THE CHALLENGE

Southern Water, which serves more than four million customers in the water-scarce south-east of England, is working towards a 15% leakage reduction by 2025. The water company's Water Resources Management Plan 2024 sets out long-term plans to more than halve leakage by 2050 through a combination of new technologies and enhanced monitoring, using tools such as acoustic sensors and digitalised management systems.

In November 2020, Southern Water began a project with technology company Ovarro to undertake targeted leakage reduction in 40 district metered areas (DMAs) across its region of Kent, Sussex, Hampshire and the Isle of Wight.

FULLY MANAGED FIXED NETWORK

Southern Water deployed Ovarro's LeakNavigator, the UK's first fully-managed fixed network leakage service, to enhance leak detection. The solution integrates Enigma acoustic loggers, the LeakInsight analytics platform, and expert analysis. Ovarro planned logger networks, supported installations, and analyzed data to identify leaks, generating actionable points of interest (POIs).

About 1,650 loggers, primarily the Enigma3-BB hydrophone sensor, were installed due to its easy deployment in meter boxes and effectiveness in detecting leaks on plastic pipes.

©Ovarro. Enigma3BB

LeakNavigator's tailored approach and advanced technology addressed the challenges of plastic pipelines, providing accurate, efficient, and scalable leak detection for Southern Water.

In the early weeks of the project, approximately 12 leaks were detected per month. Knowing the figure could be improved, Ovarro analyst Chris Mould reassessed each DMA and set specific individual filters using the LeakInsight software.

Additional training in the system and POI follow-up process was also given to leakage technicians onsite. **Phil Tapping, regional operations leakage manager at Southern Water**, said "Having used Ovarro leakage products for a number of years, we were confident that LeakNavigator would deliver good results in the DMAs we were targeting. After some initial training and guidance, the overall end-to-end process was straightforward, and we are pleased with the outcomes to date. As a result, we plan to continue to use LeakNavigator in AMP8."   Following the training, technicians began to find more leaks, much faster – rising from around 12 per month to approximately 130 – and they gained greater confidence in the accuracy of the POIs. Up to July 2024, a total of 1,170 leaks and 66 burst mains had been found.

WATER

MONITORING & CONTROL

LEAK NOISE LOGGERS & CORRELATORS

OVARRO
CONNECTING TECHNOLOGIES

THE RESULTS

Conversion rate of 80%

An overall conversion rate of 80% was recorded for category 1 alerts, for which the data indicated a strong likelihood of a leak being found. Leakage in 35 of the 47 DMAs had reduced, with an overall reduction of 51 cubic metres in water loss across all DMAs. This equates to 204Ml/d of water being saved every month. Targets in 16 DMAs had been met, with the project ongoing. In June 2024, two further large leaks were picked up by the system, both on communication pipes. The first repair saw the nightline reduce from 15 cubic metres per day to nine. The second repair brought a further reduction which took the DMA nightline down to 3m³ per day.

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> We are aiming to reduce leakage by 53% by 2050 – a target greater than the 50% reduction set by the government. New technology, like LeakNavigator, is a key part of our strategy.
>
> Phil Tapping, regional operations leakage manager - Southern Water

NOTABLE SUCESSES INCLUDE:

In April 2024, LeakNavigator detected two main bursts in one DMA in the town of Andover in Hampshire, where leakage had been increasing for approximately 12 months. Earlier attempts to pinpoint the leak had proved challenging – in part, due to a pressure reducing valve emitting constant sound and an oval-shaped water main pipeline that reverberated all sound waves.

On following up the POIs, with close guidance from Ovarro's analysts, technicians found two large bursts, one on a plastic pipe and one on metal, both likely to have been running since at least January 2024. Following repairs, the nightline figure for the DMA reduced by 13.5m³/h. Using previous methods of leak detection, the leaks were likely to have continued to go undetected until they became visible at the ground's surface. **Ovarro leak analyst Chris Mould** said: "Key to the success of this project has been close communications between Ovarro, our client Southern Water and the technicians who are following the LeakNavigator process in the field every day.