

Futureproofing our water supplies

A CONSULTATION ON
OUR DRAFT REGIONAL
PLAN FOR SOUTH
EAST ENGLAND

NOVEMBER 2022



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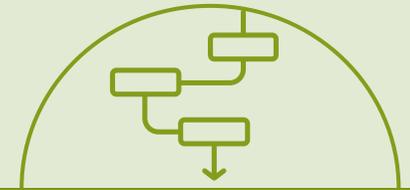
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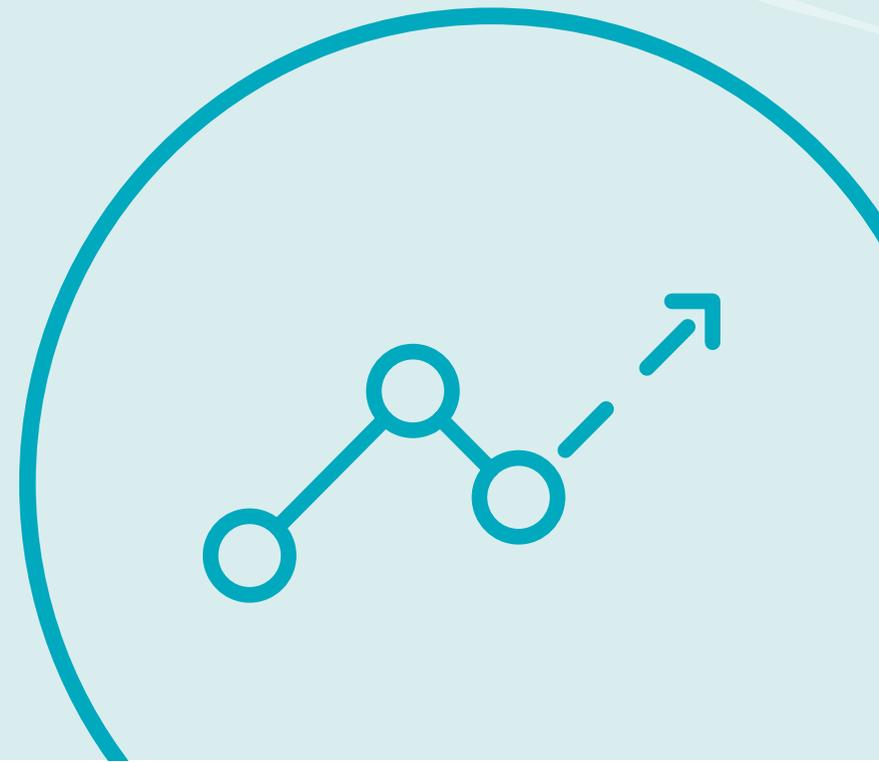
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SECTION 1

Introduction to this Consultation



Introduction

Water Resources South East (WRSE) is an alliance of the six water companies that supply drinking water across South East England. We are working collaboratively with government, regulators and stakeholders to develop a regional plan that addresses the climate and environmental emergency facing our water environment and to secure the region's future water supplies.

This is a consultation on our draft regional plan. It is a strategic plan that presents a regional solution to make our water supplies more resilient and address the projected future shortfall in the region's water resources due to climate change, population growth and increased protection for the environment.

Our draft regional plan has been produced following the publication of the Environment Agency's National Framework for Water Resources¹. Our plan looks ahead from 2025 to 2075 and will be reflected in the Water Resources Management Plans (WRMPs) our six member companies are required by law to produce. It is one of five regional plans that have been prepared through a process of national collaboration and reconciliation.

It is an adaptive plan that identifies the priority investment needed between 2025 and 2035, regardless of what the future holds. Beyond 2035, it can adapt to a wide range of future scenarios, so we can manage uncertainty and invest appropriately in our region's water supplies so they remain resilient in the years to come.

Our draft plan has been prepared in line with legal and regulatory requirements and policy expectations. These include:

- Increasing the resilience of the region's water supplies to reduce the risk of emergency restrictions such as standpipes to no more than once every 500 years on average by 2040
- Leaving more water in the environment to deliver long-term environmental improvements
- Reducing leakage by at least 50% by 2050
- Supporting the national ambition to reduce household water use to 110 litres per person per day by 2050.

The draft plan we present in this consultation is a best value plan. A best value plan is one that considers a range of factors alongside economic cost and seeks to achieve an outcome that increases the overall benefit to customers, the wider environment and society. It contains a mix of options, balancing ambitious reductions to leakage and water consumption with the need to invest in new sources of water. Some of these schemes will provide water to customers of multiple water companies through the development of a network of new transfers.



The water companies that are members of WRSE are:

AffinityWater



south east water



Guide to this consultation

This consultation is on our draft regional plan. The consultation period runs from 14 November 2022 to 20 February 2023.

Our consultation asks the following questions:

- 1 Do you think the draft regional plan addresses the scale of the challenge we face in the future through our adaptive planning approach?
- 2 Do you support us continuing to work with other sectors so our regional plan fully embeds their future needs and includes appropriately-funded solutions to meet them?
- 3 Do you think the draft regional plan strikes the right balance between reducing demand for water and developing schemes to provide new water supplies?
- 4 Do you support the increased collaboration between the water companies in the South East and other regions, through the development of shared resources and an enhanced network to transfer water around the region and between regions?

The six water companies that operate in South East England are consulting on their draft WRMPs over the winter of 2022/23. The draft WRMPs cover the same time period and reflect our draft regional plan. They identify the investment each company needs to make to secure water supplies to its customers.

These are separate consultations and submissions should be made directly to the water companies on their draft WRMPs. Please ensure you direct your response to the appropriate consultation. You are free to respond to more than one consultation if you wish. Details of our privacy policy can be found in Section 4 of this document.

To help direct your response appropriately we have produced the following guide.

WRSE draft regional plan

What this is:

It is a regional, strategic plan, that considers the future water needs of the whole of South East England.

It has set the strategic planning framework and decision making process that has been applied across the WRSE water companies' WRMPs.

It has considered all the options available to the region.

It identifies the regional solution to provide the water we will need between 2025 and 2075.

What this is not:

It is not a consultation on an individual water company's draft WRMP.

It does not include the technical details of how individual schemes will be implemented as this is a matter for the relevant development consent process.

How to respond:

If you would like to respond to our consultation on the draft regional plan visit wrse.uk, engagementhq.com/our-consultation or go to page 41 for alternative ways to provide feedback.

Draft Water Resources Management Plan (dWRMP)

What this is:

This is a plan prepared by each water company that sets out how it will meet its legal duties to secure water supplies for customers in its supply area.

It has adopted the regional planning framework and reflects the draft regional plan.

It will present the options the company intends to progress in the future for consultation.

Each water company is required by law to hold a consultation on its draft WRMP and produce a statement of response.

What this is not:

It does not include the technical details of how individual schemes will be implemented as this is a matter for the relevant development consent process.

How to respond:

If you would like to respond to a water company WRMP, page 41 of this document provides further details.

Welcome from the Chair of WRSE



Welcome to this consultation on our draft regional plan for South East England. Our plan sets out the actions and investment needed to secure our water supplies for the future and is being used to inform the plans of the six companies that supply water in the region. This is the first time a long-term plan of this nature has been produced at a regional level, but it follows years of collaboration by our six member companies in planning water resources.

Investment in water resources has the potential to deliver wider benefits and provide greater value to the environment and society, as set out in the Government's Water Resources Planning Guideline. That is why we have produced a best value plan. In short, this means we have considered how investments can deliver additional benefits, beyond the companies' legal obligations and regulatory expectations to secure water resources.

Secure water resources are vitally important to society. The formal announcement of a drought and the temporary restrictions on water use many experienced over the summer of 2022, are real-time reminders of why the change this plan embodies is so crucial.

By its very nature our plan is long-term. As such, we might not see the benefits we've outlined for several years. For example, next year, without the winter rainfall we desperately need, we may still experience restrictions. However, delivering our plan will mean our environment is more resilient, our supplies are more reliable and our relationship with water will be different in the years to come. This will ensure future generations have secure and sustainable water supplies.

Over the lifetime of the plan, we'll improve the environment we are so heavily reliant on and increase our resilience to droughts. This means we'll avoid reactive costs and economic disruption, protect iconic environments for generations to come, and reduce the risk of water shortages impacting on our society.

It's not just restrictions on our daily use we need to be concerned with, as these are a necessary short-term measure to manage one of the symptoms of the long-term challenges we face. Water security is integral to food and energy production, as well as crucial industries – involving businesses of all sizes. Therefore, we've worked with other sectors to develop our plan, helping secure sustainable supplies to support economic growth and food security.

Climate change and population growth will continue challenging our water resources and environment. Our single biggest driver of change is reducing abstraction to protect and improve our environment. This plan will leave more water in the environment than the options it includes take out, moving instead to sources that are more environmentally sustainable.

Achieving this will take time, require collective effort, and, as with all new infrastructure, cause some disruption. However, the long-term benefits we can achieve for customers, industry and the environment will bring sustainable benefits of far greater magnitude.

We've changed how we think about, and plan for, the future. While adaptive planning isn't a new concept, it's still relatively new for our sector. Our approach recognises that while we can't predict exactly what happens in the future, we can make a series of well evidenced projections and have a strategy to adapt when needed.

Crucially it means the investment needed in the first ten years of our plan has been tested against a range of different futures, so we know it is required. These 'least regret' options must be progressed urgently, so we get ahead of the challenges we face. Least regret does not mean these solutions will be easy to implement or won't be disruptive while they're being delivered. Instead, they are the solutions needed if we are to have secure and resilient water supplies in the future alongside an improved environment.

The heavy reliance on reducing how much water we use and tackling leaks is a collective challenge for the water sector, government and other stakeholders, while building new infrastructure will always be met with mixed views. However, we must make the most ambitious start possible and think differently about water. This year's drought was a stark reminder of that.

This consultation is a significant step, in a significant process. We face dynamic and existential challenges which none of us can solve alone. I'm very proud of the work done by the WRSE team and the water companies, and feel privileged to have played a small part in developing a plan to help futureproof our region's water supplies.

I'm grateful for everyone who has engaged with WRSE over years of hard work to get us to where we are today. Each new piece of evidence, insight and challenge, provided by so many of you has helped us refine and sharpen our plan.

Your responses to our draft best value plan for the region will be very welcome.

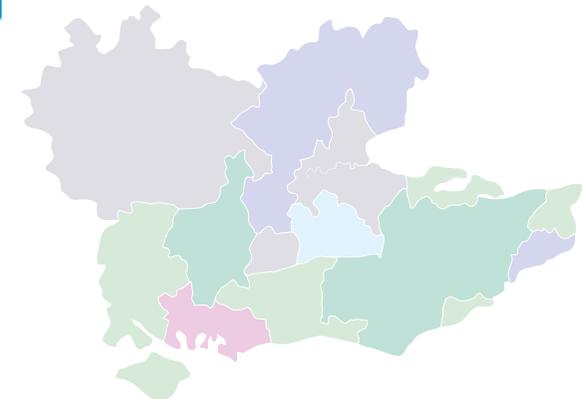
Chris Murray MBE



Independent Chair
Water Resources South East

Draft regional plan on a page

WRSE is an alliance of the 6 water companies in South East England.

Together they supply **6 billion litres** of water each day.

We're planning **50 years** ahead to provide enough water for the future through a regional plan.

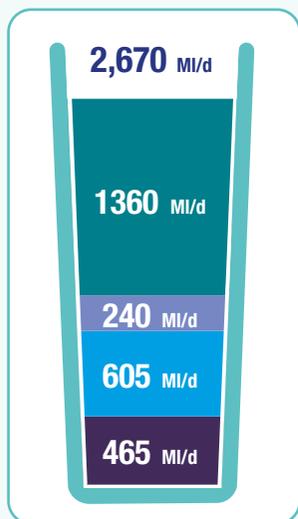
We're also planning for the needs of other sectors such as agriculture, industry and power.

If we do nothing, we could face a shortfall of nearly **2.7 billion litres** of water per day by 2075.

More water is needed to:

- Improve the environment by leaving more water in rivers, streams and underground sources
- Address the impact of climate change
- Supply a growing population
- Make our water supplies more resilient to droughts

The future is uncertain, so our regional plan can adapt, depending on what might happen.



Our draft regional plan shows how resilient and sustainable water supplies could be provided for the future.*

-  Reduce leakage by at least **50%** and lower water use by **40 litres** per person per day (on average) by 2050.

Between 2025 and 2035 we need to:

-  Complete the construction of **1** new reservoir in Hampshire and start building **3** more in Oxfordshire, Kent and West Sussex
-  Use the Grand Union Canal to transfer water from the Midlands to South East England
-  Develop **6** water recycling schemes in Kent, Sussex, London, Hampshire and the Isle of Wight to supplement our water supplies
-  Build **1** desalination plant on the Sussex coast
-  Develop new transfers so we can move up to **600 million litres** of water per day around the South East and between other regions

Between 2035 and 2075 we could need to:

-  Develop a further **6** water recycling schemes across the region
-  Transfer more water from the Midlands and the North West using the River Severn and the River Thames
-  Build desalination plants at a further **5** locations in Kent
-  Build **1** new reservoir in East Sussex
-  Store extra water underground at **3 sites**
-  Develop new transfers so we can move up to **1,400 million litres** of water per day around the South East and between other regions.

Our regional plan could cost **£15.6 billion** to deliver by 2075.

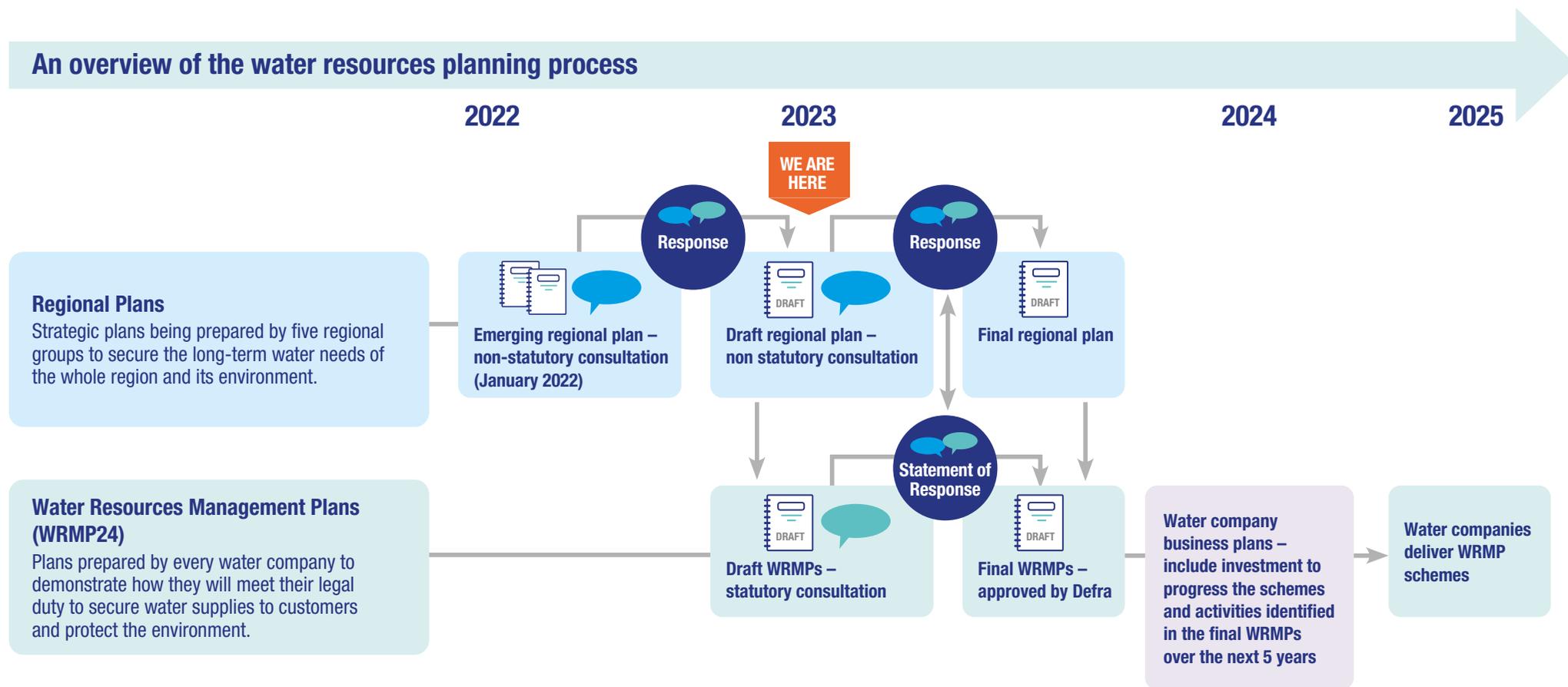
*Schemes shown are based on the reported pathway of our draft best value plan

Overview of the water resources planning process

Water companies in England and Wales are required to produce a Water Resources Management Plan (WRMP) every five years. WRMPs are strategic plans, which must be prepared by law. They assess a range of options and present a solution – or set of options – to provide the water needed to secure resilient and sustainable water supplies for their customers throughout the planning period. This will ensure that at no point there is a shortfall in water supplies.

Where new water sources and pipelines are needed, the companies will develop these schemes and follow the appropriate planning process before they are built. This will include further public consultation where required. The investment required to progress the options identified in the WRMPs will be included in water company business plans and reflected in customers' bills.

For the first time, regional plans are being prepared to consider the water needs of the whole region. Our draft regional plan has set the strategic planning framework and decision-making process used to identify the best value solution for the region. Water companies are required to reflect the regional plan in their WRMPs.



What is a regional plan?

The WRSE regional plan is being developed by collaboration through the six water companies that supply water in South East England.

It provides an objective and evidence-based solution to meeting the region's future water needs. Instead of each company developing its own water resources management plan in isolation and putting them together, we are taking a regional approach.

We are looking beyond individual companies' boundaries and considering all the options available. The regional plan will identify the best value set of options that deliver the most benefit to people and the environment across the region. It also considers the water needed by other sectors in the future.

More options have been identified and considered that will need to be developed collaboratively to provide water to more than one company. Options have also been considered that could provide water to other users too.

Our plan is one of five regional plans being developed to meet the country's future water needs.

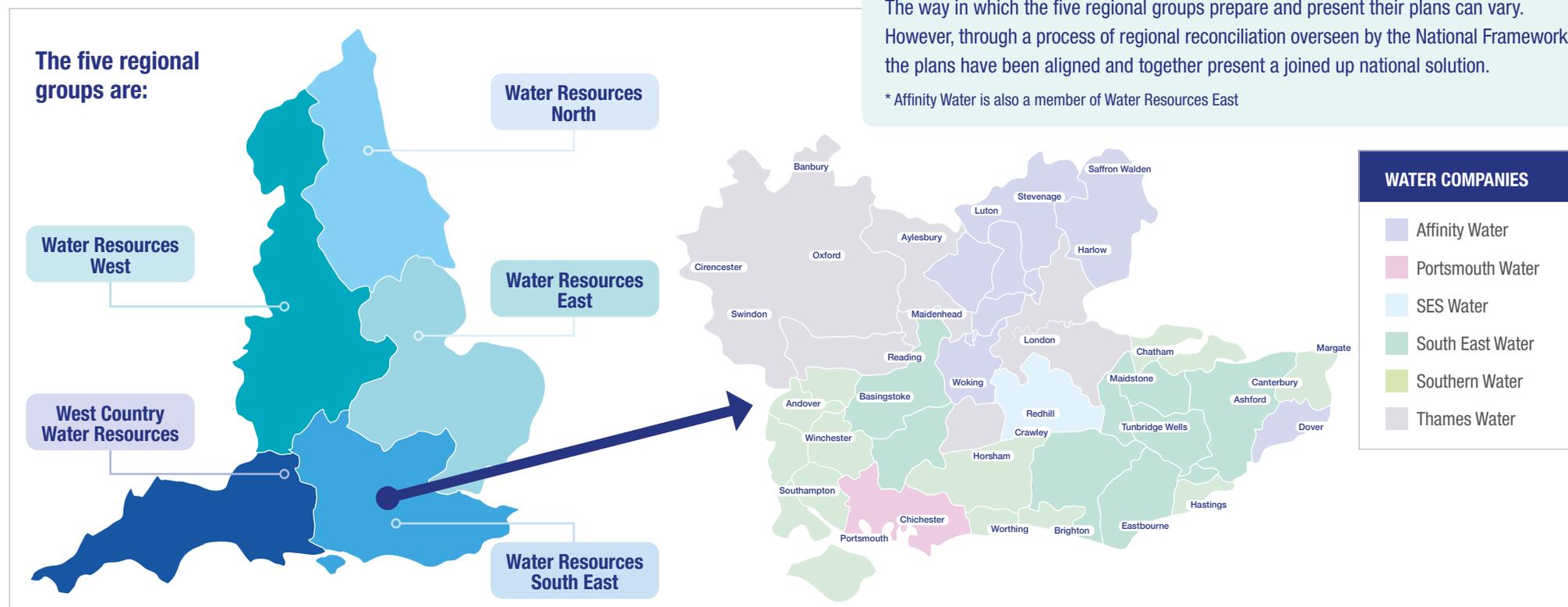
There are 17 companies that provide public water supplies in England. Each belongs to at least one regional group.*

In 2020, the Environment Agency published the first National Framework for Water Resources to transform how we plan future water supplies. It requires water companies and other large water users, such as the energy, agriculture and horticulture sectors to work together through regional groups to understand the future water needs of the whole region and its environment.

The regional plans must identify which combination of options are needed to secure water supplies. They must also assess what additional benefits could be delivered through investment in water resources, including benefits to the environment and society such as increasing biodiversity and natural capital. Each regional group must produce a best value plan that balances cost alongside these wider benefits.

The way in which the five regional groups prepare and present their plans can vary. However, through a process of regional reconciliation overseen by the National Framework, the plans have been aligned and together present a joined up national solution.

* Affinity Water is also a member of Water Resources East



The development of the draft regional plan

We've worked with the WRSE member companies, water industry regulators, water companies in other parts of the country, customers, and a range of stakeholders to develop our draft regional plan.

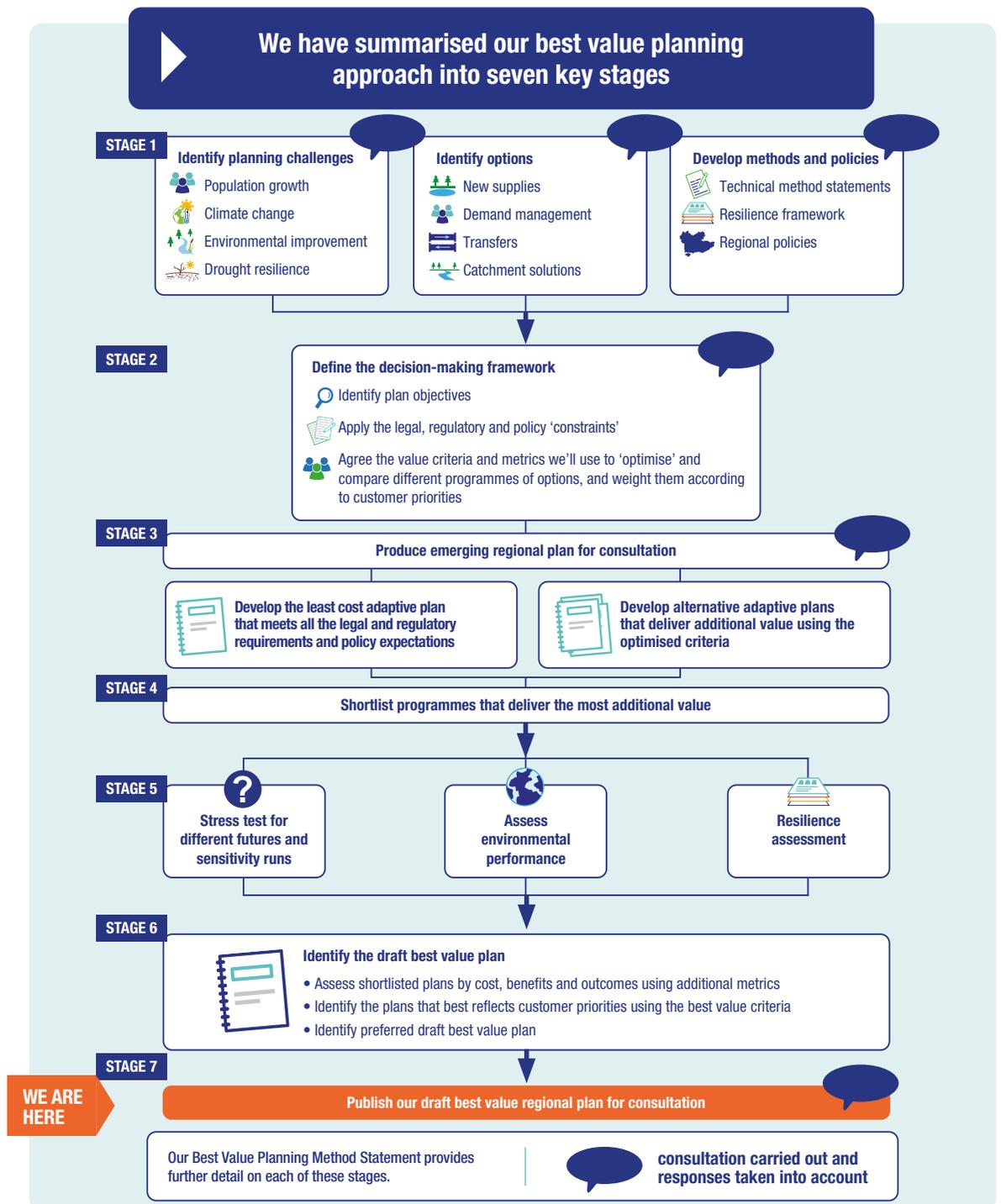
We assessed more than 2,400 options to identify which should be considered in our regional plan. An option is a scheme or intervention that will either provide more water or reduce demand. Most of the options considered were put forward by our six member water companies. We also identified new ones, so more were considered than ever before. Just over 1,000 options were rejected because our assessments showed they were too damaging to the environment or were not reliable enough sources of water.

More than 1,400 options were included in our regional investment model, some of which can be developed in different sizes depending on how much water is needed. The investment model chooses the options that, when combined, deliver the water required when and where it is needed.

We used our model to identify the least cost regional plan, which met all the legal and regulatory requirements and policy expectations. We then developed a number of alternative plans to assess the wider benefits they could deliver. We have also tested what happens when you remove certain options. This has helped ensure we understand their role in the future and whether there are any alternatives.

The preferred best value plan has been selected by WRSE for the purposes of the draft plan consultation. We consider it represents the best value combination of options to meet the future challenges the region is facing and that perform most favourably against the criteria we have assessed the plans against.

Details of how we have developed the best value regional plan and the alternative plans we have produced can be found in our technical annexes and supporting reports.



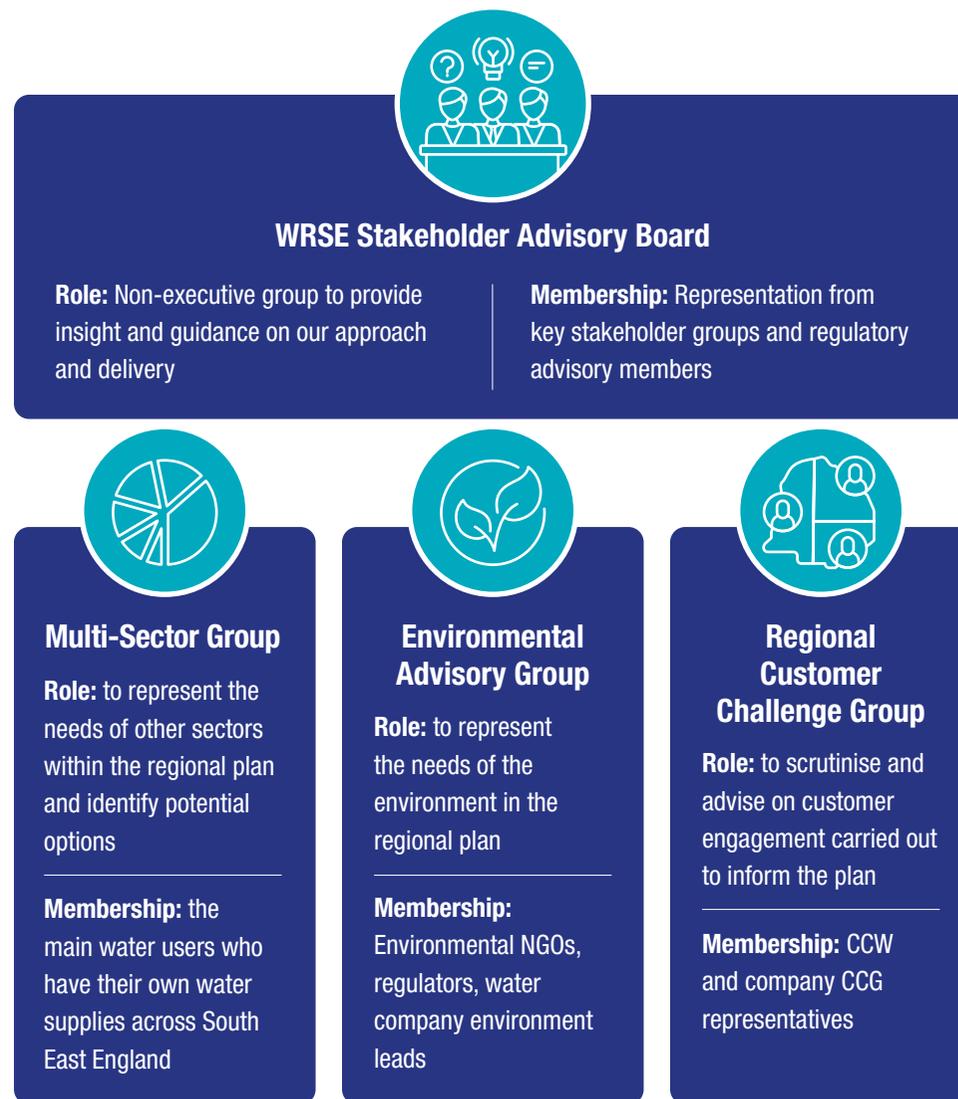
Customer and stakeholder involvement in the regional plan

We are engaging with the customers of the six WRSE companies to help us develop the regional plan. We are also working with a wide range of stakeholders to incorporate their knowledge and expertise to ensure we produce the best value plan for the region. We have:

- Worked with local authorities to help us forecast how many people we may need to supply water to in the future
- Engaged with other sectors such as energy, industry and agriculture to understand their future water needs
- Carried out a series of consultations on the technical methods we are using and our best value decision making framework
- Worked closely with the Environment Agency and our Environmental Advisory Group to develop an environmental forecast that includes a range of scenarios to leave more water in the environment by reducing existing abstractions and are developing a framework to help us prioritise where this is needed
- Engaged with more than 2,500 water company customers to understand their priorities and the types of schemes they prefer, these have been scored and used to assess the different plans we have developed
- Carried out research with customers on what they value most and the wider benefits they want us to deliver to inform our best value framework
- Consulted on our emerging regional plan in January 2022 and used the feedback received to inform our draft regional plan
- Commissioned independent experts to review key elements of our plan including our investment model, demand forecast and resilience framework.

We established four stakeholder groups, shown in Figure 1, that have helped us develop our draft regional plan. They contributed to the development of our plan by providing data, knowledge and expertise on their areas of interest, and challenging and scrutinising our approach.

Figure 1: WRSE stakeholder groups



Further details of our stakeholder groups can be found on our website, wrse.org.uk/stakeholder-advisory-groups.

The options that have been considered

We put more than 1,400 options into our investment model, some of which can be developed in a range of different sizes depending on how much water is needed. Together these options could provide nearly five billion litres of water per day. They include:



148 demand management strategies which include a range of leakage, metering, and water efficiency activity



12 locations for new reservoirs and two schemes to make existing reservoirs bigger



40 groundwater schemes that will improve how we abstract water from underground



158 transfers within South East England that would move water between the six water companies in the region



16 desalination plants that could turn more than 900 million litres of seawater into drinking water



15 managed aquifer recharge (MAR) and aquifer storage and recovery (ASR) schemes that enable more water to be stored underground



28 water recycling schemes that will return highly treated wastewater to the environment in a different place so it can be used again



300 catchment schemes, many of which were identified by local catchment groups and community organisations



16 transfers from other regions of the country that would move water already available, or created by the development of new sources in those other regions, to South East England

We've also looked at options to trade water and at drought options such as Temporary Use Bans, Non-Essential Use Bans, Drought Orders and Drought Permits.

Strategic Resource Options (SROs)

Within our set of options are 15 SROs that are being investigated in more detail by the relevant water companies. Specific funding was allocated in the PR19 business plans to progress work on these schemes through a process being overseen by RAPID – the Regulators' Alliance for Progressing Infrastructure Development. Work is still ongoing to look at the cost and deliverability of these options, but they have all been considered in our draft best value regional plan. If progressed, each will go through the full planning process including further public consultation where required. We'll continue to work with the water companies to update costs and option information as their work progresses. To find out more about the RAPID process visit <https://www.ofwat.gov.uk/regulated-companies/rapid/>

Changes since our emerging regional plan

Since the consultation on the emerging regional plan in January 2022 we have continued to develop our draft best value regional plan. This has included:

- Carrying out more detailed work with the four other regional groups to establish where water may be available elsewhere in England and Wales to move to South East England
- Updating details on some of the individual options, including costs, in our regional model
- Conducting further environmental assessments where there have been changes to schemes
- Developing a new least-cost plan, based on updated data, that meets all the legal and regulatory requirements and policy requirements to compare our best value plan against
- Assessing how much additional value different regional plans could deliver using the criteria and metrics in our best value framework to identify our draft best value plan
- Carrying out further modelling that considers how the draft regional plan performs without key options and interventions.

Following the consultation we produced a summary of the responses we received².

We have taken into account the feedback we received through the consultation and have made several changes. In Table 1 we highlight the main areas of feedback we received and how we have responded.

Table 1: Summary of our response to feedback on the emerging regional plan

Feedback on the emerging regional plan	WRSE response	Page
Most supported our work to develop a long-term environmental forecast but wanted any reductions to abstraction to be evidence based and deliver benefits to the environment.	We have continued to work with the water companies, regulators and members of our Environmental Advisory Group to identify three scenarios to forecast future abstraction reductions and included them in our adaptive plan.	14
Abstraction reduction should be prioritised in catchments where there are sensitive water sources and designated sites; and focus on headwaters to provide benefits to the whole river.	We are continuing to work with regulators to develop an environmental framework to prioritise long-term abstraction reduction. Investigations over the coming years will determine where further reductions are made.	15
WRSE should use the latest population figures from the Office of National Statistics (ONS) in our adaptive planning scenarios.	We have included a range of population forecasts including local planning authority housing projections, the latest ONS regional population growth forecast and the population forecasts associated with OxCam, planned development between Oxford and Cambridge in our adaptive plan.	13
The adaptive plan should branch before 2040 to reflect any changes over the coming years.	We have changed our adaptive planning approach so there are branch points to alternative pathways in the first 15 years of the plan and we have introduced decision points where the decision to adapt will be made.	19
WRSE should nominate a pathway for the draft regional plan on which to base future investment.	We have identified a reported pathway which is presented in this consultation which meets regulatory requirements. However, our adaptive plan presents a strategy that can adapt to all future pathways.	19
Some were concerned about the over-reliance on demand management measures and the risk on these not being achieved.	We have assessed a range of demand management portfolios and have completed an investment model run to show what would happen if we don't achieve the level of demand management assumed in the plan.	26
Certain options in the plan were challenged and some stakeholders didn't support them.	We have considered a wide range of options in the development of the plan. The programme appraisal and decision-making process has considered all feasible options on a comparable basis. This has included testing how the plan performs without strategic resource options to understand the consequences of their omission, resulting in evidence-based decision making on the production of a robust, best value plan for South East England.	28-33
Some respondents felt the Severn Thames Transfer (STT) option should be progressed ahead of the South East Strategic Reservoir Option (SESRO).	Further reconciliation has been carried out with the other regions to determine how much water could be transferred to the South East through the STT. The costs associated with developing the STT have also been updated. Both options have been considered and included in the draft regional plan. The STT is a more expensive and carbon intensive option.	28-29
We should consider the use of the Cotswold Canals as part of the STT option.	We have undertaken an investment model run to explore the use of the canal as part of the STT scheme, which has demonstrated that it is a more expensive option.	28

SECTION 2

The Challenge

We have looked ahead to 2075 to understand the future water needs of South East England.



The region today

In the Environment Agency's latest assessment³, all the water companies in South East England are in serious water stress. This means that current or future predicted household demand for water is a high proportion of the effective rainfall available which is, or is likely to be available, to meet that demand.



MAP KEY



National Parks



Areas of Outstanding Natural Beauty

The South East Environment

The region has a precious and unique environment with a number of designated and protected areas.

- 30 river catchments with more than 40 prominent chalk streams*
- Over a quarter of the region is designated as an Area of Outstanding Natural Beauty
- National Parks cover 8% of the region
- There are more than 1,600 Sites of Special Scientific Interest (SSSI).

**As identified by the CaBA Chalk Stream Restoration Strategy*

Where our water comes from

We rely on the natural environment to provide the water we use.

- More than half the region's public water supply comes from natural underground sources many of which also support chalk streams
- Rivers and springs provide the rest
- 27 reservoirs store water across the region
- Average rainfall across South East England is 64mm per month compared with 81mm per month across England and Wales
- There is one desalination plant in London
- 400 million litres of water per day is moved around the WRSE region.

How much water do we use?

97% of the total water used in the region is supplied by water companies to homes and businesses. The rest is abstracted directly by other users.

- Up to six billion litres of water is supplied each day by water companies to 8.2 million homes and 2 million businesses
- Household customers use just over 150 litres* per person compared to the national average of 145 litres per person per day
- Around 3,000 agricultural and horticultural businesses across the region together use 77 million litres of water per day (with seasonal variations)
- One major power station in Oxfordshire uses just under 30 million litres of water per day
- Around 30 million litres per day are used to produce paper in Kent.

**Based on 2020/21 figures, source discoverwater.co.uk*

Climate change and population growth

There are three main factors that will impact how much additional water we will need in the future – climate change, population growth and environmental improvement through abstraction reduction.

Climate change

Climate change will impact how much water is available from our existing water sources. This is because it will result in more frequent and severe droughts and more extreme flooding events. We've taken the most recent climate change projections produced by The Met Office and assessed how much water will be available in normal years and during droughts. This tells us how much more water we will need to find to replace the supplies we expect to lose. It has also helped us identify which sources are most at risk from climate change. These are typically river sources that are less dependent on groundwater and more reliant on rainfall to maintain flows.

Our draft regional plan is adaptive to this range of climate change scenarios. Climate change impacts also impact on the two other factors we have considered.

Population growth

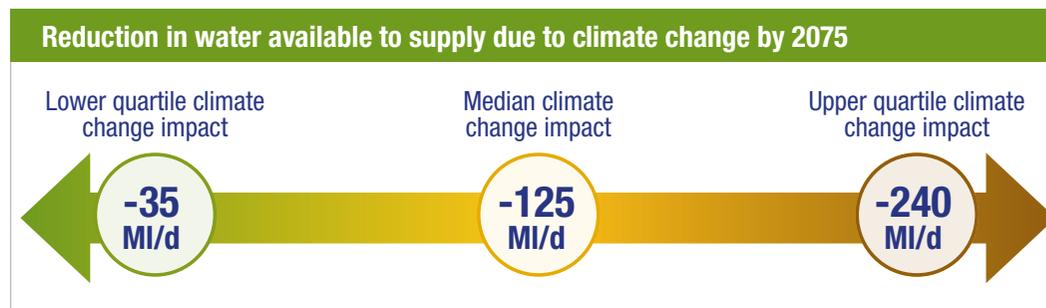
Our region's population could grow by between 2% and 33% over the next 50 years. This range includes the latest regional forecasts produced by the Office of National Statistics (ONS) and local authority housing plans which include proposed areas of development.

The minimum growth scenario reflects the lowest ONS projections, while the maximum growth scenario reflects future projected levels of housing need. These have been included so the draft

regional plan is stress tested against a wide range of future growth scenarios. We have also included a scenario that includes a large area of development between Oxford and Cambridge (OxCam). In this scenario there is projected migration out of the WRSE area.

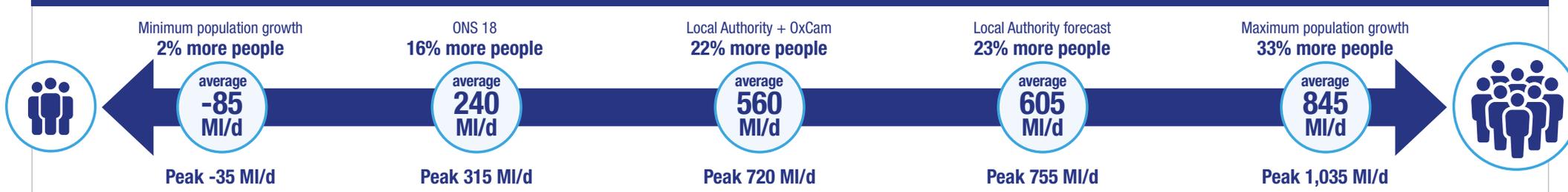
We have used these different population projections to forecast how much demand for water could change by 2075, with an overall increase in demand in all but one scenario. Our demand

forecast has included a reduction in water use because of ongoing water efficiency activity and the development of more water efficient homes. It also considers the impact of climate change, including how demand for water increases during periods of hot, dry weather. The demand forecast shows how much extra will be needed on an average day and during peak periods as our plan must provide enough water in all conditions.



MI/d = million litres of water per day.

Amount of water needed to meet population growth by 2075



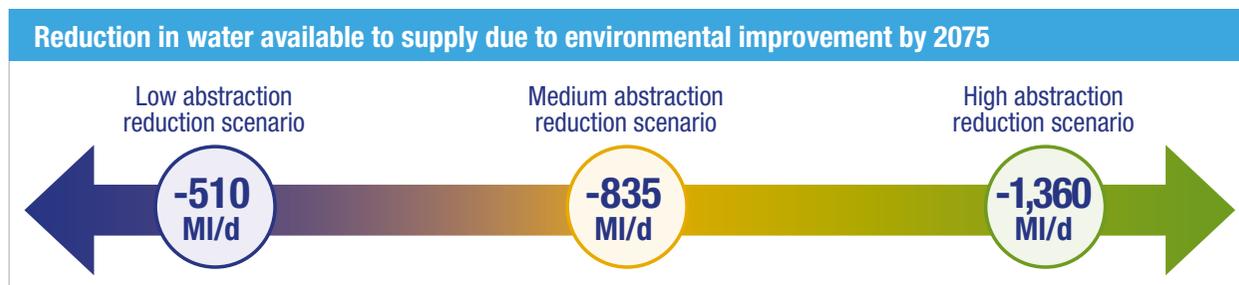
Non-household demand for water

We've also projected the future demand from businesses and public sector customers. Over the first 10 years of the plan we project a small decrease in non-household demand due to water efficiency activity. By 2050, the growth in industries such as data processing will see demand rise back up to 2025 levels.

Environmental improvement through reducing abstraction

Improving the environment of South East England is a priority for the regional plan. It will help to deliver the Government's ambition to achieve clean and plentiful water by improving at least three-quarters of our waters to as close to their natural state as is practicable. Abstraction, the process of taking water from the environment, is one of many things that can have an impact on the health of our waters. It can affect river flows, wetlands and ecology.

Water companies are already reducing how much water they take from some of their most sensitive water sources to prevent damage and help improve them. By 2030, they will have left more than 400 million litres of additional water in the environment each day. Further reductions have been committed to through the current Water Industry National Environment Programme (WINEP) up to 2035. The Environment Agency is also introducing caps on some abstraction licences, which will reduce how much water can be taken from some water company sources.



Longer-term, water companies may need to reduce how much water they take from other sources to help them adapt to climate change and remain healthy. The scale, pace and location of future abstraction reduction is being investigated by the water companies alongside their environmental regulators. We have worked with them to develop three long-term abstraction reduction scenarios to help us understand how much water could need to be left in the environment in the future and where this is needed.

The three scenarios have been informed by work carried out by the Environment Agency. It provided indicative forecasts for future abstraction reductions to support environmental policy outcomes. The Environment Agency forecast, referred to as 'BAU+', is the minimum level regulators expect water companies to plan for through their WRMPs. The Environment Agency's 'Enhanced' forecast goes further as it takes into account of additional long-term requirements for protected areas including chalk streams.

We have used the Environment Agency's indicative scenarios together with investigations and assessments completed by the water companies to develop the three environmental scenarios included in the draft regional plan. Our high abstraction reduction scenario meets the current expected level of abstraction reduction set by regulators.



Environmental improvement through reducing abstraction continued

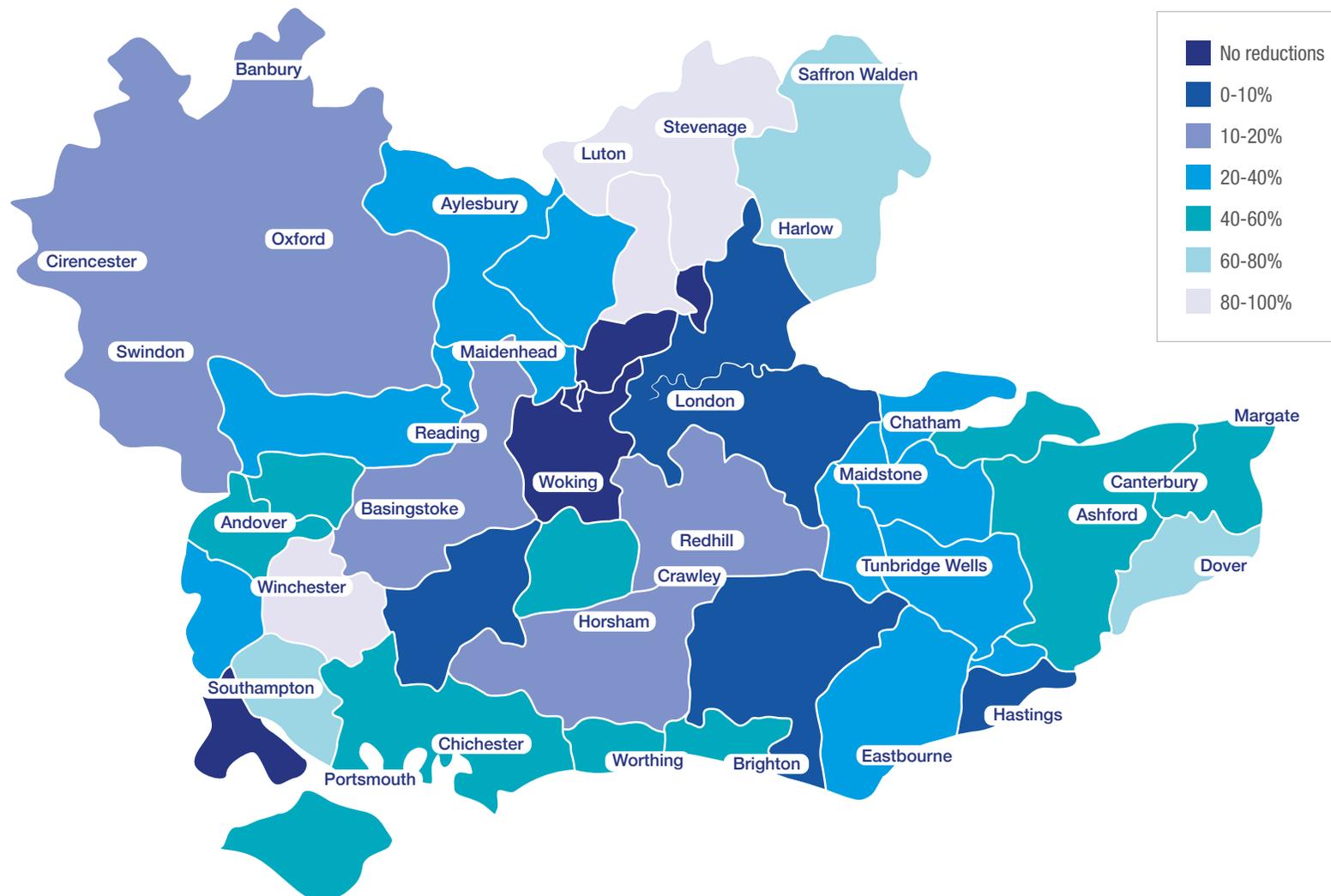
The level of future abstraction reduction will be determined through an ongoing programme of environmental investigations across the region's catchments.

This map shows the proposed percentage reductions in abstractions in the water resource zones across South East England by 2050, under the high environmental ambition scenario presented in the draft regional plan, compared to the predicted abstraction levels in 2026.

Prioritisation of abstraction reduction

Feedback on our emerging regional plan consultation indicated a strong preference that any future reductions to abstractions must be evidence-based and show the benefits that will be delivered.

We are working with the Environment Agency, Natural England, the WRSE water companies and our Environmental Advisory Group to develop a framework to prioritise where abstraction should be reduced. This will take into account feedback from our emerging plan consultation which showed strong support for the prioritisation of chalk streams and designated sites. There was also support for focussing on headwaters and tributaries so more water can be retained to benefit the whole river. The investigations carried out by water companies over the next 10 years will provide the evidence base for the future reductions in abstraction.



Increasing resilience to drought

Climate change is likely to make droughts more severe and frequent. Water companies are, through their current WRMPs, already making their supplies more resilient to severe droughts that would require emergency water restrictions such as standpipes in public areas and temporary cuts to water supplies.

These restrictions would have a significant impact on people and the economy. The National Infrastructure Commission's report⁴ produced in 2018 showed that at the time, there was a one in four chance they would be needed by 2050. The report also showed the cost of continuing to rely on emergency options could amount to £40 billion over the next 30 years.

The National Infrastructure Strategy⁵ produced by the Government in 2019, set the requirement for water companies to make their water supplies more resilient to severe droughts by 2040. This means water companies should only need to use such emergency measures once in every 500 years on average.

During droughts, water companies can apply for drought orders and drought permits from the Environment Agency that allow them to continue abstracting water from the environment, outside their normal licence conditions. This helps maintain supplies to customers. The WRSE water companies are proposing to stop using these drought orders and drought permits after 2040, during less severe droughts to help protect the environment. The regional plan includes the additional water needed to replace them.

In total, an additional 465 million litres of water is needed by 2040 to make the region's water supplies more resilient to a one in 500 year drought. This includes replacing 165 million litres of water currently provided through environmental drought orders and drought permits.

The draft regional plan assumes that Temporary Use Bans (TUBs) and Non-Essential Use Bans (NEUBs) will continue to be used in line with the levels of service set out in each water company's Drought Plan. Some of the WRSE companies currently have TUBs in place to help them manage the drought that developed over the summer. We expect that, as resilience to drought increases, these temporary measures will be needed less frequently.

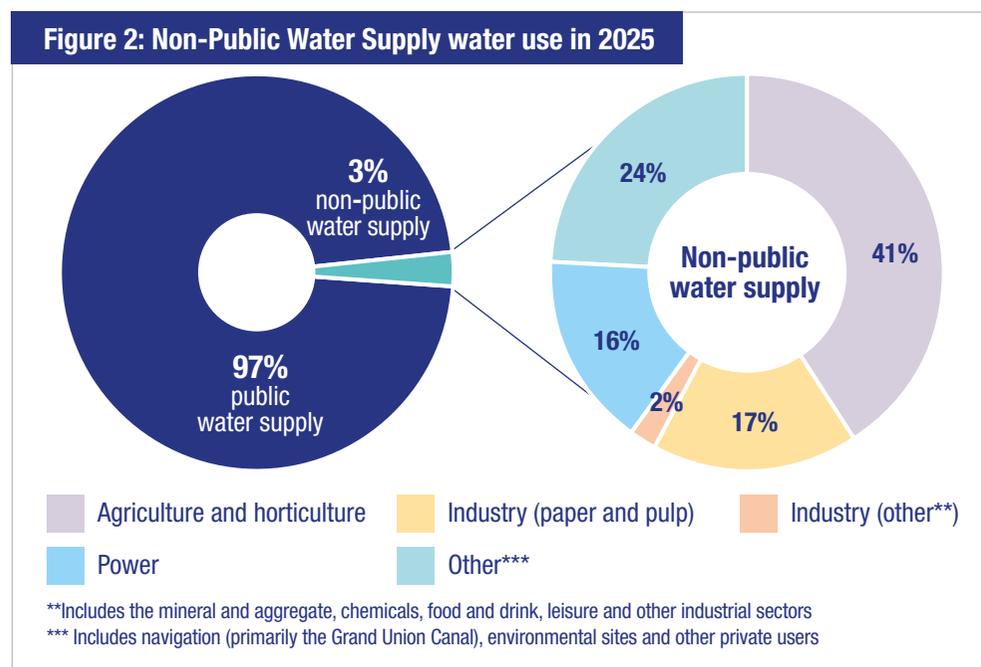


Understanding the needs of other sectors

Water companies are not the only industry to abstract water from the environment. Many other organisations and individuals have abstraction licences for the water they need to produce their products and services. The Environment Agency’s National Framework set the requirement for regional groups to consider the needs of other sectors in their regional plans.

The main water-using sectors in South East England are agriculture and horticulture, power generation and the paper production industry. Others include the leisure sector – golf courses and sports pitches – and the water used as part of the canal system.

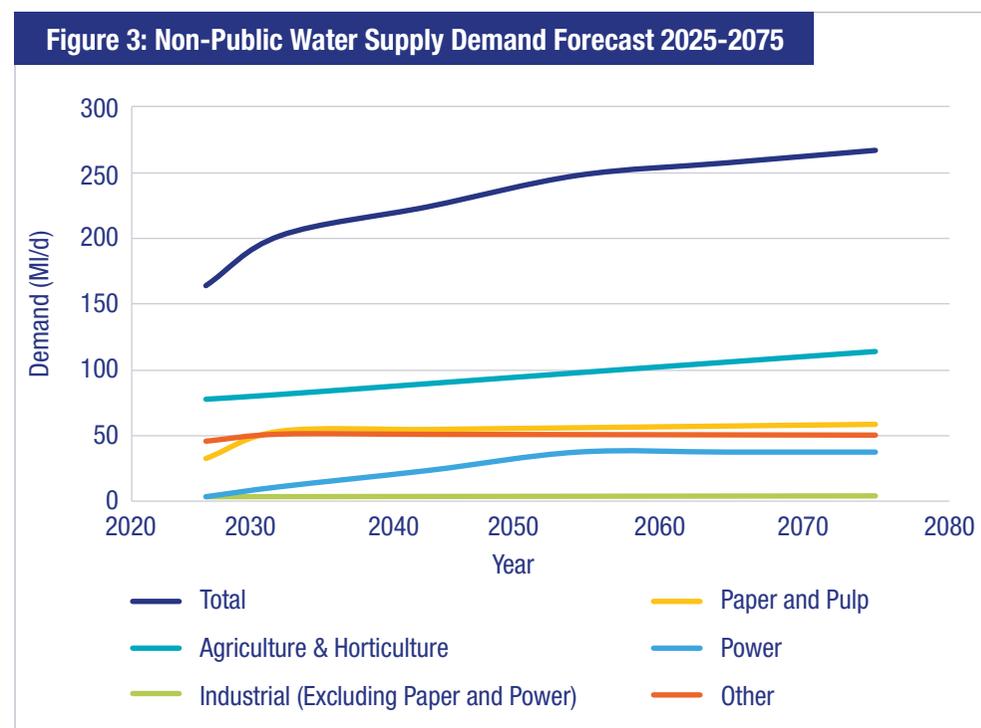
We’ve assessed how much water will be used by the other sectors in 2025 and projected what their future demands could be. We’ve also assessed how droughts could impact on the demand for water by other sectors.



The National Framework provided an initial assessment of other sectors’ future demands for water. We’ve developed this further by adding abstraction that was not included in their initial assessment but is in the process of being assessed and licenced by the Environment Agency. This includes activity such as trickle irrigation which is used by horticultural businesses and is prominent in the region.

We have projected future growth rates by engaging with the sectors. We established a multi-sector group to provide input into our future demand forecast and the potential options that could be developed that could have multi-sector benefits. Energy UK provided a range of scenarios on behalf of the power sector for its future water needs, which included future government policy which could see a transition from gas to hydrogen generation and storage.

We have identified that nearly 100 million litres per day of additional water could be needed by 2075, primarily by the power and paper industries, and agricultural and horticultural users. This forecast is projecting demand under average conditions. Our analysis has also shown other sectors have little spare capacity to cope with drought conditions.



Understanding the needs of other sectors continued

The increase in demand by other sectors could be met in three potential ways:

1. Using existing licence headroom to meet any increases in demand
2. Using existing licence headroom combined with new multi-sector options to meet specific increases in future non-public water supply demands (for example, multi-sector demand management or increased farm storage)
3. Developing a public water supply solution that also provides water to another sector, who would contribute to the cost of the scheme development.

We have included a number of multi-sector options in our regional plan which would involve water companies working with other sectors on shared solutions that provide multiple benefits. There are also options, that if modified, could provide water for other sectors.

Our analysis shows that the additional requirements of the power and agricultural sectors can be met within their existing licence headroom, development of local storage solutions and using water more efficiently. However, this assumes their existing licences remain unchanged. If their licences are capped, they could require additional water from the regional plan. We will continue to work with the agricultural, horticultural, and power sectors, alongside regulators, over the coming months to look at alternative future strategies should licence headroom reduce.

We have looked at how the future needs of the paper industry could be met. Our assessment shows there is currently capacity across all the licences held by paper producers in Kent to meet anticipated growth in the sector's demand for water. The draft regional plan includes a scheme that recycles the wastewater from the paper production process to provide an alternative water supply to the paper industry and enable a licence trade with a water company. This scheme could be increased to provide a further 12.5 million litres of water per day for use by paper producers. We consider there are opportunities for similar recycling schemes to be developed at other sites. We will continue to work with the paper industry to explore these potential solutions further.

There are also two wetland areas which have been identified by Natural England, which would require additional water during a drought. We'll continue to work with environmental organisations on a solution for this, which could involve using recycled water to support the wetland areas.

Further areas of work

There is further work needed to understand the future demands of other sectors and fully embed them into the regional plan. This includes:

- Understanding the impact that the Environment Agency's licence capping policy will have on the other sectors' existing abstraction licences
- Understanding whether any reductions are needed to the licences of other sectors to achieve long-term environmental improvement
- Working with the other sectors to determine how resilient they will need their water supplies to be in the future so this can be built into the regional plan
- Considering a wider range of future scenarios for different sectors and how this could impact on their demand for water in the future
- Continuing to identify and develop multi-sector options that can be included in future regional plans
- Working with regulators to establish how schemes that supply water to other sectors should be funded, so water company customers aren't cross subsidising investment by other sectors.



Planning for an uncertain future – our adaptive planning approach

Like all businesses, water companies must plan for the future. However, the further ahead we look the more uncertain the future is. To manage this uncertainty, we have taken an adaptive planning approach. Our adaptive approach, shown in Figure 4, will enable water companies to make the right immediate investment decisions so they can provide resilient water supplies to their customers in the years ahead.

Adaptive planning helps us to look ahead at a range of different futures we might face so we can develop a plan that can adapt to them all. Our forecasts have helped us to project the future water needs of the region. We have used these projections to develop nine alternative pathways. Each is assumed to be equally likely for planning purposes.

The regulatory guidance water companies must follow requires them to identify a pathway on which to base the first 25 years of their WRMP. We have identified a ‘reported’ pathway for the draft regional plan following pre-consultation with regulators. This pathway complies with the Water Resources Planning Guideline⁶ produced by the Environment Agency. The reported pathway is our best value way of meeting the regulatory and policy guidance. It will:

- Meet population growth in-line with the local authority housing plans
- Achieve the level of environmental improvement required by regulators (BAU+)
- Plan for a high climate change scenario
- Achieve one in 500 year drought resilience by 2040.

We have identified two regionally significant decision points in the early years of the plan, which could trigger us to change pathways. The first decision point is associated with the level of population growth and the second with climate change and the level of abstraction reduction needed to improve the environment.



We have presented our draft regional plan in two time periods:

2025 to 2035: The first 10 years includes the schemes that the water companies must progress, whether completed or started, and are ‘least regrets’ as they are critical and required in all the future pathways, irrespective of which is selected in 2030.

2035 to 2075: This period is more uncertain so includes an adaptive strategy to deal with different futures through nine alternative pathways. Each pathway represents a different combined population growth, environmental improvement and climate change scenario and includes the schemes needed under each. The plan will adapt depending on which future scenario occurs.

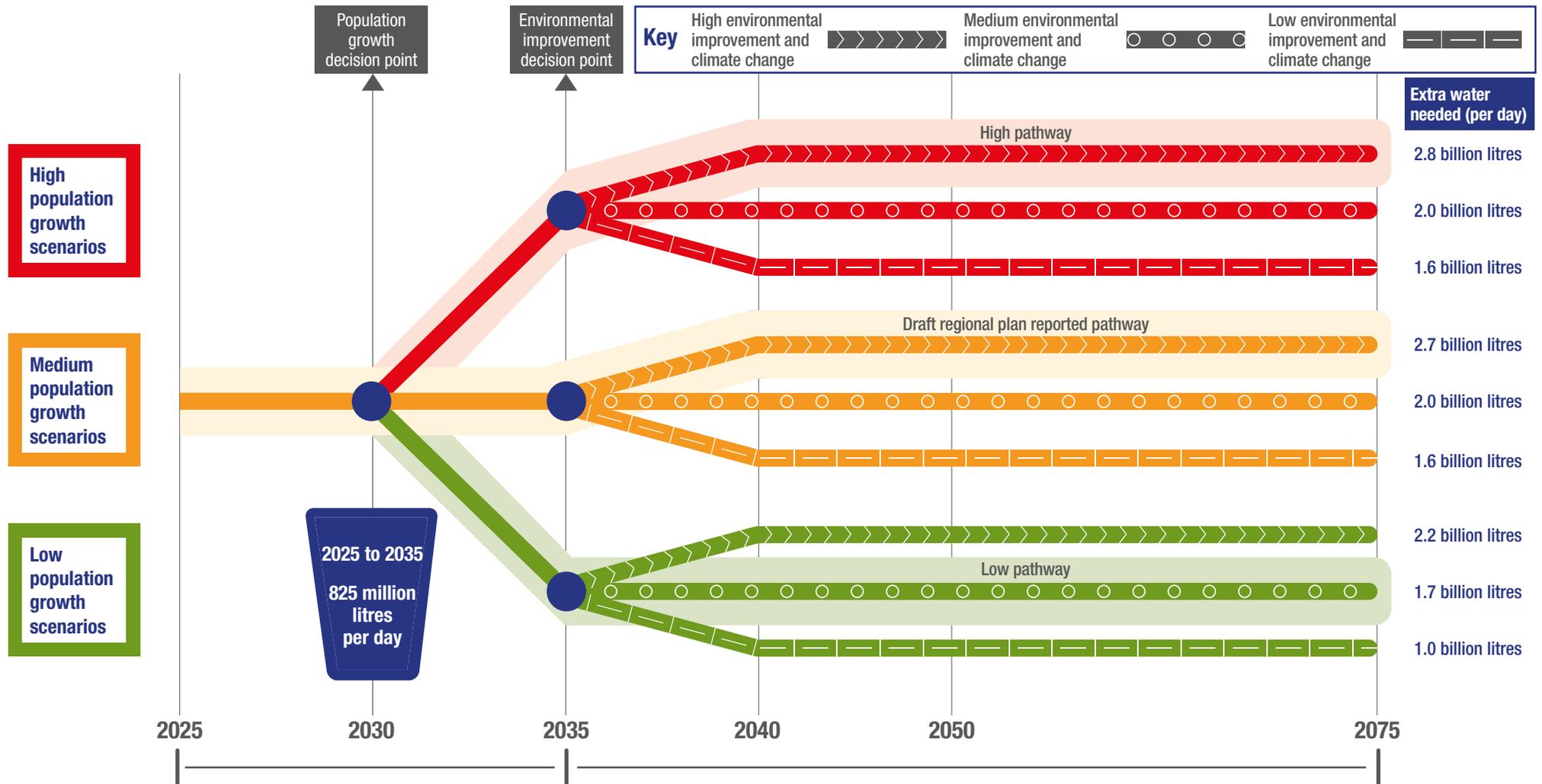
The regional plan will be updated every five years to inform the water companies’ future WRMPs. The decision points are aligned with the completion of their five-year business plans, so they include the investment needed for the pathway we are following. The Water Resources Planning Guideline requires companies to adopt a consistent adaptive planning approach in their draft WRMPs, so there is alignment across the region.

Least regrets means a decision that balances minimal cost with maximum benefit, accounting for any possible futures in the most feasible way.

The investment in water resources that is needed will be included in each company’s Long-Term Delivery Strategy. They will bring together the investment identified in all the strategic plans that are developed by water companies including Drainage and Wastewater Management Plans, Flood Risk Plans and the requirements of the Water Industry National Environment Programme (WINEP). The first five years of the Long-Term Delivery Strategies will inform water company business plans for 2025 to 2030.

Our adaptive planning approach

Figure 4 shows the scenarios we are planning for in each of our alternative pathways and how much extra water will be needed in each by 2075.



For the purposes of this consultation, we describe the solutions identified in our reported pathway as required by the Water Resources Planning Guideline. We also provide details of the how the scheme selection changes in two alternative pathways that plan for more and less challenging futures:

High pathway: Maximum population growth, high environmental improvement, and high climate change

Reported pathway: Housing plan population growth, high environmental improvement and high climate change

Low pathway: ONS18 population growth, medium environmental improvement and medium climate change

How much water will we need in the future?

The amount of water we will need in the future will be driven by:

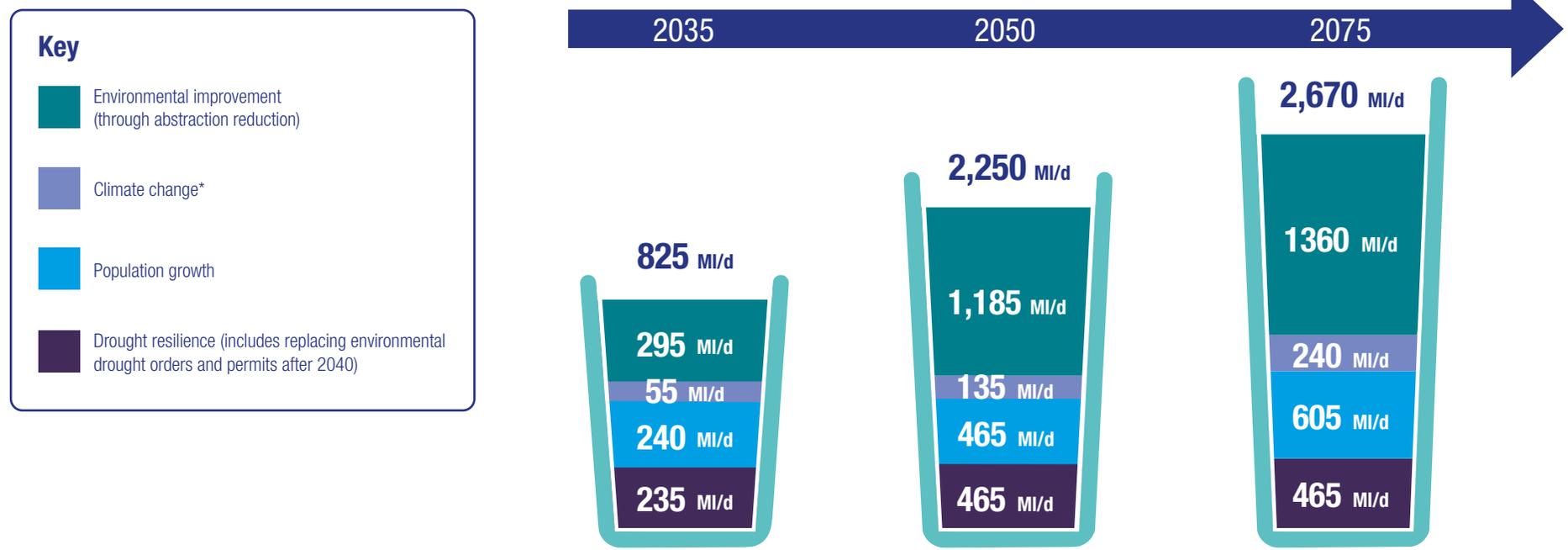
- Climate change
- Population growth
- Environmental improvement through abstraction reduction
- Increasing resilience to severe drought events.

At present the six water companies in South East England together supply up to six billion litres of water per day. Figure 5 shows how much additional water is needed to address these challenges in our reported pathway by 2035, 2050 and 2075. This shows that by 2075, the water companies will need to increase how much water they supply by 40% to replace what is no longer available and meet future demand.

The reported pathway is our best value way of meeting the regulatory and policy guidance. It will:

- Meet population growth in-line with the local authority housing plans
- Achieve the level of environmental improvement required by regulators (BAU+)
- Plan for high climate change scenario
- Achieve one in 500 year drought resilience by 2040.

Figure 5: South East England's future water needs under our reported pathway (million litres per day is represented by MI/d)



*Climate change represents how much water will no longer be available from our existing water sources. The impacts of climate change are also included in the three other areas.

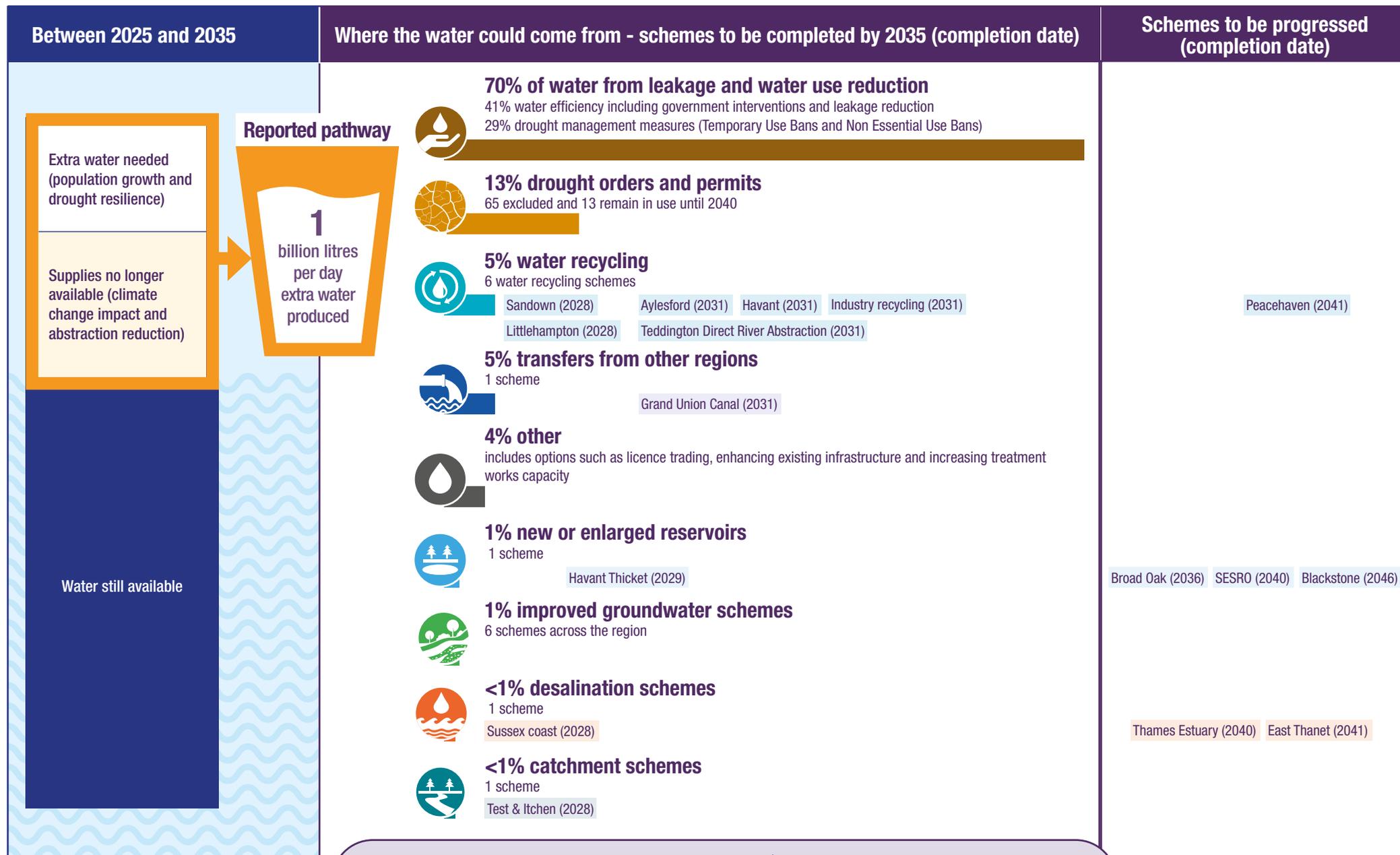
SECTION 3

The Draft Best Value Plan

We've developed a draft best value regional plan. It sets out our proposed solution to secure South East England's water supplies for the future and delivers additional benefits to the region.



South East England's future water supplies (2025 to 2035)

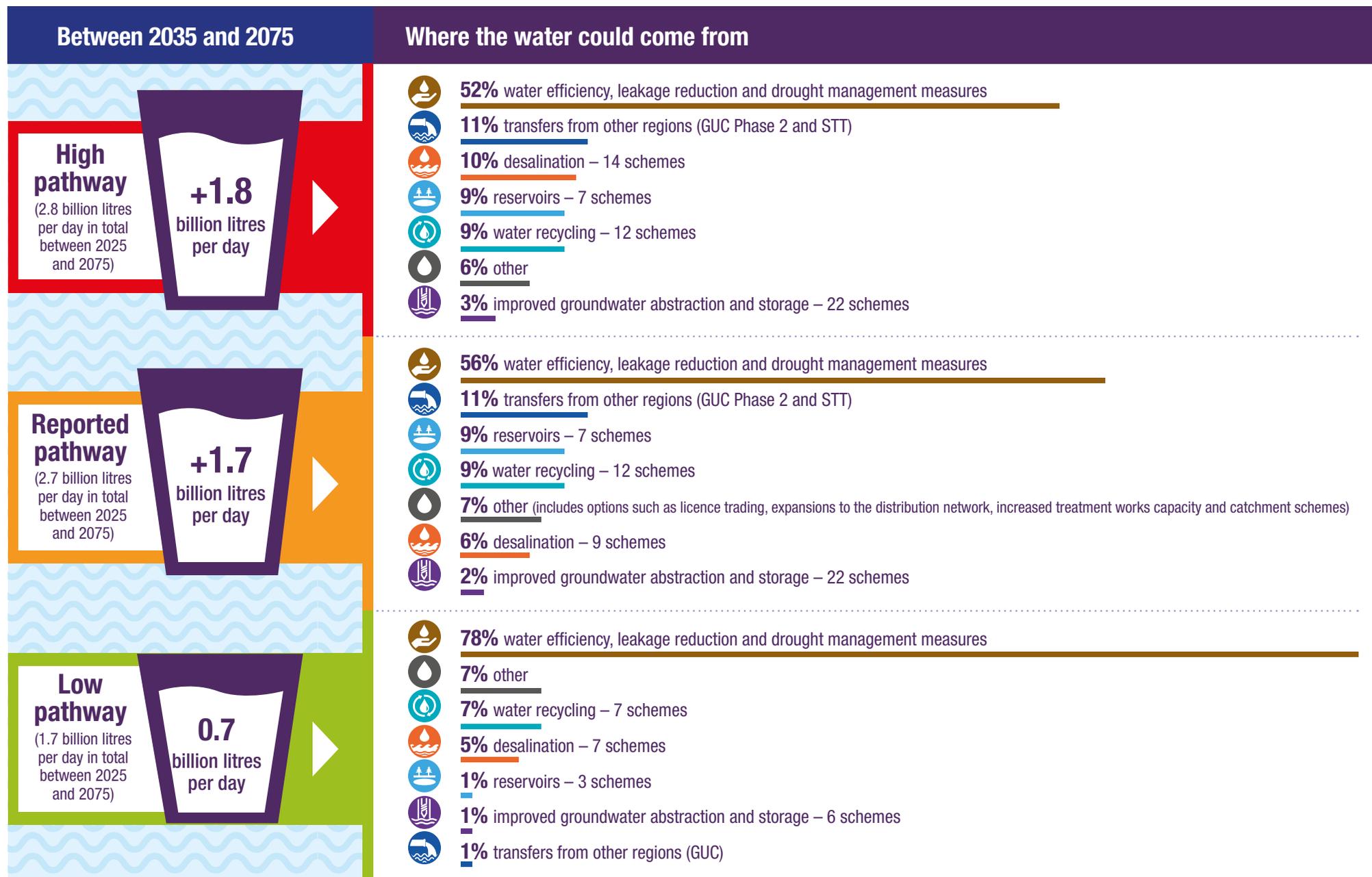


600 million litres of water per day



could be moved around the WRSE region and between other regions

South East England's future water supplies (2035 to 2075)



What is a best value plan?

Our draft regional plan identifies how the additional water needed in the future could be supplied, whilst meeting or exceeding all the legal and regulatory requirements as well as policy expectations that water companies must meet. This includes:

- Achieving the one in 500 year level of drought resilience by 2040
- Leaving more water in the environment to deliver long-term environmental improvements
- At least halving leakage by 2050
- Supporting the national ambition to reduce household water use to 110 litres per person per day by 2050.

Investment in water resources can also deliver wider benefits. We have considered several additional, non-monetised criteria alongside cost and carbon cost to identify our best value plan. The criteria we have used to identify our best value plan are:

- Options customers prefer (based on our customer research)
- Environmental benefits (based on our Strategic Environmental Assessment)
- Environmental disbenefits (based on our Strategic Environmental Assessment)
- Natural capital creation (based on our environmental assessment)
- Biodiversity net-gain (based on our environmental assessment)
- Resilience (based on our resilience framework assessment)
- Spreading the cost across future generations (using the Government's Long-Term Discount Rate).

Our preferred best value plan has been selected by WRSE for the purposes of the draft regional plan consultation. We consider it represents the best value combination of options to meet the future challenges the region is facing and that perform most favourably against the criteria we have assessed the plans against. In this consultation we present the schemes in the reported pathway of our draft best value plan, which complies with the Water Resources Planning Guideline.

The best value plan creates more natural capital, improves biodiversity, has less overall impact on the environment and increases the resilience of our water supplies when compared to the plan that just considers economic cost (least cost plan).

You can find details of the alternative plans we have produced in our technical annexes.

Our resilience framework

Building resilience to drought is one of our primary objectives. Our water supplies also need to be resilient to a wider range of shocks and stresses such as freezes, floods and pandemics. To achieve this, we developed a resilience framework. The framework considered a range of different shocks and assessed three different aspects of resilience:

- **Reliability** – the ability of the system to withstand short term shocks without actively changing its performance
- **Adaptability** – the ability to make a short-term change in performance of the system to accommodate the impact of a shock and recover normal function afterwards
- **Evolvability** – The ability to modify the system's function to cope with long-term trends.

These have each been scored and used as the resilience criteria in our best value assessment to help us understand how much additional resilience our best value plan will deliver.

We consulted on our Resilience Framework and further details can be found in Section 4.

The draft best value regional plan

Our draft best value plan provides a regional solution to securing South East England's water supplies from 2025 to 2075. It includes four priorities:

1. Efficient use of water and minimal wastage across society
2. New water sources that provide sustainable and resilient supplies
3. A network that can move water around the region
4. Catchment and nature-based solutions that improve the water environment we rely upon

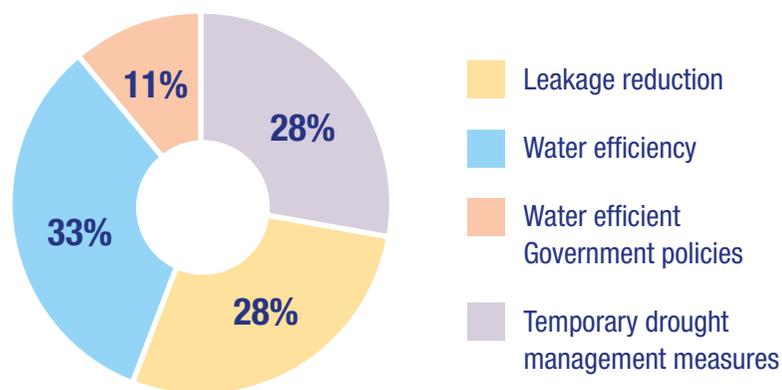
Efficient use of water and minimal wastage across society

Reducing water use across society is critical to help improve the environment and make our water supplies more resilient, particularly as the climate changes and population grows.

Reducing the demand for water is a priority for the regional plan. It is vital in the first 10 years while new water sources are being developed, and the level of long-term environmental improvement through abstraction reduction is determined by the ongoing investigations carried out by water companies.

Reducing leakage and achieving and maintaining a lower level of water use is required in all the pathways of our best value plan. By 2050, it could provide over half the additional water we need to address the shortfall in water supplies. It consists of four areas of activity – leakage reduction, water efficiency, water efficient government policies and using temporary drought management measures (Temporary Use Bans and Non-Essential Use Bans).

Figure 6: Percentage contribution of schemes to reduce demand



At present, nearly 16% of the water that is treated and put into supply is lost through leaks from water companies' and customers' pipes. The regional plan will deliver the ambition of halving leakage levels across the region by 2050. It will build on the reductions that are achieved between 2020 and 2025. In total, reducing leakage from 2017/18 levels will provide 556 million litres of water per day of which 286 million litres per day is delivered through this plan.

Helping customers to reduce their water use will be achieved through action by water companies and the introduction of new government policies that will promote water efficiency. At present, average water use in South East England is 150 litres per person per day. This has risen in recent years because of the pandemic.

The Government has set a national target to reduce household consumption to 110 litres per person per day by 2050. The draft regional plan anticipates this will fall to an average of 115 litres per person per day across the region by 2050. However, the level of leakage and household water use varies between the six WRSE water companies and is shown in Table 2. The variation is due to several factors such as housing types, levels of affluence, household size and other personal choices that influence how water is used. Smart meters are helping companies to better understand how water is used. Consumption data from companies that have installed smart meters shows that many people typically use between 100 and 110 litres per day, but a small proportion of very high users is causing average usage to be higher.

Table 2: Leakage and household water use reductions (per capita consumption) for the WRSE water companies by 2050

		Affinity Water	Portsmouth Water	SES Water	South East Water	Southern Water	Thames Water	Region
Per capita consumption (litres/person/day)	2017/18	155	147	147	144	129	146	145
	2050	113	109	106	107	106	121	115
Total leakage reduction at 2050 (%)		53%	50%	56%	51%	51%	50%	51%
Leakage (litres per property per day)	2017/18	121	101	89	103	90	176	140
	2050	42	39	32	39	36	66	52

How will demand for water be reduced?

Water company activity – leakage and water efficiency

Each water company has developed a demand management strategy for its supply area that consists of a mixture of measures to reduce leakage and help customers become more water efficient.

Leakage reduction activity includes:

- Installing sensors in water pipes that use smart technology to detect smaller and less visible leaks, so they can be found and fixed more quickly
- Replacing water mains that are more likely to leak or burst
- Managing water pressure to help lower leakage levels
- Working with customers to find and fix leaks on their own water pipes.

Water efficiency activity includes:

- Installing water meters and smart devices in more homes and businesses to help customers understand how much water they use
- Using smart meter data to help target activity and communications to customers about their water use
- Carrying out more in-home water saving visits and fitting products to help save water with a focus on customers who use a large amount of water
- Running public awareness campaigns to promote efficiency
- Testing how different tariffs can encourage water efficient behaviour
- Helping customers and businesses to reduce wastage from poor plumbing.

The role of government polices

The reduction in household water use depends on government introducing new polices to promote the efficient use of water. The draft regional plan assumes the introduction of the following policies:

- Water labelling of all water using products by 2024 (already committed to by government)
- Minimum standards for all water using products by 2040 at the latest
- New building regulations for new homes and retrofits by 2060 at the latest.

We have looked at what would happen if these new polices were introduced sooner and how this would impact on the regional plan. Our analysis shows that introducing minimum standards for all water using products by 2030 and new building regulations by 2040 could provide an extra 300

million litres of water per day. This would reduce average water use across the region to 109 litres per person per day by 2050 and reduce the total cost of the plan by £0.5 billion.

We will continue to work with the Government as it develops its future policies for water efficiency.

The long-term targets for leakage and water efficiency are ambitious. Achieving these reductions will rely upon new approaches and technologies that are yet to be tried and tested. It will also require collective action by society to change how water is used and for some consumers to change their behaviour. As well as the implementation of new government polices it will require greater collaboration with a wide range of stakeholders to embed water efficiency across society.

Our modelling shows that if the government policy measures are not implemented, then additional infrastructure will be required. We would need to find nearly 190 million litres per day of extra water through a mix of schemes, including reservoirs, desalination and water recycling, in addition to those identified in our draft regional plan.

If demand reduction is not achieved in the early years of the plan, we could start to see a shortfall in water supplies in some areas and would need to quickly adapt to develop alternative sources of water. Therefore, monitoring progress in this area over the coming years will be essential. We will use the water companies' annual reviews to monitor levels of demand reductions and progress work in parallel to update the plan and progress alternative schemes.

The role of drought management measures

The regional plan continues to rely on temporary restrictions on customers' water use during droughts to help reduce demand for water. Temporary use bans or 'hosepipe bans' on households and non-essential use bans on businesses contribute nearly 300 million litres per day to the draft regional plan, during periods when demand for water is at its highest.

They are still needed in the first 10 years of the plan, in line with the water companies' drought plans. However, as we make our water supplies more resilient, we expect them to be needed less frequently in the future. If we were to stop using them, new water sources would need to be developed in their place.

New sources that provide sustainable and resilient supplies

In the following pages we provide a summary of the schemes that feature in the reported pathway of our draft best value plan. Some of the schemes identified are already being progressed by the water companies. We also highlight some of the schemes that could be needed in the high and low pathways presented in this consultation.

Transfers from other regions

We have been working with the other regional groups to identify opportunities to share water between regions and provide a more joined up national solution to the country's future water needs. There are two transfers identified from the Water Resources West region into South East England using the river and canal network.

Phase one of the Grand Union Canal scheme needs to be delivered in the early 2030s in all future scenarios. The second phase is required by 2040 in our reported pathway and the high pathway. In the low pathway, phase two is not needed. If the Grand Union Canal scheme is not developed, alternative water recycling schemes would be needed which would cost more and produce more carbon.

The Severn Thames Transfer would need to be developed by 2050 in our reported pathway and the high pathway. It could transfer up to 500 million litres per day to South East England. Initially it would transfer water when it is available in the River Severn and from a water recycling scheme at Netheridge. After 2050, additional sources would need to be developed in the Water Resources West region.

In the low pathway, the Severn Thames Transfer is not needed at any point. The use of the Cotswold Canals as part of the Severn Thames Transfer, rather than a new pipeline, has been explored but is a more costly option.

In our reported pathway, the Severn Thames Transfer is needed as well as the South East Strategic Reservoir Option (SESRO). If SESRO is not developed, the Severn Thames Transfer would be required by 2040, along with other additional schemes. A transfer using the Oxford canal is also identified in our high pathway.

What's in the reported pathway of the draft best value plan?

Scheme description	Completion date	Water available
Grand Union Canal (GUC) transfer (phase 1): the GUC runs from Birmingham to London and could be enhanced and used to transfer water that is produced through a new water recycling scheme at Minworth near Birmingham.	2031	50 MI/d
Grand Union Canal (phase 2).	2040	50 MI/d
Severn Thames Transfer (STT): the STT could move water from the North West and Midlands to the South East. It would transfer water using the River Severn in Gloucestershire, from where it would be transferred into the River Thames. It would initially transfer water available in the River Severn and water from a new water recycling scheme at Netheridge.	2050	160 MI/d
Severn Thames Transfer (STT): New water sources could be developed and transferred using the STT including the Minworth water recycling scheme and enhancements to Lake Vyrnwy in Wales.	2050 to 2060	130 MI/d

By 2035
 By 2050
 After 2050



New sources that provide sustainable and resilient supplies

Reservoirs

Reservoirs store water when it is available, typically pumping it from a river or spring when water levels are high, usually during the winter. Building additional storage will help us to adapt to climate change, capturing more excess water during intense rainfall periods. Water supplies in reservoirs could also be supplemented by other sources, such as water recycling. The water will be stored until it is needed before being treated and supplied to customers. We have identified the need for some new reservoirs and schemes that will increase the size of the region's existing reservoirs.

Havant Thicket reservoir has received planning permission and construction is underway. It will be completed by 2029 to provide a new resource in Hampshire.

Broad Oak reservoir is needed in our reported and high pathway by 2036 and 10 years later in our low pathway. Preparatory work on the scheme is underway, and construction would need to begin by 2031 to deliver the scheme by 2036.

SESRO would store water from the River Thames in Oxfordshire. It is required in our reported, high and low pathways. In all three pathways of our draft regional plan, SESRO provides 100 million m³ of storage and will produce up to 185 million litres of water per day, which will be used to supply the customers of Thames Water, Affinity Water and Southern Water through new transfers. It will be fully utilised by 2050.

We have modelled a range of sizes for SESRO. The largest size would provide 150 million m³ of storage and produce 270 million litres per day. This would also be fully utilised by 2050 in the more challenging future scenarios. If this was developed, more water could be moved to Hampshire through a new transfer, so the size of the Havant water recycling scheme could be reduced. Some smaller schemes would not be required or not needed until later in the planning period.

The investment plan with the 100 million m³ reservoir performs better against some of the best value criteria we have assessed, particularly those that provide additional benefits to the environment, and which show the potential for adaptability and evolvability. The plan with the larger reservoir performs

What's in the reported pathway of the draft best value plan?

Scheme description	Completion date	Water available
Havant Thicket reservoir in Hampshire.	2029	21 MI/d
Broad Oak reservoir near Canterbury.	2036	22 MI/d
South East Strategic Reservoir Option (SESRO) near Abingdon, Oxfordshire.	2040	185 MI/d
Brent reservoir in north London.	2045	7.5 MI/d
Blackstone reservoir in West Sussex.	2046	19.5 MI/d
Increase the capacity of Bough Beech reservoir in Kent.	2051	12 MI/d
Broyle Place reservoir near Lewes in East Sussex.	2075	18 MI/d

By 2035
 By 2050
 After 2050

better against the reliability resilience criteria and also has additional natural capital benefits compared to the smaller reservoir. However, the differences in best value criteria between the investment plans with different sized SESROs is minimal.

A smaller SESRO that would provide 75 million m³ of storage was also included in the modelling but was not selected in any of the adaptive pathways. The smaller reservoir does not perform as well against any of the best value metrics and is more costly as other schemes need to be developed as well. Our work shows both SESRO and STT are needed but the reservoir is a better first option. This is because the reservoir has lower running costs. The plans with the reservoir developed first are less expensive and have lower carbon emissions. Forecasts also suggest that in the future, droughts are likely to occur at the same time across the whole country. This could mean that less water is available to transfer to the South East through the STT as it will be needed in the Midlands and the North West.

If SESRO is not developed, other resources would need to be progressed instead. This would include larger water recycling schemes, such as at Beckton in London. The STT would also need to be developed earlier and would need to provide more water than Water Resources West have currently indicated is available. For the reported pathway, a plan without SESRO would cost £500 million more than the best value plan and have significantly higher carbon costs.

The Brent reservoir would involve repurposing an existing Canal and River Trust reservoir for public water supplies. It is required in our reported and high pathways. Blackstone reservoir, which would store water from the River Adur in West Sussex is also needed in the reported pathway and the high pathway.

New sources that provide sustainable and resilient supplies

Water recycling

Water recycling is where highly treated wastewater is returned to the environment and used to supplement our natural water supplies. It is used extensively in other parts of the world, such as California and Singapore. It typically involves moving a coastal or estuarine treated wastewater release point higher up in the catchment. The water, which would undergo an extra stage of enhanced treatment, would be released at a point where it can support additional water abstraction downstream. Alternatively, the recycled water could be stored in a nearby lake or reservoir from where it would be abstracted and treated again to drinking water standard before being supplied to customers.

Six water recycling schemes are identified in the draft regional plan for completion by 2035. They are needed in all alternative pathways. Water companies are already progressing plans for these schemes, which will go through the appropriate planning process. They will provide a resilient supply of water to replace existing water sources in areas where extra water is needed. One scheme uses the wastewater from the paper production process.

The recycling schemes needed between 2035 and 2050 are identified in our reported and high pathways. In the low pathway, no other recycling schemes are needed, apart from the Tunbridge Wells recycling scheme which is required by 2046. This is because the low pathway plans for less water to be left in the environment so not as much new water needs to be produced to replace existing supplies.

If water recycling schemes cannot be progressed, then desalination plants or more storage options will need to be built instead. An alternative to the Peacehaven recycling scheme could be a new reservoir at Arlington in East Sussex. However, there are a limited number of locations for new storage in South East England and they typically take longer to plan and build.

What's in the reported pathway of the draft best value plan?

Scheme description	Completion date	Water available
Sandown water recycling scheme to support abstraction from the River Yar on the Isle of Wight.	2028	8 MI/d
Littlehampton water recycling scheme to support abstraction from the River Rother in West Sussex.	2028	15 MI/d
Havant water recycling scheme to supplement water supplies in Havant Thicket reservoir in Hampshire.	2031	60 MI/d
Teddington direct river abstraction supported by water recycling at Mogden in London.	2031	67 MI/d
Wastewater from the paper production process will be recycled and enable a trade of an existing licence for public water supply in Kent.	2031	7.5 MI/d
Aylesford water recycling scheme into Eccles Lake to supplement abstraction from the River Medway in Kent.	2031	13 MI/d
Peacehaven water recycling to supplement supplies in Arlington reservoir in East Sussex.	2041	30 MI/d
Hythe water recycling scheme in Kent.	2045	5 MI/d
Hastings water recycling scheme to supplement supplies in Darwell reservoir, East Sussex.	2046	15 MI/d
Dover water recycling scheme in Kent.	2057	8 MI/d
Deephams water recycling scheme in London.	2061	42 MI/d
Tunbridge Wells water recycling scheme into Bewl Water in Kent.	2062	4 MI/d

By 2035
 By 2050
 After 2050

New sources that provide sustainable and resilient supplies

Desalination

Desalination turns seawater and brackish water into drinking water by removing the salt. It can produce a reliable source of water during droughts. It is used extensively in other parts of the world such as the Middle East. Desalination plants can often be expanded to treat more water if needed in the future.

A desalination plant on the Sussex coast (phase 1) is needed in all pathways of our adaptive plan and investigation work is underway. Additional desalination plants are identified from 2040. They feature in the reported and high pathways with some variations in the timing. In the high pathway, more desalination schemes are needed including a new plant in London.

The need for desalination plants in these areas is primarily driven by the long-term need to protect and improve the environment. Therefore, the decision on the location and level of future abstraction reductions will determine what additional resources will be needed.

Desalination is energy intensive and costly to operate. It produces more carbon emissions than most other options and abstracting seawater from some locations could have an impact on the coastal environment.

We recognise that desalination is not a preferred option for many stakeholders due to the high cost and potential environmental impacts. We will continue working with our member water companies, in collaboration with regulators and stakeholders, to understand the future abstraction reductions required. This will help us identify the appropriate solutions to meet the future regional environmental ambitions. We will also continue investigating potential future solutions for our region which have less of an impact on the environment, in collaboration with our regulators.

What's in the reported pathway of the draft best value plan?

Scheme description	Completion date	Water available
Sussex coast desalination (phase 1).	2028	10 MI/d
River Thames estuary desalination in Kent (phase 1).	2040	20 MI/d
East Thanet coast desalination (phase 1).	2041	20 MI/d
Hythe beach desalination.	2041	5 MI/d
River Thames estuary desalination in Kent (phase 2).	2041	20 MI/d
Reculver desalination of brackish water.	2046	30 MI/d
Isle of Sheppey desalination (phase 1).	2046	20 MI/d
East Thanet coast desalination (phase 2).	2051	20 MI/d
Sussex coast desalination (phase 2).	2059	10 MI/d

By 2035
 By 2050
 After 2050



New sources that provide sustainable and resilient supplies

Improved groundwater abstraction and storage

Groundwater abstraction improvement schemes involve making changes to existing groundwater storage, where it is sustainable to do so, to make more water available.

These schemes are promoted in areas where the current arrangements are limiting how much water can be abstracted. They are typically cheaper to develop and make the best use of water already available. Groundwater schemes are needed in all the alternative pathways, although the more challenging pathways require more to be delivered.

Groundwater storage schemes can involve using other sources of water to recharge the existing groundwater source known as Managed Aquifer Recharge (MAR). Alternatively, where groundwater conditions are suitable, a technique called Aquifer Storage and Recovery (ASR) can create a new area of storage underground so more can be stored. Water can then be pumped back to the surface and treated when needed.

Managed Aquifer Recharge and Aquifer Storage Recovery schemes can be developed in a limited number of locations because they require specific ground conditions. These schemes will require further technical investigation by water companies.

Multi-sector options in the best value plan

We have identified opportunities to share water resources with other sectors. These include:

- An abstraction licence trade with an energy provider in Oxfordshire
- A water recycling scheme to provide water to a paper producer in Kent and enable a licence trade for public water supply
- A scheme to trade licences with farmers who currently abstract from the Western Rother and fund the development of new on-site reservoirs
- A scheme to repurpose a Canal and Rivers Trust reservoir for public water supply in north London.

What's in the reported pathway of the draft best value plan?

Scheme description	Completion date	Water available
Six groundwater improvement schemes	Between 2025 and 2035	Between 0.5 and 9 MI/d per scheme
11 groundwater schemes to improve or recommission existing groundwater sources	Between 2035 and 2050	Between 0.5 and 5 MI/d per scheme
MAR scheme using water from the River Test to supplement groundwater supplies	2042	5.5 MI/d
ASR scheme at Epping	2050	8 MI/d
ASR scheme at Horton Kirby	2050	5 MI/d

By 2035 Post 2035



New sources that provide sustainable and resilient supplies

The draft regional plan includes a mix of schemes that will provide new sources of water. Table 3 shows the timing of the planning and construction phases of the main schemes in the draft regional plan and when the water will first become available.

Table 3: Summary of schemes that provide new sources of water by 2050

Scheme	Timeline		
	To 2030	To 2040	To 2050
Sandown water recycling scheme	Planning consent, construction with water available from 2028		
Littlehampton water recycling	Planning consent, construction with water available from 2028		
Sussex coast desalination	Planning consent, construction with water available from 2028		
Havant Thicket reservoir	Construction with water available from 2029		
Grand Union Canal (phase 1)	Planning consent and construction (phase 1&2)	Construction and water available from 2031	
Havant water recycling	Planning consent and construction	Construction and water available from 2031	
Teddington direct river abstraction	Planning consent and construction	Construction and water available from 2031	
Wastewater recycling (paper) and licence trade	Planning consent	Construction and water available from 2031	
Aylesford water recycling	Planning consent and construction	Construction and water available from 2031	
Broad Oak reservoir	Planning consent	Construction and water available from 2036	
Grand Union Canal (phase 2)	Planning consent	Construction and water available from 2040	
South East Strategic Reservoir Option (SESRO)	Planning consent	Construction and water available from 2040	
River Thames estuary desalination (phase 1)		Planning consent, construction, and water available from 2040	
Peacehaven water recycling		Planning consent, construction	Construction and water available from 2041
East Thanet Coast desalination (phase 1)		Planning consent, construction	Construction and water available from 2041
Hythe beach desalination		Planning consent, construction	Construction and water available from 2041
River Thames estuary desalination (phase 2)		Planning consent, construction	Construction and water available from 2041
Managed Aquifer Storage River Test		Planning consent, construction	Construction and water available from 2042
Hythe water recycling		Planning consent, construction	Construction and water available from 2045
Brent reservoir		Planning consent, construction	Construction and water available from 2045
Hastings water recycling			Planning consent, construction and water available from 2046
Blackstone reservoir		Planning consent, construction	Construction and water available from 2046
Reculver desalination		Planning consent, construction	Construction and water available from 2046
Isle of Sheppey desalination (phase 1)			Planning consent, construction and water available from 2049
Severn Thames Transfer (STT)		Planning consent, construction	Construction and water available from 2050

A network that can move water around the region

The water companies in South East England already share some of the region's water supplies through pipelines that link their supply areas. Currently, up to 400 million litres of water per day can be moved around South East England, with an additional transfer from the Anglian region.

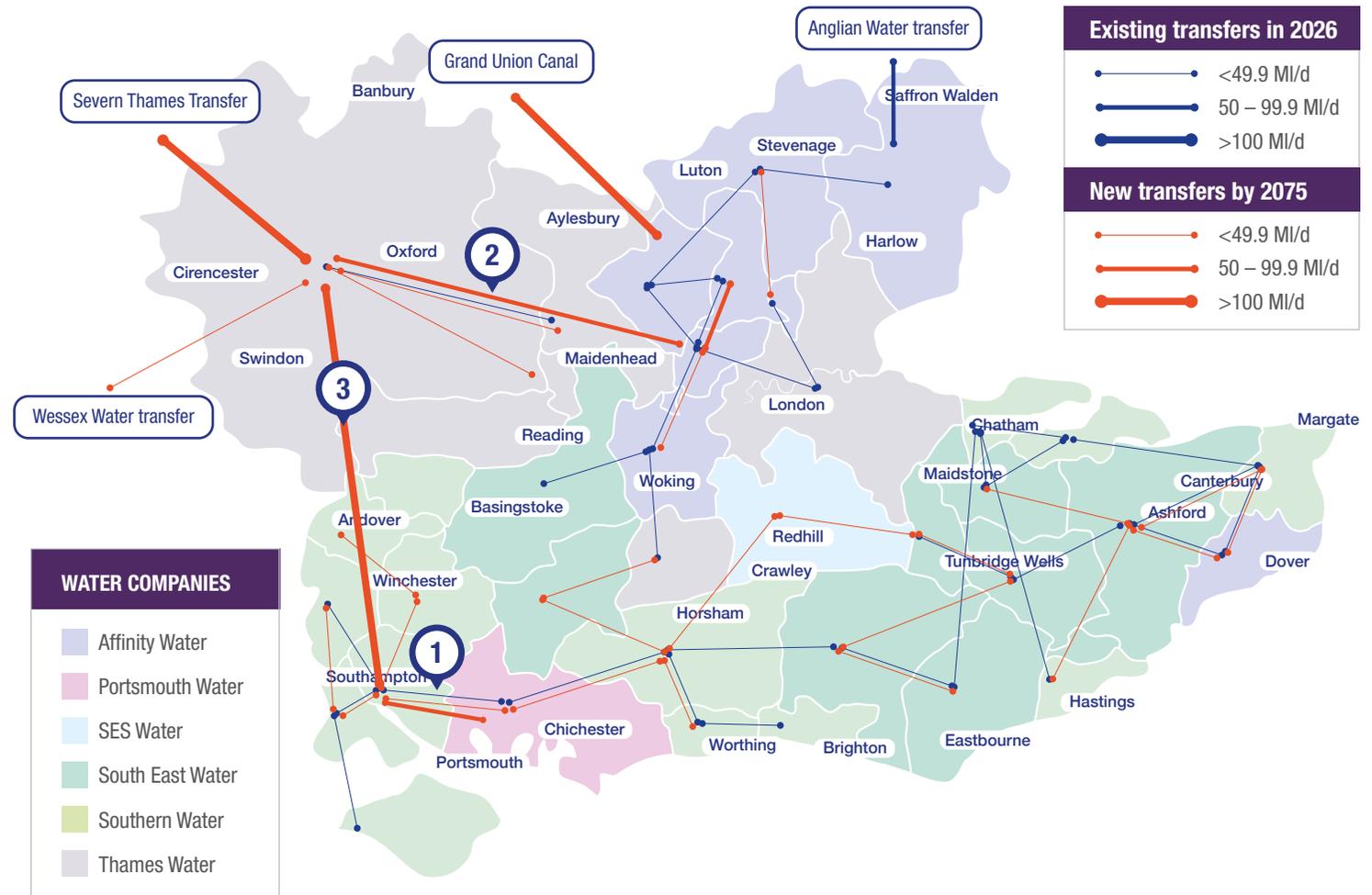
This also includes pipelines that link the companies' water resource zones which enable them to move water around their own supply areas.

The draft regional plan has identified new transfers to increase how much water can be moved around the region. As new sources of water are developed, they will be shared between companies helping to increase the resilience of the region's water supplies. These transfers will not need to be used all the time. The amount of water that is moved and when, will depend on the weather conditions and how much extra water is needed to supplement supplies.

The existing and new transfers between water companies are shown in the map to the right. The largest new transfers between the South East water companies include:

- 1** A transfer from Havant Thicket reservoir to Southern Water in Hampshire – up to 90 million litres per day by 2030
- 2** A transfer from Thames Water to Affinity Water – up to 100 million litres per day by 2040
- 3** A transfer from Thames Water to Southern Water – up to 120 million litres per day by 2040

By 2075, up to 1,400 million litres of water per day could be moved around the region and between regions.



Catchment and nature-based schemes that improve the water sources we rely upon

Catchment schemes and nature-based solutions, that involve working with natural features and processes, could play an important role in securing resilient and sustainable water supplies for the future.

Working with stakeholders, we identified more than 200 potential catchment and nature-based schemes across 20 catchments in South East England which were included in our emerging regional plan. These include:

- River restoration
- Nutrient and sediment reduction
- Working with farmers to improve land management practices
- Water retention measures such as natural flood management and wetland creation
- Sustainable Drainage Schemes (SuDS).

For our draft best value regional plan, we have applied the regulatory guidance and only included schemes that secure water resources. This results in integrated catchment activity being required on the River Itchen and River Test in Hampshire in the first five years of the plan. This is part of the work to deliver long-term improvements to these rivers through sustainable abstraction.

The WRSE companies are considering a wide range of catchment options, which are being driven by other plans they produce such as Drainage and Wastewater Management Plans, the Water Industry National Environment Programme (WINEP) and drinking water quality plans. They will identify the schemes to be included in their five-year business plans to secure funding from Ofwat.

These schemes could deliver multiple benefits, including helping to provide resilient water resources. Developing a better understanding of the benefits these schemes can deliver and improving the way we measure their impact will be important to help inform their use in future regional plans and WRMPs.

Delivery of catchment and nature-based schemes will require water companies to work in partnership with other agencies. There is also the potential for alternative funding to be accessed through other routes such as Environmental Land Management Schemes (ELMS) to help deliver wider environmental benefits.

The role of catchment and nature-based solutions in achieving sustainable abstractions

The environmental forecasts we have produced show that by 2050, we may need to leave nearly 1.2 billion litres of water per day in the environment that we currently use to supply our customers. This will require water companies to significantly reduce how much water they abstract from certain sources and replace that water with new sources.

Exploration into a more integrated approach that combines the use of catchment and nature-based solutions with more moderate levels of abstraction reduction could be undertaken. This may deliver better outcomes for our rivers at a more efficient cost and deliver wider environmental benefits such as improving water quality and reducing flood risk.

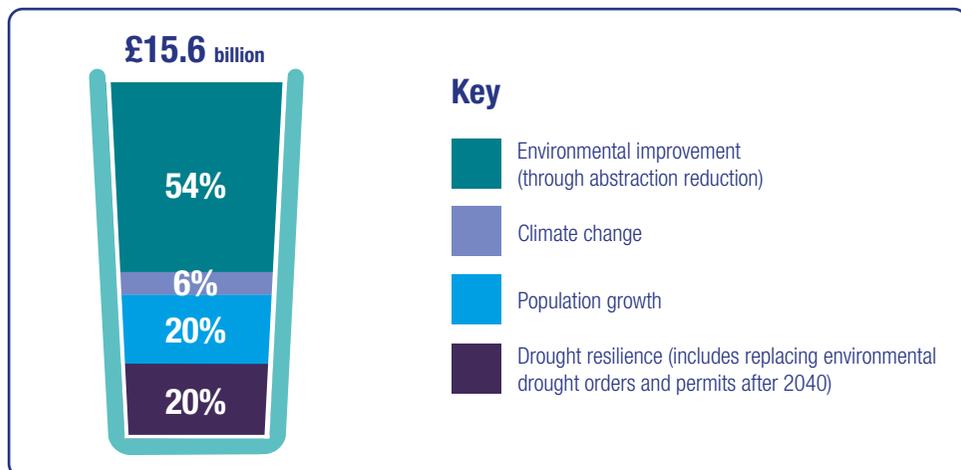
It is important that we build our understanding and evidence-base over the next 10 years to help inform future decisions about the level of abstraction reduction required. This will ensure we continue to abstract water in a sustainable way and help strike the right balance between environmental improvement and cost to customers.



The cost and carbon impact of our plan

The total cost of our draft best value plan for the pathway reported in this consultation is £15.6 billion between 2025 and 2075. Just over half the investment is being driven by the need to protect and improve the environment for the long-term.

Figure 7: Factors that are driving the investment in the draft regional plan



The cost range of our full adaptive plan for 2025 to 2075 is £10.7 billion to £16.4 billion.

Investment in water resources is largely funded through customers' water bills. Delivery of the schemes in the draft regional plan will require an increase in bills. Each company's draft WRMP will provide indicative bill impacts for its customers.



The carbon impact of our plan

Building and running new critical water resources infrastructure will generate carbon emissions. In the development of this plan, we have estimated the carbon footprint of the proposed programmes.

This includes the carbon emissions created through:

- the construction process, and activities associated with processing and transporting raw materials
- the replacement of assets and components at the end of their asset lives
- the ongoing operation of assets, this includes considering the energy requirements (accounting for projected decarbonisation of the UK electricity grid), chemical consumption and maintenance activities.

By measuring carbon in the development of the regional plan, lower carbon options can be selected, helping to avoid some emissions.

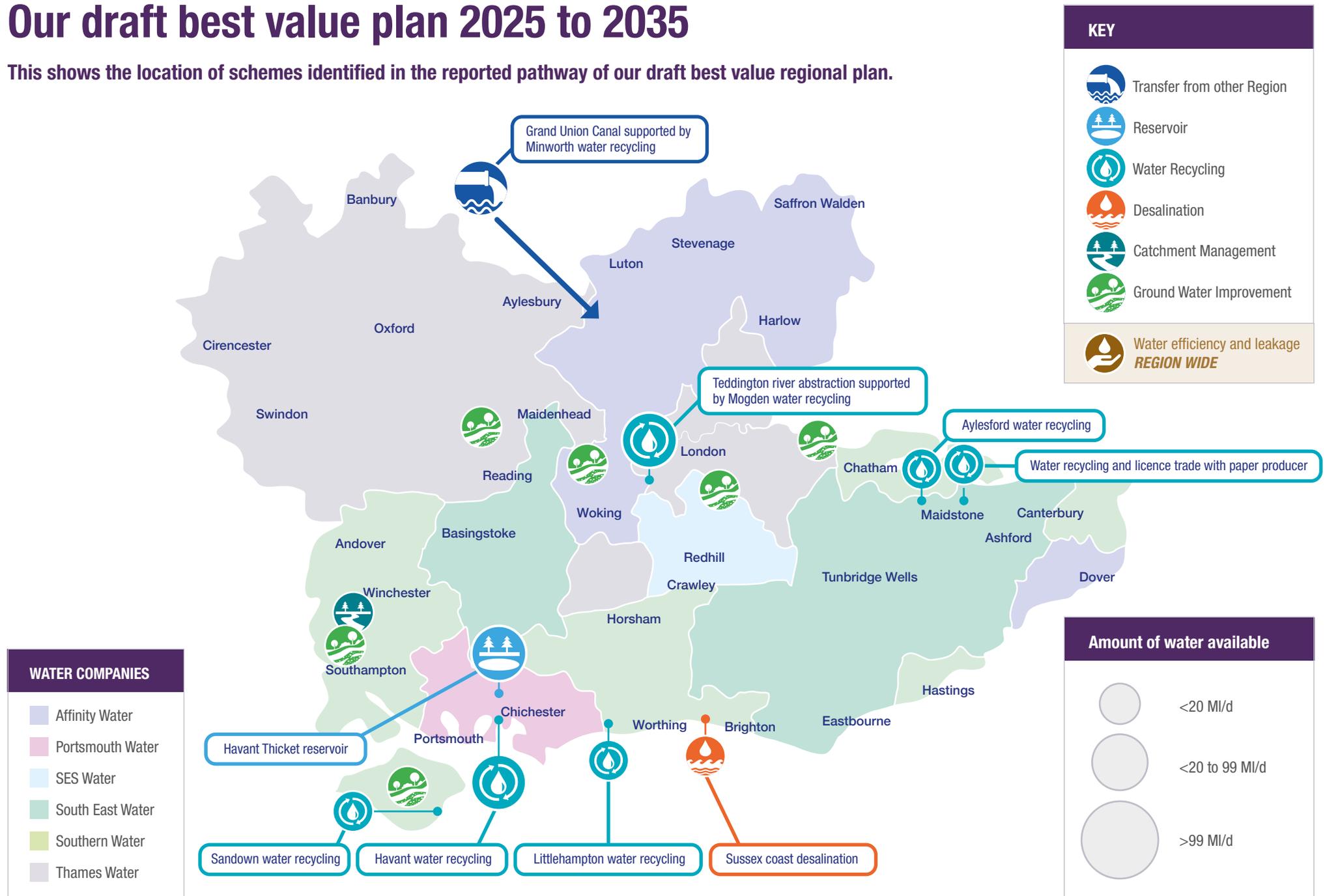
We have also identified where there is potential to further reduce carbon emissions for the selected options. This could include using new construction techniques, powering construction machinery with green energy and using more environmentally friendly materials. There is also the potential for even greener options, such as green hydrogen, to be used later in the planning period.

Despite these interventions, some emissions will continue to occur from materials and processes that are hard to decarbonise. For these emissions, water companies will explore ways to offset the remaining carbon produced such as by working with nature to increase carbon capture.



Our draft best value plan 2025 to 2035

This shows the location of schemes identified in the reported pathway of our draft best value regional plan.



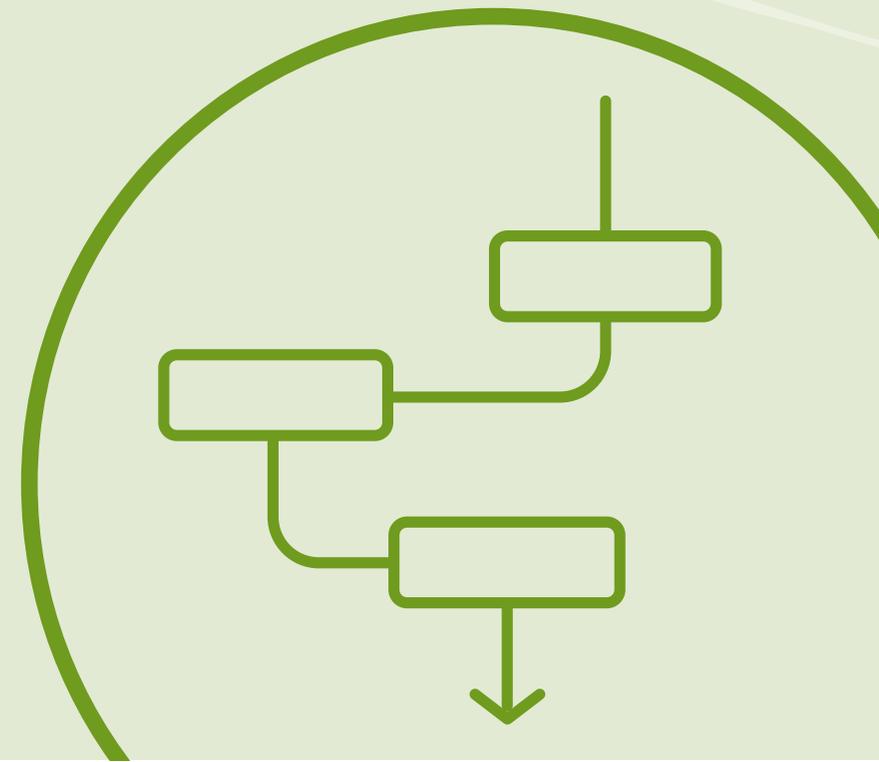
Our draft best value plan 2035 to 2075

This map shows the location of the main schemes in the reported pathway of the draft best value regional plan.



SECTION 4

How to respond and supporting information



Consultation questions

We'd like to hear your views on our draft regional plan. We are asking four consultation questions, alternatively you can provide a general response to our consultation.

Question 1:

Our draft regional plan looks 50 years ahead. It plans to increase resilience to drought and address the potential shortfall in water as a result of climate change, population growth and increased protection of the environment, by taking an adaptive planning approach.

Do you think the draft regional plan addresses the scale of the challenge we face in the future through our adaptive planning approach?

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree

Please explain your answer

Question 2:

Our draft regional plan has considered the needs of other sectors and how their demand for water could be met in the future.

Do you support us continuing to work with other sectors so our regional plan fully embeds their future needs and includes appropriately-funded solutions to meet them?

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree

Please explain your answer

Question 3:

The draft best value regional plan includes investment in new water supplies and activity to reduce the demand for water. The draft plan identifies that nearly 60% of the water needed by 2075 could come from demand management activities. This includes reducing leakage by at least 50%; extensive water efficiency through smart metering, customer behaviour change and new government policy; and the continued use of temporary restrictions on water use during periods of drought. The rest needs to come from a mix of new supplies.

Do you think the draft regional plan strikes the right balance between reducing the demand for water and developing schemes to provide new water supplies?

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree

Please explain your answer

Question 4:

The draft best value regional plan promotes increased collaboration between water companies in the development of new water sources and the construction of more transfers to move water around the region and share it between companies.

Do you support the increased collaboration between the water companies in the South East and other regions, through the development of shared resources and an enhanced network to transfer water around the region and between regions?

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree

Please explain your answer

How to respond to our consultation

We want to hear your views on our draft best value regional plan for South East England.

We have a dedicated consultation site where you will find more information about our draft regional plan and an online survey where you can answer our consultation questions. The consultation is open until 20 February 2023.

[Water Resources South East | Homepage \(wrse.uk/engagementhq.com\)](https://www.wrse.uk/engagementhq.com)

You can send us a response to the consultation by email to contact@wrse.org.uk

Or by post to:

WRSE draft regional plan consultation
c/o Adams Hendry Consulting Ltd
Sheridan House, 40-42 Jewry Street
Winchester
Hampshire
SO23 8RY

All consultation responses must be received by **23.59 on 20 February 2023**.

If you have any questions relating to the WRSE draft regional plan, please email contact@wrse.org.uk. We will aim to respond to any questions within 20 working days of the date it is submitted. Please submit any questions as early as possible in the consultation process. WRSE will only be able to provide information and respond to feedback on the draft regional plan.

An accessible version of the draft regional plan can be found **on our consultation site**.

WRSE is committed to protecting your personal information. Whenever you provide personal information, we are legally obliged to use it in line with all applicable laws concerning the protection of personal data, including the UK General Data Protection Regulation (**GDPR**) and the Data Protection Act 2018. Our privacy notice tells you what to expect when you provide your personal information to Water Resources South East (**WRSE**) in connection with the draft regional plan consultation (the **Consultation**). Our privacy notice can be found on our consultation site.



Water company draft Water Resource Management Plan consultations

Each of the WRSE water companies is consulting on its draft Water Resources Management Plan (dWRMP). You can read and respond to the individual dWRMPs directly through the statutory consultation process.

Affinity Water www.affinitywater.co.uk

Portsmouth Water www.portsmouthwater.co.uk

SES Water www.seswater.co.uk

South East Water www.southeastwater.co.uk

Southern Water www.southernwater.co.uk

Thames Water www.thameswater.co.uk

Our journey so far and what happens next

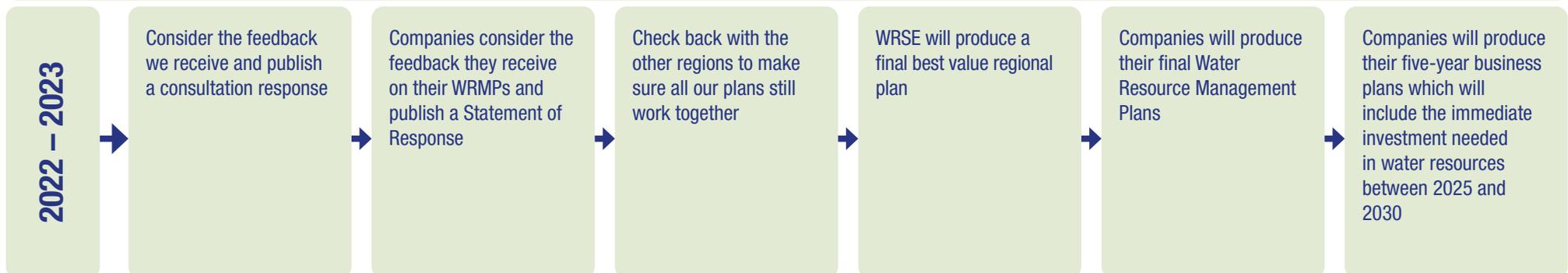
What we've done so far



Now



Next



Document library

The draft regional plan consultation is supported by a number of technical documents and reports.

All the documents can be found on our consultation site wrse.uk/engagementhq.com or at wrse.org.uk/library

Technical annexes

The WRSE draft regional plan consultation is supported by two technical annexes.

- Technical Annex 1: The challenge we face and how we prepared our plan (November 2022)
- Technical Annex 2: Our draft regional plan proposals (November 2022)

Supporting reports

The following reports have been prepared and published that support our draft regional plan.

Population and property forecasts (Edge Analytics Report)
Strategic Environmental Assessment Summary Table
Strategic Environmental Assessment Environmental Report
Habitats Regulation Assessment
Natural Capital and Biodiversity Net Gain
Water Framework Directive Assessment
Options Appraisal Summary Report
WRSE Defra Demand Management Savings Profile Report
Environmental ambition technical note
Regional reconciliation report
Problem characterisation report
Resilience Phase 2 report
Regional system simulator report
Stakeholder engagement summary report
Customer engagement reports
Investment modelling draft regional plan results report

Method statements

The following method statements have been prepared and published, which set out the methodologies we have used to prepare the draft regional plan.

Best value planning method statement
Calculation of deployable output method statement
Climate change method statement
Demand forecast method statement
Engagement with customers method statement
Engagement with stakeholders method statement
Environmental ambition method statement
Environmental assessment method statement
Groundwater framework method statement
Hydrological modelling method statement
Multi-sector approach method statement
Options appraisal method statement
Outage method statement
Quality Assurance method statement
Regional system simulation model method statement
Resilience framework method statement
Stochastic datasets method statement

References

1. Meeting our future water needs: a national framework for water resources, The Environment Agency (March 2020)
2. WRSE Emerging Regional Plan – consultation response document (May 2022)
3. Water stressed areas – final classification, The Environment Agency (July 2021)
4. Preparing for a drier future: England's water infrastructure needs, The National Infrastructure Commission (2018)
5. National Infrastructure Strategy, HM Treasury (November 2020)
6. Water resources planning guideline, The Environment Agency, Natural Resources Wales, Ofwat (April 2022)

Abbreviation list and Glossary

Acronym	Term	Definition
	Abstraction	Taking water from the environment (under licence from the Environment Agency) for use in the public water supply or industry
	Adaptive planning	<p>Adaptive planning allows us to account for uncertainty, such as different impacts of population growth and climate change, which is useful when planning into the future.</p> <p>For each new plan, we monitor how previous ones have been implemented, what impacted their operation and incorporate new forecasts into modelling. We're then able to adapt future plans to meet different scenarios, based on this understanding</p>
AMP	Asset Management Period	Five-year water company investment period
AONB	Area of Outstanding Natural Beauty	An Area of Outstanding Natural Beauty is an area of countryside in England, Wales, and Northern Ireland, that has been designated for conservation due to its significant landscape value
	Aquifer	A body of rock and/or sediment that holds groundwater
ASR	Aquifer Storage Recovery	ASR involves injecting additional fresh water from other parts of the aquifer or from rivers into a confined area within the aquifer. It can then be stored and pumped back to the surface and treated when needed
	Best Value Plan	The consideration of non-monetised factors alongside cost to develop a plan that delivers best value
	Business Plan	<p>Water companies develop and submit business plans every five years to Ofwat, the economic regulator.</p> <p>These plans set out the commitments companies make to their customers, and how they will meet them</p>

Acronym	Term	Definition
	Biodiversity net gain	Biodiversity refers to the variety of living organisms including animals, insects, plants, bacteria and fungi. Net gain is the process of increasing the overall biodiversity value
	Catchment	The area from which precipitation (rainfall) and groundwater would naturally collect and contribute to the flow of a river
CaBA	Catchment Based Approach	An initiative that works with Government, Local Authorities, Water Companies, businesses and more, to maximise the natural value of our environment
CCG	Customer Challenge Group	A group of independent stakeholders representing different customer groups and scrutinising water companies' business plan development
CCW	Consumer Council for Water	The consumer protection body for water customers in England and Wales
	Cost-efficient	A cost efficient planning process assesses all options which meet both company and WRSE feasibility threshold against whole life delivery costs including the cost of carbon. The resulting plan therefore represents the lowest programme costs to deliver required policy outcomes and core strategic objectives. A cost efficient plan does not include, in its selection process, other benefits, additional value and/or wider objectives
Defra	Department for Environment, Food and Rural Affairs	UK Government department with responsibility for environmental matters – including water resources
	Desalination	A process where seawater or brackish water is turned into drinking water by removing the salt, providing a reliable source of water, including during droughts

Abbreviation list and Glossary

Acronym	Term	Definition
	Demand Management	Measures taken by water companies to support customers to reduce the amount of water they use and reduce leakage
	Drought Permit	An authorisation granted by the Environment Agency under drought conditions, which allows for abstraction / impoundment outside the schedule of existing licences on a temporary basis
	Drought Order	Powers granted by the Secretary of State during drought to modify abstraction / discharge arrangements on a temporary basis
DWMP	Drainage and Wastewater Management Plan	Strategic plans where wastewater companies take a company-wide approach to managing their wastewater and drainage assets
EA	Environment Agency	The regulator responsible for environmental protection and enhancement
	Groundwater	Water held underground in the soil or in voids in rock (see aquifers)
GUC	Grand Union Canal	A canal stretching 137 miles from London to Birmingham with arms into Slough, Aylesbury, Leicester and Northampton
	Headwater	Permanently flowing tributaries feeding a river system
HRA	Habitat Regulations Assessment	Assessment to consider the likely significant effects on designated European sites
INNS	Invasive Non-Native Species	Any non-native animal or plant with the ability to spread, causing damage to the environment and the way we live
	Least regrets	Least regrets means a decision that balances minimal cost with maximum benefit accounting for any possible futures in the most feasible way

Acronym	Term	Definition
	National Framework for Water Resources	An Environment Agency document that set the strategic direction for long-term regional water resource planning
	Natural England	The Government's adviser for the natural environment in England
	Natural Capital	Our stock of natural resources, including soils, air, water and all living organisms. Some natural capital assets provide "goods and services", often called ecosystem services
	Nature-based solutions	Sustainably managing natural features and processes to deliver wider benefits for customers – such as catchment management or river restoration
	Net zero operational carbon emissions	The water sector, through Water UK, has pledged to achieve net zero carbon emissions from its operations by 2030
	Non-household	Water use by businesses and public bodies such as schools and hospitals
NEUB	Non-Essential Use Ban	A drought order approved by the Secretary of State to restrict specific water uses by business
NIC	National Infrastructure Commission	An impartial, expert body commissioned by government to advise on infrastructure priorities and long-term challenges
Ofwat	Office of Water Services	The economic regulator of the water sector in England and Wales
	One in 500-year level of drought resilience	Being resilient to a drought that would happen on average once every 500 years – or it has a 0.2% chance of happening every year
PCC	Per capita consumption	The amount of water a person typically uses every day at home

Abbreviation list and Glossary

Acronym	Term	Definition
	Planning horizon	How far ahead a plan looks
RAPID	Regulators' Alliance for Progressing Infrastructure Development	An organisation formed by Ofwat, the Environment Agency and Drinking Water Inspectorate to help accelerate the development of new water infrastructure and design future regulatory frameworks
RBMP	River Basin Management Plans	Management tool within integrated water resources management containing descriptions of water resources within drainage basin and water allocation plans
	Regional Reconciliation	The process to understand how each region could support the others' developing regional plans
	Regional groups	The five regional groups outlined in the water resources framework – Water Resources South East, West Country Water Resources, Water Resources East, Water Resources North and Water Resources West
	River Restoration	The process of managing rivers to reinstate natural processes
SEA	Strategic Environmental Assessment	Assessment of the likely significant environmental effects of certain plans and programmes
STPR	Social Time Preference Rate	A method used to put a present value on costs and benefits that occur at a later date
SRO	Strategic Resource Options	Large-scale infrastructure solutions for securing water
SESRO	South East Strategic Reservoir Option	A proposed reservoir in the Upper Thames catchment in Oxfordshire
SSSI	Sites of Special Scientific Interest	An area designation for conservation, usually due to particularly interest to science due to the flora or fauna within it or important geological features

Acronym	Term	Definition
	Supply-demand balance	The difference between total water available for use (as supply) and forecast distribution input (as water demand) at any given point in time over the Water Resource Management Plan's planning period / horizon
	Sustainability Reduction	Reductions in deployable output required to meet statutory and / or environmental requirements
	TOTEX	This combines the capital, operational and carbon costs associated with the options
TUB	Temporary Use Ban	Drought management measure imposed by water companies on customers – previously known as a hosepipe ban
WRPG	Water Resources Planning Guideline	Expectations set by Government about how water companies should develop their WRMPs published by the Environment Agency, Natural Resources Wales and Ofwat
	Water recycling	A process where wastewater is treated above usual standards to be returned to the environment and then abstracted downstream to process for drinking water
	Water UK	The trade association for water companies
WFD	Water Framework Directive	Environmental Legislation relating to river basin management and committing all EU member states to achieving good quality and good quantitative status of all water bodies and retained as UK law following Brexit
WINEP	Water Industry National Environment Programme	A programme issued to water companies by the EA which outlines what regulators expect companies to include in future investment plans to meet environmental obligations
WRMP	Water Resources Management Plan	A plan produced by each water company every five years that follows a statutory process and sets out how they will provide water over the long-term





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