Our investment plan for Hastings

- a stakeholder summary

November 2024

from Southern Water

Our commitment to the Hastings community

We want to make long term, robust improvements to how we serve the community of Hastings with water and wastewater services, both now and in the future.

The background

When we met with Hastings Borough Councillors at a public meeting in July, we heard about the public concerns following a main bursting in May and the town centre being flooded in January and October 2023.

We made a commitment to return to Hastings in three months' time to present a detailed investment plan for our infrastructure in Hastings.

We recognise that our past performance hasn't always met the expectations of our customers and stakeholders, but we've been working hard to make sure that we address the current challenges in the Hastings area, as well as planning ahead.

The challenges in Hastings

There are a variety of challenges in Hastings that we assessed when putting together our investment plan.

Overall, the water supply system performs well, but the configuration, and the reliance on the Darwell main means that a prolonged outage of this asset puts the area at risk of widespread supply outage.

This pipeline is reaching the end of its asset life and its recent failure led to the prolonged, widespread outage unfortunately suffered by customers around Hastings and St Leonards. Although we have had failures of this pipeline which have been repaired with no impact on customers' supplies, there are locations along the main where access is particularly challenging – slowing our ability to detect, access and repair bursts. A current lack of resilience in the overall water supply system means that a failure in these locations has a high likelihood of impacting supplies – as was the case in May 2024.

Our plan for the Hastings water supply system addresses these challenges and we're already delivering improvements to our sites and critical assets to reduce risk and improve performance.

We welcome your feedback on our plans and would like to thank you for the opportunity to share them with you in person at this meeting.

What we're doing to make improvements in Hastings

Water

How the system works and our key risks

The two-water supply works of Brede and Beauport which supply the Hastings area produce 34 megalitres per day between them (a megalitre is a million litres) – this amount is equivalent to almost 14 Olympic-sized swimming pools, serving a population of 113,000. Raw water is supplied from two open, storage reservoirs at Darwell and Powdermill and, once treatment is completed, the clean water is stored in 8 enclosed, service reservoirs, before feeding our network of pipes connecting to the houses and businesses across the area.

Improvements we're making before April 2025

We are investing in strategic programmes of work to improve the resilience of our water sites and equipment, while maintaining our focus on water quality. The work uses the 4Rs approach – looking at Resistance, Reliability, Redundancy, Response and Recovery – particularly in our least resilient water zones, as we seek to reduce the amount of time customers are without water and improve customers' experience.

A business case proposing improvements to water network resilience outlining the benefits to Hastings, has been submitted to our economic regulator, OFWAT. This request is for approval to fund an ambitious programme of improvements across the Hastings supply system, to be delivered by us between 2025 and 2030.

The exact allowance and expectations will be set out in OFWAT's Final Determination of our submission which we expect to receive in December 2024, but our Operations team are already in the process of carrying out a comprehensive review of our sites and equipment which serve the Hastings area. Alongside this, the team have already been making improvements to our assets and how they operate to start to reduce the risk in the system.

Since May, we have returned Baldslow reservoir to service (June 2024) which has increased treated water storage in the system. This additional storage capacity means we can continue to supply water for longer if we lose the supply of treated water from our works. This gives the repair teams more time to complete their work, and therefore there is a greater chance of repairing a future asset failure without affecting water supplies.

We have also completed work on the second Ultraviolet treatment steam at Beauport water supply works, meaning this aspect of the treatment process is more resilient and removing a single point of failure in our works.

We're working hard to secure support from OFWAT for funding for the full plan which is set out in this document; without this support, we may not be able to deliver it as quickly as we wish to.

We are planning the following improvements to support network resilience, water quality and future needs:

Risk	Action	Mitigation forecast milestone Expected completion date	4R's of Resilience
Outage risk - Limited visibility of transient pressure along the main	Installation of loggers on 800mm concrete main from Darwell SWR to Beauport WSW	Dec 2024	Reliability
Outage risk - Limited access and understanding of entry points	Study to understand and address multiple rights of access, landowner changes, SSSI challenges and easement, and develop a plan to address findings	Dec 2024	Response and Recovery
Structural failure	Darwell SWR abstraction Pump 1 plinth repair	March 2025	Reliability
Demand risk - Output constraint	Darwell SWR strainers modification to increase Beauport WSW output by an additional 2Ml/d	March 2025	Redundancy
Outage risk - Aged assets prone to failure	Brede WSW Sodium hypochlorite (Chemical dosing assets repair/refurbishment)	March 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Brede WSW Low Lift pumps (Repair/refurbishment)	March 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Brede WSW On Site Electrolytic Chlorination (Chemical dosing assets repair/refurbishment)	March 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Brede WSW Low Lift pumps (Repair/refurbishment)	March 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Brede WSW dirty washwater pumps (Repair/refurbishment)	March 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Beauport WSW Caustic soda dosing lines (Chemical dosing assets repair refurbishment)	March 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Beauport WSW aluminium monitor (Chemical dosing assets repair/refurbishment)	March 2025	Redundancy
Outage risk - Aged assets prone to failure	Beauport WSW Poly aluminium chloride (Chemical dosing assets repair/refurbishment)	March 2025	Reliability
Outage risk - Aged assets prone to failure	Beauport Study/design a solution to improve zonal network DMA interconnectivity	March 2025	Redundancy
Demand risk - Filtration process not operating to full capacity	Brede WSW Rapid Gravity Filter Conditional survey	March 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Brede WSW Sodium hydroxide (Chemical dosing assets repair/refurbishment)	March 2025	Reliability
Outage risk - Aged assets prone to failure	Beauport WSW Polyacrylamide (Chemical dosing assets repair/refurbishment)	March 2025	Reliability

Outage risk - Aged assets prone to failure	Beauport WSW Rapid Gravity Filter Conditional survey	March 2025	Reliability
Outage risk - Aged assets prone to failure	Udimore WSR outlet network improvements	Sep 2025	Redundancy
Outage risk - Aged assets prone to failure	Darwell SWR to Beauport WSW surge suppression management	June 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Brede WSW Poly aluminium chloride (Chemical dosing assets repair/refurbishment)	Dec 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Brede WSW to Baldslow WSR high lift pumps (Repair/refurbishment)	Dec 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Brede WSW to Rye WSR high lift pumps (Repair/refurbishment)	Dec 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Beauport WSW Caustic soda dosing skid (Repair/refurbishment)	Dec 2025	Reliability
Outage risk - Aged assets prone to failure	Beauport WSW Poly aluminium chloride (Chemical dosing assets repair/refurbishment)	Dec 2025	Reliability
Outage risk - Aged assets prone to failure	Darwell WSR Pumps 3 & 4 transformer (Repair/refurbishment)	Dec 2025	Reliability & Resistance
Outage risk - Aged assets prone to failure	Darwell WSR aqueduct to Brede WSW valve (Repair)	Dec 2025	Reliability
Outage risk - Aged assets prone to failure	Brede WSW caustic soda skid and lines (Chemical dosing assets repair/refurbishment)	Mar 2026	Reliability & Resistance
Outage risk - Aged assets prone to failure	Brede WSW to Fairlight high lift pumps (Repair/refurbishment)	Mar 2026	Reliability & Resistance
Outage risk - Temporary power	Darwell WSR New generator	Mar 2026	Resistance
Outage risk - Aged assets prone to failure	Study/design targeted refurbishment of the Darwell SWR aqueduct to Brede WSW	Mar 2026	Reliability
Outage risk - Aged assets prone to failure	Study/design a solution to unlock 3Mld production constraint as Brede WSW	Mar 2026	Redundancy
Outage risk - Aged assets prone to failure	Study/design a resilience solution to address the prematurely failing 800mm main from Darwell SWR to Beauport WSW	March 2026	Reliability
Demand risk - Output constraint	Deliver solution to unlock 3Mld production constraint as Brede WSW	March 2028	Reliability
Outage risk - Aged assets prone to failure	Study/design the replacement /refurbishment of Brede WSW in line with WRMP forecast	March 2028	Reliability & Resistance
Outage risk - Aged assets prone to failure	Study/design the replacement /refurbishment of Beauport WSW in line with WRMP forecast	March 2028	Reliability & Resistance
Demand risk - Limited distribution network	Deliver targeted network DMA interconnectivity	March 2028	Redundancy

connectivity between supply works			
Demand risk - Limited storage	Study /design a new reservoir at Newgate B	March 2028	Redundancy
Demand risk - Filtration process not operating to full capacity	Refurbish or replace RGF (Rapid Gravity Filters) at Brede WSW	March 2030	Reliability
Outage risk - Aged assets prone to failure	Deliver targeted refurbishment of the Darwell WSR aqueduct to Brede WSW	March 2030	Reliability
Outage risk - Raw water quality deterioration	Deliver Brede WSW disinfection upgrade under the Disinfection Future Resilience Programme	March 2030	Resistance
Outage risk - Raw water quality deterioration	Deliver Beauport WSW disinfection upgrade under the Disinfection Future Resilience Programme	March 2030	Resistance
Outage risk - Aged assets prone to failure	Delivery targeted network mains replacement under the Leakage delivery programme – At least 1.24km with first delivered by 2028	March 2030	Resistance
Outage risk - Aged assets prone to failure	Deliver a resilience solution to address the prematurely failing 800mm from Darwell to Beauport	March 2030	Reliability
Demand risk - Limited visibility of usage	Deliver Smart metering programme (c39k to be replaced)	March 2030	Response and Recovery
Outage risk - Aged assets prone to failure	Initiate the build/refurbishment of Brede WSW in line with WRMP forecast	March 2033	Reliability & Resistance
Outage risk - Aged assets prone to failure	Initiate the build/refurbishment of Beauport WSW in line with WRMP forecast	March 2033	Reliability & Resistance
Demand risk - inability to meet demand through dry weather scenarios	Develop and initiate a new bulk supply agreement with South East Water	March 2035	Redundancy
Demand risk - inability to meet demand through dry weather scenarios	Install approx. 25km of new mains including additional pressure manage to improve network resilience	March 2035	Reliability & Resistance
Demand risk - Limited storage	Initiate the build of a new reservoir at Newgate B, build in additional network connectivity and decommission 6 reservoirs	March 2035	Redundancy

Wastewater

We serve 141,300 wastewater customers in the Hastings and Bexhill area. There are a total of 1,225km of sewers and 74 pumping stations in the sewerage network. The sewerage system comprises foul / combined sewers (68%) and storm / surface water sewers (32%). Foul wastewater is treated at the wastewater treatment works, with the treated effluent being discharged into the English Channel through two long sea outfalls. The discharge point for treated wastewater is 3.2km offshore.

The Hastings area has seen significant flooding and pollution events in the last couple of years, leading to this review of the issues and actions. This review has been a further development of the Drainage and Wastewater Management Plan for Hastings, published on our website in 2023.

To gain a full understanding of the cause of the flooding events in 2023 and to determine the current level of flood risk to the town we have undertaken a detailed hydraulic investigation of the system we adopted from the council in 2022. This comprised the build and verification of a computer hydraulic model of the surface water system draining to the Pelham outfall and analysis of the resultant model against a series of storm events of different severities to determine the level of risk. An independent expert consultant, Stantec, was commissioned to deliver this work.

The base model was built using asset data from the public sewer record, supplemented by survey data to ensure that the complex connectivity and interaction between the piped system and watercourses was represented correctly. 64 flow monitors and 9 rain gauges were installed in the system for 20 weeks to record actual flows in rainfall events. The hydraulic model was then verified using this data to ensure that the model predictions matched the flows actually observed. Once this match had been achieved the model was amended to represent the system as it was in the 2023 flooding events. A series of simulations was then undertaken to determine the most significant factors which led to the 2023 flooding. It was found that the most significant factor was the inability to discharge flows to sea either because of the structural condition of the outfall in January or the tidal flap valve in the culvert at the promenade which had become dislodged. If the system had been running unimpeded in these events the model indicated that flooding would not have occurred.

On completion of this retrospective review of performance the model was run against a series of rainfall events of increasing severity to determine the flows the system can cope with and at what point flooding is predicted. This analysis concluded that the location of first flooding is in Alexandra Park which is first predicted to flood in a rainfall event which statistically would only be exceeded once in 30 years. This equates to a rainfall depth of around 45mm falling in an 8 hour period. In this type of event the system would have a conveyance capacity of around 6 cubic metres per second and flows above this rate would lead to flooding. The water industry design standard for flood protection from public sewers is for no internal flooding in a once-in-30 year rainfall event, the modelling shows that in this system this is achieved.

As the modelling shows the ability to discharge flows from the outfall is the most significant factor which may lead to flooding in events less severe than the system capacity, we need to ensure this is not impeded at times of less severe rainfall events. We have therefore initiated an outfall monitoring and maintenance plan: the outfall is checked daily and if shingle depth is at or above 80% of the outfall diameter, shingle is cleared from the end of the pipe to ensure a free discharge.

Our next step with the model is to undertake long term flow monitoring of the river system in Alexandra Park to record flows in rainfall events and to see how these vary across the seasons. This data would then be used to identify options to manage surface water within the park in extreme events so that the flood risk to the Town Centre is not compromised.

The following table sets out the risks identified and planned actions for Hastings. Much of the work has already been completed but further work is planned over the next few years.

Risk	Action	Date
Bathing water at Pelham now classified as 'good'	Continue to work with Local Authority to maintain and even improve the 'good' classification	Ongoing
Pollution risk – blockages causing pollution	670 sewer level monitors installed to proactively identify blockages that can cause pollution	Complete
Pollution risk – bursts on Cinque Ports rising main	Rising main replacement nearing completion	Early 2025
Pollution risk – Ghyllside Road sewers, contamination of foul water into surface water	Separation of surface / foul sewers nearing completion	Early 2025
Pollution risk – Galley Hill pumping station failure	Pumping station refurbishment complete. Further work to improve power resilience planned	2025-27
Pollution risk – poor condition assets at Rock-A-Nore pumping station	Pumping station refurbishment planned for 2025-27	2025-27
Flooding in town centre	Manhole sealed. Flap valve reseated. Pelham outfall refurbished to original design	Complete
Surface water system modelling to assess ongoing flood risk	Model predicts protection for town centre is greater than 1 in 50 year rainfall event. Alexandra Park protection to 1 in 30. These are higher than industry standards	Under Review
Surface water flooding in extreme events	Long term monitoring of flows in Alexandra Park watercourse and associated reservoirs to identify optimisation and attenuation opportunities to manage surface water flows	2025-2027
Pelham outfall	Continue to maintain the outfall and prevent excess shingle build up	Ongoing
Main Bexhill and Hastings storm overflow spills circa 120 times per year	The government has set a target to reduce spills for this overflow by 2035. We are proposing to accelerate the significant investment required to start in 2027/28.	2027-2035
Asset condition - sewers	Refurbishment of 500m of critical sewers previously identified as poor condition	2025-2028
Asset condition - sewers	Resurveying 11km of poor condition sewers, refurbishments as required	2025-2030
Asset condition – inlet and screens at treatment works	Refurbishment of screens and settlement tanks (lamellas) in 2025-30 period	2025-30

For further information, please contact our Stakeholder Engagement team: stakeholderteam@southernwater.co.uk.