

Water Resources South East

Our draft best value regional plan

22nd November 2022

The webinar will start at 13:30.

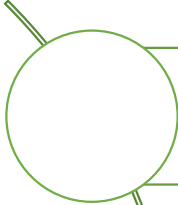
Water Resources South East

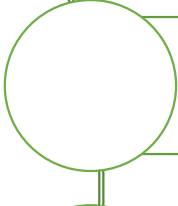
Our draft best value regional plan

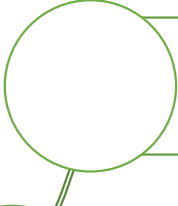
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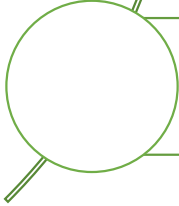
Housekeeping



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Please keep microphones and cameras off
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Please use the Teams Q&A function to submit questions for our panelists
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If we don't get to your question, please submit it via our consultation page or the relevant water company's process
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We're recording the session and will share it and the slides afterwards

Agenda



Introduction and housekeeping

- Joel Hufford – Create 51

Setting the scene

- Chris Murray – Independent Chair, WRSE

Our draft regional plan

- Trevor Bishop – Organisational Director, WRSE

Q&A One – The view from our stakeholders

- Karen Gibbs – CCW
- Cat Moncrieff – South East Rivers Trust
- Kelly Hewson-Fisher – NFU

What's in the draft regional plan

- Doug Hunt – Affinity Water
- Jim Barker – Portsmouth Water
- Alison Murphy – SES Water
- Andrew Halliday – South East Water
- Nick Price – Southern Water
- Peter Blair – Thames Water

Q&A two – What's in the draft regional plan

Close

Setting the scene

Chris Murray – Independent Chair, Water Resources South East

Our draft Regional Plan

Trevor Bishop – Organisational Director, WRSE

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.

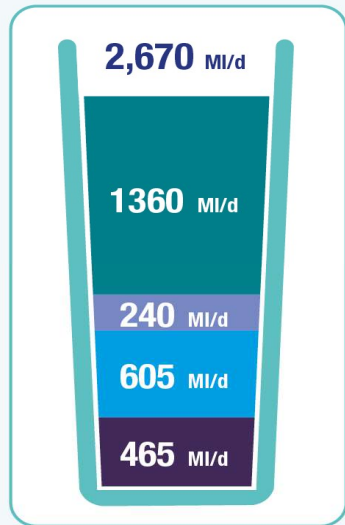
We're also planning for the needs of other sectors such as agriculture, industry and power.

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.

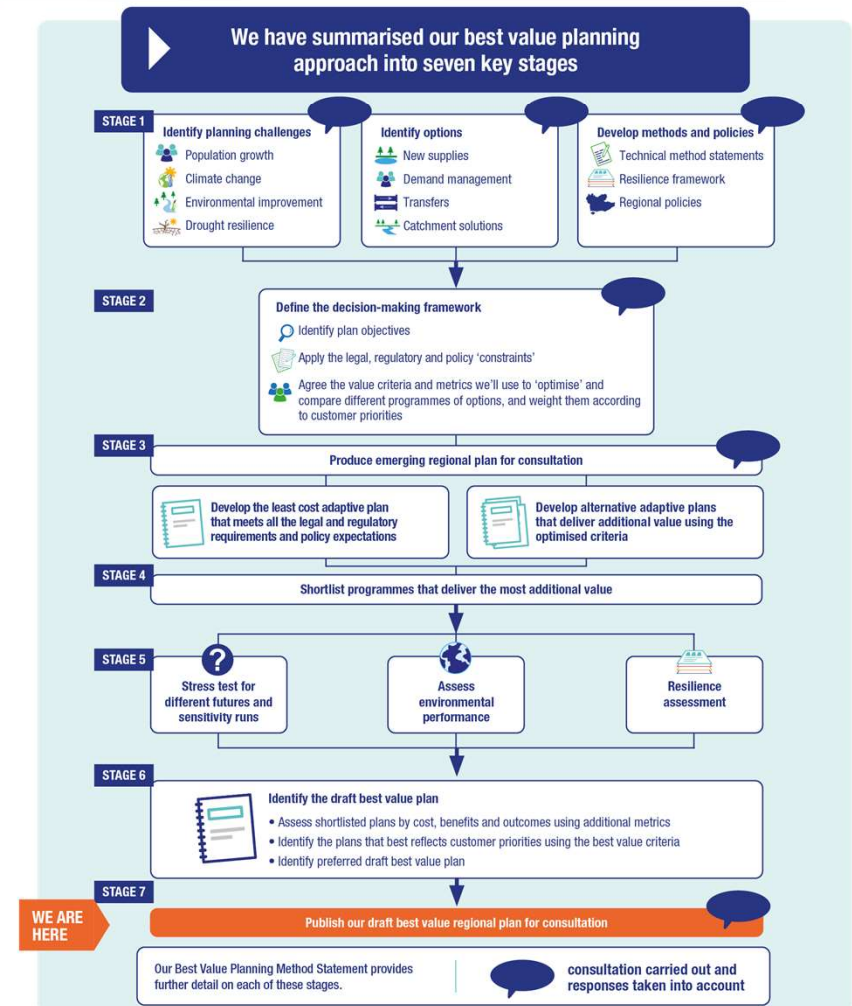
*Schemes shown are based on the reported pathway of our draft best value plan

How we developed our draft regional plan

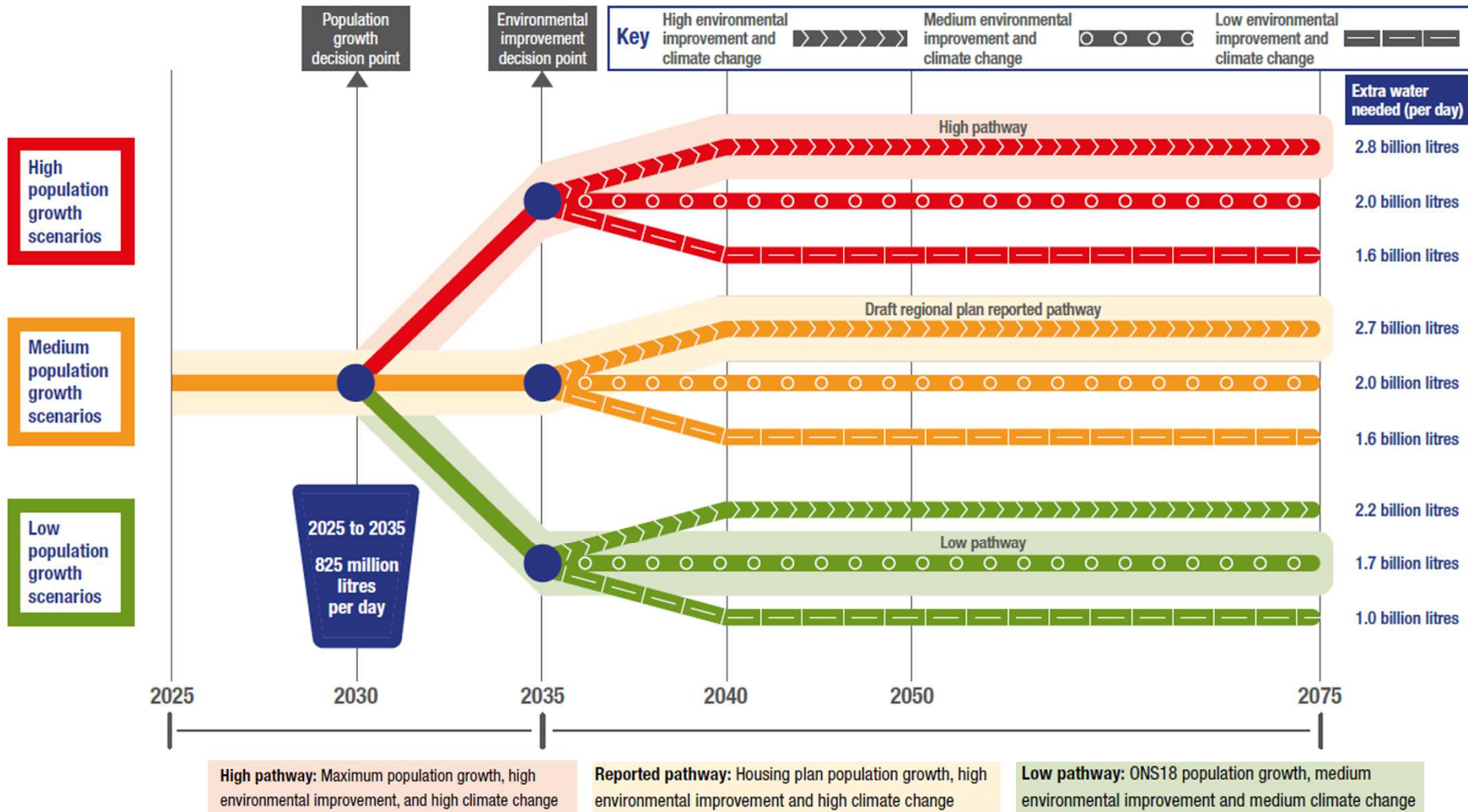
We've worked our member companies, industry regulators, other regional groups, and a range of stakeholders

We assessed over 2,400 options and included 1,400 in our investment model

We first identified the *least cost* plan – then developed alternatives to understand the wider benefits we could deliver



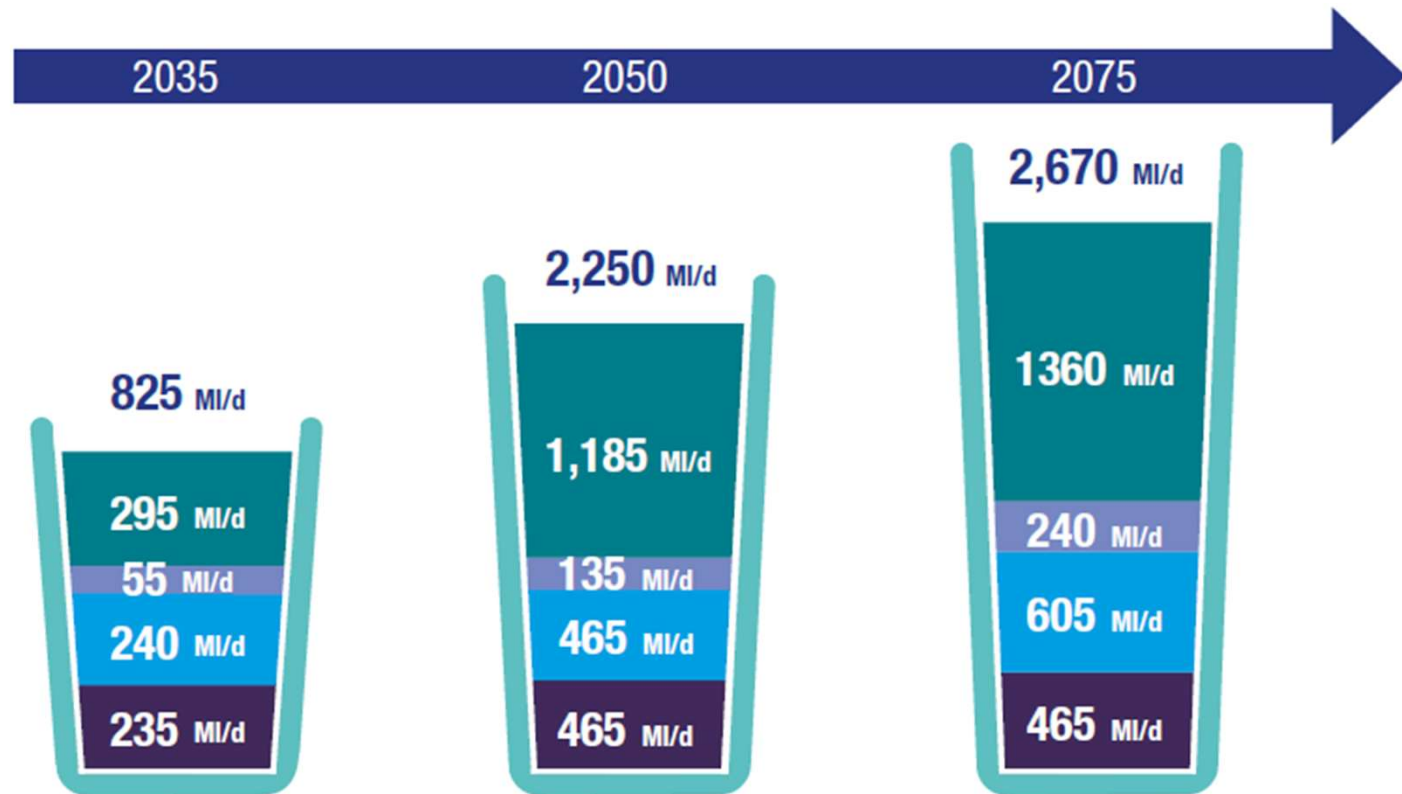
Planning for uncertainty



Mind the gap

Key

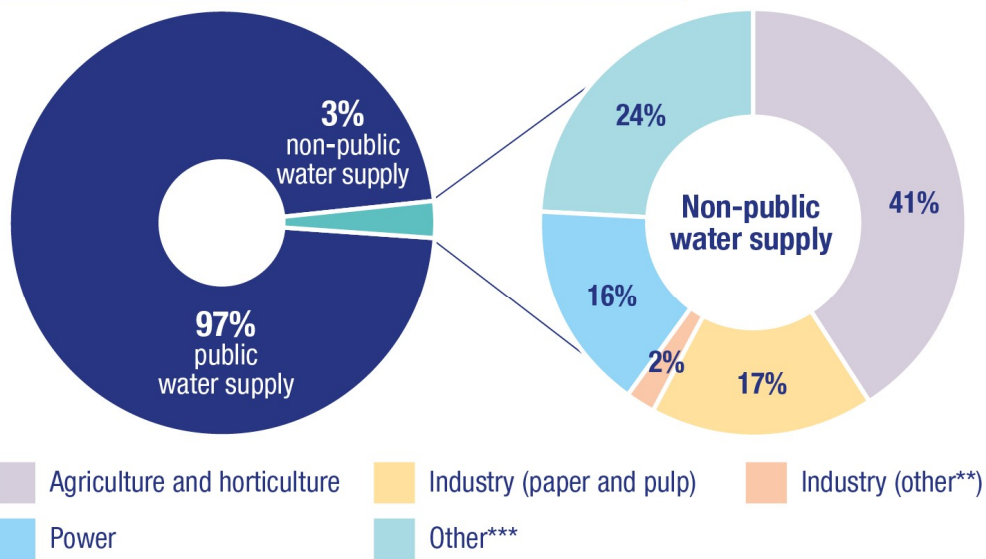
-  Environmental improvement (through abstraction reduction)
-  Climate change*
-  Population growth
-  Drought resilience (includes replacing environmental drought orders and permits after 2040)



*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.

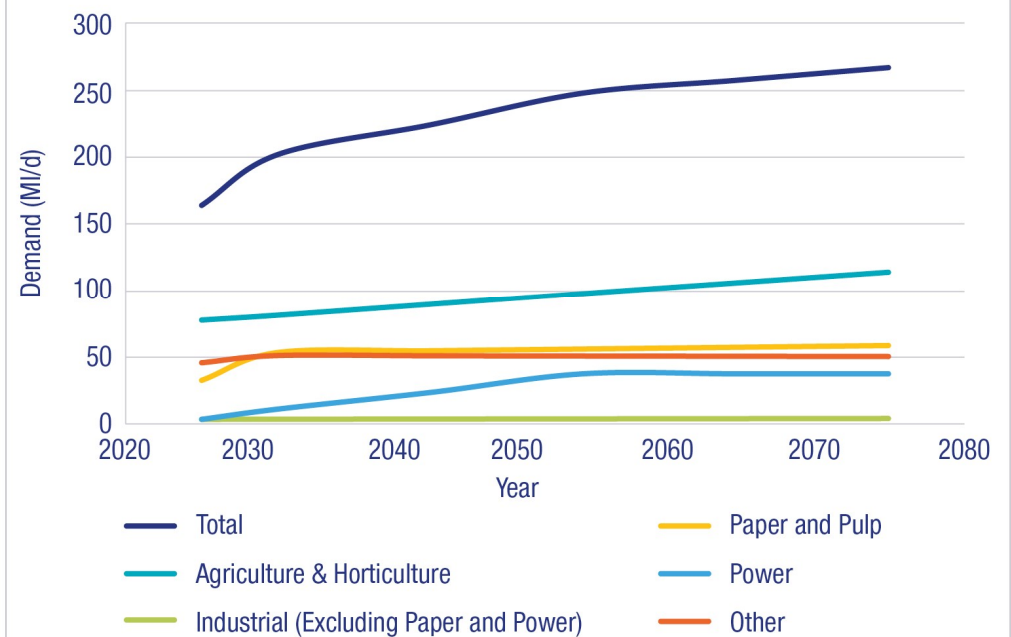
Understanding the needs of other sectors

Figure 2: Non-Public Water Supply water use in 2025



**Includes the mineral and aggregate, chemicals, food and drink, leisure and other industrial sectors
 *** Includes navigation (primarily the Grand Union Canal), environmental sites and other private users

Figure 3: Non-Public Water Supply Demand Forecast 2025-2075

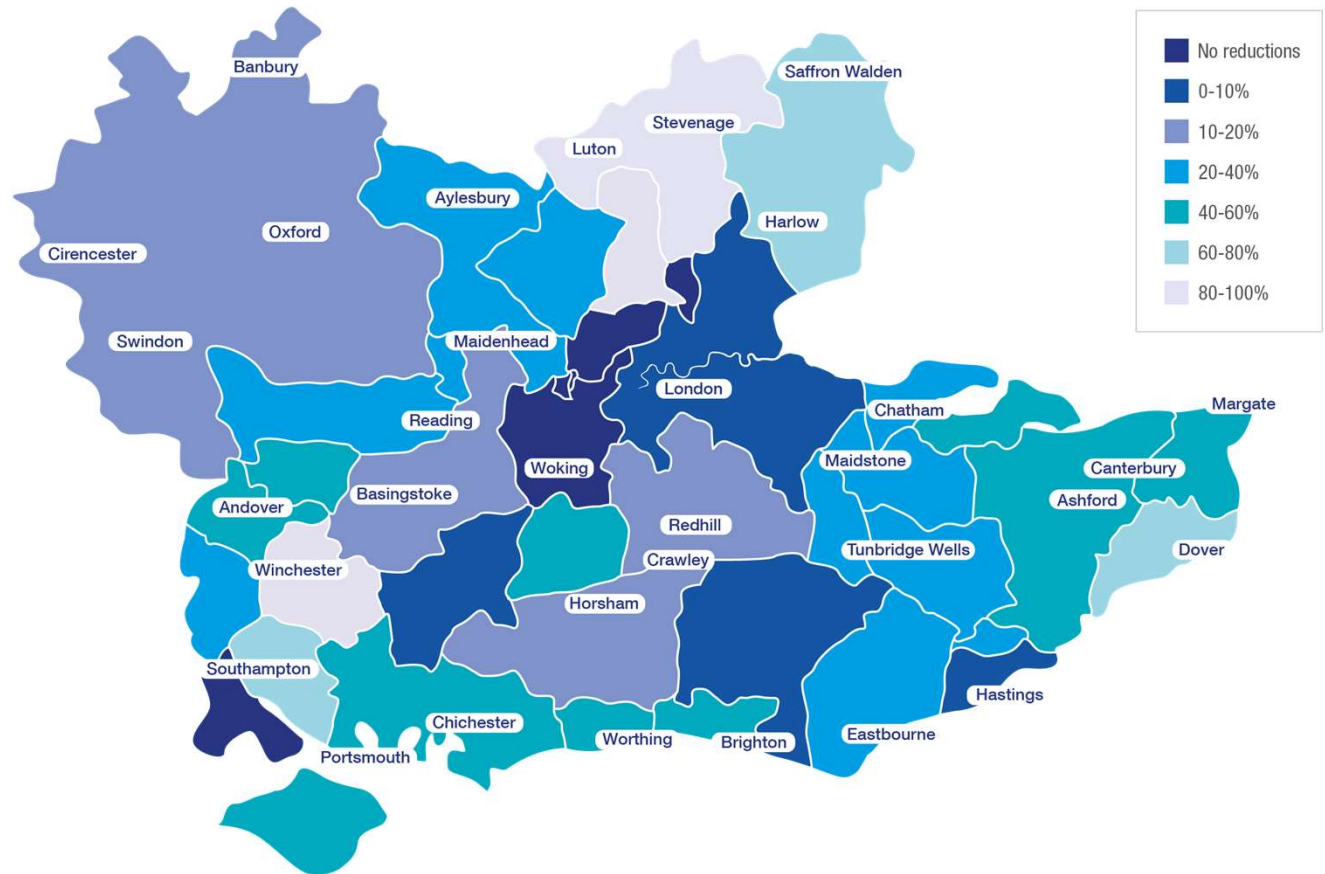


Reducing abstraction to improve the environment

Reducing abstraction is a priority for customers and stakeholders. They wanted us to include a long-term sustainability reductions program.

We are working with regulators and stakeholders to develop a framework to prioritise where abstraction should be reduced.

Investigations carried out by water companies over the next 10 years will provide the evidence base for future reductions in abstraction.



The options we considered



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



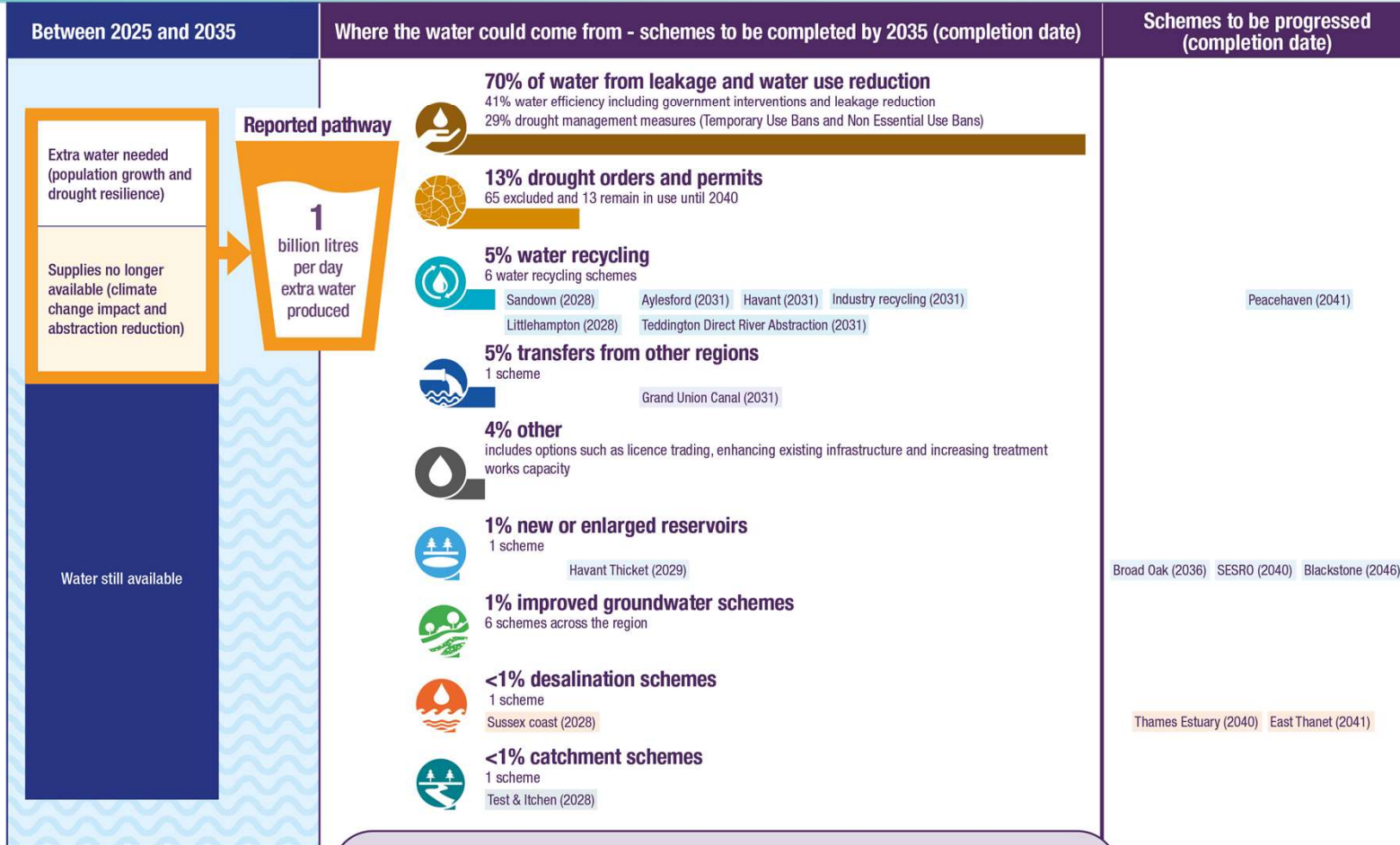
16 transfers from other regions of the country that would move water already available, or created by the development of new sources in those other regions, to South East England

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

Our plan – 2025 to 2035

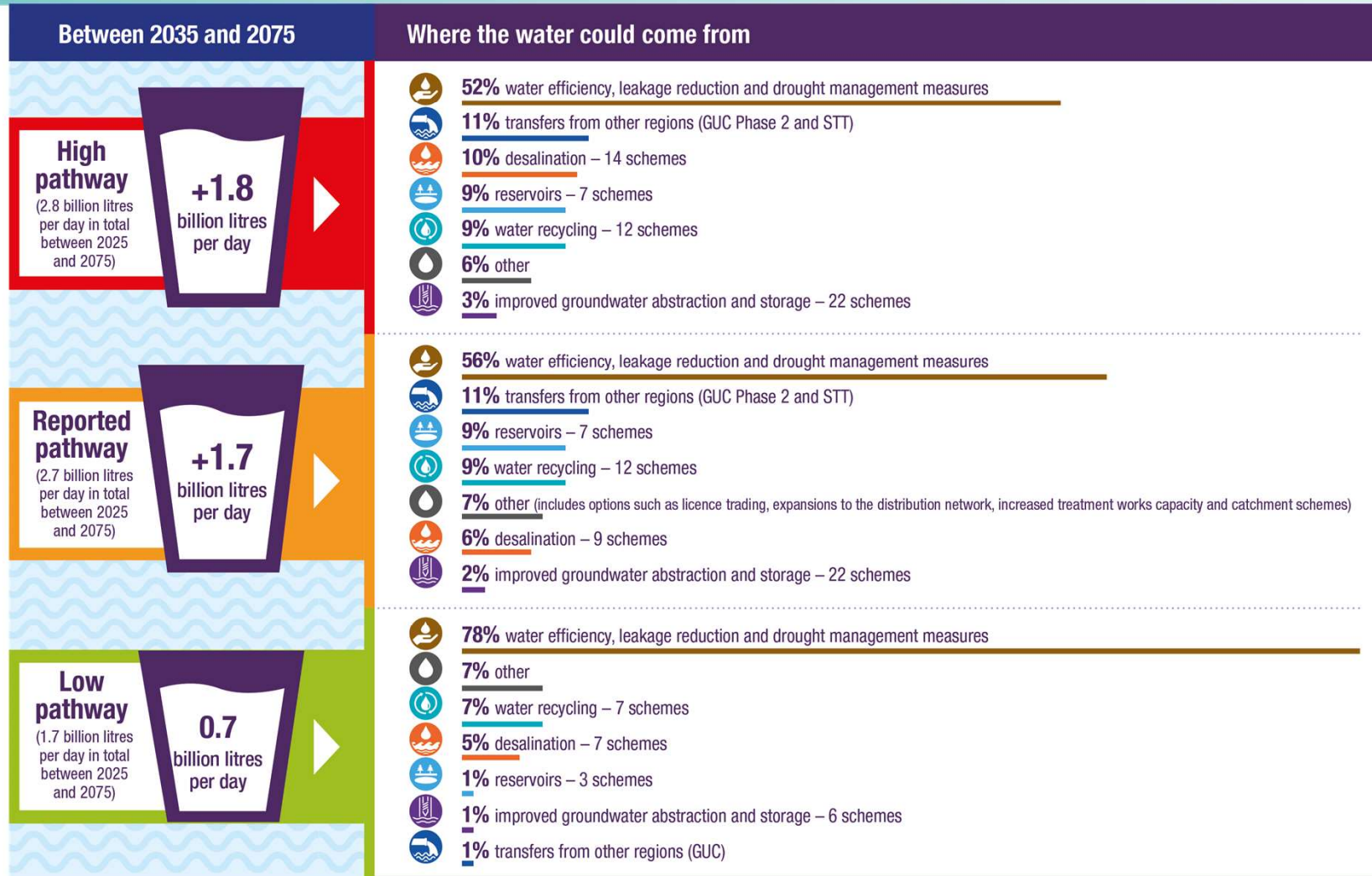


600 million litres of water per day



could be moved around the WRSE region and between other regions

Our plan – 2035 to 2075



Cost and carbon impact of our plan

Building and running new critical water resources infrastructure will generate carbon emissions.

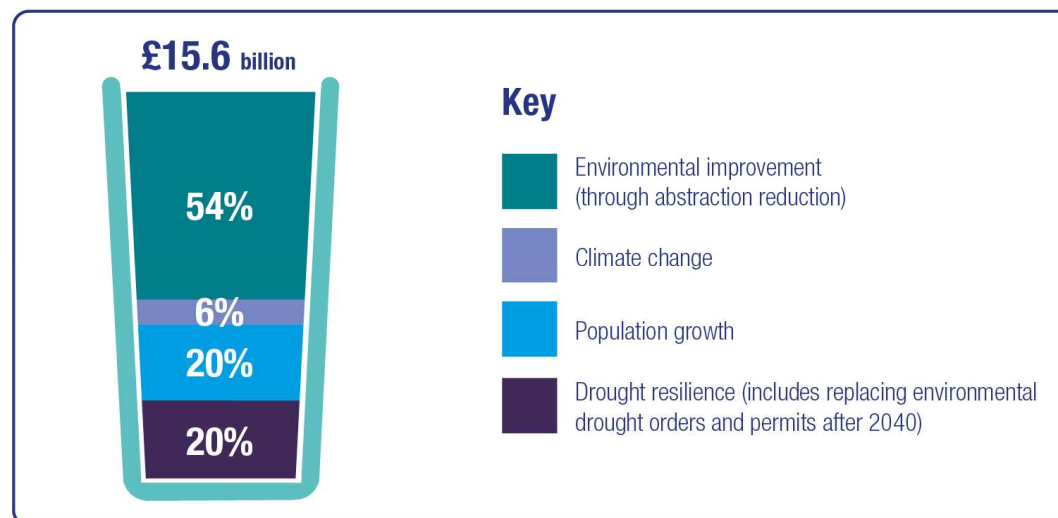
While developing the plan, we estimated the carbon footprint of the proposed programmes.

This includes emissions created through construction, replacing assets at the end of their lives and their ongoing operation and maintenance

Measuring carbon in this way means lower carbon options can be selected, helping to avoid some emissions.

The total cost of our reported pathway is £15.6 billion – more than half of this is driven by environmental protection and improvement. The cost range of our full adaptive plan is £10.7 billion to £16.4 billion.

Investment in water resources is largely funded through customers' water bills. Companies' draft WRMPs will provide indicative bill impacts for their customers.



Q&A One – The view from our stakeholders

What's in the draft regional plan

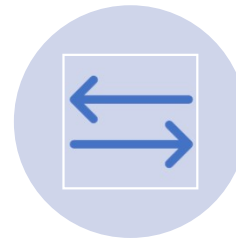
Four priorities



Efficient use of water and minimal wastage across society



New water sources that provide sustainable and resilient supplies



A network that can move water around the region



Catchment and nature-based solutions that improve the water environment we rely upon

Efficient use of water and minimal wastage across society



Reducing demand for water is vital while new sources are developed, and we determine the level abstraction reduction needed.

Reducing demand and leakage is required in all pathways. By 2050, it could provide over half the extra water we need.

The regional plan will halve leakage and forecasts demand will fall to 115 litres per person per day by 2050.

There are four areas of activity – leakage reduction, water efficiency, water efficient policies and using temporary drought management measures.

The level of leakage and household water use reduction varies between the six WRSE water companies.

		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

Efficient use of water and minimal wastage across society



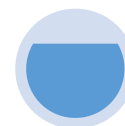
Water efficiency activity includes:

- Installing more meters and smart meters
- Using data to inform communications and awareness raising campaigns
- Carrying out more home visits
- Helping reduce wastage from poor plumbing
- Testing different tariffs.



Leakage reduction activity includes:

- Replacing water mains
- Managing pressure
- Working with customers to find and fix leaks on their pipes
- Installing smart sensors to identify leaks



Our plan assumes government will introduce:

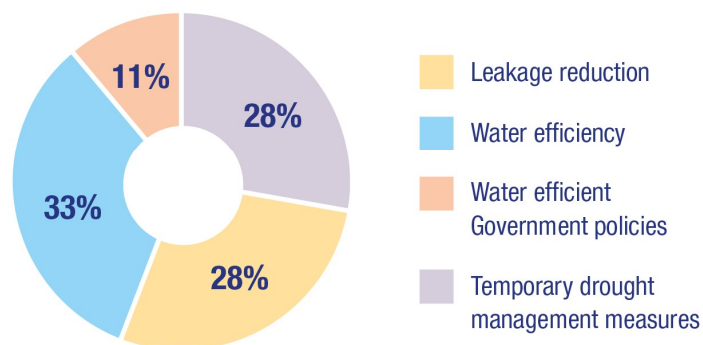
- Labelling of all water using products by 2024
- Minimum standards for all water using products by 2040
- New building regulations and retrofitting existing homes by 2060



Our plan continues to rely on temporary restrictions:

- They contribute nearly 300 million litres per day to the draft regional plan
- They are still needed in the first ten years of the plan, but should be needed less frequently in the future

Figure 6: Percentage contribution of schemes to reduce demand



New water sources – transfers from other regions



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

WRSE worked with the other regional groups to identify opportunities to share water between and provide a more joined up national solution.

There are two transfers identified from the Water Resources West region into South East England using the river and canal network.

The Grand Union Canal scheme needs to be delivered by the early 2030s in all scenarios, with the second phase by 2040 in our reported and high pathways.

The Severn Thames Transfer needs to be developed by 2050 in our reported and high pathways. It is not needed in our low pathway.

New sources – improved groundwater abstraction and storage



These schemes involve changing existing groundwater sites to make more water available.

They are typically cheaper and make the best use of water available. However, they can only be developed in a few locations.

They can involve recharging a groundwater source from another nearby one or creating new underground storage.

Groundwater schemes are needed in all our pathways, but more are needed in the more challenging pathways.

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 water sources – reservoirs



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

Reservoirs store water when it is available. They can also be topped-up from other sources like water recycling. They can also be used as a source for new transfers.

Havant Thicket reservoir has received planning permission and construction is underway. It will be completed by 2029.

Broad Oak reservoir is needed in our reported and high pathway by 2036 and 10 years later in our low pathway. Construction would need to begin by 2031 to deliver the scheme by 2036.

SESRO is needed in all three pathways. It provides 100 million m³ of storage and will produce up to 185 million litres of water per day.

Brent reservoir involved repurposing an existing Canal and River Trust reservoir for public water supplies. It is needed in the reported and high pathways.

Blackstone reservoir would store water from the River Adur in West Sussex is needed in the reported and high pathways.

New water sources – desalination



Desalination turns brackish and seawater into drinking water – and provides a long-term, resilient source. However, it is energy intensive and costly to operate. It can also have a carbon and environmental impact.

A plant is needed on the Sussex coast in all pathways before 2030. Investigative work is already underway.

More sites are identified in the reported pathway after 2040, including in Kent and Sussex. Further sites are identified in our high pathway, including one in London.

The need is primarily driven by the long-term need to protect and improve the environment. The location and level of future abstraction reductions will determine what additional resources are needed.

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 water sources – water recycling



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

Water recycling is where highly treated wastewater is returned to the environment to supplement our natural supplies.

Six water recycling schemes are identified for completion by 2035. They are needed in all alternative pathways.

The recycling schemes needed between 2035 and 2050 are identified in the reported and high pathways.

If water recycling schemes cannot be progressed, then desalination plants or more storage options will need to be built instead.

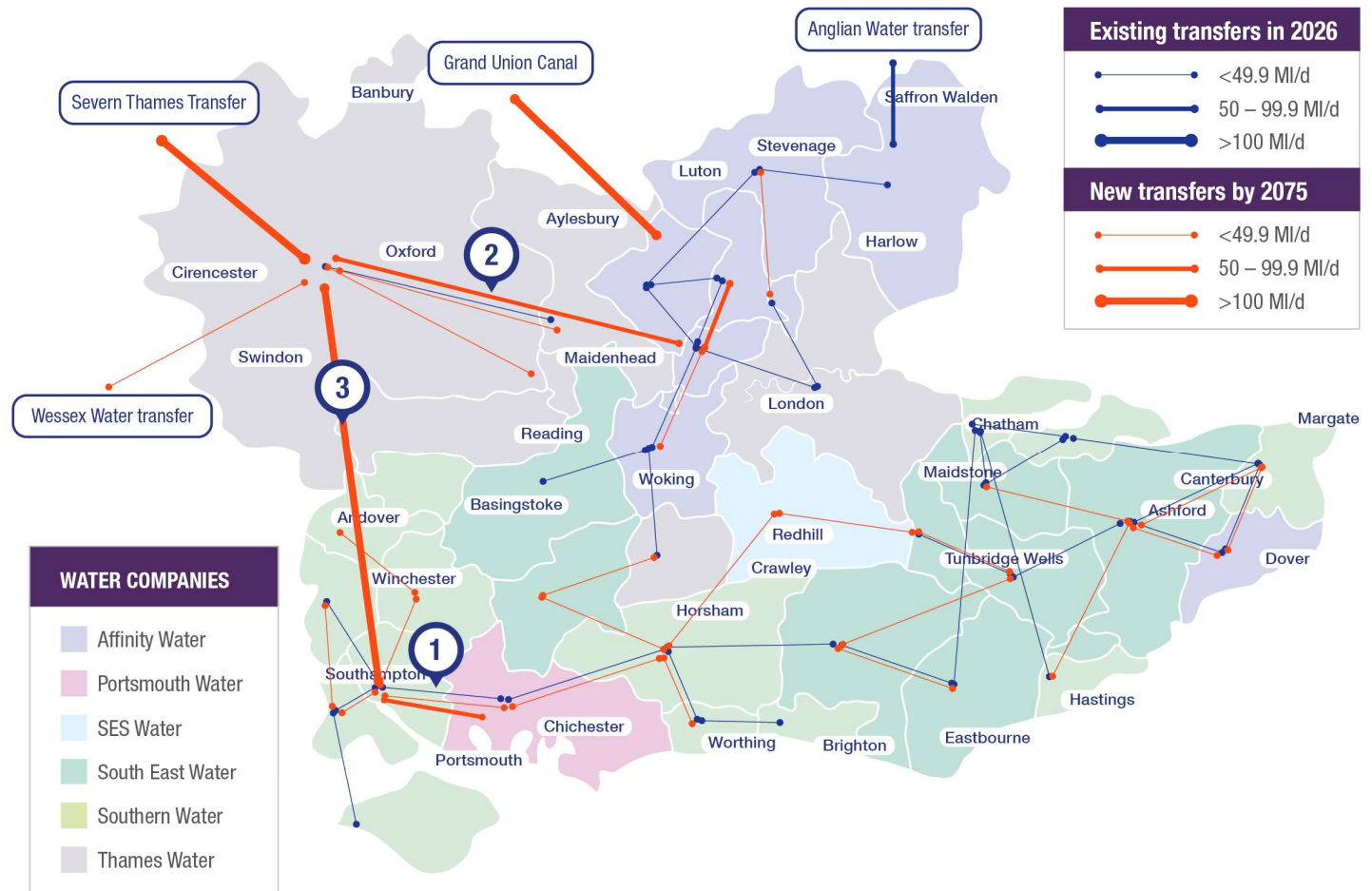
A network that can move water around the region



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 solutions



Catchment schemes and nature-based solutions could play an important role in securing resilient and sustainable water supplies for the future.

WRSE included over 200 potential schemes in the emerging regional plan including river restoration, improving land management practices, natural flood management and Sustainable Drainage Schemes.

WRSE applied regulatory guidance to the draft regional plan 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.

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 and WINEP.

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.

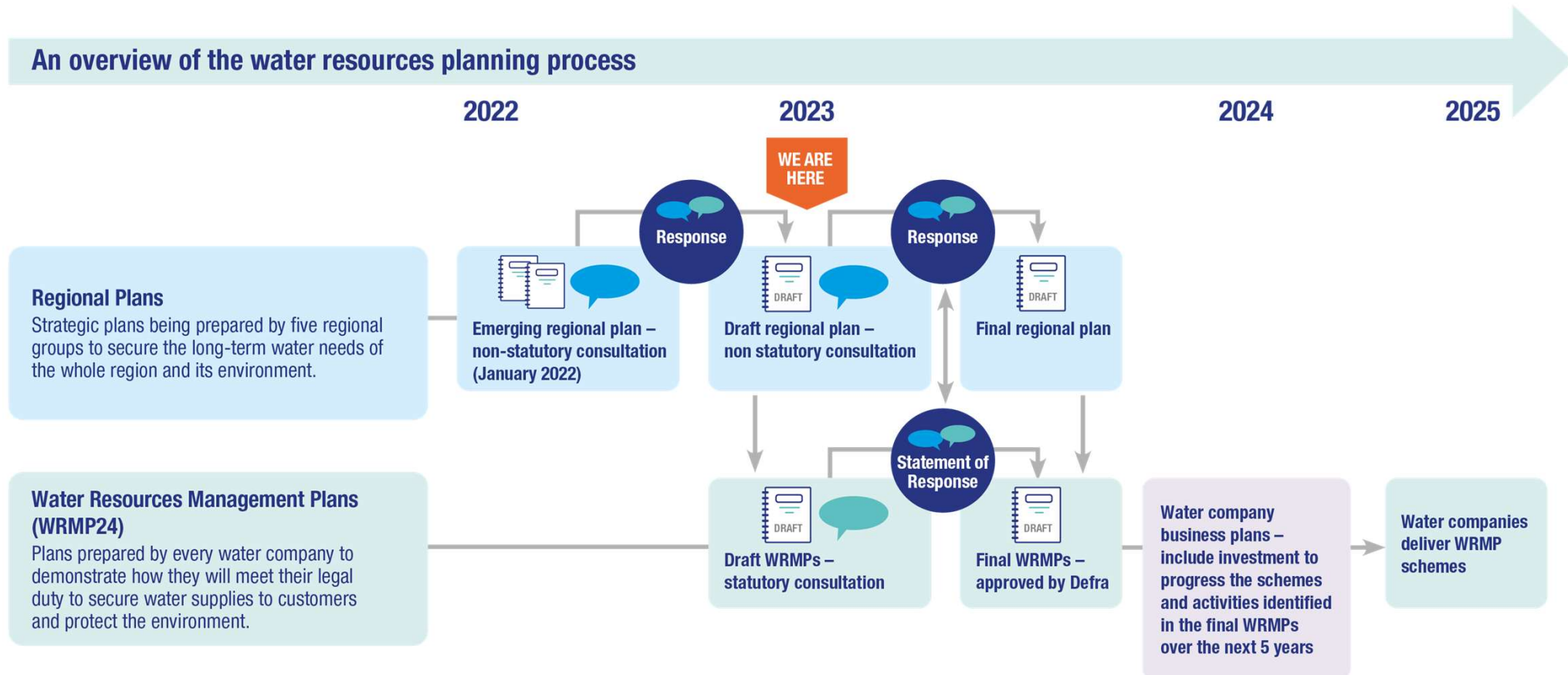
Exploration into a more integrated approach that combines the use of catchment and nature-based solutions with more moderate levels of abstraction reduction could be undertaken. This may deliver better outcomes for our rivers at a more efficient cost and deliver wider environmental benefits such as improving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

Q&A Two – What’s in the draft regional plan

What's next

An overview of the water resources planning process



How to get involved



Visit linktr.ee/wrse for links to all the companies' WRMP pages



Thank you