Hampshire Water Transfer and Water Recycling Project

Havant Borough Council briefing – February 15, 2023

Why we're here

In this presentation, we will give an overview of the water recycling plans and the technology proposed.

Our aim is to allay some of the concerns raised, and assumptions made, about water recycling.

We can assure you that Southern Water and Portsmouth Water are working together with our regulators to ensure these proposals safely and sustainably secure the county's water supplies for the future.

What is recycled water? What is stormwater? What is spring water?

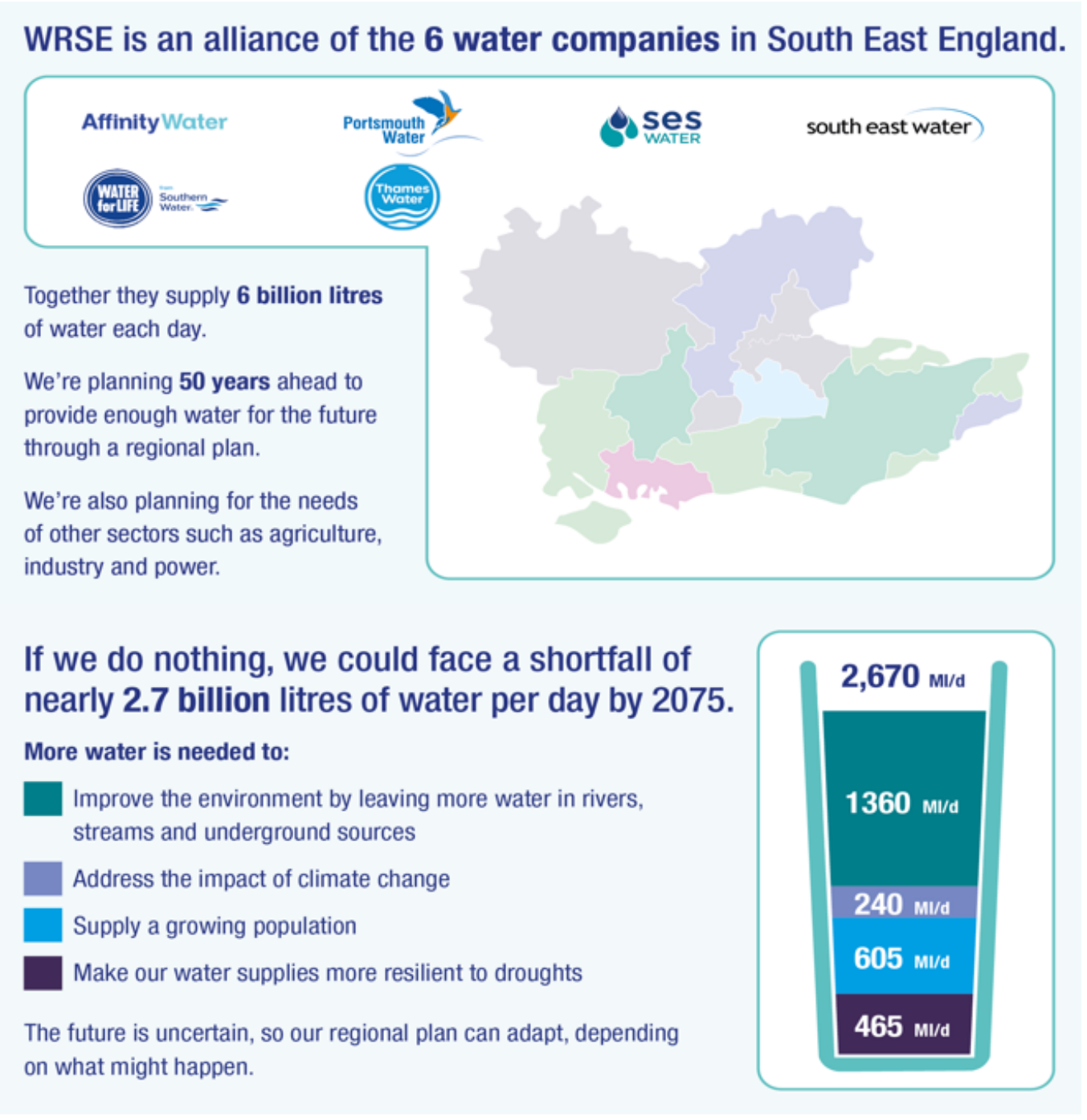
The water recycling process is fundamentally different, and totally separate, to stormwater releases.

No stormwater would go into the reservoir. They are separate systems.

- **Stormwater** is wastewater that has been heavily diluted by rain and is sometimes released out to sea as part of a separate process to protect homes from flooding.
- **Recycled water** is fully treated wastewater that has been further purified through a series of advanced treatment techniques so it can be used as a source for drinking water.
- **Spring water** is water that has risen from the ground. It contains nitrates and other impurities from the local geology, agriculture and other sources.

Regional context

- The South East is water-stressed.
- There is a significant long term shortfall in available water.
- New sources need to be created to replace abstractions from rivers and aquifers.
- If we don't develop new sources now – we'll face challenges in future droughts.
- The water recycling proposals would make better use of Havant Thicket Reservoir as a strategic water resource for the South East.

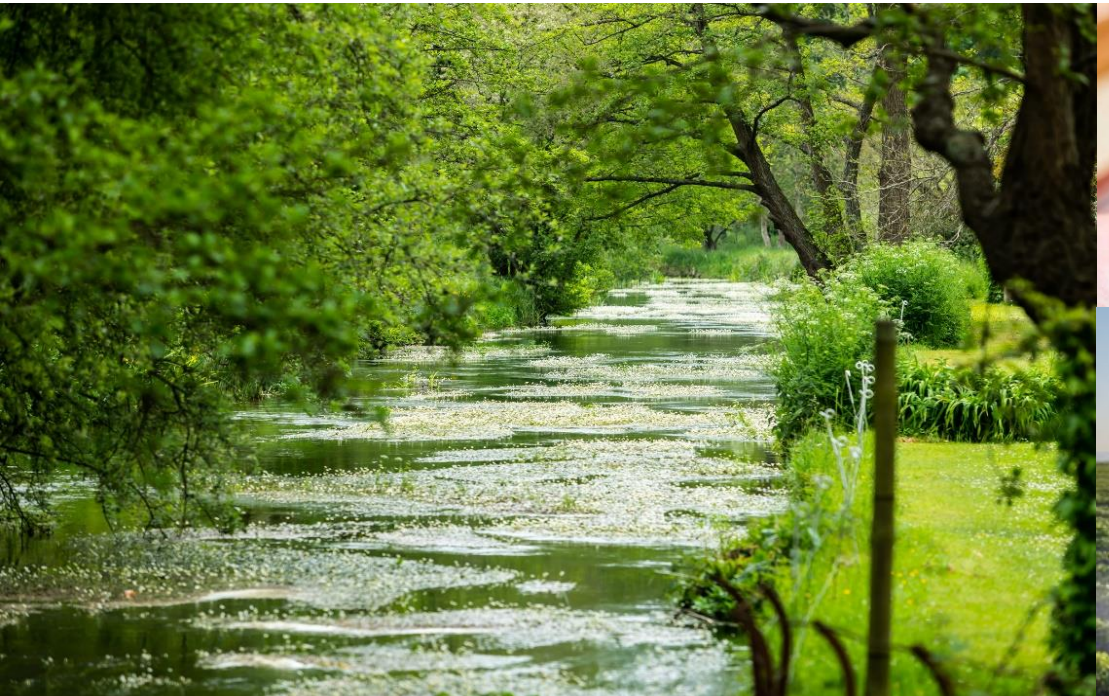


Keeping taps and rivers flowing

The Water for Life – Hampshire programme will help protect the Test and Itchen chalk streams and maintain supplies for customers during a drought.

We rely on the environment for water supplies but face a shortfall of up to 192 million litres of water a day in Hampshire during a drought.

A number of projects are included due to the size of the shortfall, including reducing leakage and improving water efficiency but the biggest single solution is water transfer and water recycling.



The Hampshire Water Transfer and Water Recycling Project

Under the Project, we plan to:

- Build a new water recycling plant south of Havant to turn treated wastewater into recycled water.
- Transfer this recycled water via a new underground pipeline to the reservoir.
- Build a new pipeline to transfer water from the reservoir to Otterbourne Water Supply Works, where it would be treated further to become drinking water.
- Use the existing long sea outfall from Budds Farm to release the reject water, produced by the water recycling plant, safely out into the sea.

Not to scale, for indicative purposes only

Water recycling

A guide to the stages of water recycling

Water recycling uses advanced treatment techniques to turn highly treated wastewater, that is usually pumped away into rivers and the sea, into drinking water.

Membrane process

Water, already extensively cleaned at a wastewater treatment works, is pumped through two filtering processes in the Water Recycling Plant. The first, micro-filtration, removes remaining impurities that could block the membranes used at the second stage of treatment – reverse osmosis. Here, dissolved salts and impurities are removed by pushing the water at high pressure through a membrane of tiny holes more than 50,000 times smaller than the width of a human hair. Dissolved impurities such as bacteria and pharmaceuticals are also removed.

Did you know?

Water recycling is a tried-and-tested technology used elsewhere in the world – in Southern California they've been using it for 40 years.

Advanced oxidation process

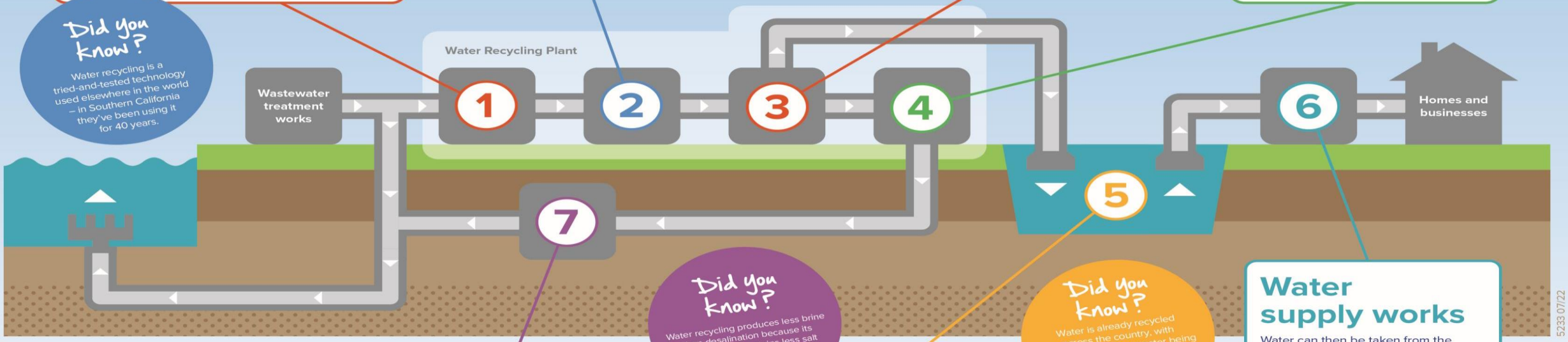
Reverse osmosis is extremely effective at removing impurities. But, as an extra layer of protection, ultraviolet light (just like that found in sunlight) is applied along with a small dose of a chemical called hydrogen peroxide. Both of these treatments are used around the world in water recycling. Ultraviolet light is widely used in other drinking water treatment processes as it helps reduce the amount of chlorine that needs to be added at later stages of treatment.

Treated water conditioning

To make the water drinkable, minerals such as calcium and magnesium salts (that have been removed during the earlier stages of treatment) are added back in. As in traditional treatment methods, some chlorine may be added to the water to ensure it meets strict water quality standards.

Reject stream

Water and particles removed by each of the previous stages of treatment are taken away to be cleaned. The liquid is filtered to produce cleaned wastewater, known as reject water, which can be released back into the sea at Step 7. The process produces a concentrated solid matter which is removed and most commonly returned to the wastewater treatment works.



Did you know?

Water recycling produces less brine than desalination because its source water contains less salt and other impurities that need to be filtered out.

Reject water release

As about 20% of the source water is filtered out through the various treatment processes, reject water is released back into the sea. An underwater pipe with a series of holes at the end, called a diffuser, helps disperse it across a wider area.

Did you know?

Water is already recycled across the country, with highly treated wastewater being released into rivers, where it blends with river water before being reabstracted further downstream.

Environmental buffer

The treated water is pumped to a lake, reservoir or watercourse, known as an environmental buffer, where it mixes with existing water from other sources.

Water supply works

Water can then be taken from the environmental buffer and pumped to a Water Supply Works where it is treated to the same rigorous standards as all water taken from the environment. Typically this involves a combination of filtration and the addition of chlorine before it is sent into supply.

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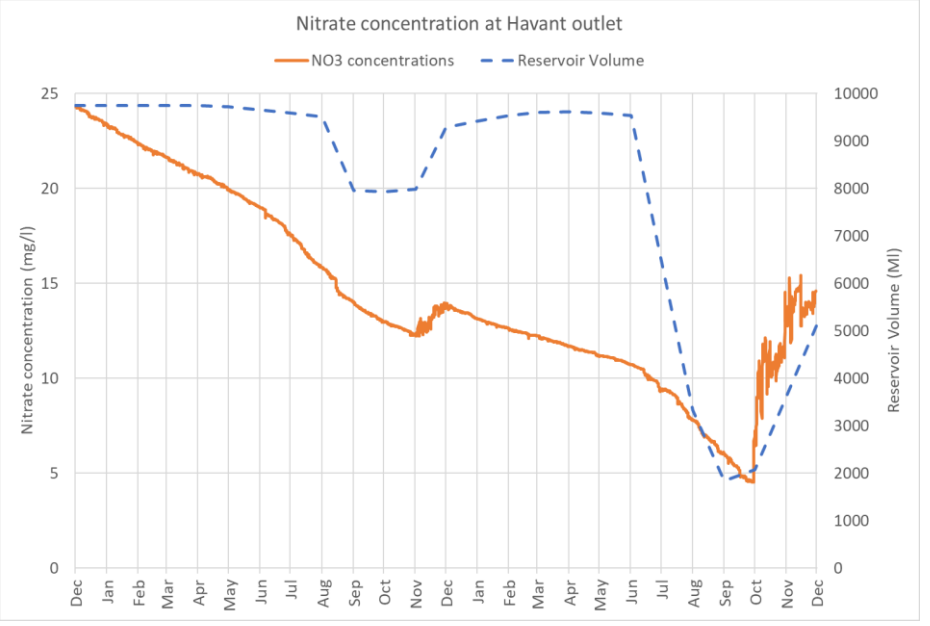
We are confident our proposals will have no adverse impact on the reservoir

- Our modelling predicts the recycled water will be purer, in many ways, than the spring water, will dilute nitrates in the reservoir and reduce the risk of eutrophication.
- Initial testing shows nitrate levels in the spring water are on average 30mg/l (milligrams per litre) vs 0.3 mg/l in recycled water.
- Detailed water quality assessments and environmental impact assessments are under way.
- We will share details of these assessments when they are available.
- The results will also form a key part of our next public consultation.



Model showing the reduction in nitrate within the reservoir over a two year period with recycled water added and an increase when spring water is added following a drought.

Havant Thicket Reservoir: Community and environmental commitments

- Havant Thicket Reservoir will provide a new, sustainable source of water, meaning less needs to be taken from the environment.
- The plans include planting and improving more than 200 hectares of woodland and wood pasture (both on site and off site) and creating a new wetland on the northern shore of the reservoir.
- It will also provide a new green leisure facility for the community including a visitor centre, footpaths, bridleways and cycling routes.

Portsmouth Water

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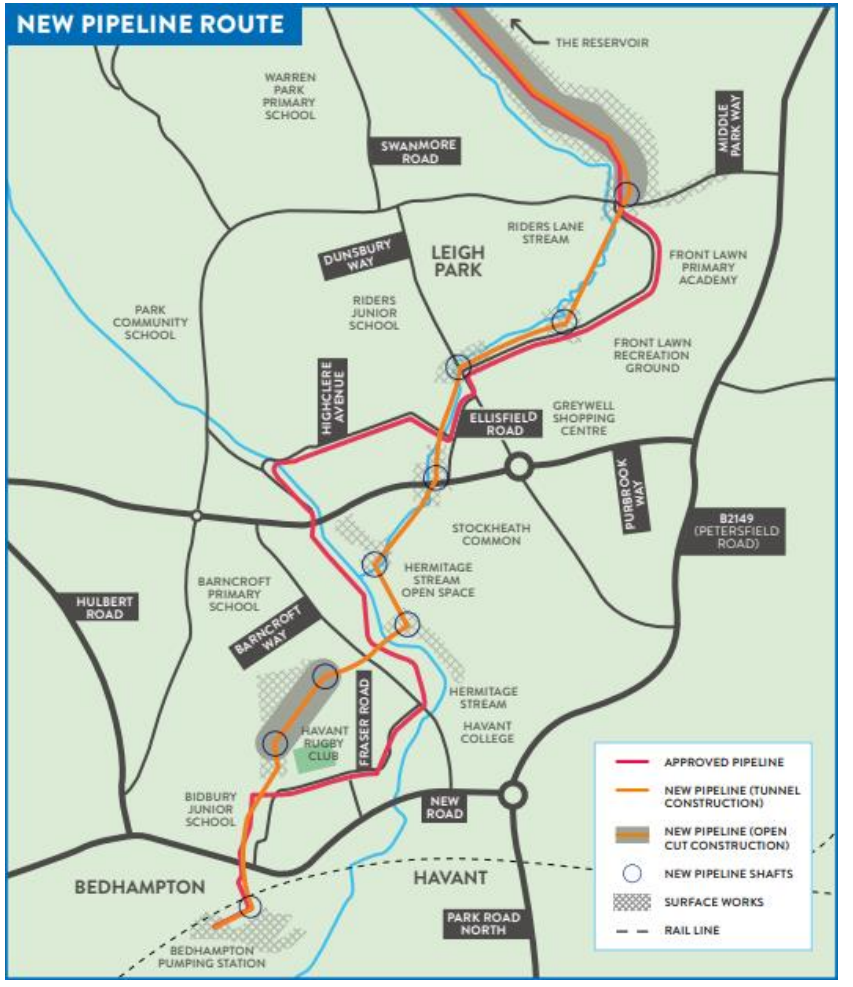
Havant Thicket Reservoir: water recycling

- Water recycling is a well-established and widely used technology that would provide a brand new source of clean, safe drinking water.
- Initial investigations predict that recycled water would be purer than the water already in the reservoir.
- Portsmouth Water and Southern Water are working closely to ensure that this is the case.
- Environmental commitments made in respect of the reservoir, particularly around the wetland, will be maintained.

Havant Thicket Reservoir: pipeline consultation

- In 2021, Portsmouth Water received planning permission for a new pipeline to fill Havant Thicket Reservoir with water from the Bedhampton Springs.
- Since then, a new plan has been developed, which would reduce disruption and have a lower environmental impact.
- We're also exploring the opportunity to incorporate part of Southern Water's pipeline within this tunnel to further reduce disruption if the water recycling plans go ahead.
- This would not allow Southern Water to operate the pipeline and would not, in any way, pre-empt the approval of the water recycling scheme.



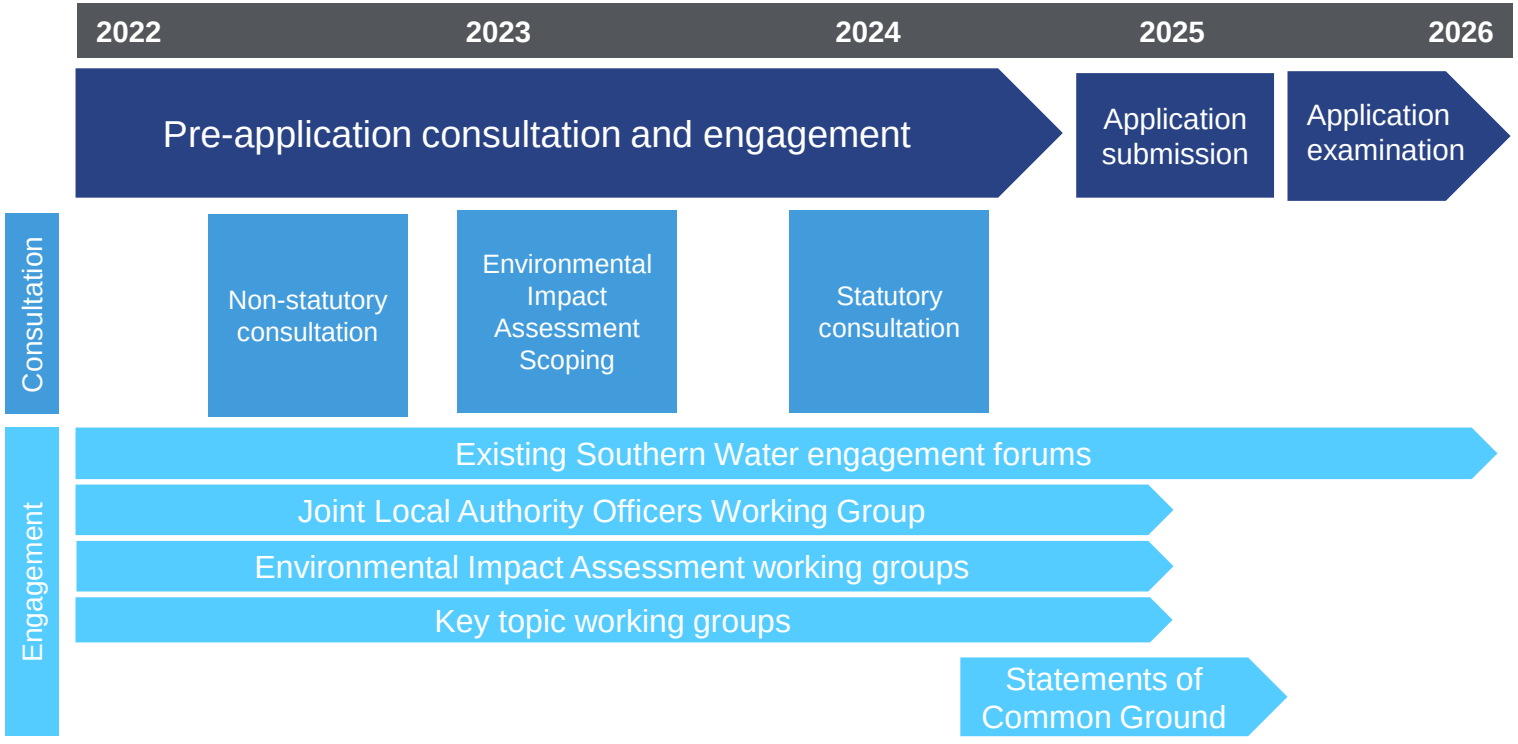
HWTWRP public consultation 2022

During the six-week consultation period (July 5 – August 16):

- 9,169 people visited the consultation web pages
- 878 people visited one of six drop-in sessions
- 69 people attended one of our public webinars
- 571 consultation responses were received

Further engagement and consultation

- Defra has confirmed the project is of national significance. We'll need to apply for a Development Consent Order from government to build it.
- Our third consultation will be held towards the end of 2023 or early next year. It will give people a further opportunity to feed back on the developing plans.
- In the third consultation, we'll also share the findings of our environmental impact and water quality assessments that are currently under way.
- There will be many more opportunities for people to have their say and help us shape the plans.



Q&A