand reductions; the findings of this study will be included in our final plan.

3.4 Metering programme

In the least-cost model, smart meters are only installed reactively: when a 'dumb' meter or AMR fails and an AMI meter is installed as a replacement. Consequently, smart-meter penetration increases slowly in relation to our supply-demand position and environmental ambition.

Our preferred metering strategy has two main parts:

1. **The movement of customers from unmeasured charges to measured charges**, predominantly in our Bournemouth region
2. **The proactive replacement of meters with new smart meters** (AMI) that provide enhanced consumption and leakage information.

Both programmes are proposed to run for a 10-year period so that the benefits are realised ahead of when they are needed and continue into the future.

Our preferred metering strategy is summarised as

- Metering unmeasured properties
- Compulsory metering across our Bournemouth and IoS regions by 2035
- Continuing our free meter installation option for customers across all regions and extending this to include free smart meters (AMI)
- Smart metering (AMI)
- Proactive smart meter replacements in Colliford and Wimbleball so that all meters are smart (AMI) meters by 2035
- Reactive smart meter replacement at the end of life

Our preferred option has a mid-level upfront cost for AMP8, associated with the Bournemouth compulsory metering and the proactive replacement of existing meters with smart meters by 2035. This delivers a total water saving of nearly 6.4 Ml/d by 2029/30, increasing to 18.8 Ml/d by 2034/35. Some of this upfront cost is recovered in later years through lower mid-term maintenance costs. However, our overall maintenance needs will increase to reflect the costs associated with the replacement of the new meters being installed under our preferred option.

We recognise that it is not always economic or feasible to install a meter at a property and where this is the case, we will continue to put customers on assessed charges. Previous studies have estimated that it is uneconomical for c.10% of households to be metered, so our preferred strategy delivers a forecast c. 90% of our customers to be measured. However, this is dependent on the continuation of meter options in our South West region.

The preferred option reflects the resources situation in Bournemouth, Colliford and Wimbleball. Bournemouth would enter a significant deficit upon abstraction reductions post-2035, and Colliford and Wimbleball are forecast to enter a supply deficit in AMP8, so proactively and compulsorily installing AMI smart metering is a key demand-management option to improve the supply-demand balance.

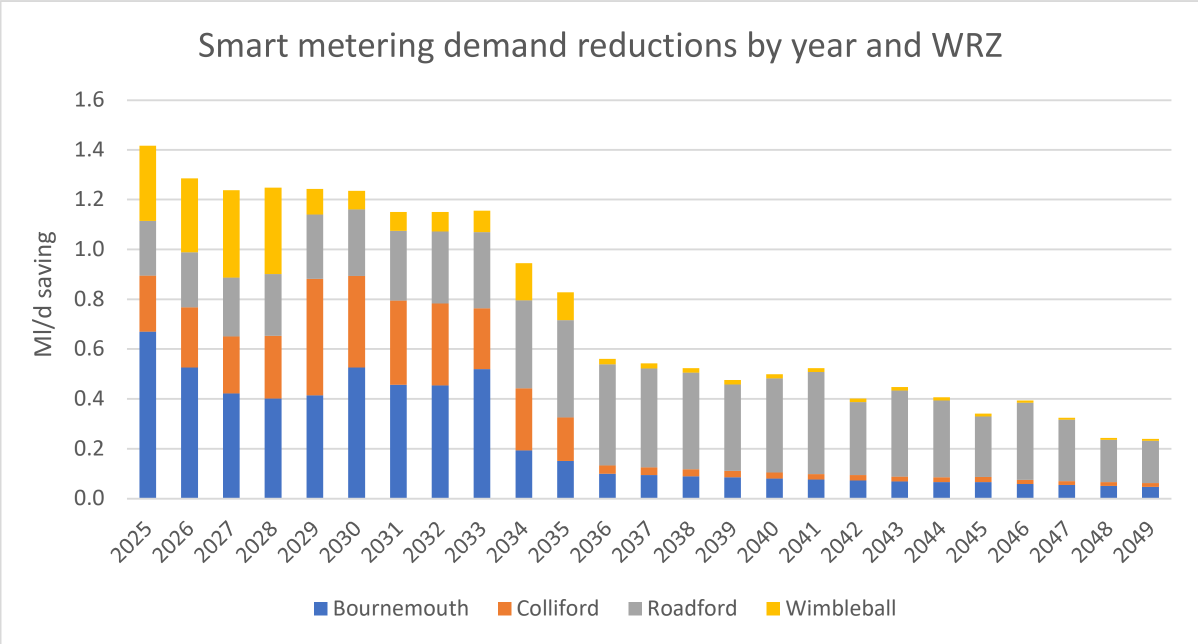

Figure 10: Smart metering demand reductions by year and WRZ

There is uncertainty about how much of the total leakage occurs on pipes not owned by the water companies. Smart metering will help us quantify customer leakage and plumbing losses for operational purposes but also allows customers to manage supply-pipe leaks and internal losses themselves and to be aware of issues sooner.

3.5 Reduce our own demand for water

Our own water use affects the overall demand we must meet. In our 2019 WRMP, we set out a programme of work to reduce consumption at our wastewater treatment sites, and this has so far delivered 2.7 Ml/d of savings. While we envisage that this work will be complete within this AMP period, we will continue to target water-efficiency improvements at our operational sites where we identify opportunities.

Our plan includes a commitment to continue to reduce our own water use, but we do not set out any specific schemes. Instead, we will use the results from work in the short term to inform future long-term plans. We do not anticipate any significant changes in total consumption because of our approach.

3.6 Demand-side drought options

Demand-side drought options, such as calls for restraint, temporary use bans (TUBs), and non-essential use bans (NEUBs) are effective ways of temporarily improving the supply-demand balance during a drought. Our plan continues to use these during future droughts, ensuring that we meet our agreed levels of service.

As we invest to meet the target of being resilient to 1 in 500-year droughts in the future, the frequency at which we need to use these measures will reduce, and the levels or service we offer to our customers will improve. Our customer research has shown that, while customers are relatively comfortable with less-severe demand restrictions during a drought, they place high value on avoiding more severe restrictions. By integrating this customer feedback within our best-value planning methodology, along with other factors such as bill impacts, we can ensure that we develop informed and efficient level of service glidepaths for drought actions.

The assumptions we make around the benefits of imposing demand restrictions during a drought are consistent with our published Drought Plan[11] and are quantified in our WRMP planning tables.

Our recent experience of demand management via TUBs is set out in Chapter 1.1: whilst it is difficult to ascribe volumetric benefits to any specific demand-side activity, the insight gained supports the levels of demand reduction which we have been using for WRMP planning.

[11] South West Water Final Drought Plan (2022)

4 Related initiatives that support our WRMP

Enhancing and protecting our environment drives our plans in the medium term to promote catchment thinking and nurture our environment. Many of these initiatives sit outside the WRMP but are listed below for completeness.

- Continued engagement and input into the **West Country Regional Plan** and the West Country Water Resources Group's work developing catchment action plans and the wider established catchment partnerships in place.
- Our PR24 plan will also include **investment in interconnectivity between our regions and within our WRZs** to ensure we can move water to where it is needed in the event of a drought or other events. Refer to Appendix 8.2 for a selection of network reinforcement projects under consideration for PR24, to improve resilience.**Continued investment in our Water Fit Plans.** This is not a WRMP-specific activity but a wider SWW strategy. Water Fit focusses on reducing storm overflows and improving bathing-water quality, creating and restoring habitat, and looking to inspire local champions to improve water quality through schools and communities.
- **Upstream Thinking Project.** This is an ongoing SWW project focused on improving water quality in river catchments to reduce water treatment costs, but it has added benefits from improved biodiversity, reduced carbon emissions, improved river quality and reduced investment in SWW's water treatment work assets.
- **Farm water efficiency and resilience project – 1,000 ponds**. Continue to develop nature-based solutions like the case study discussed in Chapter 4 – providing water for agricultural use and public water supply. We are also expanding our work with the agricultural sector through our engagement with NFU and others in focused working groups to support long term water-resource planning. Refer to Chapter 9 for information on further non household demand-side options being explored with the Agri-food sector.
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5 Plan costs

Table 11 shows our overall planned level of capital and operational expenditure for our Best Value Plan to 2030.

Table 11: Planned expenditure £m (2025 – 2030). Prices in 2020/21 cost base, pre efficiency

	Description	Ml/d benefit[1]	Capex £m	Opex £m	Totex £m
Leakage management	Blend of leakage options including mains renewal, active leakage control and pressure management	11.0	£168.0m	£16.6m	**£184.6m**
Water efficiency: HH	Customer contacts, visits, education, Rainshare (note metering will contribute significantly to demand-side reductions)	1.65	£0.24m	£0.04m	**£0.28m**
Water efficiency: NHH	Efficiency visits across various retail sectors	0.67	£0.9m	nil	**£0.9m**
Metering	Rollout of smart metering - compulsory metering in Bournemouth and IoS, and as soon as possible elsewhere	6.43	£40.7m	£16.7m	**£57.4m**

	Description	Ml/d benefit[1]	Capex £m	Opex £m	Totex £m
Supply-side options	Implement 7 supply-side schemes (4 new sources, 3 upgrades to water treatment works)	91.3	£119.3m [12]	£4.1m	**£123.4m**
Costs excluded from WRMP tables					
Environmental Studies	Implement a range of environmental studies to ensure our abstraction reductions are sustainable	Nil	£0.86m	Nil	**£0.86m**
Biodiversity fund	Funding that can be used to provide biodiversity net gain/ habitat restoration either locally or regionally to provide 10% BNG.	Nil	Nil	£1.5m	**£1.5m**
Adaptive planning / engineering / Env studies	Funding to accelerate environmental and studies and design studies to have implementation ready supply-options to support our adaptive strategy.	Nil	Nil	£3m	**£3m**
Total			**£329.98m**	**£37.4m**	**£367.41m**

[12] Includes £24.8m investment to support the development of the SROs

6 Plan benefits

6.1 Overall performance

Table 13 and Figure 11 to Figure 14 show the performance of the Plan according to the Best Value Index (BVI) multi-criteria analysis framework used in our programme development and scoring. Best-value investment programmes were developed from the least-cost model by adapting the selected options to increase the score. The impact of these changes is shown in the tables and diagrams below.

In all WRZs, the best value plan results in a higher BVI than the least-cost plan offers. However, the investment programmes have not been fully optimised at this stage, and further development will be undertaken in support of the final Plan.

The best-value indices also factor in biodiversity and carbon emissions. We are aware of the need for our plan to provide a 10% biodiversity net gain and contribute towards achieving Net Zero; our best value plan achieves a greater score for biodiversity, natural capital and carbon emissions than our least-cost plan does, but we have further work to complete on option development for our final plan (through engagement around specific scheme designs) that will ensure we achieve these outcomes.

As discussed in **Chapter 10: Plan development**, we have developed a set of best-value metrics (Table 12) to inform the optimisation of our programme and understand our plan's performance.

No.	Primary Dimension	Sub-Dimension	Metric
1	**Environment**	Water environment	Ambition of Environmental Destination (Reducing Abstraction)
2			Expected Cost of Drought Permit Restrictions (weighted by Frequency)
3		Biodiversity/Habitats	Enhancing natural capital/biodiversity
4			SEA
5		Carbon	Reduction in Carbon emissions[13]
6	**Resilience**	Public Water Supply	Increase resilience to extreme droughts (1 in 500)
7			Frequency of Drought restrictions (G4)
8		Other System Resilience	Resilience to other risks (e.g. Single Source Dominance)
9		Deliverability	Benefit Certainty
10		Non-Public Water Supply	Available headroom for Water Sharing
11	**Society**	Financial & Customers	Bill impacts for customers
12			Intergenerational equity - Plan 'Gini' Coefficient
13		Stakeholder & Regulators Priorities	Leakage reduction targets
14			PCC targets
15			Non-household water efficiency
16		Wider Society	Recreational / amenity benefits delivered through plan

Table 12: Our Best Value Indices

[13] Supports Direction 2022 reference 3 (1)(d)(ii) – demonstrating how gas emissions will contribute individually and collectively to its greenhouse gas emissions overall.

The performance of our plan against these best-value indices are summarised below in Table 13.

Best value indices scores	Colliford			Roadford			Wimbleball			Bournemouth		
	Env	Res	Soc	Env	Res	Soc	Env	Res	Soc	Env	Res	Soc
Least cost	0.06	0.84	0.41	0.12	1.00	0.35	0.63	0.94	0.61	0.10	0.78	0.37
	27			34			72			31		
Best value	0.43	0.89	0.71	0.65	1.00	0.64	0.63	1.00	0.64	0.67	0.87	0.90
	65			75			74			81		

Table 13: Best-value index (BVI) scores of the Recommended Plan

The following graphs show the comparison across all best-value indices by WRZ.

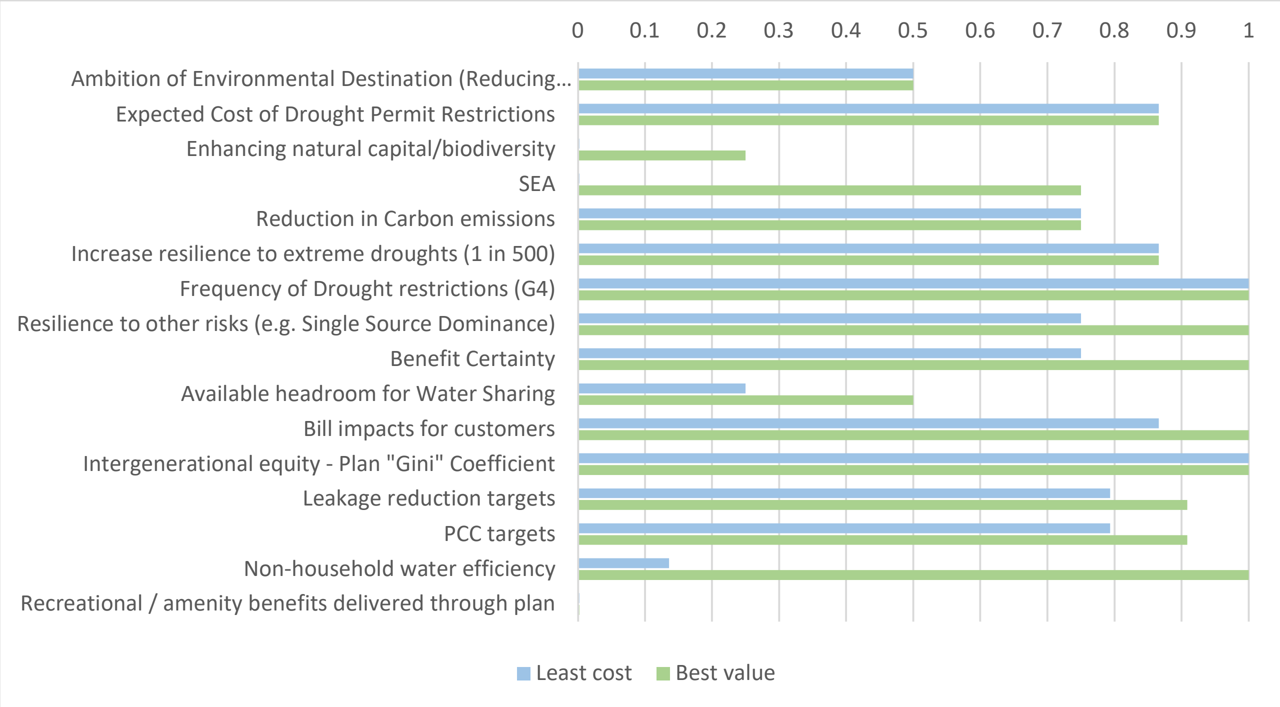

Figure 11:Performance of the Recommended Plan by best-value metrics: Colliford

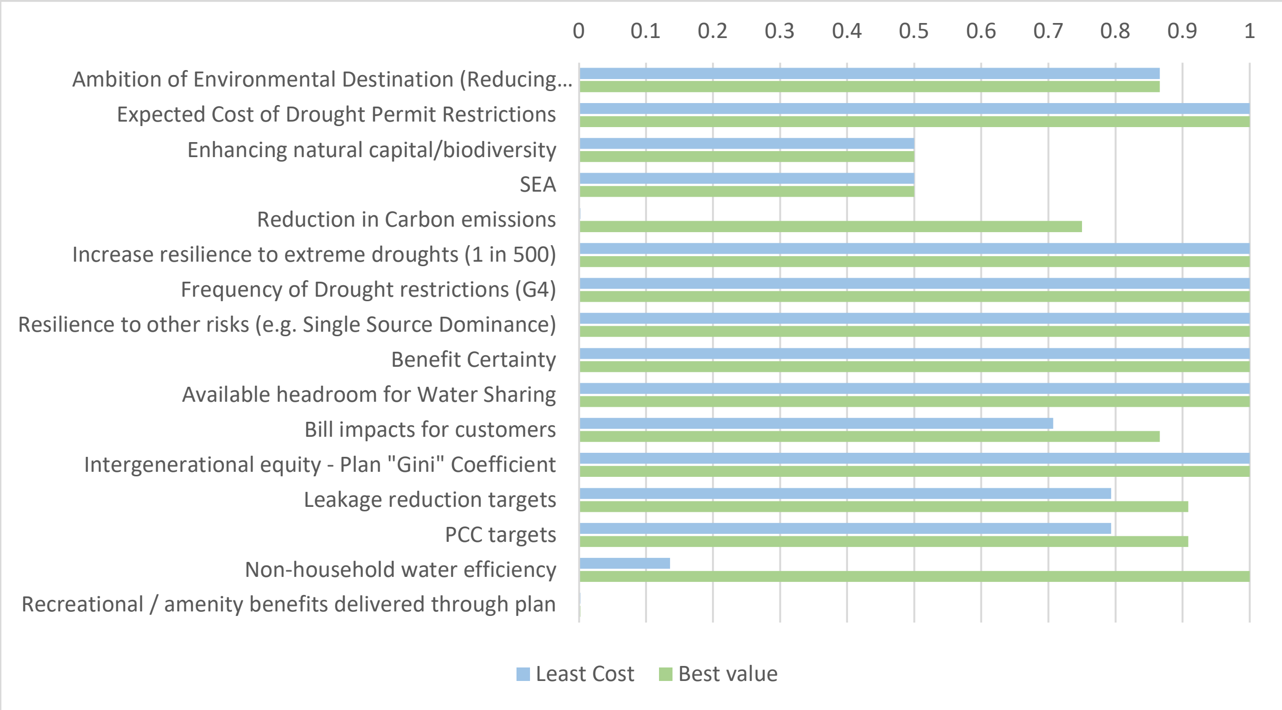

Figure 12: Performance of the Recommended Plan by best-value metrics: Roadford

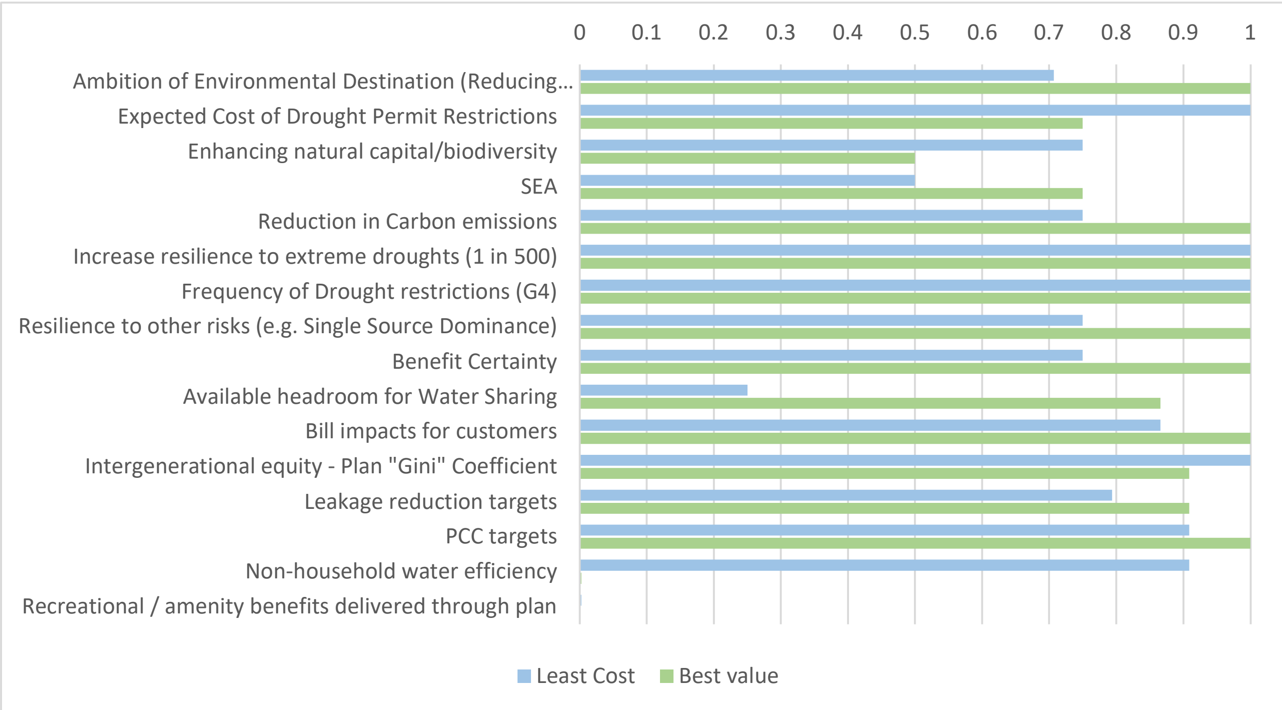

Figure 13: Performance of the Recommended Plan by best-value metrics: Wimbleball

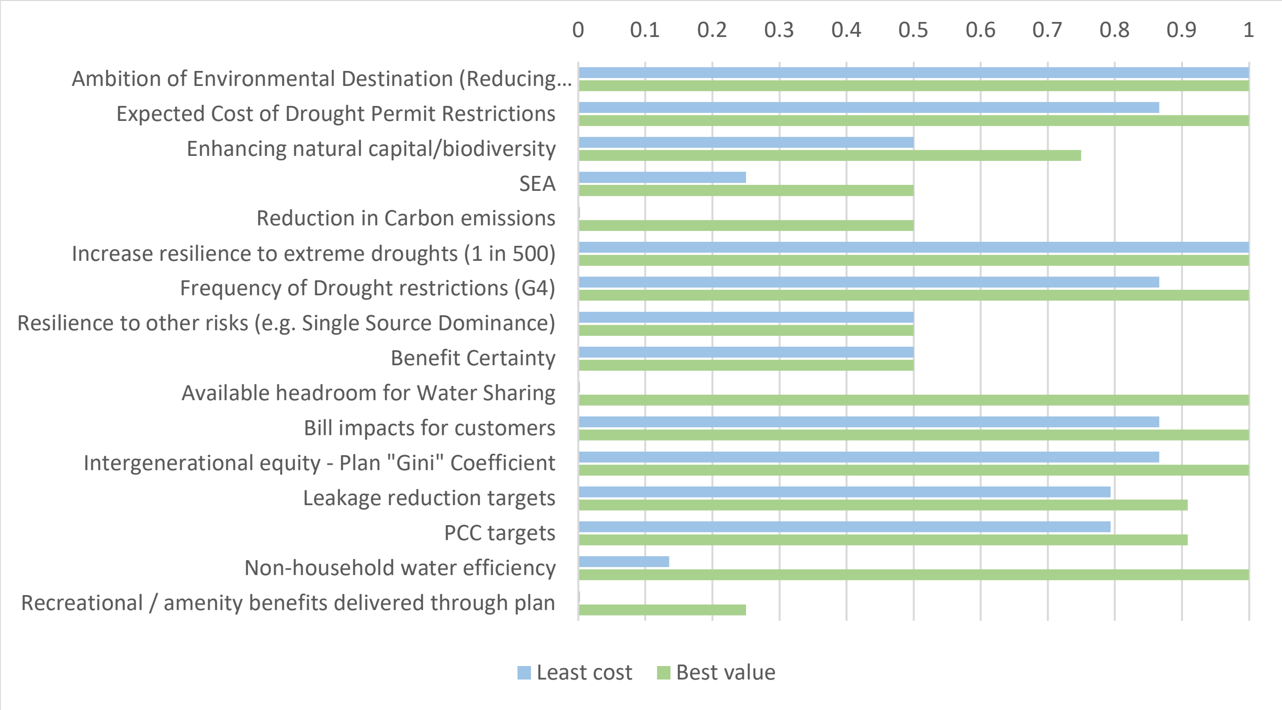

Figure 14: Performance of the Recommended Plan by best-value metrics: Bournemouth

The assessment shows that the recommended Plan performs well overall when all factors are considered. However, it is not the lowest-cost plan. There are both higher- and lower-cost plans and plans that could contain more or less risk mitigation. The recommended Plan is considered to give the best overall value and considers the feedback from customers, stakeholders and regulators.

6.2 Final supply-demand balances

The supply-demand balances for each of our WRZs are shown in Figure 15 to Figure 18. These are presented against a 1 in 500-year drought resilience. They include the assumed benefits from drought actions, which until 2039 include emergency drought orders to maintain supply in the most extreme droughts exceeding 1-in-200 year severity but these are not included in our plan after that time.

Our preferred plan results in additional headroom compared to the least-cost plan. This provides benefits to customers by giving a more resilient supply and allows potential acceleration of environmental destination actions to bring forward environmental benefits.

The stepped reductions visible in the baseline balances reflect phased environmental destination abstraction licence reductions. These reductions require phased development of new supply schemes to ensure that resilience is maintained.

Compared to least-cost, our best value plan includes earlier delivery of supply schemes to improve resilience and provide customer benefits. Ambitious water efficiency activity maintains headroom in the longer term.

Our Plan undertakes some action now to mitigate risks to our service for future generations but is flexible and adaptable to risks and future Government policy, such as defined leakage targets. The Plan will be aligned with our Periodic Review 2024 Business Plan and WINEP submissions.

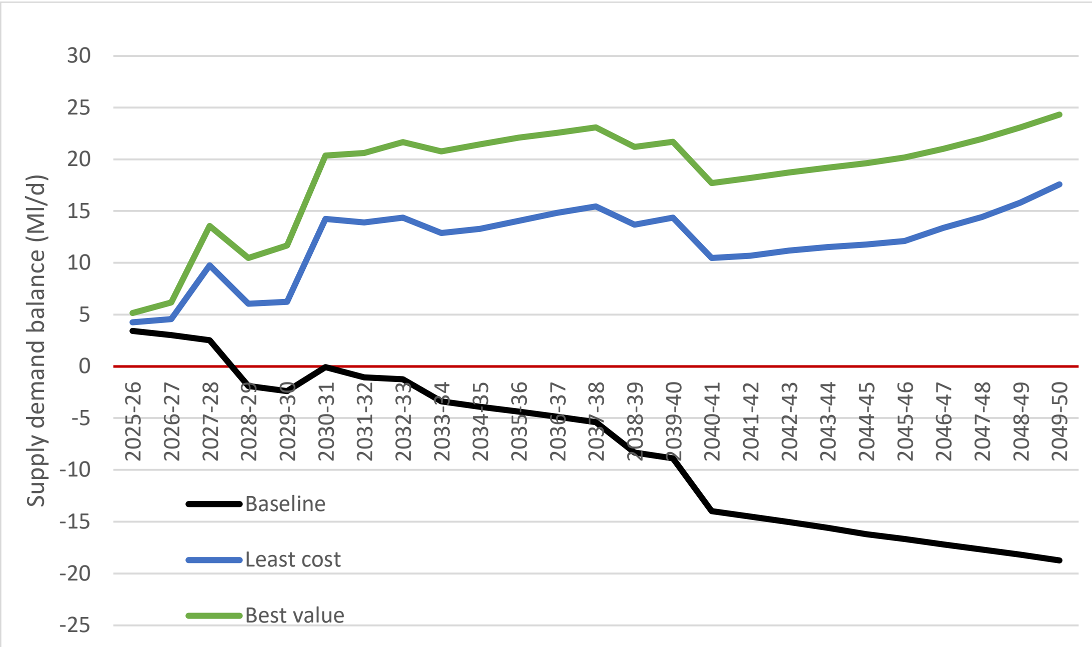

Figure 15: Supply demand balance (including the impact of drought actions) – Colliford WRZ.

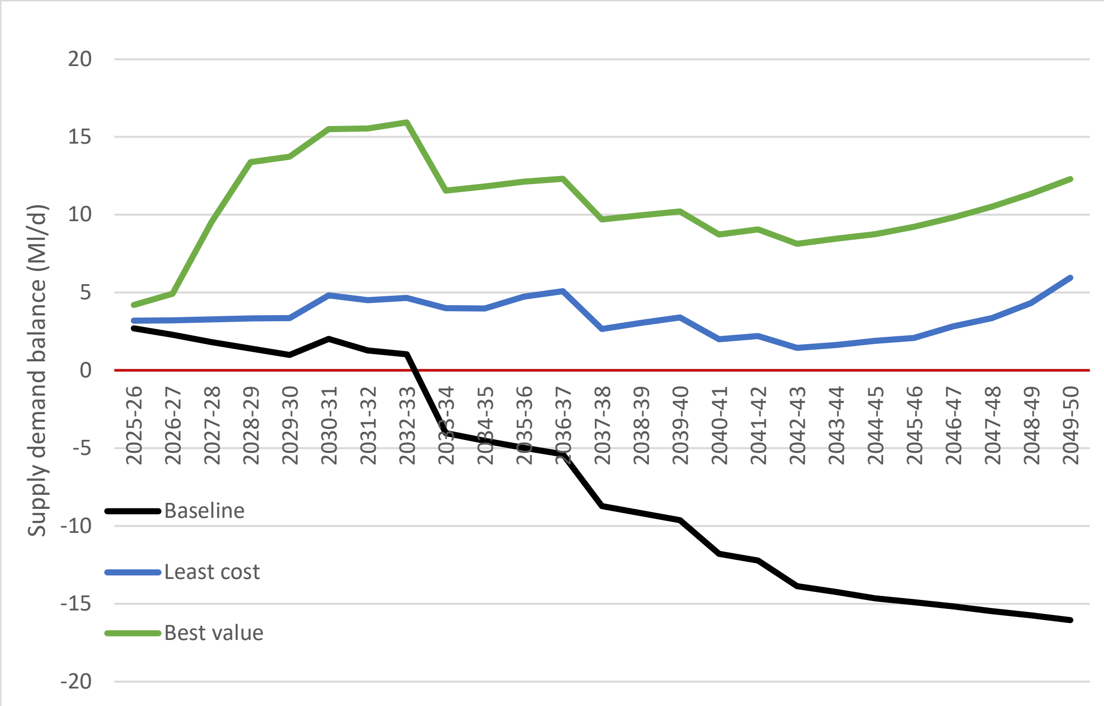

Figure 16: Supply demand balance (including the impact of drought actions) – Roadford WRZ

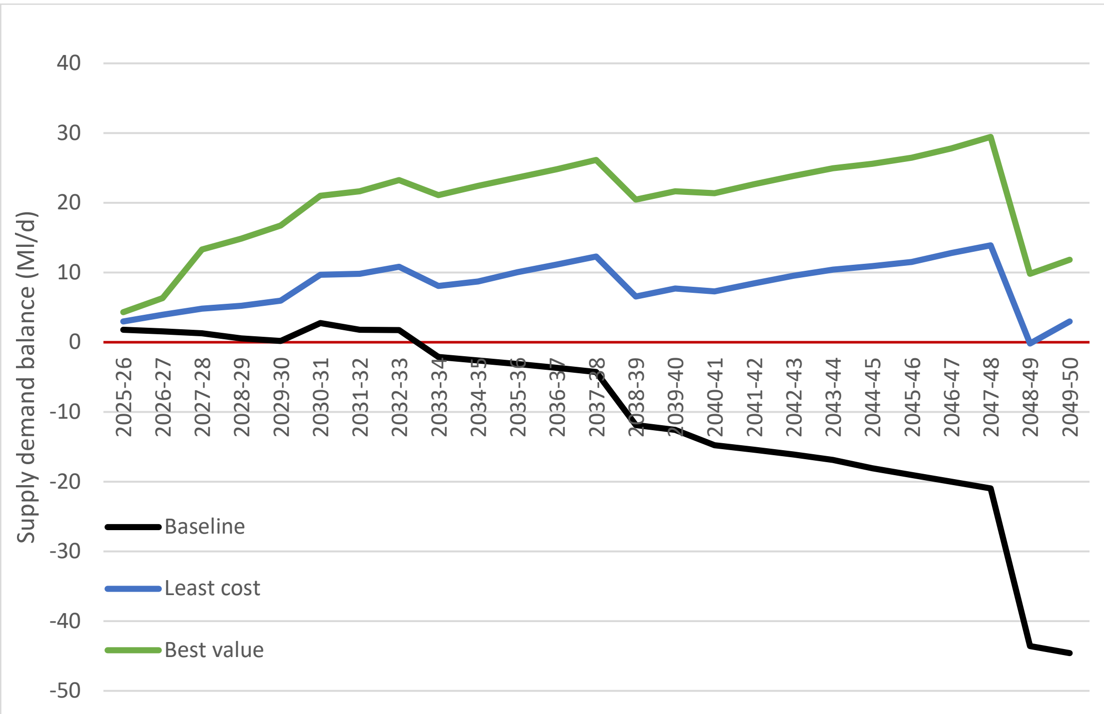

Figure 17: Supply demand balance (including the impact of drought actions) – Wimbleball WRZ.

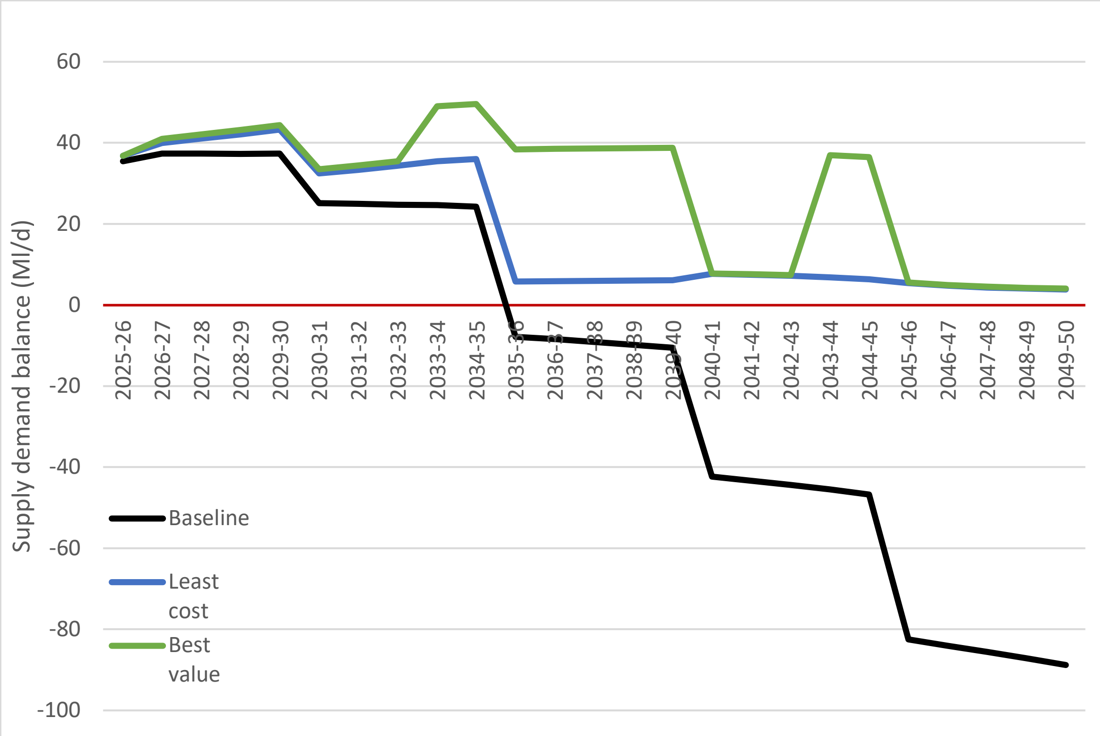

Figure 18: Supply demand balance (including the impact of drought actions) – Bournemouth WRZ.

6.3 Levels of service across the planning period

Table 14 gives information on our levels of service for our supply area. These levels of service apply to both household and non-household customers.

Drought Action	Minimum Long-Term Levels of Service	Planned Levels of Service	
		Until 2039	After 2039
Publicity, appeals for restraint and water conservation measures	1 in 10 years	> 1 in 10 years	> 1 in 10 years
Temporary Use Bans	1 in 20 years	> 1 in 20 years	> 1 in 20 years
Supply-side Drought Orders or Drought Permit	1 in 20 years	> 1 in 20 years	> 1 in 20 years
Demand-side Drought Orders	1 in 40 years	> 1 in 40 years	> 1 in 40 years
Emergency Drought Orders – partial supply, rota cuts or standpipes	1 in 200 years	> 1 in 200 years	> 1 in 500 years

Table 14: Company Levels of Service

Water companies are required in their 2024 WRMPs to show that they are resilient to 1 in 500-year droughts by the end of the 2030s. This is defined as not requiring exceptional demand restrictions, such as Emergency Drought Orders, more than 1 in 500 years on average. The supply-demand calculations we have included within this plan are on a 1 in 500-year drought basis, delivering this requirement and meeting our customers' expectations for greater resilience (see Chapter 3 for details of customer requirements).

Our best-value planning approach, which is described in Chapter 10 of this Plan, considers many factors, with drought resilience, bill impacts, and customer and stakeholder preferences being examples. Considering all these factors within our planning allows us to propose a glidepath to the 1:500 resilience, and levels of service for TUBs, NEUBs, and EDOs that are informed by many aspects - an efficient glidepath to the targeted level of resilience. We will be able to further validate our approach through the consultation process using quantified examples and scenarios as a basis for engaging discussion with stakeholder and customers.

Our Plan exceeds this minimum level of service because customers strongly dislike exceptional drought actions, resulting in a best value plan that reduces the risk of these occurring earlier than the 2039 target. All our WRZs are ‘1 in 500’ resilient early in the AMP9 period, removing the risk of unpopular actions in all but the most exceptional droughts. This means that we will only use emergency drought orders (Level 4) in droughts more severe than a 1 in 500 yr from the early 2030s. WRMP guidance asks that we consider how our plan would change if we only achieved 1 in 500-year drought resilience in 2050. While we have considered this, delaying resilience in this way is inconsistent with the preferences expressed by customers in our research.

The supply-demand balance charts show that the size of the surplus in each WRZ varies across the planning period with a resulting change in our actual levels of service. It is difficult to accurately quantify planned actual levels of service, we will continue to improve our analysis of this as part of our final Plan.

6.4 Carbon/greenhouse gas emissions

In July 2022, we set out our Net Zero ambitions[14], outlining our commitment to transform how we produce and use energy to become carbon neutral by 2030 through our three pillars: sustainable living, championing renewables, and reversing carbon emissions. Initiatives, such as planting trees are important parts of this strategy, and we plan to plant 250,000 trees by 2025, more than doubling the original target, which we achieved four years early.

Our dWRMP seeks to quantify and reduce greenhouse gas emissions in several ways:

- Our proposed SWW Biodiversity (Nature) Fund (see Chapter 4) seeks to develop initiatives identified by our stakeholder communities to improve biodiversity and realise a wide array of additional environmental benefits. The fund will be wide-ranging in its application but has significant potential to support the delivery of measures, such as wetland creation/restoration, peatland restoration, soil health improvements and tree planting, which have significant potential to enhance carbon sequestration.
- Similarly, our Upstream Thinking catchment management scheme applies landscape-scale solutions to improve water quality and supply. Many of the interventions delivered under the Upstream Thinking scheme have the potential to enhance carbon sequestration in the landscape (e.g., soil management and tree planting). In addition, the scheme can also reduce carbon generation at our treatment works, by mitigating the need for new treatment processes and reducing the chemicals and other resources required to treat drinking water. It can also help to reduce carbon generation by land managers and farm businesses in our catchments by promoting and enabling more sustainable practices.
- As we move our feasible schemes into detailed design, we will be engaging with stakeholders and our supply chain to identify opportunities to reduce greenhouse gas emissions. This will range from initiatives to generate power onsite (through solar, or hydroelectric recovery) through to optimised designs to ensure pumping efficiency and reduce embedded carbon.
- We have also identified specific carbon reduction schemes within our portfolio of options. Our proposed option to allow the return of water from Colliford reservoir to Restormel works via pipelines rather than via the river has the potential to deliver both more naturalised river flows and recovery of energy through hydro power.
- Each option taken forward as feasible has undergone carbon assessment by our consultants Stantec. Stantec have calculated both the embedded carbon associated with build and operational carbon associated with running the proposed schemes. These values provide an input into our decision-making process.
- Our current assessment of the overall GHG impact (WRMP table 4) of our preferred plan is 400k tCO2 equivalent of embodied carbon, with average operational carbon estimated as 8.5k tCO2 equivalent per annum; the whole life carbon cost is estimated as £300m.

6.5 Environmental impact/biodiversity net gain

In developing our options, we have filtered out schemes that have been considered as environmentally damaging as part of our long-listing exercise (see Chapter 8) and sought supply options where the environmental destination modelling work suggests there is water available. The supply-side options currently selected in our best value plan have a minimal residual short- and long-term environmental impact and, through further study and development, we will look to further mitigate and enhance the value we can bring through our interventions and habitat restoration funded through our biodiversity fund. We will look to work with stakeholders to build an integrated approach.

Our preferred plan also includes a deliverable but ambitious leakage and metering programme to drive strong demand reductions. Our leakage programme will continue to target the ‘wastage’ of our precious water resources. Our proposed leakage strategy looks to delay mains replacement to later in the 25-year period, when we expect there to be innovative techniques available to reduce our carbon impacts from mains repair/replacement. Our metering programme, in combination with feedback from customer water-usage, will help us reduce water wastage and leakage.

Our preferred programme is the best for the environment because it maximises our focus on demand-side savings and looks to introduce supply options in catchments where water is available. We recognise that further work is needed to complete more detailed environmental studies to ensure we protect the environment when implementing our proposed supply options.

[14] Net Zero plan (southwestwater.co.uk)

The following tables set out the programme-level assessment of our preferred plan. There were no potential major negative short-term or long-term effects identified because of the Best Value Plan (BVP) options, across any of the Water Resource Zones (WRZs).

Information on the WRMP24 options was given to Mott MacDonalds, and the strategic environmental assessments (SEAs) were undertaken based both on national and on local datasets and information. The WRMP options have been assessed following the UK Water Industry Research (UKWIR) SEA guidance 11. The SEA assessment framework and the scoring criteria described in the SEA report were used to assess the potential positive and negative effects of each option against each of the SEA objectives. An example of the scoring criteria used is shown in table 1 below.

It should be noted that the yellow 'neutral' score has been assigned this colour to reflect that there have been no identified likely impacts on a given SEA objective. The results of the HRA, BNG, NCA and INNS assessments have fed into the SEA assessments for biodiversity, and the WFD assessments inform the SEA assessments for the water topic.

Effect	Description	Example Scoring Definition - Biodiversity Objective
+++	Major Positive	The option would result in a major enhancement of designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat quality and availability The option would result in a major increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or moderate amount of creation or enhancement of habitat, promoting a major increase in ecosystem structure, function or connectivity. The option would result in a major reduction or management of Invasive Non-native species (INNS).
++	Moderate Positive	The option would result in a moderate enhancement on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures. The option would result in a moderate increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or moderate amounts of creation or enhancement of habitat, promoting a moderate increase in ecosystem structure, function or connectivity The option would result in a moderate reduction or management of INNS.
+	Minor Positive	The option would result in a minor enhancement on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures. The option would result in a minor increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or moderate amounts of creation or enhancement of habitat, promoting a minor increase in ecosystem structure, function or connectivity. The option would result in a minor reduction or management of INNS.
0	Neutral	The option would not result in any effects on designated or non-designated sites including habitats and/or species. It will not have an effect on INNS.
-	Minor Negative	The option would result in a minor negative effect on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat loss or degradation. The option would result in a minor decrease in the population of a priority species. Effects could be caused by detrimental changes in flows/water quality or small losses or degradation of habitat leading to a minor loss of ecosystem structure, function or connectivity. The option would result in a minor increase or spread of INNS.
--	Moderate Negative	The option would result in a moderate negative effect on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat loss or degradation. The option would result in a moderate decrease in the population of a priority species. Effects could be caused by detrimental changes in flows/water quality or small losses or degradation of habitat leading to a moderate loss of ecosystem structure, function or connectivity. The option would result in a moderate increase or spread of INNS.
---	Major Negative	The option would result in a major negative effect on the quality of designated and/or non-designated sites / habitats due to changes in flow or groundwater levels, water quality or habitat loss or degradation. The option would result in a major decrease in the population of a priority species. Effects could be caused by detrimental changes in flows/water quality, or large losses or degradation of habitat leading to a major loss of ecosystem structure and function. The option would result in a major increase or spread of INNS.
?	Unknown	From the level of information available, the effect that the option would have on this objective is uncertain.

Table 15: Amended Best Value Plan short-term residual effects

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health			Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1		8.2	9.1	9.2
BNW 1	ST	-	-	0	0	0	0	-	-	-	0	0	-	0		0	-	0
BNW 3	ST	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
BNW 6	ST	-	-	-	-	-	0	-	-	-	0	0	0	-	++	-	-	0
BNW 7	ST	SRO Option																
BNW 8	ST	SRO Option																
BNW 11	ST	--	--	-	-	-	0	-	-	--	0	--	--	-	+	-	-	-
COL 2	ST	-	-	-	-	-	0	0	0	--	0	0	-	-	+	-	-	-
COL 9	ST	-	-	-	-	-	0	-	-	-	0	-	--	-	+	-	0	-
COL 11	ST	-	--	-	-	-	0	0	0	--	0	-	-	-		-	-	-
COL 15	ST	0	0	0	0	-	-	0	-	--	0	-	-	-	+	-	-	0
ROA 7	ST	-	-	-	-	0	0	-	-	-	0	0	-	-	+	0	-	-
ROA 10	ST	-	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
ROA 15	ST	-	-	--	-	-	0	-	-	--	-	-	-	-	+++	-	--	-
ROA 16	ST	-	0	0	0	0	0	0	0	-	0	0	-	-	+	0	-	0
WIM 2	ST	0	-	-	-	0	0	-	-	-	0	0	0	-	+	-	-	0
WIM 5	ST	-	-	-	-	-	0	-	-	-	0	-	--	-	+	-	-	--
WIM 7	ST	-	0	0	0	-	0	-	-	--	0	-	-	-	+	0	-	0
WIM 8	ST	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
WIM 9	ST	0	0	0	0	0	0	0	-	-	0	-	0	+		0	-	0
DemB-NHH1	ST	0	0	0	0	0	0	0	0	0	0	0	0	0		0	-	0
DemB-NHH2	ST	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
DemB-NHH3	ST	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0

Table 16: Amended Best Value Plan long-term residual effects.

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	LT	--	-	0	-	0	- +	0	0	-	+	0	0	0	0	-	0
BNW 3	LT	0	0	0	0	0	+	0	0	0	+	0	0	0	0	0	0
BNW 6	LT	- +	- +	--	-	- +	++	0	-	-	+	0	0	+	-	-	-
BNW 7	LT	SRO Option															
BNW 8	LT	SRO Option															
BNW 11	LT	0	- +	0	0	- +	++	0	-	-	- +	0	0	0	0	-	0
COL 2	LT	--	--	-	--	-	++	0	0	--	-	0	0	+	-	-	0
COL 9	LT	-	-	-	-	-	+	0	0	-	0	0	0	+	0	0	0
COL 11	LT	-	-	-	-	+	+	0	0	-	0	-	0	0	0	0	0
COL 15	LT	-	-	0	--	0	+	0	0	-	+	0	-	+	-	-	0
ROA 7	LT	0	-	0	-	0	+	0	0	--	- +	0	0	+	0	-	0
ROA 10	LT	0	-	0	+	- +	+	0	- +	0	- +	0	0	0	0	0	0
ROA 15	LT	0	-	--	--	-	+++	-	0	-	- +	0	-	+	+	--	0
ROA 16	LT	0	0	0	0	0	+	0	0	-	- +	0	0	0	0	-	0
WIM 2	LT	0	-	0	-	0	- +	0	0	-	-	0	0	+	0	-	0
WIM 5	LT	0	+	0	-	0	- +	0	0	-	+	0	0	-	-	0	0
WIM 7	LT	0	-	0	-	0	- +	0	0	-	- +	0	0	+	-	-	0
WIM 8	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0
WIM 9	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0
DemB-NHH1	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	+
DemB-NHH2	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
DemB-NHH3	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0

6.5.1 SEA summary: Roadford

The extracts below show the current impacts of our proposed activity. Through the detailed design process, we will look to minimise and offset any negative impacts identified whilst developing positive opportunities arising from the work. It should also be noted that these schemes will, in some cases, enable sustainable reductions to be made in other abstractions materially increasing benefits beyond those assessed in these schemes.

Short-Term Effects:

- Option ROA15 was identified for potential major positive short-term effects for objective (8.1) *"maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing"*. These effects were attributed to the scale of construction works likely leading to a temporary and major beneficial impact on the economy of the local community, as there is opportunity to create jobs alongside sourcing materials from local suppliers during the construction phase.
- ROA15 was also identified as having potential for moderate short-term negative effects across three SEA objectives including biodiversity objective (1.3) *"reduce the spread or presence of INNS"* because of construction activities such as sharing equipment. The material assets objective (9.1) *"minimise resource use and waste production"*, due to the construction works requiring significant amounts of material and energy usage and the climate objective (5.1) to *"reduce embodied carbon emissions"*. This is largely due to the total embodied carbon from construction which is estimated to be over 2,000 tCO2 equivalent option.

Long-Term Effects:

- Option ROA15 was identified as having a major positive long-term effect for the water objective (2.3) *"deliver reliable and resilient water supplies"* this was due to the major positive effect to the resilience of water supplies for the area because of the option.
- Potential moderate negative long-term effects were identified for ROA15 in relation to three SEA objectives including biodiversity objective (1.3) *"reduce the spread or presence of INNS".* This is anticipated to be due to the potential reduction in water levels on the River Tamar and Lyd, as well as increased water levels at Roadford Reservoir, leading to a change in the suitability for any INNS present and increased facilitation for the spread of INNS to hydrologically connected sites. Water objective (2.1) *"protect and enhance the quality of the water environment and water resources"* may be affected due to the increased abstraction resulting in potential long-term deterioration of the water quality caused by reduced flows. Material assets objective (9.1) *"minimise resource use and waste production"* is affected due to the moderate value for ongoing yearly Opex and operational carbon emissions. This suggests that moderate amounts of energy will be required for the new abstraction points and increased power associated with the new pumping station.
- Option ROA7 identified potential moderate negative effects for climate objective (5.1) *"reduce embodied and operational carbon emissions"* due to the carbon emissions generated by the options in the operational phase.

6.5.2 SEA summary: Colliford

Short-Term Effects:

- Option COL11 was identified for potential moderate negative short-term effects for the biodiversity objective (1.2) "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". These potential negative effects are due to the anticipated loss of habitats from clearance for construction of the options.
- Potential moderate negative short-term effects have been identified for COL11, COL15 for the climate objective (5.1) to "*reduce embodied carbon emissions*", largely due to the total embodied carbon from construction, which is estimated to be over 2,000 tCO_2 equivalent for each option.
- Option COL9 has the potential for moderate negative short-term effects in relation to the landscape objective (7) to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*" regarding potential effects on visual amenity. These identified effects relate to the requirement for excavation related site works for the three options.

Long-Term Effects:

- Option COL2 was identified as having potentially moderate positive long-term effect for the water objective (2.3) *"deliver reliable and resilient water supplies"* due to an anticipated significant increase in water yield once operational.

- Potential moderate, negative, long-term effects were identified across four SEA objectives including biodiversity objective (1.1) *"protect and enhance designated and non-designated ecological sites"* for option COL2. This is due to the potential significant effects that increased abstraction may have on groundwater levels as well as hydrological connections to designated sites, meaning there is potential for long-term effects through pollution and changes in water levels as a result of this option. In respect of biodiversity objective (1.2) *"protect and conserve biodiversity, including priority species, vulnerable habitats and habitat connectivity"*, effects are due to the additional abstraction of 15Ml/d from the River Camel SAC, which is a classified GWDTE. This reduction in water flow therefore has the potential for adverse effects on the designated site.
- Climate objective (5.1) *"reduce embodied and operational carbon emissions"* was also identified as having the potential moderate negative long-term effects for options COL2 due to the carbon emissions generated by the options in the operational phase.
- Finally, potential moderate negative long-term effects were identified for COL2, and COL15 for the water objective (2.1) *"protect and enhance the quality of the water environment and water resources"* due to the increased abstraction resulting in potentially long-term deterioration of the water quality caused by reduced flows.

6.5.3 SEA summary: Wimbleball

Short-Term Effects:

- Potential moderate negative short-term effects have been identified for WIM7 for the climate objective (5.1) to "*reduce embodied carbon emissions*", largely due to the total embodied carbon from construction which is estimated to be over 2,000 tCO_2 equivalent for each option.
- Option WIM5 has the potential for moderate negative short-term effects across two SEA objectives including landscape objective (7) to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*" regarding potential effects on visual amenity. These identified effects relate to the requirement for excavation related site works for the three options. In respect to material assets objective (9.2) *"avoid negative effects on built assets and infrastructure",* this was due to the proposed works intersecting minor and major roads and excavation works likely to be required.

Long-Term Effects:

- There were no long-term major or moderate effects identified for the Wimbleball WRZ as part of the Best Value Plan.

6.5.4 SEA summary: Bournemouth

Short-Term Effects:

- Option BNW6 was identified to have potential for moderate, positive, short-term effects in relation to the population and health objective (8.1) to "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". These effects were attributed to the significant capital cost predicted, leading to benefits in the local economy during construction including job creation and working with local suppliers to source materials.
- Option BNW11 was identified for moderate, negative, short-term effects across five SEA objective. This includes two biodiversity objectives (1.1) "*protect and enhance designated and non-designated ecological sites*" which was attributed to outfall points being constructed within designated and non-designated sites, as well as objective (1.2) "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". These potential negative effects are due to the anticipated loss of habitats from clearance for construction of the options.
- Potential moderate, negative, short-term effects have been identified for BNW11 in relation to the historic environment objective (6) to "*conserve, protect and enhance the historic environment, including archaeology*" regarding the potential for this option to affect the setting of, or prevent access to listed buildings and scheduled monuments, as well as the potential effect on below-ground remains. Further moderate, negative, short-term effects in relation BNW11 in relation to the landscape objective (7) to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*" have been identified due to effects on visual amenity. These identified effects relate to the requirement for excavation related site works for the three options.
- Finally, potential moderate, negative, short-term effects have been identified for BNW11 for the climate objective (5.1) to "*reduce embodied carbon emissions*", largely due to the total embodied carbon from construction which is estimated to be over 2,000 tCO_2 equivalent this option.

Long-Term Effects:

- Options BNW6, BNW11 were identified as having potential moderate, positive, long-term effects for the water objective (2.3) *"deliver reliable and resilient water supplies"* due to an anticipated significant increase in water yield once operational.
- Potential moderate, negative, long-term effects were identified for the biodiversity objective (1.1) *"protect and enhance designated and non-designated ecological sites"* for options BNW1. This is due to the potential significant effects that increased abstraction may have on groundwater levels as well as the current location of discharge being unknown, resulting in it not being possible to rule out significant effects for this option.
- Potential moderate, negative, long-term effects were identified for BNW6 in relation to biodiversity objective (1.3) *"reduce the spread or presence of INNS"* due to the transfer of untreated water from Matchams site to Longham during the operation of this option.

6.5.5 SEA Summary: Demand Options:

There were no major or moderate short-term or long-term effects identified for demand options within the Best Value Plan.

7 Our adaptive strategy

We have evolved our preferred 'most-likely' plan based on the most-likely future into an adaptive plan based on future uncertainties. We have used our insights from our Drought 2022 and Ofwat guidance, to inform the size and scale of sensitivity tests. Our decision-making approach is described in Chapter 10.

We have considered the following uncertainties individually and in combination:

- **Climate change**; low and high climate change.
- **Levels of possible abstraction reductions**: these scenarios have ranged from only legally agreed licence reductions to low and high Environmental Destination.
- **Differing demand / per capita consumption:** varying degrees of higher demand as observed in Drought 2022. Our most extreme scenario has used a demand of 6% greater than that observed in our Drought 2022 (equivalent to a 15% increase in population in 2025 – we have referred to this as 'high, high, high').
- **Technology innovation:** smart metering occurs 10 years later than assumed (2045), smart networks including leakage and innovation occurs 5 years later (2040)

We have also developed an Ofwat core pathway. Our Ofwat Core pathway sets out the investment needed in each WRZ for options that are required across multiple scenarios to meet short-term needs, enable future options and therefore are our 'low regret' options across the 25-year planning period.

The following section discusses our best-value adaptive plan and our Ofwat core pathway. [15]

7.1 Background

In Chapter 10, we showed how we developed our best value plan in a way that enabled us to create and decide on several pathways, or potential future decisions, ensuring that we have flexibility in our planning to meet the needs of our customers and respond appropriately to changing factors in the future (e.g., climate change, population change or changes in available water for abstraction).

It is important that we plan for different eventualities, develop suitable metrics to help us track our plans and then, when decision points are reached, act in a timely manner to engage with customers and stakeholders to make the right decisions. For example, some of our adverse scenarios require us to decide when or if we implement strategic resource investments and, when that happens, we need to ensure the cost of our plan is efficient without risking the security of supply to customers.

To develop our adaptive plan, we used the scenarios and sensitivity testing in Chapter 10.

Forecasting supply demand balances over a 25-year planning period contains inherent uncertainty, so it was important that we tested our preferred investment programme and identified potential decision points where we might need to adapt our plan. We have already built our plan on readiness for adverse situations, but the current drought has shown that we need to apply more scenario tests and be ready to adapt as part of our responsibility to our customers.

Our adaptive pathways have decision points and trigger points:

- **Decision points** are points along our pathway where our forecasting indicates we need to evaluate our situation very closely and make critical choices about whether we need to adapt our plan.
- **Trigger points:** are points where we need to react to a negative impact and implement a specific solution to address a supply demand balance risk.

Decision points are well in advance of trigger points to make sure we have time to implement any required solutions in time for the trigger points, which are reacting to negative impacts on our supply demand balance when we plan for 1 in 500 resilience. Many of the trigger points in our adaptive plan are linked to supply-demand issues when environmental destination abstraction reductions reduce the amount of water we have available for supply.

We tested our plans at WRZ level because each resource zone has different supply and demand characteristics. We used the outcomes of the testing to form our adaptive plans for each zone.

The scenarios tests which underpin our adaptive plan explore the uncertainty associated with an unknown future with multiple possible pathways. This is different from the uncertainty we capture in target headroom (see Chapter 7.2) which reflects the uncertainty in how we calculate the supply-demand balance in any given year.

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[15] Our least cost plan is discussed and compared in Chapter 10 against our best-value recommended plan.

Our demand-side interventions are already ambitious, with a significant metering programme and a continuation of current leakage reduction targets. Achievement of our per capita consumption (PCC) targets relies on delivering our metering programme, support from the government from changes to policy and water-labelling and delivering sustainable behavioural change on consumption from our customers. We are therefore assuming that to resolve any additional deficit in our supply-demand balance will require investment in further supply options. This assumption forms the basis of our adaptive strategy, in identifying additional supply-side options that can be introduced to mitigate more extreme futures or, alternatively, will not be required in more benign futures.

The following section discusses both our best-value adaptive strategy and the Ofwat core pathway for each water resource zone.

The production of the dWRMP also coincides with a heightened level of activity with regards to progression of new water supply schemes and evolving work to understand post covid demand levels. These are immediate triggers for change and the scenarios set out below also help us to understand how changes in 2023 could impact on our longer-term plans.

7.2 Bournemouth WRZ: Adaptive strategy

7.2.1 Bournemouth best-value adaptive

Our best value plan in Bournemouth uses all our available supply options in a balanced programme to provide optimum resilience. The diagram below sets out our adaptive strategy for the Bournemouth WRZ.

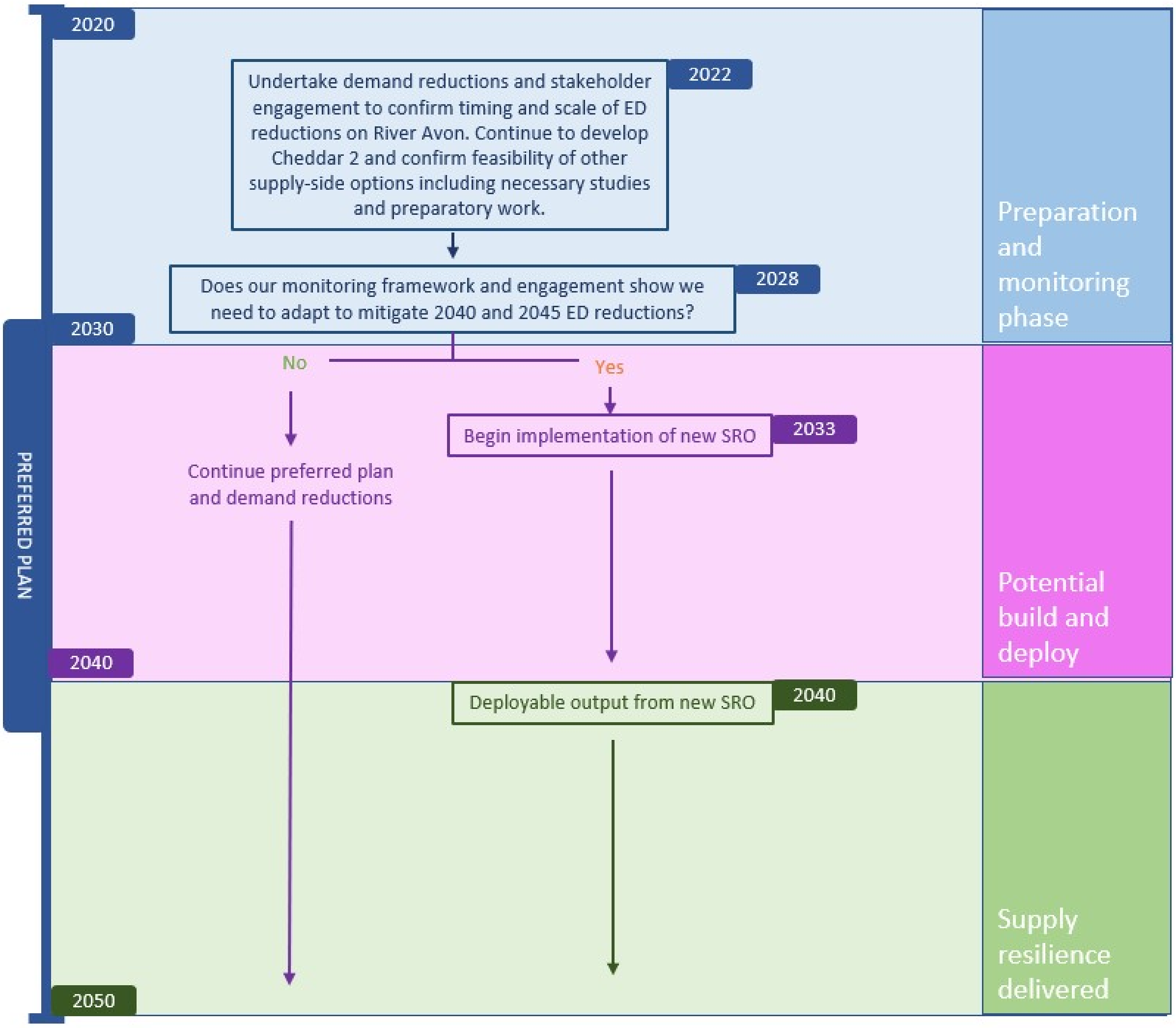

Figure 19: Adaptive Strategy for Bournemouth WRZ.

Analysis of our more extreme demand and climate-change scenarios shows that our plan could fall into a supply-demand deficit between 2040 and 2045. To address this potential deficit, we must continue to develop further supply options to support our Bournemouth zone, including investigations into Cheddar 2, throughout AMP8. In parallel, we must investigate what level of abstraction reductions on the River Avon are needed to deliver a sustainable Environmental Destination. The large level of potential abstraction reduction to benefit < 1km of river stretch requires further scrutiny. Without this significant reduction, the zone would remain in supply surplus for the 25-year planning period. We currently do not have a fully developed cost-effective scheme that would address the future deficit identified in 2040 onwards and must work with the Regional Plan to understand our wider options.

To manage this future uncertainty, we have identified the following decisions and trigger points.

- **Decision point: 2028.** Do we have a forecast deficit in our supply-demand balance due to the combination between our demand, climate change and required abstraction reductions on the River Avon.
- **Trigger point 2033:** Implementation of BNW7: Cheddar 2 SRO or other alternative supply options (if other options found to be feasible) to mitigate supply-demand deficit in 2040 – 2045. This trigger point mandates activity in the short term to progress Cheddar 2 to be implementation ready.

7.2.2 Bournemouth core pathway

In producing our core pathway, we have generated a plan reflecting 'benign' conditions as defined by the Ofwat reference scenarios. The 'low' Ofwat abstraction scenario only requires consideration of legally binding abstraction reductions.

Our Bournemouth WRZ is significantly impacted by these future possible abstraction reductions, with over 100 Ml/d reductions being suggested as required in the lower reaches of the River Avon.

Without the proposed environment destination targets on the River Avon[16], we would remain in a surplus despite planning for 1-in-500 resilience, so all our supply options become a potential adaptive pathway that we might not need to implement until formal agreement on the River Avon is made.

This means our Bournemouth core pathway is potentially very different in AMP8 to our best value plan but without legal agreement on the River Avon abstraction reductions, the Ofwat reference scenario testing requires us to present this alternative circumstance.

We would continue to deliver our leakage and PCC reduction programmes in Bournemouth as part of our company's performance commitments.

[16] Our best value plan assumes that we would introduce this reduction gradually in 2030, 2035, 2040 and 2045

7.3 Colliford WRZ: Adaptive Strategy

7.3.1 Colliford Best Value Adaptive

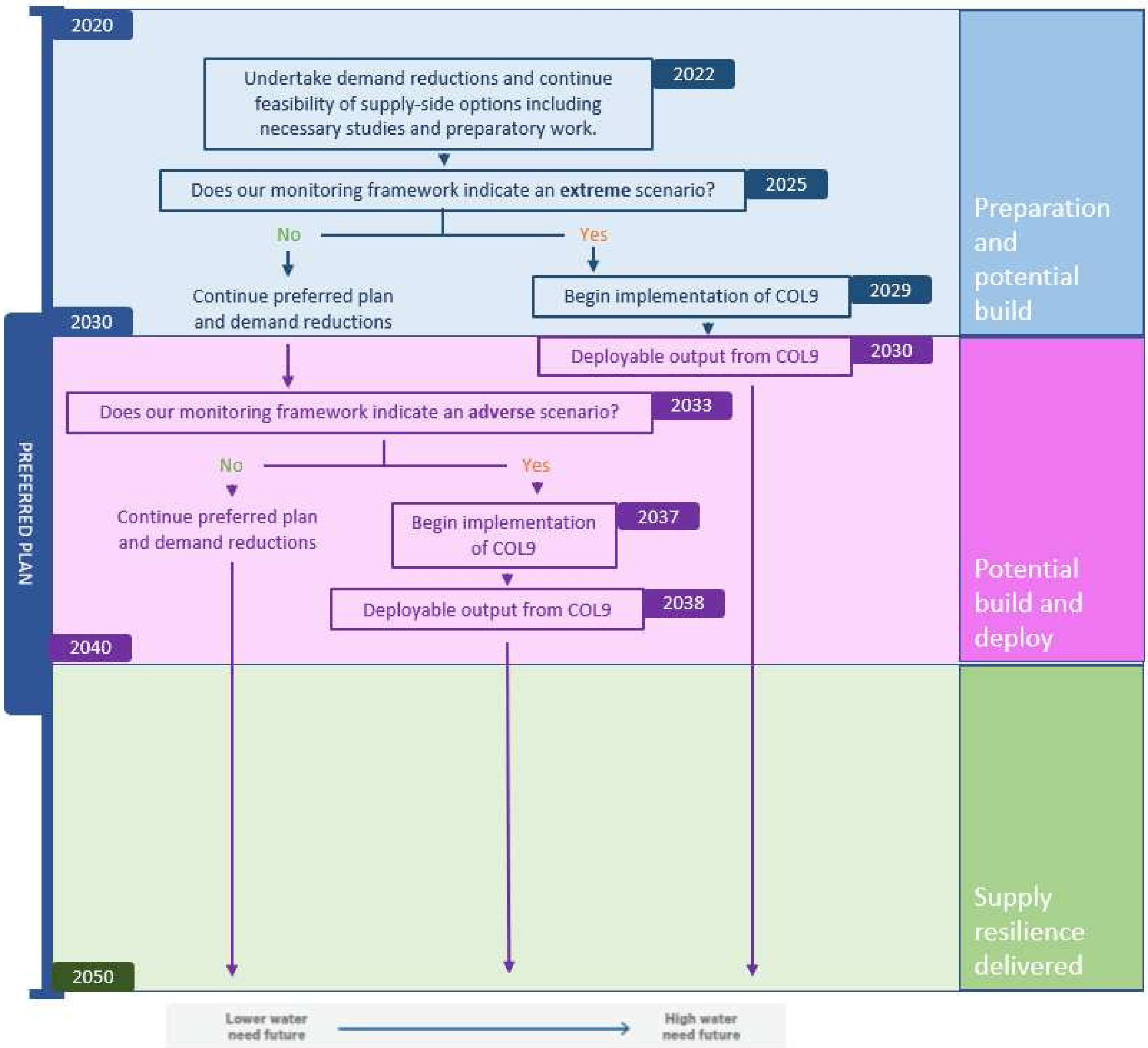

Figure 20: Adaptive strategy for Colliford WRZ

In Colliford WRZ, our best value plan will deliver significant investment in AMP8 that provides resilience throughout our 25-year planning period. Our sensitivity testing and scenarios in a more extreme future identify that there could be a shortfall as early as 2025. There are two potential adaptive pathways which would require the implementation of other supply-side options at differing times in AMP8 or AMP9.

A review of our 2025 outturn may identify the need to develop additional schemes for implementation in AMP8 or alternatively for design during AMP9 for implementation in early AMP10. This means we must continue to develop other supply options during AMP7 to mitigate this risk and have an implementation-ready scheme in the case that Porth and Stannon are not implemented in AMP7.

To manage this future uncertainty, we have identified the following decisions and trigger points:

- **Decision point: 2025.** Do we have a forecast deficit in our supply-demand balance due to not delivering the Porth and Stannon schemes in AMP7 and/or as a result of the impacts of climate change and demand?
- **Trigger point: 2027.** Implementation of COL9: Leswidden Pool or other supply-options: We have inserted an earlier trigger point to ensure the preferred additional supply option provides deployable output by 2030.
- **Decision point: 2033.** Do we have a forecast deficit in our supply-demand balance due the abstraction reductions becoming legally binding by 2038 and more extreme climate change and demand?

- **Trigger point: 2037**. The same additional supply-side schemes would be implemented but 10 years later, on this alternative pathway.

7.3.2 Colliford Core Pathway

Appraising our core pathway in Colliford WRZ against the benign reference scenarios has shown that we will follow the same programme as our best value plan in AMP8, then we would not need to consider any further supply options or adaptive points. One of the reasons we wouldn't have to consider further options is because the reference scenarios ask us to consider only legally binding abstraction reductions. In Colliford these abstraction reductions occur later in the plan and, without them as a consideration, we would only need to follow our best-value programme in AMP8 to provide resilience across the 25-year planning period.

7.4 Roadford WRZ: Adaptive strategy

7.4.1 Roadford best value adaptive

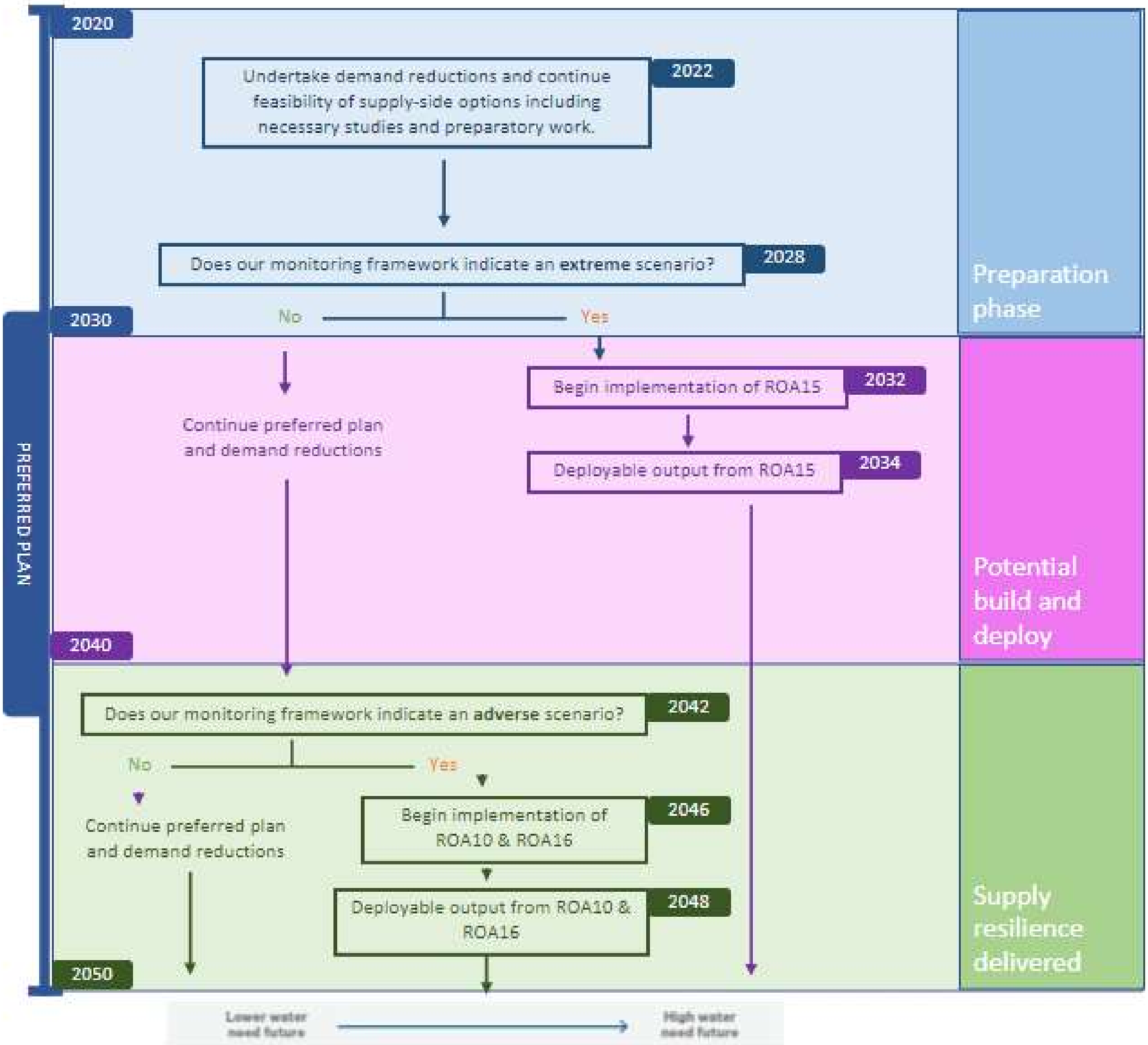

Figure 21: Adaptive strategy for Roadford WRZ

Our best value plan in Roadford implements a significant supply-side option at the start of AMP8 which provides a robust path through to 2050, allowing for 1 in 500 resilience. However, our scenario testing has shown we potentially have to make two adaptive decisions, one at the start and one at the end of the 25-year planning period.

Our adaptive planning has shown there is a possible shortfall in 2033.

During AMP7, we must investigate what level of abstraction reductions are needed on the River Dart and River Tavy to deliver sustainable environmental abstractions. The most extreme scenario would require studies and investigation work on ROA15: 'Gatherley 2', to inform PR29 / WRMP29, with an implementation date in early AMP9.

A less-extreme future may require the development of ROA10: 'Avon WTW' and ROA16: 'Littlehempston WTW' upgrade (or equivalent alternatives) in AMP11 (2040 onwards), with implementation completed in early AMP12.

To manage this future uncertainty, we have identified the following decisions and trigger points.

- **Decision point: 2028.** Are we seeing adverse climate change or demand impacts emerging?
- **Trigger point: 2032:** Implementation of ROA15: Gatherley 2, to deliver deployable output in 2034.
- **Decision point: 2042.** Are we seeing adverse climate change, demand impacts emerging in combination with the environment destination in 2048?
- **Trigger point: 2046:** Implementation of ROA10 and ROA16 (or alternatives) by 2048.

7.4.2 Roadford Core Pathway

Like our core pathway in Colliford WRZ, when we derive our core pathway for Roadford WRZ using the benign reference scenarios, we will follow the same programme as our best value plan in AMP8 and then we would not need to consider any further supply options or adaptive points. Only considering legally binding ED abstraction reductions, we would only need to follow our best-value programme in AMP8 to provide resilience across the 25-year planning period.

7.5 Wimbleball WRZ: Adaptive strategy

7.5.1 Wimbleball Best Value Adaptive

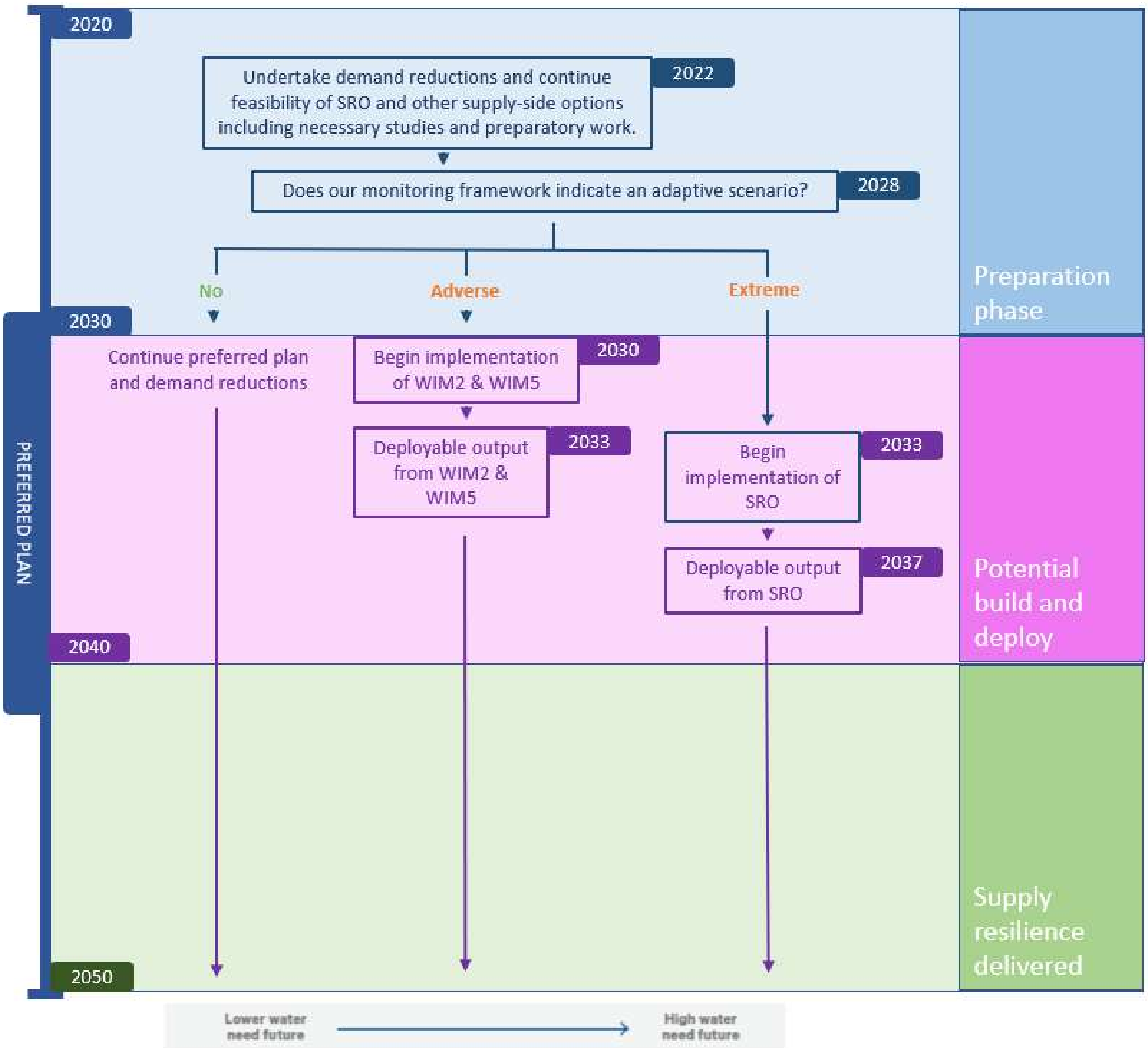

Figure 22: Adaptive strategy for Wimbleball WRZ

Scenario testing has shown Wimbleball WRZ to be particularly sensitive to climate change impacting either supply or demand despite our substantial investment in supply options in AMP8. Our adaptive planning has shown there is a possible shortfall in 2033, with another larger shortfall in AMP11 (2037) associated with uncertainties on environmental destination abstraction reductions. This would require studies and investigation work on WIM2: 'Sid Valley Groundwater' & WIM5: 'Dotton WTW indirect potable reuse' in AMP8, with construction in early AMP9. To address the potential deficit, we must continue to develop further supply options to support Wimbleball, including investigations into the SROs during early AMP7 and understand how these could support water availability across the West Country Region.

To manage this future uncertainty, we have identified the following decisions and trigger points.

- **Decision point: 2028.** Are we seeing either an adverse or extreme climate change impact on the WRZ?
- **Trigger point: 2030:** Implementation of WIM2 and WIM 5 to deliver deployable output in 2033.

- **Trigger point: 2033:** Implementation of a combination of the proposed SROs[17], with deployable output available by 2037.

7.5.2 Wimbleball Core Pathway

Our core pathway in Wimbleball WRZ is comparable to the pathway in our other WRZs. Generating the core pathway in Wimbleball, using the benign reference scenarios, we will follow the same programme as our best value plan in AMP8, and then we would not need to consider any further supply options or adaptive points. Only considering legally binding ED abstraction reductions, we would only need to follow our best-value programme in AMP8 to provide resilience across the 25-year planning period.

7.6 Company-level adaptive summary

Our adaptive strategy has identified the possible need for a further 6 local supply-side options to be implemented during AMP9 onwards. We must also assess how all three strategic resource options, with their necessary network reinforcements, can make sufficient water available through our Regional Plan. Wimbleball and Bournemouth are zones that, in the most extreme futures, will require support from water sources beyond their local area.

Our best value plan in AMP8 (see Section 2.1.1) includes funding to continue to identify and develop a full portfolio of local supply options so that we have implementation-ready options available to adapt. This will also require continued support to develop the strategic resource options as part of Regional Plan.

Option ID	Title	WAFU benefit Ml/d	Totex – implementation costs
COL9[18]	New source: Leswidden Pool	2.5	£4.9m
ROA10	WTW output change: Reduce Avon minimum capacities	1	£0.9m
ROA15	New source increased output: Gatherley Phase 2	20	£42.6m
ROA16	WTW output change: Littlehempston WTW increased capacity	6	£3.2m
WIM 2	New source: Sidford borehole	1.5	£17.9m
WIM 5	New source: Effluent reuse - stream support for Dotton WTW	2.0	£4.1m
BNW17	Cheddar 2 Strategic Resource Option	14.0	Circa £650m [19]

Table 17: Possible future supply options being considered in the adaptive strategy

7.6.1 AMP8

As a result of our scenario testing and adaptive planning, we have identified that we will have key decisions to make In AMP8 for each resource zone.

In Bournemouth, we will have engagement and liaison with key stakeholders to understand and finalise the future ED reductions. The outcomes of these discussions will shape which strategic resource options are required over the 25-year planning period. We need to do this in AMP8 so that, if any of these SROs are determined as needed, we have enough time to initiate studies and other preparatory work and incorporate investment requirements into WRMP29.

[17] Cheddar 2, or other Regional Planning options made feasible through the Regional Model – enabling us to assess the ability to move water around the region more effectively.

[18] Other options will also be considered.

[19] This is an order-of-magnitude cost to transport the water from to the Bournemouth WRZ; other options have not yet been assessed and will be assessed through the Regional Plan.

We will need to use the monitoring plan set out below in Table 16 to help us understand whether we follow our best value plan in AMP8 or if we need to adapt in our other resource zones.

In Colliford WRZ, we need to review our position in 2025 and, if the monitoring metrics indicate that we are experiencing our extreme scenario, we will need the additional supply option (COL9) in AMP8. Therefore, we will undertake studies and assessment with the aim of meeting our build trigger point in 2029.

For Roadford WRZ, our extreme scenario would require preparatory work for a significant supply option (ROA15), which we would need to implement at our trigger point in 2032. In AMP8, we would need to undertake studies and assessments if the monitoring metrics show we need to adapt our plan.

In Wimbleball WRZ, if the monitoring metrics show we are experiencing adverse scenarios, we will need to decide in AMP8 if we will need two supply options in AMP9, WIM2 and WIM5. If they are needed, we would undertake studies and assessments in AMP8 ready to start both builds in 2030. If the metrics show that we may be facing an extreme scenario, we will need to consider in AMP8 if we need a strategic resource option in AMP9, and we would need to explore options, engage stakeholders, and undertake studies in AMP8 to begin building in AMP9.

All the AMP8 decisions would need to be taken in time for the outcomes to be incorporated into our WRMP29.

During AMP8, we will continue to study and evaluate potential supply options, undertaking assessments to expand our options should we need to adapt into the planning period.

We will need to consider an appropriate funding mechanism for each decision/trigger point via the relevant periodic review.

7.6.2 Beyond AMP8

Our decisions later in our planning period depend on how our pathways develop (e.g., in relation to climate change or demand) and especially on how adverse situations effect our ED abstraction reduction mitigation.

We will use our monitoring framework throughout our planning period and with our continual preparatory work on supply options, we will be able to evaluate our adaptive options if we need to change our plan.

We will have SRO decisions to consider in Bournemouth and Wimbleball WRZs which will require engagement with stakeholders and form part of our longer-term regional planning. In Colliford, Roadford and Wimbleball WRZs, if we need to adapt our plan in response to environmental destination abstraction reductions, we will assess the need at that point and select the most cost-efficient solution from the portfolio we will develop from AMP8 onwards.

7.7 Monitoring Plan

The following table summarises how we will monitor and track the key uncertainties identified within our adaptive strategy:

Component of the plan	Type of uncertainty under assessment	Tracking activities and assessments	Decision timing and how it will be incorporated within the plan
Demand side	Population growth	Annual update of growth forecasts through the WRMP cycle to inform AMP8 and WRMP29. Review the impact of COVID-19 on recent increases in demand for the rest of AMP7 to track the impact of the pandemic on demand. Engage industry experts to further understand non-resident population impacts on the South-West going forward.	We will use the growth forecasts to review our high/medium/low profiles annually and determine which scenario and pathway we should follow in AMP8 and use for WRMP29 planning. We will analyse the annual impacts of COVID-19 throughout AMP7 to determine which scenario and pathway we should follow in AMP8 and use for WRMP29 planning. Better understanding the significance, behaviour, and seasonality of non-residents during AMP7 will inform our planning into WRMP29.
	Demand-side benefits realisation	Monitor the success of demand management interventions through Annual Return data, specifically leakage, PCC reductions and changes in non-household consumption. Additionally, six monthly water balance calculations will be undertaken to provide a mid-year position. Carry out monthly reviews of distribution input at company and WRZ level and reconcile where possible to constituent activities to identify and understand risks at a component level.	We will use our Annual Return data to inform our understanding of which pathway our programme is matching. Our six-monthly water balances will indicate whether we are going to meet our targets. We will report back through our annual WRMP review and provide an assessment of whether supply-side interventions need to be re-scheduled to maintain resilience. This will guide our delivery programmes and inform our WRMP29 plan. Regular review and reconciliation of distribution input will give a proactive view of in-year performance and allow us to adapt our activities to maintain performance. It will also identify any anomalous situations that might require we review our plans more regularly and react. This will also be used to inform our WRMP29 plan.
	Policy and support for water efficiency	Engage with stakeholders and policy makers on government support for water efficiency activities such as water labelling, targets on new housing developments and innovations such as rainwater harvesting.	Our engagement will inform us year on year whether our best value plan assumptions are aligned to government support or progress in implementing schemes. It will indicate which pathway the plan is tracking and what is appropriate for our long-term planning in WRMP29.

Component of the plan	Type of uncertainty under assessment	Tracking activities and assessments	Decision timing and how it will be incorporated within the plan
Supply side	Environmental destination	Undertake an evidence-based engagement of WINEP to inform the longer-term environmental destination programme. This will include studies and assessments of environmental flow impacts to determine reductions in abstraction based on planned AMP8 and beyond WINEP plans.	We will use the engagement and studies to update our environmental destination forecasts for WRMP29. This will inform us whether our planned schemes to mitigate abstraction reductions are adequate or required and allow us to make sure we align our supply options identified in WRMP29 to the timing of WINEP.
	Climate change impacts our security of supply	Update and refine our modelling of RCP8.5 climate change impacts on supply every year to ensure we capture the effect of the recent more extreme years, such as 2018 and 2022. Monitor and engage with stakeholders to review key environmental indicators, such as river levels, for climate change impacts and work with those stakeholders to understand implications for our water resource planning.	We will use the updated modelling to ensure our forecasts of climate change impact and our vulnerability assessments are current for WRMP29. Monitoring the environmental indicators will guide us on whether we are following our forecast path or need to adapt. This will inform our planning in WRMP29.
	Strategic resource options	Our plan considers strategic supply options for our Bournemouth and Wimbleball WRZs. Due to the size of investment, amount of assessment, lead and build times involved we will need to consider the requirement for these options in AMP8 to enable construction to being in AMP9.	We have clear decision points in AMP8 as part of our adaptive plan. We will use these to consider our pathway, engage with stakeholders, undertake environmental assessments, and decide if the strategic resource options are a necessary balance between investment, environmental considerations and the impact on customers. If the decision is made to undertake the supply option we have clear trigger points in our adaptive plan and the outputs of our preparatory work will feed into our WRMP29 plan.
	Local supply-side interventions	We have adaptive supply options in our Colliford, Roadford and Wimbleball WRZs, but further environmental studies and engineering design work is required to confirm water available for use (WAFU), cost and feasibility. There is still some uncertainty on which schemes will ultimately provide best value for implementation in these more extreme futures.	We will undertake studies and assessments for COL9, ROA15 and WIM5 and continue to develop a wider range of supply options to ensure we have implementation-ready schemes (in AMP7 and early AMP8) to make sure we are ready for the potential decision points in AMP8. We then have clear trigger points for implementation based on our current understanding of lead and build times. We will undertake studies and assessments for adaptive options later in the plan at the clear decision points stated which allow for appropriate preparatory work in advance of build trigger points.

Table 18: Monitoring Plan

8 Summary of Recommended Plan targets

	Up to 2030	Up to 2050
Leakage	Reduce leakage by 15% from the 2024/25 forecast position.	50% lower than 2017/18 levels by 2050; this is equivalent to a leakage level of 64.25 Ml/d in 2050 based on a 2024/25 forecast level of 98.4 Ml/d.
PCC	Reduce normal year per capita consumption (PCC) to 144.5 l/person/day by 2030 (dry year).	Reduce the average consumption to 110 l/person/day by 2050 through smart metering, customer feedback, and targeted water efficiency measures supported by government interventions.
Metering	An additional 77,000 new household customers will be metered; a total of 166,000 meters will be installed or existing meters replaced with smart meters. Through compulsory metering in Bournemouth and continuing our meter optant strategy in other regions we will increase meter penetration to 87.53% by 2030. Bournemouth Water is forecast to reach 90% in 2030.	An additional c. 245,000 new household customers will be metered, and we will achieve full smart-meter penetration in Bournemouth, and close to 90% smart-meter penetration across the company in the 2030s.
Drought resilience		Resilient to 1 in 500 year drought by the end of 2039, without the use of exceptional demand restrictions such as Emergency Drought Orders.
Environmental and Engineering Studies	We will continue to expand our engagement with other sectors looking to build on our 'thousand ponds' initiative and work with the agri-food sector to co-create and co-deliver. Engage with our wider stakeholders and identify opportunities for nature-based solutions, catchment-based solutions, water-reuse opportunities, and third-party water options to support decarbonisation and biodiversity net gain. Develop new demand and supply options to ensure we can maintain the supply demand balance in a way that maximises societal and environmental benefit. Continue to support strategic resource options Support the development of regional modelling tools to allow an optimised regional supply strategy to be developed. Undertake several studies to support a better understanding of the abstractions that feature in our environmental destination plan, and the actions that can be taken to ensure the environmental water needs of the waterbodies are met.	

Table 19: Summary of Recommended Plan Targets

9 Next steps: by Statement of Response

The following section summarises some of the key areas that we will continue to refine prior to submission of our Statement of Response. We will actively engage with all stakeholders around the published draft plan seeking to work with them in co-creating our final approach.

Current position for draft plan	Next steps for revised draft plan at Statement of Response.
Our current approach to assessing our 1 in 500 year design drought event is our first DO assessment using stochastic datasets and rainfall runoff models.	We will continue to refine our approach and make best use of the available evidence for areas including climate change and rainfall run-off models. We will assess droughts with durations that are different from our current critical drought duration analysis.
Insights from Drought 2022 **We have an understanding that increased demand, high temperatures and low rainfall caused the lack of supply in our region.**	We will continue to review the ongoing impacts of the exceptionally low rainfall on our multiyear reservoir systems. Population and demand studies are ongoing to confirm our final 'post covid demand figure'
There are uncertainties around our baseline position for demand and drought-options, we have tested these uncertainties as part of our adaptive plan.	We will update our baseline position for supply and demand. We have prepared 3 additional higher demand scenarios increasing from our baseline to levels well above those seen in 2022. Ongoing studies and engagement with stakeholders allow us to confirm an agreed 'post covid demand figure' which will form the basis of our final plan. We will also review which drought and resilience options can be included in our baseline. If schemes are built/licenced in 2023, they would move into our base plan. The role of desalination will also be re assessed.
Supply options. We have undertaken engineering feasibility work, together with environmental screening to identify feasible schemes.	We are undertaking further engineering and studies that will explore and improve the design for each supply option and refine our understanding of WAFU, environmental considerations, greenhouse gas emissions and costs.
Demand-side options: Developing more feasible options and expanding our scenario analysis	We will be reviewing our metering data and insight from our response to drought, and the impact on customer supply pipe subsidies on reducing leakage and introduce further demand options where we can evidence the benefits these bring. We will finalise our metering strategy, including our non-household strategy, to provide a comprehensive set of costs and benefits for our PR24 plan. We are undertaking a study with agriculture and wider businesses to look at a wide variety of demand-management options. (Chapter 9). We will be looking at carrying out further scenarios and sensitivity tests to understand the impacts of climate change, technology, and other variables on the optimum demand-management options.
Strategic Environmental Assessment	Refine our programme level assessment to include all adaptive pathways; further improve the narrative on natural capital methodology (qualitative and quantitative approach)

Current position for draft plan	Next steps for revised draft plan at Statement of Response.
Isles of Scilly: Developed our plan based on indicative business decision to meet AMP7 DWI requirements	Our revised draft plan will be based on a confirmed Board Decision on our AMP7 water treatment solution, which may change our overall view of the supply-demand position. Further work on leakage, metering and demand-side options across the islands will be completed. Timescales for establishing monitoring and measurement of key performance metrics.
Cheddar 2: Indicative solution has been developed showing how the water could support the Bournemouth Region	Further options will be investigated between now and the Final Regional Plan, looking at how the Cheddar 2 water could be 'moved-around' across the region to support Wimbleball and Bournemouth WRZs.
Environmental Destination	We plan to further investigate the expected impacts of Environmental Destination for our sources. Our assessment for our final WRMP will test the environmental destination scenarios across a wider range of design drought conditions. We will also derive separate WRZ assessments to demonstrate the programme costs and benefits directly resulting from Environmental Destination for all of our WRZs.
Adaptive strategy/ Adaptive planning has been developed using our best value tool based on best available information on available options.	Continue to evolve our adaptive strategy; assess alternative programmes with stakeholders where relevant[20] as we better understand the feasibility of our supply options and develop a more detailed delivery timescale. Refine our best-value methodology and test the sensitivity our investment programme to the assumptions we have made on metrics and their weights.

Refresh of Drought Plan: Considering the extremely dry weather that we experienced in 2022, we will review our Drought Plan and prepare and publish a revised plan following engagement with the Environment Agency and re-consultation if material changes are identified. This will reflect the completion of our environmental assessment (HRA) work and response on the Lower Avon for the Bournemouth region and will include appropriate updates to reflect other material changes that are the result of taking actions to address the drought affecting Devon and Cornwall this summer. Given the multi-year impacts of the current drought it is envisaged that we will begin consultation on a review of our drought plan in Autumn 2023 (after submission of our final WRMP).

[20] Examples may include "Best for environment and society", "lowest carbon"

South West Water

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