Keeping water flowing for the future

A summary of our draft Water Resources Management Plan 2024:
A plan to provide a secure water supply for our growing population, protect against the growing risk of drought and water shortages, and improve the environment

For consultation with our customers and stakeholders

Welcome to our draft Water Resources Management Plan 2024

This document is a summary of our draft plan. It highlights the challenges we face for our future water supply and sets out how we plan to continue delivering life's essential service for all our customers while caring for our environment and helping the economy over the next 50 years. We're consulting on our draft plan and want to hear your views, so please tell us what you think.

Contents

Water is essential for everyone

Every day we turn on our taps to fill glasses of water, make cups of tea, wash, cook and clean. We rely on water to run our schools, hospitals and businesses – not just ones we usually associate with water, like car washes and hairdressers, but every industry. And we need it to keep the world around us healthy too.

Water is essential for…

Our society

- We all need water for everything from drinking, cooking, cleaning and washing to flushing the toilet, watering green spaces and doing the laundry
- Across London and the Thames Valley, we get through around 2.6 billion litres every single day
- We forecast that we'll need an extra 1 billion litres of water every day for our customers by 2075

Our economy

- With nearly as many businesses as the rest of the UK put together, the South East makes up around 37 % of the national economy
- As a water company in the South East, we contribute billions by supplying water (and energy) to industries as well as by investing in infrastructure and jobs
- Not having enough water to go around would cost London's economy alone around £500 million each day

Our environment

- Our rivers sustain entire ecosystems and are home to over three million species of plants and animals
- Our nature reserves and reservoirs provide green spaces to relax, unwind and enjoy
- With over 20 % of the UK's chalk streams in our area, it's our responsibility to take care of them as part of our operations

It's our job to provide a reliable supply of safe drinking water to around 3.8 million homes and 216,000 businesses across London and the Thames Valley. But the water resources we rely on are under pressure, and this is increasing all the time. We must find ways to adapt to our changing climate, supply water to more people as our population grows and reduce the amount of water we take from our rivers to protect the environment. We also need to plan ahead and invest in our infrastructure so that our water supply is resilient for future generations. It's a huge challenge that we're taking very seriously.

Planning ahead to protect our water supplies

Through Water Resources South East (WRSE), we've worked with the five other water companies in the South East – Affinity Water, Portsmouth Water, SES Water, South East Water and Southern Water – to develop a regional plan addressing our future water challenges. Your views, and the views of our stakeholders, are helping to shape this plan.

This document is a summary of our draft Water Resources Management Plan 2024 (WRMP24). It reflects the draft WRSE regional plan, but it focuses on our supply area only. It sets out how we intend to provide a secure and sustainable water supply for you over the next 50 years, looking ahead to 2075. It highlights the challenges we face and the actions we plan to take to maintain the balance between water supply and demand. It includes measures to make sure we're all using water efficiently and losing less through leaks. It also explains why it's important that we work together to reduce our water usage, sets out why we need to invest in new sources of water and promotes our plans to work with nature.

We review this plan every five years. This draft builds on our previous plan, WRMP19. We've taken a collaborative approach in its development – the plan complies with the legal requirements and policies set by the government and our regulators. In accordance with the National Framework, it also reflects the WRSE regional plan.

We need to make timely decisions about our future water supply. The choices we make now will shape the water supply we can provide for future generations for many years to come as well as help us protect our environment. Once you've read our draft plan, we'd like to hear from you. Knowing what matters most to you will help shape our long-term ambitions and our final WRMP24.

Rain, rain, don't go away

Many people think we have plenty of water, but our region is actually one of the driest in the UK. In 2021-22, ten out of 12 months had below-average rainfall, and July 2022 was the driest on record. Not only that, we also had record-breaking temperatures in July of over 40°C. The long, dry period combined with unprecedented hot weather had a huge impact on our rivers and streams, with many of the smaller ones at perilously low levels or even running dry. Demand for water also soared, which is why we introduced a temporary hosepipe ban in August. We need to plan properly now to secure a plentiful supply of water for you, your community and the environment.

How you can get involved

Help keep water flowing for the future by sharing your feedback on this draft plan.

Your feedback will help safeguard water supplies for future generations.

Throughout the document you'll see this symbol, which highlights the topics we'd like your feedback on. To read how to submit your comments, please go to page 29.

We've also published more detailed documents – a technical report and appendices – which explain our draft plan in more detail. This symbol signposts the relevant sections of the technical report if you want to read about a topic in more detail. The technical report and appendices are available on our consultation website thames-wrmp.co.uk

Where your water comes from

Every day we supply over 10 million customers with around 2.6 billion litres of water – enough to fill 1,000 Olympic sized swimming pools. Every drop of this water comes from the environment around us.

We take water from rivers and natural underground sources called groundwater. The Environment Agency regulates how much water we can take from the environment. We store water from rivers in large reservoirs until we need it, treating it to a high standard before distributing it to homes and businesses through our 20,000-mile network of pipes. Once it goes down the drain, we treat it again before it's returned to rivers.

Our supply area follows the River Thames and stretches from Gloucestershire in the west to Essex in the east. We've divided this into six areas, called water resource zones, helping us plan our service to customers at a more local level.

To read more, go to Section 1 of the WRMP24

London – Water is mainly taken from the River Thames and the River Lee and stored in reservoirs in South-West London and the Lee Valley. The remainder (roughly 20 %) comes from groundwater. We also have a desalination plant in London for use in drought.

Swindon and Oxfordshire – Water is mainly groundwater (60 %) taken from the upper Kennet Valley and the Cotswolds, and we have a water main from Gatehampton. We also take water from the River Thames and have a reservoir at Farmoor, near Oxford.

Kennet Valley – Around 50 % of water is pumped directly from the River Kennet to a treatment works. The other 50 % comes from groundwater.

Guildford – Around 50 % of water is pumped directly from the River Wey to a treatment works. The other 50 % comes from groundwater.

Slough, Wycombe and Aylesbury – All water comes from groundwater, mainly from sources close to the River Thames.

Henley – All water comes from groundwater, mainly from sources located near to the River Thames.

Thames Water in context

- Our water supply area is one of the most intensively used catchments in England. Around 90 % of the water we take from the environment supplies homes and businesses – the rest is used in energy generation, agriculture and other areas.
- Most people think we get plenty of rain, but London gets less rainfall each year than Rome, Istanbul and Sydney. The South East of England, including our supply area, is classified as "seriously water stressed" by the Environment Agency.
- London and the Thames Valley is already one of the most densely populated parts of the country, and the number of people living and working here is forecast to grow significantly. By 2050, we forecast there will be around two million more people living in our area, and by 2075, we forecast the population will rise to over 13 million.
- We live in a precious and unique natural environment. The Thames Valley is home to over 20 % of the UK's chalk streams, and it's our responsibility to take care of them as part of our operations. We plan to reduce abstraction to sustainable levels by 2050, targeting reductions in vulnerable catchments first.
- We're committed to playing our part to tackle climate change. We're working towards net zero carbon by 2030 for our operations and to become a carbon negative business by 2040.
- We're working with all our customers to encourage them to use water wisely. We've installed almost 700,000 smart water meters so far, and over 50 % of our household customers now have a water meter. Our work has shown that having a meter could help you use around 13 % less water.
- Reducing leakage is a priority for us. Right now, around 24 % of the water we supply is lost through leaks from our own network and customer pipes. We know it's not acceptable to be losing so much precious water and we've got a plan to fix it. We've met our target for the last three years, reducing leaks by more than 10 % (from 2017/18 levels), and we're aiming to halve leakage by 2050.

We plan to stop abstracting from vulnerable chalk streams by 2050, and we're working with others to improve the quality of our river catchments

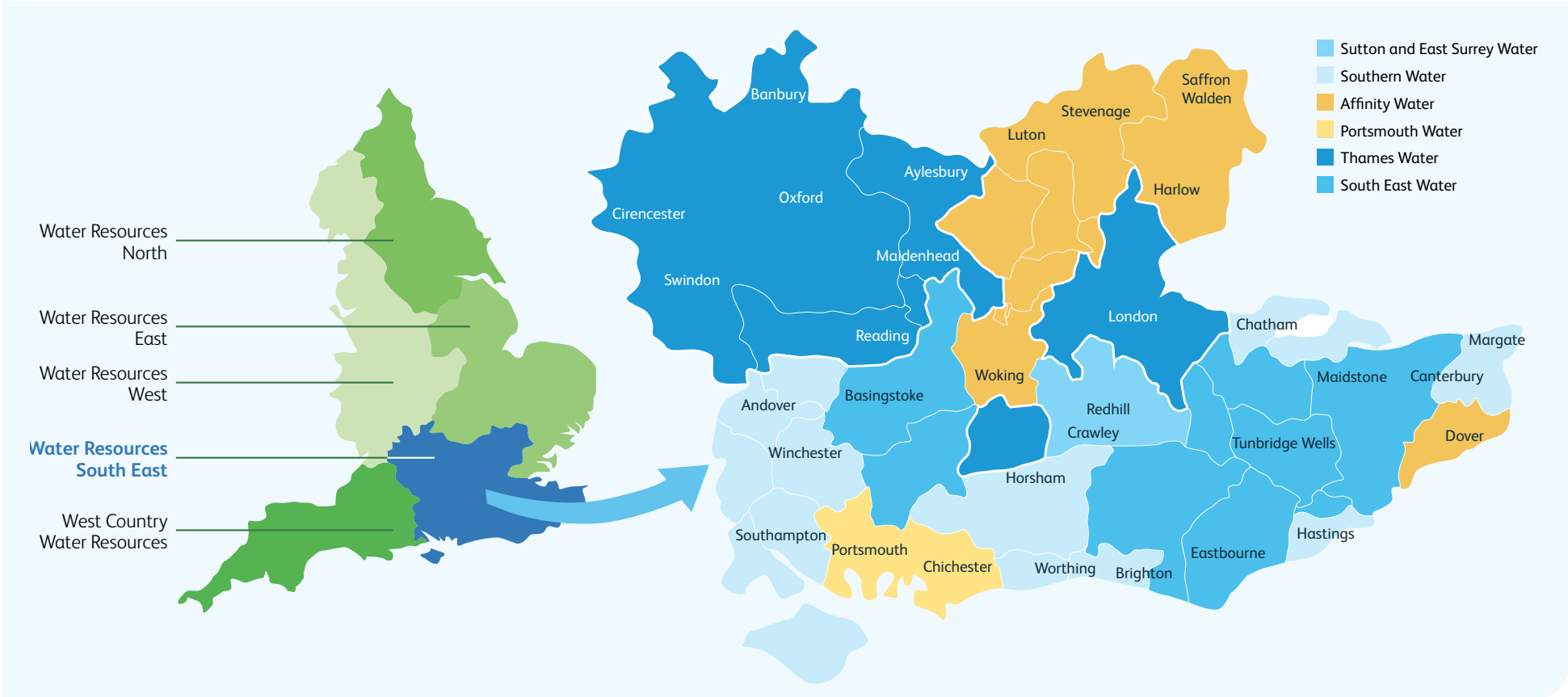
Working together

In 2020, the Environment Agency published the first 'National framework for water resources' transforming how we plan future water supplies. It set out how water companies and other large water users must work together in regional groups to understand and plan for our future water needs while protecting the environment.

We've worked in collaboration with the five other water companies in WRSE to develop a plan for the whole of the South East region. WRSE has taken an evidence-based look at the challenges facing the area and how to solve them. Over the past three years, we've engaged with customers, stakeholders and other water-using sectors and used this feedback to draft an overarching plan that addresses climate and environmental pressures and secures future water supplies. This collaborative approach means we can look beyond our individual boundaries and identify what will deliver the most benefit across the South East for the long term. You can find out more about WRSE at wrse.org.uk.

This plan is just one of five regional plans being developed to meet the country's future water needs. WRSE has worked with other regions across the UK to make sure the regional plans fit together to provide a joined-up national solution.

To read more, go to Section 1 of the WRMP24



In developing the draft regional plan and our draft WRMP24, we've engaged with our customers to make sure we understand and have reflected their priorities. We've also consulted a wide range of stakeholders to incorporate their knowledge and expertise.

We have:

- worked closely with the Environment Agency, Natural England and environmental stakeholders to develop environmental scenarios that reduce the amount of water we take from the environment
- engaged with local authorities to help us forecast how many people we'll need to supply water to in the future
- engaged with regulators, catchment partnerships and other stakeholders to identify potential new options and share the work to examine the feasibility of options
- engaged with customers to understand their priorities and the types of schemes they prefer; these have been scored and used to assess the different water resource programmes
- explored what customers value most and the wider benefits they want us to deliver
- built an understanding of, and consulted on, the technical methods and approaches used in the draft plans. We've also commissioned independent experts to review parts of our draft plan.

The challenges we face

Our water resources are under pressure. We need to plan ahead to manage a growing population, changing climate and increasing drought risk as well as make sure we can protect our environment.

What is a Ml/d?

It's a million litres of water every day

A growing population

London and the Thames Valley is already one of the most densely populated parts of the country, with over 10 million people living and working here. We've used the latest forecasts from local authorities to develop future growth forecasts in our area. This is in accordance with guidance from our regulators which states that the plan should reflect local growth ambitions and plan to meet the additional needs of new businesses and households.

These forecasts indicate that the number of people in our area will grow to over 12 million by 2050 and over 13 million by 2075.

We've also considered other forecasts such as the Office of National Statistics (ONS) in developing our draft WRMP24.

	2050 (% growth)	2075 (% growth)
Local authority forecast	12.3 million (22 %)	13.1 million (31 %)
ONS forecast	11.1 million (10 %)	11.8 million (22 %)

To read more, go to Section 3 of the WRMP24

A changing climate

Our climate is changing and our weather is more unpredictable than ever. We're facing hotter, drier summers, which means there'll be less rain when we need it most, and extreme weather events will likely happen more often. We've taken the most recent climate change projections produced by the Met Office (UKCP 2018) and assessed how they could impact our water sources in normal years as well as in a drought. This tells us how much more water we'll need to replace the supplies we may lose and identifies which water sources are most at risk.

Here's how we predict climate change will reduce the amount of water available by 2070:

Forecast	Volume of water (Million litres per day)
Low	45
Middle	120
High	183

To read more, go to Section 4 of the WRMP24

An increasing drought risk

As our climate changes, we'll likely see more severe and frequent droughts. In severe droughts, water restrictions could see us rationing water for everyday activities or turning off supplies for certain periods during the day. Restrictions like this could last for several weeks, not only disrupting communities but also harming the local environment and damaging the economy. We've calculated that this could cost London's economy alone up to £500 million every day[1].

Following recommendations from the National Infrastructure Commission[2], the government asked us and other water companies to make sure our water supplies are more resilient to severe drought by 2040. This means we'd only need to introduce severe water use restrictions, such as standpipes in the street and water rationing, on average once every 500 years, reducing the chance of them being needed to one in 20 by 2040.

We need an extra 321 Ml/d of water in our area to reinforce our water supplies to a one in 500-year drought.

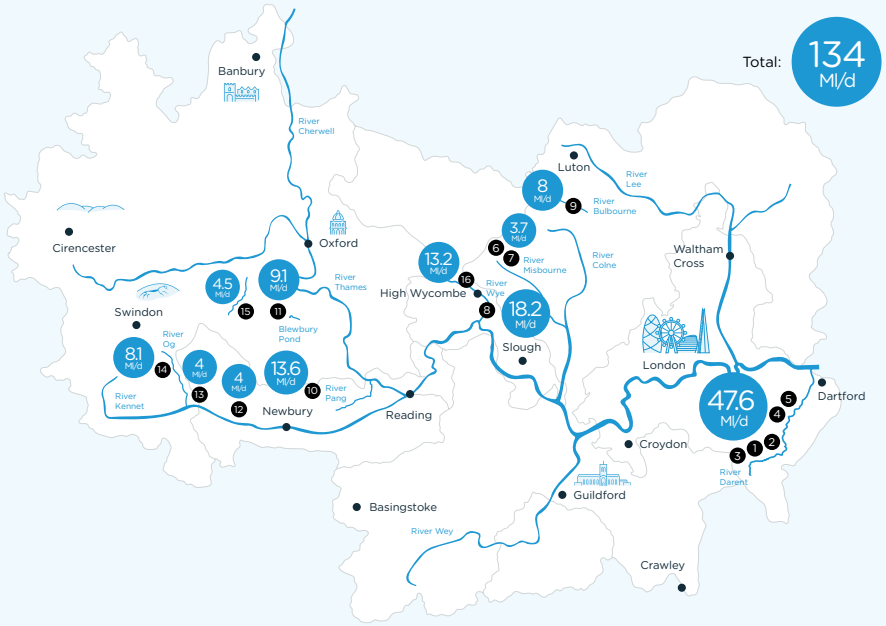
To read more, go to Section 4 of the WRMP24

[1] NERA Economic assessment, 2022

[2] National Infrastructure Commission, Preparing for a drier future - England's water infrastructure needs, April 2018

An environment under pressure

A healthy natural environment is crucial for a sustainable water supply, thriving plants and wildlife, and the health, wellbeing and enjoyment of us all. That's why protecting the environment is a priority for us. Over the past 25 years, we've reduced the amount of water we take from the environment by 134 Ml/d and taken steps to protect some of our most sensitive rivers, including the chalk-fed River Darent and River Pang (as shown in the map below), but there's more to do.



Volume of Reduction

1. Brasted - River Darent
2. Sundridge - River Darent
3. Lullingstone - River Darent
4. Eynsford - River Darent
5. Horton Kirby - River Darent
   Total = 47.6 Ml/d
6. Hampden - River Misbourne
7. Wendover - River Misbourne
   Total = 3.7 Ml/d
8. Mill End - River Wye
   18.2 Ml/d
9. New Ground - River Bulbourne
   8 Ml/d
10. Compton - River Pang
    13.6 Ml/d
11. Blewbury - Blewbury Pond
    9.1 Ml/d
12. Speen - Kennet & Lambourn Floodplain
    4 Ml/d
13. Axford - River Kennet
    4 Ml/d
14. Ogbourne - Og
    8.1 Ml/d
15. Childrey Warren - Letcombe Brook
    4.5 Ml/d
16. Pann Mill - River Wye
    13.2 Ml/d

In developing our draft plan, we've worked with the Environment Agency, Natural England and other environmental organisations to develop three scenarios that reduce the amount of water we take from the environment. These scenarios:

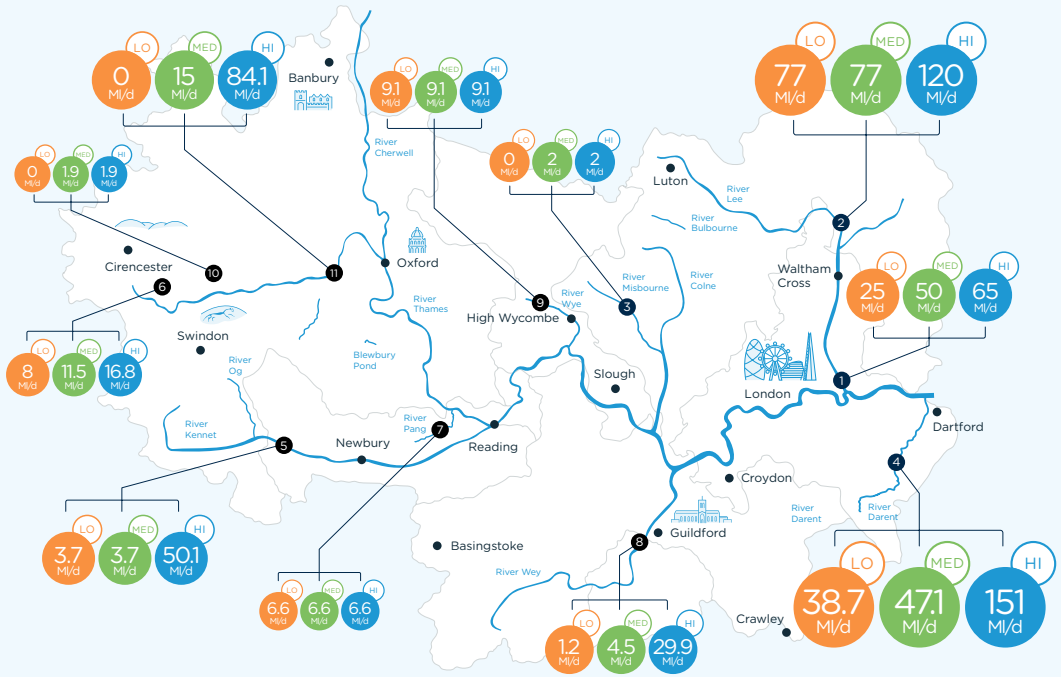
- take account of the commitments we've already made to reduce abstractions and 'caps', or upper limits, introduced on some of our licences by the Environment Agency
- are based on learnings from previous investigations and assessments of the effects of climate change on sources
- set out where and when we need to reduce abstractions, prioritising the environmental significance of our chalk streams, designated sites and rivers' headwaters (where the river begins), so that we can keep as much water flowing downstream as possible

This approach is in line with feedback we've previously received from stakeholders. To the right is an illustration of our three abstraction reduction scenarios – high, medium and low.

Reducing abstractions from the environment is the single biggest driver for investment in our draft plan. There are practical limitations to how quickly we can upgrade our infrastructure and introduce new sources of water. We also need to make sure we can pay for these changes while keeping bills affordable. That's why we need to be careful about where we reduce abstractions and how quickly we do so.

Following discussion with our regulators, we've based our draft plan on the 'high' scenario to provide the highest level of environmental improvement. This means we'll need to start developing new sources of water, which could take many years to be approved and built, sooner rather than later. These new sources will also help other water companies in the South East make environmental improvements too. We'll monitor the impact of this work so we can see exactly how it benefits our rivers and the wildlife they support. We'll adapt our approach as we learn more.

Our three abstraction reduction scenarios



Sustainable abstraction

Hertfordshire & North London (Ml/d):

		LO	MED	HI
1	Lower Lee/River Lee	25 Ml/d	50 Ml/d	65 Ml/d
2	Upper Lee/River Lee	77 Ml/d	77 Ml/d	120 Ml/d
3	Hampden Bottom/River Misbourne	0 Ml/d	2 Ml/d	2 Ml/d
	Total:	102 Ml/d	129 Ml/d	187 Ml/d

Kent & South London (Ml/d):

		LO	MED	HI
4	River Darent, Cray and Ravensbourne	38.7 Ml/d	47.1 Ml/d	151 Ml/d
	Total:	38.7 Ml/d	47.1 Ml/d	151 Ml/d

Thames Valley (Ml/d):

		LO	MED	HI
5	River Kennet	3.7 Ml/d	3.7 Ml/d	50.1 Ml/d
6	Cotswolds	8 Ml/d	11.5 Ml/d	16.8 Ml/d
7	River Pang	6.6 Ml/d	6.6 Ml/d	6.6 Ml/d
8	River Wey	1.2 Ml/d	4.5 Ml/d	29.9 Ml/d
9	River Wye	9.1 Ml/d	9.1 Ml/d	9.1 Ml/d
10	Chiltern Scarp	0 Ml/d	1.9 Ml/d	1.9 Ml/d
11	River Thames	0 Ml/d	15 Ml/d	84.1 Ml/d
	Total:	28.6 Ml/d	52.3 Ml/d	198.5 Ml/d

Q1. We've chosen to aim for the highest level of environmental improvements. This is supported by our regulators. We'll be tracking the benefits of our work as we carry it out and will adapt our approach as we learn more. Do you have any comments on our approach?

To read more, go to Section 5 of the WRMP24

Planning for an uncertain future

It's clear we're facing significant challenges. While we don't know exactly what the future holds, we do know we need to get started on planning new infrastructure – some schemes could take up to 15 years to progress through planning and construction before they can provide water for everyone to use.

To make sure we make the right decisions at the right time, we've used an 'adaptive planning approach'. This helps us look ahead to the different futures we might face so we can develop a plan that's adaptable to all of them. This is the approach used in the draft WRSE regional plan and is consistent across all water companies in the South East.

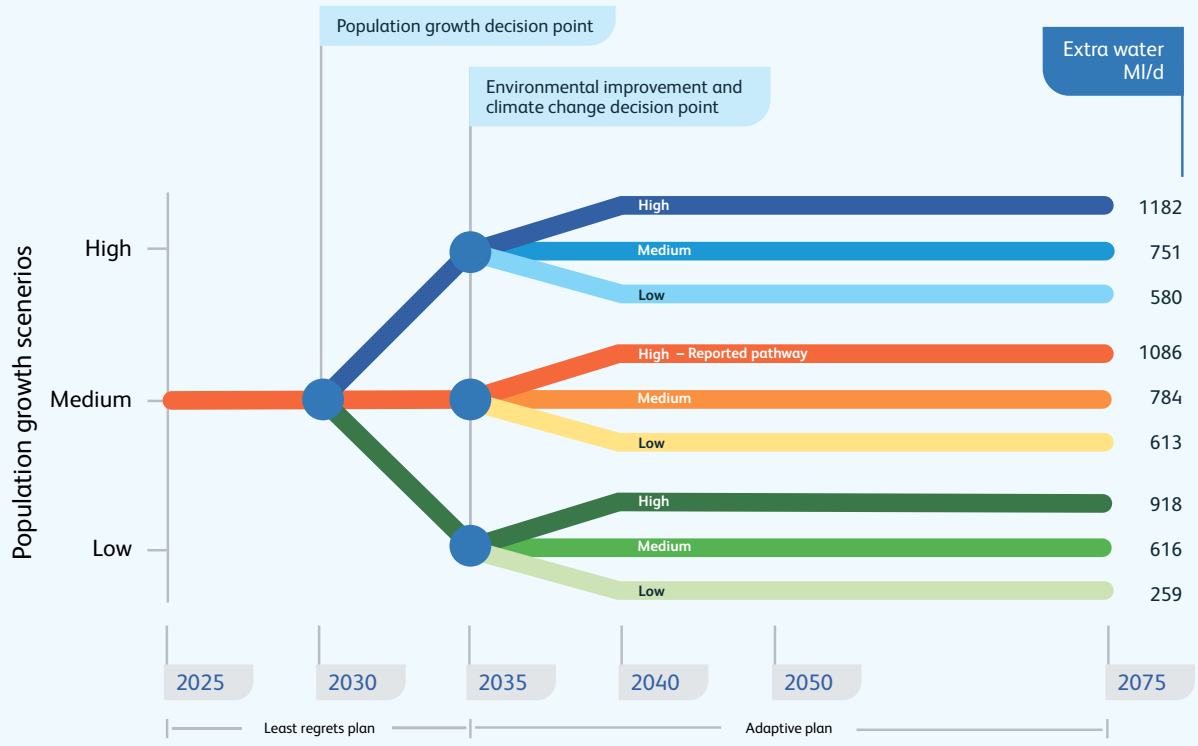
Looking at different futures: We've developed nine possible futures, each of which considers different population and housing growth forecasts, the effects of climate change and levels of environmental protection. Our plan can adapt to the different possible futures we might face.

A 'least regrets' decision balances minimal cost with maximum benefit, accounting for any possible futures in the most feasible way.

Defining a single pathway in the short-term: As we can be reasonably confident in what's needed in the short-term, we've set a single pathway for the first 10 years to 2035. This period includes all 'least regrets' investment that we must move forward with urgently, as it's considered critical and necessary for all future pathways. It also includes preparatory work for options that may be needed in future years.

Setting decision points: We've set two decision points early in the plan that could trigger us to change pathways. The first is focused on our growth forecasts, and the second focuses on the effects of climate change and our ambition to restore the environment. At both of these points, we'll reflect on future pathways and decide if we need to change or adapt our course. This also aligns with our five-year business plan, which sets out how future investments will impact customer bills.

Here's our adaptive plan, which shows the nine future pathways and the 'reported' pathway. It also shows the amount of additional water that we need under each pathway to deliver life's essential service.

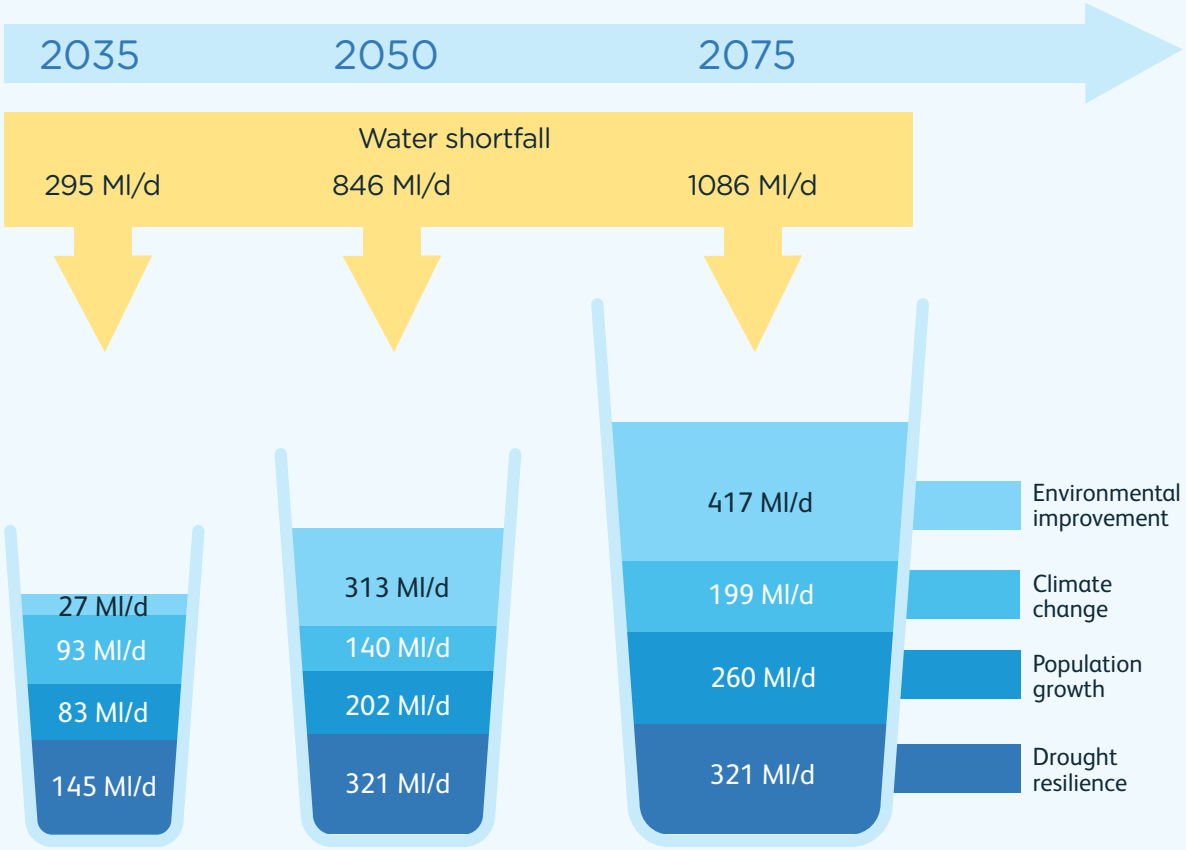


Review and adapt: Every year, we'll report on our progress, and every five years, we'll complete a detailed review to make sure we're headed in the right direction. Working alongside other water companies in the South East, we'll update our forecasts and identify if, and when, we need to divert or adjust our pathway.

Our 'reported' pathway: The regulatory guideline[3] requires us to identify a single pathway in the adaptive plan. We've made sure this pathway is compliant with the guideline and has been agreed with the five other companies that form WRSE. We also discussed this extensively with the Environment Agency and Ofwat. This pathway will ensure we can:

- support local authority planned housing growth
- cope with our changing climate and set a course to respond to high climate change scenarios
- achieve more resilient water supplies – a one in 200-year drought in the early 2030s and a one in 500-year drought by 2040
- make a robust plan to achieve our environmental goals, reflecting the expectations of our environmental regulators

We face a significant planning challenge. We forecast that we'll need an additional 295 Ml/d of water in 2035, 846 Ml/d in 2050 and over 1000 Ml/d in 2075 to address future challenges in our 'reported' pathway.



The planning challenge takes account of other factors in addition to the four main challenges. This is why the overall water shortfall is not the same as the sum of the four challenges shown in the diagram.

To read more, go to Section 6 of the WRMP24

[3] Water Resources Planning Guideline, EA, Ofwat and NRW, July 2022

Considering our options

We've looked at a wide range of potential solutions to address these future challenges and plug the shortfall between the amount of water we have and the amount we need. These include making the most of the water supplies we have (demand reduction solutions), creating new sources of water (water supply solutions) and improving catchment areas (nature-based solutions).

Demand reduction solutions

These are solutions to make the best use of the water we already have and include tackling leaks from our network and working closely with all our customers to reduce water use.

Tackling leaks

We fix thousands of leaks a day across 20,000 miles of pipes – but why don't we stop them from happening in the first place? We get lots of questions about leaks, but this is one of the hardest to answer.

Pipes are very sensitive to changes in temperature, pressure and their surroundings. They also become more susceptible to leaks as they age. While we can't control the environment of every single pipe, every single day, the government has set an ambitious target for us to halve leakage by 2050, and we're determined to achieve this.

There are lots of factors we need to consider, including cost, which affects your bills; our confidence in delivery; and the potential disruption to communities from restricting traffic and closing streets.

Helping you save every drop

We're working with customers like you to help you use water wisely. Since we started our progressive metering programme in 2015, we've installed over 700,000 smart meters, which means over 50 % of our household customers are now on a meter. As well as rolling out the rest of our smart meter programme, we're launching targeted campaigns on how to save water, carrying out more Smarter Visits for homes and businesses, and sharing handy advice on basic home repairs, such as fixing dripping taps. We're also looking into new ways for you to use non-potable water, such as for watering gardens and golf courses.

Working in partnership

To use water more sustainably, we need to work collectively with the government, other sectors and wider society. The government has set out its intention to introduce new policies and legislation that will improve the water efficiency of household appliances and make sure new homes are built to higher efficiency standards, and we fully support this. We've also been working with housing developers and recently launched an incentive scheme to encourage new housing developments to achieve water neutrality.

To read more, go to Section 8 of the WRMP24

How much water do you use?

It's hard to work out how much water you're using every day – 46 % of people think their entire household uses less than 20 litres a day, when in reality, you're likely using around 100 litres per person if you're on a meter. But some customers use far more, whether for cultural, medical or lifestyle reasons, which pushes up the average water use in our area to around 141 litres each per day. We're carrying out a detailed analysis to delve into how we all use water, so we can design targeted solutions, such as new water pricing, to take care of water more sustainably across all our communities.

Water supply solutions

Working with others, we've been exploring new options to boost our water supplies. These range from traditional techniques to more innovative approaches, and include turning seawater into drinking water (desalination), recycling water, transferring water from other regions and building a large storage reservoir. We've assessed every option for cost, water output, the time to deliver the scheme and make the water available, potential impact on the environment, carbon budget, and ability to cope with a changing future.

Water recycling

This involves taking treated wastewater, putting it through more treatment and then returning it to the environment to boost our natural water supply. We've considered recycling schemes in both East and West London, where the water resources would otherwise be lost to the sea.

Water transfers

We can use rivers, canals and pipelines to move water between regions, providing a more joined-up approach to the country's future water needs. We've looked at schemes that move water from Wales, the North West and the Midlands.

Desalination

This involves treating sea water and brackish water to remove salt. It's an energy-intensive technology that is used extensively in other parts of the world such as the Middle East. We already have one desalination plant in London, and we've scoped out the possibility of building additional plants.

Reservoirs

Reservoirs help us store water so it's available when supplies drop. We usually pump water from a river when water levels are high, often during the winter, so we can store it until we need it. There aren't many suitable sites available in the South East, as they need to be close enough to a large river with the right underlying geology, which limits the options significantly.

Groundwater storage

This involves making changes to existing groundwater storage (where sustainable) or using an innovative technique called Aquifer Storage and Recovery (ASR) to store additional water underground.

Sharing water

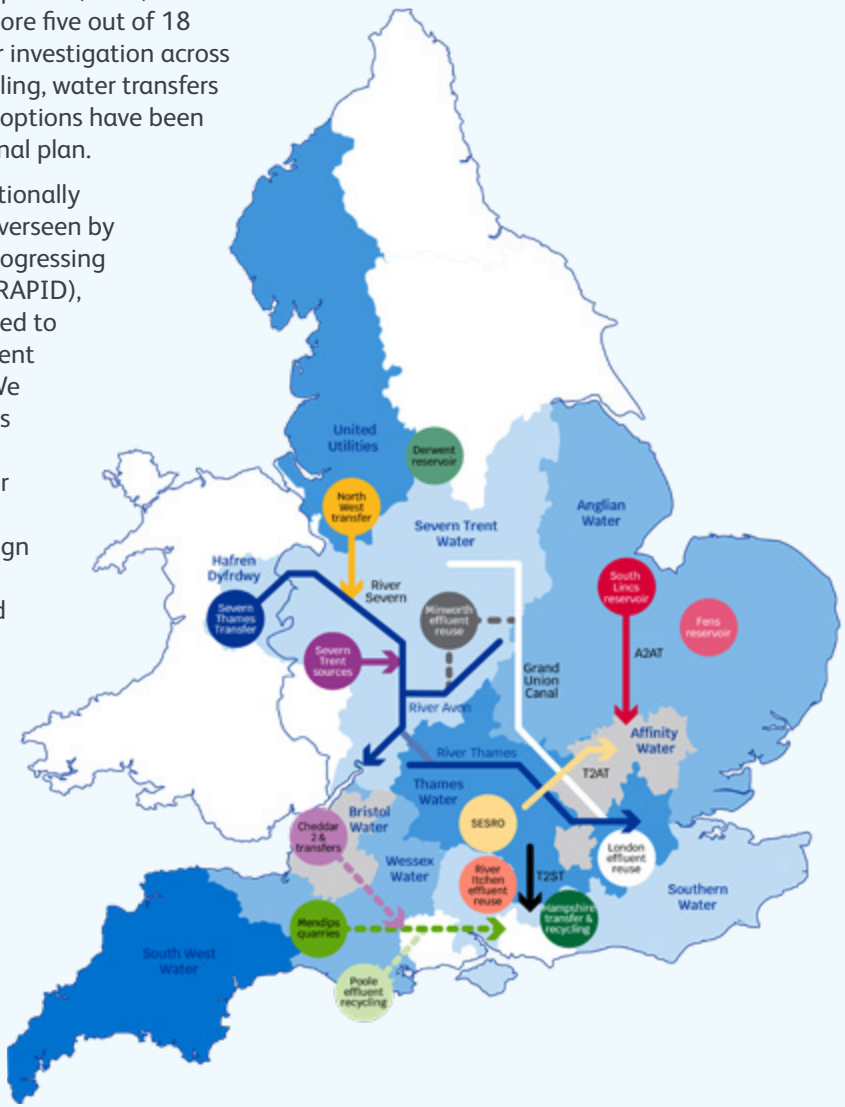
Alongside these options, we're working with WRSE to improve connectivity across the South East. While this won't boost supplies, we can potentially provide a more efficient service for everyone by sharing water across the region.

Thinking strategically

The scale of the water resources we need for the future means we need to take a strategic approach to planning our future water supply. We've been working closely with other water companies to look at options that could provide a large volume of water (more than 50 million litres of water a day) for more than one water company to use. These options are called strategic resource options (SROs). We've worked collaboratively to explore five out of 18 proposed SROs that are under investigation across the UK. These are water recycling, water transfers and a new reservoir. All these options have been considered in the WRSE regional plan.

The development of these nationally important schemes is being overseen by the Regulators' Alliance for Progressing Infrastructure Development (RAPID), an alliance of regulators formed to help accelerate the development of new water infrastructure. We submitted Gate 2 assessments to RAPID for the SROs we're involved with on 14 November 2022. These reports provide information on the initial design and assessments for these options. If an SRO is approved in our WRMP24, it will go through the full planning process, which will include more detailed work on the scheme design, assessments of the environmental impact as well as consultation.

To read more visit thameswater.co.uk/wrmp



Strategic Resource Options (SROs) under investigation. Source RAPID, August 2022 © Crown copyright

Nature-based solutions

These schemes can take many forms depending on the area and the environmental issues. We may work with farmers to improve land management practices, introduce natural flood management measures or create and manage new habitats. While these schemes don't always provide us with more water, they can strengthen the environment's resilience, improve water quality and reduce the risk of flooding.

We're working in partnership with The Rivers Trust and Thames Rivers Trust and have committed to investing £5 million in catchment partnerships over the next five years. We'll start by building capacity locally before developing detailed catchment plans, helping to achieve successful nature-based solutions for the long-term.

To read more, go to Section 7 of the WRMP24

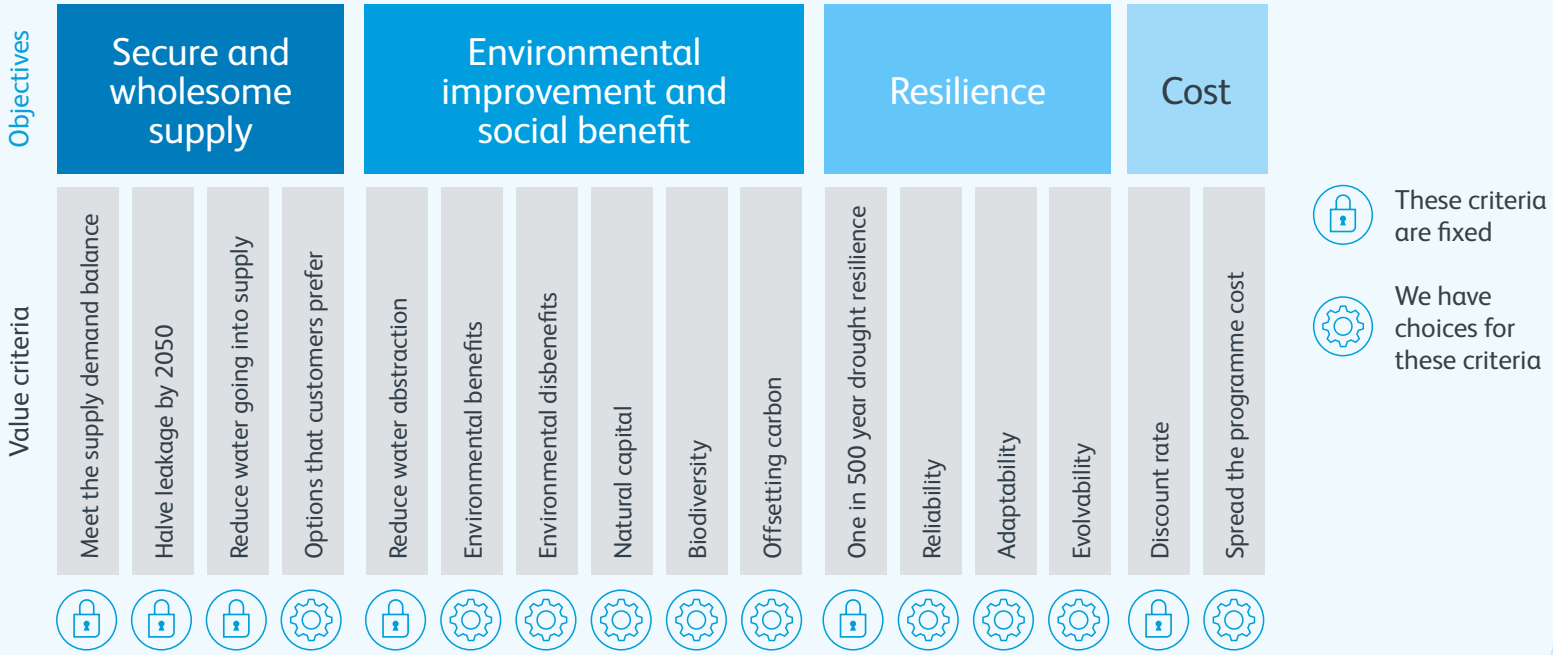
Our draft plan

The regulators' guideline requires us to develop a best value plan and we've taken an evidence-based approach to do this for our area and the region as a whole. This ensures our draft WRMP24 fits with the supportive regional approach of the WRSE regional plan.

We've been working openly and transparently with customers and stakeholders across our area and the wider South East throughout the development of this draft plan. The first step was to build and gather feedback on a draft least-cost plan*. We then considered a wider range of factors to develop the plan into what it is today. Our approach has taken into account the need for flexibility in managing a range of risks, including a drought; affordability; your preferences; impacts on the environment; and the need for sustainable development.

What is a best value plan?

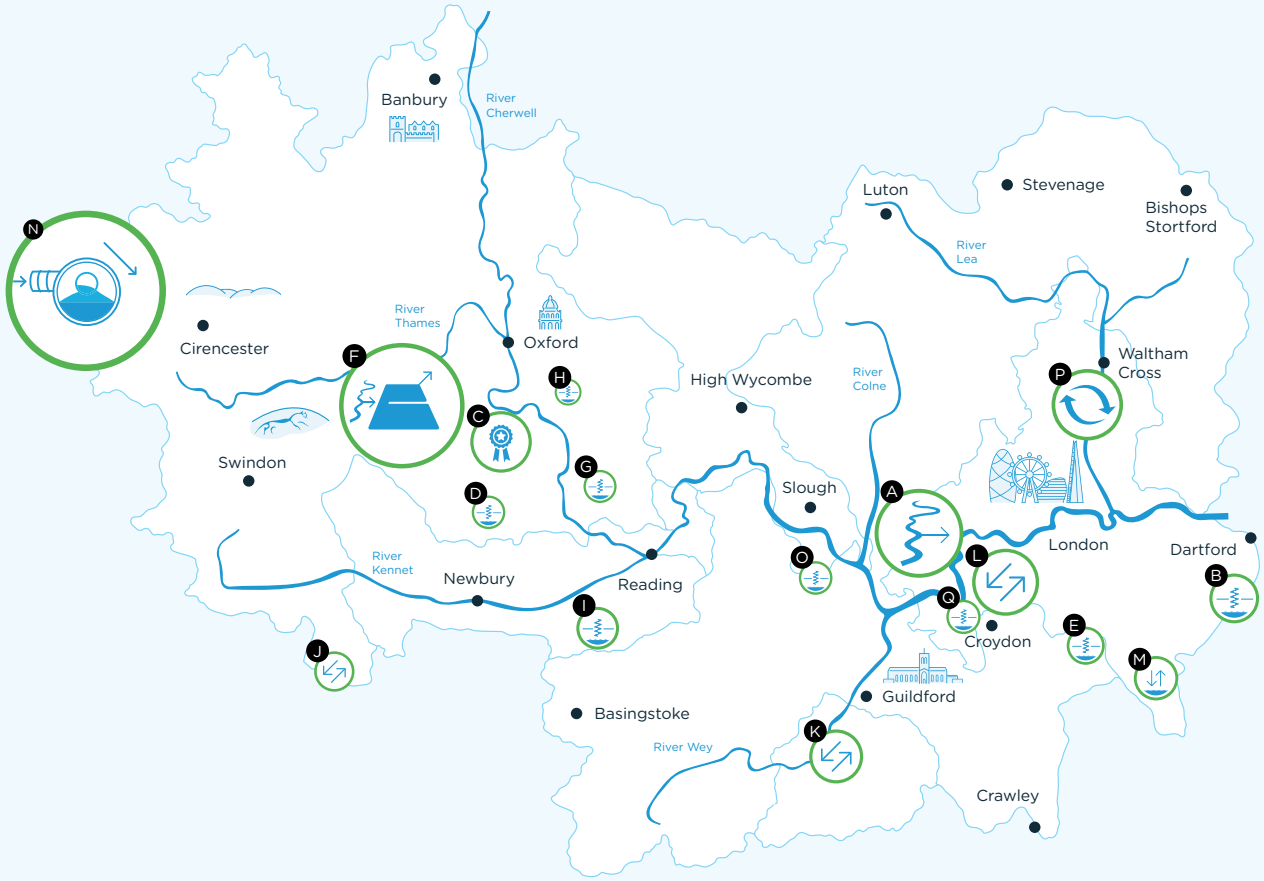
A 'best value' plan considers environmental, social and economic needs while still balancing supply and demand for water. For example, in the WRSE regional plan, we considered not only cost but also the wider benefits the plan could provide to you and the environment. We covered everything from boosting biodiversity and offsetting carbon to increasing our resilience to a range of risks, including droughts. We've worked closely with customers and stakeholders to develop the best value objectives and criteria for this draft WRMP24.



* Consultation on the emerging draft regional plan, January 2022

Here's an overview of our draft WRMP24

Our draft plan sets out how much we need to invest to ensure we have a secure and sustainable water supply. It includes ambitious targets to tackle leaks and reduce demand for water in our area while planning and developing new water sources, which are shown below.



- **A** New river abstraction at Teddington supported by water recycling: 67 Ml/d - 2031
- **B** Groundwater scheme at Southfleet and Greenhithe: 9 Ml/d - 2031
- **C** Licence trade: 23 Ml/d - 2031
- **D** Groundwater scheme at Woods Farm: 2 Ml/d - 2031
- **E** Groundwater scheme at Addington: 3 Ml/d - 2032
- **F** South East Strategic Reservoir Option (SESRO): 185 Ml/d - 2040
- **G** Groundwater scheme at Moulsford: 2 Ml/d - 2040
- **H** Groundwater scheme (modified) at Britwell: 1 Ml/d - 2042
- **I** Groundwater scheme – Mortimer (recommissioned): 5 Ml/d - 2042
- **J** Water transfer from Wessex Water: 3 Ml/d - from 2045
- **K** Water transfer from South East Water: 10 Ml/d - 2050
- **L** Water transfer from SES Water to Merton: 30 Ml/d - 2050
- **M** Aquifer recharge at Horton Kirby: 5 Ml/d - 2050
- **N** Severn Thames Transfer – natural river flow with additional water sources: 288 Ml/d - from 2050 onwards
- **O** Groundwater scheme at Datchet: 2 Ml/d - 2051
- **P** Deephams water recycling: 42 Ml/d - 2061
- **Q** Groundwater scheme – Merton (recommissioned): 2 Ml/d - 2062

Transfers within our supply area are not included in the map.

Reducing demand for water

Our aim is to reduce leaks, consider how frequently we should use drought measures, and help you cut down your water use. Reducing demand is the focus of our plan in the short-term. It's ambitious but achievable, and we'll monitor our progress to make sure we stay on track.

Reducing leaks

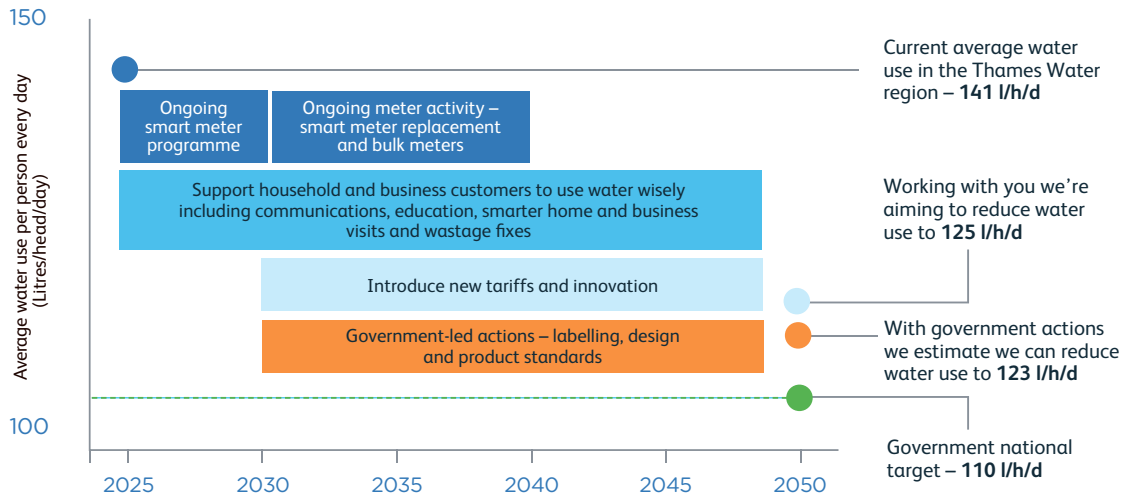
As part of our plan, we'll reduce the amount of water lost through leaks in our network and customer pipes by 16 % by 2030 as well as meet the government priority of halving leakage by 2050, saving 176 Ml/d of water. We'll start with the most cost-effective interventions. Firstly, we'll help customers like you find and fix leaks on your water pipes, as well as our own network, enabled by smart water meters. Then we'll move to the more costly and tricky task of renewing our water network which is needed to support continued, sustainable reductions in leakage.

Using water wisely

We'll continue to roll out smart water meters to all households in our area, installing or upgrading a further 1,000,000 smart meters by 2030. We'll also work closely with households and businesses to help you understand how much water you use and make every drop count.

We've analysed water saving activities in depth. Using tried and tested techniques alongside some more innovative approaches, including experimenting with new water tariffs, we forecast that we can help you save around 118 Ml/d by 2050. This will reduce average water use from 141 to around 125 litres per person per day.

In addition to the actions we can take, the government is also planning to introduce measures to support long-term, sustainable water use across the UK, including labelling all water-using products, bringing in new standards for these products and updating building regulations for new homes and retrofits. Taking government-led and our own actions into account, we forecast that average water use in our area will reduce to around 123 litres per person per day by 2050.



The national target

The government has set a national target to reduce water use to 110 litres per person per day. While we're committed to supporting the government as it develops a roadmap for water efficiency, we're not confident that we could achieve this target just yet. This is not due to a lack of ambition but rather due to a lack of evidence that achieving such a target is realistic, or that it presents best value to customers. To achieve this target would require government-led or as-yet-unknown company-led actions to deliver substantial demand reduction. The recent Covid-19 pandemic and the heatwaves of summer 2022 have shown us how quickly demand for water can grow and highlighted the risk of relying on predicted demand when planning for long-term water supply. Setting an unachievable goal would threaten the security of our water supply and put more pressure on the environment. It would also force us to develop alternative sources at short notice, increasing risk and reducing value for you. Instead, we've taken an evidence-based approach that we're confident we can deliver. We'll monitor progress and take account of our learnings as we go.

Q2. We've set out our plan for reducing demand, with government interventions, to achieve 123 litres of water per person per day on average. This is above the government's national target, but we think it's the right approach. We'll monitor and develop this by building on our learnings and evidence. Do you have any comments on our approach or suggestions for additional measures we could take?

Temporary drought measures

While our draft plan considers a range of futures, it can't plan for all eventualities. In a future drought, we may need to temporarily restrict water use in line with the levels of service we've committed to in our drought plan. This may include temporary use bans (TUBs), or 'hosepipe bans', such as the one we introduced in summer 2022, plus non-essential use bans (NEUBs), which can affect businesses such as window cleaners and car washes. A TUB can save around 10 % of demand in the summer while a NEUB can save just over 1 % of water demand.

By 2050, the demand reduction measures described above will save around 480 Ml/d of water – that's over 50% of the total forecast shortfall in 2050. We're relying on the success of these measures, some of which aren't in our control. We'll monitor progress to ensure we can adjust the plan if we need to.

Here's a summary of the activities and the contribution of each to the overall water saving programme.

	2030	2040	2050
Reducing leakage	78	55	43
Metering and water efficiency – household	32	7	
Metering and water efficiency – non- household	24	2	
Innovation and new tariffs	7	60	12
Water efficient government policies *			24
Temporary drought measures – TUBs and NEUBs	140	140	140

Q3. Measures to reduce demand for water make up over 50 % of our forecast shortfall by 2050. Some of the activity is untested and not within our direct control. Do you think this is the right approach? Should we plan for additional new sources of water in case these measures don't deliver the water we've forecast?

*We've assumed water savings from confirmed government-led action in our baseline assessment, such as water labelling. As such, they're not included here.

Providing sustainable, resilient sources of water

We need to invest in new sources of water to ensure a secure and sustainable future water supply.

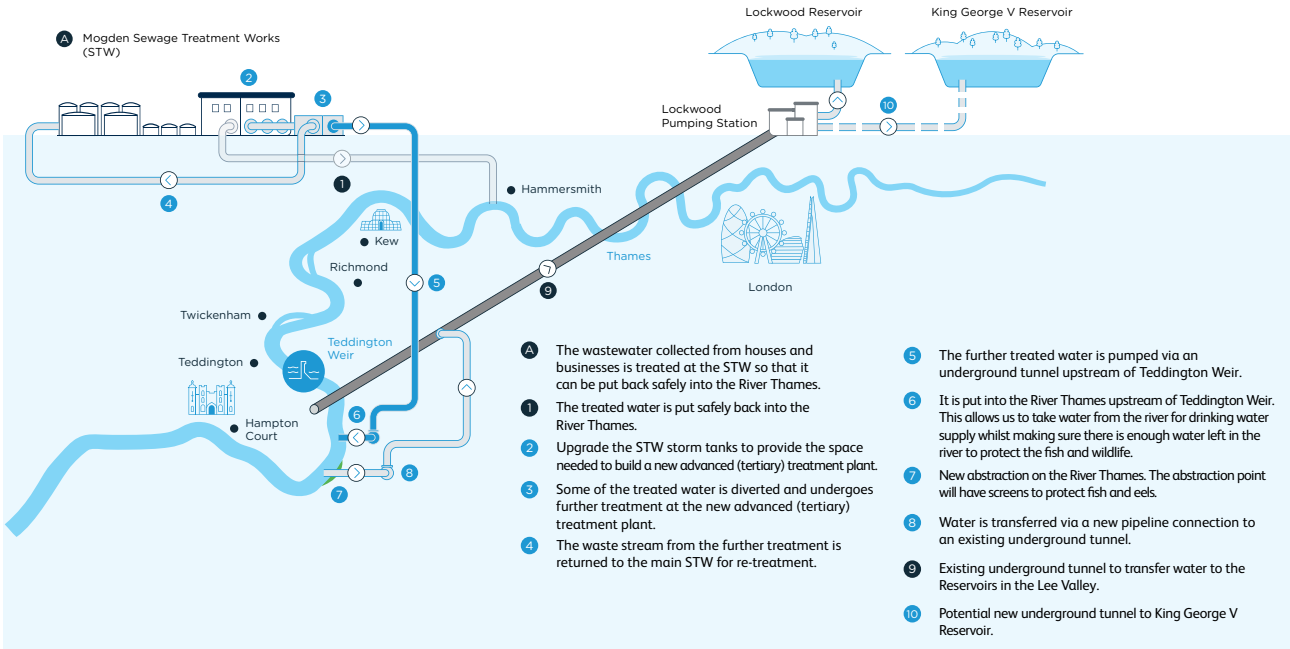
Working with WRSE, we've used complex decision support tools to develop different programmes of options, or plans, that could help us and our neighbours meet the planning challenge. We've analysed these plans to understand the cost and how the plans perform against our best value criteria. We've also probed the plans to understand risks – for example, we've checked the implications of increasing the cost of a scheme or removing schemes that might not be available later down the line. This has helped confirm our plan is robust and that small changes don't alter the overall choices.

The plan we've selected has performed consistently well across a range of potential futures. It includes the development of several new strategic resource options that will serve our whole region. Here's a summary of the new sources of water that are in our area:

	Plan timescale		
New water source or scheme	To 2030	To 2040	To 2050
New river abstraction at Teddington New river abstraction supported by water recycled from Mogden sewage treatment works (67 Ml/d by 2031)	Planning consent and construction, with water available from 2031		
South East Strategic Reservoir Option (SESRO) **New storage reservoir.** The scheme would supply water for Affinity Water, Southern Water and Thames Water customers. The minimum size is 100 Mm^3 (185 Ml/d by 2040)	Planning consent	Construction, with water available from 2040	
Thames to Affinity Transfer (T2AT) Water transfer to Affinity Water from SESRO (up to 100 Ml/d)	Planning consent	Construction (Phase 1) (50 Mld), with water available once SESRO is built	Construction (Phase 2) (50 Mld)
Thames to Southern Transfer (T2ST) Water transfer to Southern Water from SESRO (up to 120 Ml/d)	Planning consent	Construction, with water available once SESRO is built	
Severn to Thames Transfer (STT) Water transfer from the River Severn itself supplemented with water from United Utilities and Severn Trent Water. The scheme would supply water for Affinity Water, Southern Water and Thames Water customers.	Ongoing work to enable the scheme to proceed if it's required	Planning consent	Construction, with water available from 2050 in a phased manner
New groundwater sources, water transfers and licence agreements These schemes take between one and five years to develop	New groundwater sources at Addington, Southfleet and Greenhithe, and Woods Farm Licence trade	New groundwater sources at Moulsford, Britwell and Mortimer Water transfer from Wessex Water	New groundwater sources at Datchet and Merton Aquifer recharge at Horton Kirby Water transfers from SES and South East Water
Water recycling at Deephams Sewage Treatment Works Water recycling scheme in North East London (42 Ml/d by 2061)			Planning consent, with water available from 2061

New river abstraction at Teddington

A new abstraction would be sited on the River Thames close to Teddington Weir. Abstracted water would be transferred via an existing underground tunnel to the Lee Valley reservoirs in East London. Highly treated recycled water would be moved from Mogden sewage treatment works upstream to compensate for the additional water taken from the river to protect the environment and wildlife.



South East Strategic Reservoir Option (SESRO)

A new storage reservoir would be built in the Upper Thames catchment, south west of Abingdon in Oxfordshire. It would be filled with water from the River Thames during periods of high river flow. When river levels drop or demand for water increases, water would be released back into the River Thames for re-abstraction downstream. This would help us protect supplies and manage future water quality issues created by a changing climate. It would also provide regional and local benefits, including environment and biodiversity improvements, public access and recreation, and mitigation of local flooding.

This illustration reflects the conceptual design for a 150 Mm^3 reservoir

Severn to Thames Transfer (STT)

Water would be transferred from the North West and Midlands to the South East for use during a drought. This water would come from the River Severn itself, with Severn Trent Water and United Utilities providing additional sources of water if needed. The water would then be moved from the River Severn to the River Thames either by a new pipeline or by a combination of new pipeline and restoring the Cotswold canals.

Sources of water:

1. Temporary use of existing United Utilities abstraction from Lake Vyrnwy
2. Water resource redeployment at Shrewsbury
3. Treated water from Minworth STW
4. River abstraction reduction at Mythe
5. Treated water from Netheridge STW

New water transfer infrastructure:

6. Pipeline to bypass the River Vyrnwy.
7. Pipeline from Gloucestershire to Oxfordshire (preferred option).
8. Pipeline and restoration of the Cotswold canals (alternative option).
9. Water is abstracted from the River Severn near Deerhurst for transfer via the preferred pipeline option to Culham.
10. Water is released into the River Thames at Culham for re-abstraction further downstream.

New pipeline

Interconnector canal (restored)

Thames to Affinity Transfer (T2AT)

Water would be moved by pipeline from the River Thames to Affinity Water once a new source of water (such as SESRO, STT or a new water recycling scheme in East London) has been developed.

Thames to Southern Transfer (T2ST)

Water would be moved by pipeline from the River Thames to Southern Water once a new source of water (either SESRO or STT) has been developed.

A focus on carbon

Building and running new infrastructure will create carbon emissions. That's why we've considered the carbon budget, including emissions during construction and production, for each of these new schemes. We've also considered the future decarbonisation of the electricity network in our decision making.

Throughout design and development, we'll prioritise opportunities to reduce and mitigate the carbon budget, such as using new construction techniques, powering construction machinery with green energy and using more environmentally friendly materials, as well as making the most of carbon offset opportunities like carbon capture.

Why is the new river abstraction at Teddington the first scheme in the plan?

We need to improve the resilience of our water supply by the early 2030s. This scheme will help keep the River Thames flowing and can be introduced within eight years, helping us achieve resilience to a 1:200 year drought event by 2031. There are other schemes that we could deliver within eight years, such as a water recycling scheme in Beckton, East London, but these are all more expensive.

Why have you chosen a new reservoir ahead of water recycling or the Severn to Thames Transfer?

We need to invest in new water sources that can provide a resilient and sustainable water supply for the whole of the South East. The options are a new storage reservoir, a large inter-regional water transfer or a large water recycling plant in London. To achieve the highest levels of environmental improvement it's likely that all these schemes will be needed, so the decision is about the timing and sequence of the options.

So, which option should be developed first? More water is needed across the whole of London and the Thames Valley as well as in Southern Water's supply area. As water recycling in London won't easily provide the regional resource needs, the choice is whether to develop a new reservoir or inter-regional water transfer first. Our work has shown that, while both options are needed, a new reservoir is a better first option considering the long-term needs of the region. Here's why:

Cost and carbon: A new reservoir has lower running costs than a regional water transfer, so it makes sense for it to come first. Also, the plans with a reservoir first are less expensive and have lower carbon emissions overall.

Operation: In a drought, it's hard to predict exactly when we'll need extra water supplies. The lead time to get water from the west of the country would be between three and four weeks, whereas it would be readily available from the reservoir. The additional storage would also allow us to manage any issues with our existing reservoirs around London.

Resilience to our changing climate: Forecasts suggest we'll see more droughts occurring at the same time across the whole country, so when the South East is in drought, the water for the transfer may actually be needed by customers in the Midlands and North West. In addition, plans that don't include a reservoir have higher carbon emissions, which is counter to our commitments in our current climate emergency.

Local and regional opportunities: The reservoir has the potential to provide a wide range of economic, social and environmental opportunities – boosting biodiversity, natural capital and recreational benefits beyond those that can be offered by the water transfer. This is why many customers tell us they'd prefer a new reservoir over other schemes.

What size will a new reservoir be?

We've evaluated a range of potential reservoir sizes ranging from 75 Mm^3 to 150 Mm^3 and considered building the reservoir in two phases. The regional-led work has shown that we need a reservoir of at least 100 Mm^3. If we were to build a reservoir smaller than this, we'd need to introduce additional schemes by 2040, resulting in a more complex, risky and expensive overall plan.

There are advantages to both the 100 and 150 Mm^3 reservoir sizes.

- **100 Mm^3 reservoir:** Local communities close to the reservoir site are concerned about the reservoir being too big. This option would be a good compromise, as it could blend more into the local landscape while still providing extra water and boosting biodiversity in the area. It would also result in fewer regrets if the future turns out better than we predict.
- **150 Mm^3 reservoir:** This size of reservoir would give us around 50 % more water for around the same level of investment and make us extra resilient for the future. It's hard to predict what all our challenges might be over the reservoir's expected life span (150-200 years), but the extra capacity would help us adapt if water use doesn't reduce to the levels we're aiming for, we need extra water to protect the environment or we need a back-up supply for even more extreme droughts.

As it stands, we've opted for the 100 Mm^3 reservoir, but it's a very close call, and we believe there are important benefits to a larger reservoir we must consider, including extra resilience and flexibility to cope with whatever the future holds.

This year, the impact of water shortages has shown us that a secure water supply is absolutely essential. With farmers facing crop failures, more restrictions on water use, rivers and reservoirs drying up and our region's recovery continuing into next year, decisions like these can't be made lightly.

That's why we're seeking your feedback on the size of the reservoir as part of this consultation.

Q4. A new reservoir is an integral part of our best value plan for the South East. Do you have any comments on the size of a new reservoir?

Catchment and nature-based solutions

Working with stakeholders, we've identified more than 200 potential catchment and nature-based schemes across the South East. Catchment based approaches and nature-based solutions could play an important role in providing more resilient and sustainable water supplies for the future.

We're proposing a range of schemes in our area, including working with farmers to reduce pesticides and nitrates to improve the quality of our watercourses.

We're not diving into more details in this draft plan, as these schemes don't specifically provide new water sources. Instead, we're including them in our business plan, where we explain more about how they can improve water quality, reduce flooding and enhance the local environment.

To read more, go to Sections 10 and 11 of the WRMP24

Q5. Do you have any comments on the new water source options included in our draft plan?

Providing more than water

We need to invest in new sources of water and modernise our infrastructure to safeguard supplies and reduce the risk of us running dry during prolonged periods of drought. As well as planning for a secure, safe and dependable water supply in our area, our draft WRMP24 will add value for society, the economy and the environment.

More value for...

Our society

- Our new, greener infrastructure will be built with consideration and respect for local communities
- You can enjoy more opportunities to get back to nature and take care of your wellbeing, such as at a new reservoir in Oxfordshire
- You can live wild with a choice of leisure activities, including fishing, walking, cycling, water sports and riding trails, which link to our existing network

Our economy

- We're investing £13 billion in our programme of work over the next 25 years
- This will provide greater protection against a changing climate and more extreme droughts
- A boost in investment will mean more jobs, skills and apprenticeships

Our environment

- To promote a healthy, thriving environment, we'll take up to 540 Ml/d less water from sensitive rivers and waterways by 2050
- We'll develop more nature-based solutions with our partners that build on the programmes we're already running
- We'll boost biodiversity by 10 % through new wetlands and habitats that support local wildlife

We must make sure our plan is affordable

The cost of investing in our future water supply is around £13 billion – between 2025 and 2050. The majority of the investment is to ensure we can cope with our changing climate and can continue to provide a secure water supply, as well as protecting and improving the environment for the long-term. Most of our investments are funded through customers' bills. This means you may see a gradual increase in your annual bills from 2025 to 2035 of up to around £37 per year by the end of the ten-year period, rising to around £100 increase by 2050 as shown in the table below. As our programme develops, we'll be able to confirm these increases for you.

Increase in the average household bill*

	2030	2035	2040	2045	2050
Best value plan	£14	£37	£65	£80	£100

Q6. Do you think our draft plan represents the best value plan for you, your community and the environment?

Q7. Do you have any other comments on our draft plan?

*The predicted bill impact is for investment in water resources only. Investment in other services, such as wastewater, may also affect your bills. Please don't worry – we'll confirm the overall changes to your bills in our next business plan submission in 2023.

Hearing your views

We've developed our draft WRMP24 so we can continue delivering life's essential service for you while caring for our environment and helping the economy. Please let us know what you think.

Here are our consultation questions

1. We've chosen to aim for the highest level of environmental improvements. This is supported by our regulators. We'll be tracking the benefits of our work as we carry it out and will adapt our approach as we learn more. Do you have any comments on our approach?
2. We've set out our plan for reducing demand, with government interventions, to achieve 123 litres of water per person per day on average. This is above the government's national target, but we think it's the right approach. We'll monitor and develop this by building on our learnings and evidence. Do you have any comments on our approach or suggestions for additional measures we could take?
3. Measures to reduce demand for water make up over 50 % of our forecast shortfall by 2050. Some of the activity is untested and not within our direct control. Do you think this is the right approach? Should we plan for additional new sources of water in case these measures don't deliver the water we've forecast?
4. A new reservoir is an integral part of our best value plan for the South East. Do you have any comments on the size of a new reservoir?
5. Do you have any comments on the new water source options included in our draft plan?
6. Do you think our draft plan represents the best value plan for you, your community and the environment?
7. Do you have any other comments on our draft plan?

Tell us what you think

It's up to you if you'd like to answer the questions in this document or send us a general response to our consultation. You can share your feedback in any of the following ways:

Visit our consultation website thames-wrmp.co.uk and complete our online feedback form

Email your feedback to both consultation@thames-wrmp.co.uk and the Department for Environment, Food and Rural Affairs (Defra) at water.resources@defra.gov.uk.
Please put Thames Water in the title of your email.

Write to the Secretary of State for Environment, Food and Rural Affairs:
Defra Water Resources Management Plan Water Services
Department for Environment, Food and Rural Affairs
Seacole 3rd Floor, 2 Marsham Street, London, SW1P 4DF

We'll share the responses we receive with the Secretary of State for Environment, Food and Rural Affairs.
This is a legal requirement.

If you've got questions or would like more information

If you need our help with the consultation process, or would like to receive a paper copy of this document, please email info@thames-wrmp.co.uk
For information and data requests, we'll aim to get back to you within 20 working days.

Visit our consultation website thames-wrmp.co.uk to find out more

If you'd like to know more about how we'll use the information you provide, please read our privacy policy go to thameswater.co.uk/legal/privacy-policy.

Document library

Our plan is made up of:

- Summary (this document)

- Technical Report
- Technical Appendices
- Supporting documents

To access these documents, visit thames-wrmp.co.uk

Technical Report

1 Introduction and Background
2 Environment
3 Demand Forecast
4 Supply Forecast
5 Environmental Forecast
6 Risk and uncertainty & Baseline Supply Demand Balance
7 Resource Options
8 Demand Options
9 Environmental Assessment
10 Programme Appraisal and Scenario Testing
11 The Overall Best Value Plan

Technical Appendices

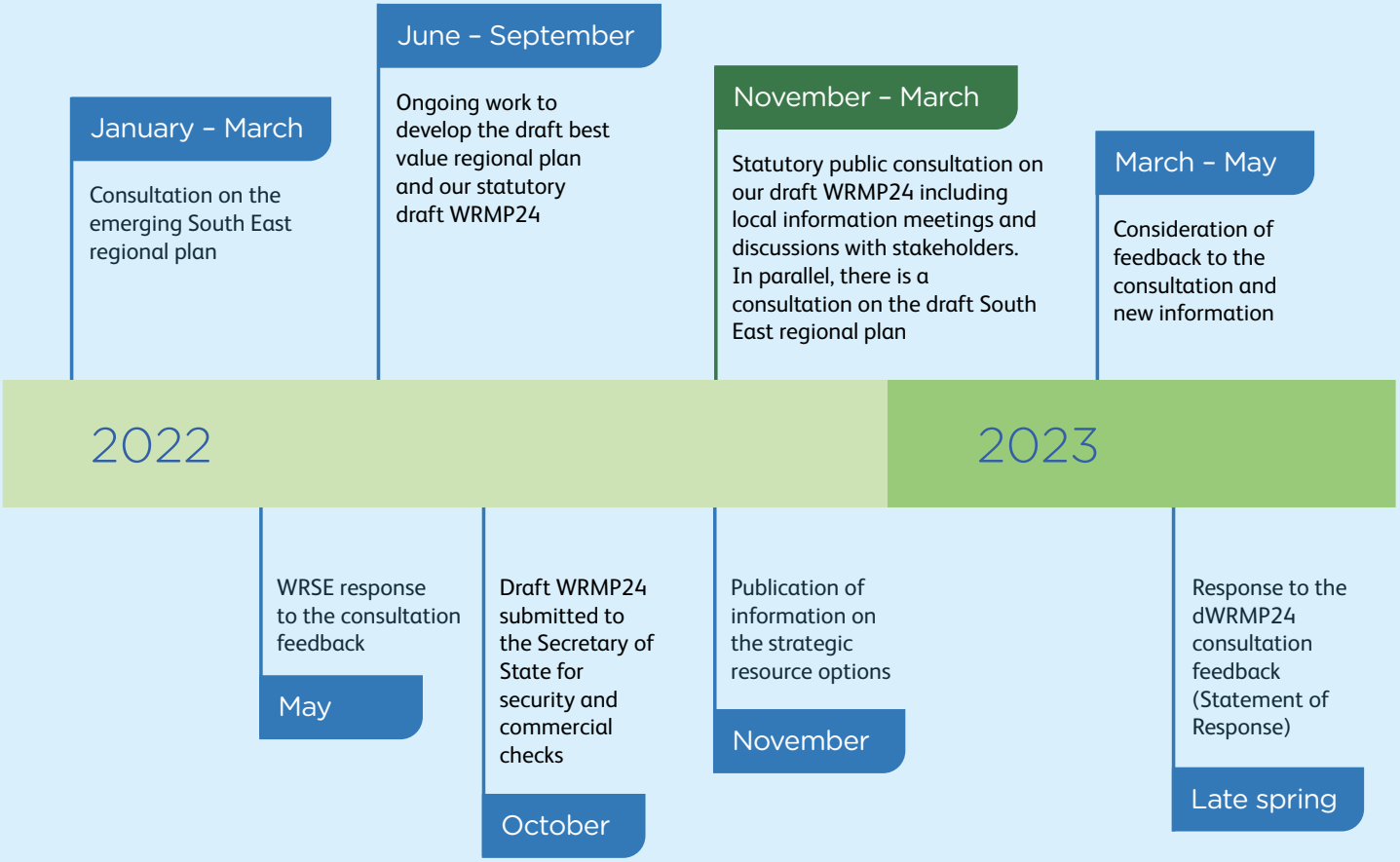
A Water Resource Zone Integrity
B Strategic Environmental Assessment Report
C Habitats Regulations Assessment
D Water Framework Directive Assessment
E Population and Property Projections
F Household Water Demand Forecast
G Non-Household Demand Forecast
H Dry Year & Critical Period Forecasting
I Deployable Output
J Outage
K Treatment Capability & Process Losses
M Leakage
N Metering
O Water Efficiency
P Options List
Q Scheme Rejection Register
R Scheme Dossiers
S Stakeholder Engagement
T Customer Priorities & Preferences
U Climate Change
W Programme Appraisal Methods
X Investment Model Outputs
Y Alignment (DWMP and WRMP)
AA Natural Capital and Biodiversity Net Gain Assessment
BB Invasive and Non-Native Species Risk Assessment
Data Tables
Glossary

What happens next

We'll carefully consider all the feedback you share with us. We'll publish a report that will set out the comments we've received, explaining how these and any new government and regulatory policies have been considered and the changes we've made to our draft plan in response. We'll send this directly to everyone who took part in the consultation.

We'll submit the report to the Secretary of State for Environment, Food and Rural Affairs. They'll consider your feedback, our responses and any advice from the Environment Agency before deciding whether to approve our draft plan.

Thank you so much for taking the time to read this document and helping us shape your water future.



Thank you for taking the time to read this document.
If you have any questions, please get in touch at
info@thames-wrmp.co.uk

This booklet can be supplied in large print, braille, or audio format on request.

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