Keeping water flowing for the future

A summary of our 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

Welcome to our Water Resources Management Plan 2024

This document is a summary of our plan to manage water resources. 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.

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 2050

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 3.9 million homes and 183,000 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

Every water company must prepare and maintain a Water Resources Management Plan (WRMP). This plan is updated every five years and sets out how we will achieve a secure supply of water for our customers whilst protecting the environment. WRMPs are long-term plans that require us to forecast future scenarios using a range of data. We've complied with regulators' guidance in developing and using these forecasts to form our plan.

The further ahead we look the more uncertain the future is, and we take this into account by using an adaptive planning approach. This allows us to identify all the potential options we could require.

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. This collaborative approach means we can look beyond our individual boundaries and work together to secure the region's future water supplies. Your views, and the views of our stakeholders, have helped to shape this plan.

This document is a summary of our Water Resources Management Plan 2024 (WRMP24). It reflects the 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, and this plan 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.

The actions we take 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.

We've published more detailed documents – a technical report and appendices – which explain our 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 website thameswater.co.uk/about-us/regulation/water-resources

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.

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, Cotswolds, and boreholes near the River Thames. 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 for our operations and to ultimately become a carbon negative business.
- We’re working with all our customers to encourage them to use water wisely. We’ve installed over 1 million smart water meters so far, meaning 56 % 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 23 % 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 reduced leakage by more than 20 % (from 2017/18 levels), and we're aiming to halve leakage by 2050.

We plan to stop abstracting from vulnerable catchments by 2050, and we're working with others to improve river water quality too

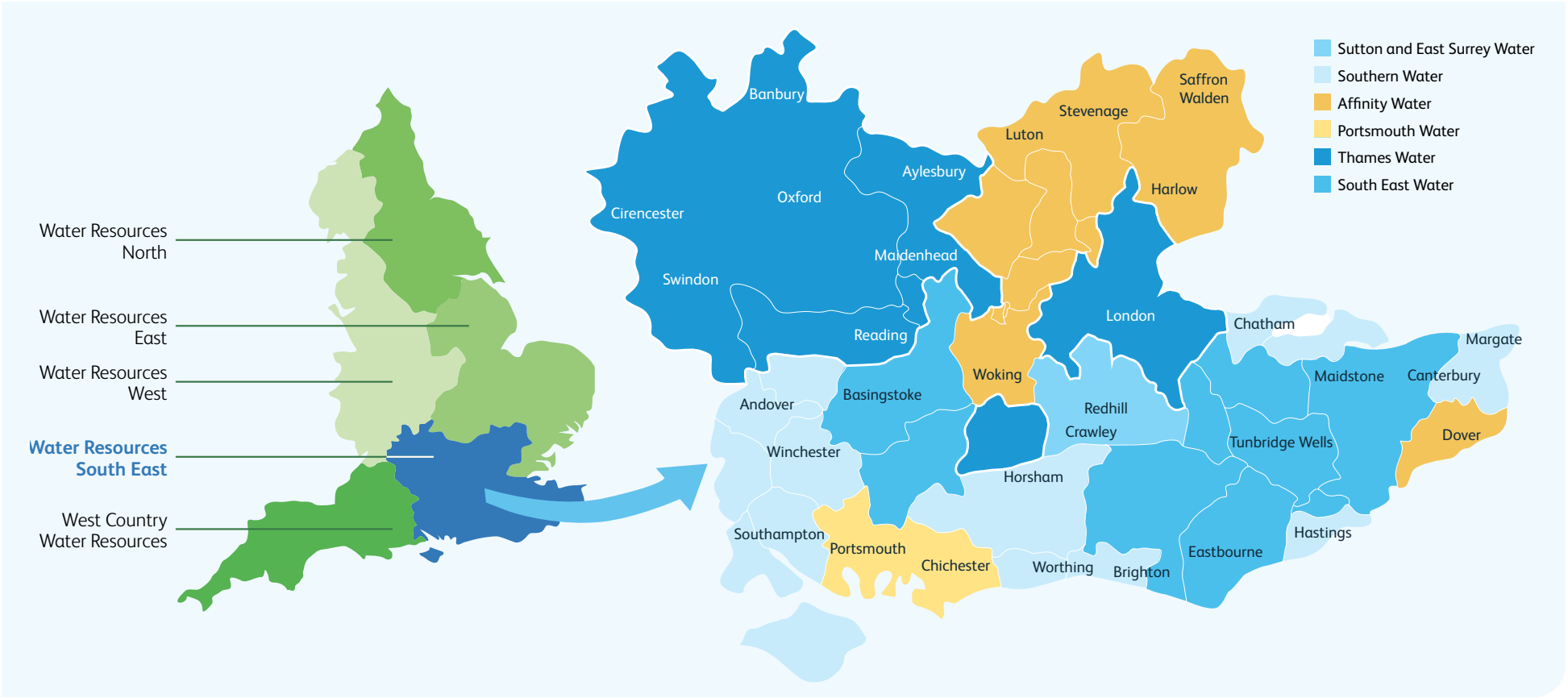
Working together

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 five years, we've engaged with customers, stakeholders and other water-using sectors and used this feedback to develop 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 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 regional plan and our 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 plans. We've also commissioned independent experts to review parts of our plan.

Engaging with you

On 13 December 2022, we published our draft plan for public consultation. We promoted the consultation through lots of different channels to raise awareness and encourage everyone to provide their feedback. We also asked for feedback from our customers through a managed research forum and survey. The consultation was open for 14 weeks and closed on 21 March 2023.

We received 1,687 responses to the consultation from a wide range of local, regional and national stakeholders.

Thank you so much for taking the time to take part in the public consultation. Here's a summary of the consultation process and the responses we received.

About our consultation

We reached out to over **2,000** stakeholders

We setup a dedicated consultation website **thames-wrmp.co.uk**

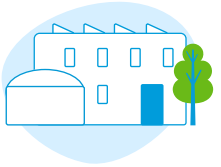
We held community events and webinars

Over **1,500** people attended

We sought views from our customers

1,300 households

400 businesses



We received over **1,680** responses

522 written

1,165 online

These included:

- **9** Government bodies
- **28** Local government organisations
- **42** Community groups
- **4** River catchment partners

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 WRMP24.

	2050 (% growth)	2075 (% growth)
Local authority forecast	12.7 million (20%)	13.1 million (24%)
ONS forecast	11.1 million (5%)	11.5 million (9%)

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	47.4
Middle	122
High	185.8

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. At the moment, each year there is a 1% chance we'd need to introduce severe water use restrictions, such as standpipes in the street and water rationing. This will reduce to a 0.2% chance from 2040.

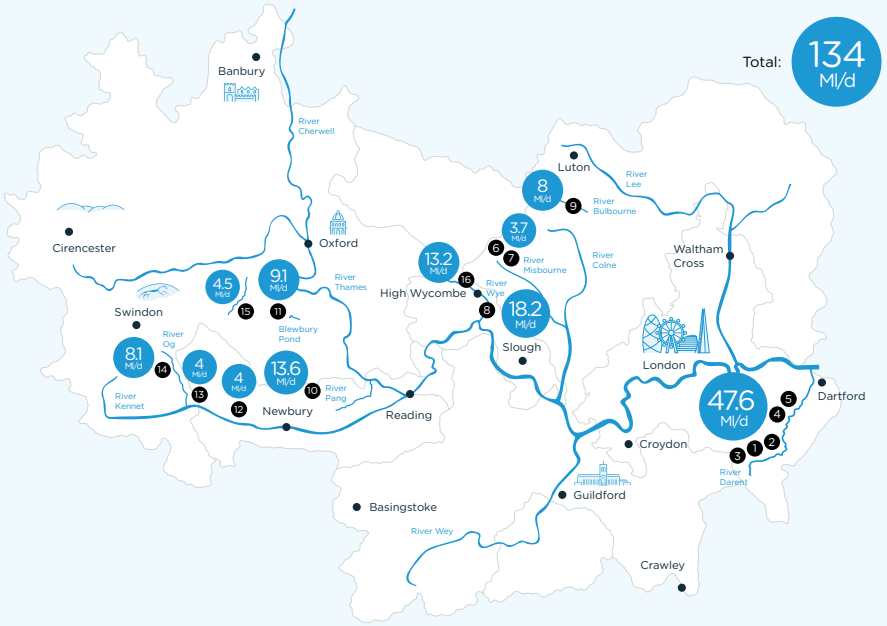
We need an extra 320 Ml/d of water in our area to reinforce our water supplies to a one in 500-year drought.

[1] NERA Economic assessment, 2022

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

Environmental improvement to date

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 plan, we've worked with the Environment Agency, Natural England and other environmental organisations to develop a plan to reduce the amount of water we take from the environment. These reductions:

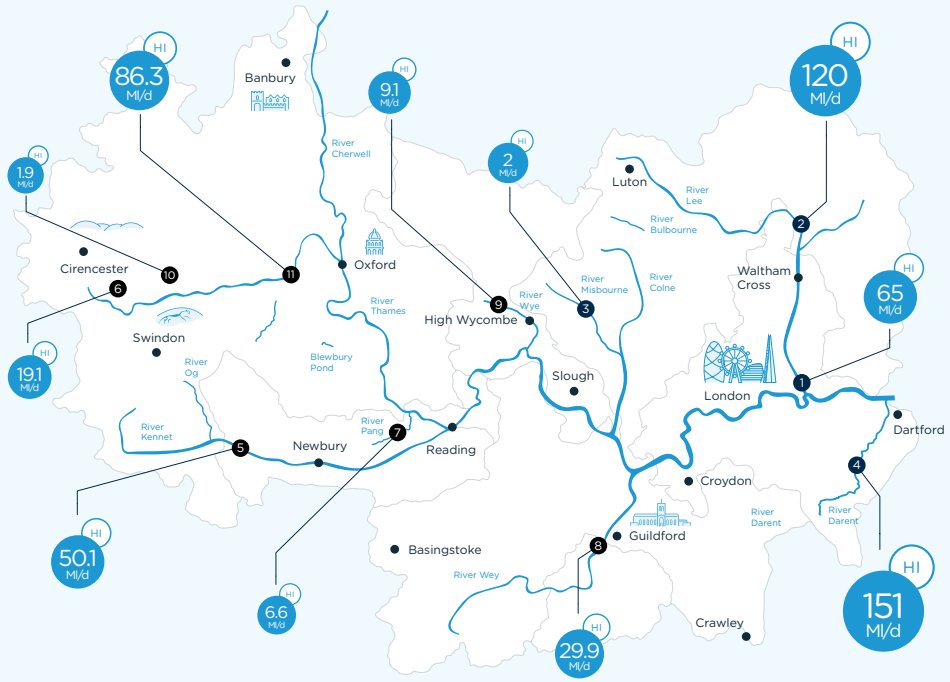
- take account of the commitments we've already made to reduce abstractions and 'caps', or upper limits, introduced on some of our licences by the Environment Agency
- are based on learnings from previous investigations and assessments of the effects of climate change on sources
- set out where and when 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 received from stakeholders. To the right is an illustration of our planned abstraction reduction

Reducing abstractions from the environment is the single biggest driver for investment in our 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.

We have based our plan for future licence reductions on a scenario set out by our regulators, in line with their policy recommendation. This scenario includes a large volume of licence reductions, in order to ensure the environment is protected. This means we 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 planned abstraction reduction



Sustainable abstraction

Hertfordshire & North London (Ml/d):

1	Lower Lee/River Lee	65 Ml/d
2	Upper Lee/River Lee	120 Ml/d
3	Hampden Bottom/River Misbourne	2 Ml/d
	Total:	187 Ml/d

Kent & South London (Ml/d):

4	River Darent, Cray and Ravensbourne	151 Ml/d
	Total:	151 Ml/d

Thames Valley (Ml/d):

5	River Kennet	50.1 Ml/d
6	Cotswolds	19.1 Ml/d
7	River Pang	6.6 Ml/d
8	River Wey	29.9 Ml/d
9	River Wye	9.1 Ml/d
10	Chiltern Scarp	1.9 Ml/d
11	River Thames	86.3 Ml/d
	Total:	203 Ml/d

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 developing 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 WRSE regional plan and is consistent across all water companies in the South East.

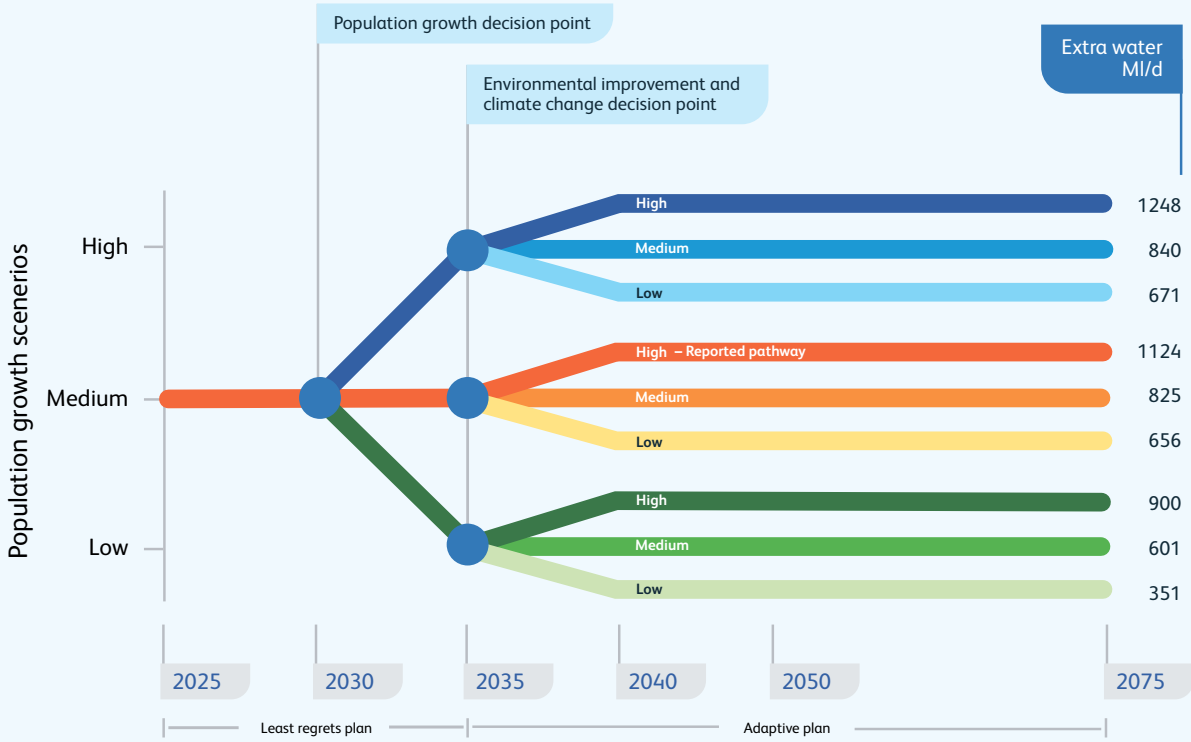
Looking at different futures: We've developed nine possible futures, each of which considers different population and housing growth forecasts, the effects of climate change and levels of environmental protection. Our plan can adapt to the different possible futures we might face.

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 to 2030. 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.



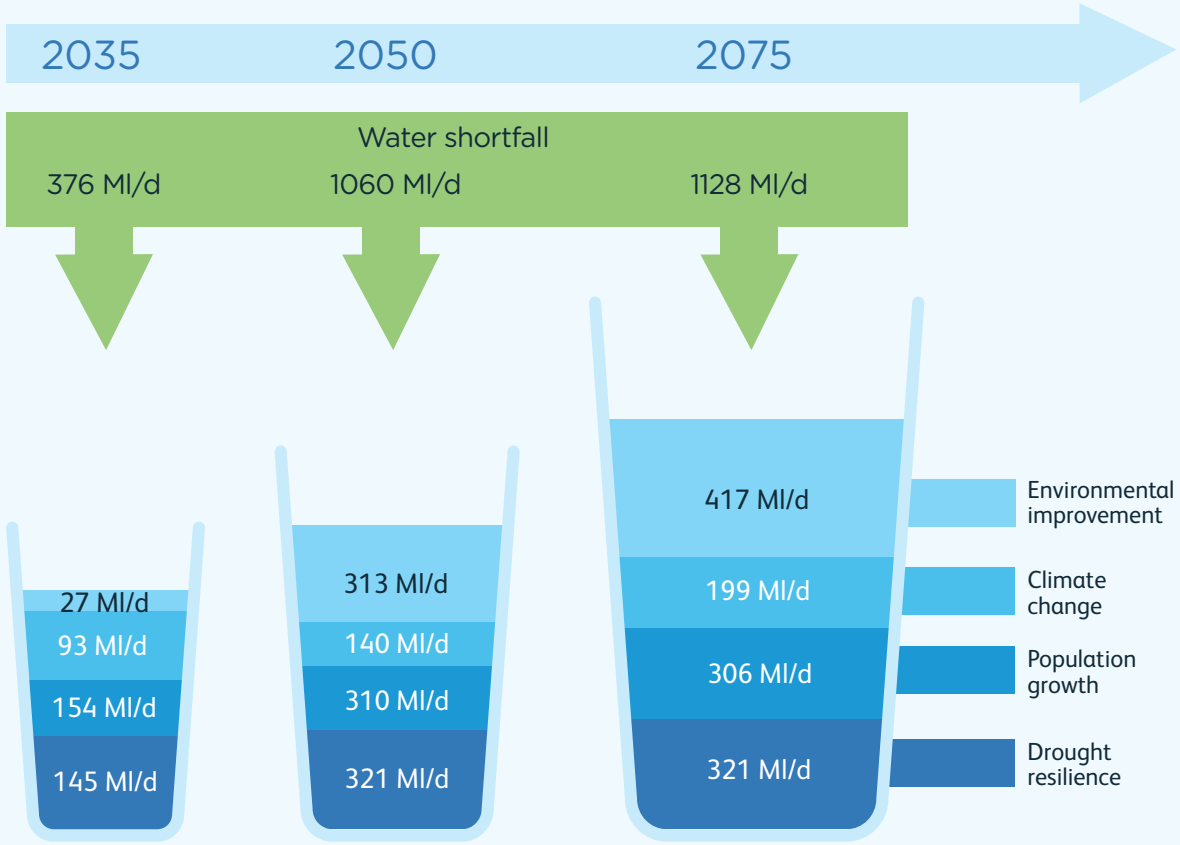
Water Shortfall: Our WRMP24 sets out that, if we do nothing, we could face a shortfall of over 1 billion litres of water per day by 2050. To meet this shortfall, we must make the best use of the water we've got by tackling leakage, using water more wisely and investing in new sources of water.

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 376 Ml/d of water in 2035, 1060 Ml/d in 2050 and 1100 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, April 2023

Options considered

We 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 to help them use water wisely. Since we started our progressive metering programme in 2015, we've installed over 1 million smart meters, which means over 55 % 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 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 120 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 137 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 explored new options to boost our water supplies. These ranged from traditional techniques to more innovative approaches, and included turning seawater into drinking water (desalination), recycling water, transferring water from other regions and building a large storage reservoir. We 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

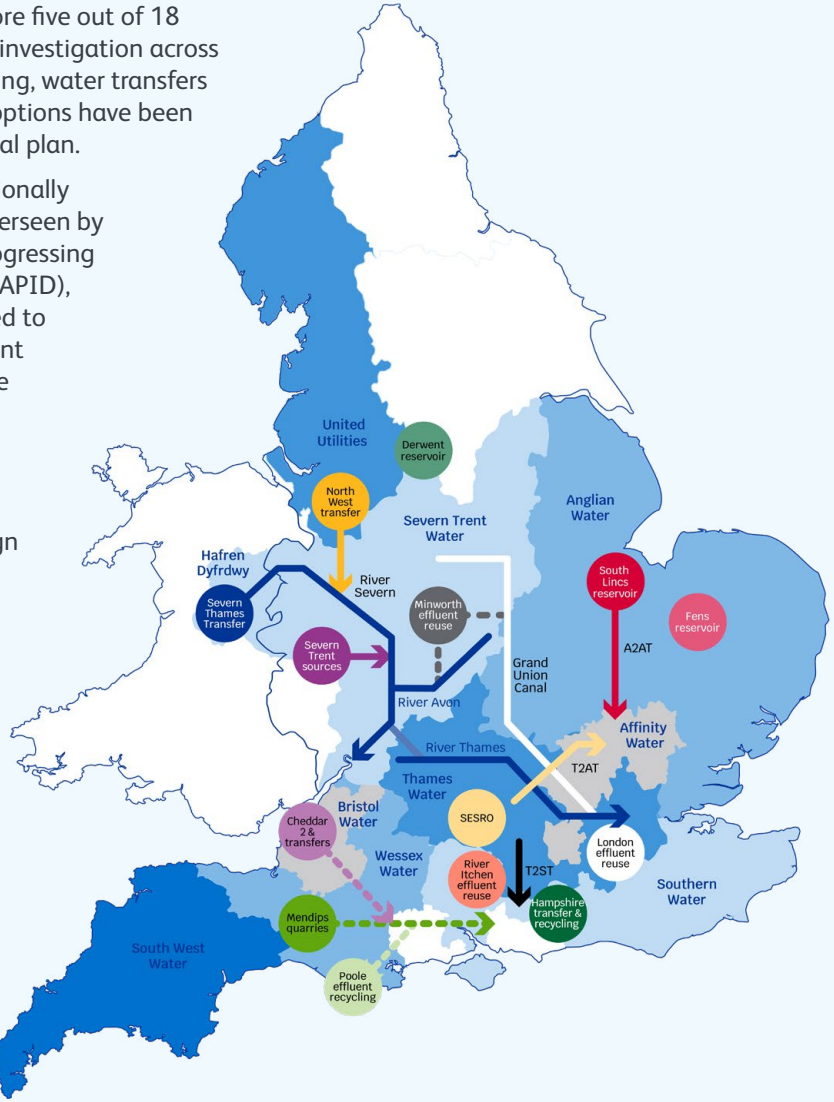
Alongside these options, we're working with WRSE to improve connectivity across the South East. While this won't boost supplies, we can potentially provide a more efficient service for everyone by sharing water across the region.

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. SROs approved in our WRMP will now 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

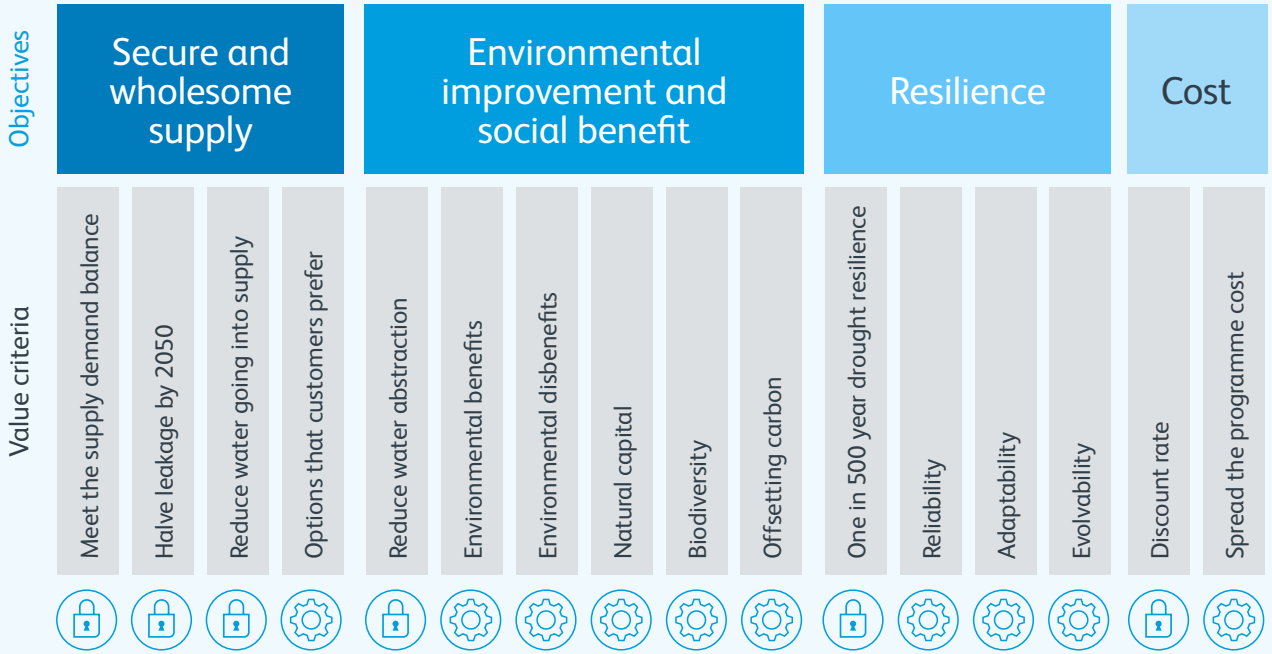
Our plan

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 WRMP24 fits with the regional approach of the WRSE regional plan.

We've worked openly and transparently with customers and stakeholders across our area and the wider South East throughout the development of this plan. The first step was to build and gather feedback on a 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; customer 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 our WRMP24.



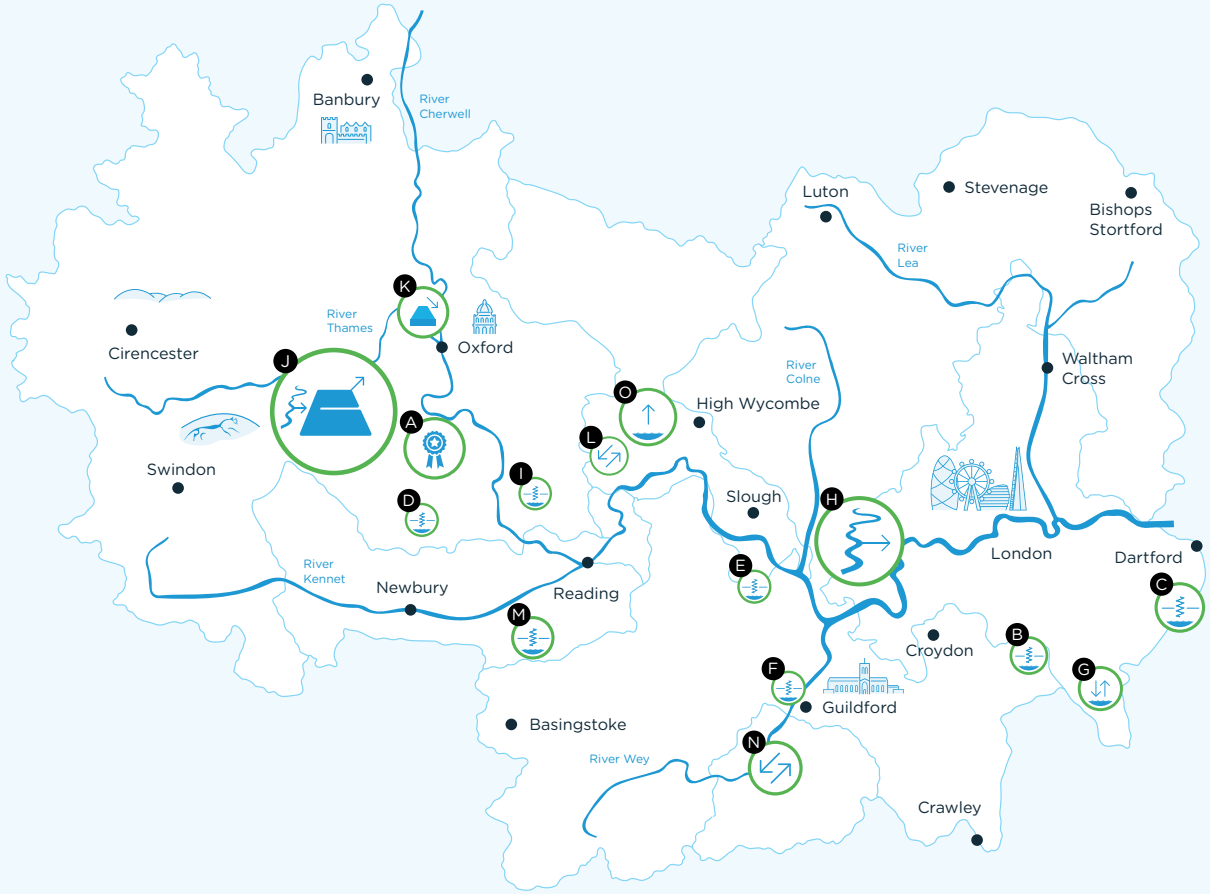
These criteria are fixed

We have choices for these criteria

* Consultation on the emerging draft regional plan, January 2022

Here’s an overview of our 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 RWE Didcot Licence Trade: 23 Ml/d - 2025
- B Groundwater scheme at Addington: 3 Ml/d - 2028
- C Groundwater scheme at Southfleet and Greenhithe: 9 Ml/d - 2030
- D Groundwater scheme at Woods Farm: 2 Ml/d - 2030
- E Groundwater scheme at Datchet: 2 Ml/d - 2030
- F Groundwater Scheme - Dapdune Licence Disaggregation: 2 Ml/d - 2030
- G Aquifer recharge at Horton Kirby: 5 Ml/d - 2030
- H New river abstraction at Teddington supported by water recycling: 67 Ml/d - 2033
- I Groundwater scheme at Moulsford: 2 Ml/d - 2033
- J South East Strategic Reservoir Option (SESRO): 271 Ml/d - 2040
- K Oxford Canal Transfer: 12 Ml/d - 2040
- L Interzonal transfer from Henley to SWOX: 5 Ml/d - from 2040
- M Groundwater scheme – Mortimer (recommissioned): 5 Ml/d - 2042
- N Water transfer from South East Water: 10 Ml/d - 2050
- O Surface Water abstraction at Medmenham: 24 Ml/d - 2050

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 customers cut down their 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

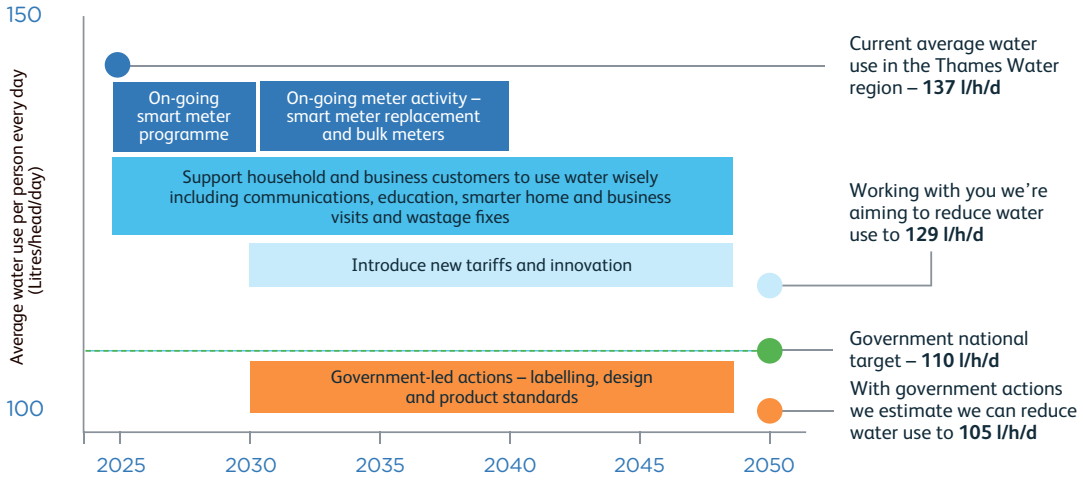
As part of our plan, we'll reduce the amount of water lost through leaks in our network and customer pipes by 23 % by 2030, saving over 100 Ml/d of water as well as meet the government priority of halving leakage by 2050. We'll start with the most cost-effective interventions. Firstly, we'll help customers 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 1,500,000 smart meters to homes and businesses 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.

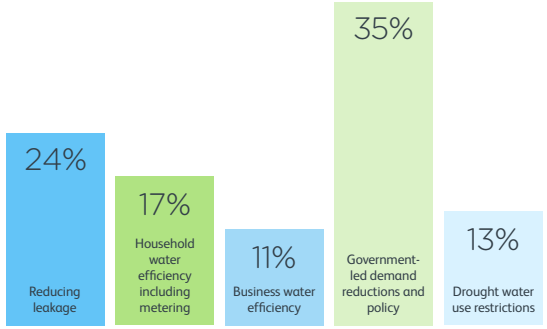
We've analysed water saving activities in depth. Using tried and tested techniques alongside some more innovative approaches, including experimenting with new water tariffs, we forecast that we can help save around 143 Ml/d by 2050. This will reduce average water use from 137 to around 129 litres per person per day.

In addition to the actions we can take, we require further action by the government if we are to achieve the national target of 110 l/h/d. The government is 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 105 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. We have committed to meet this in our WRMP through a significant demand reduction programme. In total, our work to tackle leakage and reduce water demand will make up around 80 % of the water shortfall by 2050. The scale of this activity is very ambitious and hasn't been achieved previously. It will take concerted, collaborative efforts by the government, stakeholders and water companies, who will have to transform how they work with customers to reduce their water use. It also relies on the government bringing forward new water-efficient policies including labelling all water-using products, bringing in new standards for these products and updating building regulations for new homes and retrofits earlier than originally proposed. The ability to achieve these ambitious demand reduction targets will greatly affect the resilience of our water supplies. As we deliver our plan, the WRMP24 monitoring plan will indicate whether the reductions being achieved are enough or whether we need to take further action including developing additional sources of supply.



2050 (% contribution)

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.

By 2050, the demand reduction measures described above will save around 557 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 cumulative contribution of each to the overall water saving programme.

	2030	2040	2050
Reducing leakage	100	158	204
Metering and water efficiency – household	35	81	
Metering and water efficiency – non- household	30	69	95
Innovation and new tariffs	5	31	61
Water efficient government policies *	22	167	304
Temporary drought measures – TUBs and NEUBs	140	140	140

Providing sustainable, resilient sources of water

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

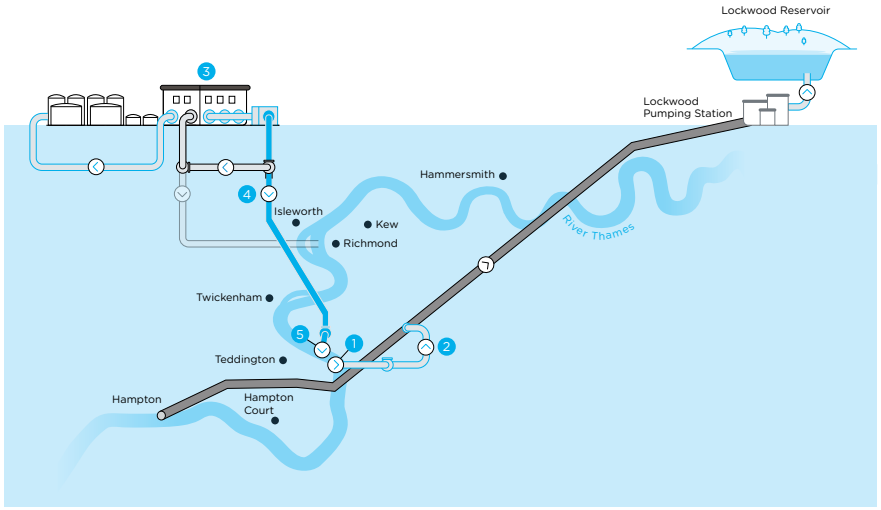
Working with WRSE, we've used complex decision support tools to develop different programmes of options, or plans, that could help us and our neighbours meet the planning challenge. We've analysed these plans to understand the cost and how the plans perform against our best value criteria. We've also 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 2033		
South East Strategic Reservoir Option (SESRO) **New storage reservoir.** The scheme would supply water for Affinity Water, Southern Water and Thames Water customers (271 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	
New groundwater sources, water transfers and licence agreements These schemes take between one and five years to develop	Groundwater sources at Addington, Southfleet and Greenhithe, Woods Farm, Datchet and Dapdune. Aquifer recharge at Horton Kirby	Groundwater sources at Moulsford and Mortimer. Transfer via Oxford canal. Inter-zonal transfer from Henley to SWOX	Water transfer from South East Water. Surface water abstraction at Medmenham

New river abstraction at Teddington

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



1. A new abstraction from the River Thames, upstream of Teddington Weir. A new intake structure will be built on the bank of the River Thames to take the water from the river.
2. A short connecting pipeline will be built underground to move the abstracted water to an existing tunnel and then onto storage reservoirs in the Lee Valley to be treated to become drinking water.
3. The abstracted water will be replaced with highly treated water from a new water recycling facility, which will be located at Mogden Sewage Treatment Works.
4. A new tunnel will be built to transfer highly treated water, from a new water recycling facility which will be located at Mogden Sewage Treatment Works to the River Thames.
5. A new outfall structure, to discharge the recycled water, will be built on the banks of the River Thames.

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

South East Strategic Reservoir Option (SESRO)

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

Teddington Direct River Abstraction (TDRA)

What's the scheme?

This scheme is a new river abstraction on the River Thames, close to Teddington Weir. Water would be abstracted from the river upstream of Teddington Weir and transferred along a section of new connecting pipeline to an existing underground tunnel to our Lee Valley reservoirs in East London to become drinking water.

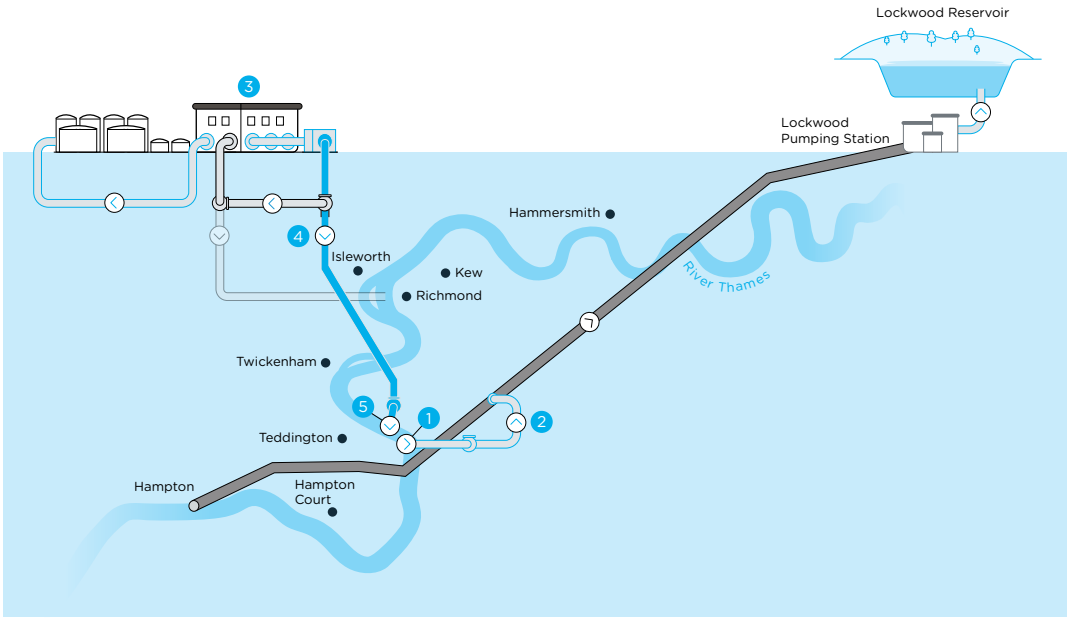
The abstracted water would be replaced with highly treated recycled water from Mogden Sewage Treatment Works in Isleworth, transferred to the river along a new underground tunnel to an outfall structure upstream of Teddington Weir. This way, we'd be able to access additional supplies of water from the river, while ensuring river levels are maintained and the river environment and ecology protected. As a drought resilience scheme, this will provide up to 75 million litres per day.

Why do we need this scheme?

We need extra water resources from the early 2030s so we can be confident we can supply a secure water supply to our customers during severe drought events. Working with WRSE, we've carried out further modelling and testing for the regional plan, which shows that a direct river abstraction is the best value scheme to increase drought protection for our London customers. It can be constructed by 2033.

When will it be used?

There would be rules governing when the scheme could be used. We'd only use it during periods of prolonged dry weather, typically between late summer and late autumn, on an intermittent basis. In order to keep the treatment facility in good working order at other times, we'd need to run water through it, at a low volume, called a "sweetening flow. This would be discharged at the existing outfall at Isleworth Ait.



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5. A new outfall structure, to discharge the recycled water, will be built on the banks of the River Thames.

Have we listened to local concerns and how have these shaped the plan?

We've listened to concerns raised by the local community about the perceived public health and environmental impact of the scheme. So far, we've completed initial assessments including environmental and water quality monitoring. The results show that the scheme presents a low risk to the environment, and the risks can be mitigated. We're carrying out more detailed assessment in consultation with the Environment Agency, Natural England, the Drinking Water Inspectorate and other stakeholders. We'll share this work with the local community as soon as it's ready, factoring in time to scrutinise and discuss it together.

What happens next?

We'll continue to carry out more detailed engineering and environmental studies to develop the scheme before we submit a formal planning application. We'll continue engaging with local communities and stakeholders throughout this work. We'll also examine a potential water recycling scheme in east London as a reserve option.

A new reservoir – the South East Strategic Reservoir Option (SESRO)

What's the scheme?

This is a reservoir in the Upper Thames catchment, south west of Abingdon in Oxfordshire. The reservoir will be filled with water from the River Thames in winter when there's plenty of water in the river. When river levels drop or demand for water increases, water will be released from the reservoir back into the river for re-abstraction downstream. It will provide water to customers in London and the Thames Valley as well as customers served by Affinity Water and Southern Water. As well as providing a resilient water supply for the South East, the reservoir also provides opportunities to create new habitats and increase biodiversity as well as offer new leisure and recreation facilities.

Why do we need a reservoir?

We've assessed a wide range of options, including tackling leaks, making the best use of our water resources and developing new sources of water including water recycling, regional water transfers and reservoirs. Given the scale of the water resources shortfall, we'll need a combination of demand reduction and new water sources.

Working with Water Resources South East (WRSE), the technical assessments and modelling that have been carried out show that a new reservoir forms an integral part of the proposed plan for the South East region.

The impact of the drought experienced in 2022 showed 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 the following year, a large reservoir will ensure our water needs can be met during future droughts.

Why is the reservoir chosen instead of the Severn Thames Transfer?

We need to develop a new strategic resource option in the western part of the South East region to make sure we've got enough water to go around in the future. We considered a transfer from the River Severn, but the technical assessments showed a reservoir is a better choice. It's more cost effective, has a lower carbon budget and it provides more environmental and resilience benefits, particularly under severe future scenarios.

Have we listened to local concerns and how have these shaped the plan?

We've listened to the concerns from the community, and in February 2023, we published a statement of **community commitments** to reassure the community that we're listening. One of our commitments is that we'll continue to engage with local communities as part of the rigorous planning process. We carried out a consultation in summer 2024 which will help to shape some of the design elements of the project.

What happens next?

We'll continue to carry out more detailed engineering and environmental studies to develop the scheme before we submit a formal planning application. We'll engage with local communities and stakeholders throughout this work.

What happens to the Severn Thames Transfer now?

There are lots of uncertainties in planning ahead for the next 50 years. We know we can't take risks with our water supply, so we've proposed that we should continue to develop the transfer scheme as a reserve option. This will allow us to act quickly if we need additional water in the future.

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

Work in progress overview map of the proposed reservoir site

Developing our proposals

Our proposals for the SRO schemes have been overseen by RAPID (Regulators' Alliance for Progressing Infrastructure Development), a consortium of water industry regulators. RAPID has implemented a 'gated' regulatory process to ensure that all new strategic water supply options are considered in a fair, consistent and transparent way, and that our customers' money is spent wisely.

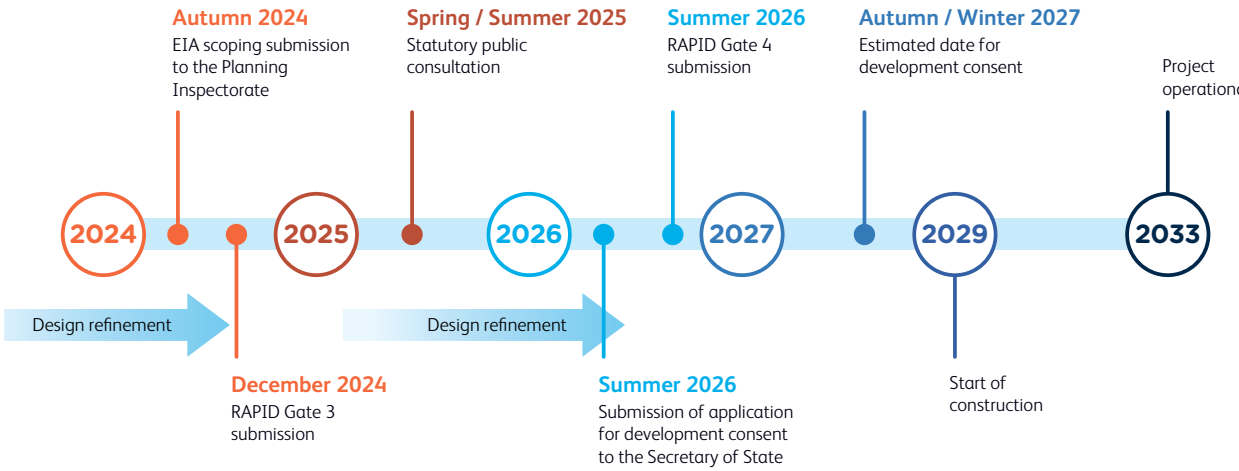
Over the next couple of years, reflecting on feedback that we receive during our engagement and public consultations, we'll be developing designs for the proposed schemes prior to submitting applications for a Development Consent Orders (DCO), seeking permission to construct and maintain them.

The DCO process provides opportunities for people to have their say on the proposals before a final decision is made by the Secretary of State. Before formally applying for a DCO, Thames Water must carry out public consultation and consider feedback.

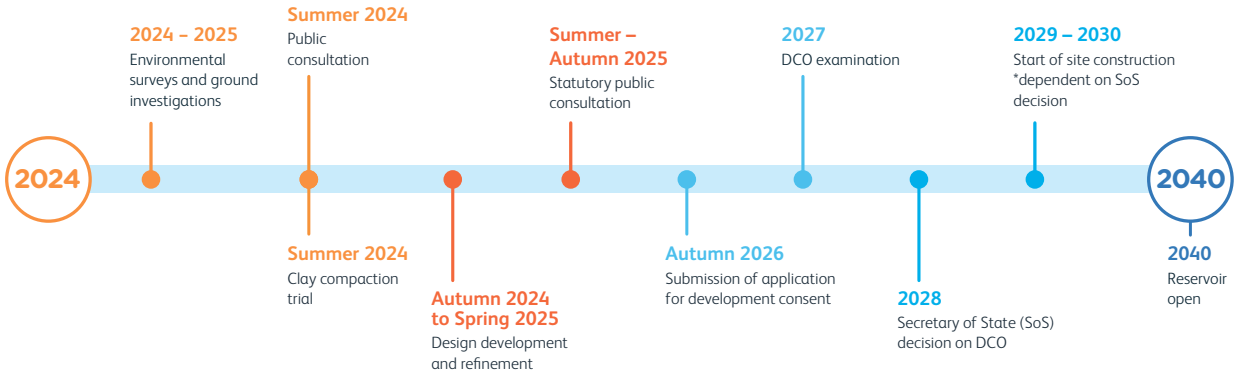
More information about RAPID and the gated process can be found here ofwat.gov.uk/regulated-companies/rapid/the-rapid-gated-process where you will also find the technical reports, additional information provided to RAPID and feedback from RAPID relating to the project.

Find out more about the DCO process in our factsheets thames-sro.co.uk/news/documents
More information is also available at national-infrastructure-consenting.planninginspectorate.gov.uk/projects/WA010006

Teddington Direct River Abstraction (TDRA)



South East Strategic Reservoir Option (SESRO)



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 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

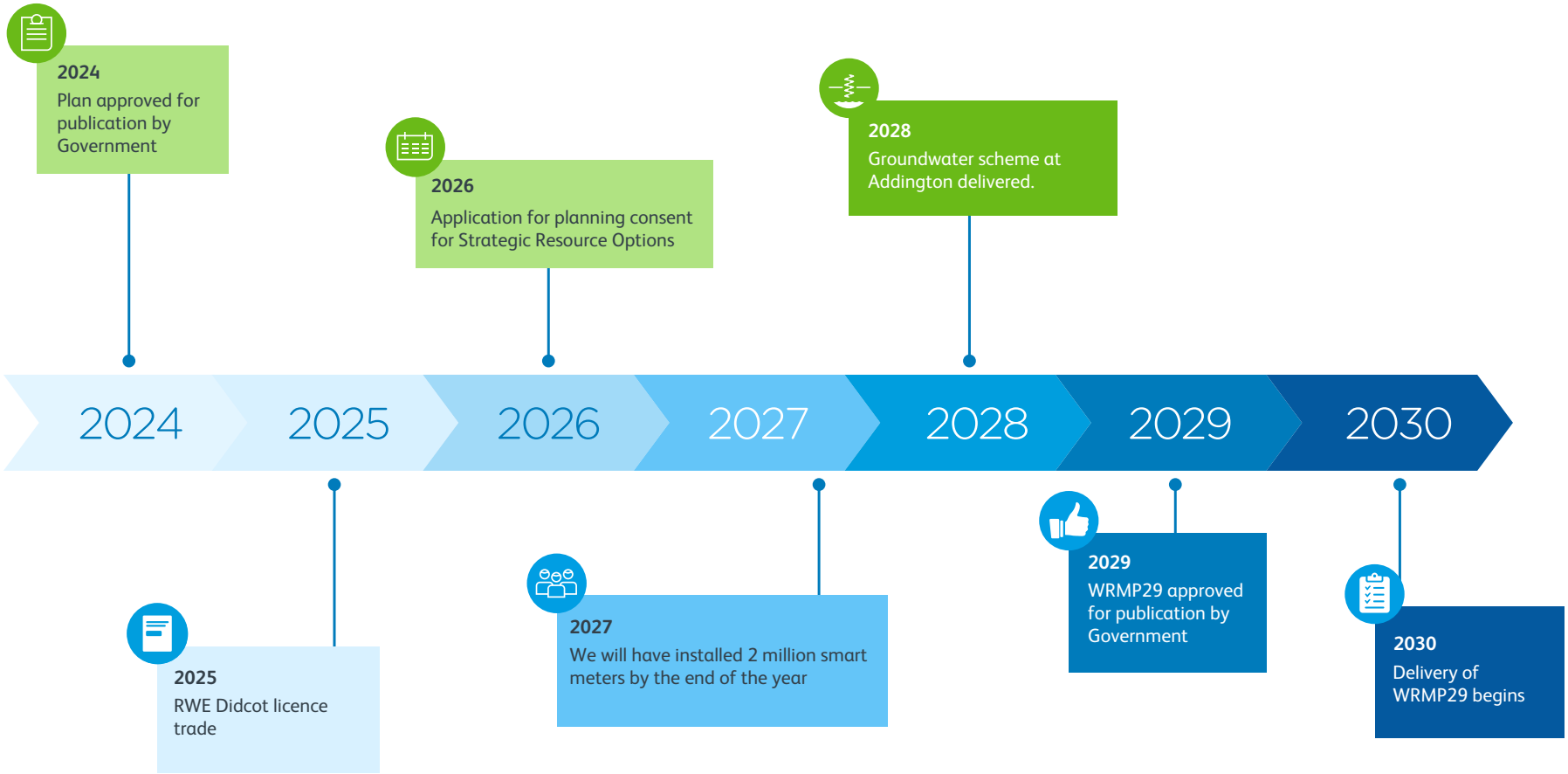
- To promote a healthy, thriving environment, we'll take up to 540 Ml/d less water from sensitive rivers and waterways by 2050
- We'll develop more nature-based solutions with our partners that build on the programmes we're already running
- We'll boost biodiversity by at least 10 % through new wetlands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

Delivering our Plan

Water is essential for all our lives, so we can't take chances with our water supply. We must not let the already serious challenges become greater as we work to make sure we all have access to a safe, secure water supply both now and for generations to come.

Our robust plan is based on the best available data and evidence. In the short term, we're confident in our forecasts and feel ready to start making progress that adds value for our customers. Building new water sources can take up to 15 years, so we need to get started with these proposals. Looking further into the future can be less predictable. That's why we've followed an adaptive planning approach with several checkpoints to adapt and modify our plan.

We'll monitor progress to ensure we're on track and can maintain confidence in our plan to provide a secure and sustainable water supply to our customers while protecting the environment. We'll review our plan each year and publish a report on progress, we also submit this to the Environment Agency for review.



Document library

Our plan is made up of:

- Summary (this document)

- Technical Report
- Technical Appendices
- Supporting documents
- Data tables

To access these documents, visit thameswater.co.uk/about-us/regulation/water-resources

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
CC Lessons Learnt from the 2022 Drought

Data Tables

Glossary

Response to issues raised in Defra's permission to publish letter

Supporting Documents

Statement of Response to Public Consultation

Statement of Response

Appendices responding to representations made

Response to Defra's request for further information on our revised draft plan

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

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