

Technical Report

# Draft Water Resources Management Plan

October 2023



# CONTENTS

<b>1 INTRODUCTION</b>	<b>16</b>
1.1 Water resources management	16
1.2 This document: our revised draft WRMP	17
1.3 Creating our dWRMP	18
1.4 Governance	22
<b>2 OUR PLANNING APPROACH</b>	<b>24</b>
2.1 Water Resource Zone descriptions	25
2.2 WRZ integrity	31
2.3 Planning assumptions	32
2.4 Problem characterisation	34
2.5 Drought Vulnerability Assessment	35
2.6 Levels of resilience (service)	36
<b>3 SETTING THE SCENE FOR WRMP</b>	<b>38</b>
3.1 Changes since WRMP19	38
3.2 Additional investment in AMP7 (2020-25)	39
3.3 Challenges we face 2025-2050	42
3.4 Regional Planning	47
3.5 Customer and stakeholder engagement	51
3.6 Changes resulting from the dWRMP24 consultation	58
3.7 Links to other plans	61
<b>4 DEMAND FORECAST</b>	<b>63</b>
4.1 Our approach to forecasting demand	63
4.2 Base year demand	64
4.3 Property and population forecasting	66
4.4 Forecasting water consumption	68
4.5 Leakage	71
4.6 Other components of demand	71
4.7 Distribution input	72
<b>5 SUPPLY FORECAST</b>	<b>73</b>
5.1 Water resource updates since WRMP19	73
5.2 Developing our baseline supply forecast	76
5.3 Baseline deployable output (DO)	76
5.4 Our role in achieving sustainable abstraction	79
5.5 Forecasting the impacts of climate change	85
5.6 Bulk imports and exports - water transfers	86
5.7 Raw water and process losses	86
5.8 Outage	87
5.9 Water available for use	88
5.10 Drinking water quality and protected areas	88

<b>6 OUR SUPPLY-DEMAND BASELINE</b>	<b>89</b>
6.1 Target headroom: allowing for uncertainty	89
6.2 Comparison with WRMP19 forecast for 2024/25	91
6.3 Baseline supply-demand balance	95
<b>7 IDENTIFYING AND ASSESSING OPTIONS</b>	<b>102</b>
7.1 Unconstrained list of options	104
7.2 Selecting feasible options	105
7.3 Distribution management (leakage) options	111
7.4 Demand management options	112
7.5 Supply options	117
7.6 Resilience options	122
7.7 Feasible options assessment	126
7.8 Final constrained list of options	133
<b>8 OUR DECISION-MAKING PROCESS</b>	<b>135</b>
8.1 Overall decision-making approach	136
8.2 Key planning considerations	138
8.3 Objectives of our plan	142
8.4 Best value metrics	143
8.5 Decision-support tools	144
8.6 Defining our alternative programmes	145
8.7 Adaptive planning process	146
<b>9 OUR DEMAND MANAGEMENT PLAN</b>	<b>148</b>
9.1 Smart metering	148
9.2 Leakage	150
9.3 Water efficiency	151
<b>10 OUR WATER SUPPLY PLAN</b>	<b>161</b>
10.1 Least-cost plan	161
10.2 Preferred plan – Best Value Plan	161
10.3 Adaptive pathways	166
10.4 Review of our preferred plan	171
<b>11 NEXT STEPS</b>	<b>184</b>
11.1 Second public consultation and preparation of final plan	184
11.2 Annual review process	184
11.3 AMP8 Investigations	184
11.4 Our roadmap to WRMP29	185



# Executive Summary





## Overview

South West Water provides over 600 million litres of drinking water every day to meet the demand of 2.2 million people and 0.08 million businesses. Our supply area includes Bournemouth, Devon, Cornwall, the Isles of Scilly and parts of Dorset Hampshire, Wiltshire and Somerset. It is a unique part of England, encompassing historic towns and cities and beautiful coasts, rivers, and landscapes, including three national parks.

We are also responsible for the provision of drinking water services to over one million customers in the Bristol Water area. For information on Bristol Water's water resources please visit [Water Resources \(bristolwater.co.uk\)](https://www.bristolwater.co.uk).

We abstract water from environmentally rich catchments that include protected areas, such as the River Avon and Dartmoor. As a water company we have a duty to provide our customers with a safe and reliable supply of water. We also have a responsibility to protect the environment from which we take raw water to be treated and put into supply.

Our Water Resources Management Plan (WRMP) 2024 presents our best value plan for providing a sustainable and secure supply of water to our customers for the period from 2025 to 2050. It identifies the challenges we face and presents our long-term strategy for alleviating the risks and protecting the environment.

We revise our Water Resources Management Plan every five years to ensure it is based on the most up to date data and to reassess the risks. Our WRMP24 has identified more significant challenges than our previous plans. Climate change is an increasing risk to our supply resilience and, in 2022, we experienced the worst drought in our region for over 25 years. The environment is also sensitive to these risks, and we need to reduce abstractions to deliver a sustainable water supply that achieves ambitious outcomes for the environment.

Our WRMP is developed in combination with regional plans and our company plans and strategies for the environment, drought resilience and investment. Our plans are shaped by what our customers, stakeholders and regulators expect us to deliver, including the Government's 25 Year Environment Plan. We have built a plan to be sustainable for current and future generations and our WRMP24 plan is our most ambitious to date.

### Revised draft WRMP

Our WRMP24 is currently in draft stage, and this is our revised draft plan following a public consultation. We have listened to feedback on our plan and made changes to strengthen our commitments to our customers, stakeholders, and the environment.

In February 2023, we published our draft Water Resources Management Plan 2024 and held a 12-week consultation period until May 2023. We invited customers, regulators and other interested parties to comment on our plan. We listened to feedback and published a statement of response to the representations we received.

To incorporate the feedback, we made changes to our plan and produced this revised draft Water Resources Management Plan 2024.

### Changes since our WRMP19

Since our WRMP19 was produced there have been some significant changes to our forecasts. The supply-demand impacts driven by climate change, growth and environmental sustainability have increased and, without intervention, there is a greater risk of deficit in the future. Other changes are a result of recent events that have put additional pressure on our water resources and increased the near-term risk.

In line with the latest methodologies, we are planning for more extreme climate change projections based on the UKCP18 emissions and higher population growth incorporating local authority data for new developments. We are also planning for licence reductions that are greater in number and scale compared to our previous plan. Drought events are likely to be more frequent in the future and we must plan to a higher level of resilience than our system can currently provide.

In recent years we have experienced drought and the COVID-19 pandemic, which led to unprecedented high demands putting greater pressure on our resources and networks. We are now seeing a return to pre-COVID demand levels, but the legacy of the COVID-19 pandemic is that more people work from home than before, and water use continues to be higher than forecast in our WRMP19.

The South West is very popular amongst tourists and second homeowners and we experience exceptionally high summer demand in our region. This, coupled with high demand during hot weather, can mean some parts of our region experience a 50% demand increase during summer.

In the summer of 2022, the South West region experienced exceptionally low rainfall and record high temperatures. In the Roadford and Wimbleball areas the Met Office recorded the driest conditions in a 60-year period. The combination of supply and demand pressures resulted in a situation in our Colliford WRZ more extreme than the current WRMP19 1-in-200-year design condition.

During 2022, high demand and low rainfall triggered a temporary use (hose pipe) ban for the first time since 1995. However, we were able to continue meeting the demand for water without requiring further demand restrictions (a non-essential use ban).

In response to the drought, we increased our water efficiency initiatives and leakage reduction activity. We have a 'Green Recovery' scheme that has brought forward the delivery of smart metering in the Roadford area from 2025 to 2023. We are also investing in accelerated infrastructure initiatives to provide additional resilience in the Roadford and Colliford areas over the next two years and we plan to deliver desalination treatment plants to the Isles of Scilly.

Maintaining water supply to our customers is vital at all times and the recent drought has shown further investment is needed to ensure we have sufficient resources and infrastructure to meet peak demands. We are no longer in a position to close the future deficit with the measures included in our WRMP19 plan.



## Regional planning

Our WRMP has been developed in close collaboration with the West Country Water Resource Group (WCWRG) Regional Plan (see [WCWRG | Draft Regional Plan](#)). The Regional Plan considers opportunities for water transfer schemes across company boundaries to provide benefits to our customers and those of our neighbouring water companies. The WCWRG is developing three Strategic Resource Options all of which have potential to benefit our supply area.



## Water resource zones

For water resources planning, we divide our supply area into five water resource zones and assess the risks to each individual zone. The South West Water zones are Colliford, Roadford, Wimbleball, Isles of Scilly and Bournemouth.

The zones are defined by water supply connectivity and geographical boundaries. Customers in each zone receive the same level of service and are impacted by the same risks. Levels of service refer to drought actions and how frequently they are likely to be needed. Our WRMP24 plans to achieve resilience to 1 in 500 year drought events without the need for emergency drought actions in all water resource zones by 2040.

## Key challenges

### Future water supply

In the future, we will face longer, drier and hotter summers and more erratic rainfall. Our WRMP24 baseline supply forecast considers the risks during dry weather as this is when the supply-demand balance is most vulnerable.

To ensure we are resilient to low rainfall during extreme drought events, our WRMP24 baseline deployable output is based on a 1-in-500-year drought event, derived from stochastic datasets and rainfall runoff models.

Our forecasts for future water supply also incorporate climate change over the next 25 years. Across our five water resource zones it is estimated available supply will reduce by 14.5 ML/d by 2050.

## Environmental Destination

Rivers and reservoirs are the main sources of supply in our area, providing around 90% of our region's water resource needs. The remainder comes from groundwater sources predominantly located in East Devon, parts of Bournemouth and the Isles of Scilly.

Climate change and increasing demand for water not only impacts on water availability for public water supply, but also water availability for the environment. There is a risk our current abstractions are detrimental to the environment during dry weather and that watercourses will become more sensitive to abstractions over time.

The catchments we abstract from include internationally designated Special Areas of Conservation (SACs) which we have a statutory duty to protect from over-abstraction. The SACs in the SWW supply area are:

- River Camel (Colliford WRZ)
- Hampshire Avon (Bournemouth WRZ)
- Dartmoor SAC (Roadford WRZ)
- River Axe (Wimbleball WRZ – but limited impact)

We are also working with the Environment Agency to investigate the impacts of our abstractions in the ecological health of several other rivers in our supply area. We have a duty to mitigate any impacts on these rivers under the Water Framework Directive 2000 via the Water Industry National Environment Programme (WINEP) and several other drivers.

- River Fowey
- River Exe
- River Dart
- River Stour
- River Tavy
- River Otter

Where abstraction is causing, or is at risk of causing, serious damage to the water environment we must plan to reduce the volume of water we are permitted to take. For our WRMP24, we have worked with the Environment Agency to understand which of our sources of supply are vulnerable to abstraction and used this information to develop our 'Environmental Destination.'

We will need to significantly reduce the quantities of water taken from environmentally sensitive waterbodies in four of our five zones. In our baseline supply forecast the total impact on water available by 2050 will be up to 173 ML/d.

## Future demand for water

Population across our region is growing each year and by 2050 there could be up to 400,000 more people living and working in our region. The population growth will be predominantly across our Colliford, Roadford, Wimbleball and Bournemouth zones. The Isles of Scilly has a low potential for growth limited to one island, as it is a protected area with restrictions on development.

Growth is mostly in towns and cities and our existing network in these areas will be put under stress, especially during peak demands. As well as planning for sufficient water resources, we must ensure that we have sufficient treatment capacity and infrastructure to transport the water to our customers.



## Supply-demand balance

Our WRMP forecasts changes to supply and demand components over a 25-year period to produce a supply-demand balance for each of our water resource zones that is representative of a dry year. We use this information to identify the risk of a future deficit and create a plan to close the gap. We have considered critical period scenarios in our Bournemouth and the Isles of Scilly zones.

Our baseline dry year annual average scenario forecasts incorporate the ‘most likely’ risks to meeting demand between 2025 and 2050. Four of our five water resource zones are forecast to be in deficit during the planning period and the combined deficit for all these zones is 201ML/d.

Dry year annual average zonal deficits by 2050 assuming no interventions are shown below. Small deficits which can be overcome with drought measures such as temporary use bans and drought permits are coloured amber.

*Supply-demand balance for each of our five WRZs against 1 in 200-year drought events until 2039, and 1 in 500 year droughts after 2039.*

Water Resource zone	2025	2030	2035	2040	2045	2050
Bournemouth	+16.0	+15.9	-92.1	-93.4	-95.8	-98.2
Colliford	+4.2	0.0	-1.9	-14.6	-20.3	-24.1
Roadford	-5.6	-6.7	-6.7	-34.3	-37.3	-40.8
Wimbleball	-8.9	-9.9	-19.4	-32.6	-35.4	-38.2
Isles of Scilly	0.0	+0.7	+0.7	+0.7	+0.7	+0.7

The table above shows, without interventions, our Roadford and Wimbleball zones have an immediate risk of deficit and Colliford and Bournemouth will fall into deficit within the next ten years. The Bournemouth zone has a critical period deficit of 106.5 ML/d by 2050. This zone has the largest deficit to close due to significant licence reductions to achieve the Environmental Destination.

The Isles of Scilly supply-demand balance remains in surplus in both the dry year annual average and the critical period scenarios.

We have also considered a range of known uncertainties that result in a higher or lower deficit over the next 25 years.

## Customer and stakeholder engagement

As a minimum, our WRMP24 must meet the long-term public water supply and Environmental Destination needs in our region. However, we want our plan to deliver cross-sector, mutual benefits. We recognise our plan has greater potential to achieve this if we work collaboratively with others.

During the process of building our WRMP24 we have regularly engaged with our customers and stakeholders to seek their feedback. This includes household customers, local authorities, charities, tourism and environmental groups, investors, businesses and retailers.

Our customers want to see demand reduction prioritised and are concerned about affordability, but recognise new supplies are needed. Retailers and non-householders are open to collaborative demand reduction schemes and to developing opportunities in the future.

## Closing the deficit

Our long-term supply and demand forecasts show, if we do not take action now, there is a significant risk that we will not be able to meet our customers' demand for water. To mitigate this risk, we identify options and determine a best value plan.

We have a range of options available to us for reducing demand for water and increasing water available for supply. From our available options we created a preferred plan using our best value decision-making process.

## Our best value plan

We want our plan to close the deficit, meet regulatory requirements, deliver wider societal and environmental benefits and remain affordable to our customers.

To help us achieve this, our WRMP24 investment plan has been created using a multi criteria analysis approach that represents environmental and societal factors alongside financial cost.

Our process starts with our best value objectives, which we have based on what our regulators, customers and stakeholders told us they wanted our plan to deliver. We then use an optimisation model and decision-making metrics to select a combination of options that meets our objectives and can be considered best value.

## WRMP24 objectives

The best value objectives were identified by engaging with customers through the WCWRG and our own Willingness to Pay survey. They are aligned with our company's values and commitments.

- **Objective 1:** Protect and enhance the environment
- **Objective 2:** Ensure resilience of water supply
- **Objective 3:** Deliver wider societal benefit
- **Objective 4:** Ensure affordability for our customers
- **Objective 5:** Optimise land use

We measure best value using predefined metrics to compare alternative programmes of options to closing a zonal deficit. We have chosen metrics that represent our WRMP24 objectives and align with regulatory guidelines.

## Adaptive pathways

The best value solution to our baseline scenario is our 'most likely' pathway. We have also tested our plan to known uncertainties in our supply-demand balance projections. This included alternative climate change, demand and environmental destination scenarios.

The scenario analysis allows us to test the flexibility of our plan to the alternative futures and create pathways. These alternative pathways have potential to trigger a need for additional options or negate the need for longer-term options to be implemented. Options that are selected across the range of scenarios are considered low regrets, and this forms our 'core pathway'.

## Benefits of our best value plan

Our best value plan is a 'twin track' plan that reduces demand and increases available supply. It includes an ambitious demand management strategy to contribute to the Government's Environmental Improvement Plan targets for leakage, per capita consumption (PCC), non-household use and water production.



### Smart metering and networks

Smart metering and smart networks contribute to leakage and PCC targets by enabling us to detect and fix leaks sooner and share data with our customers. Smart meter data can be linked to customer bills and combined with water efficiency measures.

We will deliver an estimated 470,000 smart meter upgrades, and new meters to around 440,000 households, and 30,000 non-household properties by 2030 and a further 80,000 a year up to 2035. All meters installed or replaced will be AMI Smart Meters.

All new build properties and meter octants will be fitted with a smart meter and, where any unmetered customers move house, we will install a meter as part of our change-of-occupancy meter policy.

It is forecast that this smart metering programme will deliver a 5.7 ML/d consumption saving by the end of AMP8, and 3.2 ML/d towards our AMP8 leakage target.

By 2050, metering will have provided 14.8 ML/d demand reduction (a 6.5% reduction in distribution input) and will contribute 9.1ML/d towards reducing consumption and 5.7 ML/d towards meeting our leakage targets.

### Leakage

Our best value plan for leakage reduction is essential for our overall demand strategy driven by our distribution input reduction target and our target to halve leakage compared to 2017/18 levels. Our preferred plan targets a 50% reduction in leakage by 2045, bringing forward the delivery of these reductions from 2050. This target has been revised following feedback on our previous WRMP and to support the delivery of the new distribution input reduction targets.

From 2025 we will deliver year on year reductions in leakage levels, saving over 13.6 ML/d by 2030 and 29 ML/d by 2050. This is in addition to the leakage benefit from metering stated above. Our total leakage across all zones will be reduced to 64 ML/d by 2050, a 50% reduction compared to 2017/18 levels.

We plan to achieve this through a blend of mains replacement and repair, enhanced active leakage management and increased pressure management. We will leverage the benefits of smart metering to reduce leaks on customer supply pipes and support identification of distribution-side leakage.

### Water efficiency

Leakage and metering will contribute to the distribution input and the PCC targets, and we will be delivered alongside water efficiency initiatives such as home audits and behaviour change initiatives. This is essential as, in isolation, metering interventions alone will not deliver the reductions required to achieve our targets and objectives, including the government target of reducing PCC to 110 l/h/d by 2050.

The consumption benefits of this household water efficiency programme are estimated to be 11.2 ML/d by the end of AMP8. By 2050 the household water efficiency programme will contribute 92.3 ML/d (excluding the consumption benefits from metering).

We will also implement non-household water efficiency initiatives, coupled with our non-household smart metering programme. This will contribute to the Government target to reduce non-household water use by 15% by 2050. The combined water resources benefit of this programme are estimated to be 1.8 ML/d by the end of AMP8 and 4.4 ML/d by 2050.

The total benefit of our demand strategy is 39.0 ML/d in AMP8 and 141.0 ML/d by 2050. We will achieve all Government 2050 targets and interim targets except for the non-household and the

2026/27 distribution input reduction target. We will continue to develop our demand strategy and look for new innovations and identify further non-household options for future WRMPs.

### **New supplies**

Our demand strategy will benefit all our WRZs, including the Isles of Scilly which is not showing risk of deficit. However, demand reduction alone is not sufficient to close the baseline deficit and our preferred plan includes new supply schemes to help close the gap and provide additional resilience that will offset the Environmental Destination licence reductions.

Our best value plan enables us to be resilient to a 1 in 500 drought without the need for extreme demand restrictions by 2040 and to become less reliant on less extreme drought measures. These include demand restrictions through temporary use bans (hosepipe bans) and non-essential use bans and increased supply through drought permits and orders.

In selecting our 'most likely' pathway we have balanced the need for resilience with the benefits of drought options. Our preference is to avoid the need for such measures with the affordability and deliverability constraints of closing the deficits in each zone.

Our Bournemouth WRZ shows the greatest deficit, and we will invest in five new supply schemes. This includes a water recycling scheme at Poole Harbour to be delivered in 2035/36 providing a 6.25 ML/d benefit on average and a 25 ML/d benefit at peak times and a 50ML/d water transfer scheme from Mendip Quarry to augment the River Stour and provide a supply benefit of 12.5 ML/d on average and 50 ML/d at peak times by 2042/43.

Both these schemes are being developed through the regional planning framework, and although not part of Wessex Water's current plan, they provide opportunities for the future. In addition, we will invest to remediate an existing borehole which is currently not used, to provide an additional 1ML/d in 2030/31. We will also develop an aquifer recharge scheme, and the conversion of an existing lake to a reservoir by 2035/36, each providing 10ML/d. The total supply benefit to the zone will be 39.75 ML/d on average and 96.00 ML/d in the peak week critical period.

We will increase treatment capacity at our Restormel water treatment works (WTW) in our Colliford WRZ from 100 ML/d to 110 ML/d providing an annual average benefit of 2ML/d from 2030/31. The scheme will enable increased utilisation of the Colliford Reservoir, the River Fowey and additional new water resources delivered in AMP7.

In our Roadford WRZ we will invest in additional raw water transfer capacity in 2035/36 to offset an Environmental Destination abstraction reduction of 16.99 ML/d on the River Dart.

Network improvements in our Wimbleball WRZ will allow the movement of more treated water around the zone, delivering a 3.00 ML/d supply benefit. We are also investing in a further regional strategic option to deliver the Cheddar 2 reservoir in 2035/36 that will provide an average benefit of 13 ML/d. Water from the new reservoir will be made available to the Wimbleball WRZ through the use of Wessex Water's distribution network.

### **Adaptive plan**

In compiling our best value plan, we consider the risk of the future deviating from our baseline supply and demand forecasts through the use of alternative scenarios. This includes scenarios that increase the deficit and those that reduce the risks. We assess the alternative futures and the events that could require additional supply options to be implemented.

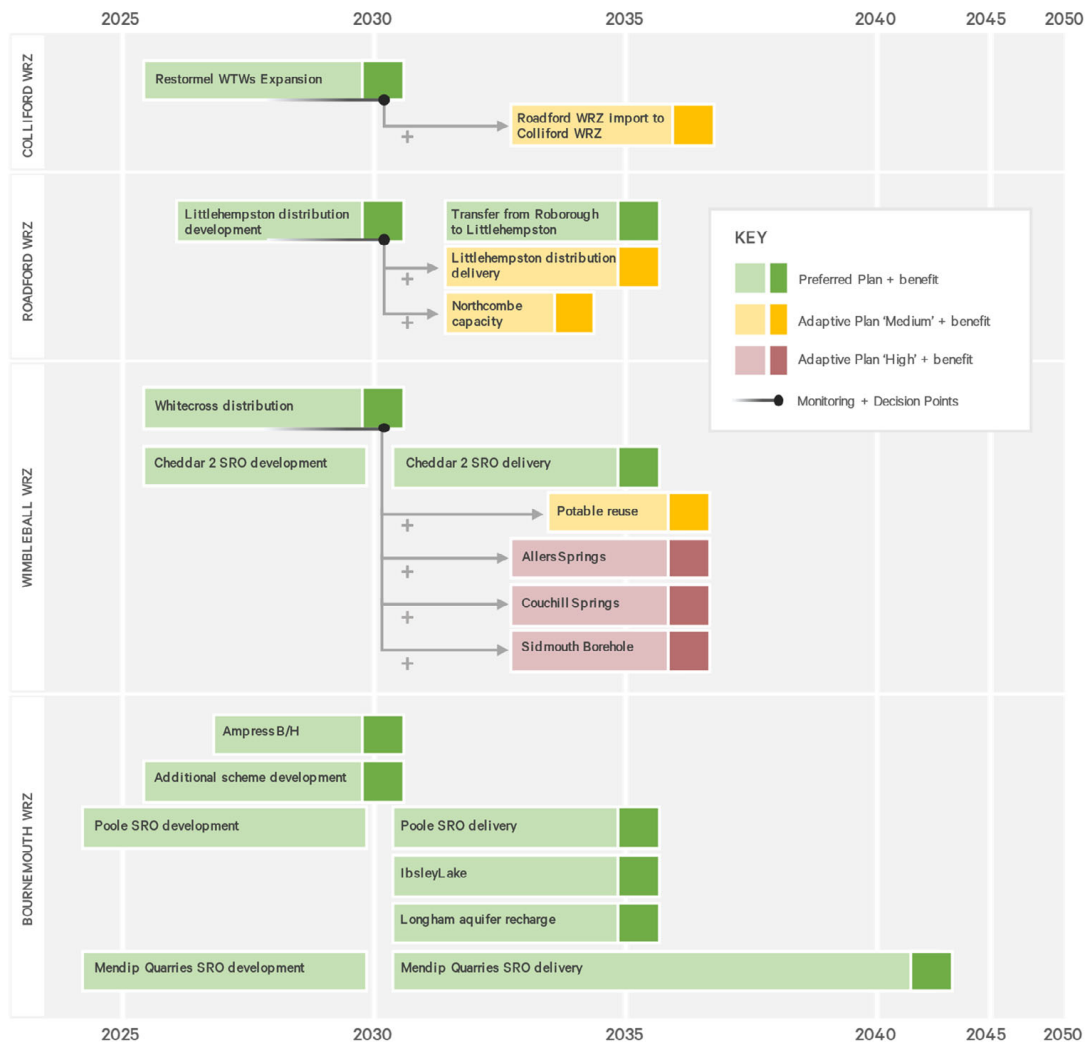
In our Colliford WRZ a scheme to improve connectivity with our Roadford zone could be triggered in 2036/37, enabling an additional 1.0 ML/d to be transferred from Roadford to Colliford.

In Wimbleball an indirect potable reuse scheme could be triggered in 2035/36 providing an additional 2 ML/d. In a more extreme deficit alternative scenario, three further schemes could be



required in 2035/36. These require investment in spring sources and a new borehole, providing a combined benefit of 3.5 ML/d.

A summary of our preferred plan and the adaptive plans is provided below.



### Next steps

Our WRMP24 is still in the draft stage. Once our plan is finalised, we will move into the delivery phase. To ensure timely delivery of our WRMP24 solutions we will continue to engage with communities, retailers, local authorities, developers and the supply chain. In collaboration with others, we can identify more effective and sustainable solutions for achieving our demand management goals, offsetting biodiversity impacts to deliver a 10% net gain and implementing lower carbon, more efficient supply schemes.

Looking forward to our next WRMP we will further develop our Environmental Destination to understand the scale of licence reductions and the benefits of nature-based solution that may mitigate the need for reductions.

Our WRMP24 has introduced new approaches for best value planning and supply forecasting. We will continue to improve our capabilities for delivering WRMPs and we will expand our portfolio of feasible options.

**Regional Planning**

As a key member of the WCWR Group we will work in partnership with our neighbouring water companies, abstractors and stakeholders to develop a fully integrated regional plan that will shape our WRMP29.

We will continue to co-develop the three regional SROs that benefit our Bournemouth water resource zone through the WCWR regional planning group. To help us better understand how the strategic resource options may benefit our region, we will work with Bristol Water and Wessex Water to develop a regional network model for the next iteration of the WCWR Regional Plan.

**Monitoring**

We will monitor and track the key uncertainties identified by our adaptive pathways to ensure we have the information we need when we reach our decision points. If we deviate to an alternative pathway that requires additional options, we will start implementation of our additional schemes. Where necessary we will carry our investigations and planning requirements in parallel to our preferred plan to ensure we are fully prepared.

**WRMP24 final plan**

Our revised draft WRMP24 consultation closes in early December 2023. We will review the feedback we receive and produce a statement of response to our second consultation in December 2023. Our plan will be finalised once we receive notification from Defra that we can publish. We shall notify key stakeholders and anyone who has made a representation on our plan.



A photograph of a forest stream flowing over mossy rocks. The water is blurred, creating a sense of motion. The surrounding forest is lush with green foliage and trees. The scene is captured in a natural, serene setting.

# Draft Water Resources Management Plan



# 1 INTRODUCTION

## 1.1 Water resources management

Water resources management refers to the process of planning, developing, distributing, and utilising water resources sustainably. **Balancing the supply and demand for water** involves carefully matching the amount of water sustainably available from sources such as rivers, lakes, reservoirs and groundwater with the forecasts of water requirements of households, industries, agriculture and the environment.

Effective water resources management ensures equitable access to clean and safe water, prevents water scarcity, and protects the ecosystems that rely on water. Approaches include strategies for efficient water use, pollution control, infrastructure development, and integrated planning for both surface and groundwater sources.

If undertaken in a robust and effective manner, water resources management can provide vital benefits to society, the environment, and the economy, including:

- **Sustainable water supply:** Effective management ensures a reliable and sustainable supply of clean and safe water for domestic, industrial, and agricultural use, reducing the risk of water scarcity.
- **Ecosystem protection:** Proper management helps protect aquatic ecosystems, rivers, and wetlands, preserving biodiversity and supporting important habitats for plants and wildlife.
- **Economic growth:** Reliable water resources support important sectors of the economy, including agriculture, manufacturing, energy production, and tourism.
- **Tourism and recreation:** Clean and well-managed water bodies attract tourists and provide recreational opportunities such as boating, fishing, and swimming.
- **Climate change adaptation:** Effective water management strategies consider the impacts of climate change and helps communities adapt to changing patterns of rainfall and extreme weather events.
- **Drought mitigation:** Planning for water scarcity events such as droughts helps minimize their impacts on agriculture, water supply and the environment.
- **Stakeholder collaboration:** Water resources management involves engagement with a wide range of stakeholders, fostering cooperation and shared responsibility for the sustainable use of water.



## 1.2 This document: our revised draft WRMP

This document and the accompanying technical appendices, summarised in Figure 1 below, comprise our revised **Draft Water Resources Management Plan (dWRMP)**. It sets out our best value plan for maintaining the balance between supply and demand for the next 25-years.

We forecast how we expect demand to change as the population in our region changes, and how we expect supply to vary considering factors such as the impact of climate change, the need to reduce our abstraction of water to protect the environment and the likely increases in demand for water at certain times in the future.

This dWRMP also shows how our forecasts have been ‘stress-tested’ for a range of possible scenarios to assess the robustness of our supply-demand balance. It explains the options that we will implement to maintain the supply-demand balance under these scenarios and their costs and benefits.

This report ends by presenting our overall water resources strategy for the next 25-years along with the supporting activity that we plan to undertake to achieve the goals we have set ourselves. This strategy sets stretching targets in key areas to ensure we deliver excellent industry performance while also successfully balancing customer affordability and reliability.

In developing the overall proposed strategy, we have taken full account of government and regulatory policies, including relevant legal requirements and the national guidelines governing best practice. We have also considered the findings of our extensive customer research on how our customers would like us to maintain a resilient supply demand balance in the future.

This revised dWRMP considers all the feedback we have received during the consultation on our Draft Plan.

Figure 1: Structure of the SWW dWRMP package



## 1.3 Creating our dWRMP

It is a statutory duty on all water companies in England and Wales to produce a **Water Resources Management Plan (WRMP)** and update it every five years.

Our WRMP is a strategic document which sets out how we plan to maintain the balance between supply and demand for water for a minimum planning period of 25 years. It demonstrates that we have long-term plans in place to address the impacts of population growth, drought, our environmental obligations, and climate change uncertainty, to balance the supply and demand for water in the communities that we serve.

This is our fifth published WRMP for our mainland water supply areas and the first WRMP developed for the Isles of Scilly.

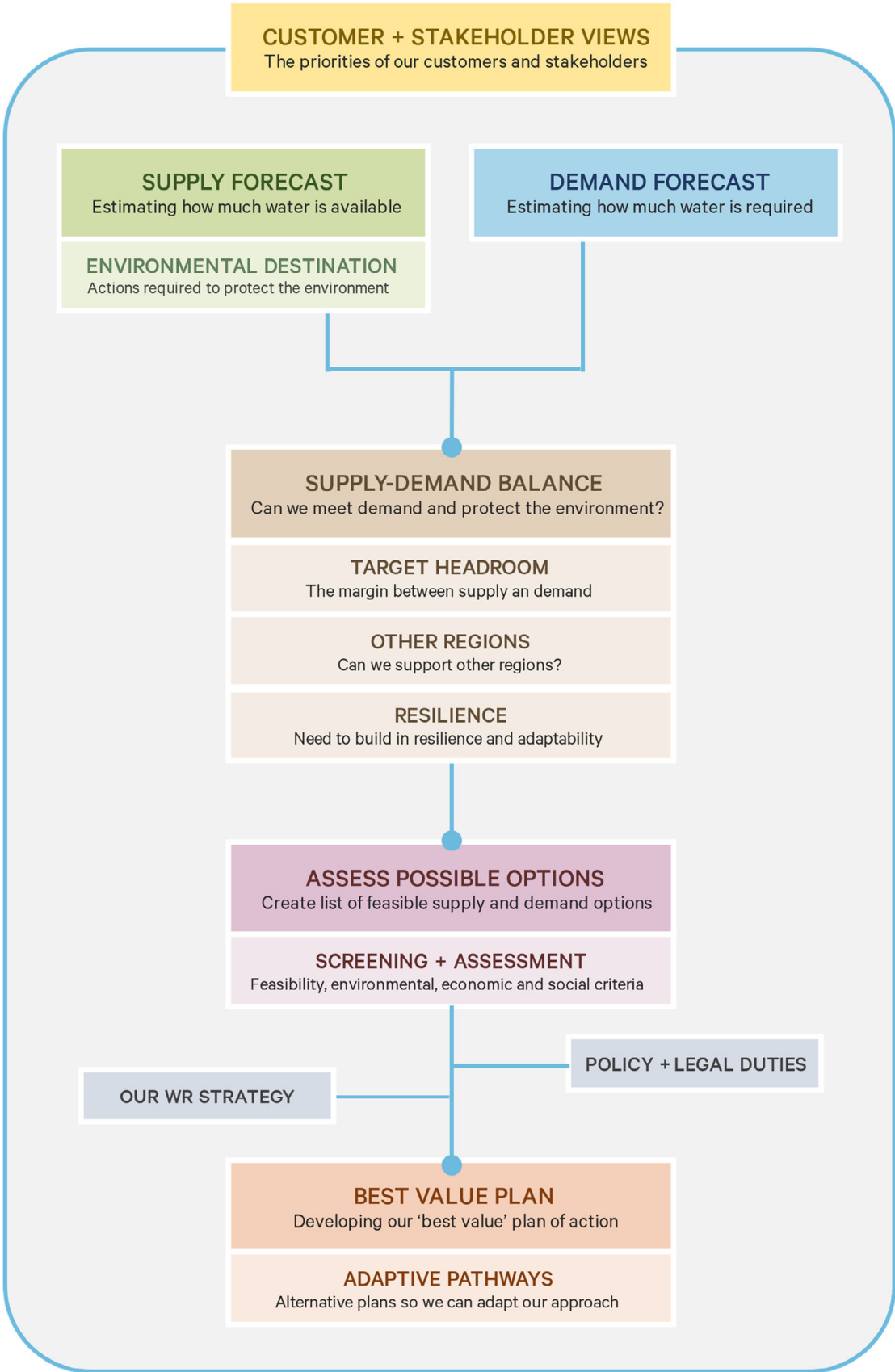
### 1.3.1 Our process

For our dWRMP, we have carefully followed all relevant and up to date guidance issued by the Government and the water industry regulators, the Environment Agency (EA), Natural England (NE), Ofwat, and the Drinking Water Inspectorate (DWI). We have used the outcome from our Strategic Environmental Assessment (SEA), Habitats Regulations Assessment (HRA) and other environmental assessments to inform our decision making around our options and the selection of our **'best value plan'** (see Sections 8, 9 and 10 of this report).

Our dWRMP has been developed to a logical sequence of steps, which aligns with the process described in the 2022 **Water Resources Management Planning Guidelines (WRPG)** (Figure 2).

- 1. Customers & stakeholders needs:** We have researched our customers' needs and preferences and consulted with our stakeholders including: businesses, local authorities, non-governmental organisations (NGOs), regulators and water suppliers, and used this insight to inform our plan (Section 3.5)
- 2. 25-Year Demand Forecast:** How much water customers will need in the future, considering factors such as the changing climate, population, and technological changes (Section 4)
- 3. 25-Year Supply Forecast:** Sets out how much water is available for use now and how this may change in the future. We consider the impact of climate change and potential reductions in the volume of water that we can take from rivers and groundwater to protect the environment over the longer-term (Section 5)
- 4. Supply-Demand Balance:** We assess whether we will have sufficient water now, and in the future, based on our 25-year demand and supply forecast. We calculate the likely effects of climate change, population growth and other future uncertainties. (Section 6)
- 5. Options Assessment:** We undertake a twin-track approach to developing options, assessing ways to both reduce water consumption (demand-side options) and ways to increase the availability of water supply (supply-side options). These options include leakage reductions, customer metering, water efficiency and new sustainable abstractions. (Section 7)
- 6. Plan development and appraisal:** From the feasible options available to us, we then develop a series of alternative plans (least cost, best value, best for environment and society), which meet the objectives of our plan in different ways. These are assessed using a suite of metrics to explore the interactions between their cost and other environmental and social impacts.
- 7. Adaptive planning:** Our plan is also tested to determine how well it performs under a range of different future scenarios. To meet these future uncertainties, we have developed a series of adaptive pathways and a monitoring plan to identify when these will be required (Section 10).
- 8. Publish draft plan and consult:** Following the publication of our draft plan we consult with our customers and stakeholders to inform our final plan.

Figure 2: Overview of the process we have adopted for developing our dWRMP.





### 1.3.2 Our WRMP Timeline

We last published a WRMP in June 2019. Working with regulators and stakeholders and listening to our customers, we reviewed and updated the 2019 WRMP during 2022, and then issued our dWRMP 2024 for public consultation between 14 February and 09 May 2023.

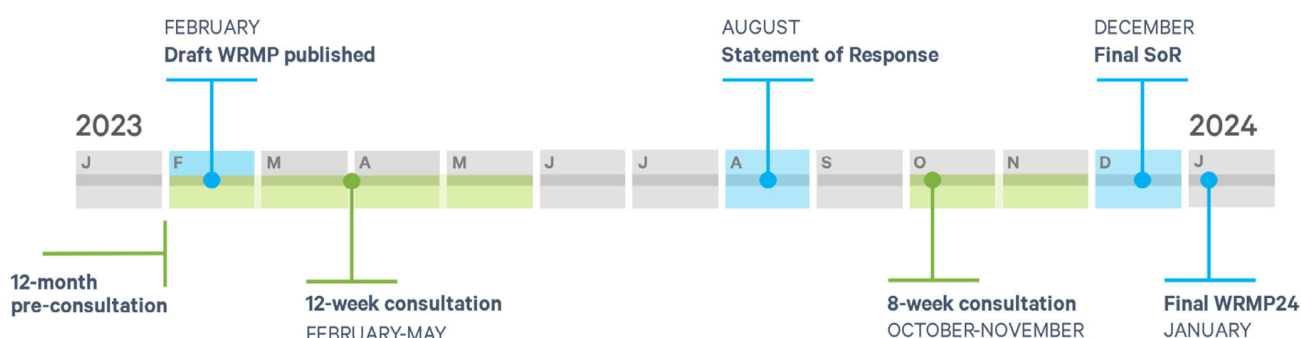
Our Statement of Response (SoR) to the public consultation on our first dWRMP 2024 was published on 15<sup>th</sup> August 2023 in line with the requirements of the Water Resources Planning Guideline.

The SoR summarises the comments we received on the dWRMP and sets out how we have modified our plan as a result. This revised dWRMP was submitted to the Secretary of State for the Environment in early October 2023 and will then be issued for to another public consultation in October and November 2023.

Following the second consultation, we will publish an updated SoR which will show all the changes and updates we have made in response to the feedback received during the production of the plan.

Having worked with Defra and our regulators to finalise the revised dWRMP, we will publish the final WRMP 2024 in January 2024.

Figure 3: Timeline for the creation of our WRMP 2024.



### 1.3.3 Legislative requirements

WRMPs are produced as part of a statutory process. Under Section 37 of the **Water Industry Act 1991 (WIA)**, water companies are required to provide domestic and non-domestic customers with a reliable supply of water for domestic and business purposes. The **Water Act 2003** amended the WIA 1991 by introducing a statutory requirement for water companies to produce a WRMP at least every five years, setting out how we will ensure we are able to meet the demand for water that we expect in the future (WIA 1991 Section 37A, as amended). This legislation also requires us to consult with customers and stakeholders on our dWRMP (WIA 1991 Section 37B, as amended).

When producing this dWRMP, reference has been made to the following guidance and legislation (*this is not an exhaustive list*):

- Water Industry Act 1991
- Water Resources Act 1991
- Environment Act 1995
- Water Resources Management Plan Regulations 2007 (2007 regulations)
- Environmental Assessment of Plans and Programmes Regulations 2004
- Conservation of Habitats and Species Regulations 2017

- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, referred to in this guideline as ‘WFD regulations’
- Water Supply (Water Quality) Regulations 2016
- Eels (England and Wales) Regulations 2009
- Wildlife and Countryside Act 1981
- Countryside and Rights of Way Act 2000
- Natural Environment and Rural Communities Act 2006
- Invasive Alien Species (Enforcement and Permitting) Order 2019
- Well-being and Future Generations (Wales) Act 2015
- Marine and Coastal Access Act (2009)

We have also referred to the following additional governmental guidance and legislation:

- Water Industry Act 1991, Sections 37A – 37D, as amended by the Water Act 2003, and Water Resources Act 1991
- Government expectations for water resources planning (Defra April 2021)
- February 2022: The Government’s strategic priorities for Ofwat, (updated March 2022)
- The Water Supply (Water Quality) Regulations 2016

#### 1.3.4 Guidelines & Government Directions

We have prepared our plan in accordance with the Environment Agency **Water Resources Planning Guideline (WRPG)**, April 2022).

The WRPG set out the requirements for how the plan should be developed, including:

- The methods for supply and demand forecasting and our key planning assumptions
- Assessing risks and uncertainties including climate change
- How we have engaged with our customers and stakeholders to co-create the plan and have considered and acted upon their views in creating the plan
- Environmental and habitats assessments to ensure that our plan fully complies with all our environmental obligations
- The options development and assessment process
- Presenting and justifying the plan including least-cost and best-value principles.

Our dWRMP also complies with the **Water Resources Management Plan (England) Direction 2022**, which came into force on the 28<sup>th</sup> April 2022. This directs all water undertakers wholly or mainly in England on the contents of our WRMPs.

Appendix 10 lists the requirements set out in the Directions and where these are addressed within this dWRMP.

## 1.4 Governance

Our approach to governance is an integral part of our culture, guiding how we do business and create value for our stakeholders.

The information we publish not only ensures that we meet our statutory, licence and regulatory obligations but also provides information to customers on the Company's activities, how the Company is performing and, most importantly, how customers can get help when they need it.

Underpinning this information, we publish our risk and assurance processes. These processes have been embedded into the management of the Company and are designed to ensure that risks are promptly identified and updated on a regular basis and that mitigation appropriate to the level of risk is in place.

### 1.4.1 Assurance

We have a mature, integrated risk-management framework which is fully embedded into our governance structures and embodies our values of being 'trusted' and 'responsible' in the way we carry out our business. Details of this integrated assurance approach is published each year in our assurance plan.

Our integrated assurance approach includes our three levels of scrutiny:

1. **Management:** review, quality control and sign off.
2. **Policy setting and compliance checking:** adequate policies, internal audit, and business management systems.
3. **External scrutiny:** external audit and other assurance providers.

#### Management review

Development of our dWRMP has been led by an experienced team with staff who have carried out this activity in previous planning periods, have worked in regulatory roles on resource planning, and have relevant experience from across the water sector. Team members are also fully engaged with the Regional Planning process and represent the Company on the Steering Group and Board of the West Country Water Resources Group (WCWRG) and in the Strategic Regional Options (SRO) assessment process with the Regulators' Alliance for Progressing Infrastructure Development (RAPID).

Extensive technical support has been provided by industry experts, including with support for our best value modelling. The work packages delivered by consultancies have been commissioned through a structured procurement framework, with formal assessment of the expertise of all consultancies commissioned.

#### Policy setting and compliance checking

Engagement with the plan across the business has been regular and detailed. The Internal Audit Team at Pennon, our parent company, has undertaken a review of the assurance underpinning the dWRMP. The scope of the Group Internal Audit's work was to provide independent assurance that there was sufficient underlying evidence to support the Assurance Statement made by our Board which is submitted as part of the dWRMP.

#### External scrutiny

Throughout the development of our dWRMP, we have fostered close collaboration with customers, partners and regulators. This helped us to develop a fuller understanding of future challenges relating to water needs and the potential options and solutions to the challenges while building a strong consensus on our plans and their delivery.

In addition, we have employed the services of independent third-party assurance partners to assure the technical quality and the accuracy of the draft WRMP.

Assurance on draft WRMP methodology and data table completion has been provided by **Jacobs**, SWW's Technical Auditor.

Cost assurance was provided by **Chandler KBS, KPMG** and **Jacobs**.

#### 1.4.2 Board approval

The SWW Board of Directors (SWW Board) has overseen every stage in the development of our dWRMP and is content that it represents the best value for our customers, society as a whole and the environment. The SWW Board considers the process we undertook is sufficient to ensure that, in all material aspects, it is in line with the guidance and frameworks set out to establish consistent plans (see Appendix 10).

Due to the oversight and assurance processes applied during the development of the dWRMP, the Board is satisfied that:

- The National Framework and relevant guidance have been followed and applied.
- There are clear processes in place to ensure there are appropriate links with the WCWR Regional Plan and that it includes a wider range of partnership schemes.
- We are on track to produce a final WRMP that represents a best value solution for managing and developing water resources in line with our obligations to supply water and protect the environment. The Board is also satisfied that we have considered the interests of customers, stakeholders and the environment, and that the plan is based on robust evidence and costing processes aligned to the PR24 business plan.





## 2 OUR PLANNING APPROACH

**South West Water (SWW)** provide drinking water to a population of **1.7 million** across Devon, Cornwall and parts of Dorset and Somerset. In addition, since our merger with **Bournemouth Water** in 2016, we also supply approximately 0.45 million customers in the Bournemouth area (total population served ~2.2 million).

From April 2020, we also assumed responsibility for public water supply and waste treatment on the **Isles of Scilly (IoS)**, taking on the established sources and small networks on the five inhabited islands.

We supply this vital resource for everyday use in households and businesses and we make sure the water keeps flowing so that farmers can irrigate their crops and our industries remain productive. A plentiful supply of fresh water is essential to our regional economy and to our health and wellbeing on every level. Our unspoiled rural landscapes attract growing numbers of tourists at the same time as supporting the thriving agricultural and horticultural sector that supplies the nation.

The regions that we serve are set apart within the UK. While many areas of the country are partly supplied with water brought in from elsewhere, in the South West, all our water resources are sourced from our natural resources.

We currently provide on average **~445 million litres** of water each day (ML/d) to our customers across Cornwall, Devon, Dorset and Somerset. Rivers and reservoirs are our main resources in this area providing about 90% of our water. The remainder comes from groundwater sources such as boreholes, wells and springs, which are predominantly found in East Devon.

We also provide on average **145 ML/d** in the Bournemouth area. The water supply here is principally from river abstractions, supported by groundwater sources.

Our total water supply area, which comprises five **Water Resource Zones (WRZs)** is shown in Figure 4. This is a combined WRMP for all these areas combined.

*Figure 4: The 5 Water Resource Zones (WRZ) of the SWW supply area.*



## 2.1 Water Resource Zone descriptions

We supply water to our customers and businesses through five **Water Resources Zones (WRZs)**. Our WRZs are defined in accordance with the Water Resources Planning Guideline.

### What is a Water Resource Zone?

Water Resource Zones (WRZs) are defined as: *“the largest possible zone in which all resources, including external transfers, can be shared and hence the zone in which all customers experience the same risk of supply failure from a resource shortfall”*. A WRZ is a geographic area we use to:

- define where the water supply comes from such as a reservoir, river, or groundwater.
- forecast what the demand will be from our customers, communities, and businesses.
- describe how we will balance the water supply with the demand for use.

Customers in a WRZ will have the same experience of our water supply. It will taste the same, and weather conditions such as hot, dry weather or a drought will affect all customers and businesses in a WRZ in the same way.

A WRZ will be broken down into sub-zone supply areas based on our infrastructure such as treatment works and networks of pipes and pumps. If one of these assets fails, for example through a burst water main, customers and businesses within the sub-zone are likely to experience similar issues such as an interruption to supply.

Three of these, **Colliford WRZ**, **Roadford WRZ** and **Wimbleball WRZ** are each centred around a strategic supply reservoir. To optimise our performance, we operate these three in conjunction with other sources within the relevant zone and transfers between the zones.

The **Bournemouth WRZ** is not geographically connected to these three areas and so is operated as a standalone supply area.

In addition, since 2016, we are now responsible for managing the **Isles of Scilly WRZ**.

Sections 2.1.1. to 2.1.5 below give a brief description of our Colliford, Roadford, Wimbleball, Bournemouth and Isles of Scilly WRZs. The results of the **WRZ Integrity Assessment** for each zone are summarised in Section 2.2 below and detailed in Appendix 11.





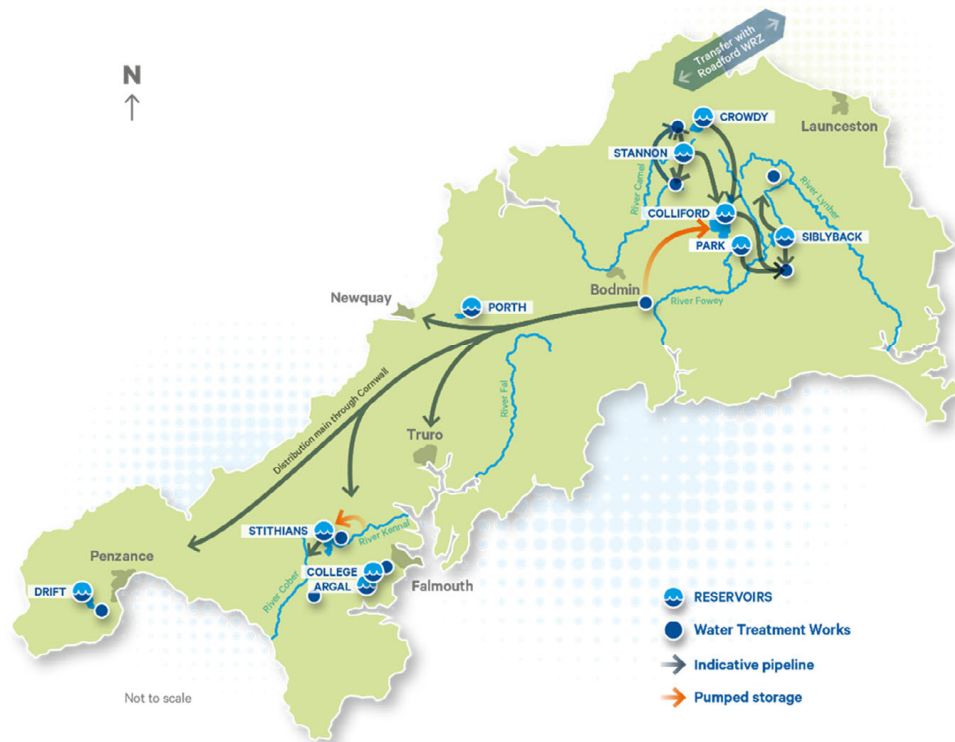
### 2.1.1 Colliford WRZ

The Colliford WRZ covers most of Cornwall except the North East of the county. The main towns it supplies include Penzance, Falmouth, Newquay, Truro and Bodmin.

The strategic Colliford Reservoir is our second largest impounding reservoir, and we operate it conjunctively with our local impounding reservoirs, two groundwater fed lakes and river intakes. These sources are supplemented by a bulk transfer from the Roadford WRZ. We can also supplement the Colliford Reservoir storage by pumping water in from the River Fowey.

We release water from the reservoirs within this zone either directly to the Water Treatment Works (WTW) before putting into public supply, or we can release water into the local river system to support abstractions further downstream. The distribution mains throughout Cornwall provide a high level of connectivity between our Colliford WRZ resources. A schematic of the key components of the Colliford WRZ is shown in Figure 5 below.

Figure 5: Colliford Water Resource Zone (WRZ) with aerial view of Stithians Reservoir pictured below.



### 2.1.2 Roadford WRZ

The Roadford WRZ covers a large part of Devon, from Plymouth, the South Hams and Torbay in the South, to Bideford and Barnstaple in the North. It also includes parts of North East Cornwall.

The strategic Roadford Reservoir is our largest impounding reservoir and we operate it conjunctively with our local reservoirs, river intakes and groundwater sources. These sources are also supplemented by bulk transfers between the neighbouring Colliford and Wimbleball WRZs.

We release water from the reservoirs within this zone either to directly supply WTWs before putting into public supply, or to supplement flows in the local river systems to support abstractions further downstream. A schematic of the key components of the Roadford WRZ is shown below in Figure 6.

Figure 6: Roadford WRZ with aerial view of Roadford Reservoir pictured below.





### 2.1.3 Wimbleball WRZ

The Wimbleball WRZ covers parts of North Devon, the whole of East Devon and extends into parts of Somerset and Dorset. The area includes the settlements of Tiverton, Exeter, Exmouth and Crediton.

The strategic Wimbleball Reservoir is our third largest impounding reservoir, and we operate it conjunctively with the majority of our groundwater sources. We use the reservoir principally for releases to the River Exe to support abstraction downstream.

We can also supplement the Wimbleball Reservoir storage by pumping from the River Exe over the winter months. Wimbleball Reservoir is an important source of water for Wessex Water, who abstract from it all year round.

A schematic of the key components is shown in Figure 7.

Figure 7: Wimbleball WRZ with aerial view of Wimbleball Reservoir pictured below.





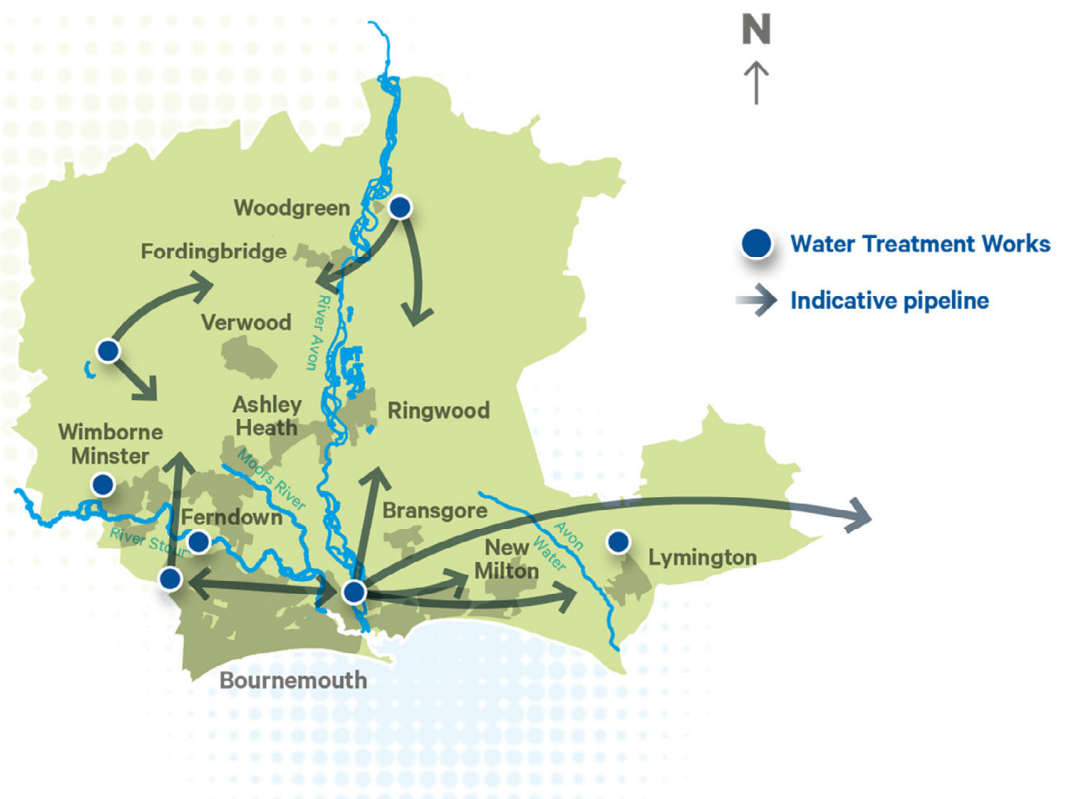
### 2.1.4 Bournemouth WRZ

The Bournemouth WRZ covers parts of Dorset, Hampshire and Wiltshire, supplying the settlements of Bournemouth, Christchurch, Lymington and Fordingbridge.

The principal water sources are the Hampshire Avon and the Dorset Stour. There are also two small lakes, which provide short-term bankside storage. Groundwater abstractions provide water to the more rural parts of the WRZ.

This zone is isolated from our other WRZ, but we do have a connection into the Wessex Water area which allows some flow balancing in both directions although there is a net benefit of 0 ML/d. A schematic of the key components is shown in Figure 8.

*Figure 8: Bournemouth WRZ with a view of River Stour in Dorset pictured below.*





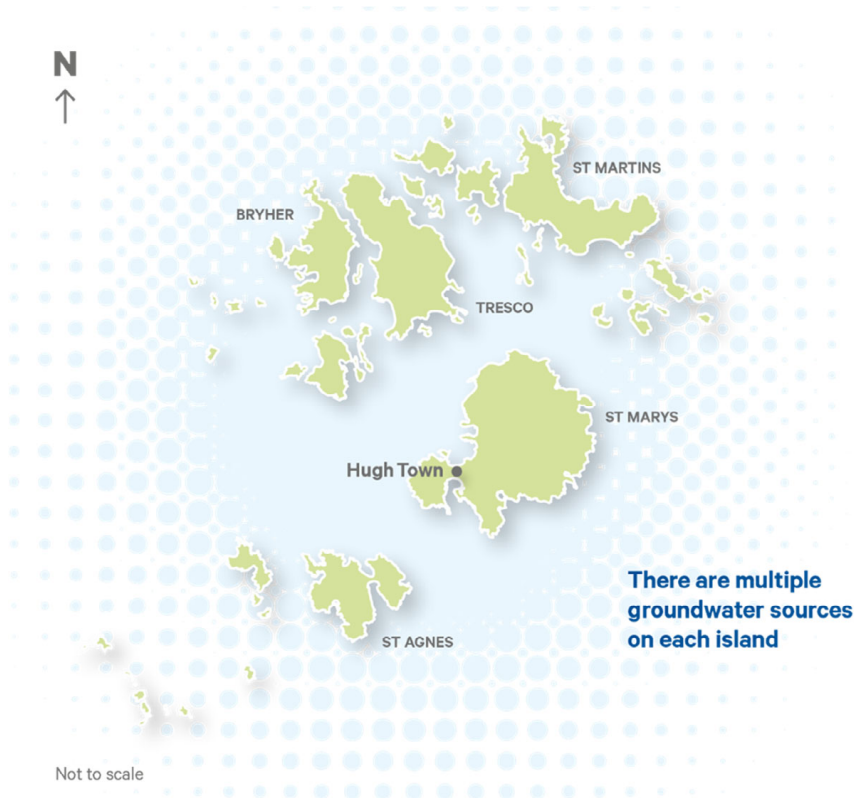
### 2.1.5 Isles of Scilly WRZ

The Isles of Scilly (IoS) WRZ covers five inhabited islands: St Marys, Treско, Bryher, St Agnes and St Martins. On St Marys, approximately 40% of total water comes from the desalination of seawater abstracted from coastal boreholes and, in the summer months, from a seasonal sea water intake. The remaining 60% of the total water supplied is through groundwater sources.

On Treско, St Agnes, St Martins, and Bryher, 100% of the water supplied is currently sourced from groundwater sources. However, the water supplies for each island are currently under review and will change over the next 3 years following investment which is needed to meet drinking water standards.

The IoS WRZ is not supported by any other zones. A schematic of the key components is shown in Figure 9.

**Figure 9:** Isles of Scilly WRZ with a view of Treско pictured below.





## 2.2 WRZ integrity

We have defined our WRZs using the EA's assessment methods (Water Resource Zone Integrity, 2016). We keep the composition of our WRZs under continual review and consider this annually as part of our annual reporting process.

There have been no changes to the inter- or intra-WRZ links since our 2019 WRMP and the assessments undertaken for that plan are still valid.

The IoS water supply network consists of five isolated supply systems covering the five inhabited islands. There is not currently a water connection between any of the Islands and the WRPG supplementary guidance – 'Water resource zone integrity' published in March 2021 only applies to: "WRZs where the population is greater than 5,000 and/or where over 1 ML/d of Total Water Available for Use (WAFU) is supplied from your own sources". The IoS fall below both thresholds, so they are grouped into a single WRZ.

We have completed the water resource zone integrity assessment for each of our WRZs, and these are set out in Appendix 11.

Despite these assessments, we are constantly reviewing options which may provide improvements to WRZ connectivity to ensure we can maintain the integrity of our WRZs in the future. This is especially important as we continue to reduce local abstraction to meet our Environmental Destination and ensure sustainable abstraction.

Examples of 'connectivity' resilience schemes are those currently being delivered on the River Lyd and the Tamar at Gatherley in AMP7, which will pump additional water to Roadford Reservoir during periods of high water-availability. These investments will ensure that we have a resilient strategic storage and the connectivity options to move this resource to the areas in our WRZ where we expect to see reduced local supplies and/or increased local demands.

### YOU SAID WE DID

During the consultation on our dWRMP, some respondents questioned the integrity of the Roadford WRZ. This was due to observed issues moving water to the north of the zone during dry weather periods in 2018 and 2022.

In response to this we have (as stated above) completed the water resource zone integrity assessment for each of our WRZs. This assessment found that Northcombe WTW, which is supplied by Roadford Reservoir provides year-round resource (up to 50 ML/d) to the northern section of the Roadford WRZ. Changes to network infrastructure in the north west of our Roadford WRZ means we can now move more of this water into the Upper Tamar area from Northcombe WTW to meet local demand in this area in addition to the local resource in Upper Tamar Lake. South West Water is continually reviewing our network and the ability to meet local demands.



## 2.3 Planning assumptions

Our dWRMP is based on a scenario which considers the supply-demand balance when our supplies are low and demand for water is high. This is called the **‘Dry Year Annual Average’ (DYAA)** planning scenario. This has been used to inform the supply and demand forecasts for all our WRZs.

In addition to this baseline scenario, we assessed whether a **‘Dry Year Critical Period’ (DYCP)** planning scenario should also be considered for any of our WRZs. This scenario can be used to inform our planning for a period of peak strain on our system, for example, during high seasonal demand such as the heatwaves we experienced in 2018, 2020 and 2022, winter leakage, or when seasonal visitors increase the demand significantly at certain times during the year. The DYCP scenario can also consider a combination of these various pressures.

It is important to note that, where these types of peak strain on supply and demand have a much shorter duration or localised impact than is considered in a WRMP, then it is more appropriate for them to be addressed as part of the water company Business Plan.

Based on our analysis of the drought of 1975-76, our drought risk assessment described below and through discussions with our regulators, we have produced forecasts for supply and demand based on the following planning scenarios:

- Colliford, Roadford and Wimbleball WRZs – Dry Year Annual Average (DYAA)
- Bournemouth WRZ – Dry Year Annual Average (DYAA) and Dry Year Critical Period (DYCP)
- Isles of Scilly – Dry Year Annual Average (DYAA) and Dry Year Critical Period (DYCP)

In our **mainland supply areas**, none of Colliford, Roadford or Wimbleball are solely dependent on groundwater, run of river abstractions or limited storage. They are not particularly sensitive to peak demand, but we do carry out detailed modelling of the water resource system which implicitly considers these peaks. The DYAA average is, therefore, considered the appropriate planning forecast.

In contrast, the **Bournemouth WRZ** is largely dependent on run of river abstractions and has limited storage which means that supply and/or demand constraints will be experienced during the peak demand period which coincides with the lowest flow period. Here, it is most appropriate to use the DYCC forecast in addition to the DYAA forecast.

For the **Isles of Scilly WRZ**, our planning approach is based on the classification of the Islands as a ‘seriously water stressed area’. This classification reflects the high pressure on water resources and the increasing dependence on desalination, driven by the vulnerability of the groundwater quality and resources during dry weather, and the highly sensitive nature of the environment to abstraction.

We have based our forecasting of supply and demand on the following scenarios:

**Supply forecast:** our estimate of supplies which are available in a drought are based on a likelihood of a failure to meet our service levels once in every 500 years, which is 0.2% in any one year. This has been undertaken in accordance with the WRPG and the EA supplementary guidance on ‘Planning to be resilient to a 1 in 500 drought’.

**Demand forecast:** our forecast DYAA demand is when demand for water is at its highest before temporary use bans (TUBs) are imposed. We have presented our evidence and discussed this approach with our regulators.

In Section 4, ‘Demand forecast’, and in the WRMP Planning Tables, we present our assessment of the demand we might expect during a 1-in-500 year drought event for each WRZ. We have included forecasts for non-potable water demand and supply as additional lines in the water resources planning tables where relevant.

Our **baseline water resources planning scenarios** also include the criteria and assumptions set out in Table 1 below.

*Table 1: Criteria and assumptions included in our baseline water resources planning scenarios.*

Issue	Assumptions
Management unit	5 Water Resource Zones (WRZ)
Base Year	2019/20
Planning Horizon	2049/50
Planning Scenarios	Dry Year Annual Average (DYAA) and Dry Year Critical Period (DYCP)
Service/Resilience Levels	See Section 2.6 ‘Levels of Resilience (service)’
Leakage	Remains static from the first year of our plan (2025/26) throughout our whole planning period.
Demand Forecast	We forecast the level of customer consumption without any further interventions. We assume that our water efficiency programmes, and metering programmes end after our AMP7 funding. This does include any relevant government interventions such as mandatory water labelling, which are reflected through options and our final plan.
Transfers	Existing transfers to the extent of the agreed bulk supply agreements or other arrangements are considered.
Sustainability reductions	Impact of any confirmed or likely sustainability changes as identified for implementation in AMP8.
Water Quality Risks	Risks to groundwater and surface water sources due to declining water quality have been captured in our baseline so that the measures to address them could be properly explored and set out in the plan.
Other solutions	Factors in the benefits of non-supply-demand balance solutions such as capital maintenance.
Drought measures	No demand side (temporary use bans or non-essential use bans) or supply side options (drought permit options) are included in the baseline plan supply-demand balance.
Initiated schemes	Factors in the benefits derived from schemes that either have planning permission in place, a funding allowance made by Ofwat, or other necessary permissions such as abstraction licences or environmental permits in place.
Non-potable water use	Forecasts for non-potable water demand and supply are included as additional lines in the water resources planning tables where relevant.



## 2.4 Problem characterisation

We have assessed the size and complexity of the planning problem, a process known as ‘problem characterisation’, using the method presented in the UKWIR methodology, **‘WRMP 2019 Methods – Decision Making Processes: Guidance’**.

This approach shows the complexity of the planning problem to be solved by scoring our water supply system according to the complexity and strategic risk presented by the needs identified in each WRZ. We have used a problem characterisation process which allows us to develop a proportional response for our long-term planning. This problem characterisation has been used to inform the development of our best value plan (see Section 8)

There are two elements to the problem characterisation assessment:

- **Strategic needs** – a high-level assessment of the scale of need for new water resources and/or demand management strategies (“How Big is the Problem?”)
- **Complexity factors**– an assessment of the complexity of issues that affect investment in a particular water resource zone or area (“How Difficult is it to Solve?”)

We have undertaken a problem characterisation assessment for all our WRZs. These detailed assessments for Bournemouth, Colliford, Roadford, Wimbleball and the Isles of Scilly WRZs are reported in Appendix 12, which sets out the detailed scoring and assessment across the ‘Strategic Needs’ and ‘Complexity Factors’ for each of the WRZs. They are summarised in Table 2.

**Table 2:** Overall Problem Characterisation summary (IoS=Isles of Scilly WRZ, B=Bournemouth WRZ, C=Colliford WRZ, R=Roadford WRZ, W=Wimbleball WRZ).

		Strategic Needs Score (“How big is the problem”)			
		0 (None)	2 (Small)	4 (Medium)	6 (Large)
Complexity Factors Score (“How difficult is it to solve”)	Low (<7)	IoS			
	Medium (7-11)				B + C + R + W
	High (11+)				

As shown in Table 2, for Bournemouth, Colliford, Roadford, Wimbleball WRZs, the assessment was undertaken independently for each zone, and the overall result determined to be a **‘medium level of complexity with high strategic needs’**.

Compared to our 2019 WRMP, the current problem characterisation shows an increase in both complexity and strategic need, requiring more careful consideration of the tools and methods used to produce our plan. This finding indicates that we require an increased focus on our decision-making methods and, as a result, we have developed more complex multi-criteria decision-making tools and adopted an adaptive planning approach (see Section 8).

We have reported the IoS assessment separately because this is the first WRMP for the Isles of Scilly and the evidence base we have to inform this assessment is not as mature as our other WRZs.

As shown in Table 2, the results of the problem characterisation for the IoS show a **‘small strategic needs score and low complexity’**. This suggests that relatively simple methods are acceptable for the IoS plan, which are also necessitated by the lack of data currently available.

## 2.5 Drought Vulnerability Assessment

Each of our five WRZs has its own characteristics and blend of supply sources, and each water source reacts differently to weather conditions, with some being more susceptible to certain types of drought than others.

We have considered a range of evidence sources to inform our understanding of drought in each of our WRZs. We have used both historical datasets and statistically generated sequences of drought (stochastic drought libraries) to understand the vulnerability of our WRZs to drought. They have informed our approach to our 1 in 500 year drought assessment outlined in Appendix 1.

Both Colliford and Roadford WRZs contain large, multi-seasonal strategic reservoirs, which may not recover fully over the Winter following a dry Summer. This makes them vulnerable to very severe dry summer periods, and rainfall deficit periods of a longer duration. This impacts recovery after a dry Summer. The delivery of our AMP7 schemes mitigates this risk in both WRZs because we will have resilient winter pump storage schemes assisting reservoir storage recovery.

Wimbleball WRZ also contains a large strategic reservoir, but it is supported by a large, pumped storage scheme which allows full recharge in all historic events, and in all but the most extreme climate-impacted future years. This means the system is vulnerable to severe single-season droughts rather than multi-season droughts which are mitigated by the pumped storage scheme.

Bournemouth WRZ has no significant water resources reservoirs and is supplied by groundwater and run-of-river abstractions, making it vulnerable during periods of peak-demand.

The Isles of Scilly WRZ will have desalination on all islands from 2025 and will therefore be resilient to drought. The peak seasonal demands driven by tourism in the summer can be fully supplied by our desalination schemes.

## 2.6 Levels of resilience (service)

The WRPG requires water companies to be resilient to a drought with an annual probability of occurrence of 0.2% without the use of Emergency Drought Orders. This is commonly referred to as the 1-in-500-year level of resilience and we must plan to be resilient to this level by 2039 at the latest.

Prior to 2039, a 1-in-200-year level of resilience must be considered as the minimum. Our policy is to avoid imposing demand restrictions on our customers or increasing our abstractions from the environment outside of our levels of service.

Our current levels of service for customers in Bournemouth, Colliford, Roadford and Wimbleball WRZs is outlined in the table below for our WRMP baseline (Table 3).

This is the first WRMP for the Isles of Scilly WRZ and the Levels of Service have not previously been reported. Our program of improvement works for the Isles of Scilly means we will be able to align the Levels of Service with our other WRZs.

Our preferred plans sets out how we will achieve this 1-in-500-year resilience for each WRZ from 2025 onwards (see Section 10 for full details).

**Table 3:** Our current and proposed levels of service.

Drought Action	Min. Long-Term Levels of Service
Publicity, appeals for restraint and water conservation measures	1 in 10 years (10%)*
Temporary Use Bans (TUBs) <sup>(1)</sup>	1 in 20 years (5%)*
Supply-side Drought Orders or Drought Permits	1 in 20 years (5%)*
Demand-side Drought Orders <sup>(2)</sup>	1 in 40 years (2.5%)*
Emergency Drought Orders – partial supply, rota cuts, standpipes <sup>(3)</sup>	1 in 200 years (0.5%)*
<p>* Annual percentage risk of occurrence</p> <p>(1) Formerly termed hosepipe bans. Return period calculated based on our historic design drought (1975/76), which was classified as at least 1 in 40 years in our SWW supply area WRZs and at least 1 in 100 years in BW supply area.</p> <p>(2) Formerly termed 'non-essential use bans' (NEUBs).</p> <p>(3) Previously service level listed as unacceptable. Following further guidelines from the Environment Agency we included in our WRMP19 an estimated return period for this service level based on our drought analysis. Drought return periods of this magnitude are inherently uncertain, but the events that would cause these interventions are rare.</p> <p>(4) The IoS has been part of SWW since 2020. While data collection around drought performances is more limited than on the mainland, the potential installation of new desalination plants by 2025 as part of the need to meet a Drinking Water Quality commitment has the added benefit of providing a robust and reliable source of water. These plants are the only viable way to meet the drinking water requirements set for the Islands given the availability of alternative water sources. Currently, there is only a single desalination plant, operated by Thames Water, in England at Beckton. Subject to regulatory approvals for the proposed desalination plants, we will align the service level for IoS to that on the mainland. The plants may provide valuable 'lessons learned' for installing desalination elsewhere in England and Wales.</p>	



**Customer and stakeholder views on levels of resilience (service)**

We discussed these varying levels of drought resilience and service with our customers and stakeholders as part of our WRMP24 and West Country Regional Plan engagement programme (see Section 3.5 and Appendix 8).

Availability of water for household supplies and boosting supply resilience is consistently ranked in the top five customer priorities. However, customers' views on water resources management (including the use of drought restrictions and hosepipe bans, and demand management) are primarily driven by the extent to which any intervention or solution impacts on the water environment, with any consideration of personal inconvenience seen as a lower priority (outside of any severe impacts on essential water use).

Customers and stakeholders told us through our consultation process that our supply must be resilient in the short, medium and long-term to drought and other unplanned events. They worry that there could be huge potential increases in water demand from the agriculture and energy sectors and that a greater range of future supply options including raw water transfers and new reservoirs must be identified. They also believe that action is needed now as it could be too late to start planning supply options once they are already needed.

Through several customer research studies, we have found that water restrictions are seen by many customers as an occasional necessity that can cause minor inconveniences. As result of this, these measures tended not to be a priority for customers, who were generally happy with current service levels and did not want to pay to further reduce the risk of restrictions.

However, if restrictions last more than three months (with six months being the maximum tolerance upper bound), then customers felt the impact could become more significant. Research from August 2023 discovered that older respondents (55+) were willing to pay less for reducing the risk of severe drought restrictions compared with all other respondents, but they had stronger preferences for leakage reduction.

This research also found that enhanced resilience to extreme drought is important to customers, but the strength of preference for achieving 1-in-500 years over 1-in-200 years is marginal, which was consistent with the 2022 research findings.

There is a real sense of urgency among stakeholders for investment in solutions to the challenges faced, with many expressing their desire to see more actions delivered (greater scale of investment) and for these to be delivered sooner. In the research undertaken, customers also favoured earlier investment in new supply options, even if this carried an increased risk that they may not be needed or that they could be the wrong scale of intervention.

## 3 SETTING THE SCENE FOR WRMP

Before we could begin to develop our dWRMP24, we first must define the context within it is being developed. This context includes several key factors which need to be considered and fully characterised, including:

- Changes to the water resources management situation in our region since WRMP2019
- New or altered challenges we are facing during the planning period (2025-2050)
- Impact of regional planning on WRMP development
- Customer and stakeholder engagement
- Results of the consultation on our first dWRMP
- Links and interactions with other plans

### 3.1 Changes since WRMP19

#### 3.1.1 Supply and demand

Since our WRMP19 was produced there have been some significant changes to our forecasts. The supply-demand impacts driven by climate change, growth and environmental sustainability have increased and, without intervention, there is a greater risk of deficit in the future (see Section 3.2 'Challenges we face 2025-50').

Several recent events have put additional pressure on our water resources and increased the short-term risk to water supplies and the environment. Since 2019, we have experienced a significant drought and the COVID-19 pandemic, which both led to unprecedented levels of demand putting greater pressure on our resources and networks.

During the hot, dry period in 2022, demand for water increased significantly. While most of this increase was likely to have been driven by the seasonal peak in tourism, the increased needs of other sectors such as agriculture and domestic consumption were also impacted by the dry weather, which further pushed demand up.

Another significant driver of demand increases in AMP7 has been the impact of the COVID-19 pandemic. Post-COVID water use behaviour is still 'normalising'. The COVID-19 restrictions meant people worked and studied from home far more, travelled abroad far less and consequently part of their water use such as toilet use and showering has shifted from business to domestic use.

In 2023, people have increasingly returned to the office/work locations, but hybrid working is becoming well integrated and is unlikely to return to pre-pandemic levels. In addition, while people are now able to travel abroad, it appears that there is a permanent increase in the number of people holidaying in the South West.

In 2019/20 customer water use was under 150 litres per person per day (L/p/d), but in 2020/21 it increased to nearly 160 L/p/d and in 2021/22 nearly 170 L/p/d. We are now seeing a return to pre-COVID demand levels, but the legacy of the COVID-19 pandemic is that more people work from home than ever before, and household water consumption continues to be higher than forecast in our WRMP19 (see Appendix 2 for more details).

Our assessment of the water supply available remains consistent with that presented in the previous plan, but the new requirement to plan for a 1-in-500 level of drought resilience has required us to recalculate our Water Available For Use (WAFU) under more severe droughts.

Taken together these changes have impacted on our supply-demand position and we have had to act in this investment period (AMP7) to improve our baseline position for dWRMP24.

## 3.2 Additional investment in AMP7 (2020-25)

As a result of the changes described above, we are currently scoping several supply-side options for delivery in AMP7 to address the gap in the supply-demand balance that has arisen since our WRMP19 plan was approved. As stated, in our WRMP19 we forecast a surplus so did not propose any supply-side schemes in that plan.

To reduce demand closer to the levels forecast in WRMP19, we have increased our delivery of water efficiency initiatives and leakage reduction for the years 2023-2025, over and above the levels we included for that period in our WRMP19 plan. We also have a 'Green Recovery' scheme that has brought forward the delivery of smart metering in the Roadford area from 2025 to 2023.

In addition, the changes have prompted us to invest in accelerated infrastructure initiatives designed to increase the resilience of our supply network in the Colliford and Roadford WRZs, and we are currently progressing several additional supply options in AMP7 (including desalination). These additional AMP7 investments are described below.

For all these changes we have considered how this new capacity will affect our longer-term strategy set out in this dWRMP.

### 3.2.1 Green Recovery: Roadford Pumped-Storage Scheme

We have committed to deliver the following as part of the 'Green Recovery':

- A new intake pumping station on the River Tamar to Roadford reservoir to increase its yield during drought periods and potentially facilitate water transfers.
- To lay a new raw water main and treated water main between the Prewley and Northcombe water treatment works to address water quality and sufficiency concerns.

In developing our Roadford pumped storage Green Recovery scheme, we made assumptions around the assets that were put in place after the 1995 drought, and which have not been used since that time. One of those assumptions was that the existing pipeline to Roadford could take the full planned flow.

We have subsequently investigated the assets and identified that the main will need to be dualled to achieve this flow, and the green economic recovery funding is insufficient to cover the cost of this additional capacity.

The full benefit of 10 ML/d Deployable Output (DO) in a 1 in 500 drought will not therefore be achievable under the funding awarded, and the benefit of the scheme will be 6 ML/d instead. The scheme is still cost-effective at this reduced DO. We have included the benefits of this scheme in our baseline DO assessment, and this is visible within our planning tables.

A new River Lyd abstraction licence has been accelerated in response to the 2022 drought in parallel to the Roadford Green Recovery Scheme. The Lyd licence will allow us to abstract 40 ML/d from the River Lyd between November and March to enable pumped refill into Roadford Reservoir.

In our dWRMP submission, the Gatherley Phase 2 option (ROA15) includes increased pipeline capacity which will facilitate the use of both the Lyd and Gatherley schemes in parallel, and this is selected in our preferred plan from 2032 onwards.

### 3.2.2 Green Recovery: Metering & Leakage

As part of the Green Recovery programme, we have committed to deliver the following:

- Smart metering upgrades for 44,800 installations and for 76,072 basic meters to be replaced by, or upgraded to, smart meters
- Replacing/repairing 2,076 customer supply pipes.



The smart metering benefits of 0.93 ML/d in the Roadford WRZ, as stated in the Green Recovery Final Determination, are incorporated in our demand figures beyond 2024/25, so that they begin to deliver savings beyond 2024/25. We have used our Final Determination performance commitment level for the 24/25 baseline.

Total demand in the Roadford zone is around 233 ML/day at the end of AMP7 (45BL I Table 3 of the WRMP tables v2.0). The starting point of 0.93 ML/d difference is not expected to make a material difference to our plan.

Our metering data tables account for our Green Recovery metering installation investment programme. The only exception to this is for new connections where we are continuing to install AMR meters. This position is being reviewed and could lead to a small change to the data tables to account for this between our draft and final submission.

### 3.2.3 Defra Accelerated Delivery Programme

In 2022, we received approval from Defra to accelerate the delivery of some of our AMP8 investments into AMP7. Proposed activities included:

- Acceleration of our proposed metering strategy in Colliford by starting the proposed smart metering programme 2 years earlier than stated in our dWRMP, with a planned completion by 2035. This programme will deliver 37,300 new domestic smart meters and 2,700 commercial meters by 2025 in combination with a pre-fit flow regulator. This is estimated to reduce Per Capita Consumption (PCC) by an additional 0.1% by 2025.
- Providing free customer supply-pipe leakage repairs. This is estimated to deliver an additional 0.6% leakage reduction across our whole region.
- Installation of the supply-side option COL 2: Colliford Pumped Storage Stage 2 (River Camel Abstraction).
- Accelerating the work via the WCWRG Regional Plan to deliver the feasibility and design works for the Cheddar 2 Reservoir, to deliver of the scheme by circa 2030.

It is important to note that the design of this Defra accelerated delivery programme is still being finalised and, as a result, we have not included the benefits of it in our dWRMP baseline.



### 3.2.4 Desalination in Cornwall and the Isles of Scilly

Perhaps the most advanced of our AMP7 supply options are the desalination plants proposed at Par in Cornwall in the Colliford WRZ and 5 small works being developed on the Isles of Scilly (one on each inhabited island), all of which are due to be ready for operational use in 2024.

The Isles of Scilly currently rely on groundwater sources and the treatment processes require improvements. We will meet these requirements and provide a desalination capability by 2025 to ensure the Islands have a secure water supply. These initiatives will improve our supply-demand position ahead of the WRMP plan delivery.

### 3.2.5 Water efficiency campaigns for household and non-household customers

As a result of changes in demand in recent years, our recorded consumption for 2022/23 was greater than our WRMP19 forecast for every customer category. Measured consumption has seen a similar increase for both household (HH) and non-household (NHH) customers.

To address this challenge, we have delivered an enhanced programme of demand management activities in AMP7. These included the delivery of large-scale water efficiency schemes targeting both HH and NHH customers, and visitors to the region. Examples of the schemes delivered include:

- **Working with schools** (NHH) in the Colliford WRZ as part of a joint initiative with the Department of Education. In 2022/23, 44 schools were visited, and interventions and remedial work undertaken at 22 sites.
- Establishing our **Non-household Innovation Fund** to encourage business customers to proactively think about how they can reduce their consumption. The total fund for 2022/23 was £110,000 and the maximum contribution per customer was £10,000.
- Continuing our **Water Saving Community Fund**. In 2022/23 we funded 49 community groups to a total of £125,000, delivering an estimated annual water savings in the region of 116 Megalitres.
- Engaging with **water efficiency contractors** with experience of working with commercial customers, such as Groundworks and H2oIQ, who will be delivering audits and interventions in 2023/24.
- Working with key **NHH customers** (such as in the agrifood, tourism and energy sectors) throughout 2023/24 to help them with water efficiency measures as part of our work to preserve water resources and reduce total demand.
- Evolving our 'Stop the Drop' incentive campaign, initiated prior to Christmas 2022, into our long-term campaign to "**Save Every Drop**". This focuses on **driving consumer behavioural change** through education, engagement and support to reduce water consumption by our customers, businesses and tourists over the long term.

# SAVE EVERY DROP



Ordinary steps really do make  
an extraordinary difference.



### 3.3 Challenges we face 2025-2050

We have a vital role to play in ensuring that we can maintain a sustainable and resilient water supply that is affordable, is shaped by our customers and stakeholders' views, and which delivers a positive benefit to society and the environment.

Over the next 25 years we will be facing several challenges which will have a significant impact on the delivery of both our corporate and water resources management objectives. These include:

- Changing regulatory requirements
- Impacts of climate change
- Increasing demand for water
- Reduced abstraction to protect the environment
- Higher levels of drought resilience
- Continued delivery of value and affordability for customers.

#### 3.3.1 Regulatory requirements

Our dWRMP has been developed in line with regulatory guidelines and statutory requirements under the Water Industry Act 1991 and the Government Directions 2022.

The regulatory requirements and expectations for WRMP24 include national objectives set out in the EA's **National Framework for Water Resources** and the UK Government's **Environmental Improvement Plan**. These requirements now include:

- Producing a plan to provide a secure supply of water for our customers that protects and enhances the environment.
- Delivering environmental improvement.
- Increasing resilience to drought so that restrictions such as rota cuts and standpipes are needed no more than once every 500 years on average by 2040.
- Meet demand reduction targets for leakage, per capita consumption (PCC), non-household water use and water production:
  - 50% reduction in leakage compared to 2017/18 levels by 2050
  - Average PCC of 110 l/h/d by 2050
  - 15% reduction in non-household water use by 2050
  - 20% reduction in water production by 2037/38
  - 20% reduction in DI per head by 2050.
- Exploring opportunities for large supply and transfer schemes beyond the boundaries of our supply system.

The Government objectives align with our own long-term company goals and our WRMP strategy for meeting these objectives has been developed in conjunction with our regional group and other stakeholders.

It is now essential that any WRMP programme selected must be constrained by these statutory targets and policy expectations, which are pre-defined and timebound. We have therefore ensured that these are applied across all future scenarios analysed and in the analysis of our best value objectives and plan (see Sections 8-10 of this report).



### 3.3.2 Climate change

**YOU SAID  
WE DID**

Customers and stakeholders have challenged us to set out the future impacts that climate change might have on water supply and demand in a clear and easy to understand way.

In line with this, we have worked hard to improve the way we have analysed and presented our assessment of climate change impacts on our supply and demand forecasts.

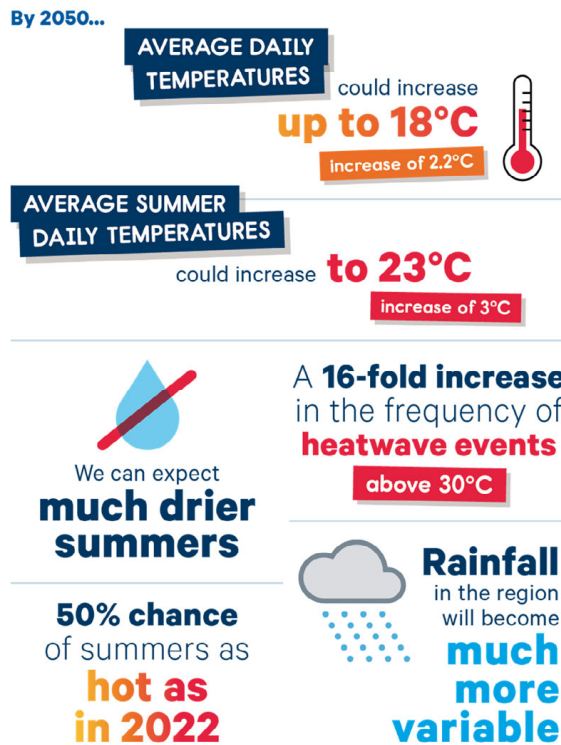
In the future, we will face longer, drier and hotter summers and more erratic rainfall. This will include prolonged periods of dry weather and increased flood events. Our dWRMP baseline supply forecast considers the risks during dry weather as this is when the supply-demand balance is most vulnerable.

Our forecasts for future water supply also incorporate the predicted impact of climate change over the next 25 years. Our approach to forecasting the impacts of climate change on water supply are set out in Sections 4 and 5 of this report and in Appendices 1 and 2.

The scale of the impact of climate change on water availability is highly uncertain and we have assessed a range of scenarios using the UKCP18 data. Our baseline deployable output is based on a medium climate change emissions scenario in accordance with regulatory guidelines.

The climate change impact (under a medium emissions scenario) on water availability in our five water resource zones is estimated to be a ~14 ML/d reduction in water availability by 2050.

It is also anticipated that climate change will have an impact on the demand for water. Our approach to forecasting the impacts of climate change on the demand for water are set out in Section 4 of this report and in Appendix 2.



### 3.3.3 Increasing demand for water

#### YOU SAID WE DID

Many stakeholders and customers have voiced concerns about the impact that both population growth and tourism can have on the demand for water, especially at times when water resources are already under pressure. They also urged us to ensure that these impacts should not be underestimated.

To meet this challenge, we have updated and improved our demand forecast, which you can now find summarised in Section 4 of this revised dWRMP and in Appendix 2.

#### Population growth

Population across our region is growing each year and by 2050 there could be up to 400,000 more people living and working in our region. By 2050, our projections estimate there could be around 300,000 new houses built in our supply area and 20,000 additional commercial properties.

This growth is mostly in towns and cities and our existing network in these areas will be put under stress, especially during peak demands. As well as planning for sufficient water resources, we must ensure that we have sufficient treatment capacity and infrastructure to transport the water to our customers. The population growth will be predominantly across our Colliford, Roadford, Wimbleball and Bournemouth WRZs.

The Isles of Scilly has low potential for growth as it is a protected area with restrictions on development. Our forecasts do predict that there will be an additional 80 houses on St Mary's by 2050 but development elsewhere is limited to very few properties.

Taken together, we estimate that this population growth will require an additional 30ML/d to be put into supply by 2050, equivalent to 15 Olympic-sized swimming pools extra water every day.

#### Seasonal peaks in demand for water

The Isles of Scilly and Cornwall are the hottest areas of the UK, and many tourists visit our area each year, creating prolonged periods of high summer demand. During critical periods demand can increase by up to 50% in some parts of our region.

Tourists and visitors staying on the Isles of Scilly each year increase the population by over 15%. In other parts of our region, tourism typically creates a one to four percent increase in population. We see seasonal peaks in demand in each zone with the Isles of Scilly and Colliford showing the most significant uplift in summer demand due to tourism.

Our Bournemouth and Colliford zones are vulnerable to increased demand for water in the summer and we have created a peak week critical period scenario for each of these zones. During peak periods these zones are limited by resource and system constraints that increase the risk of deficit and can drive additional investment.

### 3.3.4 Abstraction reduction – Environmental Destination

In its 25-Year Environment Plan the Government has set out ambitious long-term goals to protect and enhance the water environment by improving at least three quarters of our waters to be as close to their natural state as soon as is practicable.

These long-term goals are reflected in the EA's latest draft River Basin Management Plans and the National Framework for Water Resources, which set out the anticipated need for water to improve the ecological health of the environment and to support nature recovery.

**YOU SAID  
WE DID**

Protecting and improving the environment is the highest priority for many of our customers and stakeholders, followed by resilience and affordability. Stakeholders saw nature-based solutions as a key strand to any environmental approach. Stakeholders wanted to see more specific biodiversity and environmental ambitions added to our plan.

Protecting and improving the environment and historic landscapes is as important to us as meeting our customers' demand for water. Where abstraction is causing, or is at risk of causing, serious damage to the water environment we must plan to reduce the volume of water we are permitted to take. For our dWRMP, we have worked with the EA to understand which of our sources of supply are vulnerable to abstraction and used this information to develop our 'Environmental Destination' (ED).

Rivers and reservoirs are the main sources of supply in our area, providing around 90% of our region's water resource needs. The remainder comes from groundwater sources, such as boreholes, wells, and springs, which are predominantly located in East Devon, parts of Bournemouth and the Isles of Scilly.

Climate change and increasing demand for water not only impacts on water availability for public water supply, but also water availability for the environment. During dry weather when less is available, we have to abstract more water from reservoirs, rivers and groundwater sources. There is a risk our current abstractions are detrimental to the environment during dry weather and that watercourses will become more sensitive to abstractions over time.

The catchments we abstract from include internationally designated Special Areas of Conservation (SACs) which we have a statutory duty to protect from over-abstraction. We are also working with the EA to investigate the impacts of our abstractions on the ecological health of several other rivers in our supply area. We have a duty to mitigate any impacts on these rivers under the Water Framework Directive 2000 via the Water Industry National Environment Programme (WINEP) and several other drivers.

As summarised in Section 5.4 of this report and in Appendix 1, we will need to significantly reduce the quantities of water taken from environmentally sensitive waterbodies in four of our five zones. In our baseline supply forecast the total impact on water available by 2050 will be a 172 ML/d reduction in average abstraction

**3.3.5 Drought resilience**

A key objective of the WRMP is to demonstrate that we will be able to sustainably meet the demand for water over the next 25 years, even when under drought conditions. We also need to help maintain the resilience of the natural environment, river catchments, business and communities to drought.

Water companies are now required to ensure that, as a reference level of service, WRMPs should be resilient to a 0.2% annual chance of failure due to drought, giving a 1 in 500-year level of resilience, by 2039. This level of service is set against the need for emergency drought orders such as the use of standpipes.

To ensure we are resilient to low rainfall during extreme drought events, our WRMP baseline deployable output is based on a 1-in-500-year drought event, derived from stochastic (described by a random probability distribution) datasets and rainfall runoff models.

Our previous plan was based on a 1-in-200-year drought event. By planning to more extreme drought conditions we reduce the risk of emergency drought actions and the frequency of preceding actions such as restrictions on use and temporary increases in abstraction permits. This improves our level of service to customers and reduces our reliance on supply-side drought actions that take more water from the environment.



### 3.3.6 Value for customers

We have developed our dWRMP to address the challenges we face, from population growth and increased demand to the changing climate and its impact on the performance of our operations. However, while we need to demonstrate change, we also need to balance this with keeping water bills affordable for all. It is essential that, while our plan rightly focuses on the things our customers have told us are most important, we also ensure that we limit the impact on our customers' bills and charge a price that is fair.

Our revenue is capped by our economic regulator, Ofwat, and so we do not benefit from changes in tariffs and charging structures. However, we know it is important to customers that their charges are fair, and the service they receive represents value for money. With increasing focus on water resources, climate change and affordability, it is also important that we conserve water, only using the water that is needed across our region, and that tariffs incentivise careful use of water. As a result, updating our tariffs to ensure they are fair, as well as benefitting those using less water, is vital.

### 3.3.7 Our overall supply-demand balance challenge

The supply-demand balance in all our WRZs has changed since WRMP19. In summary:

Our supply-demand balance for each of our five WRZs against 1 in 200-year drought events until 2039, and 1 in 500 year droughts after, is summarised in Table 4. Small deficits which can be overcome with drought measures such as TUBs and drought permits are coloured amber.

**Table 4:** Supply-demand balance for each of our five WRZs against 1 in 200-year drought events until 2039, and 1 in 500 year droughts after 2039.

Water Resource zone	2025	2030	2035	2040	2045	2050
Bournemouth	+16.0	+15.9	-92.1	-93.4	-95.8	-98.2
Colliford	+4.2	0.0	-1.9	-14.6	-20.3	-24.1
Roadford	-5.6	-6.7	-6.7	-34.3	-37.3	-40.8
Wimbleball	-8.9	-9.9	-19.4	-32.6	-35.4	-38.2
Isles of Scilly	0.0	+0.7	+0.7	+0.7	+0.7	+0.7

The different pressures outlined previously mean that overall, we are facing a significant challenge to our future water supply/demand balance.

Using our best estimates of how the different baseline planning assumptions might evolve over time, we are projecting supply deficits in all our mainland WRZs in the 2030s.

The combined supply-demand deficit for all our zones in 2050 is over 200 ML/d. This is the equivalent to around 80 Olympic sized swimming pools every day. Therefore, we will need to invest in supply and demand interventions to prevent this happening.

## 3.4 Regional Planning

The EA's National Framework laid out the scale of the water resources challenge facing England and Wales. It set the expectation that water companies will work together in regional groups to develop a set of cohesive plans which identify the best options to meet the challenges we face, whilst delivering the best value for the environment and society.

### 3.4.1 West Country Water Resources Group

The West Country Water Resources Group (WCWRG) is one of five regional groups in England, responsible for producing a long-term strategic plan for managing water resources in the South West region for all water users to 2050. The Group was created in 2018 with the purpose of developing the first ever water resource plan to protect water security across the South West of England.

The South West region stretches from Bristol and Wiltshire down to Devon and Cornwall. It is made up of diverse and distinct areas each facing their own unique water resource challenges. The Western part not only includes high quality environmental sites of both national and international importance but is also a working agricultural landscape, a popular tourist destination, and home to over 4.7 million people. In total 1,400 million litres of water are used every day in our region, 85% of which is for domestic use. Water sources in the western side of the region are predominantly from reservoirs and rivers.

The eastern side of the region is dominated by chalk landscapes and rolling downs. Many of the watercourses are 'bournes' or chalk streams supporting rich habitats, but with river and stream flows that vary naturally depending on the pattern of recharge to the chalk aquifers. In the East, water use for industry, agriculture and homes is mainly from underground aquifers and from the larger rivers in the area.

In line with the EA's framework, the West Country Regional Plan (WCRP) sets out, at a strategic level, how the supply of water for people, business, industry, navigation and agriculture will be managed across a region. It describes how resilient water supplies will be provided for all users for 25 years or more, while protecting and enhancing the environment.

We are a core member of WCWRG, and we continue to collaborate closely with the other core members – Bristol Water, Wessex Water and the EA as we developed the plan for our region. Our dWRMP has been designed in close collaboration with the WCWRG and is well aligned with the water resources management strategy set out in its WCRP. It has informed each stage of the development of our own dWRMP, including the selection of our preferred programme.

#### YOU SAID WE DID

In relation to our dWRMP and the WCRP, our customers and stakeholders challenged us to collaborate with partners, regulators and stakeholders at a regional strategic scale.

In line with this, we have worked hard to integrate and align our dWRMP with the Regional Planning process and now have our own technical specialists actively delivering elements of the WCWRG programme including multi-sector engagement, regional modelling and strategic resource options (SROs). We have also worked to identify any inconsistencies between the preferred programme in the regional plan and our preferred programme in our WRMP.

### 3.4.2 West Country Regional Water Resources Plan

The current water resource situation in the West Country is set to become more challenging for all water users and the environment. Although the past record for meeting water needs across the West Country has been good, the future is looking different with several factors accumulating to result in the need for drastic change over the next few decades. These factors include:

- **Climate change** – the changing climate has implications for water availability and demand in the future. There is a general trend to warmer and wetter winters and hotter, drier summers. This means we may need to store more water over the winter to ensure summer demands can be met. The impact of climate change in the Draft Regional Plan is estimated to result in a loss of water resource of between 102 and 169 ML/d by 2050 depending on the severity climate change scenario used.
- **Improving the environment** – a key focus of the West Country Regional Plan, in line with the requirements set out in National Framework, is to deliver environmental improvements to water habitats across the West Country region. The environmental outcomes will primarily be driven by a reduction to abstraction volumes. Meeting the ‘Environmental Destination’ may result in a reduction of water available for public supply by between 180 and 201 ML/d by 2050. The regional plan sets out how the environmental destination for the region will be achieved.
- **Ensuring supply resilience** – Government policy has shifted in response to changes in climate we are currently experiencing, with water companies across the UK planning to increase their resilience to drought from 1 in 200-year events to 1 in 500-year events. Planning to this higher level of drought resilience will require additional actions to be taken to either reduce demand or increase supply capacity.
- **Future demand** will be affected by many factors including population change, changes in consumption patterns for homes and businesses, climate change, and technological advances. This creates a high level of uncertainty in the forecasts. Our Regional Plan has been developed with other large water-users and takes into account the demands of all sectors.

Due to these pressures, WCWRG anticipate a deficit of between 131-246 ML/d by 2050. If no action is taken to improve the resilience of the region, the West Country is likely to face a shortfall in water availability by 2050. It is vitally important that we work together as a region to reduce the overall risk for the whole area.

### 3.4.3 West Country Strategic Resource Options (SROs)

As part of our work with the WCWRG, we are developing three **Strategic Resource Options (SROs)**. SROs are large regional or inter-regional schemes which have the potential to provide benefits to multiple water companies.

The Regulators Alliance for Infrastructure Development (RAPID) are charged by the government to assess and progress infrastructure development rapidly to ensure needs are met. The 3 SROs in our region, which are currently being progressed through RAPID’s gated process, are:

- Mendip Quarries (Torr) Reservoir
- Poole Water Recycling
- Cheddar 2 Reservoir

A summary of the West Country Regional Plan is shown in Figure 10 and further details on the specification and status of these schemes are set out in Section 7.5 and can be found on the WCWRG website - <https://www.wcwr.org/our-work/documents/regional-strategic-options/>

The draft Regional Plan proposes that all the SROs, including Mendip Quarries, continue to be developed so that they can be implemented when new water resources are required. This should either be as part of the preferred plan or as part of an adaptive plan in case demand reductions do not materialise or if environmental needs are greater than expected.

The draft plan also recognises the need for a regional water resources model to better understand the utilisation of solutions, intra-regional transfers and what a regional best value plan would look like. This work is scheduled to commence by September 2023 and be completed so that it can be used to prepare the next regional plan in 2027.



Figure 10: Summary of the West Country Water Resources Group Regional Plan



### The South West of England is made up of diverse and distinct areas facing their own unique water resource challenges.

Our region supports:

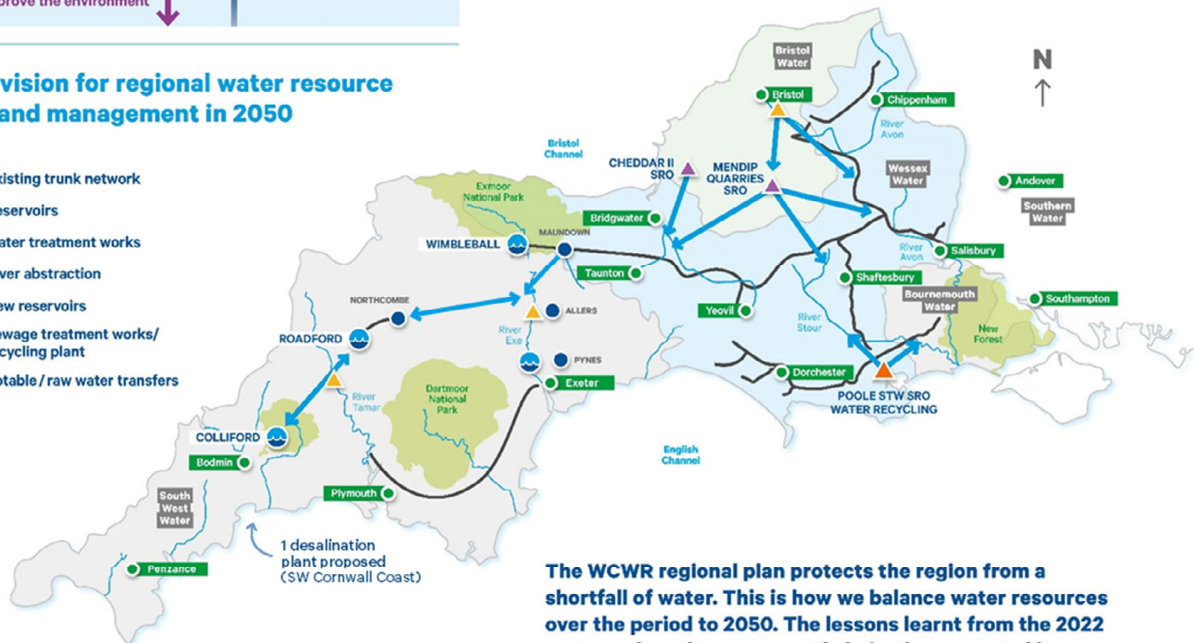
- Both national and internationally important environmental areas
- An extensive agricultural sector
- Active minerals extraction sector
- Nationally popular tourist destinations
- Home to over 4.7 million people
- 1,400 million litres of water are used every day, 85% is for domestic use.

**Our aim is to achieve a long-term sustainable water resource future.**



### Our vision for regional water resource use and management in 2050

- Existing trunk network
- Reservoirs
- Water treatment works
- ▲ River abstraction
- ▲ New reservoirs
- ▲ Sewage treatment works/ recycling plant
- Potable/raw water transfers

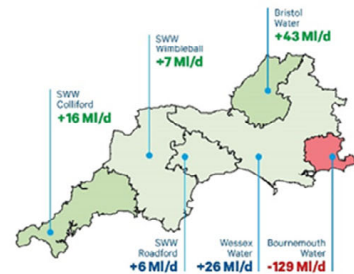


The WCR regional plan protects the region from a shortfall of water. This is how we balance water resources over the period to 2050. The lessons learnt from the 2022 summer drought are currently being incorporated in revised company WRMPs and the Final Regional Plan.

### 2050 Supply balance plus demand

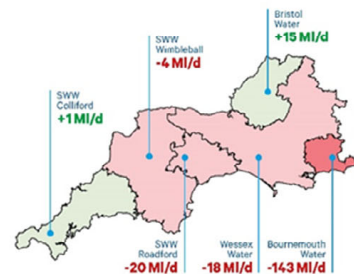
#### Scenario 1

Climate prediction	RCP 6.0 (+1.9°C)
Environmental destination	BAU+
Leakage	Reduced by 50% by 2050
Water use per person per day	Achieve 110 l/p/d target



#### Scenario 2

Climate prediction	RCP 6.0 (+1.9°C)
Environmental destination	BAU+
Leakage	Reduced by 25% by 2050
Water use per person per day	Achieve 131 l/p/d target



The Hampshire Avon in the SWW Bournemouth supply zone is a major future challenge where reductions in abstraction to protect the environment are significantly affecting the supply and demand balance.



\* Data may change as regional water resource plans for Bristol Water, South West Water and Wessex Water are finalised. A final regional plan will be published in late 2023/early 2024.

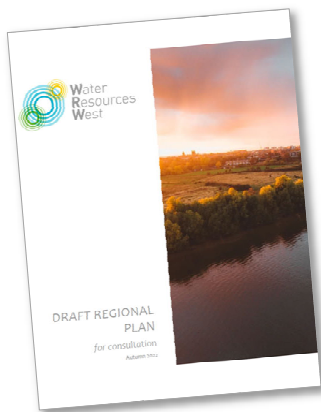
## Links to other Regional Plans

WCWRG does not sit in isolation to the other regional groups across England and Wales. To the east of the region, it borders Water Resources South East (WRSE), and to the north, Water Resources West (WRW).

During the planning period a 'regional reconciliation' scheme was undertaken with representatives from each planning group collaborating to find potential water transfer schemes across regional boundaries. WCWRG collaborated with its neighbouring companies to find and assess the potential suitability of transfer options into and out of the region.

An outline of our neighbouring regions below highlights the future water impacts that will be felt in other parts of the UK.

- Water Resources South East (WRSE)** – the WRSE draft water resource regional plan submitted in December 2022 shows a severe situation with all scenarios showing large water supply deficits with an increasingly difficult challenge to balance water supply demand from population growth with the pressures of climate change and environmental protection. Under low, medium and high population growth projections these needs vary between 1000 to 2800 ML/d of additional water supply requirement.



- Water Resources West (WRW)** –

In contrast, WRW identified they have potential options to transfer water out of their region to those in need. This includes a possible River Severn to River Thames water transfer. This is relevant to WCWRG because Bristol Water abstracts water from the Sharpness Canal just off the Severn estuary. If more water is available in the Severn, it could also be available for the West Country.

The conclusions of the reconciliation processes removed the likelihood of water being sent out of the West Country region to support WRSE from the proposed strategic resource options, and transfers into the West Country from strategic resource options were also confined to the most extreme of climate change scenarios. This decision was mostly based on the need for water to stay within the West Country for regional needs and the high cost of requiring support from WRW through any transfers into the West Country.

Combined analysis of the water company's draft Water Resource Management Plans (dWRMP) to be completed in 2024 by Wessex Water and Bristol Water and South West Water indicates that the supply and demand balance within the West Country Region currently mean it will be unable to provide transfers out of the region.

### 3.5 Customer and stakeholder engagement

We are committed to working with customers and stakeholders to develop an integrated and holistic approach to water management so that our WRMP delivers cross-sector, mutual benefits and outcomes for society and the environment.

Throughout the development of our dWRMP we have fostered close collaboration with customers, partners and regulators, and this has helped us to develop a full understanding of future water needs (challenges) and the potential options (solutions to the challenges) while building strong consensus on our plans and their delivery.

We have developed an approach to customer and stakeholder engagement that is broad, inclusive and comprehensive, and we have consistently applied it throughout the development of our dWRMP. A detailed report on this work can be found in Appendix 8 of this dWRMP.

Consultation and collaboration with our customers and stakeholders are a continuous process that ensures our water resource planning, overall business planning and long-term strategies are fully integrated with each other and are fully reflective of customer and stakeholder preferences.

#### YOU SAID WE DID

Our stakeholders have been clear that they believe that collaborative working is essential for SWW to achieve the ambitions set out in our plans, and they want to work in partnership to co-create and develop solutions and strongly support community engagement initiatives. They have also repeatedly advocated that we should adopt a holistic, evidence-based and collaborative approach to the delivery of water resources outcomes, and called for cross-sector solutions, collaboration, holistic approach, strategic options at a regional-scale, and NBS to increase environmental resilience.

Our dWRMP approach has been transparent in its methods, data, assumptions, and decisions, and it has been scrutinised and discussed with stakeholders throughout the process. To demonstrate that our stakeholders' views have been considered (and acted on) in the development of the Plan, we have included 'You Said, We Did' sections throughout this plan that show where stakeholder insights have influenced the plan.

#### 3.5.1 Customer engagement and research

Our 2020-25 Business Plan laid the foundations for comprehensive customer engagement to support the development of the dWRMP. We carried out significant customer research during PR19 planning, engaging over 27,000 customers which included 1,072 business customers.

Building on this work, our research around water resources, water restrictions and water use has continued throughout 2022 and 2023, and a further 26,000 customers have now been engaged in relation to our future planning, including the dWRMP.

The purpose of this engagement and research has been to gain a clear understanding of our customers' priorities for investment, the environmental issues they care most about, what they think about water efficiency measures and how much they are willing to pay for our services.

During these studies, which have spanned several years (2016-2022), we have employed different research methods, such as workshops, interviews, surveys and focus groups, including one study conducted during the COVID-19 pandemic to understand how that has shaped views.

The findings of this research have been brought together into an independent synthesis by Frontier Economics, which collated insights from around 40 separate studies. This synthesis has given us a clear customer viewpoint on priorities for investment and preferences for solutions. It has helped to identify gaps in our knowledge which we will aim to fill with future research.



Specific customer engagement undertaken to inform our dWRMP24 has included:

- 8 in-depth research or 'deep dive' studies involving large-scale surveys and 28 focus groups.
- In-depth customer interviews (4) and bulletin board (14) to gather feedback on the dWRMP.
- Ongoing sentiment tracking research and ad-hoc deep dives into emerging topics.
- Our 'Green recovery' insight programme looking into how we could better support customers following the COVID pandemic.
- Focus Groups to gather feedback on proposed supply and demand options for customers and businesses in the water stressed Bournemouth Water area.
- Research study into views of Water Retailers and NHH Customers (various issues).
- Two major Willingness-to-Pay studies exploring customer perceptions and priorities.

In addition, we have also worked alongside the WCWRG to deliver a major customer research study between June 2021 and March 2022, which focused on customer awareness of drought resilience measures, the effectiveness of behaviour-change programmes, where we should set our environmental ambitions and the options for issues such as water transfers and reservoirs.

We learnt a huge amount about our customers' points of view through our extensive insight gathering including what our customers value about water, their perception of the challenges ahead, their priorities, and their expectations of our performance and services. This insight has informed, influenced and underpinned the development of all aspects of our dWRMP, from option selection to levels of service.

### 3.5.2 Pre-consultation – stakeholders and regulators

To develop the dWRMP, we worked closely with a wide range of stakeholders across our region, as well as with our expert colleagues within South West Water and our regulators. Throughout the development of the dWRMP, the views, concerns, issues and preferences of stakeholders were captured, documented and have been carefully considered.

The insights gained have helped us to shape the strategic direction of our plan, refine our approach to water resources management planning, including the methodologies adopted, and improve the content of our dWRMP. They will also be used to inform the development of subsequent customer and stakeholder engagement campaigns.

The early engagement undertaken with our regulators and stakeholders meant we were able to:

- Identify opportunities to benefit multiple water users and the environment.
- Reducing the risk of issues being identified later and resolve concerns early.
- Be transparent in methods, data, assumptions, and decisions.
- Engage at a local or catchment level and take a 'catchment approach'.
- Demonstrate that stakeholders' views have been considered (and acted on) in the development of the plan.
- Include evidence of customer and stakeholder support for our environmental objectives and plan to meet the ambitions of the 25-Year Environment Plan.
- Provide confidence to regulators and stakeholders that the Plan represents best value.
- Align with and complement other planning processes, including River Basin Management, Flood Risk Management, Drainage and Wastewater Management and Drought Plans.

Some of the feedback and comments received from our customers and stakeholders are shown on the following page – a detailed report on this work can be found in Appendix 8 of this dWRMP.

**“I wouldn’t mind paying more but I certainly would want to see the figures that it’s actually making a difference, because if it’s not I wouldn’t want to pay it. You’d want to see the numbers going down wouldn’t you, on the leaks and the emissions and pollution.”**

SWW customer, C2DE,  
Aged 18-45

**“My children are only 5 and 6, but already they talk about climate change in school and they’re aware of issues with the environment, so I think that it’s only a thing that’s going to continue to be discussed.”**

SWW customer, SEG ABC1,  
Aged 18-45

**“You can’t control population growth, you can’t control the climate change but you can improve the resilience of water supplies.”**

SWW Business customer,  
Devon

**“I don’t think anyone wants to see their bills going up at all, but I think if something’s really worthwhile then I think people would accept it, but it’s got to be something that doesn’t seem like a minor issue.”**

SWW customer, SEG ABC1,  
Aged 18-45

**“I’d say probably increasing water resilience is quite important, because the weather can obviously be quite bad in England, so if there’s like storms and things then it’s quite good that that’s ahead of target, because you don’t want to be without water for any period of time.”**

BW customer, SEG AB,  
Aged 18-30

**“I think they should be investing now and looking at a mix of things to see what the best option is for the future.”**

SWW customer, C2DE,  
Aged 46+

We adopted a wide range of methods to connect with and engage our stakeholders, including correspondence campaigns, one-to-one meetings, focus groups, workshops, dissemination events, formal research and many additional formal and informal conversations which take place between our expert colleagues, partners and stakeholders on a regular basis.

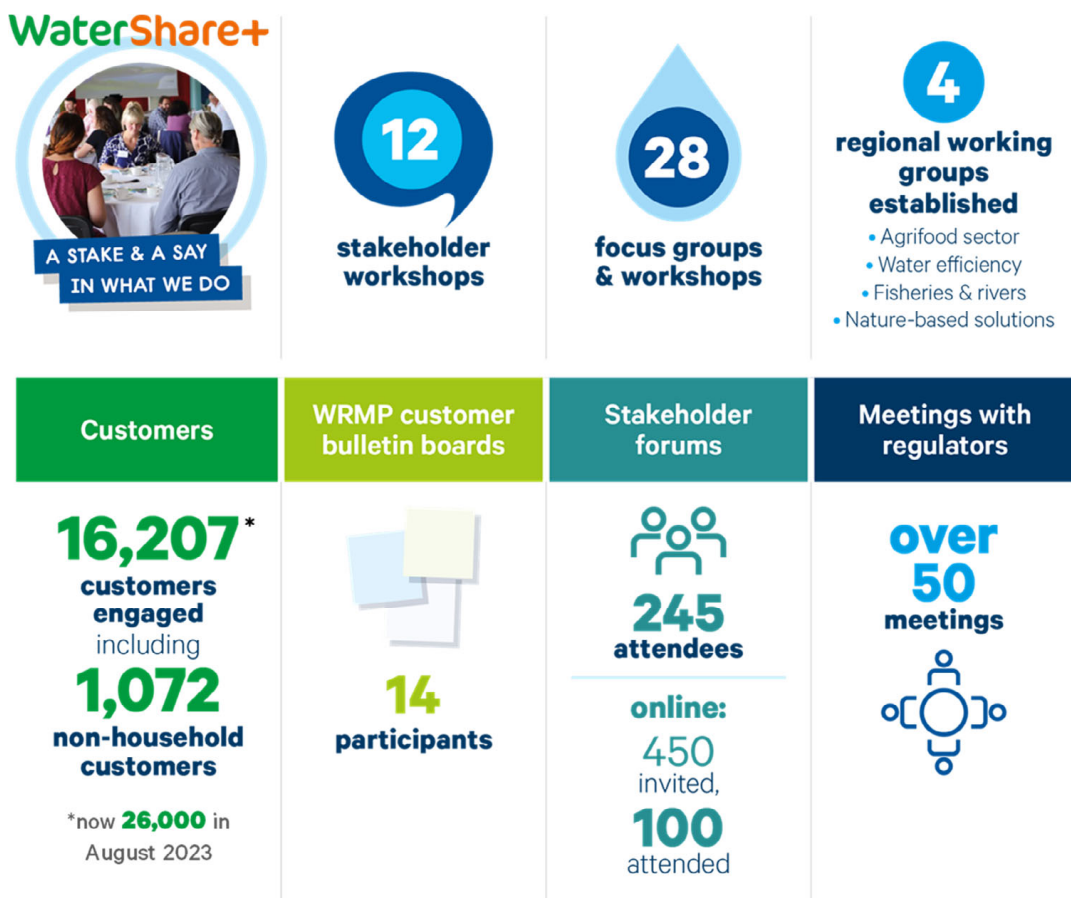
During our pre-consultation stakeholder engagement work, we contacted over 400 stakeholders from across all 15 of our key sectors. Over 200 of these have become actively engaged in the process through attending events, completing surveys or by engaging in the dialogue via 1-2-1 meetings or working group meetings.

We also convened 12 stakeholder workshops, held two Stakeholder Forum events (~80 attendees at each), and established 4 regional working groups to discuss key regional water resources issues. The four groups were Agrifood, Water Efficiency, Fisheries and Rivers, and Nature Based Solutions.

We believe that our approach to developing our dWRMP has been transparent in its methods, data, assumptions and decisions, and it has been scrutinised and discussed with stakeholders throughout the process. We have worked hard to ensure that that stakeholders’ views have been considered, and acted on, in the development of the plan.

Our customer and stakeholder engagement activities during the development of our dWRMP are summarised in Figure 11 below.

Figure 11: Summary of activities undertaken for the dWRMP24 pre-consultation programme



Throughout the stakeholder engagement activities, we adopted a ‘catchment approach’ and significantly increased our engagement and collaboration with the seven catchment partnerships across our region. This allowed us to actively engage with customers and stakeholders at a local or catchment level and helped us to align our water-resources plans with other processes and



planning regimes, including river basin management, flood risk management, drainage and wastewater management and drought plans.

The emerging proposals in the dWRMP were also discussed with, and scrutinised by, our stakeholders and regulators. We believe our ongoing pre-consultation engagement has helped ensure our plan represents best value for our customers and our decision-making processes, including the methods, data, modelling and assumptions used.

During our engagement work, we have had extremely valuable interactions with many of our key stakeholder groups (sectors, communities of interest, place-based).

### **Regulators: statutory consultees**

We have engaged with all our regulators and statutory consultees (including the EA, NE, Historic England and Ofwat) throughout the development of our WRMP and the West Country Regional Water Resources Management Plan (in line with Section 3.3 of WRMP guidance).

We are grateful for the input from our regulators, particularly given the time required to support the development of our WRMP and the Regional Plan in addition to working with us to meet the challenges of responding to the 2022/23 drought. We are pleased to have established a robust and very positive collaborative approach with our regulators during the drought response in 2022.

We undertook a positive consultation on the 'Emerging WCWRG Regional Plan' in January 2022 and have made significant contribution to the ongoing pre-consultation engagement with regulators in relation to the Regional Plan since then.

Our dWRMP pre-consultation engagement programme has included numerous technical meetings with the EA, such as fortnightly/weekly updates throughout 2022, specific technical meetings on all aspects of the WRMP (e.g., Environmental Destination workshop in May 2022) and a further 20+ additional WRMP-focused meetings between November 2022 and September 2023.

In addition, we have convened pre-consultation meetings (for WRMP and the Regional Plan) with senior representatives of the EA, NE and Ofwat, and representatives of these organisations have been involved in dWRMP and regional water resources management planning workshops held during 2022 and 2023. Throughout this engagement, we have sought to build the confidence of regulators, stakeholders and customers that our preferred programme represents best value.

Our annual reporting process to Ofwat and the EA, including the annual performances report, has provided updates to regulators on progress since WRMP19. We have also formally responded to questions raised by the EA and Ofwat through development of plan, particularly during autumn 2022. This includes sharing details on our problem characterisation, approach to adaptive planning, provisional preferred schemes and indicative supply-demand balance at a resource zone level.

Taken together, we believe that these engagement activities have stimulated strong working relationships with these key stakeholders as we have worked to co-develop this dWRMP. This collaboration has also helped us to develop our long-term destination for environmental improvement and sustainable abstraction.

### **Environmental groups**

During our WRMP stakeholder engagement programme, we have strengthened our engagement with the catchment partnerships, local nature partnerships and other environmental groups. This has been through attendance at partnership meetings and through targeted correspondence and meetings with key members of these groups.

In addition, we have also continued our dialogue about water-resources management with the environmental non-governmental organisations (NGOs) who comprise the long-established

Upstream Thinking Project Partnership, and with NE and other stakeholders involved in the creation of Local Nature Recovery Strategies (LNRS).

These interactions have successfully raised the awareness and understanding of water-resources management challenges and solutions among these stakeholders and have facilitated a collaborative approach to the development of options and the gathering of significant amounts of feedback on our approach. They have also allowed us to secure their firm support for the level of our environmental ambition for the dWRMP (and the Regional Plan) and our proposed approach to achieving it.

A further direct outcome from these conversations has been the co-development of the Water Net Gain initiative by ourselves and the Westcountry Rivers Trust. The aim of the Water Net Gain Project (submitted as a £1m proposal to the Ofwat Breakthrough Challenge Fund) is to explore the governance and technical aspects of planning, designing, creating and trading of a water bank through a distributive network of ecologically connected ponds and other nature-based solutions. These features could increase resilience by passively contributing to base flows, deliver demand management benefits or actively release water to the river to dilute pollution, resulting in supply-side benefits.

### **Agrifood sector**

Members of the agricultural (or ‘agrifood’) sector (farming, horticulture, land management, food and drink supply chain) are critical stakeholders in the water resources management planning process. Landowners and land managers have significant potential (individually or collectively) to contribute to the challenges and solutions on the supply side of water resources management.

As a large group of non-household water users, they also have the potential (individually or collectively) to contribute to the challenges and solutions on the demand side of water resources management. In periods of water shortage, there is a risk that the supply of water to farm businesses (whether from public supply or the environment directly) may not be resilient, resulting in significant negative impacts. Farmers have the potential to take actions that make their businesses more resilient, but only if the required evidence, advice, financial support and other enablers are in place.

In recognition of this pivotal role, we have undertaken a focused engagement with these stakeholders. This has included detailed and ongoing dialogue with:

- Upstream Thinking partners, and other catchment management groups (e.g., in Dorset), to explore how water resources outcomes (supply, demand, farm/environmental resilience) could be achieved through our various farmer-engagement, advice and investment programmes.
- NFU (locally and nationally) to explore how the challenges and solutions identified in the WRMP and the WCWR Plan relate to the agricultural and horticultural sectors in the SW.
- Key water retailers in the SW region to explore how we could collaborate with them to deliver support to their non-household customers in the agricultural and horticultural sectors.
- The National Trust, who have engaged very positively in both the WRMP and WCWRG engagement events and signalled their commitment to exploring potential opportunities to collaborate on the design and delivery of catchment or nature-based solutions.

As a result of this work, these stakeholders are now highly engaged (especially NFU and National Trust) and clearly see both the WRMP and Regional Plan as opportunities for them to get involved in and make a significant contribution to water resources planning in the region. This collaboration has the potential to be highly mutually beneficial as it is well aligned with our ambition for the water resources plans to be ‘multi-sector’ and could give us access to a wide array of other stakeholders and networks that we may not otherwise be able to engage.

Building on this engagement, we are now working to establish an Agrifood Sector Working Group under the auspices of the WCWRG. This group will co-design a strategy for the long-term collaboration between the agrifood and water resources sectors across the region.

### Local government

We have established strong working relationships with local government stakeholders and both the regional plan and the SWW WRMP have been informed by strong local authority engagement. This includes extensive engagement with staff and elected members from both **Cornwall Council** and **Devon County Council**, as well as with the district councils and urban unitary authorities of Devon, and with representatives from numerous town and parish councils across the region.

We have engaged with planners, environmental and flood risk management sections of these authorities and have also secured representation on several key groups and bodies that fall under local authority governance, for example, the **Council of the Isles of Scilly**, the **Devon, Cornwall and Isles of Scilly Climate Impacts Group** and the three **Local Nature Partnerships** across our region.

### Fisheries and riparian interests

We have always had a close association with fisheries and riparian interest groups across the region, in particular the South West Rivers Association (and the local associations and groups it represents), the Westcountry Rivers Trust, and fisheries experts from the EA. During the Summer of 2022, this engagement has been reinforced through regular and robust dialogue with these groups in relation to mitigation funding, fish bank releases from reservoirs, the Green Recovery Scheme in the Tamar, the drought response (including drought permit consultations) and through the WRMP and regional plan pre-consultation process.

Building on the active participation of several key representatives of this sector in both the WRMP and Regional Plan Stakeholder Engagement Workshops, we have continued our dialogue with these stakeholders, and they have drafted a 'statement of intent/ambition' for fisheries and riparian interests/owners that will be fed into both the regional planning process and the development of our WRMP. In this statement, they strongly voice their support for a Fisheries and Riparian Interests Working Group to be established under the auspices of the WCWRG.

### Community groups and networks

We have established many long-term and strong partnerships with community groups and civil-society networks across the region. This has received fresh impetus in 2022 following the arrival of a new Partnership and Community Coordinator. These partnerships give us access to a wide array of customers and stakeholders that we may not otherwise find it easy to engage with.

The Water-Saving Community Fund was established to enable a more meaningful way to promote water efficiency at a community level. Following the launch of the fund in March 2021, SWW received 62 bids from local community groups, with bids totalling £333,491.37.

Each application was assessed according to its water-saving benefits, benefits to the community, and innovation potential. To date, funding has been awarded to 22 community groups totalling over £73,000. This approach is building experience and insight for the future delivery of water-efficiency schemes.

Successful proposals ranged from small bids to install water butts or rainwater harvesting equipment in a local school and other community buildings, through to a highly ambitious community and stakeholder engagement project called Voices of the Dart.



### 3.6 Changes resulting from the dWRMP24 consultation

#### 3.6.1 Consultation on the draft WRMP24

Having undertaken a comprehensive pre-consultation process, we wanted to ensure that our dWRMP reflected the issues, views and concerns our customers and stakeholders raised with us during its development. It is very important to us that it meets their requirements and expectations before we produce the final plan for submission to the Secretary of State for the Environment and our regulators.

To this end, we held a 12-week public consultation on our dWRMP between 14 February and 09 May 2023. During this consultation, customers and stakeholders had the opportunity to review our proposals for managing water resources supply and demand across our region, how this may affect them, and to give us their feedback and comments.

To promote responses to our consultation from our customers, retailers and stakeholders, we undertook a wide array of engagement activities which are summarised in Figure 12.

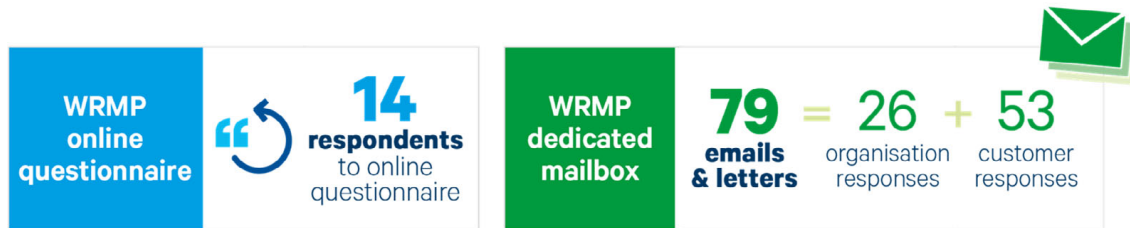
Figure 12: Summary of activities undertaken for the dWRMP24 public consultation



### 3.6.2 Summary of consultation response

Our Statement of Response summarises the responses we received as well as providing an overview of how we have changed our dWRMP as a result.

A total of 79 responses were received to the consultation. A list of the respondents who provided representations on the dWRMP, including the accompanying Strategic Environmental Assessment and Habitats Regulations Assessment reports, is provided in the table below.



Following the consultation on our dWRMP, we reviewed all the responses received and took account of all the material comments. The Statement of Response is published on our website at: <https://www.southwestwater.co.uk/environment/water-resources/water-resources-management-plan/>

Everyone who responded to the consultation has received notification of its publication.

### 3.6.3 Summary of feedback received

In our Statement of Response, we present a summary of the of the feedback and views we received during the consultation divided by **theme**.

A summary of the feedback received in shown in Figure 13 and the breakdown of responses by consultee and theme is shown in Table 5.

Within these summaries we also categorised individuals and organisations into **five broad groupings**: 1) customers; 2) statutory consultees, 3) non-statutory organisations, 4) private businesses and water sector, and 5) consumer representative bodies.

Figure 13: Headline summary of consultation responses received.

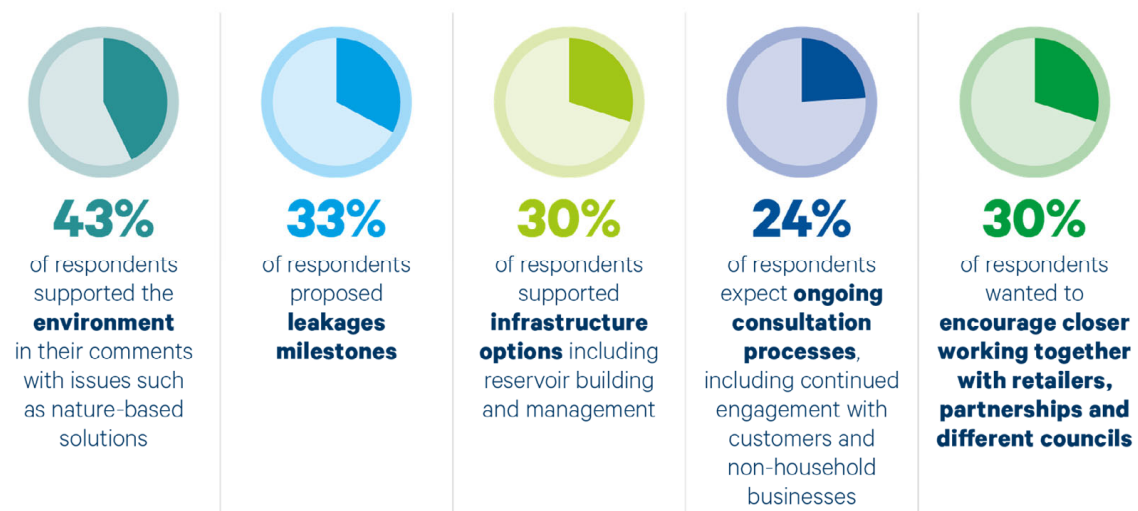


Table 5: Main themes we received feedback on from each consultee during our consultation on the dWRMP.

	Demand reduction	Leakage	PCC	Water Efficiency	NHH demand	Metering	Drought	Supply options	Abstraction	Reservoirs	Environment	NBS	Desalination	Recycling	Statutory duties	SEA / Habitat Regs	Service levels	CC mitigation	Growth / planning	Modelling	Best value	Collaboration	Funding / costs	Transfers	Consultation	Other
<b>Customers</b>																										
53 individuals	✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓	✓		Rewilding, tourism
<b>Statutory</b>																										
Devon CC	✓	✓		✓		✓	✓		✓	✓	✓	✓	✓	✓				✓			✓	✓		✓		
EA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Historic England									✓		✓	✓	✓			✓		✓			✓				✓	Landscape/heritage
Natural England				✓					✓		✓	✓			✓	✓								✓		Landscapes
New Forest NP	✓	✓				✓			✓		✓												✓			
Ofwat	✓	✓	✓		✓	✓	✓				✓				✓		✓		✓	✓	✓	✓	✓	✓	✓	
PH Cornwall														✓										✓		Emergency planning
Torrige DC	✓	✓				✓					✓		✓	✓					✓	✓	✓		✓			
Totnes TC											✓								✓							
Wiltshire CC	✓		✓	✓	✓				✓		✓								✓							
<b>Non-statutory</b>																										
Devon WT	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓		✓							✓					
National Trust		✓					✓				✓	✓			✓											
SWRA	✓	✓				✓			✓	✓	✓			✓												
WC Rivers Trust	✓		✓	✓	✓		✓		✓	✓	✓	✓		✓								✓	✓			Fish 'water banks'
Wildfish											✓				✓										✓	
Woodland Trust	✓			✓		✓			✓	✓	✓	✓	✓	✓				✓	✓							
<b>NHH / retailers</b>																										
Arqiva	✓	✓	✓	✓	✓	✓												✓		✓		✓				
Everflow	✓		✓	✓	✓	✓					✓								✓			✓				Data sharing
MOSL	✓	✓	✓	✓	✓	✓	✓								✓											
ESP Water Ltd																				✓						
SWIP	✓			✓		✓					✓			✓												
UK WRC	✓		✓	✓	✓	✓					✓															
Waterscan		✓	✓		✓	✓	✓		✓		✓			✓				✓					✓		✓	
<b>Consumer Reps.</b>																										
CCW	✓	✓	✓		✓	✓					✓						✓								✓	Boreholes
NFU				✓	✓		✓		✓	✓	✓	✓		✓	✓		✓						✓	✓		
Waterwise	✓	✓	✓	✓	✓	✓	✓				✓							✓								Water labelling
	18	14	12	15	13	15	11	2	13	8	23	10	6	11	9	3	5	7	9	5	8	10	6	7	19	

1. 'Process' – narrative, consistency of data, methodologies, options appraisal, criteria, adaptive planning, scenarios, monitoring.
2. 'Statutory requirements' – compliance, licences, evidence gaps, alignment with other plans, uncertainties, timescales, resilience, HRA.
3. 'NBS' – issues around Biodiversity Net Gain, Natural Capital Accounting, marine, environmental protection and enhancement.
4. Public concerns regarding shareholder dividends, lack of investment, renationalisation, DWMP issues and sewage releases not included.



### 3.7 Links to other plans

Our WRMP24 could not have been developed in isolation, as it is just one of several key policies, strategies and plans that individually and collectively influence water supply security and quality for our customers and the environment. All our strategies are aligned with our company long-term goals, including net zero carbon and biodiversity net gain.

#### **Government's 25 Year Environment Plan**

Our WRMP supports the Government's 25 Year Environment Plan through our Environmental Destination. We will continue to work with the EA to assess the environmental impact of our abstractions to ensure compliance with River Basin Management Plan objectives and to deliver the Water Industry National Environment Programme (WINEP). This will inform our Environmental Destination pathway as we progress with delivery of our WRMP. Our best value plan approach considered natural capital and biodiversity impacts in our decision-making. In delivering our new supply schemes we will meet the Government's condition to plan for 10% biodiversity net gain.

#### **PR24 Business Plan**

Our WRMP will be a key contributor to our **PR24 Business Plan** and **Long-Term Delivery Strategy (LTDS)**, and our adaptive pathways are based on Ofwat's Common Reference Scenarios. Our AMP8 performance commitments for leakage, per capita consumption and non-household demand are derived from our dWRMP demand forecast and met through delivery of our demand strategy. Our dWRMP consultation has directly influenced the selection of schemes (particularly water resources investigations) to be included in the **PR24 Water Industry National Environment Programme (WINEP)**. Through the WINEP and Environmental Destination planning process we are working with the EA to identify the environmental impact of current SWW and Bournemouth abstractions and identifying the best licensing strategy to ensure compliance with **River Basin Management Plan (RBMP)** objectives.

#### **Drainage and Wastewater Management Plan (DWMP)**

Our DWMP considers the future pressures on our wastewater treatment works and networks over a 25-year period and identifies solutions. Both our DWMP and WRMP use the same planning assumptions for growth forecasts and climate change scenarios. The same principle of pro-active stakeholder engagement to co-create positive outcomes for the environment and our customers will be used in delivering both our DWMP and WRMP. We will also seek to maximise opportunities across both plans, for example options for water recycling and reuse to help close the WRMP supply-demand deficit and reduce pressure on our wastewater network at the same time.

#### **Drinking Water Safety Plans**

Our Drinking Water Safety Plan was submitted to the Drinking Water Inspectorate (DWI) in 2022. It includes how we intend to prevent any potential deterioration of water quality and reduce losses where possible. This aligns with our nature-based solutions which benefit both water resources and water quality at the catchment level. We have considered how each of our WRMP supply and demand options may impact on the ability for us to supply water that meets the Water Supply (WQ) regulations 2000. Our options have been screened to consider potential water quality issues that could arise, and no significant issues have been identified.

#### **Local Nature Recovery Strategies**

The Environment Act 2021 introduced Local Nature Recovery Strategies for areas in England. These strategies align with our ambition and duties to offset bio-diversity loss and enhance the natural environment. Our WRMP will support recovery and enhancement of biodiversity according to opportunities and priorities identified in the Nature Recovery Network. We will

continue to investigate the impacts of our abstractions through our PR24 WINEP and delivering our Environmental Destination. Through our Upstream Thinking catchment management programme, we will support landowners in delivering sustainable land management practices under the schemes which will replace Countryside Stewardship in the future.

### Regional Plans

We recognise how important it is that our dWRMP is fully aligned with West Country Water Resources Group (WCWRG) Regional Plan which aims to make the best use of the available water resource within the West Country region. In line with this, throughout 2023, we have continued to be actively engaged in supporting the work of the WCWRG. During 2023, the West Country Regional Plan has continued to develop and has been enhanced following its public consultation which ran from 1 February to 26 April 2023. In addition, the plans for all three of the Group's SRO are moving through the RAPID gated process and have now received their Gate 2 approvals. We are expecting to have invested ~£15m in the development of these schemes by the end of AMP7, with ~£10m relating to the Cheddar and Mendip schemes specifically. Current forecast costs for AMP8 exceed £60m (and this could increase further if delivery of the Cheddar 2 scheme is accelerated in AMP8).

### Drought Plan

The 2022 drought required us to implement actions included in our drought plan, including a temporary use ban (TUB). We must assess the learning from this event and any changes this has on our drought actions and triggers. Commencing in December 2023 we will revise our Drought Plan to incorporate the revised supply-demand position and our current resilience status.

Through our WRMP we are investing in new water supplies and reducing daily demand for water. In the long term we will achieve our objective to be resilient to a 1:500 drought event from 2040 onwards. This will reduce the risk of restrictions on water use in the future and the need for supply-side drought measures at times when the environment is under stress.

### Local Authority Plans

#### YOU SAID WE DID

Stakeholders are keen for us to work more collaboratively with local government at all levels – especially in relation to the planning process and the local growth agenda.

We have established strong working relationships with local government stakeholders and both the regional plan and the our dWRMP have been informed by strong local authority engagement. This includes extensive engagement with staff and elected members from both Cornwall Council and Devon County Council, as well as with the district councils and urban unitary authorities of Devon, and with representatives from numerous town and parish councils across the region. We have engaged with planners, environmental and flood risk management sections of these authorities and have also secured representation on several key groups and bodies that fall under local authority governance, for example, the Council of the Isles of Scilly, the Devon, Cornwall and Isles of Scilly Climate Impacts Group and the three Local Nature Partnerships across our region.

Local authority plans set out future development, such as housing. Our WRMP reflects local growth ambitions and plan to meet the additional needs of new businesses and households.

Water companies are now required to align their plans with Local Nature Recovery Strategies (LNRS) and we are working closely with the local authorities who are responsible for these plans. In addition, we are also collaborating with the **Devon, Cornwall and IoS (DCIoS) Climate Impacts Group** on the new **Climate Adaptation Strategy** for the region.

## 4 DEMAND FORECAST

### YOU SAID WE DID

The issue of increasing demand in our region has repeatedly been raised throughout our stakeholder engagement and consultation and we have been urged to carefully consider the drivers of this and the impact on our future demand.

In response to this feedback, we have updated our demand forecast to represent a higher growth scenario. We are increasing leakage reduction and water saving activity in this investment period (2020-2025, AMP7) to help reduce demand in preparation for the delivery of this WRMP.

For our WRMP to be effective, we need a good understanding of the demand for water supply we must meet each day and robust estimates of how these might change over the next 25 years. To gain this understanding we develop our **demand forecast** for the WRMP planning period.

Water demand in our region includes all water we supply directly to our household customers and water we provide as a wholesaler. As a wholesaler we provide water to non-household water users who are billed by retailers and to householders who are billed by inset appointees operating in our supply area.

Other components of water demand include water lost via leaks in our distribution system and from customer supply pipes, and water that is unbilled, such as hydrant use and illegal water use.

The total volume of potable water we supply from our water treatment works each day is referred to as **distribution input (DI)**. There are no non-potable supplies provided in our region.

A detailed description of our Demand Forecast and how we have undertaken it can be found in Appendix 2 of this dWRMP.

### 4.1 Our approach to forecasting demand

#### 4.1.1 Key components and considerations

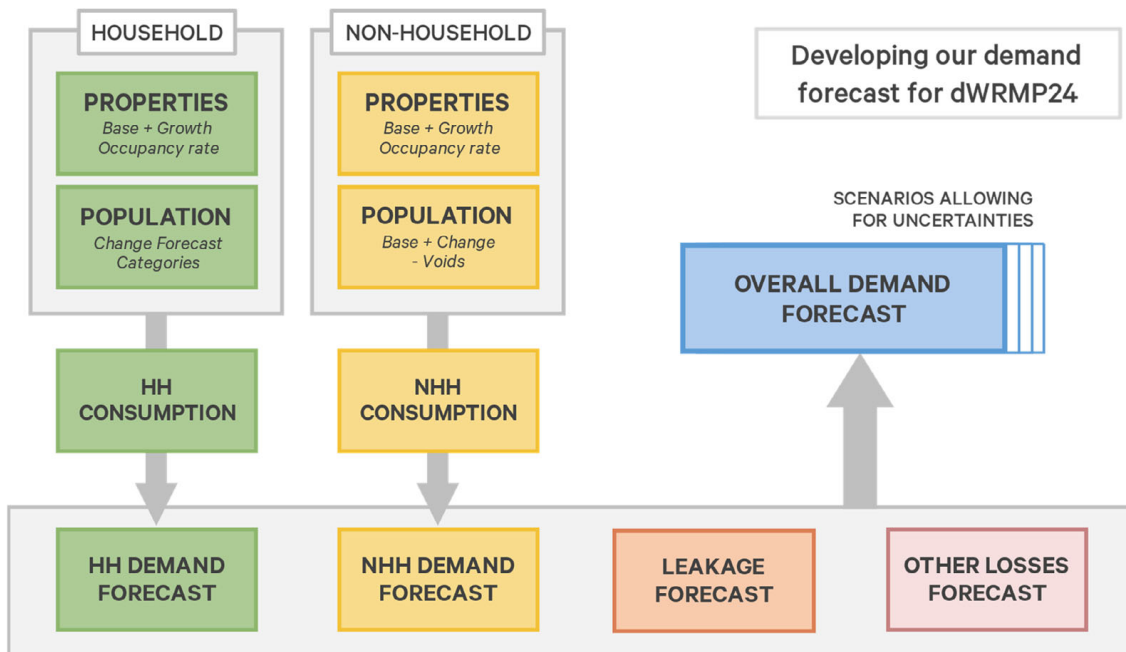
We assessed our baseline and final plan demand forecast for our entire WRMP planning period, which is 2025/26 to 2049/50. We have also included data in our forecasts for the 'pre-plan' years up to 2024/25.

Our forecasts are based on data relating to six key components (or drivers) of demand, which are used in combination to generate robust estimates of current and future demand. These components are:

- Properties (household and non-household, growth, occupancy rates)
- Population (by property type category)
- Household customer consumption
- Non-household customer consumption
- Water leaked from our network of pipes and those of our customers
- Other losses or uses of water (termed 'minor components').

The process of how we have produced our demand forecast for this dWRMP is summarised in Figure 14 (over page).

Figure 14: Process for developing our demand forecast.



In developing our demand forecast, we considered all the following potential influences on the level of water use across our region:

- Housing development and population growth
- Non-household demand
- Peak demand periods during hot dry weather, which can put additional strain on our network.
- Changes in water use behaviour and distribution of demand (in both household and non-household users) – e.g., the impact of the coronavirus pandemic, changing working patterns.
- Changes in the rates of water metering and smart metering
- Changing water efficiency and sustainable water use practices.
- Changing design standards of devices that use water such as more efficient washing machines and toilets.
- A changing climate and variable weather patterns.

## 4.2 Base year demand

For all the different components of water demand, we forecast forward from a base year using actual demand data that has been reported to our regulators.

Our dWRMP uses HH and NHH consumption data reported in 2019/20 as the base year data, while other components, such as properties, population and leakage, are based on more recent data reported in 2020/21. The Isles of Scilly forecast is built upon a base year of 2021/22, as we do not have historic data for the islands prior to this.

It is important to note that, while we have used data from 2021/22 for most components to align our forecast with more recent data, both HH and NHH consumption during 2020/21 and 2021/22 was impacted by the COVID-19 pandemic. During this time, home working increased, and many businesses temporarily closed, which led to an increase in household consumption, a corresponding decrease in non-household consumption and an increase overall in the total



demand. Subsequently total demand has reduced and neither 2020/21 nor 2021/22 are representative of the demand we would expect to experience in the future.

Report data for 2022/23 was not available when we started to create our revised draft demand forecast. However, consumption data for this year is also unlikely to represent demand going forward. During 2022/23 we experienced a drought and activated drought actions, which included enhanced water saving messages across our supply area and a temporary use ban in our Colliford WRZ. These actions constrain demand, and we require our baseline demand forecast to be based on unconstrained water use, with drought measures considered as part of the solution to any deficit.

#### 4.2.1 Water balance

The sum of the actual volumes reported for the individual components of demand should equal the volume of water provided by our water treatment works (the distribution input, DI), which is reported to our regulators annually.

We collect data on DI and the demand components using meters at our WTW outlets, on our distribution network and at property boundaries. However, not all properties are metered, and meters are not 100% accurate, therefore we must make assumptions for some components.

Due to these inaccuracies, there is always a difference between the sum of the individual components and DI. Each year we produce a water balance at a zonal level to calculate the difference, which we refer to as 'unaccounted for water'. We reconcile this difference using the Maximum Likelihood Estimation (MLE) methodology, a statistical technique which redistributes unaccounted for water across the components of demand.

#### 4.2.2 Demand forecasting scenarios

Our demand forecast scenarios have been produced following the guidance recommended in the Water Resources Planning Guideline.

Our dWRMP estimates demand for each of our five water resource zones over the next 25 years at component level and sums the components to provide a forecast of distribution input. For each of our zones we create a baseline forecast for a 'normal year annual average' scenario. This is the average daily demand we would be required to meet in most years. We forecast forward from our base year incorporating changes to the demand components.

We then apply an uplift to our normal year forecast to represent higher demand experienced in dry years. This is the baseline 'dry year annual average' (DYAA) scenario. We base our WRMP demand forecasts on dry years as demand increases during hot, dry periods and the pressure on our resources is greater than normal years.

The DYAA baseline forecast is an estimate of demand over the planning period without interventions. Interventions include additional demand management activities we could implement from 2025 onwards and restrictions on use we may need to impose during drought years. These are considered as options later in the WRMP process and not included in our baseline forecasts, which represent the unconstrained demand. We also produce a final plan baseline demand forecast, which is our baseline forecast adjusted for demand interventions that are selected through our best value plan decision making (see Section 10).

We have created 'critical period' demand scenario forecasts for our Bournemouth and Isles of Scilly WRZs. We base our critical period scenarios on the peak weekly demand we experience in the summer. Water resources systems in our Colliford, Roadford and Wimbleball WRZs are not as sensitive to peak demands, and they do not require a critical period demand scenario.



### 4.2.3 Note on the Isles of Scilly approach

We did not supply water or wastewater services to the IoS until 2020. Prior to this it was managed by the local council and a major landowner, who were not subject to the same water resource planning requirements as water companies. We therefore have limited historic demand data recorded for this WRZ.

Since taking responsibility for the Isles of Scilly water supply, we have installed monitors to collect the required usage data and we have calculated a demand forecast for the dWRMP based on the information that is already available. We have used the same process to calculate the demand forecast for this zone as for the other zones. However, due to the lack of historic consumption data the forecast is not as robust as our other zones.

## 4.3 Property and population forecasting

As a water company we need to understand planned growth in our region as this will increase the total demand for water, and we must ensure we can meet this demand. It is also vital that our demand forecast does not constrain planned growth. To develop our overall demand forecast we first must assess the changes expected to occur in each of the components of water demand.

### 4.3.1 Household property forecasting

For our dWRMP we commissioned Experian to provide data on population growth, property developments and household occupancy rates for each of our WRZs. Our dWRMP considers two property scenarios, a **trend-based forecast**, and a **plan-based forecast**.

The **plan-based property forecast** is based on local authority plans for new developments. For this, we combined information from our own development database with site allocation information obtained from local authorities across the region. The data provided runs to 2035 and it was therefore extrapolated to the end of the planning period using historic trends and the district level dwelling projections outlined in the local plans. The plan-based forecast is presented in Table 3 of the WRMP24 tables for all WRZs in line with the EA guidelines.

The **trend-based property forecast** is used in scenario testing of our plan and provides a lower growth forecast and therefore a lower demand scenario. Trend-based projections are based on historic growth for each area and derived from housing stock statistics at local authority level and aggregated to our water resource zones.

Our base year data provides the existing number of measured and unmeasured properties for each zone. All new properties are metered; therefore, we add the annual increase in properties from the Experian data to the measured household category.

As all new properties will be metered, there are no new connections added to the unmeasured property categories for each zone. Each year a proportion of unmeasured households and non-

households will switch to a metered supply. As a result, the number of unmeasured properties will reduce over the planning period, as households switch from an unmetered to metered supply.

Properties that choose to switch to a metered supply (as opposed to where it is compulsory) are known as **meter optants**. Starting with the base year, we adjusted the measured and unmeasured properties each year to account for the number of properties predicted to move from the unmeasured category to the measured category.

The final information that needs to be considered in the development of our household property forecast is the estimated **household occupancy rates** across our region. To estimate the occupancy rates for measured and unmeasured properties in the base year, we used household occupancy data obtained from CACI in combination with 'household consumption monitoring' data from our customer billing database and our own annual household surveys. New build household occupancy is assumed to be the same as the average for measured properties.

### 4.3.2 Non-household property forecasting

NHH new connections have been calculated by taking the last five years of NHH new connections and calculating that number as a percentage of the last five years of HH new connections. This data was taken from Annual Performance Reports provided to Ofwat. The percentages are:

- Colliford, Wimbleball and Roadford – 8.69%
- Bournemouth – 2.95%
- Isles of Scilly – no change.

### 4.3.3 Population forecasting

As for property forecasts, Experian created population forecasts for both the plan and trend-based scenarios by multiplying the property forecasts by occupancy rates.

The trend-based occupancy is based on average household size taken from the 2018-based sub-national population projections. Local Authority plans provide population data however, it is not always consistent with the district-level dwelling projections. We therefore based population on the weighted average of the trend-and plan-based population forecasts for each local authority area.

For both the plan- and trend-based scenarios, we took the year-on-year change in population for each supply zone and added it to our base year population for each of those zones. We aligned the growth with our property forecasts by assigning to measured and unmeasured population categories and accounting for meter switches. This allows us to forecast the total population in each of our WRZs.

Our forecasts also include an estimate of **NHH population**. This includes communal residential properties, such as barracks, nursing homes, boarding schools, universities. Experian estimated less than 2.0% of the population connected to our water supply reside in non-household properties.

A recent study identified some categories of population in the SWW supply area (**'hidden and transient populations'**) that are not covered by ONS population estimates, and which are important for us to consider. This population consists of migrants, visitors overstaying their permitted time in the country, those entering the country clandestinely and victims of human trafficking. We have assumed the local authority plan data also excluded these categories. Experian estimated the population of this category to be 12,000.

Some of the resident population in our area is connected to **private or non-public water supplies** and are not therefore reliant on public water supply provided by SWW. While this group do not form part of our base year forecast, there is potential for them to request a connection to public water supply in the future, especially if climate change impacts the availability of their supply. To assess the potential impact of these new connections on demand, the WCWRG commissioned a study which concluded that the uncertainties around the scale of non-public water supply use are currently too great to draw meaningful conclusions. For this dWRMP, we have included this risk within the high-demand scenarios considered in the development of our best value plan.

The final information that needs to be considered in the development of our household property forecast is the estimated **household occupancy rates** across our region. We forecast zonal household occupancy by dividing the total population by the total number of household properties for the zone. New build household occupancy is assumed to be the same as the average for measured properties.

## 4.4 Forecasting water consumption

### 4.4.1 Household consumption

Household consumption forecasts for our WRMP24 were produced for each of our five WRZs using a **'micro-component approach'**. The analysis was carried out using the same source data for all the WCWRG water companies, which provided a consistent approach across the region.

Micro-components are sub-components of household water consumption such as showering, bathing, toilet flushing, dishwashing and garden watering. Micro-component models quantify the water used for the different activities within the home at per-capita level then forecast how each of these components is likely to change in the future.

By considering water use at micro-component level we can incorporate changes in sub-component use over time. The approach is applied to the customer segments used in the property forecasting process (existing measured, unmeasured, meter switches, new build) as customers in each of these segments have different average water consumption.





To calculate measured ‘per capita consumption’ (PCC), we take measured consumption data available from our billing records and divide it by the respective population numbers estimated for measured and unmeasured households. Unmeasured household PCC is determined using our ‘unmeasured consumption survey’ in combination with loggers of water use which provide detailed daily consumption data not available from our regular meters.

For this analysis, consumption data from 2019/20 and population and property forecast data aligned to the 2020/21 report year were used to provide household consumption forecasts for each WRZ. For each of our main 3 zones, Normal Year (NY) and Dry Year Annual Average (DYAA) consumption forecasts were produced. For our Bournemouth and Isles of Scilly WRZs, Dry Year Critical Period (DYCP) forecasts were also produced, but the Isles of Scilly consumption forecast only starts in 2021/22 as we do not have historic data for the period prior to this.

The DYAA and DYCP scenarios were created by applying uplift factors to the normal year consumption forecasts for each zone. These factors were based on higher demands we experienced in the 2018 dry year.

#### 4.4.2 Non-household consumption

The level of metering in our NHH customers has been high for many years and currently stands at around 96% across our five WRZs. This provides a reliable source of historical data for measured non-household consumption.

Our dWRMP non-household water demand forecast, which was based on an assessment undertaken for all the WCWRG water companies, used econometric analysis to identify the historical relationship between non-household water demand and a range of explanatory factors such as industrial output, employment, and efficiency of water use.

The results of this analysis were combined with forecasts of output and employment by industry sector to provide NHH water demand forecasts disaggregated by broad sectors for each supply area.

The SW regional economy is dominated by service industries, the most important of which is tourism, which is vital to the economy of the region. Agriculture also forms a large part of the non-service sector, with livestock and smaller arable farms comprising the majority of farm businesses in the region. There is little reliance on agricultural irrigation within the region and farms with private supplies are less likely to request a mains connection than areas where agricultural irrigation is high. We have made no assumption for private supply switches in our baseline forecast, but our adaptive plan high demand scenario allows for this uncertainty.

None of the WRZs in the SWW supply area have a strong reliance on other non-service industries, however the Bournemouth WRZ includes a supply to one very large industrial customer which accounts for around two-thirds of the non-household consumption in that zone. Due to the significance of this customer in terms of total non-household demand, we forecast its consumption independently.

Overall, our forecasts show NHH demand will decline over the planning period in all our WRZs. This downward trend can be explained through the sectoral composition of the area. All WRZs are dominated by the private and public industry sectors, and its water consumption is expected to decline over time.

In all WRZ NHH consumption is forecast to drop by 2049/50. Bournemouth, which has the highest water consumption levels to begin with, it is forecast to see the largest decline in consumption from 60.73 ML/day to 53.45 ML/day in 2049/50. Roadford has the next largest drop in NHH consumption of 4.87 ML/day (47.07 ML/day to 42.20 ML/day) followed by Colliford 3.77 ML/day (32.32 ML/day to 28.55 ML/day) and Wimbleball 2.08 ML/day (18.53 ML/day to 16.45 ML/day).

The Isle of Scilly measured NHH demand profile was flat for the entire period between 2022/23 to 2049/50 as there is little evidence to suggest the water use will change over the period. However, we have adjusted the profile to account for efficiency in water use we would expect to see in the agricultural sector over time. This sector makes up 4% of the measured NHH demand and we applied the same profile as was used for the other WRZs to the demand allocated to agriculture on the islands.

#### 4.4.3 Impact of climate change on consumption

Over the planning period, it is expected summers will become dryer and hotter due to **climate change**, which is anticipated to increase household demand at these times. A percentage uplift for climate change has been applied to the household consumption forecast scenarios based on the approach provided in the UKWIR 2013 report Impact of Climate Change on Water Demand. The uplift percentages vary for each planning scenario and high, medium and low scenario have been created.

In our baseline forecasts we used the medium climate change factor of 0.84% for the normal and dry year scenarios and 2.33% for the critical period scenarios.

#### 4.4.4 Impact of COVID-19 on consumption

For all our zones, except the Isles of Scilly, we have derived consumption base year data from 2019/20 as we consider it to be more representative of future demand than subsequent years. The consumption observed during 2020-21 and 2021-22 showed substantial increases because of the COVID-19 pandemic and associated mitigation response including mandated homeworking and temporary business closures.

There is a need to distinguish between the one-off effects of mitigation actions and any long-term effects that will influence future demand, for example homeworking has reduced since the lockdowns but is greater than the pre-pandemic level. The future balance between office-based working and homeworking is uncertain however, it is generally considered likely that homeworking will continue to be higher than pre-COVID years. To reflect the changes to a more hybrid working environment since the pandemic we have increased household demand by 2% in all WRZs.

#### 4.4.5 Impact of previous water efficiency interventions

Our baseline household consumption from 2025 to 2050 assumes no interventions for demand management. However, any planned interventions we included in our WRMP19 for the AMP7 period have been built into the pre-plan years' data. Two schemes are being implemented to reduce household demand in AMP7, a home retrofit programme and community incentives for demand reduction. The benefits have been attributed to each **Water Into Supply (WIS)** zone based on the percentage of properties in that WIS zone and aggregated to WRZ.

Since publishing our WRMP19, demand has increased following the COVID pandemic and we are not on track to meet our company PCC target. We are therefore implementing additional measures to reduce household consumption that were not included in our WMRP19.

As part of Ofwat's draft decision to allow PR24 transition expenditure for schemes in the accelerated infrastructure delivery project, we are investing a potential £128 million to deliver four schemes. One of these schemes has the potential to impact on the baseline demand for Colliford.

In the Colliford zone we plan to fit over 37,000 AMI smart meters by 2024/25 in household properties and over 4,000 in non-households. A scheme to replace around 74,000 household 'dumb' meters with AMI smart meters in Roadford has also begun. We are also implementing two water efficiency schemes to reduce NHH demand in AMP7: the 'non-household retailer water efficiency' and the 'tourist accommodation water efficiency' programmes.

In addition to the AMP7 schemes described above, we are also currently delivering a wide array of day-to-day water efficiency activities, and we work to enhance the national evidence base for water efficiency through involvement in water efficiency research and trials, and engagement with appropriate industry bodies.

## 4.5 Leakage

We calculate leakage for annual reporting using the approach outlined in the **'Consistency of reporting performance measures'** report. All water companies in England and Wales report leakage using this approach so that leakage is reported in a consistent way. Leakage levels are calculated for service reservoirs, trunk mains, distribution mains and customer supply pipe leaks.

### 4.5.1 Our baseline leakage forecast

We report leakage to our regulators for all water resource zones combined. For our baseline leakage forecast we have assumed that we will maintain leakage at our targeted 2024/25 leakage levels in each WRZ. At a company level this is 99ML/d.

Our Final Plan includes further leakage reductions to achieve the regulatory requirement to halve leakage by 50% compared to 2017/18 levels.

## 4.6 Other components of demand

### 4.6.1 Water taken 'unbilled'

Water taken unbilled can be taken both legally and illegally. The majority (95%) of water taken legally unbilled is used in the operation of our wastewater treatment works, the remainder includes water used for firefighting and highway washing. Examples of illegal use are connections that have been made to our distribution system without permission and consumption at void properties which have been occupied without us having been informed.

We have assumed that water taken legally and illegally unbilled will remain static over the planning period for all WRZs. We have no evidence of water being taken illegally unbilled in our Isles of Scilly zone. We therefore assumed zero for this component across the planning the period.

### 4.6.2 Distribution system operational use

This component of demand covers the water that we use in the operation and maintenance of our distribution system, for purposes such as mains flushing and service reservoir cleaning. We have assumed that the volume of water we use for these purposes will remain at the 2021/22 reported APR level for the duration of the planning period.



## 4.7 Distribution input

Once we have forecast all demand components for each of our WRZs, we combine the annual volumes to produce year on year DI forecasts. This is the total demand we must be able to meet each year of the planning period to provide a secure supply of water to our customers.

We have summarised the DI for key years in our plan in Table 6. The demand components for the baseline DYAA demand scenario for the whole region are shown in Figure 15. As these data show, we forecast that total demand will increase over the planning period, driven by population growth increasing total household consumption.

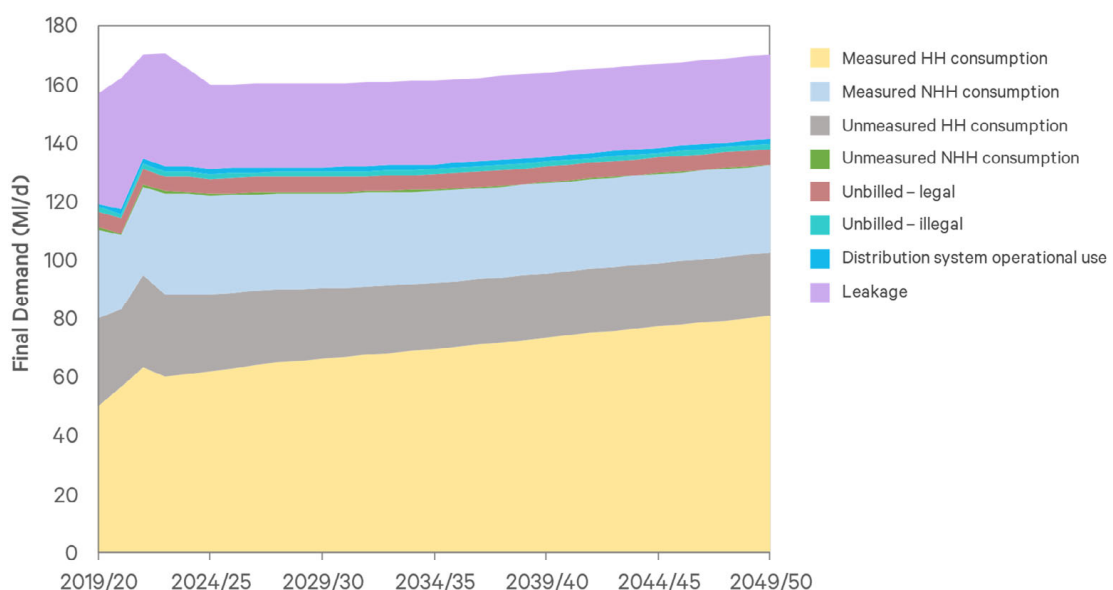
Our baseline DI for dWRMP is higher than we forecast for our WRMP19. We have applied the same approach to calculating our dWRMP forecast as used for WRMP19. However, we are now basing population and properties on a ‘plan’ based forecast, whereas as the WRMP19 demographic forecast used a ‘trend’ based scenario. Other changes include the COVID 2% uplift and rebasing of dry weather uplift factors.

DI at the end of the WRMP19 planning period (2044/45) was forecast to be 548 ML/d. For the same year in the WRMP24 forecast, distribution input is 627 ML/d, an increase of 79 ML/d.

Table 6: Summary of the distribution input for key years over the planning period by WRZ.

	2025/26	2029/30	2049/2050
<b>Water resource zone</b>	<b>Distribution input (ML/d)</b>		
Colliford	160	160	170
Roadford	232	233	239
Wimbleball	91	92	99
Bournemouth	149	150	155
Isles of Scilly	0.76	0.76	0.76
Regional	633	636	664

Figure 15: Demand forecast by component for the baseline DYAA demand scenario for the whole region.





## 5 SUPPLY FORECAST

Our supply forecast is the way we work out how much water is available to meet the needs of our customers now and in the future.

In forecasting our region's water supply needs for the next 25 years until 2050, we followed the Government's 2023 planning guidance (WRPG) for WRMPs. We also followed other industry best practice standards and technical approaches as set out by the UK Water Industry Research (UKWIR) and had regular meetings with our environmental regulators, the EA (EA) and Natural England (NE). We continued to have discussions with our regulators as we revised and updated our plan following the public consultation.

We also took the views of our customers and a wide range of stakeholders into account. They told us that to secure water supplies for the future. We have listened to, and taken into account, the views of our customers, stakeholders, businesses and regulators in producing our dWRMP.

### YOU SAID WE DID

Customers and stakeholders have told us that our supply must be resilient in the short, medium and long-term to drought and other unplanned events. They worry that there could be huge potential increases in water demand from the agriculture and energy sectors and that a greater range of future supply options including raw water transfers and new reservoirs must be identified. They also believe that action is needed now as it could be too late to start planning supply options once they are already needed.

This feedback highlights the importance of us developing a robust baseline water supply forecast for the dWRMP planning period, which is what we present in this section. We have undertaken significant additional work to ensure that the supply forecast for dWRMP is as accurate as possible, while also taking account of the uncertainties that exist when it comes to forecasting future water supply.

### 5.1 Water resource updates since WRMP19

Our previous WRMP was published in 2019 when our water supply area was thought to have plentiful water resources. At that time, we expected to be able to help neighbouring water companies resolve their water shortages by transferring surplus water supplies to them.

However, since then there have been several changes to our water supply situation that have significant knock-on impacts on our baseline supply forecast for dWRMP. As the factors influencing our water resources are different in each of our WRZs, we have summarised the changes for each zone separately.

#### Bournemouth WRZ

In our WRMP19, our Bournemouth WRZ had a healthy surplus in its supply-demand balance and at one stage, it was considered a potential 'donor' WRZ to provide its surplus supply to help resolve regional planning problems in the South East.

However, since the EA published its National Framework for Water Resources and the requirement to develop an 'Environmental Destination' for the Bournemouth WRZ, it faces a particularly acute challenge for water supply planning.

Our Environmental Destination for Bournemouth requires the Hampshire Avon Special Area of Conservation (SAC) to be better protected from abstraction pressures and this means a loss of more than half of our available water resource during a drought situation.

Our two main water treatment works in the Bournemouth WRZ, Alderney and Knapp Mill, both have significant development works planned for the remainder of AMP7 and the beginning of AMP8. The upgrade programmes for both water treatment works will make our water processing operations more efficient which means we will reduce the overall process losses. These upgrades have been represented in our supply forecast as reductions in process losses.

### **Colliford WRZ**

Of all our WRZs, Colliford experienced the most severe impact on its water supply during the 2022 drought. Colliford reservoir experienced a record drawdown in response to unprecedented demand driven by the high temperatures and very low rainfall. One of the driving factors of this is that it is prone to multi-season impacts where the reservoir does not fully refill over winter and it was only around 80% full at the start of 2022.

To increase the resilience of the Colliford WRZ, we need to have a greater diversity of sources so that it can be managed as a conjunctive system to reduce the dependency on Colliford Reservoir throughout the year. In direct response to the experience of the drought of 2022, we have developed a number of new sources in the Colliford WRZ and these will and be in place by 2025.

The new desalination plant at Par, Blackpool Quarry, and Porth Rialton will directly alleviate the pressure on the Colliford Reservoir storage. They provide additional advantages by reducing abstraction from the River Fowey at Restormel which will give greater headroom in our abstraction licence which we can then utilise over winter months to pump-store water back into Colliford Reservoir. We have included these as part of our baseline supply forecast.

### **Roadford WRZ**

Roadford WRZ also experienced a significant drawdown of Roadford Reservoir during the 2022 drought, although the impacts were not as severe as in the Colliford WRZ. Roadford Reservoir is also vulnerable to multi-season drought impacts and during the recovery from the 2022 drought it only recharged to around 70% before the 2023 drawdown period began.

In order to mitigate the impacts of multi-season events, a new pump storage scheme has been developed on the River Lyd. This became operational in Spring 2023 and allows up to 40 ML/d to be pumped to Roadford Reservoir between November and March. In addition, a second pump storage scheme is being developed on the River Tamar at Gatherley. It is being funded by the Green Recovery Programme. This scheme was planned prior to the 2022 drought but we have accelerated its delivery so that it will be operational in 2024 to add further resilience to Roadford Reservoir. The Gatherley scheme does not provide a 'Water Available for Use' (WAFU) benefit on its own because there are other system constraints. However, Gatherley will provide a significant increase in storage in Roadford reservoir, so our investment programme in the Roadford WRZ is focused on system changes which "unlock" this new resource.

We are also investing in our Avon, Meldon and Tottiford WTWs so that they can operate at a lower output at some times of the year. This means that when plenty of water is available from other resources, we can use less water from these WTWs which preserves their sources for use at other times. This will provide a greater flexibility in the operation of our Roadford WRZ system and provides a small benefit to the WRZ WAFU through improved coordinated (conjunctive) use.

### **Wimbleball WRZ**

Our Wimbleball WRZ also experienced a large drawdown during the 2022 drought event, but the existing pump storage scheme on the River Exe ensured that the storage position was fully recovered over winter 2022/23. We worked with Wessex Water throughout the 2022 drought to manage our joint Wimbleball Reservoir resource. Our WRMP24 operational assumptions have been updated to reflect our latest agreed position.

The main change in the water resource position for the dWRMP is a reduction in transfers from Wimbleball WRZ to Roadford WRZ. This change in assumptions is required to mitigate future supply-demand deficits in the Wimbleball WRZ. The forecast supply-demand deficit in our dWRMP plan is driven by Licence Capping, Environmental Destination and a move to 1 in 500 year drought resilience. We will still utilise these transfers year-to-year, but we are assuming the available export will reduce under a future severe drought.

### **Isles of Scilly WRZ**

We took responsibility for the water and wastewater services on the Isles of Scilly in April 2020, assuming ownership from the local councils (St Mary's and Bryher), The Duchy of Cornwall (St Martins and St Agnes) and Tresco Estates (Tresco). The Isles of Scilly WRZ is now regulated like the rest of England by OFWAT, EA and DWI and this is the first WRMP ever developed for the Isles.

Early water quality testing by the DWI identified several issues with the quality of the drinking water, including findings traces of radon and tritium. This has resulted in improvement notices across all five islands.

In response to these challenges, we have reviewed the potential mitigation options that could be suitable to overcome the water quality issues and identified that new water treatment works are required across the islands. However, the new treatment technology would have much higher raw water losses meaning that our groundwater abstractions would need to increase substantially.

Recognising the risks that this poses to environment and the resilience of water supply on the islands, we have reviewed the position and determined that desalination is the only option that can guarantee the quality and reliability of the water supply to our customers.

Our existing groundwater assets will be retained, except for a few boreholes that are of lower quality and lower reliability, and these will be used to supplement the water from desalination. This will ensure the resilience of our water supply in the event of any longer outage risks that desalination could pose.

We are taking steps in the short term to improve the existing treatment of our groundwater sources to mitigate the DWI identified risks whilst we develop the desalination solution. Our plan for the longer term is to improve groundwater quality prior to blending with the desalinated water.



## 5.2 Developing our baseline supply forecast

Our baseline forecast is made up from several assessments that tell us how much water is available to put into public supply. This is called the baseline water supply. For our WRMP, we calculated the baseline supply for each year for the next 25 years. Any new schemes planned or in construction **are included in the baseline supply forecast**.

The assessments that must be included in the baseline forecast are:

- **Baseline Deployable Output (DO)** – this is how much water is available to put into public supply without including any new schemes.
- Any **reductions to our current water abstractions** that are needed to make there is enough in environment to support the wildlife and habitats that depend on it.
- Impact that **climate change** is likely to have on the amount of water that is available for us to take from the environment.
- The **bulk imports and exports** between our own water resource zones and from or to other water companies or businesses
- **Losses** from the source of the supply through the water treatment processes.
- Risk of any **outages** or interruptions to supply at our treatment works.

Alongside these calculations, we need to ensure we are resilient to future droughts. To factor in the likelihood of future droughts we use a range of different drought severities, including a drought that may only be expected once in every 500 years, or a 1-in-500-year drought.

The results of our supply forecasting provide a robust estimation of the 'Water Available for Use' (WAFU). This is the total amount of water, after taking all the above into account, that we can put into public supply.

## 5.3 Baseline deployable output (DO)

As part of developing the supply-demand balance, we are required to estimate the yield of our resource zones in terms of deployable output (DO). DO is the output of a commissioned source or group of sources for the design drought that a water resource zone is assessed against, as constrained by

- Hydrological yield
- Licensed quantities
- Environment (represented through licence constraints)
- Pumping plant and/or well/aquifer properties
- Raw water mains and/or aqueducts
- Transfer and/or output main
- Drinking water treatment
- Water quality

### 5.3.1 Planning scenarios

We have five Water Resource Zones (WRZs) in our region all of which are conjunctive water supply systems which means they use water from a range of different sources including rivers, groundwater, reservoirs, and desalination. Three of these, Colliford, Roadford and Wimbleball are limited by their available reservoir storage. For these, we have produced forecasts for supply and demand for the dry year annual average (DYAA) only.



These WRZs have substantial volumes of raw water stored in reservoirs and hence are not particularly sensitive to peak demand, but our modelling of the water resource system for the DYAA scenarios implicitly considers these peaks and the DYAA is therefore considered the appropriate planning forecast.

In contrast, the Bournemouth WRZ is dependent on river abstraction and has limited storage. Because there is limited storage, the period when supply and/or demand constraints will be experienced is the peak demand period which coincides with the lowest flow period. Hence it is more appropriate to use the Dry Year Critical Period (DYCP) forecast for this WRZ.

In the Isles of Scilly WRZ a mix of groundwater and desalination is used to supply our customers. The key planning driver is the seasonal tourism demand peak. It is therefore our peak water availability and production capacity which constrain the water availability, so it is appropriate to use the DYCP forecast for planning.

In both the Bournemouth WRZ and Isles of Scilly WRZs we have, however, also produced a DYAA forecast as expected by the regulators' Water Resources Planning Guidance (WRPG).

### 5.3.2 New sources of water

In calculating our baseline DO, we have included all new sources of water being delivered before 2025. This is updated as additional new sources come online.

This means that our baseline DO also includes the desalination plants being constructed on the Isles of Scilly, that will be online by 2025 and the desalination plant being built at Par in Cornwall.

The significant upgrades being made to the Alderney and Knapp Mill water treatment works in the Bournemouth WRZ, which will reduce treatment losses, will be included in our baseline DO when they are completed early in AMP8.

Further changes may yet be identified as we develop options to ensure we are better able to withstand future droughts. However, because these are not confirmed, we have not included these in our baseline supply forecast although we have included potential options to explore how these could benefit the delivery of our Drought and Resilience Programmes.

### 5.3.3 Water resources modelling

For our Colliford, Roadford and Wimbleball WRZs, we use a water network model, MISER, to calculate DO. The model analyses the availability of water resources across these zones taking account of rainfall patterns and evaporation rates. We use it for planning short-term operational supply, long-term strategic decision-making and drought planning.

MISER allows us to simulate a representative demand for water across the year. The simulated demand patterns account for increased water use in summer months due to tourism and warmer, drier weather. The model also reflects practical operational factors such as suspending abstraction from the River Exe when it is in full spate after heavy rainfall due to quality concerns.

Our Bournemouth WRZ is slightly different. The water supply comes from two river systems and there are no impounding reservoirs. We therefore use a less complex modelling approach which compares peak demand to the water that is available in a spreadsheet mass balance model.

We do not yet have a model for the Isles of Scilly. Our approach to estimating our baseline supply forecast and DO on the Isles of Scilly reflects the relatively simple water supply system on each island, the low volumes of water produced and a lack of historical data. We estimated DO from recent pump tests on existing boreholes on each island and have assumed that our annual DO output depends on our annual borehole licences.

### 5.3.4 1-in-500 DO assessment

The EA's Water Resources Planning Guideline (WRPG) requires water companies to be resilient to a drought with an annual probability of occurrence of 0.2%. This is commonly referred to as the '1 in 500 year' level of drought resilience. Water companies must plan to meet this level of resilience by 2039 at the latest. The WRPG states that this should not be derived from the historical record alone and that stochastic weather datasets should be used to create sequences from which the 1 in 500 year drought can be derived.

Our Environmental Destination is designed to protect the health of the water environment to 2050 and beyond. We are also required to consider 1-in-500 year drought resilience and ensure we maintain supply to our customers without the use of extreme drought measures.

To respond to both challenges in WRMP24, we have prioritised the development of new rainfall-runoff models to better inform our understanding of drought resilience and reflect the greater risks to the security of our supplies. This has allowed us to use stochastic approaches to support our assessment of a 1 in 500 DO and better understand the impacts of ED and climate change.

Improvements in our rainfall-runoff modelling capabilities have resulted in a step change in our ability to explore hydrological drought using stochastic datasets. We have plans to develop our water resources modelling capacity ahead of WRMP29 which will allow us to undertake a full stochastic assessment. The WCWRG has commissioned a regional model which will include all of our WRZs, with the exception of Isles of Scilly, and is due for completion in 2024.

### 5.3.5 1-in-500 DO results

There is a significant difference in the baseline DO for the WRMP19 and our WRMP24. This is because our 2019 forecast was based on a 1-in-200-year level of drought resilience and the forecast for 2024 is based on a 1-in-500-year level. We also reviewed the constraints within our water resources and treatment systems. These have resulted in slight decreases in the baseline DO in Colliford and Roadford WRZs and a larger decrease in baseline DO in our Wimbleball WRZ.

A summary of our WRZ 1-in-500 year DO is provided in Table 7.

*Table 7: Summary of the baseline DO assessment for dWRMP24 (PDO = Peak deployable output).*

WRZ	Planning Scenario	DO (ML/d)
Bournemouth	DYCP	232.28
Colliford	DYAA	175.92
Roadford	DYAA	246.50
Wimbleball	DYAA	87.00
Isles of Scilly	DYCP (PDO)	1.98

## 5.4 Our role in achieving sustainable abstraction

It is essential that the amount of raw water we take from the environment to use for public supply is sustainable now and over the longer term to ensure the continuing health and natural resilience of our rivers, wetlands, and aquifers.

The EA ensures our abstraction is sustainable through a permitting system called abstraction licencing. Through licencing, the EA makes sure there is enough water to meet the future needs of both people and the environment.

Our abstraction licences are based on meeting vital environmental requirements of local, national and international designated sites as well as the ambitions of the government's 25 Year Environment Plan (2018), Water Framework Directive Regulations (2017) and the Conservation of Habitats and Species Regulations (2017). Licences also take the EA's Water Industry Environment Programme (WINEP) into account.

### 5.4.1 Sustainability abstraction reductions and WINEP

The WINEP is an ongoing process of investigations with the EA that are designed to understand a) how to minimise the impact of our water and wastewater management on the water environment and b) the programmes of work required to protect and enhance it.

Water resource related WINEP schemes are classed as either:

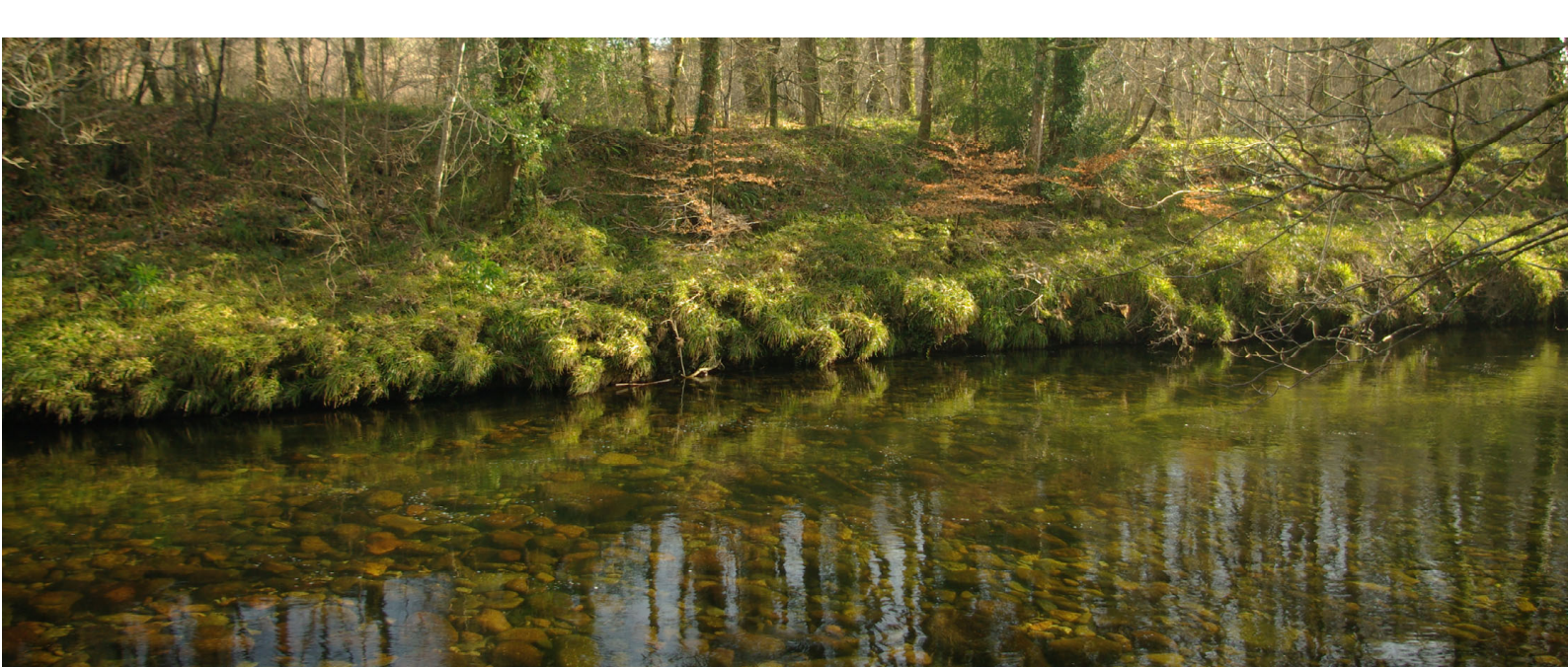
1. Improvement schemes following a completed AMP7 (2020-2025) investigation
2. Improvement schemes with a solution to be confirmed from an ongoing AMP7 Investigation
3. Investigation schemes where there is a potential risk to the environment from an existing SWW license.

In AMP7 (2020-2025) and AMP8 (2025-2030) our WINEP programme focuses on the waterbodies at greatest risk of deterioration and investigating whether our abstractions are causing damage to the environment.

Our priority is to ensure that abstractions are sustainable and we have developed, in collaboration with the EA, a comprehensive WINEP that covers all areas at risk of deterioration.

The main AMP7 and AMP8 WINEP investigations are summarised below and full details of our current and planned investigation programmes are included in Appendix 1.

For AMP8 a new 'Environmental Destination' driver has been added – this considers the sustainability of our water resource sources with future pressures, particularly climate change and population growth.



### WINEP abstraction Investigations

In collaboration with the EA, we developed a comprehensive WINEP that covers all areas at risk of deterioration through raw water abstractions. This includes:

- Otter Valley groundwater where we need to reduce abstractions to improve the flow in the River Exe as this is fed by the groundwater. Further investigations are planned for AMP8 to identify whether the reduced abstraction has been effective or whether further mitigation options are needed.
- De Lank River in the River Camel SAC (Special Area of Conservation), an internationally designated site. Our abstractions from the headwaters will be reduced to maintain the environmental quality of the SAC. Again, further investigations will take place in AMP8 to understand if the reduction in abstraction has been effective or whether further mitigation options are needed.
- River Porth at Rialton and the Porth Reservoir. In recent years, we have not abstracted from the River Porth but have retained our abstraction licence. The AMP7 WINEP scheme investigated the potential impact of using the existing licence on the River Porth and identifies new licence conditions which will allow for a sustainable abstraction going forward, if it is brought back into service.

We also have several WINEP investigations and projects for AMP8 (2025-2030) under consideration with the EA. At present the outcomes of these investigations are unknown. Once any environmental risks have been identified, mitigation measures will be agreed with the EA and incorporated into our future DO and Water Available for Use (WAFU) forecasts.

Further, we are working with our internal experts and external partners to identify further sites for consideration in the next WINEP programme (2025-2030) and to understand how these could impact our licences.

We have considered where WINEP investigations with known outcomes are impacting on DO. At present, only the Colliford WRZ will be affected as a result of the De Lank River licence change. This impact is included in the baseline DO forecast from 2028-2029.

#### 5.4.2 The Abstraction Incentive Mechanism

The Abstraction Incentive Mechanism (AIM) is a means by which the EA incentivises water companies to reduce abstractions from environmentally sensitive water sources when river flows are low. We currently operate one AIM scheme in East Devon in the Lower Otter catchment. It is assessed as having Poor Ecological Status by the EA to which the current level of local abstraction may contribute.

The Otter Valley AIM scheme, agreed with the EA, reduces the annual volume we abstract from key groundwater sites during times of low groundwater levels to protect river flows. However, since the scheme was implemented three years ago, groundwater levels have been relatively high and it has yet to be triggered.

Following an AMP7 WINEP investigation, we are now proposing an extension of the scheme which will further-reduce the volumes abstracted. This proposal, along with other measures, will ensure compliance with current flow targets.

#### 5.4.3 River (Hampshire) Avon SAC

The River Avon is a large (1,700 km<sup>2</sup>) lowland river in Hampshire reaching the sea on the south coast at Bournemouth. It runs through chalk, greensand and clay creating a unique river habitat. It is a European designated Special Area of Conservation (SAC) due to its unique environmental characteristics and the habitats and species it supports. The SAC designation means that



sustainable abstraction must ensure that the river flows meet CSMG flow standards which currently it does not. This means that we must reduce our abstraction from the River Avon, particularly during periods of lower flows in the summer, to ensure enough water remains in the environment.

### Overview of current abstractions

The River Avon is one of our largest sources of raw water providing approximately 120 ML/d of supply to our Bournemouth WRZ. We have two abstraction points on the River Avon at Matchams and Knapp Mill, both of which are treated at our Knapp Mill treatment works. Additionally, water from Matchams can be transferred to Longham lakes for treatment at Alderney treatment works.

The current licences at Matchams and Knapp Mill are summarised in Table 8.

*Table 8: Overview of existing abstraction licences in the River Avon*

Abstraction	Daily Licence	Annual Licence
Matchams	63.64 ML/d	23,230 ML
Knapp Mill	113.65 ML/d	33,186 ML

### Our role in protecting the Hampshire River Avon SAC

We recognise the important role we play in protecting the unique environment of the River Avon - both now and in a future where we must take the additional risks of climate change and population growth into account. We have worked closely with the EA and NE to identify the actions we can take immediately to benefit the Avon and to develop a longer-term plan to allow us to reduce our abstractions whilst maintaining reliable water supplies for our customers.

In the short term we have agreed to reduce our existing abstraction licences on the Avon. This will ensure that our abstraction does not grow to service the demands of new development and growth in the Bournemouth WRZ. From 2025, our River Avon licences for Matchams and Knapp Mill will reduce from an annual aggregate licence equivalent to 154.6 ML/d on average, down to 121.5 ML/d on average, a reduction of 33.1 ML/d. There will also be a daily peak reduction at Knapp Mill only from 113.65 ML/d down to 106 ML/d, a reduction of 6.65 ML/d.

In the longer term our Environmental Destination for the River Avon, which has been undertaken by Wood, on behalf of the WCWRG, indicates that we will need to reduce our peak summer abstractions by around 85 ML/d in addition to the licence reductions outlined previously.

#### 5.4.4 Time limited licences

Most of our abstraction licences are granted with perpetuity which means we can expect to continue abstracting water on an ongoing basis as long as we take due account of our obligations to ensure it is sustainable.

Time limited licences have an expiry date which means that they must be renewed to allow continued abstraction. These are typically in places where ongoing monitoring of the environmental impact of our abstractions is required.

We currently have several time-limited groundwater licences number in the River Otter catchment that are due for renewal over the end of AMP7 and start of AMP8. The work done on the AMP7 WINEP has identified the actions we need to take to ensure our abstraction in this catchment are sustainable. We therefore anticipate that these licences will need to be renewed in line with the conclusions of the WINEP investigation.

Our abstraction licence on the River Stour at Longham includes a time limited component of 12.5 ML/d. This expires in 2028 when we must reduce our total daily average abstraction to 31.82

ML/d. We have assumed that this component will not be renewed because of the risk of deterioration in the WFD status classification and Environmental Flow Index (EFI) deficits in the River Stour.

Our groundwater licences on the Isles of Scilly were issued in 2021 and are time limited to 2030. We have agreed a groundwater monitoring plan with the EA, currently underway, which will develop and provide the evidence base we need to determine the impact of our abstractions on the environment. As noted in Section 3.6, we have developed a DO scenario in our WRMP24 where we demonstrate the implications if these are not renewed.

#### 5.4.5 Developing our ‘Environmental Destination’

The Regional Plan provides an opportunity to plan an ‘Environmental Destination’ for our water resources that address all known and probable environmental issues related to water abstraction and other water supply and demand challenges. Our Environmental Destinations for our WRZs include short term reductions in abstractions as identified in the on-going WINEP programme, the Abstraction Incentive Mechanism, and ‘licence capping’ to ensure there is no future growth in abstractions which could risk environmental degradation.

The Government’s 25 Year Environment Plan, 2018 led to the creation of the EA’s National Framework for Water Resources, 2020, which outlines the risks to our future water environment from climate change if our approach to water abstraction continues as it is today.

The National Framework mandates the production of Regional Water Resource Plans to ensure abstractions are sustainable to protect the water environment from the pressures of climate change. Our initial assessment of the Environmental Destination was undertaken under the auspices of the WCWRG following the direction of the National Framework.

In addition, the EA issued further guidance on ‘preventing deterioration’, which outlined the requirement to ensure there is ‘no deterioration’ in waterbodies from the present day WINEP and the 2050 target outlined in the National Framework.

We have worked closely with the EA to develop our Environmental Destination and ensure we have used the most up to date evidence that reflects the status of water bodies and abstractions as we understand them today.

#### Licence capping

Where a risk to the environment has been identified and confirmed, we have agreed mitigation options with the EA and NE, such as licence capping, as part of the Environmental Destination.

Licence capping is a voluntary agreement with our regulators that if the flow in a river drops below what is needed to protect the environment, then we will abstract only the absolute minimum required to meet the needs of our customers.

In total there are 26 water supply licences in water bodies with a risk of deterioration which have now been included in our licence capping assessment. The most notable updates are the inclusion of our licences on the River Exe, River Fowey and River Stour which previously did not form part of our Environmental Destination.

We used the licence cap volumes to update our DO assessment (see Table 9). The impact of licence capping was assessed at a WRZ level by comparing the DO in the licence capping scenario with the DO in the baseline assessment.

The most significant impact of licence capping is in the Bournemouth WRZ where the licence reduction has a direct equivalent reduction in WAFU of 33.1 ML/d but only in a DYAA scenario and not the DYCP. The Wimbleball WRZ has a reduction of 6 ML/d, primarily driven by reductions on the River Exe, and the Roadford WRZ has a reduction in WAFU of 2 ML/d linked to the River

Dart. Licence capping has no impact on the Colliford WRZ because the existing system constraint of Restormel WTWs is reached before the licence capping constraints.

We have assumed that Licence Capping reductions in WAFU are in place from AMP9 (2030) onwards to align with the expected outcomes from AMP8 WINEP investigations. The exception to this is Bournemouth WRZ where we have already agreed the licence reduction from the start of AMP8 (2025).

*Table 9: WRZ summary of short-term licence capping impacts*

WRZ	Annual Reduction MI	Daily Rate ML/d	WAFU ML/d
Colliford	3,039	8.3	0.0
Roadford	36,323	99.5	2.0
Wimbleball	21,230	58.2	6.0
Bournemouth	12,070	33.1	33.1
<b>Total</b>	<b>72,661</b>	<b>199.1</b>	<b>41.1</b>

### Longer term abstraction reductions

Our longer-term Environmental Destination was initially informed from the National Framework analysis. The National Framework undertook analysis at a catchment-scale to identify EFI deficits in 2050 under climate change scenarios.

The WCWRG commissioned a study to translate the National Framework analysis to licence impacts at a WFD waterbody scale. The assessment for WCWRG is based on the following scenarios:

- **Business As Usual (BAU):** The same percentage of natural flow needed for the environment that currently applies continues. Un-economic waterbodies, where reducing abstraction would imply a significant investment, were initially discarded. However, an additional scenario (BAU+) which includes them has subsequently been incorporated.
- **Enhanced:** This scenario identified waterbodies where an enhanced level of environmental projection could be required.

Our consultants, Wood/WSP confirmed that our BAU+ and Enhanced scenarios result in the same volume of licence reductions and therefore we do need to provide more differentiation between these scenarios.

To resolve these deficits licence changes are required to mitigate the impacts which forms the basis for Environmental Destination (summarised Table 10 and full details in Appendix 1).

We have assumed that our Environmental Destination reductions will be implemented from AMP10 (2035) onwards as our baseline assumption, noting that our preferred plan delivers this early in some WRZs. This follows the licence cap reductions we have assumed from AMP9 (2030) onwards.

Due to the scale of the deficits in our Bournemouth WRZ we have added additional scenarios to test phasing the ED reductions in equal measures in AMP11 (2040) and AMP12 (2045) because we do not have options available early enough to mitigate the licence reduction sooner in our DYCP planning scenario.

Table 10: WRZ summary of ED licence reductions and their associated impact on WAFU.

WRZ	Revised Licence Reduction ML/d	WAFU Reduction ML/d
Bournemouth DYCP	108.43	108.43
Colliford	13.93	9.97
Roadford	82.56	26.25
Wimbleball	17.66	8.00
<b>Total</b>	<b>222.58</b>	<b>152.65</b>

#### 5.4.6 Summary of Sustainable Abstraction

A summary of the baseline WAFU impacts for each WRZ resulting from all elements of our commitment to achieving Sustainable Abstraction are outlined in Table 11. In our preferred plan outlined in sections 9 and 10, we deliver longer-term ED impacts earlier than outlined in our baseline table below. Each of the subsequent sections provides a WRZ summary of all our assumptions to ensure we achieve sustainable abstraction.

Table 11: Summary of WAFU impacts (ML/d) per WRZ in as a cumulative total across AMP8-10 and onwards.

WRZ	AMP8	AMP9	AMP10 onwards
Bournemouth DYCP	8.18	8.18	116.61
Bournemouth DYAA	41.25	41.25	70.13
Colliford	4.00	4.00	13.97
Roadford	0.00	2.00	28.25
Wimbleball	0.00	6.00	14.00
<b>Total</b>	<b>53.43*</b>	<b>20.18^</b>	<b>172.83^</b>

\* Total equals Bournemouth DYAA + Colliford + Roadford + Wimbleball

^ Total equals Bournemouth DYCP + Colliford + Roadford + Wimbleball

#### Bournemouth WRZ

We have agreed a licence cap on the River Avon from 2025 to ensure our abstractions do not grow to meet local growth in population. This reduces our annual average licence by 33.5 ML/d and our peak daily licence by 7.65 ML/d. We assume our time limited licence on the River Stour will end in 2028 which is a reduction of 12.5 ML/d in our licence. In the long term our ED sees reductions totalling 108.43 ML/d to ensure we achieve sustainable abstraction under climate change. This longer-term ED is driven in a larger part by the River Avon but also includes reductions on the River Stour and Stanbridge groundwater. In total Bournemouth WRZ DYCP WAFU is reduced by 116.61 ML/d across the WRMP24 planning period.

#### Colliford WRZ

We have a WINEP reduction at De Lank of 4 ML/d from 2028. We have tested licence capping assumptions in the WRZ, but this did not impact upon our overall WRZ WAFU because DO is constrained by our Restormel WTWs capacity. Our longer-term ED is centred on the River Fowey and River Cober resulting in an overall impact of 9.97 ML/d on WRZ WAFU. In total Colliford WRZ WAFU is reduced by 13.97 ML/d across the dWRMP planning period.



### Roadford WRZ

Licence capping has a large impact reducing the volume of licenced water in the WRZ by nearly 100 ML/d. However, a number of these sources are not highly utilised and the subsequent impact on WRZ WAFU is 2 ML/d. The longer-term impacts of ED drive large reduction in both licenced abstraction and WRZ WAFU, totalling 26.25 ML/d, which is primarily linked to abstraction reductions on the River Dart. The reductions in the River Dart mean we do not have enough local resource to meet demand which means the longer term WRZ strategy needs to include options to move more water into this area of Roadford WRZ to allow ED to be delivered. In total Roadford WRZ WAFU is reduced by 28.25 ML/d across the WRMP24 planning period.

### Wimbleball WRZ

We have a WINEP reduction of 4 ML/d on the Otter groundwater licences, but this does not impact on our WRZ WAFU because of the conjunctive use of the resources in the WRZ. Licence capping has a large reduction in the available abstraction in the WRZ, most notable reducing the resource available on the River Exe in our DO assessment. This leads to reduction in WAFU of 6 ML/d. The longer ED in the WRZ is linked to the East Devon groundwater sources with further reductions in WAFU of 8 ML/d. In total Wimbleball WRZ WAFU is reduced by 14.00 ML/d across the WRMP24 planning period.

### Isles of Scilly WRZ

Our existing groundwater licences on the Isles of Scilly are time limited and due for renewal in 2030. We have agreed a groundwater monitoring plan with the EA and are in the process of implementing this in the remainder of AMP7. This will provide us the evidence base we need to support the review of licences ahead of renewal and ensure our abstractions remain sustainable.

## 5.5 Forecasting the impacts of climate change

The Government's Water Resource Planning Guideline (2016) asks us to take the potential impacts of climate change into account when understanding DO. There is still much uncertainty about the potential impact of climate change, but there is now significant evidence that it will affect how much water is available at any given time of year, and that there will be some years when there is more stress on the water supply system than in others.

We used multiple evidence sources, including the planning scenarios used by the UK Climate Impact Panel 'Addendum on UKCP18', and rainfall and evaporation data in our MISER and URMOD models to assess the likely impacts of climate change on our future water supplies and DO. We have also worked with the WCWRG to ensure our assessment of climate change impacts was aligned with that in the Regional Water Resources Plan.

Our central climate change impact from UKCP18 for RCP2.6, RCP6.0 and RCP8.5 on each WRZs DO at the end of plan 2049/50 is outlined in Table 12.

Table 12: Central climate change impact on DO in 2049/50

	Bournemouth	Colliford	Roadford	Wimbleball
UKCP18 RCP2.6	0.00	-4.26	-2.01	-3.76
UKCP18 RCP6.0	0.00	-6.14	-2.89	-5.42
UKCP18 RCP8.5	0.00	-12.54	-5.90	-11.06

## 5.6 Bulk imports and exports - water transfers

Bulk imports and exports relate to treated water being transferred either into or out of a WRZ. Transfers can be either from one of our own WRZs to another or can relate to exports out of our WRZs or imports into them from neighbouring water companies.

For the next investment period, 2025 – 2030, we are planning to transfer small volumes of water between our WRZs and have an assumed transfer volume agreed with Wessex Water. However, the transfers are very small and do not materially affect our final Water Available for Use (WAFU). There are no raw water transfers and therefore there will not be any impacts on the water quality or environment in the receiving WRZ in terms of the risk of transporting Invasive Non-Native Species (INNS).

## 5.7 Raw water and process losses

Raw water losses and process losses represent a loss of water from the point we abstract it from the environment through to the point that water leaves our water treatment works and enters water distribution. We have reviewed our raw water and water treatments works processes across our WRZs as part of dWRMP assessment.

To calculate how much is lost during raw water processing, we look at the difference between the volume of water recorded on our abstraction meters against those recorded on our distribution meters. This allows us to calculate a percentage loss figure. We use this percentage to calculate losses at sites where we do not record both flows, but which use similar treatment processes. We have calculated our raw and treatment works process losses within each WRZ for a dry year.

Raw water losses, treatment process losses and operational use losses are accounted for within each WRZ, and these are deducted from our source DO to determine the WAFU.

As can be seen in Table 13, our highest losses are in the Bournemouth WRZ at Alderney and Knapp Mill water treatment works which use slow sand filters and are associated with high losses. We have upgrades planned for both Alderney and Knapp Mill in 2025/26 and 2026/27 respectively. We have reflected these changes in our planning assumptions by reducing losses from 19.86 ML/d to 16.90 ML/d.

Our Wimbleball WRZ has the lowest losses at 0 ML/d. We have reviewed all our water treatment works and confirmed that all water used during the process of treating water is returned to the start of the treatment process and is not lost.

Table 13: Raw water and process losses for DYAA in 2024/25.

WRZ	DYAA Losses ML/d
Bournemouth	19.86 (16.90*)
Colliford	5.47
Isles of Scilly	0.06
Roadford	2.95
Wimbleball	0.00

\* 2026/27 once Alderney and Knapp Mill works have been upgraded.

## 5.8 Outage

Outage is defined as a period when the supply of water within a WRZ is temporarily unavailable.

Outages can be unplanned or planned. An unplanned outage can happen for a range of reasons, such as a mechanical failure, a burst water main or water quality issues. These can be either full outage, where an entire source is unable to produce water, or partial outage, where a site can still produce water but not the full amount needed. Planned outages take place when site maintenance or improvement works are needed. Outages need to be considered when calculating our water supply forecast.

As it is accepted that there will be outages of water supply during normal operations, we make an allowance for outages within our supply-demand forecasts. To calculate our outage allowance for each WRZ we have used the water industry's standard: the 1995 UKWIR methodology. Due to the nature of outages, the calculations and allowances can never be precise, so we have allowed an additional 95% confidence interval either way in our overall assessment.

A detailed explanation of the methodology is set out in Technical Appendix 1 and the outage values for our WRZs are shown in Table 14. These outage values are based on the 95th percentile, which are values with a 5% risk of exceedance. As in our previous plan, where the calculated outage is less than 1 ML/day, we have adopted a *de minimus* value of 1 ML/day (only the case for Colliford WRZ).

Table 14: Raw water and process losses for DYAA in 2024/25.

WRZ	Outage at 95% Confidence interval
Bournemouth	2.38
Colliford	1.00* (0.14)
Isles of Scilly	0.07
Roadford	2.91
Wimbleball	3.36

\* *de minimus* value of 1 ML/d assumed



## 5.9 Water available for use

We calculated our total **Water Available for Use (WAFU)** in each WRZ by considering the changes to DO, transfers, operational use and outage as outlined above. We have not included benefits drawn from supply or demand drought measures, such as Temporary Use Bans (TUBS), Non-Essential Use Bans (NEUBs), drought permits and supply side drought orders, in our baseline supply forecast.

Our WAFU for each WRZ is summarised in Table 15 at the start of each AMP period in the WRMP planning period. This includes the timing of licence capping and ED and in our preferred plan.

*Table 15: Overview of WRZ baseline WAFU reflecting the final timings of licence capping and environmental destination in our preferred plan.*

WRZ	2025/26	2030/31	2035/36	2040/41	2045/46
Bournemouth DYCP	210.04	176.86	126.86	126.86	93.43
Colliford	169.21	153.87	153.34	152.82	152.30
Isles of Scilly DYCP	1.80	1.80	1.80	1.80	1.80
Roadford	236.16	234.13	207.64	207.39	207.15
Wimbleball	81.93	73.97	65.51	65.05	64.59

## 5.10 Drinking water quality and protected areas

Our drinking water meets the high-quality standards of the Drinking Water Directive and all statutory drinking water quality obligations including Section 68(i) and Section 86 of the Water Industry Act 1991 and Water Supply (Water Quality) Regulations 2000 as regulated by the Drinking Water Inspectorate.

To safeguard our drinking water resources, we have several Drinking Water Protected Areas (DWPA). These are defined by the 2017 Water Framework Directive Regulations as areas where raw water is abstracted for human consumption. Designation as a DWPA means there is long-term protection for our drinking water by preventing pollution and any potential deterioration of water quality from sources such as agriculture or our own wastewater treatment systems.

An example of our work protecting these areas is our multi-award-winning Upstream Thinking initiative. This is a catchment management scheme delivered at a landscape-scale to improve water quality by reducing the risk of pollution entering watercourses.

We are delivering it through a unique range of partnerships with the Westcountry Rivers Trust, Devon and Cornwall Wildlife Trusts, government agencies, environmental experts, landowners and tenant farmers across 10 strategically important drinking water supply areas in the Fowey, Tamar, Exe, Dart and Otter River catchments. The evaluation of the change in water quality at is being undertaken by the University of Exeter. By reducing the ongoing level of treatment and associated chemicals and energy, the scheme brings a multitude of economic and environmental benefits. It also helps deliver the Water Framework Directive (WFD) objectives for our watercourses and groundwater bodies.

Another example of protecting our drinking water supplies in our Bournemouth WRZ is the detailed investigation of Cryptosporidium in a groundwater source. The investigation, undertaken as part of the government's National Environment Programme, has identified farming activities and poorly maintained domestic septic tanks within Groundwater Protection Zone as the most likely sources of contamination. We are currently developing a strategy to mitigate these risks.



## 6 OUR SUPPLY-DEMAND BASELINE

Once our supply and demand forecasts were created, we then compared them to assess the risk of supply not meeting demand over the planning period. We include an allowance for uncertainty in this analysis, which is added to demand and referred to as target headroom.

### 6.1 Target headroom: allowing for uncertainty

#### YOU SAID WE DID

Our stakeholder told us that further information should be presented on the contribution that the individual supply-demand risks had made to the total WRZ target headroom allowances. They also requested that further consideration of the interlinks between the headroom allowance and alternative pathways was needed to ensure the headroom uncertainty was proportionate and there was no double counting of risks.

We have updated our headroom assessment to include changes to the supply and demand forecast. We have reassessed the headroom allowance using an alternative probabilistic model to the draft and produced a breakdown of the WRZ component risks. We have reviewed headroom against the pathway scenarios and where there is justification to reduce headroom risks, we have made changes.

The available headroom in a WRZ is defined as the difference between the WAFU) and the Dry Year Annual Average or Critical Period Unrestricted Daily Demand. WAFU is the DO, including raw water imports, with raw water exports and outage subtracted from it. Demand is represented by DI, which includes all demand components calculated in the demand forecast.

Even though we use the most up-to-date technology, methods and data available to produce our supply and demand forecasts, there is still a certain amount of uncertainty in all these forecasts. We therefore analyse and quantify the variability and uncertainty that exists within the calculations used to develop the supply-demand balance.

We identify a **'target headroom'** volume as a means of allowing for the uncertainty. This is a buffer between supply and demand.

If the available headroom in a WRZ is predicted to be less than the target headroom, then we should take action to close the deficit and avoid the risk of failing to meet our level of service. The magnitude of the target headroom allowance requires a balance to be made between the cost to customers against the risks to supply and the risk of over investing. This involves judgement as to the appropriate level of risk that should be included in the forecasts.

Our headroom model has been developed using the principles of the UKWIR 2002 report '**An Improved Methodology for Assessing Headroom**' (see Appendix 3 for full details).

The model provides headroom uncertainty for the whole of the planning period from the base year through to 2050. It combines probability distributions of individual risk components for each zone. The output is a range of risk profiles that represent different levels of headroom from zero uncertainty to 100% uncertainty. The absolute value of target headroom is a selected risk profile across the planning period.

The headroom uncertainty is calculated on a water resource zone basis, for the DYAA planning scenario and for the Bournemouth and Isles of Scilly zones critical period scenarios. The components of uncertainty within the supply demand-balance are divided into two supply side and demand side risk components. Those that applicable to our zones are:

Supply side headroom components:

- S6 – Accuracy of supply side data (surface water yield & groundwater yield)
- S8 – Impact of climate change on DO

Demand side headroom components:

- D1 – Accuracy of demand data (meter accuracy)
- D2 – Demand forecast variation (economic and population growth)
- D3 – Impact of climate change on demand
- D4 – Uncertainty over demand management options

As required by the WRPG, the headroom analysis has made no allowance for licences being revoked due to sustainability reductions (covered under components S1: vulnerable surface water licences, and S2: vulnerable groundwater licences) or the risk of time-limited licences not being renewed (covered under component S3: uncertainty of the renewal of time-limited licences). In addition, we do not have any bulk imports (S4) supplying our area and there are no identified pollution risks (S5), therefore these components are not applicable to our analysis.

We have not included any allowance for uncertainty of supply (S9) or demand (D4) options as this is considered in our adaptive pathways. For our revised plan we have reduced the uncertainty risk in our S6 and D2 components. We have also removed the inclusion of DI demand option uncertainty, which was included at draft.

These risks are considered in our adaptive pathways as part of the alternative climate change and demand scenarios. The changes have led to a reduction in the target headroom allowance, which addresses feedback we received from regulators. Further information on the assumptions used to assess the uncertainty for each supply side and demand side headroom component is provided in Appendix 3.

We have considered how much our headroom allowance should reduce over the planning period, recognizing that a higher level of risk is more acceptable in the future because, as time progresses, the uncertainties around the headroom reduce, and there is more time to adapt to any changes.

Our customers consider a safe and reliable water supply as a high priority; however, it is also important that we do not over invest in assets that become redundant in the future. We have a flexible plan that can adapt to risks emerging in the future, and the choice of the headroom uncertainty percentile does not drive new water resource schemes in our Plan.

We determine the acceptable level of risk to be the 95th headroom percentile at the beginning of the planning period, falling to the 90th percentile in 2030, then to the 85th percentile by 2040. This is consistent with the approach we used in our previous plan.

The chosen level of risk aligns with the EA and Ofwat's expectations and guidance, which state that to avoid unnecessary expenditure a higher level of risk should be accepted further into the future.

Table 16 shows target headroom value for each zone at 5-year intervals over the planning period. These values equate to approximately 4.5% of distribution input at the start of the planning period to 3.5% by 2050, with variations between zones.

**Table 16:** Target headroom value for each WRZ at 5-year intervals over the planning period.

	2029-30	2034-35	2039-40	2044-45	2049/50
WRZ	Target headroom (ML/d)				
Bournemouth WRZ	7.85	7.19	6.58	6.64	6.83
Colliford WRZ	6.64	6.15	5.72	5.82	6.06
Isles of Scilly WRZ	0.06	0.06	0.05	0.05	0.05
Roadford WRZ	9.28	8.59	7.99	8.15	8.42
Wimbleball WRZ	27.20	25.08	23.20	23.57	24.42
Total (ML/d)	33.05	26.31	27.18	22.84	23.63

### Assessing uncertainty: target headroom vs scenario testing

In developing our dWRMP adaptive plan we have undertaken scenario testing (see Section 9) to explore uncertain futures which could require alternative or adapted programmes of future options to meet the supply and demand challenge. The scenarios assessed represent different, as-yet-unknown future pathways.

In contrast to this, target headroom examines the uncertainty associated with the supply-demand balance calculation in any given year and it is not contingent on these alternative future pathways. Instead, it reflects the fact that there is uncertainty in the underlying assumptions in how we calculate our supply-demand balance. Our target headroom assessment does not duplicate the uncertainty that we explore in our scenario testing our plan.

For example, in our Target Headroom climate change assessment, we only explore the uncertainty inherent in the range of climate change projections for the RCP6.0 emissions scenario. This uncertainty reflects that the climate change scenarios provide us a range for a given emission scenario. In our scenario testing, however, we explore a higher rate of future emissions (from RCP8.5), which represents a different possible future pathway.

## 6.2 Comparison with WRMP19 forecast for 2024/25

Our supply and demand forecasts for the dWRMP planning period are constructed from a base year, which represents the starting position for the supply-demand balance forecast. It is important to understand how the forecast supply demand balance for this base year (2024/25) has changed since it was assessed in WRMP19.

Variations in the component parts of the supply-demand balance between WRMP19 and dWRMP24 forecasts are visualised for each WRZ in Figures 16-19. The specific components included in these assessments are shown in Table 17.

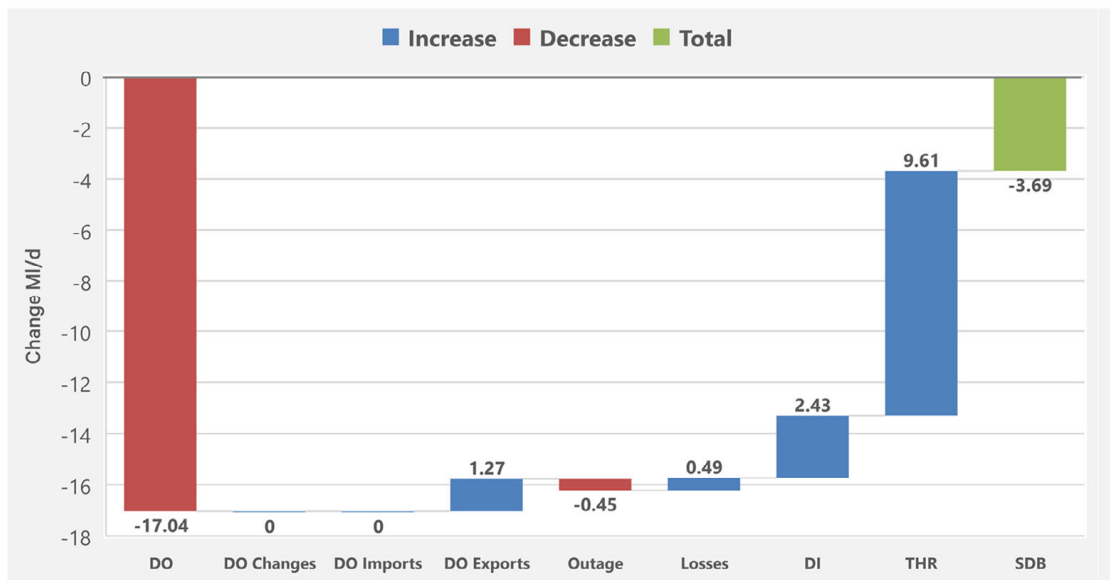
In these assessments, a negative number indicates a negative contribution to the dWRMP supply-demand balance and a positive number a positive contribution to the dWRMP supply-demand balance.

Table 17: Elements included in WRMP19 to WRMP24 2024/25 comparison (with chart labels).

Component	Label	Description and reference to planning tables
Deployable Output	DO	The WRZ Deployable Output
Deployable Output Climate Change	DO CC	The reduction in DO due to climate change
Potable Water Imports	DO Imports	Imports to the WRZ
Potable Water Exports	DO Exports	Exports from the WRZ
Outage	Outage	The outage for the WRZ
Distribution Input	DI	Distribution Input for the WRZ
Target Headroom	THR	Total target headroom allowance for the WRZ
Supply-demand balance	SDB	The supply-demand balance for the WRZ

In Bournemouth WRZ (Figure 16), the overall supply-demand balance has seen a reduction of 3.69 ML/d in the WRMP24 start position. This is primarily linked to a reassessment of the DO and an update to the headroom values. There is also a reduction in the export to Wessex Water due to the large supply-demand deficit that occurs later in the planning period driven by the Environmental Destination and an increase in DI.

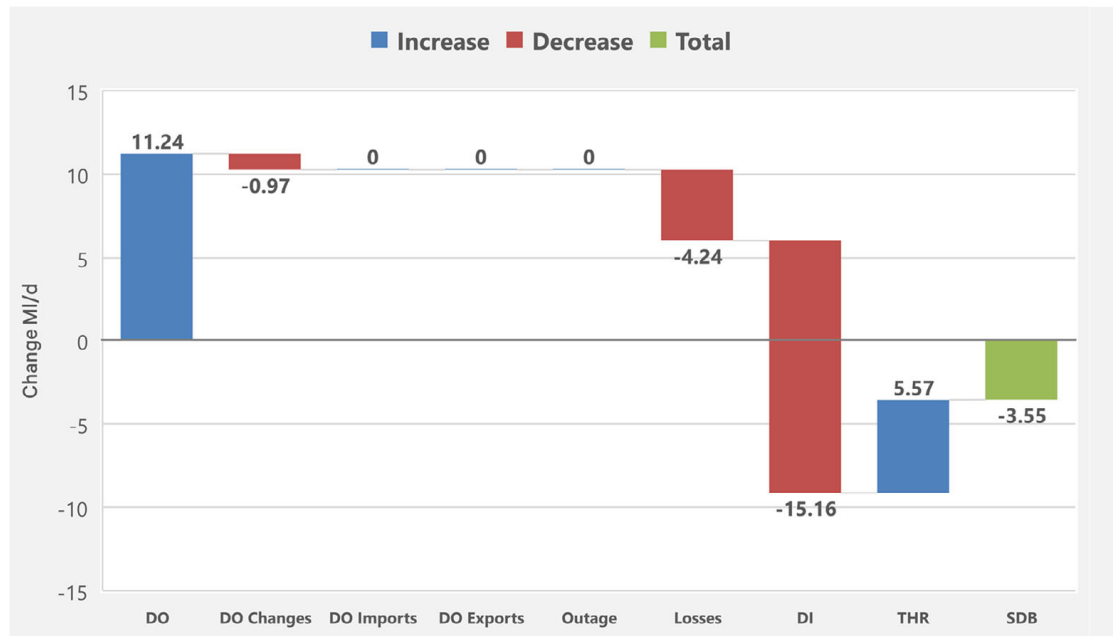
Figure 16: Bournemouth WRZ comparison of DYCP supply-demand balance components between WRMP19 and WRMP24 for the year 2024/25.



In Colliford WRZ (Figure 17), the overall supply-demand balance has seen a reduction of 3.55 ML/d in WRMP24. This has been primarily driven by increases in the amount of water put into supply (DI) as discussed in Appendix 2. There are also small reductions in DO in moving to a 1 in 500 year design drought and through updated climate change modelling leading to DO reductions.

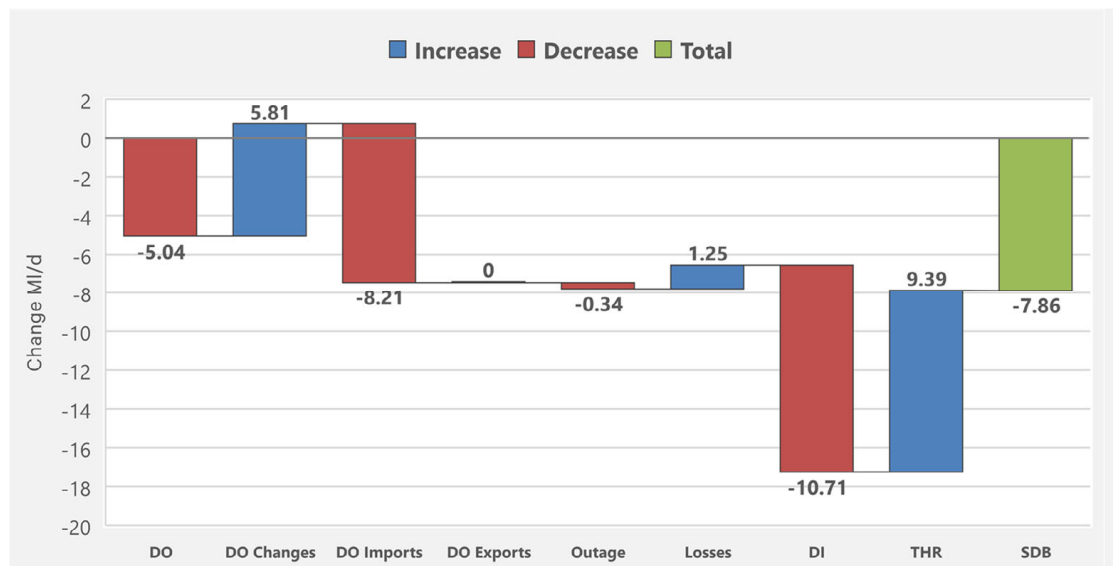


Figure 17: Colliford WRZ comparison of DYCP supply-demand balance components between WRMP19 and WRMP24 for the year 2024/25.



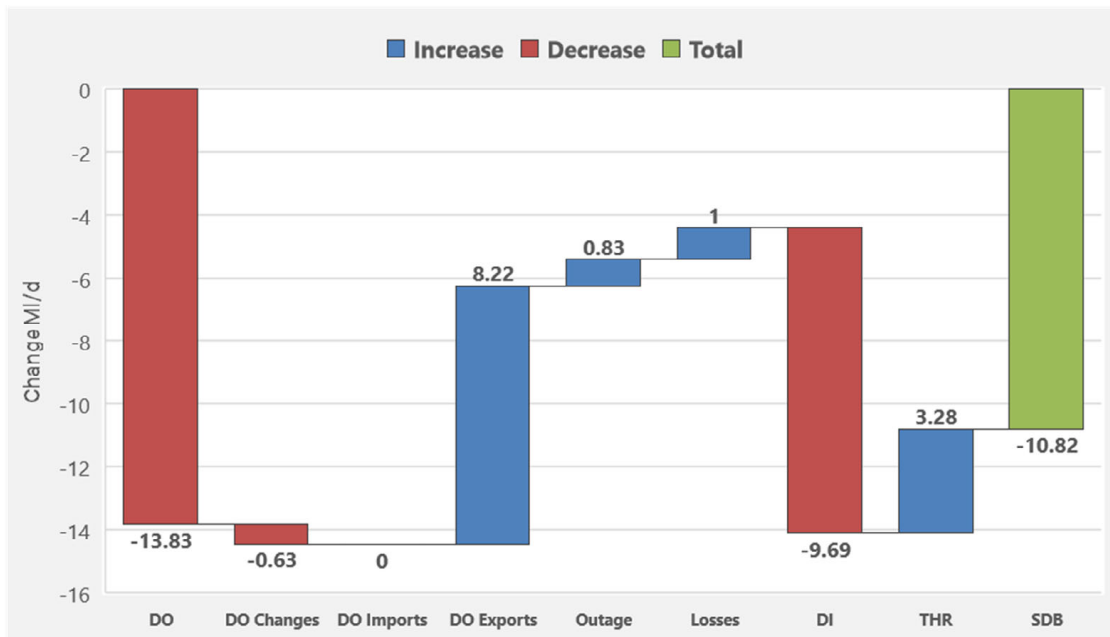
In Roadford WRZ (Figure 18), the overall supply-demand balance has seen a reduction of 7.86 ML/d in WRMP24. This has been primarily driven by increases in DI as discussed in Appendix 2. There is also a large reduction of the import from Wimbleball WRZ to keep more water within Wimbleball WRZ due to the supply-demand deficit in this zone.

Figure 18: Roadford WRZ comparison of DYCP supply-demand balance components between WRMP19 and WRMP24 for the year 2024/25.



In Wimbleball WRZ (Figure 19), the overall supply-demand balance has seen a reduction of 10.82 ML/d in WRMP24. The largest driver in this is a reduction in DO as a consequence of moving to a 1 in 500 year design drought. To compensate for this, the export to Roadford has been reduced.

Figure 19: Wimbleball WRZ comparison of DYCP supply-demand balance components between WRMP19 and WRMP24 for the year 2024/25.



## 6.3 Baseline supply-demand balance

### 6.3.1 Factors affecting the supply-demand balance

As described in Sections 4 and 5 of this report and in Appendices 1 and 2, the supply-demand balance in our WRZs is affected by several factors that will change in the future:

- **Agreed AMP8 licence reductions:** Previous investigations have identified a need to reduce abstractions from some of the sources we use to ensure their continued environmental sustainability. We will be making changes to our use of the identified sources over the period to 2030.
- **Licence capping:** The Water Framework Directive states that the environmental condition of waterbodies must not deteriorate from their current status. Where increased abstraction could cause deterioration, licence caps must be implemented to limit abstraction to recent levels. This will reduce flexibility with water resources systems to respond to resilience challenges such as drought. We are required to implement licence capping in the Bournemouth zone in AMP8, and in our other zones in AMP9.
- **Environmental Destination abstraction reductions:** The EA's National Framework for Water Resources sets out a requirement to move towards a more sustainable abstraction regime, considering challenges such as future climate change. This will result in abstraction reductions which will reduce the amount of water available to meet customer demand. We are required to make our ED changes in the Bournemouth WRZ in AMP9, and in our other zones in AMP10.
- **1-in-500 year drought resilience:** The National Framework for Water Resources requires companies to be able to plan to provide for customers' needs in very severe droughts by the end of the 2030s. Existing sources won't be able to provide as much water in these severe droughts as they will be able to in the 1 in 200 year droughts we currently plan for.
- **Climate change vulnerability:** The future impacts of climate change are very uncertain but are likely to affect some water resources systems more than others. For example, a system which is constrained by the amount of raw water available will be affected more than one that is constrained by the capacity of our treatment plants.
- **Demand factors:** Population growth will be higher in some areas than in others, affecting the future demand for water. Large seasonal fluctuations in demand, for example driven by tourism, places more pressure on resources during the drier summer months.

The relative impact of the key pressures on the supply demand balance of each of our WRZs are summarized in Table 18.

*Table 18: Relative impact of the key pressures on the supply demand balance of each of our WRZs.*

Pressure	Bournemouth	Colliford	Roadford	Wimbleball	Isles of Scilly
Agreed AMP8 licence reductions	Moderate	Moderate	Low	Moderate	Low
Licence capping	High	Low	Moderate	Moderate	Low
ED abstraction reductions	High	Moderate	High	Moderate	Low
1 in 500 drought resilience	Moderate	Moderate	Low	Moderate	Low
Climate change vulnerability	Moderate	Moderate	Moderate	High	Low
Demand factors	Moderate	High	Moderate	Moderate	High

### 6.3.2 Baseline supply demand balance for our supply zones

The supply-demand balance in all our WRZs has changed since WRMP19. In summary:

- As described in Demand Forecast (Section 4), demand in our WRZs is higher than previously forecast in WRMP19.
- Bournemouth benefits from a healthy surplus in AMP8 but required abstraction reductions at the start of AMP9 halve the water available for use and push the zone into a large deficit for the rest of the planning period.
- AMP7 drought and resilience investment will see Colliford WRZ enter AMP8 with a surplus. This surplus will be eroded by the required abstraction reductions and the zone will develop a deficit in AMP9, which will increase further with time.
- Roadford Reservoir benefits from new pumped storage schemes in AMP7, leading to the zone to start the planning period resilient to 1 in 200 year droughts with the use of drought actions such as TUBs and drought permits. Large abstraction reductions required to achieve environmental destination objectives see the zone enter a large deficit at the start of AMP10, and this deficit increases through to the end of the planning period.
- Wimbleball starts the period resilient to 1 in 200 year droughts with the use of drought actions, but starting in AMP9 it enters deficit which worsens through the rest of the planning period.
- The AMP7 Isles of Scilly strategy, which will deliver climate-resilient desalination plants for each island, puts the zone into a surplus which is maintained through the planning period.

Our supply-demand balance for each of our five WRZs against 1 in 200-year drought events until 2039, and 1 in 500 year droughts after, is summarised in Table 19. Small deficits which can be overcome with drought measures such as TUBs and drought permits are coloured amber.

**Table 19:** Supply-demand balance for each of our five WRZs against 1 in 200-year drought events until 2039, and 1 in 500 year droughts after 2039.

Water Resource zone	2025	2030	2035	2040	2045	2050
Bournemouth	+16.0	+15.9	-92.1	-93.4	-95.8	-98.2
Colliford	+4.2	0.0	-1.9	-14.6	-20.3	-24.1
Roadford	-5.6	-6.7	-6.7	-34.3	-37.3	-40.8
Wimbleball	-8.9	-9.9	-19.4	-32.6	-35.4	-38.2
Isles of Scilly	0.0	+0.7	+0.7	+0.7	+0.7	+0.7

The different pressures outlined previously mean that overall, we are facing a significant challenge to our future water supply/demand balance.

Using our best estimates of how the different baseline planning assumptions might evolve over time, we are projecting supply deficits in all our mainland WRZs in the 2030s. The combined supply-demand deficit for all our zones in 2050 is over 200 ML/d. This is the equivalent to around 80 Olympic sized swimming pools every day. Therefore, we will need to invest in supply and demand interventions to prevent this happening.

We have also considered a range of known uncertainties that result in a higher or lower deficit over the next 25 years. We have used these alternative scenarios to test our plan and ensure it is flexible to a range of potential futures. More details of these alternative scenarios are given in Appendix 6. More details on our baseline supply demand balances in each of our WRZs are summarised below and detailed in Appendix 3.



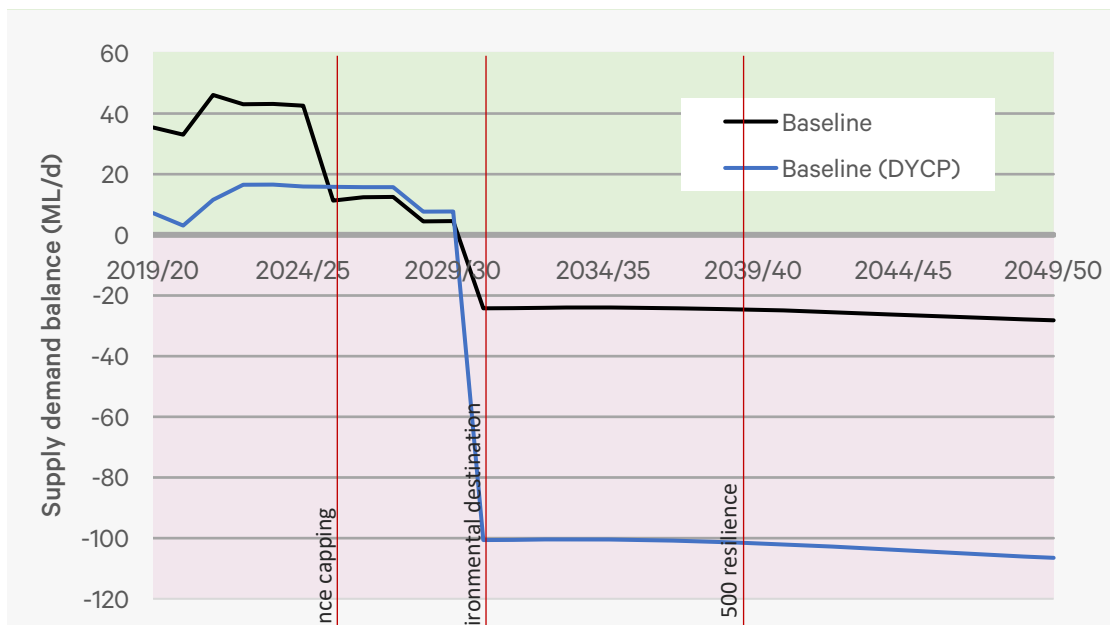
### 6.3.3 Bournemouth WRZ

Figure 20 shows the forecast supply demand balance for the Bournemouth WRZ DYAA and DYCP scenarios. Currently the amount of water we can treat at our works limits our WAFU during times of peak demand, but abstraction license reductions through license capping and Environmental Destination reductions will result in the availability of water becoming the constraint to WAFU in the future.

During the peak demand period, water treatment works infrastructure-constraints limit our WAFU until abstraction reductions on the Hampshire Avon are assumed to be implemented at the start of AMP9. In particular, the Environmental Destination abstraction reductions from the Hampshire Avon, River Stour and Stanbridge groundwater sources will lead to a very significant deficit.

We forecast baseline demand to remain stable over the planning period with a slight variation (0.3% increase) in profile due to population growth and climate change.

Figure 20: Bournemouth WRZ Baseline Supply Demand Position – DYAA and DYCP



The Bournemouth WRZ is in deficit by the end of AMP8. By the end of the planning period, without any interventions, the deficit is 28 ML/d in the DYAA scenario and 106ML/d in the DYCP scenario. This situation clearly shows the need to evaluate supply and demand management options to ensure we meet our Environmental Destination challenge and provide resilience.

Table 20: A summary of the Bournemouth WRZ baseline supply demand position.

Pressure	Impact	Comments
Agreed AMP8 license reductions	Moderate	12.5 ML/d reduction in abstraction from the River Stour at Longham in 2028
License capping	High	33.5 ML/d reduction in annual average license
ED abstraction reductions	High	108.4 ML/d reduction in abstraction required to ensure sustainable abstraction given climate change impacts and a shift to 1 in 500 year drought resilience.
1 in 500 drought resilience	Moderate	
Climate change vulnerability	Moderate	
Demand factors	Low	No significant risk factors

### 6.3.4 Colliford WRZ

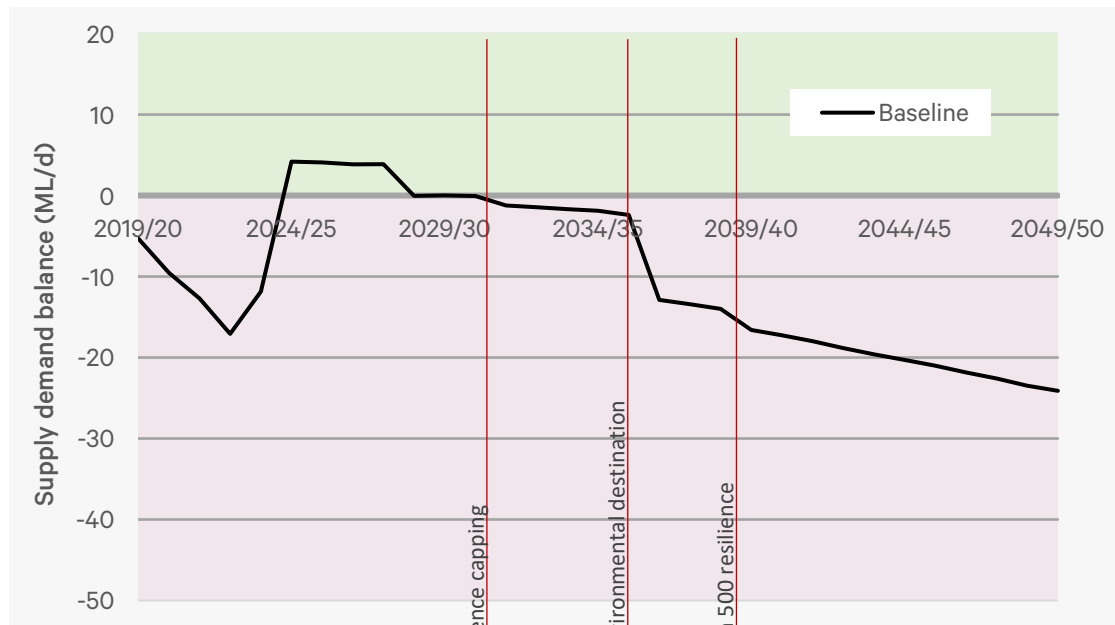
Figure 21 shows the forecast baseline supply-demand balance in the Colliford WRZ.

Supply reduces across the planning period due to potential abstraction reductions during AMP9 and AMP10 combined with the impact of climate change.

We forecast baseline demand to gradually increase by 7% over the planning period in Colliford due to population growth and climate change. This results in the baseline balance entering deficit in AMP8.

By the end of the planning period there is a deficit of 24 ML/d without interventions.

Figure 21: Colliford WRZ Baseline Supply-demand Position



This forecast clearly shows the need to evaluate supply and demand management options to ensure we meet our Environmental Destination challenge reductions and provide resilience.

Table 21: A summary of the Colliford WRZ baseline supply demand position.

Pressure	Impact	Comments
Agreed AMP8 license reductions	Moderate	4 ML/d reduction in our abstraction from the River De Lank in 2028
License capping	Low	Other system constraints limit the impact of license capping on WAFU.
ED abstraction reductions	Moderate	13.9 ML/d abstraction reduction from key sources.
1 in 500 drought resilience	Moderate	Moving to increased resilience levels has limited impact of 2 ML/d.
Climate change vulnerability	Moderate	Some impact
Demand factors	High	Highly seasonal demand patterns, showed large demand increase during Covid pandemic

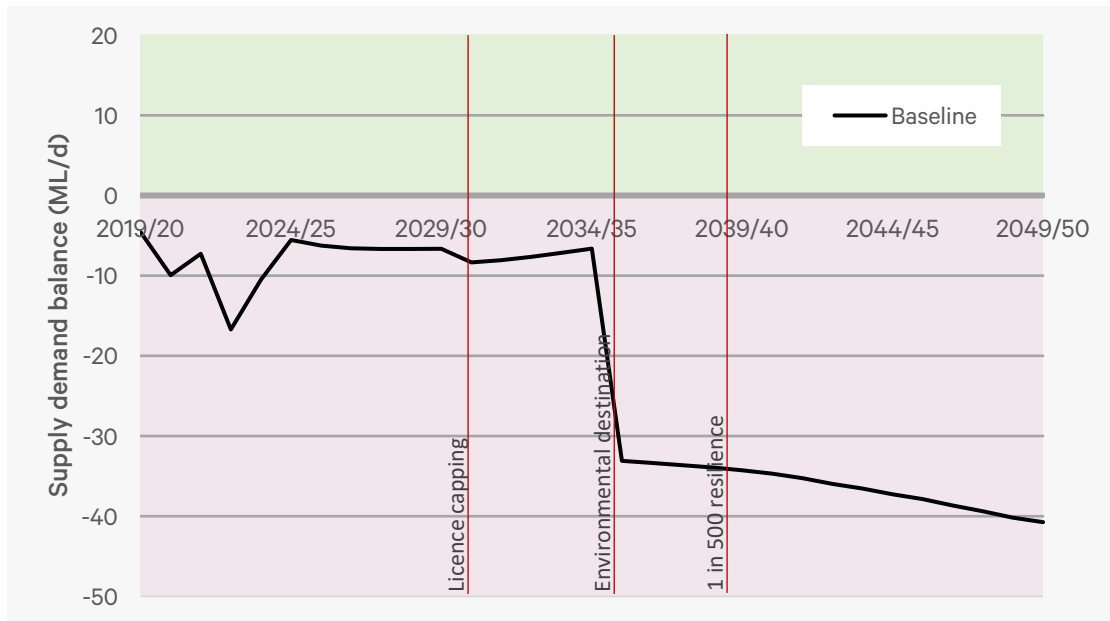
### 6.3.5 Roadford WRZ

Figure 22 shows the forecast baseline supply-demand balance in the Roadford WRZ with and without drought actions.

Supply reduces across the planning period due to climate change and potential abstraction reductions on the River Dart, River Tavy and River Tamar result in reductions in WAFU.

We forecast baseline demand to gradually increase by 5% over the planning period due to population and climate change.

Figure 22: Roadford WRZ Baseline Supply Demand Position (DYAA).



As this forecast clearly shows, the Roadford WRZ is in deficit from the beginning of the planning period. By the end of AMP9, the license reductions create a more severe deficit, and, by the end of the planning period, the zone has a deficit of 41ML/d without any interventions. This highlights the need to evaluate supply and demand management options in AMP8 to ensure we meet our Environmental Destination challenge and provide resilience.

Table 22: A summary of the Roadford WRZ baseline supply demand position.

Pressure	Impact	Comments
Agreed AMP8 license reductions	Low	None
License capping	Moderate	Impact on WAFU small – 2 ML/d
ED abstraction reductions	High	The zone is significantly impacted by abstraction reductions, particularly in South Devon where less water available from the River Dart will result in insufficient raw water available to meet demand.
1 in 500 drought resilience	Low	System constraints limit the impact of climate change.
Climate change vulnerability	Moderate	Some impact on reservoir storage.
Demand factors	Moderate	Some coastal areas show highly seasonal demand patterns.

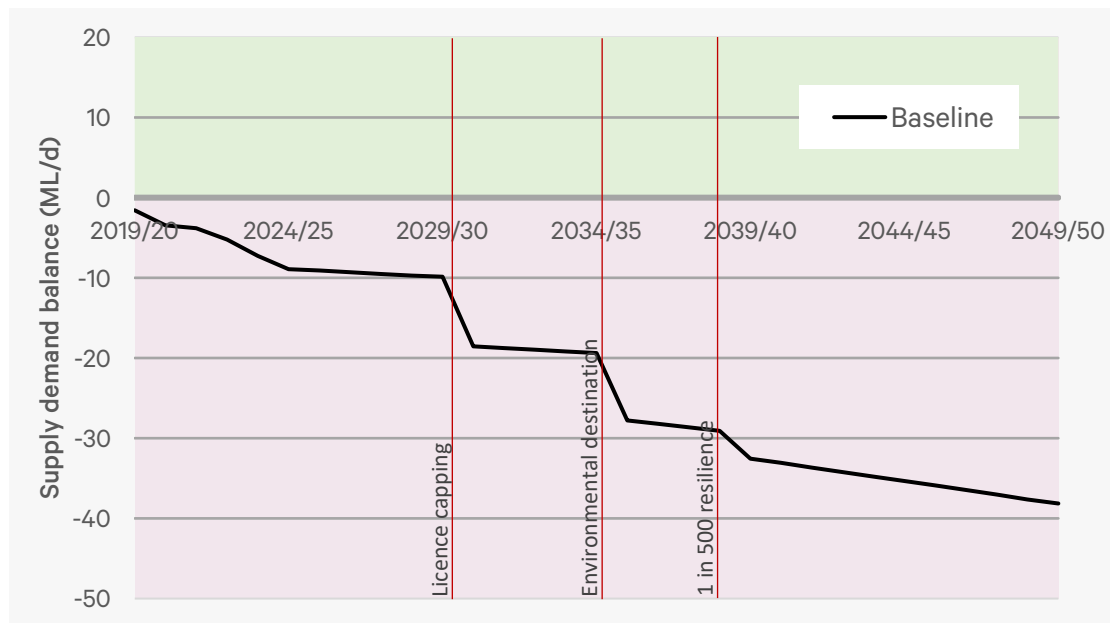
### 6.3.6 Wembleball WRZ

Figure 23 shows the forecast baseline supply demand balance in the Wembleball WRZ.

Supply reduces across the planning period due to abstraction reductions during AMP9 from License Capping and AMP10 due to Environmental Destination.

We forecast baseline demand to gradually increase by 6% over the planning period due to population and climate change.

Figure 23: Wembleball WRZ Baseline Supply Demand Position



This forecast shows that the zone has a deficit from the beginning of the planning period increasing to 38 ML/d by 2049/50. This clearly shows the need to evaluate supply and demand management options to ensure we meet our Environmental Destination challenge and that we are resilient to a 1 in 500 year drought.

Table 23: A summary of the Wembleball WRZ baseline supply demand position.

Pressure	Impact	Comments
Agreed AMP8 license reductions	Moderate	WINEP reduction of 4 ML/d reduction in our abstraction from the Otter groundwater licenses
License capping	Moderate	Capping of existing licenses will see a reduction of 6 ML/d in WAFU.
ED abstraction reductions	Moderate	Environmental destination abstraction reductions are expected to reduce WAFU by a further 8 ML/d.
1 in 500 drought resilience	Moderate	Moving to a 1 in 500 year level of drought resilience reduces WAFU by 3.4 ML/d
Climate change vulnerability	Moderate	The Wembleball WRZ is sensitive to the impacts of climate change
Demand factors	Low	No significant risk factors



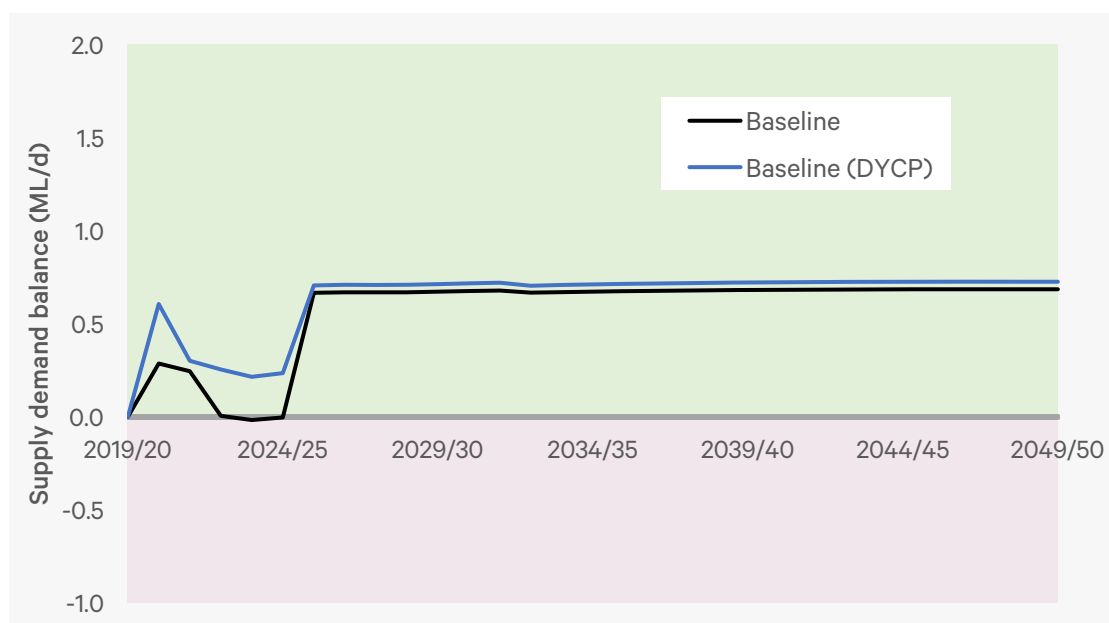
### 6.3.7 Isles of Scilly WRZ

The supply-demand balance for the Isles of Scilly WRZ is shown in Figure 24 for the DYAA and DYCP planning scenarios.

The AMP7 improvements program provides a large increase in the supply-demand surplus in both scenarios from 2025. This surplus is maintained for the duration of the planning period because desalination is not impacted by drought or climate change.

The surplus in the Isles of Scilly WRZ means that we have not considered future supply options in this WRZ at this time. We have undertaken a full options assessment for all demand side actions.

Figure 24: Isles of Scilly WRZ Baseline Supply Demand Position



This forecast shows that the IoS WRZ has a surplus forecast from the beginning of the planning period. This is the result of the transition to using desalination as the primary source of water for the islands by 2025 results in a supply system that is resilient to climate and freshwater abstraction pressures.

Table 24: A summary of the IoS WRZ baseline supply demand position.

Pressure	Impact	Comments
Agreed AMP8 license reductions	Low	The move to using desalination as the primary source of water for the islands by 2025 results in a supply system that is resilient to climate and freshwater abstraction pressures.
License capping	Low	
ED abstraction reductions	Low	
1 in 500 drought resilience	Low	
Climate change vulnerability	Low	
Demand factors	High	Very high level of seasonal demand, with population doubling during the Summer

## 7 IDENTIFYING AND ASSESSING OPTIONS

Our assessment of the water resources supply-demand balance over the coming 25-years has identified that there is likely to be a deficit of water available for us to use in the future.

The implications of this finding are that we may be unable to meet the levels of service our customers expect and protect the environment without investing in new schemes ('options') designed to reduce demand and/or increase the supply of water over the coming years.

In addition, increasing expectations of the Government, our regulators, customers and local stakeholders make it imperative that we invest in water resources measures that increase resilience of the water system, support the local economy and ensure the efficient use of water across society.

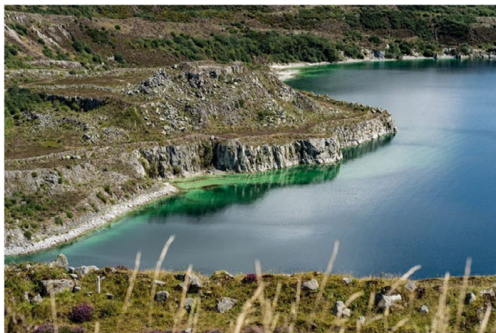
This section sets out our approach to identifying all possible water resources management options that we could use to meet the challenges we face and address the future deficit of water available for use. It is vital that the options we select for inclusion in our plan are acceptable in terms of cost, environmental resilience benefits, and their technical 'deliverability'.

Their selection and assessment must also be informed by customer and stakeholder scrutiny, and subject to a comprehensive environmental appraisal via a full Strategic Environmental Assessment (SEA), Habitats Regulations Assessment (HRA), Invasive Non-native Species (INNS), Water Framework Directive (WFD), Biodiversity Net Gain (BNG) and Natural Capital assessments (NCA).

The process of identifying and evaluating possible water resource management options is a key stage in the development of our dWRMP. To identify and assess the options to be included in our plan, we have used multi-stage process that screens every possible option against a pre-defined set of criteria. The WRMP options appraisal process and the expectations of what evidence should be considered are set out in the WRPG.

The aim of this approach is to ensure that we have identified and considered the widest possible array of options in the creation of our preferred plan. Having a comprehensive and diverse set of options to choose from in the creation of our plan allows us to demonstrate that we have been able to make real choices in the selection of our preferred programme and ensures that we will be able to meet the objectives of our plan.

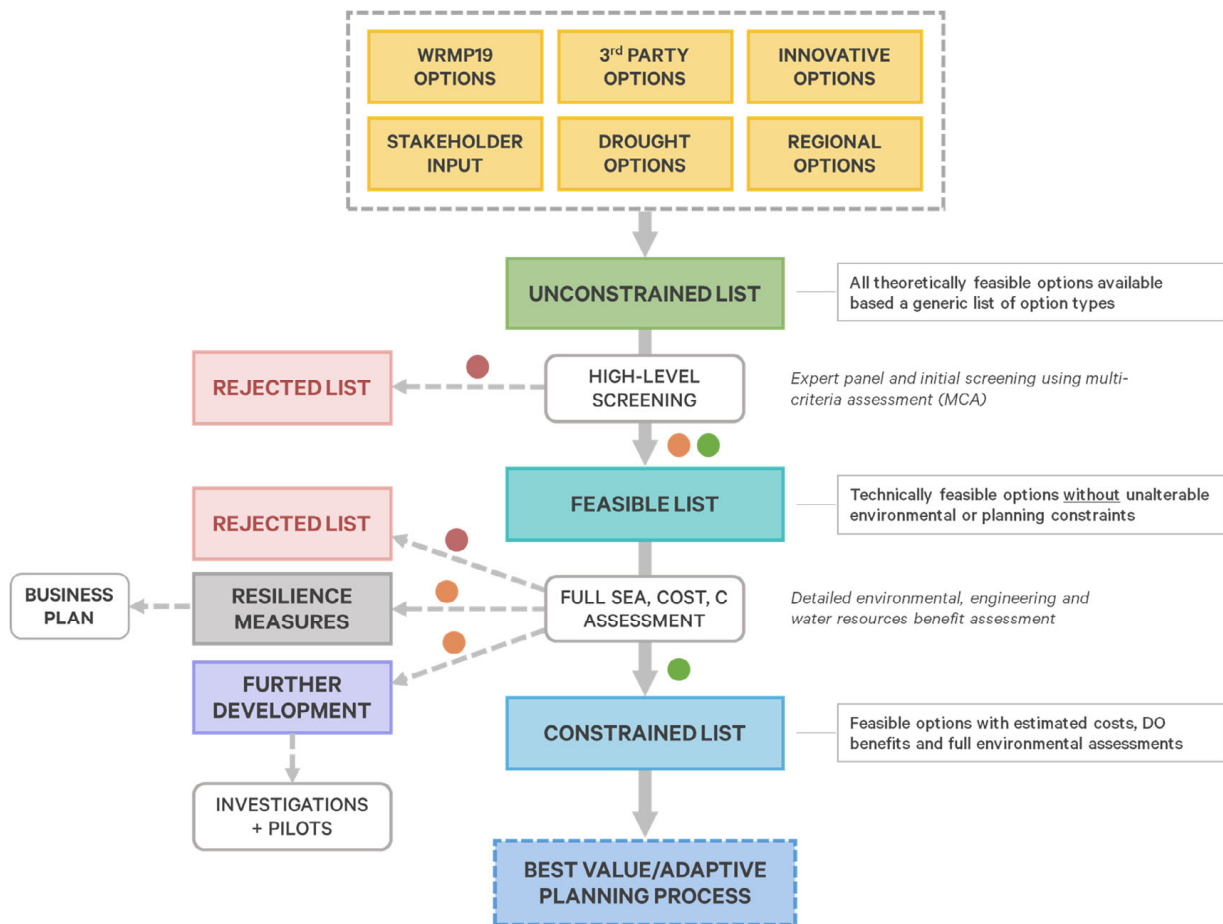
It also provides confidence to our regulators, stakeholders and customers that our preferred programme represents best value across the planning period and supports the creation of robust alternative plans in our adaptive planning process.



Our option identification and assessment process are summarised below and in Figure 25:

- Identify an **'Unconstrained List'** of all possible options from a generic list of option types and drawing from a wide array of sources (WRMP19, 3<sup>rd</sup> party, stakeholder input, resilience options, innovative solutions, strategic/regional options).
- Perform high-level initial screening via an expert panel and using semi-quantitative multi-criteria assessment (MCA) to identify a broad **'Feasible List'** of options without unalterable environmental or planning constraints.
- Feasible List subjected to detailed cost, environmental (SEA, HRA, Carbon), engineering and benefit assessment which is screened a second time using a detailed multi-criteria assessment, to create final **'Constrained List'** which is fed into the best value/adaptive planning process. Resilience options that do not deliver quantifiable DO benefits and options requiring further investigation or development are fed into business planning process.

Figure 25: SWW dWRMP24 option identification and assessment process



It is important to note that the same board approach was applied to both supply and demand options, but the criteria used to assess and screen options were slightly modified in each case.

Detailed descriptions of how supply and demand options were developed can be found in Appendices 4 and 5 respectively.

## 7.1 Unconstrained list of options

We have compiled a list of all the possible options that could reasonably be used in our plan, and which could be used to close the supply-demand deficits we have forecast. This unconstrained list was developed from a generic list of option types, but also considered options from several other sources –

- Re-assessment of options previously considered for WRMP19, including options previously rejected to check that the previous assessments remained valid.
- Options that could be sourced from 3<sup>rd</sup> parties or opportunities for collaborative delivery.
- Environmental resilience measures.
- Transfers and other network efficiency enhancements.
- Innovative solutions to water resources management challenges.
- Strategic/regional options identified via the regional planning process.
- Ideas gathered through pre-consultation engagement with customers, regulators and stakeholders (internal and external).

Unconstrained options may not be completely free from restrictions, such as environmental or planning issues, but they must be technically feasible to be included. Once compiled, the unconstrained list was rationalised before key information on the options was collated. This information included:

- Summary description.
- Location.
- Opportunities or requirement for discussions with other water companies.
- Key risks previously identified such as customer acceptability or environmental risks.
- Identification of linked or mutually exclusive options.
- Estimated yield benefit of the scheme.

As a result of this process, we generated an unconstrained list of over 198 options, which are summarised in generic terms in Table 26 below and listed in full in Appendices 4 and 5.

### 7.1.1 Note on third party options

We have a good track record of identifying and securing water resources management options from 3<sup>rd</sup> parties and of establishing collaborations to develop supply or demand options.

For this dWRMP, we have undertaken a far-reaching review of third-party options in collaboration with our regulators, stakeholders and partners, which has included exploring opportunities for:

- The transfer of water between the companies comprising the Westcountry Water Resources Group (included in Regional Strategic Resource Options – see Section 7.5).
- Water efficiency schemes provided by third party organisations or on land owned by 3<sup>rd</sup> parties (see Section 7.4 on water efficiency options).
- Water trading with third parties (see Water Net Gain Ofwat Innovation Project – Section 7.5).
- Provision of reclaimed water by a third party (included in the Poole Strategic Resource Option and several other opportunities identified in the Bournemouth WRZ – see Section 7.5).

We are keen to pro-actively engage with any third parties with the potential to provide viable water resources management options that could be included in our WRMP. To facilitate this



process, we have published an open invitation to collaborate with us and explore 'Water resources market opportunities' on our website ([Water resources market opportunities](#)).

Via this website, which clearly sets out our bid assessment framework, any third party can propose options for screening and appraisal alongside our own options in the WRMP process.

One area of success in this approach over recent years, has been our engagement with quarry owners (especially in Cornwall and more recently in Somerset) to explore the potential to purchase disused quarry pits for conversion into new water resources. This approach has been successful on several occasions (e.g., Park and Stannon Pits in Cornwall) and we are continuing to develop further opportunities of this nature (e.g., Hawks Tor Pit in Cornwall and Mendip Quarries in Somerset as an SRO).

Further information relating to the 3<sup>rd</sup> party options included in our WRMP is provided in the sections below describing our feasible options and in technical appendices X and Y.

## 7.2 Selecting feasible options

Having developed our full unconstrained list, we then subjected this list to a high-level primary screening, which was performed by an internal panel of subject-matter experts in combination with a semi-quantitative multi-criteria assessment (MCA), to identify a 'Feasible List' of options.

This feasible list is a set of options with the potential to be included in our preferred programme of options. As such, it does not include options with unalterable constraints that make them unsuitable for promotion into the constrained list.

Our objective was to create a large pool of feasible options to maximise the opportunities for optimisation in subsequent stages of the planning process.

Having selected our feasible options, we then discussed these with our regulators and other stakeholders during the pre-consultation engagement programme. This dialogue allowed us to refine the options and helped us to identify whether these options were best included as resilience measures and/or whether further investigation or piloting was required for them to be included on the constrained list of options fed forwards into the selection of our preferred programme.

### 7.2.1 Feasibility criteria

We developed a semi-quantitative multi-criteria assessment (MCA) framework to select feasible options for inclusion in our WRMP (see Table 25 below). While some of the criteria are absolute constraints, which will result in an option being rejected (e.g., unalterable environmental or other constraints), others do not immediately result in rejection if scored as 'No' or 'Potentially'. Instead, these assessments can alter how the option is taken forward in the WRMP process (e.g., as resilience measures or options requiring further investigations or development).

To be considered for supply-demand balance enhancement funding, a scheme should have some benefit to one or more components of the supply-demand balance. For example, through providing deployable output or reducing outage.

However, we were also keen for our feasible list to include options that do not currently provide quantifiable supply-demand balance benefits, but which offer **wider resilience benefits** or meet specific **legislative requirements** of the WRMP (for example catchment management and nature-based solutions).

We also wanted to include innovative or as yet un-proven options in our feasible list to ensure that they were included in the plan as 'options requiring further development'.

While these options do not meet the necessary requirements to become part of our preferred plan, they can still be presented as part of the WRMP and included in the Business Plan to be funded via either enhancement funding under the resilience investment category, or as investigations or pilot studies in the Water Industry National Environment Programme (WINEP).

Examples of these options could be catchment schemes or nature-based solutions that provide nature recovery, ecosystem resilience, catchment resilience, or water quality improvements. We have adopted this approach (as recommended in the WRPG) for these option categories in our WRMP.

*Table 25: Assessment criteria and scoring system applied to unconstrained options list to form the Feasible List of options subjected to further assessment. Options were scored Yes (Y), No (N) or potentially (P) for each criterion. While some criteria are absolute constraints, others do not immediately result in rejection if scored as 'No', but rather this can change how the option is included in the WRMP (e.g., resilience measures or options requiring further investigations or development).*

Assessment Criteria	Sub-Criteria	Description	Score
Water Resources	Water resources benefits	Does the option provide DO benefit where it is needed and align to WRMP principles?	Y / N / P
Deliverability	Design complexity	Could the option be delivered without the need for extensive feasibility studies, trials, investigations, or infrastructure modifications?	Y / N / P
	Resource availability	Are there sufficient resources available to deliver and maintain this option?	Y / N
	Buildability	What level of confidence is there that the scheme can safely and feasibly constructed?	Y / N / P
	Adaptability to change	Is the option adaptable to changing circumstances/technology/pressures in the future once implementation has begun?	Y / N / P
Resilience	Catchment and environmental resilience	Will the option improve the resilience of the catchment and the aquatic environment?	Y / N / P
Operational	Operational acceptability	Is the technology or process in use and understood by operational teams?	Y / N / P
Environmental	Environmental impact	Will the option have a significant environmental impact that cannot be mitigated?	Y / N
	Net Zero impact	Is the option carbon intensive?	Y / N / P
	Carbon capture	Will the option offer the opportunity to capture significant amounts of carbon?	Y / N / P
Customer and stakeholder	Customer and stakeholder support	Does the options have the broad support of customers and stakeholders?	Y / N / P
Regional or Company Policy	Alignment to company / regional position	Does the option align with or complement current (or planned) company and regional policy/position?	Y / N / P
Socio-economic	Socio-economic benefit	Does the option present opportunities for socio-economic benefit i.e., support vulnerable customers, partnership working, bill affordability	Y / N / P

Scalability	Can the option be scaled to meet local and regional needs.	Does the option present opportunities for implementation at various scales? E.g., rolled out quickly or slowly; phased implementation to allow for trials; implemented at different spatial scales	Y / N/ P
Regulatory policy	Regulatory policy	Is the option in line with existing company and regulatory stances and policies? Are the regulatory mechanisms in place to enable the option?	Y / N/ P
Certainty	Certainty on cost and water savings	Do we clearly understand the unit costs and the water saving benefits (due to uptake, success rate and other factors). Are these levels of uncertainty manageable / understood to form the basis for a robust plan. Does further information needed to be collected via piloting or wider feasibility studies to provide greater certainty.	Y / N/ P

### Further/specific screening

Some options on our unconstrained list were subjected to additional screening to ensure the correct options were fed through to the feasible list. For example, our leakage options were assessed using the Strategic Optimisation of Leakage Options for Water Resources (SoLow) tool and other related analytical tools.

## 7.2.2 Our feasible list of feasible options

Following screening our unconstrained list of options were reduced to the following feasible options (Tables 26 and 27). These feasible options are summarised in the following section and described in detail in Appendices 4 (supply options) and 5 (demand options).

*Table 26: Numbers of supply and demand options selected for inclusion in the feasible list.*

	Colliford	Roadford	Wimbleball	Bournemouth	IOS
Supply options	26	18	19	11	0
Metering: HH	11	11	11	11	1
Metering: NHH	2	2	2	2	0
Leakage	19	19	19	19	19
Water efficiency: HH	17	17	17	17	15
Water efficiency: NHH	19	19	19	19	8

<sup>1</sup>Note this table provides the total feasible sub-options included in the plan.

For each option on the Feasible list, the following outputs were then prepared:

- Technical option scope description and non-technical executive summary
- Cost Estimate
- Strategic Environmental Assessment Report (using inputs from HRA, INNS, WFD, BNG, NCA)
- Carbon Assessment
- WRMP Table 4/5/5a-c input data and methodology

Table 27: Full classification of unconstrained options with potential inclusion of 3<sup>rd</sup> party (3RD), resilience (RES) and innovative (INO) options and the number (No.) advanced to Feasible List indicated.

Option Type	Description	3RD	RES	INO	No.
<b>Resource management (supply) options</b>					
New surface water abstraction	New abstraction licence for new raw water transfer/ storage or new water treatment works				4
Existing surface water abstraction	Increase to abstraction licence conditions, removal of pump or water treatment work constraints to increase the deployable output of a particular source				8
Reservoir	All forms of reservoir; development of disused gravel pits or quarries as reservoirs; raising of existing or new impoundment structures; modified operation of existing reservoirs	Y		Y	7
Urban surface water	New abstraction from surface water storage for transfer to existing or new water treatment works	Y		Y	
New groundwater abstraction	Standalone or extensions to existing licence conditions with new associated water treatment works				9
Existing ground-water abstraction	Removing constraints to increase the DO of a source, modifications to water treatment works to enable treatment of additional water availability				2
Aquifer recharge	Pumped augmentation of aquifers to enable increased abstraction at certain times			Y	1
Desalination	New plant located in coastal or estuarine location – various technologies available, new conditioning process required			Y	1
Conjunctive use of sources	Integrated and selective use of surface and groundwater sources to avoid surface water sources at times of low flow	Y			0
Reductions in level of service	Reduced level of service offered to customers and any associated increase to deployable output				0
Outage reduction	Reduction in the calculated outage allowance by increasing asset reliability – e.g., through refurbishment				0
Inter-regional raw water transfer	New or increased capacity for inter-zonal/regional transfer of raw water from surface water or groundwater sources – e.g., watercourse, pipeline, etc		Y		3
Intra-regional raw water transfer	New or increased capacity for intra-zonal/regional transfer of raw water from surface water or groundwater sources – e.g., watercourse, pipeline, etc	Y	Y		7
Tankering of water	Tankering of either raw or treated water from outside the existing operational region	Y			0
International imports	Transfers of water into the existing supply system, from an international source (e.g., sea going vessels, icebergs, pipelines)	Y		Y	0
Water industry licence trading	Trade water with another water company to increase DO in the supply system	Y			0
Non-water industry licence trading	Trade water with a third party to increase DO in the supply system – e.g., redundant industrial abstraction licences, private supplies, joint ownership of assets, etc	Y		Y	0
Wastewater effluent reuse/recycling	Direct or indirect effluent reuse schemes to either potable standards for drinking water or for non-potable use			Y	3
Trade effluent reuse/recycling	Trade effluent discharges diverted from wastewater treatment works to be treated to either potable standards for drinking water or for non-potable use			Y	0



Catchment- and nature-based solutions	Land and environmental management interventions that increase water available for abstraction		Y	Y	1
Drought permits and orders	Drought management actions that, if granted, can allow more flexibility to manage water resources and the effects of drought on public water supply and the environment	Y			19
<b>Production management (network performance) options</b>					
Raw water losses	Reductions in leakage of water from raw water infrastructure to conserve store and reduce volumes abstracted				0
Increased treatment capacity	Modifications or improvements WTW capacity to allow treatment of more water at certain times				6
Process losses	Efficiency improvements to water treatment works to reduce water losses				2
Supply system operation	Alter supply network operation (locally or holistically) to increase deployable output		Y		1
<b>Customer management (demand) options</b>					
Meter optants	Meter installation on customers contact, enhanced promotion. Enhance promotion may also support protecting vulnerable customers and tackling water poverty.				2
Metering change of occupancy	Fitting of compulsory meters to Industrial, commercial, public-sector premises and domestic properties				2
Compulsory metering	Fitting of compulsory meters to Industrial, commercial, public-sector premises and domestic properties				2
Metering other selective: Dual billing	Meter all unmeasured properties without changing customer status to metered – helps assess consumption and forecasting demand				2
Meter upgrades to smart meters	Targeted replacements or upgrades of existing meters to smart water meters				3
Meter reading frequency	Changes to when installation occurs – e.g., when premises change ownership, NHH, HH, excessive water use			Y	2
Special fees/tariffs	Charging of separate additional fees or use of special tariffs for specific water uses or user groups			Y	1
Changes to measured tariffs	Introduction of variable tariffs for domestic and commercial customers to incentivise/deter certain water use behaviours				0
Incentivisation schemes	Subsidies or incentive payments for specific activities, behaviours or the use of certain water saving products				0
Water efficiency enabling activities	Influencing policy, communities of interest, lobbying for tighter sector-specific water regulations, improving the enforcement of water regulations, commission water efficiency research, influence planning process, action learning pilots with key sectors			Y	0
Retrofitting indoor water efficiency devices	Provision of leaky-loo wastage fix, appliance and/or white goods exchange programmes – washing machine, dishwasher, water closets or WCs. Water butts, saver flush, shower regulator, tap insert – through website and call centre				2
Household Audits	Household water use audit and retrofit and / or the provision of self-audit packs				5
Non-Household Audits	Non-Household water use audit and retrofit and or provision of self-audit packs				19
Rainwater harvesting	Fitting rainwater harvesting systems in new or existing homes and businesses				3

## IDENTIFYING OPTIONS

Resource options: Non potable / water reuse	Encouraging water recycling, (e.g., untreated grey water from households or industrial customers, fitting water recycling systems in new or existing houses,	Y		Y	1
Other water efficiency: incentive schemes/ subsidies	Subsidies or incentive payments for specific activities, behaviours or the use of certain water saving products, including community competitions.				1
Other water efficiency: partnership working	Partnership working with developers of HH or Non HH developers to install water efficient devices, for subsidies or reduced infrastructure charges.				2
Catchment- and nature-based solutions	Land and environmental management interventions that support water efficacy, potable water substitution, water recycling, customer water resilience, etc		Y	Y	0
Water efficiency customer education / awareness	Industrial customers/bodies, commercial customers, households, public sector (e.g. schools, hospitals, community groups), recreation facilities (parks and gardens, golf courses), designers of hot water systems, taps and water using appliances, purchasers of water-using appliances (i.e. in showrooms), labelling water consumption of appliances. Use of media campaigns, websites, online tools to help long-term behavioural change.				3
Direct abstraction and irrigation advice	Drip vs. spray irrigation, direct abstraction, other techniques for reducing evaporation				0
Education programme	Develop education programme for use in schools and colleges				1
<b>Distribution management (leakage) options</b>					
Active leakage management	Leakage detection efforts using acoustic loggers and listening sticks to detect leaks, intensive active leakage control, including investment in innovation in ALC to drive improvements in cost-benefit of the techniques used.			Y	4
Mains replacement (not trunk mains)	A combination of mains and communication pipe renewals have been considered. Free supply pipe repair to incentivise quicker replacement rates over and above partial subsidies.				5
Trunk main renewal / new	A combination of trunk mains asset renewal policies comprising mains and/or communication pipes. Includes innovation investment in trunk main renewal to drive improvement in cost-benefit of renewal techniques used.				3
Pressure management	Advanced pressure management to create small discreet pressure areas, to improve the effectiveness of pressure management on leakage reduction				1
Other leakage control:	Installation of permanent acoustic loggers, DMA monitoring, DMA sub-division, network optimisation team to manage pressure transients, trunk main flow monitoring zones through installation of flow meters, loggers and pressure monitors.				6
<b>Environmental resilience options</b>					
Catchment- and nature-based solutions	Land and environmental management interventions that help increase the resilience of the catchment and aquatic environment	Y	Y	Y	Y
River and ecological resilience measures	River restoration and wildlife management interventions (especially for fish, invasive non-native species and aquatic species and habitats) designed to increase the resilience of the environment to impoundment impacts, low flows and drought		Y	Y	Y

## 7.3 Distribution management (leakage) options

Leakage is a core demand management activity as well as being key to meeting customer and regulator expectations. Our leakage demand-side options build on our experience and expertise of exploring new activities, such as satellite leak detection, and working with RPS, a respected consultancy in leakage, to develop core leakage options.

We are committed to recognising and piloting new technology and activities to supplement these options and drive efficient delivery. Our process follows the same guidance as the supply-side option development and is equivalent, albeit with slightly different criteria and the use of modelling to develop and optimise the options.



### Preventing and fixing leaks

We have used best-practice techniques, and industry-based assumptions to develop individual leakage options, supported by our network data knowledge and experience.

We have used leakage data and data relating to our **district metered areas (DMAs)** and their watermain characteristics from our corporate systems. A base year of 2020/21 has been used as the most complete data sets are available from this year. The base year has been kept consistent throughout all leakage options. Leakage options have been built at WRZ level.

Following the screening of the unconstrained list of options, 19 distribution management (leakage) options are included in the feasible list of options taken forward for full cost, environmental (SEA, HRA, WFD, INNS), carbon and engineering assessment. The five main categories of feasible leakage options are listed below, and full details can be found in Appendix 5.2.

Leakage options on feasible list	
Active leakage management	Leakage detection efforts using acoustic loggers and listening sticks to detect leaks, intensive active leakage control, including innovation in ALC to drive improvements in cost-benefit of the techniques used
Mains replacement (not trunk mains)	A combination of mains and communication pipe renewals have been considered. Free supply pipe repair to incentivise quicker replacement rates over and above partial subsidies.
Trunk main renewal / new	Combination of trunk mains asset renewal policies - mains and/or communication pipes. Includes innovation investment in trunk main renewal to drive improvement in cost-benefit of renewal techniques used.
Pressure management	Advanced pressure management to create small discreet pressure areas, to improve effectiveness of pressure management on leakage reduction
Other leakage control:	Installation of permanent acoustic loggers, DMA monitoring, DMA sub-division, network optimisation team to manage pressure transients, trunk main flow monitoring zones through installation of flow meters, loggers and pressure monitors.

#### Option spotlight: Active Leakage Control

Active Leakage Control involves identifying and quantifying existing leakage losses from the supply network on a continuous basis. This typically includes the use of **acoustic leak detection surveys** on both a routine and intensive/reactive manner based on data collected through the continuous monitoring of flows and pressures at various spatial scales.



## 7.4 Demand management options

Following the screening of the unconstrained list of options, 30 customer (demand) management options were included in the feasible list of options taken forward for full cost, environmental (SEA, HRA, WFD, INNS), carbon and engineering assessment. The main categories of feasible demand management options are listed below, and full details can be found in Appendix 5.



### Deployment of smart meters

There are many types of smart meter, but they all measure how much water is being distributed through a pipe and allow it to be monitored closely. A smart meter may be installed on a particular section of our network, such as a street, as well as individual households having a meter installed that tells them how much water they are using.

There are two types of smart meter technology available. An Automatic Meter Reading (AMR) meter automatically captures accurate water usage readings, removing the need for manual/visual readings.

An Advanced Metering Infrastructure (AMI) is an integrated system of smart water meters, communication networks and data management systems that enables two-way communication between meter and the company or customer. Unlike AMR, AMI does not require personnel to collect the data. Instead, the system automatically transmits the data directly to the company at predetermined intervals.

Smart metering options on feasible list	
Metering other selective	Wide range of selective metering options: smart meter installs (dual billing) with voluntary or compulsory switch to measured tariff, meter upgrades from basic meters to either AMR or AMI smart meters (for both HH and NHH), increasing meter reading frequency to monthly
Metering compulsory	Compulsory meter installs in the BNW region only (due to its water-stressed status)
Meter optants	Various meter optant options: use of installing a new AMR or AMI meter, when a customer requests one, existing optant installation rates, enhanced meter optants (to support water poverty) – accompanied by a communication campaign to people in water-poverty in the region to promote meters and the ability to move onto a social tariff
Metering change of occupancy	A new AMR meter is installed, when a customer moves house, resulting in the new homeowner becoming a measured customer



### Option spotlight: Upgrade to smart meters

When a complete DMA is fitted with AMI meters, we can use the data collected to build a complete picture of where water is going, allowing us to identify potential leaks on our distribution system more easily, identify customer leaks more quickly and provide a better understanding of real time customer usage to help assess effectiveness of water efficiency activities.

Smart meters in households help people to be aware of how much water they are using (and can therefore help them use less), and helps us assess the relative effectiveness of water efficiency options on different customer groups.

Our metering options considered blended interventions. Our metering options not only install the metering technology, but also look to install a flow regulator at the same time, to help manage wastage and consumption. We also include the costs and benefits from using the data to provide enhanced billing, behavioural nudges, and water consumption via our customer website and digital app, to support helping our consumers use less water.

More specifically, the current potential benefits of these smart metering options include:

- **Per-capita consumption (PCC) reductions:** Switching to metered supplies has been shown to decrease water use significantly. Switching from a visual-read or AMR meter, to an AMI meter which provides near instantaneous data, can provide an additional reduction. Further details on these benefits are contained in Annex 5.1.
- **Customer-side leakage detection:** Private supply-pipe leakage is currently very difficult to quantify from network leakage. AMI smart meters provide almost instantaneous visibility of continuous water use that is independent of customer behaviour and which may be indicative of supply pipe leakage and plumbing losses.
- **Customer-side wastage detection:** In addition to water lost through customer supply pipes there is also inadvertent water usage through leakage on customer equipment, taps, and toilets. This water usage is also continuous and is independent of customer behaviour. The benefits are assumed within the PCC and leakage figures above.
- **Distribution leakage:** Smart metering a complete DMA has been shown to enable quicker identification and repair of distribution leaks, reducing overall leakage. Near real-time data on the movement of water through the network helps to prioritise leak detection activity and leak repairs, improving efficiency of detection activities.





## Promoting and supporting water efficiency

Our water efficiency options have been developed in close collaboration with internal and external subject-matter experts, our regulators and with partners (Bristol Water and Wessex Water) and stakeholders in the West Country Water Resources Group.

In addition, we have gathered insights into the latest best-practice and start-of-the-art approaches from experts from water retailers and sector-leading experts such as Waterwise. We have also undertaken research into the social acceptability and perceptions of water efficiency options with both household and non-household customers and stakeholders representing key groups of water-users, such as the agrifood, energy and tourism sectors.

This far-reaching stakeholder engagement programme has played a key role in finalising the selection of options that were taken forward for a more detailed review of costs and benefits.

Water efficiency options on feasible list	
Household water audit	Water audits including, advice, tailored retrofit of free water efficient devices, and repair of plumbing losses where required. Could target existing, newly metered customers, or unmeasured customers. Option working with corporate landlords to better target tenants.
Other water efficiency	Various options: mandatory water efficiency labelling, Green-redeem incentive scheme (rewarding water conserving behaviour with non-financial rewards), encouraging new housing developments to use water-efficient devices in return for reductions in infrastructure charges.
Rainwater harvesting	We have considered new or retrofit rainwater harvesting systems for both HH and NHH customers, with and without subsidies.
Water efficiency customer education / awareness	School visits and community schemes promoting water-efficiency. Installation of flow regulators alongside our HH metering programme
Retrofitting indoor water efficiency devices	Appliance subsidies (rebates for installation of water efficient appliances) and a programme of identifying and fixing leaky loos
Non-household water audit	Non-household visits to change customer behaviour, as well as installation of water saving devices such as tap inserts
Variable Tariffs	Variable tariffs for HH and NHH customers ( <b>INO</b> )

### **Option spotlight: Home Efficiency Visits and fixes**

Household customer water audits can be provided virtually (online) or via a home-visit. The 'visit' will include undertaking a water audit, giving advice and providing tailored retrofits of free water-efficient devices where required (e.g., water saving devices, fixes of leaky toilets, etc).

The identification and fixing of leaky sanitary goods (e.g., toilets and taps) will be delivered as an add-on to the HEVs. Leaking toilets can be identified using data from metered customers, and through awareness campaigns and initiatives for unmetered customers. Customers can identify leaky toilets using simple measures such as leak detection strips or drops of food dye in the cistern. We would then arrange for repair or replacement of the faulty cistern mechanism at no cost to the customer.

The effectiveness of this intervention will be proportional to smart-meter penetration, as smart-meter data will indicate which households have high levels of continuous flow.



**Option spotlight: Business Efficiency Visits and fixes**

Visits can be provided virtually (online) or via a site-visit to businesses and may include undertaking a water efficiency audit, giving advice and tailored retrofit of free water efficient devices to bathrooms and kitchens only (not wider process water). More targeted audits to specific customers with a focus on leakage-reduction or process water re-use has also been considered.

Business sectors or NHH customer groups can be targeted based on high potential for water savings. BEVs can also be targeted through detailed analysis of **Market Operators Services Ltd (MOSL)** data and must be undertaken following liaison with Water Retailers.

BEVs can also be specially targeted at leakage detection and fixing by identifying where high-water usage or continuous flow indicates that leakage might be occurring. The visits can also be used to identify where process losses are occurring and where there may be opportunities for water reuse or recycling..

**Option spotlight: Water Saving Community Fund**

To get our customers and communities more involved in water conservation, we have established the Water-Saving Community Fund. The aim of the fund is to encourage new and innovative ideas from community groups, civil society organisations or social enterprises to reduce water use. Project proposals are required to meet two key requirements:

- **Water efficiency outcomes** – the project must save tap water and be able to demonstrate a reduction in water use (litres saved because of the project)
- **Benefits for the community** – the project must be located within our service area and demonstrate a benefit to the local communities we serve.

See our **Water Saving Community Fund** webpage for more details.



The following list of projects show a selection of pilots, trials or innovation projects that are underway to inform future feasible demand-side options for inclusion in WRMP29. The full list of studies is included in Appendix 5.

### **Innovation Option: Water Efficiency Innovation Fund (NHH)**

SWW have established the Water Efficiency Innovation Fund to encourage new and innovative ideas to reduce water-use in businesses operating in Cornwall and parts of Devon. The fund is open to businesses (NHH customers), water retailers and water conservation service providers. Project proposals must deliver water efficiency outcomes that save mains tap water and be able to demonstrate a tangible, sustainable reduction in water use (litres/day saved because of the project). They must also deliver a minimum water-saving cost benefit that is better than £1/litre/day saving from the SWW funding contribution applied for.

See our **Water Efficiency Innovation Fund** webpage for more details.

### **Innovation Option: Variable tariffs**

We have recognised that our current charging structures were designed for long term, regional cost reflectivity and that they may not be suitable for use in the future. As a result, we are currently taking a systematic approach to develop new progressive charges. We have updated our cost models to reallocate costs appropriately to different activities and different customer groups and are now reviewing and revising our tariff models to enable them to accommodate the new charging models.

Progressive charges remain cost reflective, but with a focus on sending the right price signals to those who use capacity at peak times and who need to contribute to investment in that (to demonstrate the value of water). This makes progressive charges fairer because it incentivises careful use, ensuring affordable water for life, for all.

A suite of new variable tariffs/progressive charges, which have been designed to incentivise sustainable water use, will be piloted, and evaluated to determine the benefits they provide in AMP7 and AMP8.

### **Innovation Option: Agrifood and Tourism Water Efficiency Pilots**

The 'agrifood' (agriculture, horticulture, food and drink supply-chain) and tourism sectors represent two of the most significant groups of NHH water users in the South West region. As such, they have the potential (individually and/or collectively) to make a significant contribution to the delivery of demand-reduction outcomes.

In addition to demand-side outcomes (e.g., reduced reliance on potable water use, water efficiency, increased resilience to drought), the agrifood sector also has huge impact potential in relation to supply-side outcomes (e.g., nature-based solutions, water recycling/reuse, decentralised water storage) and to help us meet our environmental ambitions (e.g., increased resilience, biodiversity enhancements, net zero, climate adaptation).

The delivery of demand-management solutions with stakeholders/customers in these key sectors currently remains challenging because the evidence-base to support the development of options in this area is still poorly developed. However, the barriers to this approach are not insurmountable and the potential water saving benefits that could be achieved by working with this and other similar sectors remain significant.

We have been in dialogue with key stakeholders from the agrifood and tourism sectors throughout the development of both this dWRMP and the West Country Regional Plan. In 2023, we are establishing a 'Multi-sector Working Group' under the auspices of the WCWRG to co-design a programme of engagement and demand management options with businesses across the region, working in close association with water retailers, NHH customers and our delivery partners.



## 7.5 Supply options

Following the screening of the unconstrained list of options, 74 resource management (supply-side) options were included in the feasible list of options taken forward for full cost, environmental (SEA, HRA, WFD, INNS), carbon and engineering assessment. Full details of the feasible supply options can be found in Appendix 4.



### Storing more water

We are exploring ways to increase how much water we can store from seasonal rainfall so that there is more available during dry periods. Higher river flows in winter can be pumped up into a reservoir and strategically released to make sure the river level is not compromised when we take water from it for supply. We could make dams higher to increase the capacity of reservoirs or create hundreds of smaller ponds in the landscape to store water and enhance the natural habitat. Partnering with our partners and 3<sup>rd</sup> parties across in the wider region, we are actively looking into opportunities to create new strategic water storage options.

Storage options on feasible list	
Cheddar 2 SRO	New strategic regional reservoir, treatment, and transfer (3RD)
Mendip Quarries SRO	Conversion of quarry into strategic reservoir (3RD)
South Croft & Wheal Jane	New raw water supply from Cornish Metals at Crofty (3RD)
Avon Reservoir: Raise Dam	Increase the capacity of Avon Reservoir by raising the dam
Ibsley Lake	New raw water supply and onsite treatment at Ibsley Lake
Porth Reservoir & Rialton	New raw water supply from Porth Reservoir and Rialton intake
Hawk's Tor Pit	New raw water reservoir at Hawk's Tor Pit
Leswidden Pool	New raw water abstraction from Leswidden Pool
Slade Reservoir	New raw water reservoir at Slade Reservoir
Challacombe Reservoir	New raw water source at Challacombe Reservoir
Water Net Gain	Research into decentralised water storage – smart ponds

#### **Option spotlight: Ibsley Lake**

This option will establish an abstraction source at Ibsley Lake to utilise an existing seasonal licence and abstract up to 10ML/d.

The abstracted water will be transferred to Knapp Mill for treatment via the existing Matchams intake, to supplement resources available for Knapp Mill.

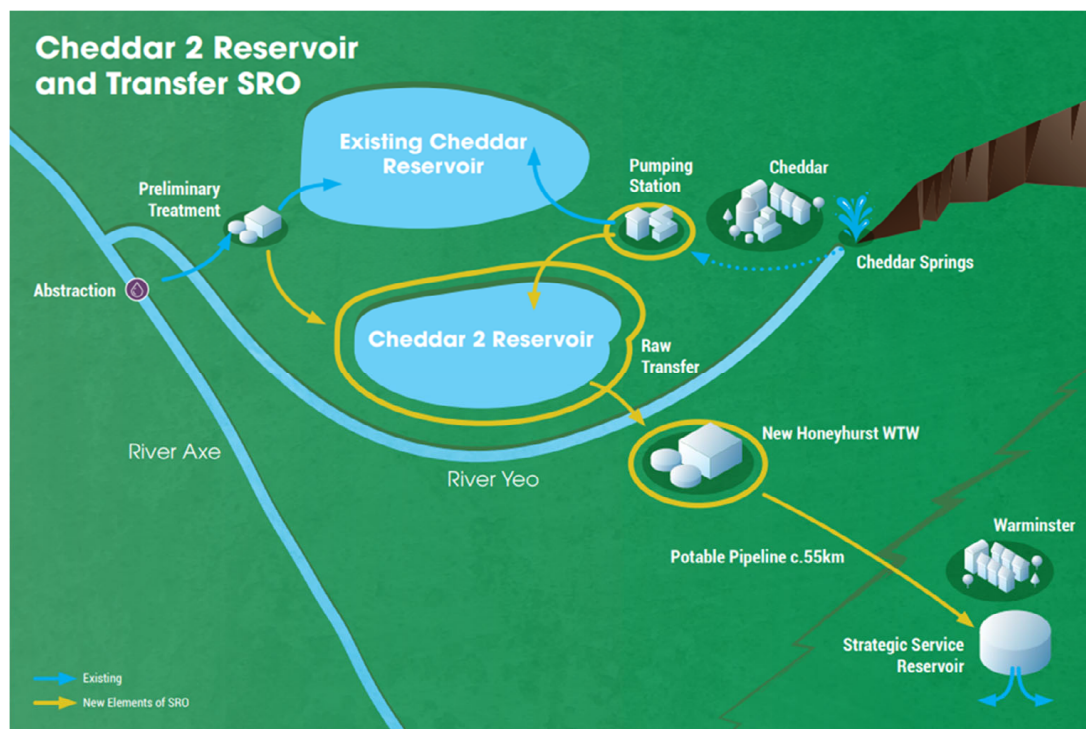
The outline scope Includes: five boreholes of 50m depth (one trial BH to verify geology and yield then 4 to follow if deemed suitable), associated headworks and piping to new Ibsley pumping station, a holding tank at Ibsley pumping station (75m<sup>3</sup>), a new pumping station (3 pumps each 50 kW), and a 9.8km pipeline to Matchams intake (and associated valves, meters and instrumentation).



### **Option spotlight: Cheddar 2 Reservoir (Regional SRO)**

The Cheddar 2 Reservoir SRO was originally envisaged to provide benefit to Bristol Water, Wessex Water, and Southern Water and the reservoir had already been granted planning permission. Subsequently, following further modelling and appraisal, the scheme was not selected by Southern Water and does not feature in the Water Resources South East (WRSE) Regional Plan. The scheme was identified as still having potential benefit in the WCWRG Regional Plan and our dWRMP.

The scheme is to construct the Cheddar 2 reservoir, that was previously granted planning approval, and to fill it alongside the existing reservoir from Cheddar springs and the river Axe, under Bristol Water's existing licences. Water would then be treated at a new works before being transferred to key Wessex Water service reservoirs in the east of their operational area.



### **Option spotlight: Mendip Quarries (Regional SRO)**

The Mendip Quarries scheme involves repurposing a quarry in the Mendip Hills, after quarrying operations have been completed, and using the site to provide raw water storage, augmented by water abstracted from the River Avon. As such, this is a 3<sup>rd</sup> party water resource option.

Both ourselves and Wessex Water will benefit from the resource, although there are also opportunities for the scheme to be expanded to provide resources to other areas. It is estimated that the scheme will provide ~46 ML/d benefit to our Bournemouth WRZ and to Wessex Water, and it is currently assumed that one half of the total yield will be available to Bournemouth WRZ during critical periods when demand for water is high.

The Mendip Quarries SRO is moving through the RAPID process and in August 2023 passed Gate 2. However, it is not possible to deliver the scheme until the early 2040s due to the existing planning permissions for its use as a quarry, unless quarrying activities end sooner than the planning permission end date. It is therefore proposed that the solution is considered as part of plans for the current planning period to 2050 and/or as a long-term water resource to meet future needs in 2050 to 2080.

**Innovation Option: Water Net Gain**

The Water Net Gain (WNG) Project is a new £1.1m initiative led by ourselves and the Westcountry Rivers Trust. It is funded under the OFWAT Water Breakthrough Challenge Fund, a pioneering £200m programme designed to stimulate innovation in the water sector and deliver transformative benefits for consumers, society and the environment.

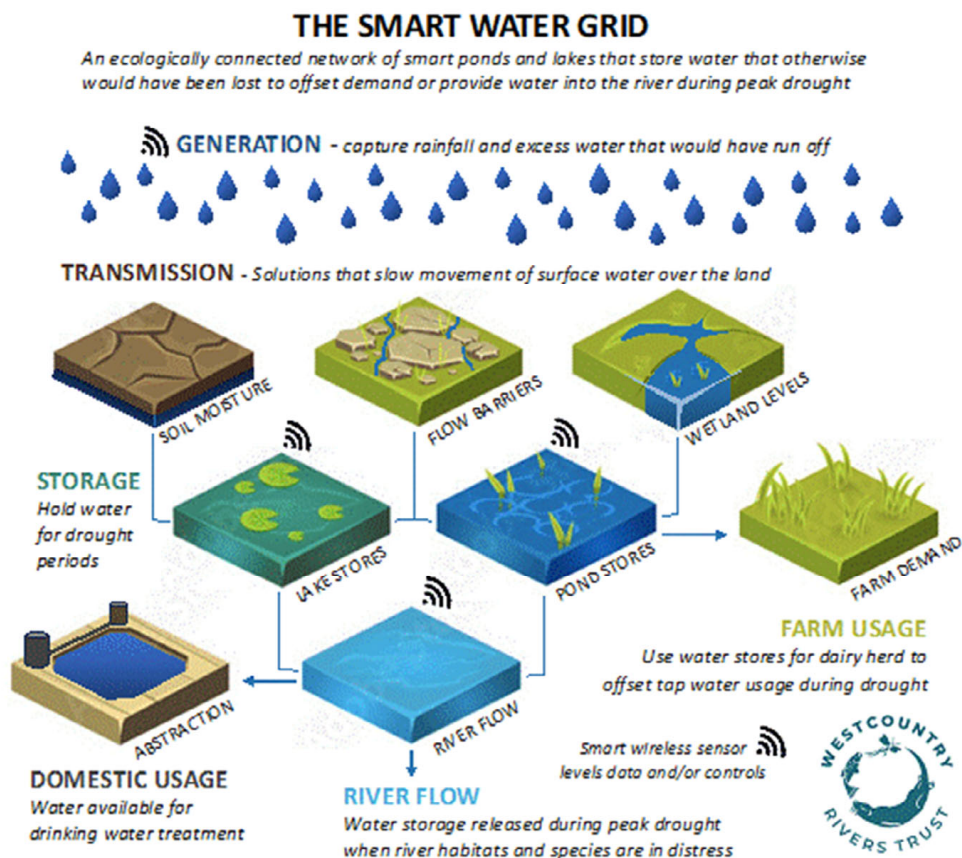
The aim of the WNG project is to pilot the establishment of a decentralised ‘Smart Water Grid’ (see Figure 26) where rainfall and surface water generation that would have been lost in the system is slowly transmitted using Nature Based Solutions to storage ponds and lakes. These features are telemetrically monitored and controlled to show the total capacity within a system and a recharged during the winter months and heavy rainfall events.



The impact of this distributive ecologically connected water bank, released to the river during period of low flow could add much needed flow to the system, support aquatic biodiversity and dilute residual pollution not managed through current water quality improvement schemes.

The water retention solutions, which will also be designed to provide flood protection and aquatic biodiversity benefits, can then be used to offset farm demand, especially on high drinking water consumptive businesses such as dairy (e.g., for drinking, washing and cooling plates) or if not needed sold into the river to recharge flows at peak times.

Figure 26: The Smart Water Grid concept developed for Water Net Gain.







## Water reuse and recycling

Recycling water that has already been used is a clean and safe option that benefits the environment. Clean, treated water from wastewater treatment works can be returned directly to the network or be used to replenish groundwater supplies instead of being lost to the sea.

We are also developing innovative approaches that work to enhance the environment and create rich habitats for wildlife, where recovered wastewater is used to support wetlands, keeping it in the regional system. Working with our partners and 3<sup>rd</sup> parties across in the wider region, we are actively looking into opportunities to increase our use of recycled wastewater.

Options on feasible list	
Countess Weir WWTW	Recycling water from Countess Weir WWTW to River Exe
Christchurch/Holdenhurst	Further treatment and transfer to Knapp Mill WTW
Poole Harbour SRO	Recycling water from Poole WWTW to River Stour
Indirect Potable Reuse	Indirect potable reuse - stream support for Dotton WTW

### Option spotlight: Poole water-recycling and transfer (Regional SRO)

The Poole Water Recycling and Transfer SRO will divert final treated effluent from Wessex Water’s Poole Sewage Treatment Works (STW) to the River Stour via a new pipeline, water recycling plant and a wetland. The additional water discharged to the river will then be re-abstracted at Longham Lakes where it will integrate with Bournemouth Water’s existing system.

The scheme will provide 30 ML/d to our Bournemouth WRZ and to Wessex Water, with one third of the total yield available to Bournemouth during critical periods when demand is high. In addition, the option will improve flows and increase environmental resilience along ~15km of the River Stour and divert treated wastewater away from sensitive ecosystems in Poole Harbour.







## Connectivity: internal potable water transfers

Our water supply system includes thousands of kilometres of pipes which move treated water from our water treatment works to our customers, often via local service reservoirs.

To build system resilience, it is also important to continually review our ability to move the available water to where it is needed. Our network has good levels of interconnectivity, but there are still restrictions on how we move water through our region.

These restrictions become critical in the event of a significant asset failure (e.g., a strategic main failing or an unplanned water treatment works outage), during periods of highest demand, or during drought when there is a greater requirement to optimise the balance between scarce water resources.

We have several existing internal potable water transfers which allow us to move treated water to where it is needed. With the development of new water resource schemes and/or changes to our treatment works, it is often favourable to develop new internal potable water transfer to move existing resource to where it is needed rather than developing new resources at these locations.

We have developed some options particularly focused towards WRZs with constraints that we need to overcome, for example, our East Cornwall resource constraint (COL26) in Colliford WRZ.

### Options on feasible list

Internal potable transfer	Mayflower WTW transfer to Kit Hill (St. Cleer)
Internal potable transfer	Restormel WTW transfer to East Cornwall



## 7.6 Resilience options

We were keen for our feasible list to include options that do not currently provide quantifiable supply-demand balance benefits, but which offer **wider resilience benefits** or meet specific **legislative requirements** of the WRMP (for example catchment management and nature-based solutions).

While these options do not meet the necessary requirements to become part of our preferred plan, they can still be presented as part of the WRMP and included in the Business Plan to be funded via either enhancement funding under the resilience investment category, or as investigations or pilot studies as part of the WINEP.

Examples of these options could be catchment schemes or nature-based solutions that provide nature recovery, ecosystem resilience, catchment resilience, or water quality improvements. We have adopted this approach for these option categories in our WRMP.



### Catchment and environmental resilience

There is a growing recognition that integrated catchment or nature-based solutions (NBS) can deliver significant multiple benefits for the environment (e.g., reducing flood risk, increasing biodiversity, aiding climate adaptation, improving resilience of the environment to droughts, etc), and that they have a vital role to play in the achievement of our environmental destination.

Water companies are also now required to identify integrated catchment and nature-based solutions in their WRMPs. These should deliver multiple benefits, for example reducing flood risk and improving resilience of the environment to droughts. It is also recommended that water companies deliver these measures at a catchment scale, either working solely or in partnership with other catchment-based organisations.

To meet this challenge, we have incorporated a significant programme of catchment management and nature-based solutions for water resources and resilience benefits into our PR24 Business Plan and accompanying Long Term Delivery Strategy.

These investments will primarily be delivered under the auspices of the collaborative Upstream Thinking scheme, but also via the wider natural resources and water resources resilience programmes (e.g., peatland restoration, freshwater fish conservation and nature recovery).

In addition, a WINEP investigation to evaluate the water resources benefits of catchment management is also planned in AMP8, and to expediate the mainstreaming of this work, we have secured £1m funding from the Ofwat Innovation Fund to deliver the Water Net Gain project, which will undertake research into farm business and water supply resilience across the region.

Catchment and environmental resilience options on feasible list	
Upstream Thinking	Catchment Management for water resources outcomes
Fish and Biodiversity	Fish and biodiversity mitigation and resilience
Invasive Non-Native Species	Biosecurity and mitigation of INNS risks/impacts
Green First Framework	Commitment to plan using the 'Green First' framework





### **Option spotlight: Upstream Thinking for water resources**

The Upstream Thinking Project is South West Water's flagship programme of environmental improvements aimed at improving water quality and water resources in river catchments. The programme includes restoring peatlands, advice and grants for farmers, help with obtaining enhanced environmental stewardship schemes, soil tests and payments for ecosystems services.

The programme is delivered via our delivery partners: Westcountry Rivers Trust, Devon Wildlife Trust, Cornwall Wildlife Trust, the Farming and Wildlife Advisory Group, the Peatland Partnership, and the University of Exeter. The partnership works closely with the EA, NE, the National Farmers Union (NFU), local catchment partnerships and many other key stakeholders.

In the 2015-2020 business planning period (AMP6), our catchment management programme benefited water passing through 15 WTWs across Devon and Cornwall and involved work across 10 catchments.

The current 5-year Upstream Thinking programme for AMP7 is comprises 16 Schemes and 5 investigations in 18 catchments, including new schemes and investigations included on the WINEP and the continuation of ongoing AMP5/6 work in the mainland WRZs. The outcomes of the scheme contribute to

- Improved raw water quality and supply and long-term business resilience.
- The new Biodiversity Improvement Outcome Delivery Incentive (ODI) 'Hectares of new catchment management'
- The SWW Sustainability and Natural Capital commitments of year-on-year 3% improvement from a 2020 baseline
- Water UK carbon mitigation commitments (peatland restoration and tree planting)
- The programme is designed to combat deterioration in soil and address nutrient and water management in the farmed landscape of catchments abstracted for drinking water supply.

The scheme also has the potential to deliver long-term resilience benefits including:

- New treatment investment deferment at treatment works.
- Reduced power, chemicals, maintenance costs and carbon emissions.
- Reduced risk of WTW shut down and DWI penalties.
- Water resources benefits, increased baseflow in rivers and resilience of the water environment.

The engagement of Delivery Partners and environmental stakeholders in the South West region and their match funding contributions is a key aspect of the programme, as are the Natural Capital outcomes. These are aligned with Ofwat and EA expectations and our own ambitions to become a leading company in environmental delivery.



### **Option spotlight: Fish and biodiversity mitigation and resilience**

The South West is an important region for fisheries; our area is home to 21 principal salmon rivers, three of which are designated as Special Areas of Conservation (Rivers Camel, Axe and Hampshire Avon). Salmon are also recognised as a designated feature of the Dartmoor SAC, which is the source of several river systems in Devon. In addition to Atlantic salmon, our rivers are home to populations of brown trout, endangered European eel and lesser known but equally important species including lamprey and bullhead.

SWW deliver significant environmental resilience and mitigation schemes through the WINEP and wider business plan investments to ensure positive fisheries and biodiversity outcomes in catchments where our water sources are situated.

Our WINEP delivery schemes include fisheries monitoring to help us understand impacts on fish populations and inform similar future schemes. Outside of the WINEP programme, we deliver fisheries work as mitigation for our 3 strategic reservoirs in the South West Water supply area. These obligations originate from planning enquiries which were undertaken prior to reservoir construction, subsequently each programme has evolved to suit catchment needs.

### **Investigation: Water resources benefits of catchment management (WINEP)**

There is a good (and increasing) understanding of how nature-based solutions benefit the environment – enhancing the overall natural capital, with interventions often delivering multiple benefits around water quality improvement, flood management, ecological diversification and resilience and carbon sequestration. However, there is much less certainty around the ability of nature-based solutions to deliver any significant increased water for public supply.

Catchment management, ecosystem restoration and NBS schemes delivered in catchments (such as via the Upstream Thinking initiative) have demonstrated improved baseflow resilience, but evidence of these benefits at a catchment-scale and considering climate change impacts on flow regimes remains inconclusive.

These solutions include measures that promote the infiltration of rainfall recharge and reduce rapid runoff (e.g. tree planting, promotion of farming methods to reduce soil compaction, contour ploughing, modification to the aspect/slope of fields, use of riparian buffer strips); measures that hold surface water back in the upper catchments (e.g., offline storage features such as ponds), and those that slow its movement towards areas of discharge (e.g., river restoration, wetland restoration/creation, floodplain re-connection, riparian woodland, in channel water weed management, maintenance of ditch systems).

To address this knowledge and capability gap, we have included an investigation into the water resources benefits of catchment management on the WINEP for AMP8.





## Network resilience – connectivity

Work is ongoing as part of our business planning process to look at areas where our network needs reinforcement to improve its ability to supply areas from multiple sources during periods of pressure on water resources in certain locations. Proposed options all have the potential to operate individually or in combination, through our PR24 optioneering process we will identify the best value combination. It is not envisaged that these schemes will run continuously but rather that they will provide resilience when required.

We are scoping where additional connections could allow reductions in abstraction at reservoirs that are at lower levels while taking more water from those with higher levels.

Our feasible list includes network resilience options under consideration for inclusion in the PR24 Business Plan and WINEP24. Investment in these options does not form part of the WRMP but is complementary to our long-term water resources management strategy. Not all schemes being considered will be proposed for AMP8. Full detail behind these schemes will be provided in our PR24 submission.

The key constraints in the Colliford WRZ are on raw water availability, treatment works capacity, and treated water available in East Cornwall.

The lack of a connection West-East and East-West between Roadford and Colliford is leading to extreme drought measures that would be avoidable if a link between the zones was in place.

The shortlisted north and south solutions look to overcome the constraint around the availability of water in East Cornwall by importing it from the Roadford WRZ. The import of water from Roadford WRZ also helps to reduce pressure on Colliford's WTWs, freeing up treatment capacity to better utilise the additional resource made available by the drought and resilience schemes.

### Network resilience options on feasible list

Trunk mains renewal/new	Roadford to Colliford transfer via Saltash
Internal potable transfer	Brent Tor transfer to Launceston



## 7.7 Feasible options assessment

The Water Resources Planning Guideline (WRPG), the EA's 'Supplementary Guidelines on Best Value Planning and Environment and Social Decision Making', and UK Water Industry Research Ltd (UKWIR) Guidance advises that water companies should consider the environmental and social effects (beneficial and adverse) of the options considered for balancing supply and demand and the dWRMP overall.

Additionally, the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations) require assessment of the environmental and social effects of the reasonable alternative programmes considered as part of developing dWRMP.

An integrated environmental and social assessment approach for the development of our dWRMP has been adopted, which has been implemented from the very outset of our planning. We have applied the range of environmental assessment requirements, described further below, to all the options considered for our dWRMP, from initial screening through to detailed assessment of the options and programmes.

The SEA provides the overarching structure of the assessment approach but has been integrated with the parallel statutory assessment requirements for the EU Habitats Directive (HRA), EU Water Framework Directive (WFD), Biodiversity Net Gain (BNG) and Natural Capital Assessment (NCA), the results of which inform the SEA.

The dWRMP decision-making process has been developed following the Environment Agency WRPG and supplementary guidelines. The Supplementary Guidance 'Environment and society in decision making' contains several requirements and recommendations for the scope of WRMP environmental assessment, in particular in relation to SEA, BNG and NCA.

UKWIR has developed several methodologies which support the WRPG. These include an updated guidance document for SEA, Habitats Regulations Assessment (HRA), and new guidance for Water Framework Directive Regulations<sup>68</sup> (WFD) compliance assessment and natural capital accounting (NCA) for strategic water resource plans and drought plans. The specifics of this relevant to each environmental assessment as well as other assessment requirements and key guidance is documented in the respective assessment reports.

Once selected, options were evaluated and subjected to the following assessments:

- Operational (OPEX) and capital costs (CAPEX)
- Environmental Appraisal, which includes:
  - Strategic Environmental Assessment (SRA)
  - Habitats Regulation Assessment (HRA)
  - Water Framework Directive (WFD) Assessment
  - Invasive Non-Native Species (INNS) Assessment
  - Natural Capital Assessment (NCA)
  - Biodiversity Net Gain (BNG) Assessment
- Carbon emissions
- Climate change adaptation

### 7.7.1 Operational (OPEX) and capital costs (CAPEX)

We have developed a whole life cost profile for each of our feasible options using a robust and evidence-based methodology. Each feasible option has been evaluated and scoped by our partner engineering consultants and summarised using a CEDAR Scope format and passed to our Contract and Commercial Team for pricing according to the PR24 methodology. Drought options were costed independently of the PR24 methodology due to their temporary nature.

Our methodology for the costing of options is set out in Appendix 4.

Our cost assessments represent the cost of a deliverable solution which includes any mitigation or design changes for environmental or drinking water quality issues. The cost of an option should be the full cost to realise the increase in WAFU or demand reduction. For example, costs include any associated treatment process, pumping or pipework connection costs. Furthermore, any interconnections required to deliver full WAFU benefit of the option have also been included as part of WRMP option level cost and benefit.

Our cost information is set out in Appendix 4 of this dWRMP and in the water resources planning tables, in line with the water resources planning table instructions. All cost information has been maintained in a price base of 2020 to 2021 throughout our planning process and is consistent with costs submitted in our PR24 Business Plan.

Our planning tables include the following cost information, as required for each option:

- Option costs split into total pre-benefit costs and post-delivery annual costs (including operational, maintenance, replacement) with both costs being reported in terms of totex.
- Total net present cost and net present benefits calculated using the Treasury standard declining long-term discount rate as set out in the HM Treasury 'Green Book (HM Treasury 2020)'.
- Average incremental cost (AIC) of the option based on the NPV of its costs and outputs.
- The costs of delivering 10% biodiversity net gain
- Environmental and social monetised cost impacts should be presented against natural capital services where applicable.
- Total carbon cost impacts

As described previously, resilience options such as catchment and nature-based solutions which address other key drivers relating to our activities (e.g., biodiversity and ecosystem resilience or water quality improvements) and innovative options requiring further development have been included in our business plan.

### 7.7.2 Environmental Appraisal of Options

New guidelines have been published for the dWRMP, which highlight the following key environmental considerations:

- Reflect the Government's 25-year Environment Plan.
- Impact of climate change on river flows, groundwater recharge, and any future supply options.
- Spread of invasive non-native species (INNS) and proposed measures to mitigate that risk.
- Enhancing the natural resilience of catchments by effective catchment management planning, to increase the amount and/or quality of water available for abstraction without posing unacceptable pressures on the environment.
- Consider whether abstractions are truly sustainable, looking across whole catchments.

The Guidelines and supplementary guidance notes also set out the specific environmental assessment requirements to be undertaken when developing the dWRMP. Key updates from WRMP19 include:

- Requirement to demonstrate Biodiversity Net Gain (BNG) for options and the plan.
- Stronger focus and detailed guidance on natural capital and the five key ecosystem services.
- Improved guidance on approaches to integrate environmental outputs into options decision-making and programme appraisal.

Our WRMP is accompanied by a separate Environmental Report (Appendix 7), which details the environmental assessments undertaken on our options (as appropriate).

Our environmental assessments are based on best available option information at the time of assessment. We continue to refine our understanding of these options and any changes to environmental assessment outcomes and will be reviewed and updated as necessary between draft and final WRMP24.

### **Strategic Environmental Assessment**

The Water Resource Planning Guidelines (EA, NRW, Defra and Ofwat, 2021) state that in developing a WRMP in England and Wales, water companies should screen for a Strategic Environmental Assessment (SEA) and carry out a full SEA if required.

In early 2022, we published our SEA Scoping Report which set out the context, approach, and framework for our environmental assessment of the feasible WRMP options and the subsequent preferred and alternatives plans. The SEA Scoping Report was subjected to a 5-week consultation during which our regulators and other key stakeholders (including the public) had the opportunity to comment on the proposed scope and approach for the WRMP SEA. Following consideration of the responses received on the SEA Scoping Report, the assessment methodology was revised and improved.

Appendix 7 of this WRMP provides a summary of all environmental assessments completed on our supply- and demand-side options, and across our various programmes. This report outlines the potential environmental and sustainability effects (positive and negative) of the options included within the draft Plan, and also includes assessment of in-combination and cumulative effects, mitigation and enhancement measures, and monitoring proposals.

By carrying out an SEA of the Plan, it enables the opportunity to improve options and the Plan in terms of their potential environmental effects and allows for mitigation measures to be devised where necessary. The SEA therefore is a tool used to steer plan-making and avoid adverse impacts.

In this context, the purpose of the SEA of our draft WRMP has been to:

- Identify the potentially significant environmental effects of the draft plans in terms of the water resource management options being considered.
- Help identify appropriate measures to avoid, reduce or manage adverse effects and to enhance beneficial effects associated with the implementation of the draft plan wherever possible.
- Give the statutory SEA bodies, stakeholders and the wider public the ability to see and comment upon the effects that the draft plans may have on them, and encourage them to make responses and suggest improvements to the draft plans; and
- Inform the selection of water resource management options to be taken forward into the final versions of the plan.



The SEA identifies, describes and assesses the likely significant environmental impacts caused by our feasible water resource options and the intention is also for the SEA to assess any cumulative, secondary and/or synergistic effects that may result from implementing our preferred plan to address the supply demand deficit. However, at the time of writing, our alternative plans have not yet been assessed. A review of cumulative effects associated with the preferred and adaptive plans will be undertaken following completion of the SEAs for the newly identified options.

### **Habitats Regulations (Conservation of Habitats and Species Regulations, 2017)**

Under Regulation 63 of the Habitats Regulations, any plan or project which is likely to have a significant effect on a designated 'European Site' (either alone or in combination with other plans or projects), must be subject to an assessment to determine the implications for the site in view of the site's conservation objectives. This is known as Habitats Regulations Assessment (HRA).

'European sites' are designated sites which form a network that across Europe is known as Natura 2000, and domestically now known as the National Site Network (NSN). Within the UK, this network consists of Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), proposed and candidate SPAs and SACs (pSPAs and cSACs), and Ramsar Sites.

As a result of this legislation, we are required to undertake a Habitats Regulations Assessment (HRA) to assess the potential effects on European sites of implementing our WRMP. The HRA determines whether there will be any 'likely significant effects' of a WRMP on any European site because of the plan being implemented and, if so, whether these effects will result in any adverse effects on the integrity of the site.

For each WRMP option (or group of options, as appropriate), the assessment comprises:

- A high-level '**screening**' of European sites within the study area to identify those sites and features where there will self-evidently be 'no effect', 'no likely significant effects', or positive effects due to the option, and those where significant effects are likely or uncertain.
- An '**appropriate assessment**' (AA) of any European sites where significant effects cannot be excluded (this may include 'down-the-line' deferral of some options in accordance with established HRA practice, where appropriate). The conservation objectives are considered at the screening and appropriate assessment stages as necessary.

The HRA screening is precautionary, and to be compliant with case law, does not consider the effects of mitigation measures. The HRA is reported separately in Appendix 7. The HRA has also been used to help inform the SEA, particularly the SEA objectives relating to the potential effects of options and the Plan on biodiversity.

For the HRA, the assessment focused on the WRMP supply options; customer demand options and the distribution options were 'screened out' from requiring assessment as both option types are designed to reduce water consumption and these types of activities are considered not to have any risk of leading to negative effects on any European sites.

The initial set of feasible options have all been subject to the HRA Stage 1 screening assessment and where significant effects have been identified an AA has been undertaken. HRA Stage 2 screening assessments are yet to be undertaken for the 15 new supply options and will be included as part of the updated revision December 2023.

### **River basin management plan and WFD regulations**

A WFD Report has been prepared to support our dWRMP (Annex 3: Appendix I of the SEA Report – Chapter 13). The Directive requires all waterbodies (both surface and groundwater) to achieve 'good status' and requires that waterbodies experience no deterioration in status as a result of the options.

The WFD assessment has been undertaken in accordance with the All Company Working Group (ACWG) Framework, consisting of two stages including an initial Level 1 comprising of basic screening, followed by a Level 2 detailed impact screening. Following the completion of these screenings, a cumulative assessment has been carried out to determine any additional impacts on respective waterbodies because of multiple options being constructed and operated in conjunction with each other under our preferred plan.

The majority of the options assessed as part of the draft dWRMP have only been subject to high level design, and if taken forward would require additional WFD assessment following design development. The findings of our WFD assessments identified that there are precautionary WFD compliance risks associated primarily with the operation of additional/new abstractions. The potential hydrological effects could conflict with achieving WFD status objectives. This is particularly the case where hydrology/ river flow is an existing limiting factor.

Further development and assessment will be undertaken to improve certainty on the scale of effects in relation to potential biological effects particularly fish, and physio - chemical changes (reduced dilution). Additionally, further mitigation and assessment is planned to assess and improve the certainty of the levels of WFD risk. WFD assessments are yet to be undertaken for the 15 new supply options and will be included as part of the updated revision December 2023.

### **Invasive Non-Native Species (INNS)**

One objective of our dWRMP is to reduce the spread or presence of INNS, and an INNS Risk Assessment has been prepared to support our dWRMP (Annex 5: Appendix K of the SEA Report – Chapter 13).

The scope of the INNS risk assessment was to identify and evaluate the potential for the different options given within the WRMP24 to spread INNS. This consists of two assessments: a high-level ‘Level 1 screening’ of the options, and a more detailed ‘Level 2 assessment’ for those options deemed to be of a higher risk.

As part of the assessment a cumulative assessment has been undertaken to assess any in-combination effects associated with the preferred plan. However, it is further recommended that the INNS risk assessment be revised using the SAI-RAT tool for options taken forward as more information becomes available. We will ensure that appropriate mitigation for INNS risk will be considered for all options taken forward during both construction and operation. INNS assessments are yet to be undertaken for the 15 new supply options and will be included as part of the updated revision December 2023.

### **Natural Capital Assessment**

Natural Capital (NC) refers to the elements of the natural world that provide benefits to society and includes aspects such as woodland, grassland, freshwater, marine, urban greenspace and wetland habitats. Ecosystem services are benefits that are provided to humans by the natural environment. They vary from regulating services such as natural flood management to cultural services such as recreational value.

A natural-capital assessment has been undertaken on the WRMP options in accordance with the WRPG and Enabling a Natural Capital Approach (ENCA) requirements (see Appendix I of the SEA Report – Chapter 13). ENCA is recommended for use by HM Treasury's Green Book: appraisal and evaluation in central government (2020) and represents supplementary guidance to the Green Book.

The impact of the options on the Natural Capital stocks and indicators of condition has been assessed for each option quantitatively. This impact was assessed both during construction and post construction to give an estimation of the impact of the options' whole lifecycle. The results of the stock assessment were reported in total losses and gains within each option's zone of influence.

### **Biodiversity Net Gain Assessment**

The BNG requirement as outlined in the WRPG stipulates that each option should look to maximise BNG. In April 2022, Defra and Natural England launched The Biodiversity 3.1 Metric (NE, 2022). At the time of assessment, the Defra 3.1 metric was the recommended approach to net gain assessments.

Our WRMP24 options have each been assessed as part of the SEA process using the BNG 3.1 Metric approach and fully in line with current guidance. The NCA assessment has been split into two stages 'Stage 1 – defining the zone of influence and the natural capital baseline' in accordance with respective guidance (National Natural Capital Atlas: Mapping indicators (NECR285)) and Stage 2 'Options level National Capital Assessment' which is undertaken in accordance with Water Resources Planning Guideline (WRPG) and Enabling a Natural Capital Approach (ENCA) requirements. See Appendix 7 for full details.

In the BNG assessment, a biodiversity baseline has been developed from spatial data sets of habitats inventories to calculate BNG change through land use for each option. The Priority Habitat Inventory and sites designated as Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Area (SPA) and Ramsar sites were used to identify areas with high biodiversity importance. Units have been assigned to the pre-construction land use according to the habitats present in the options boundary. Post construction land use, including any mitigation described in the options description, has been used to calculate the post construction score.

As this assessment has been carried out using only open-source data a precautionary approach is applied, presuming that where not specifically known, habitats will be assigned the moderate habitat score.

As the WRMP schemes move through the design and implementation process we will deliver BNG at an option-level. These BNG measures may be achievable within the site or local area, but there may also be other opportunities (e.g., as part of Local Nature Recovery Strategy Strategies) via which they can contribute to biodiversity net gain at a larger spatial scale.

### **7.7.3 Accounting for and reducing greenhouse gas emissions**

Embodied and operational carbon emissions were calculated in tonnes of CO<sub>2</sub> equivalent (tCO<sub>2</sub>) for each option in accordance with the relevant water industry and government guidance. The carbon emission values were converted to carbon costs (in £) in accordance with the UK government carbon calculation methods using the Green Book Supplementary guidance (2021) and carbon values data tables.

For our demand options, the full carbon impact of existing leakage management options (RPS) and metering and water efficiency options (Stantec) were assessed. These assessments included quantification of the embedded and operational carbon, and the carbon savings resulting from reduced water production and treatment.

The approach taken for existing leakage management options has been to introduce carbon calculations models and to feed these through to the SoLow optimiser. They have been aligned with previously optimised leakage reduction scenarios to generate carbon summaries and totals for chosen options. The leakage management options that have been optimised within SoLow have been built up from lifetime costs. A total annual cost for each year of the 80-year period was then calculated, considering the ongoing maintenance for leakage management options such as permanent acoustic logging and pressure management.

For the other demand side options (meters and water efficiency work) have been estimated using a Stantec tool which is consistent with our own carbon accounting tool. They have been aligned with previously optimised demand interventions to generate carbon summaries and totals for

chosen options. For new and replacement meters, evidence from Ofwat (2011) and Environment Agency (2010) was used. The carbon reduction was calculated over a 25-year horizon.

In both approaches, the assessment methodology follows the UKWIR guidance (2012 and updated in 2022), which sets out how to calculate embodied and whole-life (operational) carbon for water industry assets. This has been applied alongside the HM Treasury (2022) Green Book.

For supply-side options, an assessment of embodied and operational carbon was carried out. This followed latest government and regulatory guidance and the latest industry methods for carbon assessment.

In line with the requirement set out in the latest WRPG, embodied and operational carbon emissions and costs for each feasible option were calculated, following guidance from:

- HM Treasury Green Book and carbon costing guidance 2020.
- Department of Business Energy and Industrial Strategy (DBEIS) Green Book supplementary guidance for Valuing Greenhouse Gas Emissions and Energy Use.
- Ofwat (2011) Exploring the costs and benefits of faster, more systematic water metering in England and Wales.
- Environment Agency supplementary WRPG24 guidance on environmental valuation.
- UKWIR (2012) A framework for accounting for embodied carbon in water industry assets, including the latest available UKWIR carbon emissions workbook. Report number: CL01B207.
- UKWIR (2022) Calculating whole-life/Totex carbon, Report number 22/CL/01/32
- Environment Agency (2010) Energy and carbon implications of rainwater harvesting and greywater recycling, Report: SC090018.

#### 7.7.4 Climate change adaptation

We believe that our dWRMP has climate mitigation and proactive climate adaptation at its core. We have deliberately included options, such as catchment- and nature-based solutions, which enhance environmental resilience to climate impacts and, in particular, to hydrometeorological hazards such as drought and flooding.

We are also continuing to establish investigations and pilot studies, such as the Water Net Gain Project, to improve our understanding of how these and other water resources management options can contribute to increasing the resilience of both the natural environment and communities and businesses across our region.

Our plans to increase biodiversity and support nature recovery are fundamental elements of our PR24 Business plan and the accompanying Long-Term Delivery Strategy (LTDS). We have also made a significant contribution to the recently published Devon, Cornwall and Isles of Scilly Climate Adaptation Strategy and are always seeking to take a proactive approach to mitigating and adapting to climate change.



## 7.8 Final constrained list of options

Following the high-level screening of our unconstrained list, comprehensive assessment of our feasible options list, and further screening to we are left with a short list of those options we consider to be both technically feasible, and fully scoped that were then fed into the dWRMP24 decision-making process.

This final 'constrained list' is set out in Table 28 below, while the options rejected at each stage of the screening process are included in Appendix 4.

*Table 28: Final 'constrained list' of options for dWRMP24.*

ID	Option Name	Option type	Water resource constraint overcome
COL25	Brent Tor transfer to Launceston	Distribution capacity expansion	East Cornwall resource constraint
COL24	Northcombe WTW transfer to Launceston	Distribution capacity expansion	East Cornwall resource constraint
COL23	Mayflower WTW transfer to Kit Hill (St. Cleer)	Distribution capacity expansion	East Cornwall resource constraint
COL22	Roadford to Colliford transfer via Saltash	Distribution capacity expansion	East Cornwall resource constraint
COL26	Restormel WTW transfer to East Cornwall	Distribution capacity expansion	East Cornwall resource constraint
COL29	Restormel WTW - Increase treatment capacity to 120 ML/d	Water treatment works capacity increase	WRZ WTW capacity
COL16	College WTW improvements - treatment and distribution system	Water treatment works capacity increase	WRZ WTW Capacity
COL15	Restormel WTW - Increase treatment capacity to 110 ML/d	Water treatment works capacity increase	WRZ WTW capacity
COLBP	Blackpool Pit	New reservoir	River Fowey at Restormel annual abstraction licence – in AMP7 delivery
COL28	Desalination plant at Par	Desalination	River Fowey at Restormel annual abstraction licence – in AMP7 delivery
BNW7	Mendips Quarry - Raw water transfer and augmentation of River Stour	New reservoir	Raw water
BNW17	Cheddar 2 - New strategic regional reservoir and transfer	New reservoir	Raw water
BNW8	Poole Harbour - FE reuse	Water recycling/reuse	Raw water
BNW14	Ibsley Lake - New raw water supply and new onsite treatment	New reservoir	Raw water

BNW6	Longham - Aquifer Storage and Recharge	New groundwater	Raw water
BNW1	Ampress - remediation and new borehole	New groundwater	Raw water
ROA19	Cheddar 2 to Prewley - New strategic regional reservoir, treatment, and transfer	New reservoir	Raw water
ROA20	Mayflower WTW transfer to Littlehempston WTW	Distribution capacity expansion	South Devon WTW capacity
ROA21	Roborough transfer to Littlehempston WTW	Distribution capacity expansion	South Devon raw water availability
ROA15	Gatherley Phase 2 - Dual mains	Reservoir pumped storage	Raw water
ROA17	Littlehempston WTW - Dual supply mains	Distribution capacity expansion	South Devon WTW capacity
ROA7	Northcombe WTW - Increase treatment capacity to licence limit	Water treatment works capacity increase	North Devon WTW capacity
ROA13	Duckaller and Vennbridge - re-works to boreholes, and new treatment process.	Water treatment works capacity increase	South Devon WTW capacity
WIM13	Cheddar 2 to Parsonage - New strategic regional reservoir, treatment, and transfer	New reservoir	Raw water
WIM18	Cheddar 2 to Bickham Moor - New strategic regional reservoir, treatment, and transfer	New reservoir	Raw water
WIM15	Northcombe WTW transfer to Allers WTW	Distribution capacity expansion	East Devon water availability
WIM14	Whitecross distribution upgrade	Distribution capacity expansion	East Devon water availability
WIM2	Sidford - Borehole Commissioning	New groundwater	Raw water
WIM11	Couchill Springs - New raw water supply and new onsite treatment	New groundwater	Raw water
WIM5	Indirect potable reuse - stream support for Dotton WTW.	New groundwater	Raw water
WIM12	Allers Springs - New raw water supply	New groundwater	Raw water

## 8 OUR DECISION-MAKING PROCESS

The WRPG requires water companies to undertake ‘best value planning’. This represents a change from the previous traditional approach of developing WRMPs based on a ‘least cost’ approach.

Historically this meant that water companies’ plans often included the cheapest interventions which could meet their demand and supply requirements. This focus on financial cost overlooked impacts on customers beyond their bills. In addition, this least cost approach did not consider wider social and environmental costs not directly recorded on the water company balance sheet.

Best value planning refers to a strategic approach that water companies and regulators take to ensure efficient and cost-effective delivery of water and wastewater services while meeting social, environmental, and customer service standards.

### Definition of a ‘best value plan’

A best value plan is one that considers factors alongside economic cost and seeks to achieve an outcome that increases the overall net benefit to customers, the wider environment and overall society. A best value plan should also be efficient and affordable to deliver.

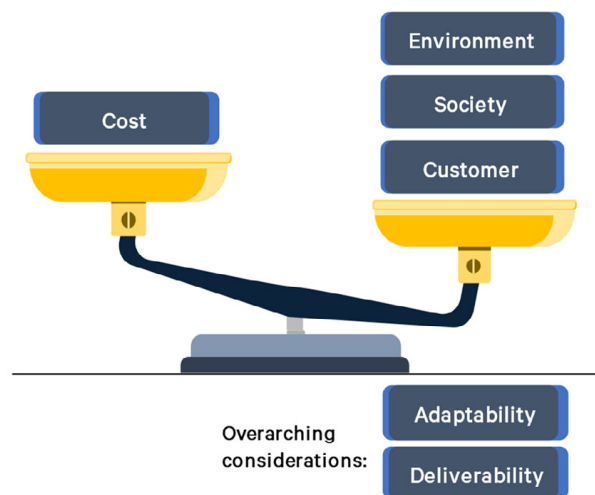
Source: Environment Agency (2022) [Water resources planning guideline](#).

The key elements in a decision-making framework that follows best value principles are shown in Figure 27. A decision-making framework of this type must balance several critical factors when assessing potential programmes of interventions to be included in a WRMP.

Firstly, cost considerations for customers are paramount. This means that the chosen interventions should be financially reasonable and not place an undue cost burden on users. We need to ensure that the planned investments are justifiable and will not lead to unaffordable increases in water bills.

On the other side of the scale, social and environmental concerns must be considered. The water sector can have a significant impact on the environment, including water sources, natural ecosystems, biodiversity, carbon, recreation and amenity, and overall sustainability. The framework recognises that decisions should be made with an awareness of how they will affect the environment.

Figure 27: Key elements in best value decisionmaking



There are other crucial factors that play a significant role in shaping our decisions, such as adaptability, deliverability, and the robustness of our plans to uncertainty. While these considerations are crucial, they sit outside the scope of quantitative analysis used in the decision-making framework. They represent additional layers of analysis and evaluation which, together with the results of quantitative modelling, form part of our decision-making approach.

The breadth of the definition of best value also means it is not possible to optimise every dimension of it. There are inevitable tensions between each dimension, meaning trade-offs must

be made in arriving at a preferred best value plan. For example, maximising benefits to the environment is likely to increase financial costs which we also aim to keep to a minimum.

The remainder of this section explains how we have developed our decision-making framework, including its key principles and the individual steps we have taken to arrive at a preferred best value plan. We also describe how modelling has informed the decision-making process.

The resulting preferred demand management plan, water supply plan and adaptive plans are set out in the following sections of this report.

## 8.1 Overall decision-making approach

Our dWRMP sets out the programme of interventions which we believe delivers best value. This means when appraising potential programmes, we have considered an array of factors in addition to the economic cost. Our preferred plan balances the financial costs of delivering the programme with the overall benefit to customers, the wider environment, and society as a whole.

To arrive at this optimal programme of interventions, we have developed a bespoke 'best value decision-support framework', which is tailored to the specific views of our customers, our corporate goals and the objectives of our regional plan. This framework, which is based on the UKWIR 'Deriving a best value water resources management plan' guidance, has informed the development and identification of our preferred plan.

Our best value decision-support framework enables us to analyse and evaluate different potential programmes, considering the individual and combined impact of interventions (both demand-side and supply-side) on our customers, the environment, society, and the water system resilience, and balancing this with the cost of delivering them.

At its core, this framework is based on the principles of multi-criteria assessment, including the use of metrics and decision-support models. However, this process is highly complex and we also recognise that we also need to be transparent in our methods, data, assumptions and decisions so that customers, stakeholders and regulators can understand and comment on our plan.

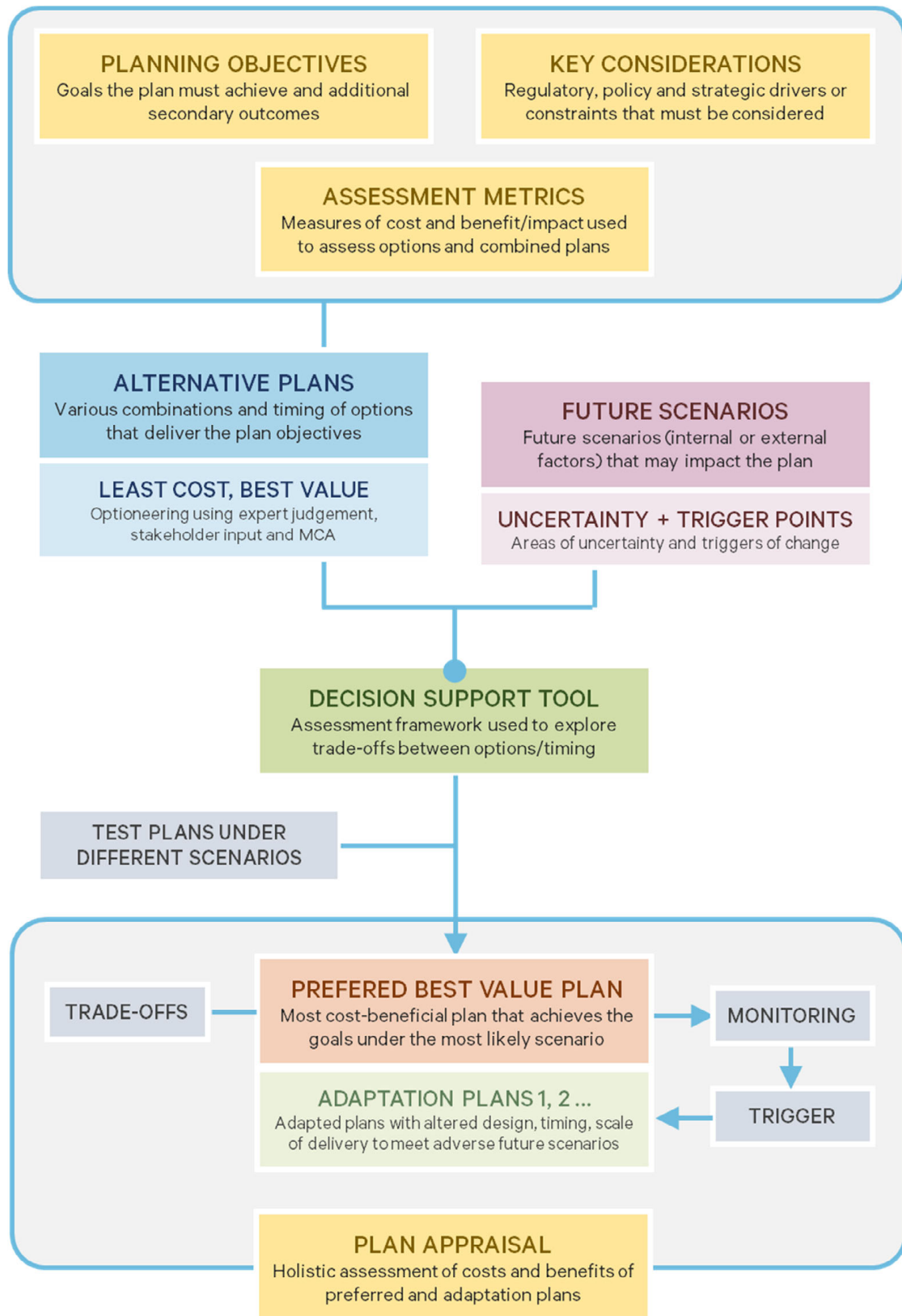
In light of this, we have attempted to communicate the overall process we have used to identify our preferred plan in this section of the main report and have provided full methodological details in Appendix 6.

Our overall approach to decision making is illustrated in Figure 28 and set out below:

1. Problem characterisation, and identification of key considerations and constraints.
2. Define what best value means for us, set out our planning objectives and define a suite of best value metrics.
3. Develop best value decision-support framework and use it to determine least cost plan.
4. Use the framework to develop a series of alternative plans including best value (core pathway), best for environment and society, and adaptive pathways.
5. Testing plans to future uncertainty, so we know how they are impacted by our assumptions changing.
6. Applying the best value planning framework to evaluate and compare plans including our least cost plan and the best for the environment plan.
7. Benefits appraisal of all alternative plans and design monitoring plan, triggers and decision-points.



Figure 28: Our overall approach to decision making for dWRMP24.



## 8.2 Key planning considerations

There is a wide array of regulatory, policy and strategic drivers or constraints that must be considered as we develop our best value plan. These include:

- Our own **corporate goals and policies**.
- **Government policy** and **regulator expectations**, especially in relation to drought resilience, demand management and environmental protection.
- The strategic goals of the **regional plan** and the strategic resource options (SROs).
- **Customer and stakeholder preferences**, including careful consideration of the needs of vulnerable customers and the impact of our preferred programme on the affordability of customer bills.
- Impact on our supply-demand balance of schemes **accelerated for delivery before 2025**.
- **Deliverability** of the proposed schemes.

### 8.2.1 SWW corporate goals and policies

We have set ourselves five long-term ambitions which reflect our position today, the priorities of customers and stakeholders and the challenges we face (see below). These ambitions represent a comprehensive approach to water management, encompassing environmental sustainability, service quality, resilience, and customer engagement.

We have integrated these ambitions into our best value decision-making framework by aligning our metrics, assessing the environmental impact of each programme, collaborating with stakeholders, and ensuring our preferred plan is affordable to our customers.

#### South West Water's strategic ambitions

1. Resilient water resources through healthy catchments: this ambition focuses on ensuring the availability and sustainability of water resources. It includes creating greater capacity through a diverse portfolio of water sources, protecting, and boosting river flows, and reducing leakage in the network and at customers' homes.
2. Top-quality drinking water: we aim to provide world-class drinking water that meets stringent water quality standards. It involves progressively addressing emerging risks, creating resilient and smart networks with real-time tracking and management of water pressure, flow, and quality.
3. Controlled and treated wastewater flows: the effective management of wastewater involves evolving the water recycling and sewerage system to meet the needs of communities and the environment, enhancing sustainable drainage to reduce the risk of flooding and pollution, and creating resilient, smart wastewater networks with real-time tracking and capacity management.
4. Delivering nature recovery and net zero: this ambition is focused on environmental sustainability. It includes efforts to increase biodiversity through habitat creation and improvement, decarbonize operations, utilize land and resources to increase renewable energy generation, and safely return treated water to the environment.
5. Trusted by customers, stakeholders, and communities: this ambition revolves around building trust and engagement. It involves delivering excellent customer service, fostering greater engagement through transparency by sharing plans and performance data, making it easier for customers to conserve water and save money, innovating through progressive charging to ensure fair and affordable bills for all, with special attention to those most in need of support, and ensuring the resilience of services to emerging threats like cyber and criminal activities.

Source: South West Water (2023). *Our Strategic Direction to 2050*.

## 8.2.2 Statutory targets and policy expectations

Any potential WRMP programme selected must be constrained by statutory targets and policy expectations, which are pre-defined and timebound. Therefore, these are applied across all future scenarios analysed and in the analysis of all Best Value goals.

Our demand strategy is driven by challenging statutory targets which drive demand side selection. We have reviewed the options required to deliver our demand ambitions against deliverability criteria and we have included options at the maximum level of deliverable ambition. The resulting plan does not hit all the earliest targets but does achieve the mid and later targets. We have not included an alternative demand strategy to go faster, as this would not comply with our deliverability assessment.

### Leakage reduction

Reducing leakage is crucial to ensuring the resilience of the water sector, as it helps to conserve water resources, improve efficiency, and maintain customer trust. HM Government's 'Plan for Water' sets out leakage reduction targets to 2038 and 2050 – set out in Table 29.

*Table 29: Leakage reductions and optimiser constraints*

Year	Leakage percentage reduction target
2024/25	16%
2026/27	20%
2031/32	30%
2037/38	37%
2049/51	50%

Source: Environment Agency (2023). [A review of England's draft regional and water resources management plans](#)

### Customer water usage

Government and the regulators require all preferred WRMP programmes to deliver a per-capita consumption (PCC) of 110 litres per person per day by 2050 under the DYAA scenario. Lower PCC reduces the overall demand for water, making it easier to manage water resources and mitigate adverse environmental impacts. Our decision-support tools are constrained to always achieve a reduction in PCC to 110 litres/household/day by 2050 and a reduction in NHH consumption of 9% by 2038 and 15% by 2050. However, in recognition of the challenging nature of this NHH target, the models have instead been set an objective to maximise the reduction in NHH usage.

### Public water supply distribution input

DI is the amount of water put into the water supply distribution network by water companies. The UK Government have set a distribution input target that is closely related to PCC, as both relate to reducing demand. The target states that the volume of potable water supplied per day per head of population in England should be 20% lower by 2038.

### Environmental destination

The EA expects the water sector to adopt a longer-term view of sustainable abstraction. This is known as the environmental destination. We have explored in our programmes how we might increase ambitions on our environmental destination and the trade-offs for doing so.

### Drought resilience

HM Government has emphasised the necessity for the water sector to enhance its resilience against drought while addressing challenges posed by climate change, population growth, and the imperative to bolster environmental protection. The National Framework sets out their expectation that water companies should achieve resilience to 1 in 500-year drought events.

### 8.2.3 Our Regional Plan

A key expectation in the WRPG is that plans should demonstrate clear linkages between regional plans and company WRMPs. All water companies in England and Wales are required to develop regional plans which set out how the supply of water will be managed at a strategic level. We are an active member of the West Country Water Resource Group (WCWRG) – see Section 3.4.

We have considered the WCWRG Regional Plan in our problem characterisation, development of demand and supply options and in developing our objectives and metrics for appraising best value. The draft regional plan contains three outcomes which cut across the objectives of best value planning:

1. **Protect and enhance the environment:** deliver long-term environmental improvement through reducing water taken from the environment where this is needed to protect it for the future.
2. **Ensure resilience of water supply:** deliver a drought resilient and secure water supply to customers.
3. **Deliver societal benefit:** deliver affordable customer bills and improved environment for human benefit.

We have adopted these outcomes as the overarching objectives in our best value decision-making framework. This ensures that our best value decision-making framework is closely aligned with our Regional Plan.

### 8.2.4 Customer and stakeholder views

We recognise that it is vital to reflect the views and priorities of our customers and stakeholders into our best value decision-support framework. Our WRMP objectives were shaped by a comprehensive programme of customer research and stakeholder consultation which we have undertaken both for this dWRMP and for our Price Review 2024 (PR24) planning (Section 3.5 and Appendix 8).

This on-going programme of engagement is also being used to evidence customer and stakeholder priorities for our overall water and wastewater services from 2025-30 (as reflected in our PR24 Business Plan) and through to longer term horizons up to 2050 (as reflected in our Long-Term Delivery Strategy).

The findings from two early phases of this customer research programme were used in the development of the regional plan and our best value decision-making framework. These were:

- **Qualitative customer research:** this customer research undertaken while developing the WCWRG's draft regional water resource plan. This research was undertaken between mid-2021 and early 2022 and considered in detail customers' views around long-term water resource planning and their service priorities.
- **Willingness to pay studies:** We undertook customer willingness-to-pay (WTP) research as part of the PR24 process. This research was designed to refresh the customer WTP values we used previously in our investment planning, but it also provided broader evidence about overall customer service priorities covering water and waste-water services. This engagement was undertaken in the early part of 2022.

The findings from this customer research and engagement were reviewed through the lens of identifying the importance placed by customers on the three regional objectives identified above (protect and enhance the environment, ensure resilience of water supply, and deliver societal benefit).



### Customer bill impacts

Our investment decisions can have both positive and negative impacts on customer bills. Assessing customer bill impacts is crucial for transparency, fairness, and informed decision-making. Water companies are required to show the impact of plans on bills and any potential affordability concerns resulting from these bill impacts, including any measures to mitigate these. While bill impacts were not explored explicitly in the modelling, we considered this as additional quantitative information to contextualise what the proposed costs mean for our customers.

### Intergenerational equity

Intergenerational equity refers to the principle that resources, benefits, and costs should be distributed fairly and sustainably across different generations, both present and future. It emphasises the idea that current actions and decisions should not disproportionately harm or burden future generations.

WRPG requires all water companies to consider intergenerational equity when developing a Best Value Plan. This reflects HM Government's appraisal guidance, which stipulates that intergenerational equity should be considered when an intervention involves very substantial or irreversible wealth transfers between generations, including irreversible changes to the natural environment. Clearly this applies to our 25-year investment programme described by our best value plan.

#### 8.2.5 Impact of delivery before 2025

As set out in Section 3.1, there have been some significant changes to our forecasts since our WRMP19 was produced. The supply-demand impacts driven by climate change, growth and environmental sustainability have increased and, without intervention, there is a greater risk of deficit in the future. Other changes are a result of recent events that have put additional pressure on our water resources and increased the near-term risk.

These changes have prompted us invest £125 million in accelerated infrastructure initiatives that increase the resilience of our supply network in the Colliford and Roadford WRZs, and we are currently progressing several additional supply options in AMP7 (including desalination). We also have a 'Green Recovery' scheme that has brought forward the delivery of smart metering in the Roadford area from 2025 to 2023.

#### 8.2.6 Deliverability of the proposed schemes

WRPG requires all water companies to consider the deliverability of plans and the resilience of plans to a range of deliverability risks. Through our decision-making framework, we have considered deliverability principally in three ways:

- **Delivery risks at the option level:** there are numerous factors which could delay the delivery of individual options. For supply options this includes: design challenges, planning consent delays, construction delays, supply chain disruptions. For demand-management options, this includes customer acceptability and the extent of behavioural change.
- **Delivery risks at the programme level owing to capacity and capability:** there are also several factors which could delay or risk delivery of the programme as a whole, including interdependencies between options, resource constraints, economic and market conditions, and the capacity and capability of the supply chain to deliver the programme.
- **Delivery risks at the programme level owing to affordability of annual spend.** A programme which results in bill impacts which are too onerous in the short-term is unlikely to be acceptable to our customers and regulators.

### 8.3 Objectives of our plan

Setting objectives is a fundamental step in the best value planning process. It provides clarity of purpose, helps us align with the needs of our customers and stakeholders, and guides decision-making by providing criteria against which potential programmes can be evaluated.

The overarching aim of our WRMP is to present a ‘best value plan’ for the next 25 years, both in the short term and the long term. Our plan must be **sustainable, deliver biodiversity net gain** (the environment should be in a better state than when we started), and should **contribute to achieving net zero carbon**.

Our Best Value objectives for our WRMP are to:

- **Protect and enhance the environment** – deliver long-term environmental improvement through reducing the amount of water we take from the environment where this is necessary to protect it for the future.
- **Ensure resilience of water supply** – it is our highest priority to ensure we provide a resilient water-supply system that ensures we meet all our customers’ water needs now and into the future. We will deliver a drought resilient and secure water supply to customers.
- **Deliver wider societal benefits** - Deliver affordable customer bills and improved environment for human benefit.
- **Ensure affordability for our customers** - Deliver an efficient and affordable plan with distributional and equity and equity considerations transparently discussed.
- **Optimise land use** – Develop our preferred plan with full consideration of environmental appraisal, including the SEA, HRA, biodiversity net gain, and natural capital where appropriate.

These objectives were agreed with our Board at outset of the planning process and have carried through into our decision-making framework.

The first three objectives mirror the goals of our regional plan. This ensures a strong alignment between our best value decision-making framework and our regional plan, which was developed while considering the opinions and preferences of our customers.

The objective to ‘ensure affordability for our customers’ reflects the need to balance environment and societal impacts with costs and affordability to our customers.

The final objective to ‘optimise land use’ allows for the explicit consideration of the environmental impacts of our plan. This includes the Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment (HRA).



RECYCLING AND REUSE



NURTURING THE ENVIRONMENT



ENSURING WATER RESOURCES FOR ALL NEEDS



WORKING WITH CUSTOMERS AND STAKEHOLDERS



A RESILIENT INFRASTRUCTURE

## 8.4 Best value metrics

The use of metrics provides a basis for measuring the performance or contribution of potential interventions against our best value objectives. We derived our best value metrics by considering guidance and best practice from the water sector (WRPG and UKWIR), as well as approaches used in other sectors. In principle, these metrics can be expressed in qualitatively, quantitatively or in monetary terms.

Our best value metrics played two distinct roles in the decision-making process:

- 1. Identifying potential programmes.** We set different goals for the Optimiser to select options against, with each goal represented by combining the metrics which best reflected the particular dimension(s) of best value we were interested in optimising against. As part of preparing the inputs to the optimiser, the performance of individual options against each best value metric was estimated. For a given goal, the Optimiser was then used to identify the optimal combination of options for meeting that goal, drawing on the option-level information.
- 2. Comparing and evaluating the relative performance of programmes:** Once potential programmes had been identified, they were compared according to their programme-level impact on each of our best value metrics (i.e., considering the combined, cumulative impact of all options within a given programme). This allowed for consideration of trade-offs between different programmes according to the different dimensions of our best value objectives and metrics (recognising it is not possible to optimise against every dimension of best value).

By embedding a broad range of best value metrics (Figure 29) throughout our decision-making process, and providing transparency around the trade-offs between them, we have been able to develop a preferred plan that aligns with our overarching ambitions and provides sufficient balance between our impact on the environment and society, while also considering costs (financial and non-financial) to our customers.

**Figure 29:** Summary of Best Value metrics (✓ = meets WRPG's minimum requirements, ✓✓ = exceeds WRPG's minimum requirements).

Objectives		Metrics		Monetised	Guidance
1	Protect and enhance the environment	1A	Protect the water environment: the value that customers place on leaving water in the environment for the benefit of existing and future users, households, and businesses.	✓	✓✓
		1B	Enhance habitats and biodiversity: the change in biodiversity habitats resulting from a change in land use, prior to undertaking statutory mitigations and delivering measures to achieve Biodiversity Net Gain.	-	✓✓
		1C	Reduce carbon emissions: the change in carbon emissions associated with construction and operation activity, including impacts resulting from changes in land use.	✓	✓
2	Resilience of water supply	2	Ensure public water supply resilience: the value that customers place on the avoidance of restrictions on households and businesses in the event of droughts.	✓	✓✓
3	Deliver societal benefit	3A	Improve natural capital ecosystem services: the change in natural ecosystem services which provide value directly or indirectly to society, resulting from a change in land use (natural capital stocks).	✓	✓✓
		3B	Meet our customers' wider priorities: the value that customers place on increased water efficiency and the perceived disbenefit of relying on reused water.	✓	✓✓
4	Affordability	4	Minimise cost: the financial whole life cost associated with construction and operation activity, which in turn results in impacts on customers' bills.	✓	✓
5	Optimise land use	5	Optimise SEA results: the environmental impact of intervention, considering the full range of topics within the Strategic Environmental Assessment, which result in consequences (positive and negative) for	✓	✓

## 8.5 Decision-support tools

We have used several different decision-support tools and optimisation models to inform our decision-making process and explore the costs and benefits of the supply and demand options available to us. These tools range from qualitative assessments using simple scoring criteria through to quantitative assessments using weighted preferences and monetary valuations of wider environmental and social costs.

The key components of this framework and how these tools have been used in combination to inform the development of overall best value plan are outlined below.

### 8.5.1 Investment Optimiser Tool

Driven by our Problem Characterisation assessment (see Section 2.4), we identified and selected a modelling approach that was suitable for bringing together a wide range of considerations and a large amount of data to identify both a least cost programme and alternatives.

The tool we selected is a multiple-criteria optimiser, called the 'Investment Optimiser Tool', which has been configured specifically for our WRMP planning requirements. Driven by the increased uncertainty facing us in the future, this new optimiser has been developed by a specialist modelling team, drawing on academic insight and research to develop better mechanisms for reflecting uncertainties.

Our Investment Optimiser Tool sits at the heart of our overall decision-making framework. The Optimiser takes in a wide range of demand and supply option-level information and outputs a suite of candidate programmes for consideration, based on the constraints and objectives we asked it to meet. It provides transparent evidence for a wide range of candidate plans and enables these to be compared across a common set of alternative futures, ensuring the inherent uncertainties of forecasting over the next 25 years are explored in detail.

However, the modelling is only a tool to help inform the decision-making process. It identifies a range of possible solutions for meeting our water resources challenge but does not provide a single answer. In addition, there are always practical considerations that cannot be fully captured by a modelling framework, such as the deliverability and adaptability of options.

This means that final decisions on our preferred plan required professional judgments from experts within our business, informed by the modelling outputs and supporting technical evidence on the options under consideration. This was achieved through iterative workshops involving experts with knowledge of the options and their engineering and environmental considerations, the operation of the resources system, asset management and the overarching strategic objectives of our business, our regional partners, our customers, and our regulators. Our conclusions were also tested and iterated with our regulators in arriving at a final preferred plan.

### 8.5.2 Leakage model

The modelling and optimisation stages of our leakage assessment process utilised a detailed assessment of the costs and benefits of each shortlisted option. Costs were estimated based on historic rates for activities / initiatives already employed, and modelled costs for the options not currently used by the company.

Multiple leakage reduction scenarios were then assessed using the Strategic Optimisation of Leakage Options for Water Resources (SoLow) tool to ensure that the final, preferred programme represents the best value option for customers.



## 8.6 Defining our alternative programmes

We have used our various decision-support tools in combination to generate the evidence required to support our preferred investment decisions and to explore the trade-offs, risks and uncertainties around the choices we have made.

Initially, we used our decision-making framework to comprehensively appraise and then select options for inclusion in a series of alternative programmes, including:

- **Least cost plan** – benchmark pathway
- **Best value plan** – core pathway
- **Best for the environment and society plan**

### Least cost plan

We first used our Investment Optimiser Tool to identify the lowest cost programme of demand-management and supply options under a range of alternative futures, whilst ensuring our statutory requirements and minimum policy expectations are met. This 'least cost' programme was then used as a benchmark to appraise our other programmes against.

In defining this plan, the Optimiser was constrained to include a pre-defined combination of demand-management options considered essential to meet the statutory demand management targets. The tool was then used to identify the optimal combination of supply options to meet the supply-demand imbalance and 1-in-500 drought resilience by 2039. Sensitivity testing was performed to understand the impact of increased lead times for delivery, as well as increases and decreases in costs and ML/d benefit, on option selection.

### Best value plan – Core pathway

Our best value plan is one that considers factors alongside economic cost and seeks to achieve an outcome that balances the cost with the overall benefit to customers, the wider environment and wider society.

### Best for the environment and society

In addition to our least-cost programme, the WRPG also requires us to produce a 'best environment and society' programme, which is formed by considering the SEA and HRA, biodiversity net gain and natural capital assessments undertaken for all the constrained options.

It is important to note that for several reasons our 'best for the environment and society' programme is indistinguishable from our best value preferred plan.

- The demand side program is our only way to meet regulatory targets and therefore we are unable to include as part of Best for the Environment or accelerate or scale it up.
- We have designed the Best Value Plan to bring forward our Environmental Destination commitments as early as possible which is constrained by the availability of options.
- We lack available options earlier because we first need to complete our programme of environmental investigations to ensure our options are sustainable for the environment.
- The options that are first selected in each WRZ (except Bournemouth) are required to overcome system constraints that mean we are unable to choose any other options first.
- In Wimbleball our only other supply option is the Cheddar 2 SRO and, while there may be the potential to trade off the long-term development/operation of Cheddar 2 with the systematic use of drought permits, the former is currently preferable and is our preferred plan.
- In Bournemouth, we currently need to deliver all the feasible options as soon as possible to meet our ED and there is nothing we could change or do differently at this stage.

## 8.7 Adaptive planning process

Our WRMP sets out how we plan to maintain the long-term supply and demand balance in an uncertain future. However, as we have described previously, there are several factors that could affect the future security of public water supplies. While we have a suite of reliable forecasting tools to estimate how these factors may vary in the future, these become less reliable the further into the future we look and our level of certainty about these changes is consequently reduced.

In addition, while we can make robust estimates of how our interventions will influence future water demand or improve water supply, there are also uncertainties around the benefits these schemes could achieve.

Our adaptive planning approach explicitly considers these different elements of planning uncertainty. Our decision-making approach and investment modelling has explored a wide range of potential future supply-demand scenarios and we have tested the robustness of our decisions based on the confidence we have in our suite of proposed investment options.

### Future scenarios

To help generate a robust adaptive plan, 11 alternative future scenarios were evaluated using the Optimiser Tool. These futures represent varying levels of supply-demand imbalance that we need to meet over the 25-year plan period, which are determined by using different assumptions relating to the future demand for and supply of water resources in our area.

### Developing our adaptive plans

We have established a suite of adaptive pathways and explored how they respond to the 11 future scenarios that our sensitivity analysis has identified as having a material impact on our forecast supply-demand balance in a high-uncertainty future.

Our adaptive planning uses a problem-solving approach to understand, plan and manage risks and uncertainty into the future. Our adaptive pathways are investment programmes that supplement the Best Value (preferred) plan when external drivers impact WAFU or demand.

In this dWRMP, we present our preferred best value plan (core pathway), which is based on our estimated most likely future scenario, and we also assessed three alternative future pathways that demonstrate how we will adapt to changing circumstances in the future.

Our adaptive pathways assume that demand for water will be higher than what we have assumed when developing our preferred plan. We have tested our approach to demand options to consider whether there is increased demand ambition that we could introduce to counter our higher demand strategies. We have not introduced a higher demand actions scenario because:

- Our leakage investment to achieve the 2050 target is already accelerated and at a challenging level of rate of delivering large infrastructure changes (mains renewal for example). A further acceleration to our leakage programme has not passed our deliverability tests.
- Our smart metering program is over 10 years, therefore at our decision point of 2028/29 (WRMP29) we will only have on further AMP of meter installs to make therefore no opportunity to materially accelerate further.
- Our water efficiency investment for AMP8 includes a range of new activities that we will carry out and measure success of alongside our smart metering roll out. We will use the data and insight from AMP8 water efficiency activity to inform our WRMP29 plans.

Our two adaptive pathways are:

- 1. Adaptive Pathway – Medium:** Demand management is a pivotal component of our preferred plan, especially early in the planning period when we have limited feasible supply-side options. As part of our sensitivity testing, we have modelled scenarios where demand management actions were less successful than planned. These sensitivities form the basis of our medium adaptive pathway. If the benefits from the demand management options were lower than anticipated, we would have residual deficits after taking into account the impact of license reductions. To enable us to still make the plan sustainability reductions to abstraction and meet environmental destination requirements, we have included an adaptive pathway that introduces additional supply schemes should the benefits of demand reduction activities be less successful than planned.
- 2. Adaptive Pathway – High:** As part of our more extreme scenario sensitivity testing, we have tested our plan against higher growth in population (and demand) than our baseline assumptions. This has been the basis of creating our high adaptive pathway. If growth and therefore demand grow in line with our high forecasts, despite our preferred plan for demand action, we will have deficits that cannot be resolved. We have created a high adaptive plan scenario setting out the additional supply options that would be required in this scenario.

### Monitoring, triggers and managing uncertainty

Our plan considers a range of alternative futures and uncertainties, which drive the adaptive pathways. The plan also outlines how interventions or investments should be monitored and evaluated over time and how any changes to performance should be made to ensure positive outcomes, success and cost-effectiveness.

Our monitoring plan decision and trigger points are linked into the regulatory planning cycle, with the next set of trigger and decision points being in 2028 to inform WRMP29.

During AMP8 we will monitor and assess the effectiveness of our demand strategy, and report on our progress through the WRMP annual return. As part of the preparation of our WRMP29 and WRMP34 we will update our forecasts for population growth, non-household demand and climate change. We will also have completed the major WINEP investigations to inform our assumptions on license capping and environmental destination. We will use the outputs of the WINEP investigations to drive our assumptions for WRMP29.

We will monitor our plan so that we can be agile and determine when, how, where and why our adaptive planning pathways need to be activated.

There could be several reasons for this, including but not exclusive to:

- Future legislative, regulatory, compliance changes – for example, targets change or further abstraction reductions are required driving the need for increased delivery of solutions.
- Demand side solutions are less effective than envisioned – for example, customer behaviour change happens more slowly or has less impact than predicted, which necessitates increased delivery of demand management options or additional supply side solutions.
- Supply side solutions are less effective than envisioned – they create less WAFU than we expected so we need to do more or increase delivery of demand side options.
- Customer needs and wants change.
- Costs change – more likely this is cost increases that mean some options become less cost-beneficial so need taking out and replacing with others.

## 9 OUR DEMAND MANAGEMENT PLAN

The government has set out stretching targets through the Environmental Improvement Plan (EIP) 2023 aimed at driving transformational programmes to address impacts on the water environment. Through a combination of demand reductions and sustainable supply options we will do our part to drive clean and plentiful water now and for generations to come, with plenty left for wildlife as well.

The Government's EIP targets half to be delivered through reducing demand for water and the remainder through increased supply. The long-term target to reduce water demand seeks to close this gap by setting us on a course for more sustainable water consumption.

### YOU SAID WE DID

Customers say they want a focus on leakage reduction and new sustainable sources, then connecting areas and smart meters. Customers support the fast plan for 15% reduction – viewing leakage reduction as key to resilience and considering the bill impacts affordable. Customers want us to target and deliver stretching performance on environmental measures, including leakage. They value leakage and other water saving options above supply options.

To meet this challenge, our plan includes significant investments in leakage, including through replacement of end of life, leaky mains, protecting future customers by passing on a more resilient infrastructure. We will do our bit to lead the way to make homes fit for the challenge, which will also support government targets to reduce leakage by 50% and reduce consumption by a quarter by 2050.

Our demand management strategy aims to invest in a comprehensive demand reduction plan in AMP8 and beyond, to meet our regulatory targets for leakage and PCC, particularly as there are limited feasible supply side options early in the planning period.

Our demand reduction plans include comprehensive programmes of smart metering, leakage reduction, and household and NHH water efficiency initiatives.

### 9.1 Smart metering

Smart metering is the foundation of our demand reduction plan, because it contributes to leakage and customer behaviour driven targets by providing the data on usage and enabling identification of customer-side leakage (CSL) at both a property and district area level.

When we refer to smart metering, we mean Advanced Metering Infrastructure (AMI metering) which is an integrated system of water meters, communication networks and data management systems that enables two-way communication between meter endpoints and our internal systems.

Household smart metering results in a CSL saving because smart meters provide real time information on water demand at each property. When a smart meter is fitted, it will identify whether there is continuous flow of water on the property. Continuous flow is where the flow rate does not drop below a minimum consistently for several days.

Continuous flow on an external meter indicates the customer either has a CSL or wastage within their property. Industry-insight suggests that AMI metering unlocks a further 20% of leakage opportunity using consumer data to update District Metered Area (DMA) leakage models daily.

We have taken an ambitious approach to the roll out of smart metering, recognising its importance as the cornerstone of our demand strategy.





## YOU SAID WE DID

As the cost-of-living crisis deepens, customers are now increasingly expecting the same regular billing and consumption information they receive in the energy industry.

Metering is viewed by customers as an important part of the solution to reducing demand. Customers recognise the wider benefits of metering beyond water efficiency, including supporting leakage detection and affordability. Our customers increasingly support compulsory smart metering; they feel that accurate billing and having the ability to detect leaks and 'putting the customer in control of their own usage' would be beneficial to both customers and us.

There are some reservations around metering, with some questioning if they work – based on experiences in the energy sector. Whilst some note that they could be effective in tackling leaks, but wanted to ensure that the problems encountered with them in the energy industry would be avoided.

To meet this challenge, we have developed an ambitious smart metering programme, but we have also phased our programme over from 2025 to 2035, in order that the plan should be affordable, deliverable and fair for future generations.

We will upgrade all our existing meters to smart meters for all our household customers and for all smaller non-household customers in Devon and Cornwall over a 10-year period, from 2025-2035.

We will continue to promote our meter-optants programme and during 2025-30 will look to enhance the number of optant meters we install to remove water poverty and ensure that our vulnerable customers have meters installed to enable us to charge them using our social tariff.

In Devon and Cornwall, we will also adopt a change of occupancy strategy for increasing our meter-penetration. Where an unmeasured customer moves house, we will install a meter and move the new customer to a measured tariff.

In our Bournemouth WRZ, we will roll out compulsory smart metering over a 5-year period, from 2025-2030.

All meter installations shall be installed with a flow regulator device, which will help manage consumption and potential wastage. The benefits from the installation of flow-regulators is included in the water-efficiency programme below.

The data we receive will both help identify leaks on customers' supply pipes and provide customers with the information they need to reduce demand.

In delivering our smart metering program we will consider the average age of the meters in each District Metered Area (DMA), and the meters in the DMA with the oldest average age will be replaced first where possible. It is essential that meter roll out is on a DMA-by-DMA basis to gain the leakage benefits derived from full DMA metering and to deliver the work cost-effectively.

Metering all supplies ensures that all flows in the DMA are measured, enabling water balance level analysis on the DMA, which will significantly help with leakage targeting. Our plan is to use the data in a state-of-the-art analytical tool that will enable us to measure network leakage, as well as assisting with where in the DMA the network leaks might be occurring. This will help our analysts and technicians to get to leaks quicker, resulting in reduced leakage by reducing the length of time leaks are running for.

Our metering programme will be supported by an enhanced meter management system, which will enable us to use the smart meter data to provide enhanced household customer bills, behavioral nudges, and insight on the customer website on overall consumption. This will help us to identify leaking customer supplies, internal leakage or other water-wastage and offer support to our customers to either subsidise customer supply pipe repairs through our existing household supply pipe repair policy or offer a home efficiency audit to provide water-efficiency advice, install water efficiency devices or resolve any obvious leaky-loos or taps, where necessary.

We will deliver an estimated 470,000 smart meter upgrades, and new meters to ~440,000 HH, and ~30,000 NHH properties by 2030 and a further ~80,000 a year up to 2035. All meters installed or replaced will be AMI Smart Meters. Throughout this period will continue to offer meter-optants, where any remaining unmetered customers can opt for a meter, or where any unmetered customers move house, we will install a meter as part of our change-of-occupancy meter policy. Any new properties (new connections) from 2025 will have an AMI meter installed as standard (Circa 4.5k of NHH and circa 50k of household new connection are forecast).

It is forecast that this smart metering programme will deliver a 5.7 ML/d consumption saving by the end of AMP8, and 3.2 ML/d towards our AMP8 leakage target.

By 2050, metering will have provided 14.8 ML/d DI reduction (a 6.5% reduction in DI) and will contribute 9.1 towards reducing consumption and 5.7 ML/d towards meeting our leakage targets.

## 9.2 Leakage

Our best value plan for leakage reduction is essential for our overall demand strategy driven by our DI reduction targets to further leakage reductions.

We are required to achieve a 50% reduction in leakage from 2017/18 baseline by 2050, with interim targets of 20% by March 2027 and 30% by March 2031.

We are on track to deliver the 2026/27 and 2031/32 leakage reduction targets. Our preferred plan targets a 50% reduction in leakage by 2045, bringing forward the delivery of these reductions from 2050. This target has been revised following feedback on our previous WRMP and to support the delivery of the new DI reduction targets.

From 2025 we will deliver year on year reductions in leakage levels, saving over 13.6 ML/d by 2030 and 29 ML/d by 2050 over and above the leakage benefit from metering stated above. Our total leakage across all zones will be reduced to 64 ML/d by 2050, a 50% reduction compared to 2017/18 levels (Figure 30).

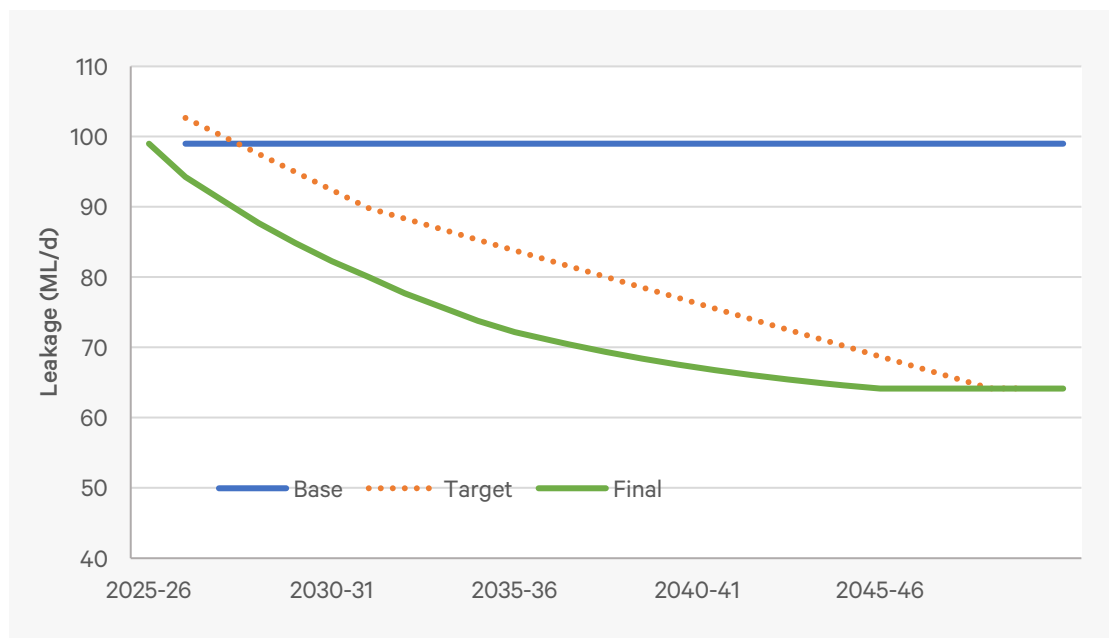
We plan to achieve this through a blend of mains replacement and repair, enhanced active leakage management and increased pressure management. We will leverage the benefits of smart metering to reduce leaks on customer supply pipes and support identification of distribution-side leakage (see above).

Over the life of the plan, we will be implementing more efficient leakage techniques (such as subdividing district metered areas) and introducing new technology (such as acoustic logging), we

will also invest in innovation to drive improvements in the cost-benefit of both asset renewal and active leakage control techniques. This will enable us to fix leaking pipes more quickly and reduce the average losses per leak.

We are also looking at new technology to help us identify the areas that are most at risk of leaks occurring. We will target these areas with mains replacement as a preventative measure.

**Figure 30:** Delivery of our leakage programme compared to our baseline levels and targets.



### 9.3 Water efficiency

Our need to invest in reducing demand through water efficiency interventions is driven by our commitment to address customer priorities and to meet the long term governmental regulatory targets outlined within the Environmental Improvement Plan (EIP23) and the England Environmental Targets (Water) (England) Regulations 2030 that include:

- Reduce household water use to 122 litres per person per day (L/p/d) by 2038 and 110 L/p/d by 2050.
- Reduce non-household (business) water use by 9% by 2038 and 15% by 2050.
- Reduce the use of public water supply in England per head of population by 20% from the 2019 to 2020 baseline reporting figures, by 31 March 2038, with interim targets of 9% by 31 March 2027 and 14% by 31 March 2032 (see above).

Our programme of water efficiency initiatives is an integral part of our overall strategy and will contribute to addressing the supply-demand challenges and meet government targets by contributing to a reduction in demand.

Our demand strategy couples water efficiency initiatives with our smart metering programme. These interventions are complimentary as neither set of interventions alone will deliver the reductions required to achieve our targets and objectives, including the government target of reducing PCC to 110 l/h/d by 2050.



Closing this gap will also require working with other water companies and local authorities as well as action by government over the coming years to:

- Influence customer consumption behaviour to become more water efficient.
- Influence government policy to better support water efficiency actions, such as mandatory water labelling, more water efficiency standards for water using appliances and enhanced water efficiency requirements for new homes.
- Incentivise manufacturers and innovators to reduce water consumption rates for household and commercial water using appliances.

A significant area of water efficiency, where reductions in demand can be made without compromising customers' lifestyles or livelihoods, is in helping people to change their water using behaviour. This remains a less well understood area of activity but is also an area of increased interest to customers as a result of the growing cost of living crisis.

We have worked in partnership with other sectors, partner water companies in the West Country Water Resources Group (WCWRG) and academic partners, to help identify the most effective cost-saving, water-saving, energy-saving and carbon-saving approaches we can take.

Customers want to see us reduce waste through leakage reduction and water efficiency measures before developing new supply options. Reducing water usage has a direct benefit on affordability and tackling water poverty, as there is a direct benefit to customer bills.

In 2022 Waterwise published the UK Water Efficiency Strategy to 2030, setting out a cross-sector pathway to greater water efficiency. Increased water efficiency has an essential role to play in helping ensure we have enough water for people, the economy and the environment now and in the future.

As is set out in Table 30, our water efficiency approach is fully aligned with the 10 strategic directives of the 'UK Water Efficiency Strategy to 2030' (Waterwise, 2023).





**Table 30:** Alignment of our water efficiency approach with 10 strategic directives of the 'UK Water Efficiency Strategy to 2030' (Waterwise, 2023).

'UK Water Efficiency Strategy to 2030' – 10 strategic directives		
1	All UK Governments and regulators show clear, visible leadership for water efficiency and reflect this in their policy and regulatory frameworks.	We recognise and fully support the need for government and regulators to be ambitious in their plans for water labelling building regulations.
2	People and organisations have access to useful and timely information on their water consumption and potential for savings.	We recognise the value that timely information on water consumption can have in enabling customers to understand their own consumption and enabling us to assess the effectiveness of water efficiency initiatives.
3	People and organisations are aware of why we need to use water wisely and how to do it and are taking action. Water-saving campaigns are effective; consistently evaluated – and the learnings are shared and used.	We already provide our customers with access to the 'Get WaterFit platform' which provides insight into their current usage through them answering a series of questions and provides them with the potential savings they could make through installation of water saving devices and using the easy win tips.
4	People value water through life-long learning about water and how to use it wisely.	As part of our WRMP we plan to roll out smart metering to household and small non household customers by 2035; accurate consumption data will be available for customers to view, and they will obtain behavioural nudges and water-saving tips through their bills to help with water-saving ideas.
5	Water efficiency advice and support is inclusive and is helping people in vulnerable circumstances, including in financial hardship.	Our preferred demand strategy includes a range of water efficiency initiatives, supported by our smart metering rollout that will enable us to continually review and assess our effectiveness.
6	All new developments are much more water-efficient and are water neutral in areas with current or future water availability challenges.	We proactively engage with our customers to support their lifelong learning in the value of water and how to use it wisely. We do this through media campaigns, 'Save Every Drop' & 'Every Drip Every Drop', delivery of our programme of school visits, and community support events, and our Awesome Water team attending larger scale events within our region. This year we are forecasting to attend 414 events / classes in total with a beneficiary reach 43.5K.
7	Water efficiency measures are included in building retrofit programmes, including to achieve net zero.	As well as our face-to-face engagement programmes, we try to encourage our customers to come up with innovative ideas on how to save water through our Water saving community and Innovation Funds.
8	People and organisations are fitting water-efficient products and making use of a mandatory water efficiency label. The take up of innovative water-saving products is increasing.	We currently have two tariffs available for our more vulnerable customers. Water care which is available to our customer classed in water poverty. This tariff offers a percentage discounted off their bill dependent on their vulnerability and Watersure which is a government scheme and fixes the customers charges for the year. Our customers must be metered or on an accessed charge if metering isn't possible to be eligible for one of these tariffs. When applying for a tariff our customers are offered a household audit to give them a bit of extra support.
9	Leaking toilets and confusing dual-flush buttons are a thing of the past	Our community Liaison Team attend targeted events where they offer support to our more vulnerable customers during which they will give out free water saving devices.
10	Organisations are more motivated to save water and the delivery of water-saving advice and support to them is working well.	We would welcome regulations that incentivise water efficiency in new house hold and non-household development. We are currently piloting incentives for property developers to deliver more efficient homes.

Our full suite of household water efficiency interventions is listed in Table 31.

We will be delivering an extensive programme, which will require substantial resources from ourselves and our sub-contractors.

We have successfully delivered a programme of water efficiency audits in AMP7, and the method of delivery is effective in engaging our customers and achieving results. We will continue with this approach and use a mix of sub-contractors who are most suitable to support the delivery of our preferred options into AMP8, in all resource zones.

We will also engage and collaborate with stakeholders such as developers, councils, and private landlords, to deliver on our rainwater harvesting schemes and our other strategies to achieve a reduction in demand. We will identify the developers who share our values in innovative water saving practices and work together to make their developments, water efficient and reduce the impact on the environment.

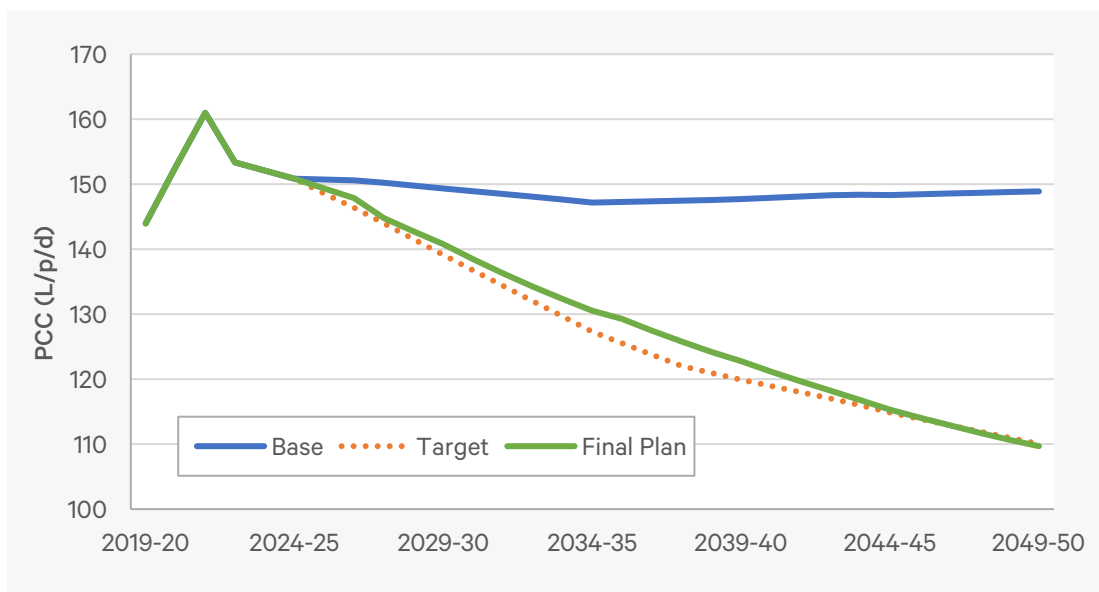
Our Community Education and Community Engagement Teams will continue to assist the ongoing delivery of education and support to our customers. They will work in partnership with, schools and community groups, and attend targeted events to engage our local communities.

To ensure successful delivery of this programme, we will recruit technical experts to support and manage the delivery of this plan. In addition, external specialists will be used to develop and deliver our campaigns. We will evaluate our campaign plans regularly to ensure the effectiveness of delivery and to iteratively improve our approach.

As highlighted above, the Government’s Policy on water labelling will also be a key enabler of the ambitious PCC target. In our analyses, we estimate that saving from more water efficient appliances contributes 30% of our 2050 household consumption reduction.

As shown in Figure 31, we estimate that the combined benefits of these household water efficiency initiatives, coupled with our smart metering programme, will help us achieve the 110 litres/person/day by 2050 target. The consumption benefits of this HH water efficiency programme are estimated to be 11.2 ML/d by the end of AMP8. By 2050 the HH water efficiency programme will contribute 92.3 ML/d (excluding the consumption benefits from metering).

**Figure 31:** Delivery of PCC reductions by our preferred plan compared to the baseline and target.



**Table 31:** Our preferred programme of household water efficiency interventions

Option Name	Option Description
Targeted incentives scheme - New metered customers	This option will offer non-financial incentives in the form of shopping vouchers/discounts, prize draws and charity donations to increase awareness and motivation to reduce water use, it will be delivered in association with "Green redeem". The option will include the use of innovative apps and website content, whilst maximising the benefits offered through smart metering data. This will be targeted at new smart metered customers.
School Visits	This option involves working in partnership with schools to promote water efficiency. The aim is that education regarding water efficiency starts at an early age and therefore will result in long term demand savings. This would be tailored for children for the different key stages. It would provide lesson plans and material to allow teachers to deliver water efficiency lessons, this would be provided to all schools. This would also be accompanied by a set number of school visits (targeted to areas of high water use or demography) each year reaching 30 students per visit.
Water Efficiency Programmes Targeted at Specific Groups	A focused water efficiency programme at targeted locations and for targeted specific groups (e.g. community and religious groups) including advertising, education, and other outreach work.
Household Efficiency Visits (Corporate Landlords)	Visits include undertaking a water audit, advice and tailored retrofit of free water efficient devices where required. Targeted at specific housing stock of local authorities or housing associations. The visits are selected based on high potential for water savings.
Household Efficiency Visits (Unmeasured Household)	Visits include undertaking a water efficiency audit for unmetered households. This will include advice and tailored retrofit of free water efficient devices where required. We will repair plumbing losses where identified (e.g. leaky loo fix). This will be supported by additional comms and media.
Household Efficiency Visits (Existing Metered Households)	Home efficiency visits include undertaking a water efficiency audit, advice and tailored retrofit of free water efficient devices where required to households with a meter already installed. We will repair plumbing losses where identified (e.g. leaky loo fix).
Household Efficiency Visits (Newly Metered Households)	Visits include undertaking a water audit, advice and tailored retrofit of free water efficient devices where required. We will repair plumbing losses where identified (e.g. leaky loo fix). HEVs are provided alongside the company's ongoing smart meter rollout.
Rainshare – Community Scheme	Work with the Council to identify 'Rainshare' twinning schemes, e.g. where buildings with low demand but which can generate high rainfall yields are located next to buildings or other demands with high non-potable demand (e.g. for irrigating or dual-supply toilet flushing). The rationale behind this option is that the harvested rainwater will replace water that had been, or would have been, taken from public mains supply.
Appliance Subsidies	SWW will introduce a subsidy programme for customers seeking to upgrade household appliances to more water efficient units. This would include WCs, showers, smart taps, dishwashers and washing machines. The rationale behind this option is to encourage customers to exchange less efficient appliances for more water efficient appliances and thus use less water. The cost of subsidising the efficient water appliances would be borne by water company. This would 'free up' resources to be used by other customers

<b>Flow Regulator Installation</b>	Alongside our rollout of AMI smart meters, we will also be installing a flow regulator to customer supply pipes. Flow regulators will reduce water wastage within homes without having a noticeable impact on water pressure. As flow regulators are going to be installed alongside the AMI meter rollout, we have included the cost in our metering programme but are claiming the water saving as a water efficiency option.
<b>Water Labelling</b>	In this intervention water labelling of relevant products is legislated as mandatory and managed by government. The scheme would be operated in association with Building Regulations and minimum standards (i.e. based on changes to The Water Supply (Water Fittings) Regulations 1999). This would mean that only products performing at a baseline level will be allowed on the market and referenced in the Building Regulations.

### Non-household water efficiency

Our NHH baseline has been forecast in accordance with guidance considering econometric data at national and regional level. This has included Gross Value Added (GVA), employment demographics on working-age population, labour participation rates, and concentration of growing/declining industries.

NHH water consumption has declined across our region from 2007/08 to 2019/20, especially in Bournemouth where, despite growth in GVA over the past decade, many sectors observed a fall in demand as more water efficient practices and technologies have developed.

Our preferred programme of NHH water efficiency interventions is listed in Table 32.

These activities include the roll out of smart metering to small NHH customers as well as a range of water efficiency activities to help support the delivery on NHH demand reduction targets. Our demand reduction targets are from a 19/20 base therefore do not include the recent uplift in NHH demand post-COVID-19. We are continuing to develop further NHH options, through pilots in AMP 8, to provide further options to meeting this target in our WRMP29, further information on these pilots is contained in appendix 5.

Our smart metering programme will provide all non-household meters with smart meter technology. As with household customers, this will provide water users and their retailers with information on their usage and we will offer demand reduction initiatives.

We will offer businesses water efficiency visits targeted at their specific sector usage. For schools, hotels and holiday rentals this can be very similar to domestic user, where installing retrofit devices, fixing leaky taps and toilets can be very effective.

For businesses such as food and drink manufacturers or other heavy industry and manufacturing we will offer advice on assessing their processes for losses or support them with experts who can advise on ways to optimize their processes to use less potable water or reuse their effluent streams.

We will continue to work with agrifood and tourism businesses, looking for opportunities to build on-site storage and recycling, such as rainwater butts and rainwater harvesting.

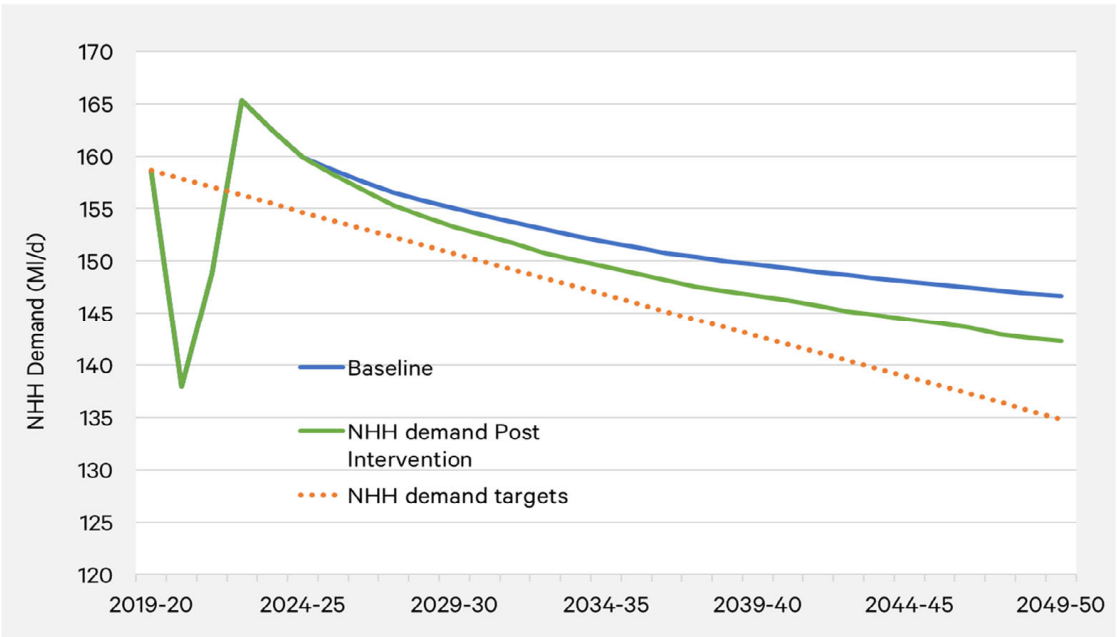


Table 32: Our preferred programme of non-household water efficiency interventions

Option Name	Option Description
Reuse of Treated Wastewater Schemes	Reuse treated wastewater from industrial customers is used for onsite use by the industrial customer. This reclaimed water could be used for industrial/commercial use rather than potable water.
Business Efficiency Visits (by sector)	This option offers non-HH customers within the target sectors, an in-person BEV, during which, water efficiency devices will be retro-fitted, and advice given on water efficiency. In addition, simple wastage fixes will take place where feasible (leaky loos, basic leaky tap issues). BEVs are targeted at customers with high consumption and delivered in partnership with water retailers.
Business Efficiency Visits (Targeting Bev and Food Manufacturers)	This option provides targeted visits by process engineers to large scale businesses to look at how water use can be reduced on site. The output will be recommendations with indicative cost and efficiencies that could be achieved (solutions could include zero liquid discharge (ZLD), water reuse). This option would also consider any potential for the use of non PWS supplies. Target visits based on MOSL data to a limited number of large-scale water users.
Business Efficiency Visits (Leakage, by Sector)	Leak detection in large non-HH users, targeted at specific sectors or large users with high expected leakage. Customer targeted are those that have recently switched to a smart meter or have flow-loggers in place, facilitating the identification of leaks. Sectors in scope are Offices, Sports Grounds, Education, and Agriculture.
Rainwater Harvesting in New NHH Developments	Work with developers to provide rainwater harvesting systems to provide a non-potable supply for use within the new commercial properties. Water is collected from roof runoff and a sustainable drainage system is created. The collected water goes through a basic level of treatment. Rainwater harvesting is included in the development to meet planning conditions. SWW funds the investment in kit.

As shown in Figure 32, we estimate that the combined benefits of these NHH water efficiency initiatives, coupled with our NHH smart metering programme, will help us achieve the target of reducing NHH water use by 9% by 2038 and 15% by 2050. The combined water resources benefit of this programme are estimated to be 1.8 ML/d by the end of AMP8 and 4.4 ML/d by 2050.

Figure 32: Delivery our preferred programme of non-household water efficiency interventions



### 9.3.1 Promoting re-use and recycling of water

To ensure we can effectively reduce demand, more innovative techniques will be needed alongside our metering and water efficiency initiatives.

We believe that more substantial water savings can be made through water re-use and recycling. By 2050, we want customers to use less potable water. All their demand will still be met but a proportion will be through non-potable supplies such as rainwater harvesting, water recycling and storage at home for usage that does not require drinking water. A key enabler to this is support from home-improvement grants.

One of our development options is to work with developers to install new properties with rainwater harvesting systems to provide a non-potable supply for toilets and washing machines. Water would be collected from roof runoff and a sustainable drainage system created. The collected water would then be subjected to a basic level of treatment before being reused.

We believe this approach, which could also be enhanced to include exploration of greywater reuse, could have the potential to replace approximately 13% of household consumption with sub-potable supplies, a 13ML/d saving.

In addition, we aim to work with the local councils to identify suitable locations for community-based rainwater harvesting schemes. This initiative will install rainwater harvesting systems in buildings that have low demand but can generate high rainfall yields. The water collected will be transferred to neighbouring buildings of businesses with high non-potable demand such as irrigation or dual-supply toilet flushing. Household water savings are estimated to be 2ML/d.

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. This is then cleaned and released back into the environment, most commonly into the sea. Our ambition is to build processes to recycle this water for household and industrial purposes and reduce pressure on our wastewater network.

As part of the West Country Regional Plan, a strategic scheme is under development to abstract the treated wastewater discharged from Poole Wastewater Treatment Works as a source of water for supply further downstream. This scheme is currently being developed through RAPID's Strategic Resource Options gated process and will provide 12.5ML/d benefit to our supply area.



### 9.3.2 Benefits of our preferred demand management plan

Our preferred best value demand management plan sets out how we will transform the way we all use water, as we adopt new ways of working, focus on sustainable operations and decarbonisation, think innovatively, and empower customers to make informed decisions (Tables 33 and 34).

The South West region is increasingly impacted by climate change and experiences tourism population equivalent increases outside of our direct management control. The future of water supply is complicated by the uncertainty surrounding the impact of climate change on river flows, rainfall and evaporation patterns, groundwater storage and the subsequent environmental consequences. This supports the need for customer empowered and informed decision making.

Our demand management programme of interventions is a critical enabler in delivering customer consumption reduction in line with government targets and is fully aligned to our Business Plan and Long-Term Delivery Strategy (LTDS).

In addition to our comprehensive programme of water efficiency initiatives, our plan also includes smart metering, and leakage interventions, all of which are interrelated, and have been evaluated collectively through our planning process to provide a set of blended and complementary outcomes that deliver a best value plan.

In addition, to the demand-side needs and benefits for supply and environmental resilience, our enhanced water efficiency programme will also address socio-economic needs of fairer pricing and support for vulnerable customers dealing with water poverty.

**Table 33.** Our preferred demand management plan – forecast costs and benefits.

Demand management benefits	AMP 8					WRMP 24 (25 years)				
	Customer demand benefit	Leakage benefit	Total DI benefit	Total Enhancement cost	Cost / ML	Customer demand benefit	Leakage benefit	Total DI benefit	Total Enhancement cost	Cost /ML
	ML/D	ML/D	ML/D	£M	£M/ML	ML/D	ML/D	ML/D	£M	£M/ML
AMI metering	5.7	3.2	8.9	62.0	7.0	9.1	5.7	14.8	118.0	8.0
Leakage investment	-	13.5	13.5	63.9	4.7	-	29.4	29.4	240.2	8.2
Water Efficiency - HH	11.2	-	11.2	3.7	0.3	92.4	-	92.4	253.0	2.7
Water Efficiency - NHH	1.8	-	1.8	5.7	3.2	4.4	-	4.4	17.8	4.0
<b>Total</b>	<b>22.3</b>	<b>17.7</b>	<b>39.0</b>	<b>135.3</b>	<b>3.5</b>	<b>105.9</b>	<b>34.9</b>	<b>141.0</b>	<b>629.0</b>	<b>4.5</b>
PCC Outturn	140.2 annual PCC 29/30					110.1 annual PCC 49/50				
Leakage Outturn	82.3 annual ML/d 29/30					64.1 annual ML/d 49/50				



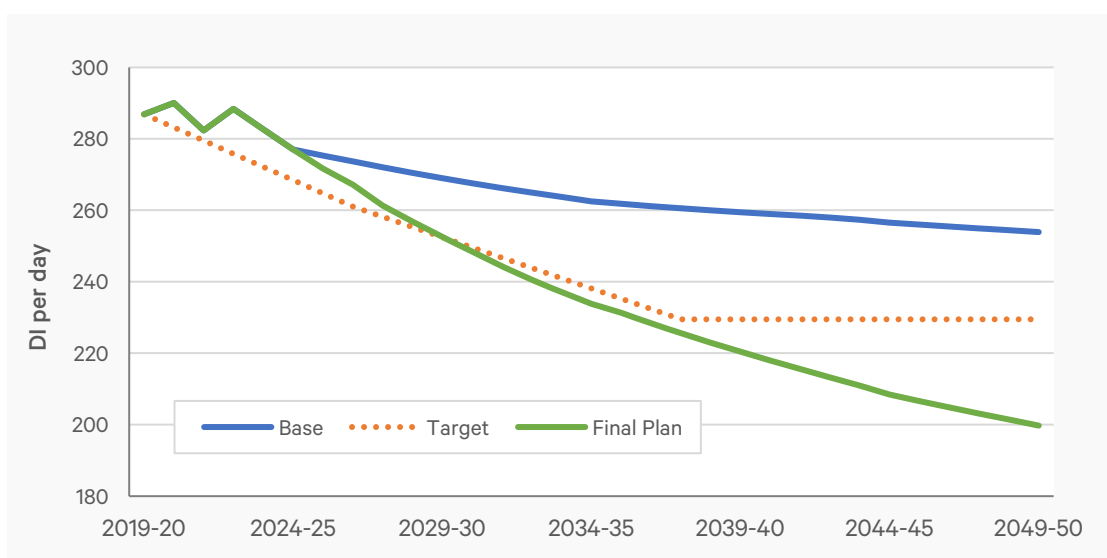
Table 34. Our preferred demand management plan – forecast achievements against targets.

Demand Target Summary		26/27	31/32	37/38	49/50
DI Reduction					
DI per head of population	Target (from 19/20 baseline)	9% reduction	14% reduction	20% reduction	-
	Final Plan	7% reduction	15% reduction	21% reduction	-
Component targets					
Leakage (ML/d)	Target (from 17/18 baseline)	20% reduction	30% reduction	-	50% reduction
	Final Plan	32% reduction	39% reduction		50% reduction
Household consumption (L/p/d)	Target	-	-	122 L/d	110 L/d
	Final Plan	-	-	127.5 L/d	110.1 L/d
NHH Consumption (ML/d)	Target (from 19/20 baseline)	-	-	9% reduction	15% reduction
	Final Plan	-	-	7% reduction	10% reduction

The EIP includes reduction targets for Distribution Input (DI) per head of population of 20% by 2037/38, with interim targets in 2026/27 (9%) and 2031/32 (14%).

As illustrated in Figure 33, our demand management plan will achieve the targeted reductions for 2031/32 and 2037/38, supporting longer term licence capping and environmental destination needs. We do not have sufficient time to reach the 2026/27 target however our plans include a 7% reduction from the 2019/20 base for that date.

Figure 33: Delivery our overall DI reduction target by our preferred demand management plan





## 10 OUR WATER SUPPLY PLAN

### 10.1 Least-cost plan

We first identified the lowest cost programme of demand-management and supply options under a range of alternative futures, whilst ensuring our statutory requirements and minimum policy expectations are met. This 'least cost' programme was then used as a benchmark to appraise our other programmes against.

The Optimiser outputs included the selected options, the costs and benefits of these and the overall performance and cost profile over the 25-year planning period.

As the single goal of this plan is to minimise cost, this programme does not consider benefits beyond delivery of supply-demand balance. It does not therefore consider the wider dimensions of Best Value, such as environmental and societal impacts (save for those which are part of a policy or legal requirement, such as achieving BNG of +10%), resilience benefits, or (non-financial) disbenefits to customers.

As a result of this, it automatically leaves interventions until the last possible (deliverable) time-point and it frequently includes the use of shorter-term drought options in the plan.

A full appraisal of our least cost plan and a detailed comparison with our best value plan is included in Appendix 6.

### 10.2 Preferred plan – Best Value Plan

The WRMP aims to present a Best Value Plan across the planning period, both in the short term and the long term.

Our best value plan considers factors such as economic cost and environmental impact and seeks to achieve an outcome that increases the overall benefit to our customers, the wider environment and overall society. Our best value plan is efficient and affordable to deliver, legally compliant and accounts for the range of legislation that apply.

Our priority is to ensure we are operating a resilient water-supply system for our customers. Our plan needs to be risk-based to mitigate any uncertainties that we face, while maintaining the balance between supply and demand over the long term.

It is important to consider these factors and our customers preferences to accurately inform our decision-making process. Our stress-testing analysis shows that all the WRZs in the SWW supply area have some sensitivity to required abstraction reductions, climate change and demand growth.

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.

For this dWRMP, our strategy is to invest in a comprehensive demand reduction plan in AMP8 and beyond, to meet our regulatory targets for leakage and PCC, only implementing supply-side schemes when additional supply is needed over and above our demand measures.

In parallel to this we will invest in engineering feasibility assessments on supply options so that we are able to implement additional supply schemes if needed to react to changes in our plan, for example if demand reduction measures are not as effective as planned. This is a core part of our adaptive planning process set out in this dWRMP.

A comparison of our least cost and best value plans is set out in Table 35.

**Table 35:** BVP least cost and best value scenarios

	Least cost	Best value	Driver
Leakage reduction	50% by 2045	50% by 2045	DI reductions set out in the EIP drive a demand reduction program that is the same in our best value and least cost plan. Even with our increased level of ambition we are not able to achieve the interim DI reduction target, therefore we have not reduced our investment in the best value plan.
Water efficiency and demand management activities	Least cost way of delivering incremental DI savings required to hit the EIP targets	Least cost way of delivering incremental DI savings required to hit the EIP targets	
Metering	10 year roll out of smart metering & 5 year compulsory metering in Bournemouth	10 year roll out of smart metering & 5 year compulsory metering in Bournemouth	
Use of drought permits and restrictions	Use frequently to minimise need for additional resources	Reduced requirement for drought options and water restrictions	Limiting the environmental impact of drought options [customer appetite / how severe are least cost]
Supply schemes	No investment enabling future adaption.	Supply options include a core plan of no regrets supply options, plus investment to develop all options needed in the adaptive pathway, enabling adaption at key monitoring points if needed	Additional supply options offset the water lost from environmental destination and climate change impacts needed in both plans, ensuring we maintain a sustainable abstraction regime in the future.

Our list of feasible options for this iteration of the draft WRMP was refined since our previous draft. This includes introducing new options required to enable environmental destination reductions, and additional screening to remove options which were unacceptable to our regulators or lacked sufficient technical detail to be assessed in compliance with WRPG. This reduced sub-set of options is the *constrained list of feasible options* which were considered through the modelling and our final decision-making process. This resulted in a relatively small number of options being available to optimise our response to the supply-demand imbalance by WRZ.

At the same time, we also face significant policy constraints, particularly in relation to environmental destination. We must aim to meet our regulatory environmental destination targets in all WRZs, with reductions of over 200 ML/d by 2050.

This meant that when undertaking our analysis to identify both a **core pathway** (involving low and no regret activity) and **most likely pathway** (representing our Best Value Plan), we were highly constrained by the planning process. As a result, our analysis resulted in a core pathway and most likely Best Value Plan that involve the same investment activity. This is explained in further detail below.

### 10.2.1 Definition of core pathway

Ofwat's PR24 business planning approach to long term delivery strategies includes the need for a core pathway that is "...designed to support long term adaptive planning by identifying no and low-regret options in the first instance.... It is not a central or most likely pathway".

Ofwat's defines the core pathway as a package of "no- and low-regret investments", including investment required to keep future options open. It should include the following:

1. **No and/or low regrets investments:** this involves options that are required:
  - in both benign and adverse scenarios
  - across a wide range of plausible scenarios
  - need to be undertaken to meet short-term requirements.
2. **Investment required to keep future options open,** such as enabling work or learning and monitoring, where possible, or is required to minimise the cost of future options.

Therefore, the core pathway should include all activities that need to be undertaken to be ready for all plausible future scenarios. Activities which should only be carried out under certain circumstances, such as under more adverse future scenarios, are then set out in alternative pathways.

This provides a framework for assessing the likely best timing for 'higher regret' investments, taking into account factors such as effectiveness of demand-side investment, scale and extent of licence capping impacts, scale and impact of future environmental destination reductions, other future uncertainties, customer preferences and fairness between current and future customers.

### 10.2.2 How we have determined no and low regrets activity for our core pathway

Environmental destination requirements drive the increased supply-demand imbalances in all but one of our alternative futures. Only the most benign scenario, *common scenarios: benign*, does not include the effects of the abstraction licence capping policy set out by the EA.

Under this most benign scenario, no investment in supply or demand options is required to meet the imbalance in some WRZs – with investment in demand options needed only to meet per-capita consumption targets. This is not true for any other alternative future due to the effects of the environmental destination requirements.

This means that a package of no regrets investments would involve no investment in supply options across some WRZs, driven purely by the requirements under the most benign scenario.

The EA's environmental destination targets are certain, unlike other external factors driving water demand such as population growth and the effects of climate change. Planning for the most benign scenario would be imprudent in light of the certainty surrounding the EA's environmental destination targets. Such a plan would not deliver across a wide range of the plausible scenarios. For this reason, we have opted for a package of *low regret* investments in our core pathway.

### 10.2.3 Selecting our core pathway

The optimiser model provided important insight, alongside our qualitative assessment of strategic considerations such as deliverability, in establishing our core pathway. The modelling identified the frequency of option selection under given policy constraints, the range of alternative futures, and different best value goals. This identified the WRZs which required investment in supply options under each alternative future. The frequency of option selection then informed the final decision regarding which supply options were included, alongside wider strategic concerns such as deliverability.

When defining our core pathway, we were required to include the same comprehensive demand-side programme as the best value plan. This package of options is the only way to meet our regulatory targets.

We were also required to select the same supply-side options early in the plan period and ahead of considering any other alternatives to overcome system constraints at the WRZ-level. These requirements are created by the need to meet our time-bound environmental destination targets, providing no flexibility for an alternative approach over the plan period. Our region is particularly adversely affected by the impacts of environmental destination, with reductions of over 200 ML/d by 2050:

Our low environmental destination assumption is based on no further reductions other than those driven by existing AMP7 WINEP outcomes.

Our medium environmental destination assumption is supposed to align with the National Framework's "Business as Usual Plus (BAU+)" scenario but this is the same as the "Enhanced" scenario for SWW because we have a large number of environmentally sensitive rivers that the EA categorise in the highest protection bands that cannot conform to BAU+.

Our high environmental destination and licence capping assumptions we must plan for are provided by the EA and linked to river basin management plans and the National Frameworks "Enhanced" scenario.

As these constraints are imposed on all scenarios except the aforementioned most benign future, the core pathway and the best value plan are effectively the same. Beyond AMP8 our preferred plan contains two adaptive scenarios that allow for future uncertainty.

#### 10.2.4 Our Core Pathway

The options that form the core pathway of our best value plan are:

##### 1. Demand management plan

Our preferred water supply plan is built on our demand management plan set out in Section 9, which uses smart metering as the enabler that will allow us to meet our demand targets.

##### 2. Increase in Restormel WTW capacity

This is a no regrets option that increases the capacity of our strategic WTW in our Colliford WRZ from 100ML/d to 110ML/d. This has multiple benefits across the zone as it has the capability to move treated water to many different locations. It will be able to increase WAFU through better usage of the Colliford Reservoir, the River Fowey and additional new water resources delivered in AMP7 (Desalination and Blackpool pit). It will help ensure growth in tourism in the region continues to be supported, and enabling future environmental destination reductions expected on smaller local sources. This option will deliver a WAFU benefit of 10 ML/d.

##### 3. Littlehempston WTW preparatory actions

This option will put in preparatory steps to allow dualling of existing mains to enable the full use of the current licensed flow. To minimise network working pressures at Littlehempston WTW it has been determined to maximize the dualled length hence minimizing overall pipe friction losses and overall network capacity. The capacity increase is part of our medium adaptive scenario if demand reductions are less successful than assumed in our preferred plan. Investment is needed in AMP8 to develop the scheme ready for the decision point in 2030 to inform WRMP29. This option will deliver a WAFU benefit of 1 ML/d.

##### 4. Roborough to Littlehempston

A new scheme introduced since Jan dWRMP to enable ED reductions on the River Dart abstraction. The SEA on this scheme is underway and will be available in December 2023 when



we publish our statement of response. The SEA report in our plan is informed by a high level screening on this option. We have chosen to include this option in advance of the full SEA to enable us to reflect the environmental destination reductions.

Whitecross distribution upgrade is a scheme enabling Pynes WTW to provide water to the Dotton area mitigating local capping and ED impacts. The SEA on this scheme is underway and will be available in December 2023 when we publish our statement of response. We have chosen to include this option in advance of the full SEA to enable us to reflect the environmental destination reductions and licence capping impacts required.

### **5. Whitecross Distribution Upgrade**

A new main allowing 5 MLD of additional water from Pynes WTW supply zone to offset any deficit in the future production capabilities of Dotton WTW resulting from water quality of the boreholes or any potential licence changes. The increased resilience in the network would provide the flexibility to support Dotton, Ottery St.Mary Intermediate WTW and Allers WTW. The new main will be 5.7 km long and 500 mm diameter and will run from Whitecross Service Reservoir to Sowton Industrial Estate.

### **6. Cheddar 2 to Bickham Service Reservoir**

This phase of the Cheddar 2 SRO is a treated water transfer to from Bristol Water to Roadford WRZ. This includes a new raw water pumping station and pipeline to Cheddar 2 reservoir, construction of Cheddar 2 reservoir, a new WTWs, and new treated water pipelines and pumping stations. Once the treated water is displaced to Wittall service reservoir it will offset supply from Maundown WTW that feeds the north Dorset network. The infrastructure requirements for this offsetting are a treated water pipeline and pumping station from Maundown WTW to Bickham Moor service reservoir.

### **7. Poole Harbour Water Recycling**

An SRO being delivered as part of the WCWRG, working with Wessex Water. For the updated dWRMP this option is selected 100% by SWW as part of the preferred plan for Bournemouth WRZ and is not selected by Wessex in this scenario. This option is to divert treated wastewater from Poole WWTW to the Corfe Mullen area of the River Stour recycle treated effluent, via a new water recycling centre, to augment flows in the River Stour for abstraction at Longham Lakes.

### **8. Mendip Quarries**

An SRO being delivered as part of the WCWRG, working with Wessex Water. The current scheme design means that there is not an option to select 100% of the benefits for Bournemouth, although the scheme is not selected in Wessex's preferred plan. Through the WCWRG, development of regional resource models and continued scheme development, we will optimise the future use of this scheme. The scheme benefit for Bournemouth is 50ML/d peak period.

### **9. Ampress borehole**

Existing borehole remedial works to make this water available for use.

### **10. Ibsley lake and Longham aquifer recharge**

This option is centred on abstracting water from Ibsley lake via the existing Matcham intake and deliver additional raw water supply to Knapp Mill WTW. This be achieved through the development of 5 no. boreholes, a new pumping station at Ibsley (with associated holding tank, headworks, and pipeline) and a new raw water pipeline (9.8km).

### **11. Bournemouth WRZ option development**

The scale of impact of environmental destination on the Bournemouth zone means significant further option development is required for WRMP29. We have included an allowance for this in our plan.

## 10.3 Adaptive pathways

As described previously, we have established a suite of adaptive pathways and explored how they respond to the 11 future scenarios that our sensitivity analysis has identified as having a material impact on our forecast supply-demand balance in a high-uncertainty future.

Our adaptive pathways set out how decisions will be made under different plausible circumstances as we move away from our 'most likely' pathway which underpins our preferred Best Value plan. These decisions are informed by pre-determined decision points.

In this dWRMP, we developed two alternative future pathways that demonstrate how we will adapt to changing circumstances in the future. These adaptive pathways are described below.

### Adaptive Pathway – Medium

Demand management is a pivotal component of our preferred plan, especially early in the planning period when we have limited feasible supply-side options. As part of our sensitivity testing, we have modelled scenarios where demand management actions were less successful than planned. These sensitivities form the basis of our medium adaptive pathway.

If the benefits from the demand management options were lower than anticipated, we would have residual deficits after taking into account the impact of license reductions.

To enable us to still make the plan sustainability reductions to abstraction and meet environmental destination requirements, we have included an adaptive pathway that introduces additional supply schemes should the benefits of demand reduction activities be less successful than planned.

Investment is needed in AMP8 to develop the scheme ready for the decision point at 2030 to inform our WRMP29. A subsequent capacity increase may be added to this as part of our medium adaptive scenario (see below) if demand reductions are less successful than assumed in our preferred plan.

*Table 36: Additional options included in 'Adaptive Pathway – Medium'*

Option ID	Option name	Anticipated operational year	WRZ
COL22	Roadford to Colliford via Saltash	2036	Colliford
ROA17	Littlehempston WTW – dualling main	2033	Roadford
ROA7	Expansion of Northcombe WTW	2035	Roadford
WIM5	Indirect potable reuse - stream support for Dotton WTW	2035	Wimbleball

The decision point for all these schemes will be in 2028/29, during the WRMP29 process. Work is included in our core pathway to get the Northcombe WTW scheme shovel ready by this time, but the decision regarding whether to fully deploy the option will be made in 2028/29.

The decisions regarding these schemes will be made with reference to the effectiveness of the demand options included in our core pathway. The relative performance of the available options against the best value metrics were taken into account when considering the schemes selected in the adaptation, in line with the selection of the core pathway.

### Adaptive Pathway – High

As part of our more extreme scenario sensitivity testing, we have tested our plan against higher growth in population (and demand) than our baseline assumptions. This has been the basis of creating our high adaptive pathway. If growth and therefore demand grow in line with our high forecasts, despite our preferred plan for demand action, we will have deficits that cannot be

resolved. We have created a high adaptive plan scenario setting out the additional supply options that would be required in this scenario.

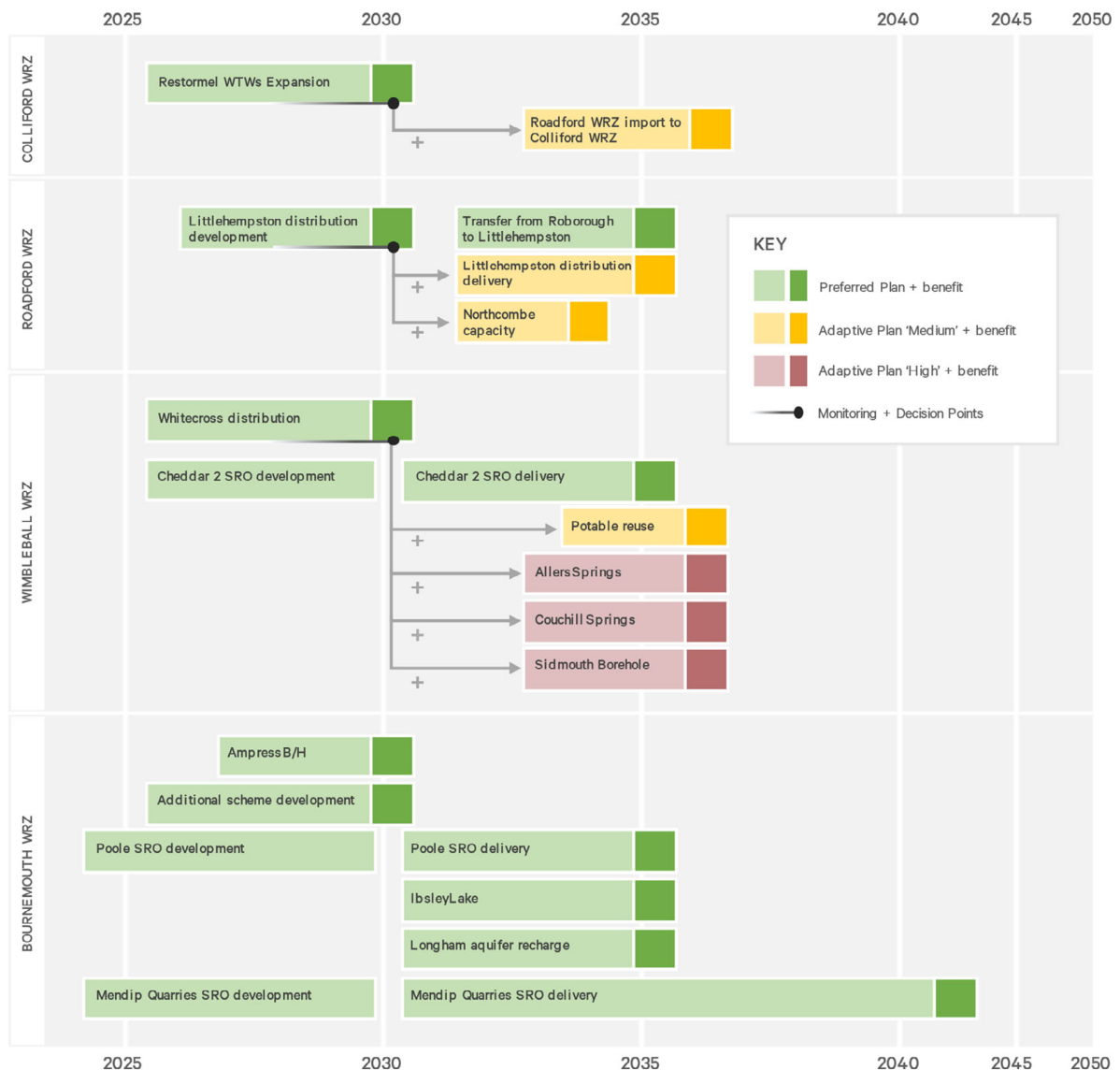
As with the medium adaption pathway, the decision point for all these schemes will be in 2028/29, during the WRMP29 process. The WRMP29 process itself will provide the decision-making framework for these potential adaptations.

Table 37: Additional options included in 'Adaptive Pathway – High'.

Option ID	Option name	Anticipated operational year	WRZ
WIM11	Couchill Springs, Seaton	2035	Wimbleball
WIM12	Allers Springs	2035	Wimbleball
WIM2	Sidford borehole commissioning	2035	Wimbleball

Our preferred best value plan and the two adaptive pathways we have defined and evaluated are shown in Figure 34 below.

Figure 34: Our preferred (core) and adaptive plans with monitoring, decision points and WAFU benefits.



### 10.3.1 Monitoring, decision-points and managing uncertainty

Our plan considers a range of alternative futures and uncertainties, which drive the adaptive pathways. We have included below a summary of the associated risks and mitigations.

**Table 38:** Summary of our monitoring plan and risk assessment, including review and trigger-point timing.

Uncertainty	What is the risk?	Related adaptive pathway?	How is the risk mitigated	When will this be reviewed	Decision and trigger-points
<b>Uncertainty in AMP 7 supply schemes</b>	Desalination at Par, Blackpool pit and Gatherley are not delivered before AMP8 therefore Insufficient raw water to meet supply	Yes	Increased use of drought actions until AMP 8 delivery of these schemes	2026	2026
<b>Uncertainty in scale of environmental destination</b>	The of licence capping impacts and environmental destination reductions is not known until the AMP 8 investigations are complete	No	Studies affecting around one third of our abstractions will be carried out in AMP 8, informing future licence arrangements, feasibility of supply options and magnitude of licence changes needed	Reviewed and reported on annually through our WRMP annual return	2028 to inform WRMP29
<b>Demand management is less effective than planned</b>	We have included an ambitious plan of demand reductions driven by leakage, metering and water efficiency activity. If these are less successful than planned we will have residual deficits in our supply demand balance	Yes – medium	Demand management benefit monitoring. Update every forecasts every 5 years as part of WRMP planning cycle. Adaptive plan included in WRMP24	Demand management benefits reviewed and reported on annually through our WRMP annual return	2028 to inform WRMP29
<b>Population growth is higher than expected</b>	Our planned demand growth is based on local authority plans in line with WRMP guidance. If actual growth is significantly higher than assumed in our baseline, we will have residual deficits in our supply demand balance	Yes – high	Population growth monitoring, better insight into usage driven by our smart metering program and	Population growth assumptions reviewed and reported on annually through our WRMP annual return	2028 to inform WRMP29
<b>Insufficient schemes to meet future demand and sustainability reductions</b>	We have a limited number of options available in our Bournemouth and Wimbleball WRZ in the short term. Whilst we have an ambitious demand reduction plan we need to develop further feasible schemes in this area	No	A number of schemes in our unconstrained list will continue to be developed including a range of water recycling schemes. We will commission a full review of potential options for Bournemouth, working with the EA and NE	Ongoing development of schemes for inclusion in WRMP 29	2028 to inform WRMP29



Our monitoring plan decision and trigger points are linked into the regulatory planning cycle, with the next set of trigger and decision points being in 2028 to inform WRMP29.

During AMP8 we will monitor and assess the effectiveness of our demand strategy, and report on our progress through the WRMP annual return. As part of the preparation of our WRMP29 and WRMP34 we will update our forecasts for population growth, non-household demand and climate change. We will also have completed the major WINEP investigations to inform our assumptions on license capping and environmental destination. We will use the outputs of the WINEP investigations to drive our assumptions for WRMP29.

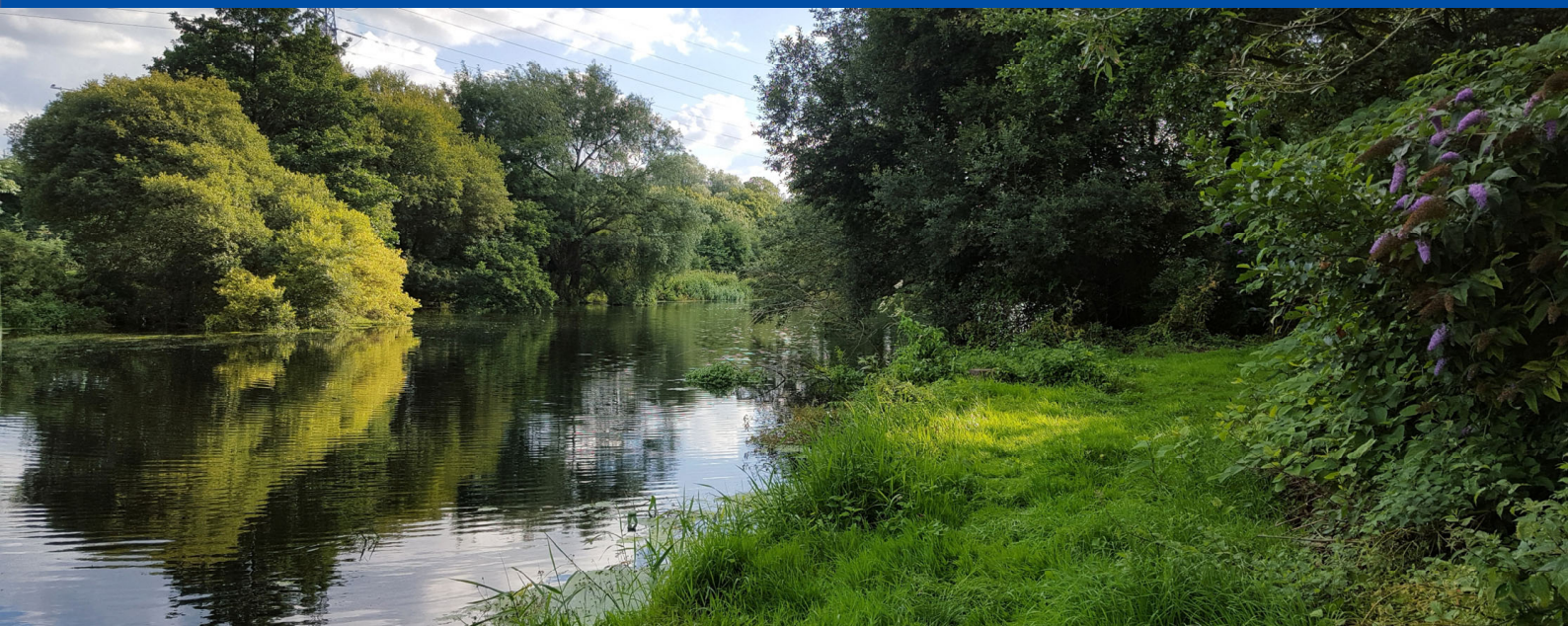
During AMP 8 we will monitor and assess the effectiveness of our demand strategy, and report on our progress through the WRMP annual return. We will monitor our plan so that we can be agile and determine when, how, where and why our adaptive planning pathways need to be activated.

Table 39 sets out our monitoring framework for WRMP24.

**Table 39:** Monitoring framework for WRMP24.

Component of the plan	Type of uncertainty assessed	Tracking activities and assessments	Frequency of reporting
<b>Demand side</b>	Population growth	Reporting of population growth against WRMP assumptions. Annual update of growth forecasts through the WRMP cycle to inform AMP8 and WRMP29. Engage industry experts to further understand non-resident population impacts on the South-West going forward.	Annually as part of WRMP annual return, As part of the regulatory planning cycle in WRMP 29 and beyond
	Demand-side benefits realisation	Monitor and report on the benefits of demand management interventions against the assumptions in the WRMP24. Delivery updated on leakage, smart metering, water efficiency options selected in BVP	Annually as part of WRMP annual return, As part of the regulatory planning cycle in WRMP 29 and beyond
	Performance against demand side targets	Reporting performance on leakage, PCC, NHH consumption and DI reduction targets.	Reported annually as part of WRMP annual return
	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.	Reported annually as part of WRMP annual return
<b>Supply side</b>	Delivery of asset interventions and impact on WAFU including SRO's	Report on the delivery of supply schemes against planned timetable and any impact of WAFU – AM7 schemes in the baseline Report on the delivery of supply schemes against planned timetable and any impact of WAFU – AM8 and beyond – WRMP24 supply schemes	Reported annually as part of WRMP annual return Informing supply forecast assumptions WRMP29
	Impact of Licence Capping and Environmental destination	Assess the outcomes of AMP8 WINEP investigations against the planning assumption in the WRMP24	Reported annually as part of WRMP annual return Informing supply forecast assumptions WRMP29

	Climate change impacts our security of supply	<p>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.</p> <p>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.</p>	As part of the regulatory planning cycle in WRMP 29 and beyond
	Further supply-side interventions	<p>We have a number of supply options screened out between our feasible options list and constrained options list. We will continue development of options through AMP 8, working closely with the local EA teams, and report updates on the status on these options.</p> <p>In addition, for Bournemouth WRZ, we will carry out a full review of additional supply options through AMP8, working collaboratively with EA and Natural England. We will report the latest feasible and constrained list of options for Bournemouth specifically.</p>	<p>Reported annually as part of WRMP annual return</p> <p>Informing supply options for WRMP29</p>
<b>Water resource planning roadmap to WRMP29</b>	Water Supply Modelling	<p>In our WRMP24 we have set out our roadmap to WRMP24 our plans to improve our capability by</p> <ul style="list-style-type: none"> <li>- Improve our water resource zone models</li> <li>- Develop regional modelling tools through the WCWRG</li> <li>- Develop a full suite of rainfall runoff models</li> <li>- Develop our groundwater modelling capabilities</li> </ul>	Progress on delivering our plans reported annually as part of WRMP annual return
	Demand modelling	Continue to develop our understanding of customer demand, with a key focus being the utilisation of increasing volumes of smart meter data that will become available	Progress on delivering our plans reported annually as part of WRMP annual return
	Investment modelling	A new regional investment planning tool will allow the development of strategies optimised across the whole West Country. This tool will be scoped and developed through the regional modelling work package commencing in Autumn 2023.	Progress on delivering our plans reported annually as part of WRMP annual return



## 10.4 Review of our preferred plan

Using the Best Value metrics and strategic considerations explained in Section 7 and by weighing-up the trade-offs between the least cost programme and Best Value programme, we have arrived at a preferred (most likely) Best Value Plan.

In this section, we highlight how this plan meets our legal obligations, policy expectations and contributes to our Best Value objectives by providing benefit to our customers, the environment and wider society whilst remaining affordable to deliver.

### 10.4.1 Bournemouth WRZ

Our plan for Bournemouth WRZ (summarised in Table 40 and illustrated in Figure 35), utilises the same ambitious demand reduction activities as other zones, but in response to the extremely challenging Environment Destination programme, adds a 5-year compulsory metering program in AMP8.

Metering is both the fairest way of charging for water, and the most effective enabler for customer engagement with water efficiency messaging. The identification of Bournemouth WRZ by the EA as a zone with a high level of water stress, opens the option for compulsory metering, and the challenges we face make this a sensible approach.

Licence capping changes will be implemented in 2025/26 in line with the agreed EA plan.

The key driver of the supply demand balance in the Bournemouth WRZ for the rest of the planning period is Environmental Destination which requires reductions in our abstraction to protect the Hampshire Avon. The magnitude of the abstraction reductions required in the Bournemouth WRZ means that over half of the current deployable output is lost by 2050 in our DYCP scenario.

We have set out ambitious metering, leakage, and demand management actions in our plan but these do not mitigate the scale of Deployable Output loss. That leaves supply-side options as the key method of achieving those targets and we require all our available supply options to maintain supplies to our customers whilst ensuring we reduce our abstraction from the Hampshire Avon.

Poole Water Recycling, and the Mendip Quarries scheme are long-term options which will take more than a decade of development. The Mendip Quarry scheme is dependent on the pit reaching the end of its commercial extraction life before it's possible to convert it to a reservoir. Even smaller options, such as aquifer recharge at Longham, will take several years of development before they become available for use and have a high degree of uncertainty. The only option currently available to implement in 2030 is the 1 ML/d Ampress borehole remedial works.

**Table 40:** A summary of our plan for Bournemouth WRZ.

	Description	Delivery date
Licence Capping	-	2025
Environmental destination	-	Phased from 2030-2042
Metering strategy	Compulsory metering	2030
	Smart metering	2035
Leakage strategy	50% reduction	2045
Water efficiency strategy	110 l/p/d	2050
Supply options	Development of additional options	2030
	BNW1 - Ampress borehole	2030
	BNW8 - Poole Water Reuse	2035
	BNW6 - Longham aquifer recharge	2035
	BNW14 - Ibsley Lake	2035
	BNW7 - Mendip Quarry	2042
1 in 500 year drought resilience	From 2025, but not meeting ED ambitions until 2042	2025
Use of drought options	Calls for restraint and TUBs	From 2030 to 2042
Potential adaptations	To be developed to consider additional options	2035

As a result it is currently not possible to achieve the desired timeline for ED abstraction reductions to protect the Hampshire Avon, therefore we have phased our abstraction reductions over the first 17 years of the plan.

In developing this phasing we have taken the approach of bringing each supply scheme into operation as soon as feasibly possible, and using the resource it provides to allow abstraction reductions to be made.

The phasing of these reductions and how they compare to the implementation of supply options is shown in Table 41 below.

**Table 41:** Phasing of reductions in the Bournemouth WRZ.

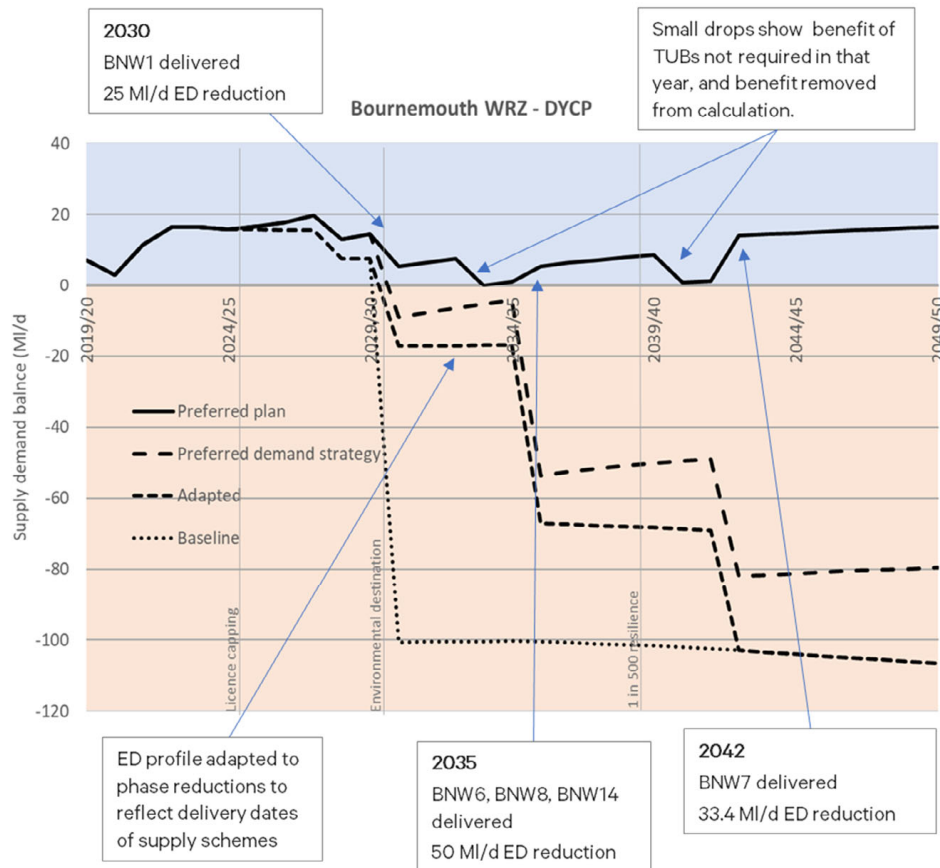
Year	Supply option benefits	ED abstraction reduction on Hampshire Avon (ML/d)
2030	1 ML/d – Ampress borehole (BNW1)	25
2035	25 ML/d – Poole Water Reuse (BNW8) 10 ML/d – Longham aquifer recharge (BNW6) 10 ML/d – Ibsley Lake (BNW14)	50
2042	50 ML/d - Mendip Quarry (BNW7)	33.43



Given the environmental sensitivity of the Hampshire Avon, our best value approach chooses to prioritise Environmental Destination abstraction reductions above the avoidance of drought options. This results in the need to impose TUBs in the zone in a severe drought from 2030 until the completion of the Mendip Quarry scheme in 2042.

This strategy for Bournemouth WRZ, and the phasing of the abstraction reductions will be discussed on an ongoing basis with the Environment Agency to monitor progress and identify future risks and opportunities.

**Figure 35:** Impact of our plans on the supply demand balance in the Bournemouth WRZ – annotated to show where the plan affects changes.



### 10.4.2 Colliford WRZ

Our plan for Colliford WRZ (summarised in Table 42 and illustrated in Figure 36), utilises the same ambitious demand reduction activities as other zones to meet the 2050 EIP objectives.

Feedback from our public consultation pushed us to consider earlier delivery of leakage reduction targets and our dWRMP targets delivery of the 50% reduction 5 years early, by 2045.

In response to the drought of 2022 and increased levels of demand, we are investing in demand reduction and supply-side schemes in AMP7 to restore drought resilience to the zone. The delivery of schemes such as Porth Rialton, Blackpool Pit, and South Cornwall desalination will allow us to achieve 1 in 500 year drought resilience in 2025. Our constraint in the WRZ then becomes the capacity of Restormel water treatment works (WTW).

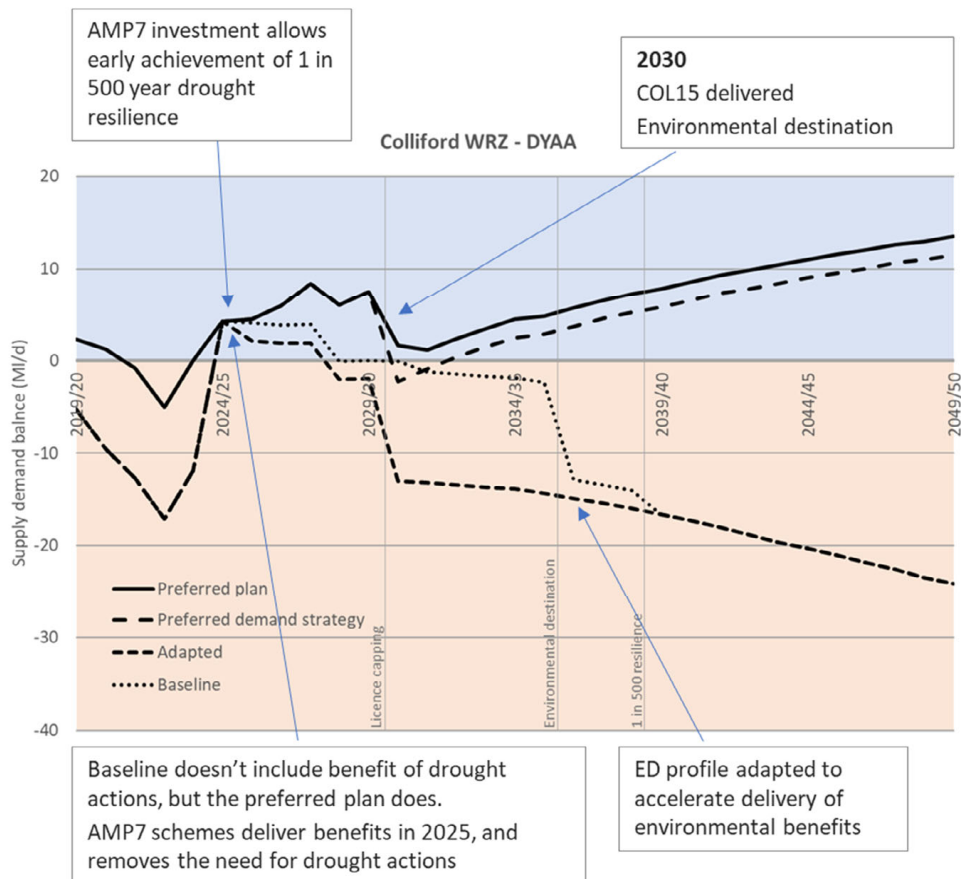
In order to meet our Environmental Destination objectives and ensure Sustainable Abstraction we will deliver an expansion of Restormel WTW in 2030 from 100 ML/d to 110 ML/d. This will utilise the additional raw water resource from our AMP7 desalination scheme. It will increase Colliford WRZ WAFU by 2 ML/d through better usage of Colliford Reservoir, the River Fowey and additional new water resources delivered in AMP7 (Desalination and Blackpool).

**Table 42:** A summary of our plan for Colliford WRZ.

	Description	Delivery date
Licence Capping	-	2030
Environmental destination	-	2030
Metering strategy	Smart metering	2035
Leakage strategy	50% reduction	2045
Water efficiency strategy	110 l/p/d	2050
Supply options	COL15 – Restormel WTW to 110 ML/d	2030
1 in 500 year drought resilience	-	2025
Use of drought options	Calls for restraint and TUBs	From 2030 to 2031
Potential adaptations	Required in medium adaptive pathway: COL22 – Roadford to Colliford transfer	AMP10

As the strategic WTW in the WRZ, Restormel can support the smaller local sources across the entire WRZ, and its expansion can therefore be used to provide multiple benefits. Among those benefits are ensuring growth in tourism in the region continues to be supported wherever it occurs, and enabling future ED reductions that are required on smaller local sources.

**Figure 36:** Impact of our plans on the supply demand balance in the Colliford WRZ – annotated to show where the plan affects changes.



Our plan identifies a risk in the Colliford WRZ in more challenging plausible futures if population or tourism growth is higher than expected, or if our planned demand reduction measures do not deliver the benefit we expect. In such a scenario, growth could cause a localised deficit in East Cornwall even though our WRZ total supply-demand balance remains in surplus.

Our plan identifies an increased transfer from the Roadford WRZ to Colliford via expansion of the existing Saltash treated water transfer as a mitigation for this risk.

This relies on delivery of the Lyd and Gatherley pumped storage schemes in AMP7 for Roadford Reservoir provides sufficient raw water for this transfer, and Mayflower WTW has sufficient capacity to treat the export to Colliford WRZ.

Our monitoring plan to identify any need to switch to this alternative pathway is described in Section 10.3 of this plan.

### 10.4.3 Roadford WRZ

Our plan for Roadford WRZ is summarised in Table 43 and illustrated in Figure 37.

**Table 43:** A summary of our plan for Roadford WRZ.

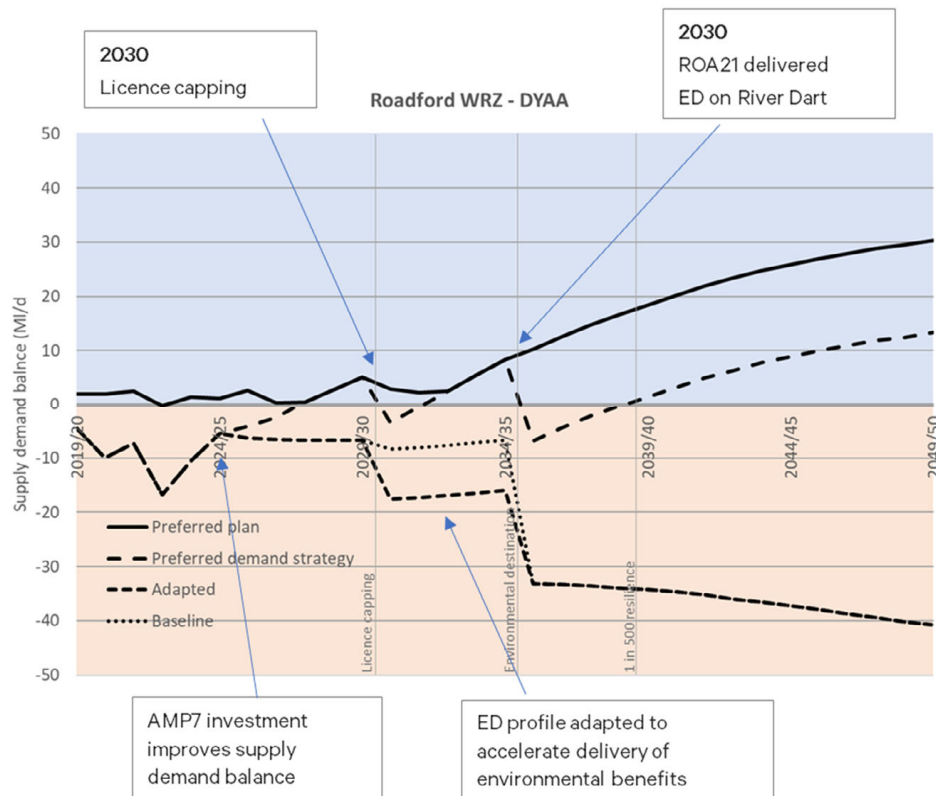
	Description	Delivery date
Licence Capping	-	2030
Environmental destination	-	River Dart in 2035 All others in 2030
Metering strategy	Smart metering	2035
Leakage strategy	50% reduction	2045
Water efficiency strategy	110 l/p/d	2050
Supply options	ROA21 - Roborough to Littlehempston transfer	2035
1 in 500 year drought resilience	-	2025
Use of drought options	Calls for restraint and TUBs	Until 2026, and from 2030 to 2031
Potential adaptations	Required in medium challenge adaptive pathway:	
	ROA17 – Littlehempston distribution improvements	AMP9
	ROA7 - Northcombe expansion	AMP10

Feedback from our public consultation pushed us to consider earlier delivery of leakage reduction targets and our dWRMP targets delivery of the 50% reduction 5 years early, by 2045.

In 2022/23 we delivered the River Lyd pumped storage scheme, improving the resilience of Roadford Reservoir to multi-season drought, and increasing the amount of raw water available in the WRZ in the event of a drought. Later in AMP7 we will be completing a second scheme from Gatherley on the River Tamar, which will provide additional drought resilience for the reservoir and wider WRZ.

Together with our demand program for AMP8, we will remain in a supply-demand surplus in Roadford WRZ, although this will be dependent on the use of TUBs early in the planning period.

**Figure 37:** Impact of our plans on the supply demand balance in the Roadford WRZ – annotated to show where the plan affects changes.



The AMP7 pumped storage schemes overcome the current Roadford WRZ constraint around the amount of raw water available in a drought. After the implementation of these schemes, WAFU is constrained by the amount of water that we can treat and distribute around the south-eastern and northern parts of the WRZ. Being constrained by treatment works capacity, and not raw water availability in a drought, means our WRZ WAFU is the same in both a 1 in 200 and 1 in 500 year drought. Therefore, Roadford will be resilient to 1 in 500 year droughts from the start of the planning period in 2025.

This resilience and the enhanced raw water availability in Roadford Reservoir means that licence capping can be implemented in 2030, along with ED abstraction reductions on the rivers Tamar and Tavy, which have limited impact on WAFU due to their low utilisation rate.

The largest impacts of ED in Roadford WRZ are on the River Dart which supplies Littlehempston WTW, particularly during the peak summer period. The required reductions will reduce WAFU by 17.0 ML/d, and result in insufficient water being available to supply demand in the South Devon area.

A new raw water main between Roborough and Littlehempston, to supplement the existing South Devon Spine main which doesn't have the capacity to transfer all the water required, will allow additional water to be made available at Littlehempston WTW.

The increased resilience of Roadford Reservoir storage during drought provided by the Lyd and Gatherley pumped storage schemes will allow releases to our intake on the River Tamar at Gunnislake.

From there, the water will be abstracted and pumped to Roborough using our existing assets, and subsequently transferred to Littlehempston using the combination of our existing spine main, and this new pipeline.



This transfer will directly replace the River Dart abstraction, meaning that our Environmental Destination abstraction reduction can be made without impacting WRZ WAFU. This scheme is planned to allow us to meet the requirement to meet our ED commitment in 2035.

Pursuing a raw water transfer means that existing treatment capacity at Littlehempston can continue to be utilised, and demand can be met without putting additional pressure on other WTWs in the zone.

Similar to Colliford WRZ, more challenging plausible futures could result in deficits in the northern and south-eastern parts of the zone. We have identified an alternative pathway to mitigate this risk, which improves the Littlehempston WTW distribution system (ROA17) and expands Northcombe WTW (ROA7) both of which utilise the additional raw water available in Roadford Reservoir.

Our monitoring plan to identify any need to switch to this alternative pathway is described in Section 10.3 of this plan.

#### 10.4.4 Wimbleball WRZ

Our plan for Wimbleball WRZ is summarised in Table 44 and illustrated in Figure 38.

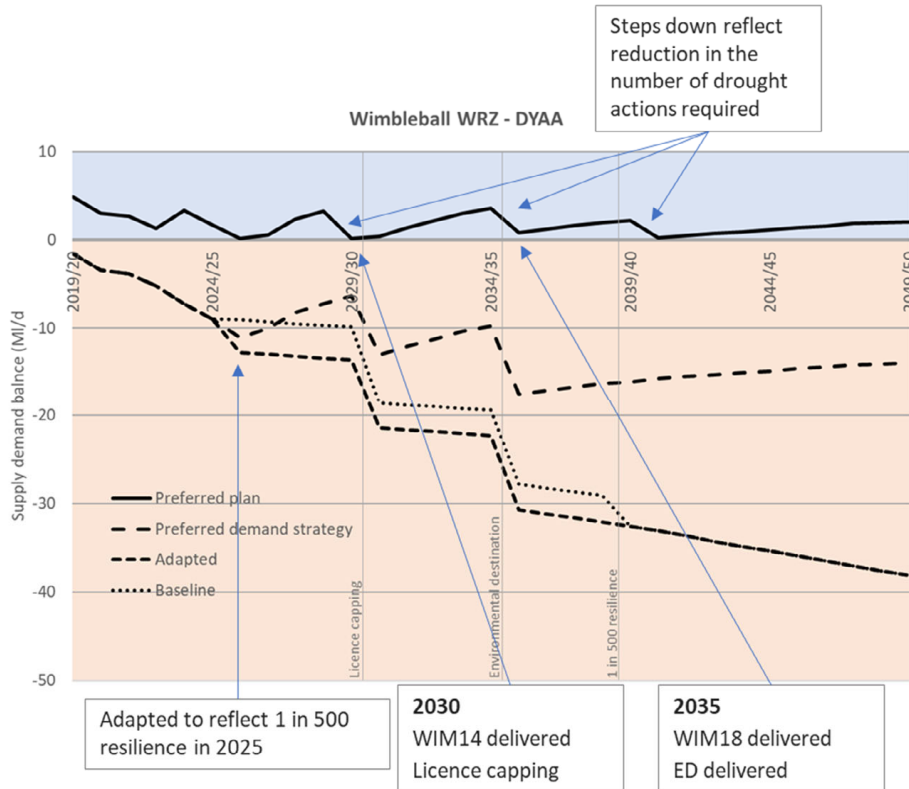
**Table 44:** A summary of our plan for Wimbleball WRZ.

	Description	Delivery date
Licence Capping	-	2030
Environmental destination	-	2035
Metering strategy	Smart metering	2035
Leakage strategy	50% reduction	2045
Water efficiency strategy	110 l/p/d	2050
Supply options	WIM14 – Whitecross distribution improvement	2030
	WIM18 – Cheddar 2 to Bickham SR	2035
1 in 500 year drought resilience	-	2025
Use of drought options	Calls for restraint and TUBs	Until 2040
	Supply side drought permits	Until 2035
Potential adaptations	Required in medium challenge adaptive pathway: WIM5 – Water reuse stream support for Dotton WTW	AMP10
	Required in high challenge adaptive pathway: WIM12 – Allers Springs	AMP10
	WIM11 Couchill Springs	AMP10
	WIM2 – Sidford Borehole	AMP10

Feedback from our public consultation pushed us to consider earlier delivery of leakage reduction targets and our dWRMP targets delivery of the 50% reduction 5 years early, by 2045.

Our AMP7 demand reduction program is expected to deliver sufficient benefit that Wimbleball WRZ is resilient to 1 in 500 year drought from 2025. This resilience is dependant on both TUBs, and supply-side drought permits.

**Figure 38:** Impact of our plans on the supply demand balance in the Wimbleball WRZ – annotated to show where the plan affects changes.



The Wimbleball WRZ is constrained by the availability of raw water, which makes it particularly susceptible to climate change, and abstraction licence reductions.

The supply demand surplus is eroded by licence capping which requires supply-side investments to address. Our best-value planning identifies the Whitecross distribution improvement scheme (WIM14) as the way to resolve this. As well as providing a WAFU benefit, this scheme allows more Wimbleball Reservoir water to be moved from the western part of the zone, into the East Devon groundwater supplied area. Not only does this provide sufficient water from the WRZ’s strategic source to allow licence caps to be applied, but it also helps to mitigate the outage risk in East Devon.

The ability to move water westwards is essential in being able to implement the ED plan for Wimbleball WRZ. The size of the required abstraction reductions required in East Devon and River Exe exceeds the capacity of the local options we have identified to address it and we therefore require the larger Cheddar 2 Reservoir SRO in our plan. The water provided by that scheme not only allows ED to be achieved, but also improves the supply demand balance sufficiently to remove the requirement to use supply-side drought permits in severe droughts.

The impact of the licence capping, and ED abstraction reductions are significant in the Wimbleball WRZ, which is also sensitive to climate change, and is forecast to be our area with the fastest growing population. These challenges combine to make demand reduction measures

particularly important, and we have considered adaptive pathways under more adverse plausible futures such as those that will be experienced if demand doesn't reduce to the targeted levels.

In a medium challenge future, local options such as water recycling or reuse to provide stream support at Dotton WTW (WIM5) will provide additional resource benefit. This location of this benefit is optimal in supporting an area that will be affected by both licence capping and ED.

In a higher challenge future, further local options will be required, such as Allers Springs (WIM12), Couchill Springs (WIM11), and Sidford Borehole (WIM2) to provide additional raw water to meet our ED objectives.

The schemes we have identified in our adaptive pathways are all relatively small, and each can provide benefit that resolves the key WAFU constraint of raw water availability. We will continue to further develop these schemes to refine our understanding of the environmental considerations and potential benefits of them. As we do this the relative costs and benefits may change the order in which we would seek to implement them.

In parallel with this we are pursuing the development of additional options within the WRZ to allow our WRMP29 to benefit from more choices over the schemes it considers. A focus of our planned work is on investigating the potential of water reuse schemes, and Wimbleball WRZ offers options for future implementation of this technology.

We will liaise with the EA regularly to update them on our scheme development and any changes to our adaptive pathways this may drive in WRMP29.

Our monitoring plan to identify any need to switch to this alternative pathway is described in Section 10.3 of this plan.

#### 10.4.5 Isles of Scilly WRZ

Our plan for the Isles of Scilly WRZ is summarised in Table 45 and illustrated in Figure 39.

Our AMP7 desalination strategy for the Isles of Scilly delivers a climate resilient supply in 2025. This puts the zone into a healthy supply demand surplus that is maintained through the planning period. The level of this surplus means that additional supply schemes and adaptations to the plan are not required even under high challenge potential futures. Drought options will not be required after implementation of the strategy.

Along with desalination, our AMP7 strategy will also deliver full smart metering by 2025. This will help to further engage a population who are already aware of a lack of available water in the WRZ, and hence place a higher value on water than much of the mainland population.

We are planning to meet company level EIP 2050 targets, but these are not specifically met on the Isles of Scilly in isolation. We are planning ambitious demand reduction actions across the Islands, but there are some key differences that make the zone unique. Firstly, the residents have not benefitted from a resilient water supply in the past and are acutely aware of the importance of water efficiency. A second factor is the impact of tourism, which doubles the zone's population in the summer.

The distribution network is relatively compact, and much of it is above ground. This means that leakage is already relatively low, and there is little potential for further reductions. Therefore, we are planning to maintain the existing low leakage levels.

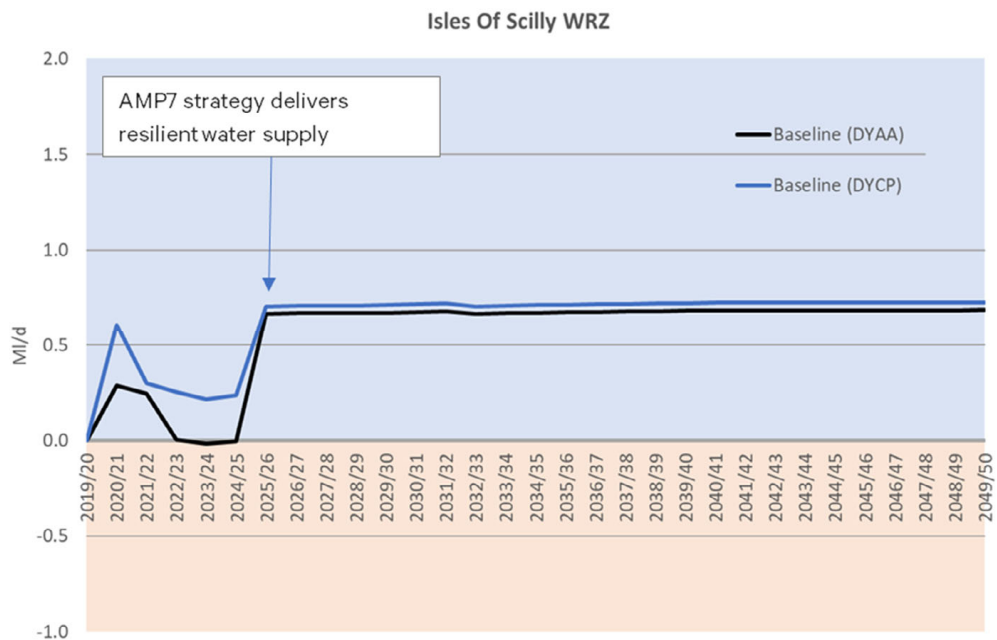
A proportion of the consumption of tourists takes place within household properties, such as holiday lets and B&Bs. As PCC is calculated based on resident population, this additional tourist consumption leads to a high reported value and makes the achievement of the 110 l/p/d unrealistic. We are however targeting a reduction of 36% over the plan period to a PCC of 121 l/p/d in 2050.

Licence capping and ED have not been assessed for the islands as neither we nor the EA have baseline data to facilitate this analysis. We are continuing to expand our environmental data collection for the Islands and will use this to understand the sustainability of our abstractions for full consideration in our 2029 WRMP.

**Table 45:** A summary of our plan for Isles of Scilly WRZ.

	Description	Delivery date
Licence Capping	-	NA
Environmental destination	-	NA
Metering strategy	Smart metering	2025
Leakage strategy	50% reduction	NA
Water efficiency strategy	110 l/p/d	NA
Supply options	None required	NA
1 in 500 year drought resilience	-	2025
Use of drought options	-	NA
Potential adaptations	None required	NA

**Figure 39:** Impact of our plans on the supply demand balance in the Roadford WRZ – annotated to show where the plan affects changes.





#### 10.4.6 How our plan contributes to climate change mitigation

Our preferred plan supports the achievement of our net zero targets, by optimising our programme to maximise the monetised benefits from carbon and willingness to pay.

Our chosen programme has an ambitious demand-side strategy, that looks to reduce our distribution input to meet our regulatory targets in a way that is affordable to customers. All demand side reductions reduce the operational carbon from water-treatment and water-distribution.

The Total Carbon from our demand-side strategy (across metering, leakage and water efficiency) is overall net-positive by 2045, saving 1500 tCO<sub>2</sub>e, rising to 2370 tonnes tCO<sub>2</sub>e by 2049-50).

Our chosen supply-side strategy has a total carbon of 0 tCO<sub>2</sub>e in 2025 and 280,000 tCO<sub>2</sub>e in 2050.

#### 10.4.7 Impact on our Best Value objectives

##### Objective 1: Protect and enhance the environment

Considering the environmental impacts of our plans is integral to best value decision-making. We considered the performance of options and plans against this objective through three best value metrics: the value customers place on leaving water in the environment; changes in biodiversity; and changes in carbon emissions. There is also significant overlap with Objective 3 (Deliver wider societal benefit) where we have considered a broad range of natural capital impacts (exceeding the minimum requirements of WRPG).

As the least cost plan focuses on minimising financial costs, it results in poorer performance on environmental and biodiversity considerations. On the other hand, the best value plan is designed to balance financial costs with environmental and social benefits, resulting in better performance against these best value metrics.

The core of our commitment to protecting and enhancing the environment lies in our choice of water supply options. The best value plan places a strong emphasis on sustainability by relying on supply options that increase the availability of water through sustainable sources. This approach involves investments in new infrastructure and responsible water management practices. While these actions may initially generate some environmental impacts such as additional carbon emissions, they are instrumental in ensuring the long-term health and resilience of our natural ecosystems.

In contrast, the least cost plan leans heavily on drought orders and permits, which, while potentially having a less immediate environmental impact, are often less sustainable and resilient in the long-term. These emergency measures can disrupt aquatic ecosystems, lead to higher water temperatures, and concentrate pollutants in our water bodies. They represent short-term solutions that may not adequately address the challenges posed by climate change and growing water demand.

##### Objective 2: Ensure resilience of water supply

It is a requirement of WRMP24 that we increase our resilience to droughts. We have embedded this in our decision-making process through an explicit best value objective and metric regarding our resilience to water shortages. Our objective seeks to deliver a drought resilient and secure water supply to all our customers.

The best value plan is designed to bolster the long-term resilience of our water supply system. It relies on supply options and the development of new infrastructure to increase the availability of water from sustainable sources. This approach not only ensures a consistent and reliable water supply, but also reduces our dependence on short-term emergency measures like drought orders

and permits. By investing in these supply options, we are proactively diversifying our water sources and minimising the risk associated with over-reliance on vulnerable sources and achieving our Environmental Destination targets faster.

In contrast, the least cost plan leans heavily on drought orders and permits, which, while potentially having a less immediate environmental or economic impact, may fall short in terms of long-term resilience for our public water supply. These emergency measures offer short-term relief but can leave our water supply vulnerable to the increasing challenges posed by climate change and growing water demand. They may not provide the sustainable, long-lasting solutions needed to ensure our water supply remains resilient over time.

### **Objective 3: Deliver wider societal benefit**

Delivering affordable customer bills and improved environments for human benefit is a crucial part of our best value decision-making framework. We have appraised options and potential programmes on their ability to improve natural capital ecosystem services and deliver on our customers' wider priorities and preferences.

While it is acknowledged that the best value plan may result in higher costs for our customers compared to the least cost plan, it is important to consider the broader societal benefits it brings. The best value plan represents an investment in long-term sustainability and resilience. By choosing this path, we aim to reduce the risk of future water supply disruptions, which could have significant economic and social benefits.

Additionally, the best value plan aligns with our commitment to environmental stewardship. It promotes responsible water management practices and reduces our environmental footprint, which, in the long term, can translate into improved human health and well-being. Clean and abundant water resources are vital for supporting agriculture, industry, and public health.

Furthermore, our customers' preferences are evolving, with many expressing a desire for environmentally responsible solutions and sustainable practices. The best value plan aligns with these evolving priorities, ensuring that our services not only meet current customer expectations but also anticipate and respond to changing societal values.

### **Objective 4: Ensure affordability for our customers**

The WRPG makes it clear that best value decision-making should consider affordability to customers alongside social and environmental impacts. Our decision-making framework includes explicit consideration of total capital and revenue expenditure, and in turn the likely impacts on customer bills.

While the best value plan may result in a higher initial cost to our customers, it is a forward-looking investment that yields significant long-term benefits. This plan focuses on enhancing our water supply resilience and demonstrates our commitment to environmental and societal well-being. In the long run, the best value plan reduces our vulnerability to water scarcity, ensuring a consistent and reliable water supply even during challenging conditions such as droughts or climate change-induced disruptions.

This resilience protects our customers from the potentially higher costs and inconvenience associated with water shortages. Moreover, the best value plan incorporates sustainable practices that minimise the adverse environmental impact of our operations. By reducing reliance on emergency measures like drought options, we contribute to the preservation of aquatic ecosystems, maintaining healthy waterways for both wildlife and future generations.

Additionally, our commitment to this plan demonstrates social responsibility. It ensures that communities have access to clean and safe water for drinking, agriculture, and industry. This not

only enhances the quality of life for our customers but also supports economic stability and growth.

#### **Objective 5: Optimise land use**

Finally, our decision-making framework must explicitly consider the findings of the Strategic Environmental Assessment (SEA). The purpose of the SEA is to evaluate the effects of the plan and reasonable alternatives considering the geographical scope of our plans. The SEA results have informed our decision-making process through the inclusion of a dedicated objective and associated metrics.

Our best value plan may register more significant adverse impacts through the SEA. However, this outcome is not a reflection of a less environmentally responsible approach but rather a result of the limitation of the assessment's scope at this stage of the planning process. We are developing a plan-level SEA for our Best Value plan and this will be complete by the time of our statement of response.

The results of the current assessment (from option-level information) are driven by a greater level of construction activity under our Best Value plan, including the development of new infrastructure. While this may introduce short-term environmental effects, these impacts are necessary for long-term sustainability.

By investing in robust infrastructure and sustainable water management practices, we aim to reduce our reliance on emergency measures like drought options, which can have their own set of environmental consequences when frequently employed.



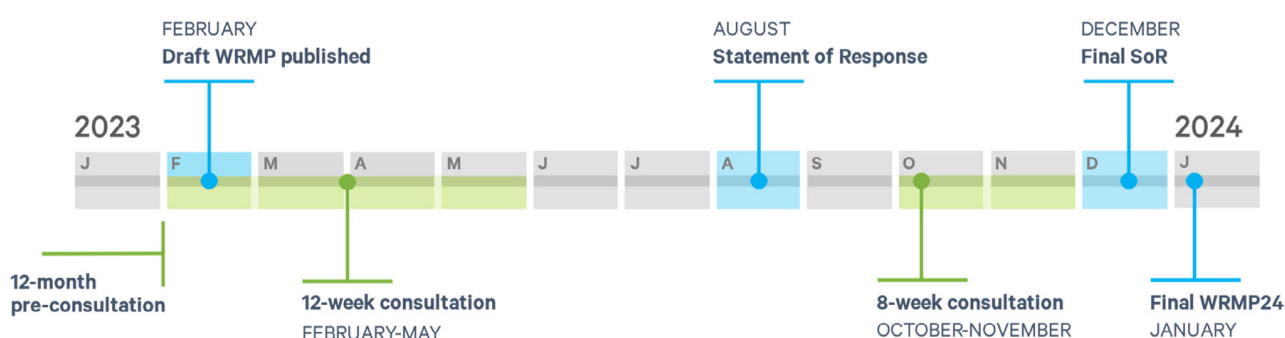
## 11 NEXT STEPS

### 11.1 Second public consultation and preparation of final plan

Following the second consultation, we will publish an updated SoR which will show all the changes and updates we have made in response to the feedback received during the production of the plan.

Having worked with Defra and our regulators to finalise the revised dWRMP, we will publish the final WRMP 2024 in January 2024.

Figure 40: Timeline for the creation of our WRMP 2024.



### 11.2 Annual review process

The purpose of the Annual Review process for us to report to our regulators on the progress we have made with implementing the WRMP and to identify if there are any material changes to the plan required. We are fully committed to collaborating with our regulators on an ongoing basis to deliver our adaptive approach to our WRMP.

### 11.3 AMP8 Investigations

We have worked closely with environmental regulators (the EA and where required NE) to develop a comprehensive water resources WINEP programme for AMP8.

Our WINEP programme includes investigations designed to ensure our abstractions are compliant with current environmental requirements, for example the Water Environment Regulations. For AMP8 a new driver 'Environmental Destination' driver has been added – this considers the sustainability of our water resource sources with future pressures, particularly climate change and population growth.

Our programme of works covering current sustainability is linked to statutory WINEP drivers. These investigations link directly to obligations in the River Basin Management Plan (RBMP) to prevent deterioration to the environment because of our activities and deliver against Water Resource Management Plan objectives to nurture the environment while providing resilient water resources to meet the needs of our customer base. Where required, these investigations will include options appraisals to improve sustainability at our sites, which will inform future iterations of the WRMP.

Our programme of investigations assessing water resource sustainability against future pressures is being delivered under the new environmental destination (ED) driver. These investigations will



consider the impact of climate change, population growth and land use change on our water resource sources up to 2050 and assess whether sustainability changes will be required.

Our aspirations for long-term water resources resilience and security for our customers, society and the environment has led to us developing a comprehensive ED Investigation programme in PR24.

In addition to our catchment-based ED investigations, we are also delivering a statutory investigation into our contribution to meeting future water resource challenges at a regional level.

Full details of all our planned investigations are provided in Appendix 1.

## 11.4 Our roadmap to WRMP29

Our last WRMP19 problem characterisation classed our WRZs to be of low level of water resources concern, meaning that less complex approaches could be used for water resources planning. This is in line with the position for the last few plans, so therefore our modelling tools and methodologies have been designed around this level of concern.

For this plan the level of concern has increased, primarily because:

- Licence capping and Environmental Destination abstraction reductions will reduce the deployable output of our resources and are forecast to push some zones into significant supply-demand deficits in the longer term.
- During the Covid pandemic we saw an unprecedented increase in demand, resulting in current deficits within our Colliford and Roadford WRZs.

In addition, recent planning guidance has increased the complexity of the planning process through changes such as regional planning, stochastic analysis, and environmental information. These factors have all emerged in the last few years, giving limited time to develop the more complex methods required to meet planning guidelines and deliver the work required for WRMP24 in parallel.

While we have sought to meet as many of these requirements as possible, we acknowledge that there are improvements to be made for WRMP29 and beyond. In this section we outline how we will seek to make those improvements.

### 11.4.1 Water Supply Modelling

There are several outcomes that we're seeking to achieve through changes to our supply modelling:

- Improved links with regional planning.
- Improved modelling of surface water and groundwater sources under a range of climate change and drought scenarios.
- An understanding of how our water resources system respond to a wider range of plausible droughts.

The key steps we will be taking to achieve these outcomes are:

- **WRZ resources models:** We will review and enhance our own water resources modelling. This activity will consist of several aspects and given the scope of the work it will run continuously until we focus on WRMP29 development in 2027.

We currently use the Miser package for our resources modelling, we will review alternatives to determine whether this is the best solution in the long-term and acquire a replacement if required. Switching to another package will require model build and calibration, which is a significant undertaking. Regardless of our decision around the modelling package, we will also seek to review the parameters, assumptions, and operation of our models to give the optimum

balance between complexity and the time it takes to run the models. This may require multiple models of each WRZ and the region to serve different purposes. For example, simplified models will allow many stochastically generated droughts to be tested against our systems to identify droughts of interest (the regional model may be able to fulfil this role). More detailed models could then be used to further examine the response of our resources to these.

These models will allow us to test the system resilience of our conjunctive use WRZs in a way that our current models do not allow us to.

- **Regional modelling tools:** In partnership with our WCWRG partners we will be commencing a regional modelling development programme during 2023. This will cover both a regional water resources model, which will help us better understand how we can utilise resources across all member companies to provide greater efficiency and drought resilience. It will also be an essential step towards helping to develop regional water resources schemes, and distribute the water efficiently, greatly supporting the SRO programme.
- **Rainfall-runoff models:** Our 2024 WRMP utilises 10 rainfall runoff models to estimate how a range of droughts may affect our key reservoirs and river abstractions. We will develop a full suite of rainfall runoff models to allow us to better capture the variance in response across all our resources.
- **Groundwater models:** In parallel with the rainfall runoff models, we will further develop our groundwater modelling capabilities to provide better estimates of the response of our groundwater sources to future climate change and droughts.

Given the extent of the resources challenge in the Bournemouth WRZ, there will be particular focus on developing a model to provide further insight for our continued strategy development. This will be developed to be complementary to the EA's Wessex Basin model, providing us with an internal modelling capability to develop insight and strategy, which can at key points be tested against the more complex EA model.

The timeline for the development of these tools is shown below. Introducing new tools and methods into our supply modelling will be a key focus as we prepare for WRMP29.

#### 11.4.2 Demand modelling

We will continue to develop our understanding of customer demand, with a key focus being the utilisation of increasing volumes of smart meter data that will become available. This will provide a step-change in our understanding of demand and the factors that influence it and provide greater certainty in the base position on which our forecast will be built.

We also plan to undertake more statistical modelling of existing data to provide greater insight into seasonal demand patterns, and how it is affected by factors such as weather and tourism.

Continued collection of demand data from the Isles of Scilly will inform both seasonal, and long-term strategy in a way that hasn't been possible in the past.

These improvements will be driven by continued analysis through the period to WRMP29, rather than the development of specific tools.

#### 11.4.3 Investment modelling

A key focus for our investment modelling is to develop a regional capability that will shape the 2029 WRMPs for WCWRG's member companies.

A new regional investment planning tool will allow the development of strategies optimised across the whole West Country. This tool will be scoped and developed through the regional modelling work package commencing in Autumn 2023. The development of which is then expected to begin in 2024.

### 11.4.4 Options development

The forecast supply demand surplus that was a common feature in previous plans meant that previous options development work was limited and aimed at smaller local options to improve efficiency and resilience.

The large deficits in this plan, driven by increased demand, and abstraction reductions, highlighted the need for a much wider range of options, particularly in the Bournemouth and Wimbleball WRZs. While we were able to develop several new options, more will be required to allow significant planning choices to be made in WRMP29.

We will use the time between this plan and the next one to identify, explore, and develop a wider range of options for inclusion in WRMP29. Where relevant these will be integrated in our regional water resources models to assess the benefit to WCWRG and assess their conjunctive deployable output. In addition to more traditional schemes, we will put particular focus on feasibility studies to understand the potential for water reuse options.

### 11.4.5 Overview

While the tools and knowledge described will have benefits across a range of our activities, a key objective in their delivery is to be able to meet good practice in the development of WRMP29. To ensure we meet that objective we will seek to work closely with the Environment Agency as we develop our capability, ensuring that we are able to provide confidence in the WRMP29 building blocks that will underlie our future strategies.

While the initial focus of our development must be on meeting the WRMP29 requirement, we will seek continual improvement beyond this to ensure we remain at the forefront of the sector’s capability in the future.

The timeline below shows our high-level plan for developing these tools.

	2023	2024				2025				2026				2027
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
WRZ resources models	█	█	█	█	█	█	█	█	█	█	█	█	█	Develop draft WRMP29
Regional water resources model	█	█	█	█										
Rainfall runoff models		█	█	█	█									
Groundwater models		█	█	█	█									
Regional investment planning tool		█	█	█	█	█	█	█	█					







**South West**  
Water



**Bournemouth**  
Water

South West Water Limited, Peninsula House, Rydon Lane, Exeter EX2 7HR, Registered in England No 02366665

This document is available in different formats.