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## Case study

# Southern Water: Hampshire Water Transfer and Water Recycling Project

February 2024

In the water-stressed South East, a fresh approach to water treatment and supply is being developed to help keep taps and rivers flowing.

Water for more than 700,000 people across a large swathe of rural Hampshire, in cities including Southampton and Winchester, and on the Isle of Wight, is supplied by Southern Water.

The majority of this water, **typically about 180 million litres a day**, has until now come from the Test and Itchen Rivers and their associated aquifers<sup>1</sup>. But an increased awareness and understanding of the risk abstraction poses to these rare and sensitive ecosystems prompted the Environment Agency to severely limit the amount of water that could be taken from them, especially during a drought.

These abstraction licence reductions, coupled with a growing population and changing climate, leave Southern Water facing a potential shortfall of 192 million litres a day in Hampshire in a 1-in-200-year drought – around 80% of its current supply.

In response, the company has launched its **Water for Life – Hampshire** programme. This holistic approach comprises a **series of projects to transform the way it sources, treats and supplies water across the county, alongside significant investment to reduce leakage and improve water efficiency**.

A central part of the solution is the development of the first major new reservoir in the South East since the 1970s, at Havant Thicket<sup>2</sup>, in partnership with Portsmouth Water. A further plan to supplement this spring-fed reservoir with recycled water, so there is more water available during a drought, is also being pursued.

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<sup>1</sup> An aquifer is an underground layer of water-bearing/permeable rock in which water is naturally contained.

<sup>2</sup> [Havant Thicket Reservoir Project, Portsmouth Water](#)

Called the **Hampshire Water Transfer and Water Recycling Project**, it will be capable of providing an additional 90 million litres of water a day from the reservoir in a drought. Expected to cost in excess of £800 million, it has been classed by the Department for Environment, Food and Rural Affairs as nationally significant. As a result, the project is planned to be determined by a Development Consent Order application made to the Planning Inspectorate, with the Secretary of State making the final decision.

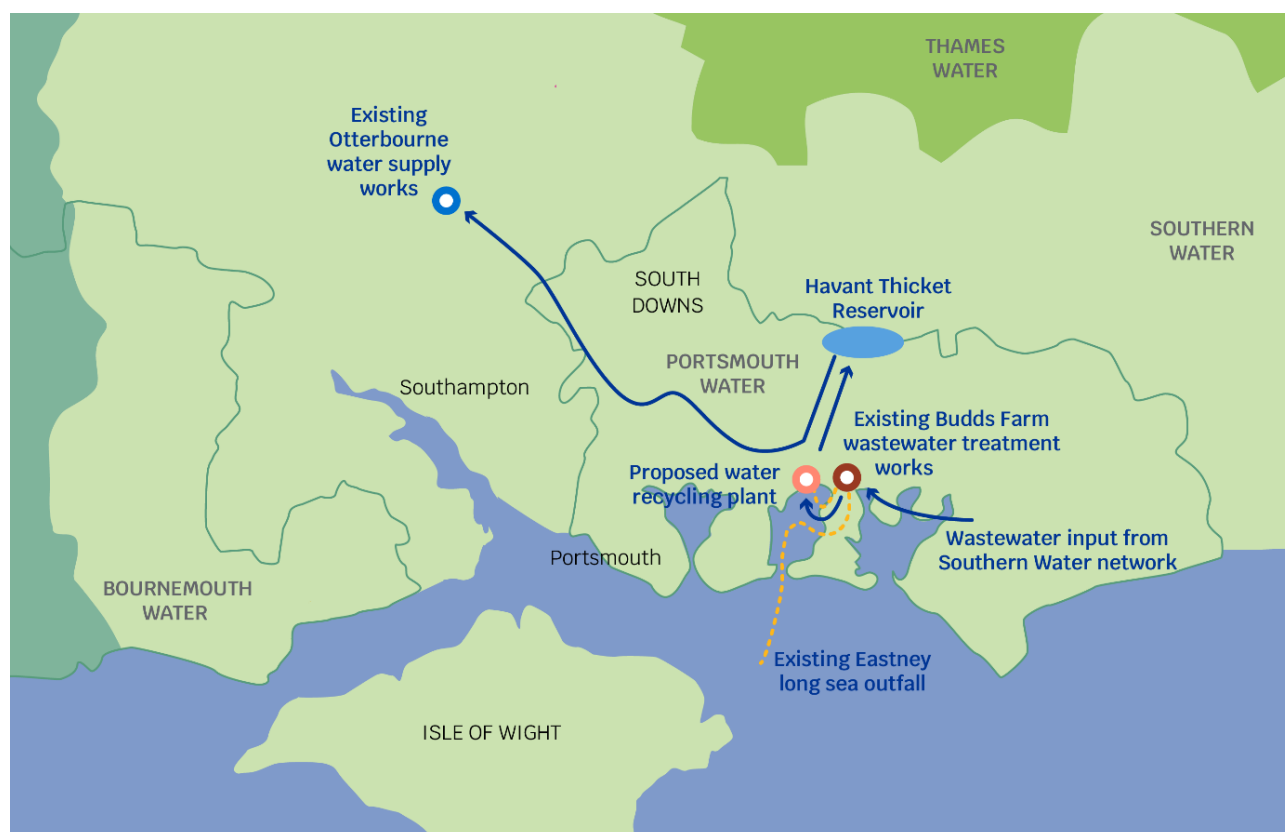
### **Water recycling is used around the world as a source for drinking water supplies.**

The process uses advanced treatment techniques to turn treated wastewater into highly purified water that can be used as a source for supply, following further treatment to drinking water standards.

The Hampshire Water Transfer and Water Recycling Project would take some of the treated wastewater from the Budds Farm Wastewater Treatment Works in Havant as its source. This water would be purified at a new water recycling plant before being pumped to the Havant Thicket Reservoir, where it would mix with spring water, ensuring more water is available for public supplies.

A new 40km pipeline would take water from the reservoir to Southern Water's Otterbourne water supply works, where it would be treated to drinking water standards before being sent into supply.

### **Preferred option for Hampshire Water Transfer and Water Recycling Project**



Water recycling typically includes the use of membranes to remove bacteria, pharmaceuticals, and other impurities from treated wastewater. The treatment process that has been selected by Southern Water includes reverse osmosis, where water is forced through **tiny membranes 50,000 times smaller than the width of a human hair**, to remove dissolved impurities.

The reject stream (containing impurities already released to sea in treated wastewater) would be pumped 5.7km out into the Solent via an existing long sea outfall, along with the remainder of the treated wastewater from Budds Farm. This reject stream is currently being modelled and discussed with the Environment Agency and Natural England, with a focus on ensuring there is no adverse impact to the marine environment.

**Water recycling produces roughly twice as much water as desalination for one-tenth of the energy.** This is due to the source water being much cleaner than seawater and therefore needing lower pressure treatment through the reverse osmosis membranes.

Working with international experts and the School of Applied Sciences at the University of Brighton, Southern Water ran a pilot plant to test the efficacy of the selected treatment process. The pilot plant was used as a destination for site visits with more than 100 stakeholders from local councils, environmental organisations and interest groups.

The company is one of six in the UK with water recycling plants in their Water Resources Management Plans and is currently developing proposals for three other plants across its region.

Rob Stewart, Southern Water's Capital Delivery Director for Water, said:

**“We’re proud to be at the vanguard of the UK water industry in the development and delivery of full-scale water recycling plants. As a water company we need to do everything we can to balance the needs of people and the planet. Water recycling presents the perfect opportunity to re-engineer the water cycle to create a new, sustainable source of purified water that will ensure our customers’ supplies are maintained during a drought and there is more water in our region’s rivers when nature needs it most.”**

Southern Water is pursuing a **Direct Procurement for Customers (DPC)**<sup>3</sup> approach to the construction of the water recycling plant and associated infrastructure.

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<sup>3</sup> Direct Procurement for Customers (DPC) is a process which sees water companies competitively tender for a third party to design, build, finance, operate and maintain infrastructure.

The company has been busy engaging potential suppliers for the project and held a series of market engagement events in the last year, with more planned for the coming year – **details of which will be published nationally**. Potential suppliers have been approaching the company via its online procurement portal.

**Southern Water expects to submit its Gate 3 documents to RAPID in March 2024 and to hold its next public consultation in summer 2024.**

Further information on water recycling and this project can be found [here](#).