

South Staffordshire Water green recovery initiative – using ceramic membrane at Hampton Loade



New pipe configuration at the Hampton Loade water treatment works, July 2022. Photo: Carl Murphy

Introduction

Following the widespread social and economic upheaval caused by the COVID-19 pandemic, the UK Government launched a number of initiatives in the second half of 2020 to encourage economic growth post-COVID, with an emphasis on green recovery. As part of this, government and sector regulators encouraged water companies in England and Wales to revisit their investment programmes for 2020 to 2025 by:

- accelerating the delivery of their existing plans, including measures to protect the environment;
- bringing forward proposals from 2025 and beyond; or
- submitting green recovery proposals that provide benefits to local communities and the environment.

In light of this, and also the water sector's commitment to achieve net zero carbon emissions by 2030, we decided to revisit our proposals to upgrade the largest water treatment works in our South Staffs region – Hampton Loade.

Our treatment works upgrade

As part of our AMP7 business plan proposals, we submitted a successful cost adjustment claim for funding to enable us to carry out an ambitious upgrade programme at the two largest water treatment works in our South Staffs operating area – Hampton Loade and Seedy Mill. These are strategically important works for us as they supply water to around 60% of South Staffs Water customers.

In the cost adjustment claim, we set out our plans to introduce an enhanced second stage filtration at both works during AMP7 and also enhance the clarification stage in the following five years between 2025 and 2030 (AMP8). At the same time, we said we would improve the operational resilience at each site by minimising the risk of single points of failure. We also said we would carry out a trunk mains cleaning programme for around 100km of strategic trunk mains to ensure customers quickly feel the benefits of the upgrade programme in terms of the quality of the water they receive from us.

The cost adjustment claim allowed for the installation of primary Rapid Gravity Filters (RGFs) near the existing clarifiers and the introduction of a new mains connection from the primary RGFs to the existing RGFs. These would then be converted into Granular Activated Carbon (GAC)

adsorbers, creating a second filtration stage downstream of the RGFs.

In our PR19 final determination, Ofwat allowed £68 million of enhancement expenditure, which was 92% of the funding we requested in our April 2019 business plan.

Our green recovery solution

Our green recovery submission related to specific changes we want to make to our plans for the Hampton Loade works. Instead of our plans to install new RGFs and clarifiers at the works over a ten-year period, we decided to pursue an innovative ceramic membrane-based solution called CeraMac®, which we believe will deliver a number of benefits for customers and the environment, including:

- enhanced water quality – this is the top priority for our customers, and the most important area in which they want us to invest;
- a reduction in carbon emissions (of around 1,000 tonnes a year);
- improved operational flexibility and resilience; and
- the potential for increased local employment opportunities.

Once complete, it will be the largest deployment of ceramic membrane technology in the UK, and the first retrofit of its kind in an existing water treatment works.

In July 2021, Ofwat confirmed its decision to allow additional funding of **£17.6 million** (2017/18 prices) under the green recovery initiative to accelerate the installation of CeraMac® at our Hampton Loade treatment works. We will contribute **£9.7 million**, while Severn Trent Water, which shares the resource, will contribute **£7.9 million**.

This expenditure is part of an overall upgrade programme at Hampton Loade.

Progress during 2021/22

In October 2021 NMCN, our construction partner for the upgrade programme, went into administration and all work at Hampton Loade came to a halt. We then started work to recruit another construction partner with the necessary experience and expertise to take over from NMCN. In May 2022 we announced Ross-Shire Engineering and Barhale as our new construction partners, and work started again at the site.

In the first half of 2021/22 we made progress on the initial construction phase, carrying out preparatory work, including installing

new pipes and constructing a sludge tank. The value of this work was **£6.6 million** – or around **10%** of the total construction costs.

As the ceramic solution is an integral part of the total Hampton Loade upgrade programme, it is not feasible to identify the separate components of expenditure that relate specifically to the green recovery funding. We have therefore assumed that green recovery funding is spent in the same proportion as the total upgrade and have assigned a South Staffs Water share of **£1.148 million** for the year.

Our new construction partners have made significant progress in the first quarter of 2022/23. All ground works have now been completed and service diversion investigations are ongoing. Detailed design works are also well advanced. We are pleased to report that we are still on track to deliver the treatment works upgrade in line with the original timescale – that is, by March 2025.

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