STORMHARVESTER

FROM DATA TO DECISIONS::

How Severn Trent Water leveraged StormHarvester's AI for sewer network management

Client Severn Trent Water | **Date** November 2023 | **Location** South Derbyshire

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ABOUT SEVERN TRENT WATER

Severn Trent Water is one of the largest of the 11 regulated water and sewerage companies in England and Wales. Severn Trent provides high quality water and waste services to more than 4.5 million homes and businesses in the Midlands, from the outskirts of Bristol to the southern suburbs of Sheffield.

THE CHALLENGE

StormHarvester started working with Severn Trent Water on a proof-of-concept (PoC) for blockage detection on the wastewater catchment of South Derbyshire. Severn Trent wanted to understand how StormHarvester would be deployed into Network Control and Operational teams for full-scale network use. Severn Trent wanted to strengthen their ability to respond to sewer network alerts. This would mean being able to prevent sewer blockages before they occur and reduce pollution and flooding leading to better protection for customers, communities and the environment.

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OUR APPROACH

In February 2023, Severn Trent Water began providing StormHarvester with sewer level data for 393 sites from the catchment of South Derbyshire.

StormHarvester ingested and cleaned the sewer level data matching it with the corresponding hyperlocal rainfall data from the same locale.

By focusing on a single catchment, this allowed Severn Trent to focus on the quality of alerts over a small area to ascertain the accuracy of our predictions.

During the trial, the nature and timing of the alerts allowed the Operations team to move from reactive to proactive control by adjusting to a new way of working.

The StormHarvester and Severn Trent teams established a close working relationship.

Severn Trent appointed a champion in the business who became the expert in communicating project findings to wider teams and stakeholders. This also meant queries or requests could be triaged through one person. Through daily and weekly meetings, the teams were able to collaborate and quickly resolve any queries that arose.

The StormHarvester operational intelligence gave a high level of accuracy which built the Severn Trent team confidence that the alerts were genuine. Engagement of the operations team's involvement from the outset was instrumental in providing informed knowledge and expertise to mitigate blockages/ potential pollution events informed by the StormHarvester AI system.
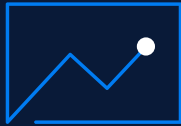
Monitoring the daily alerts raised by the StormHarvester system enabled the team to establish a process to prioritise and categorise alerts based on their causes and potential environmental impact.
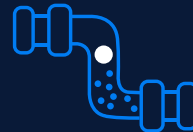
Manhole

Sensor

Sewer Level
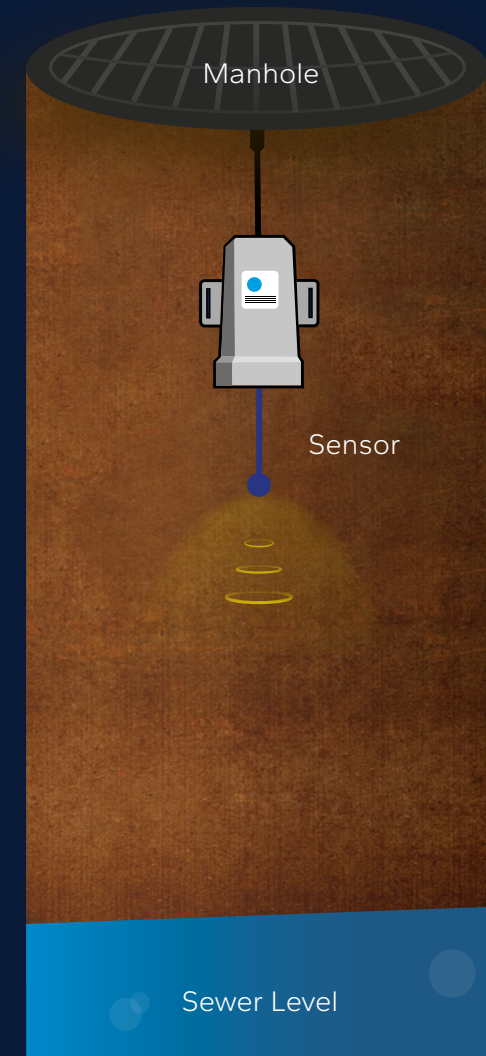
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**11 POLLUTION INCIDENTS WERE AVOIDED
DURING THE 5 MONTH TRIAL...**

93 sites had remedial works completed and are now operating in an improved and steady managed state

46 restrictions /partial blockages were found and fixed

0 pollution events were missed by the StormHarvester system

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THE RESULTS

The StormHarvester Blockage Predictor facilitated a clear transition from reactive to proactive interventions. The highly accurate machine learning model meant that Operations Team at Severn Trent Water were alerted to potential blockages and pollutions ahead of time and were able to mobilise the appropriate response to the right place at the right time to return "full flow". This meant there was no detriment to customers or the environment.

NEXT STEPS

Following the success of the POC Severn Trent Water have instigated a full EDM network roll out of the StormHarvester solution. The excellent results and processes developed during the PoC provide a blueprint for implementation and benefit realisation in the additional wastewater catchments across the business
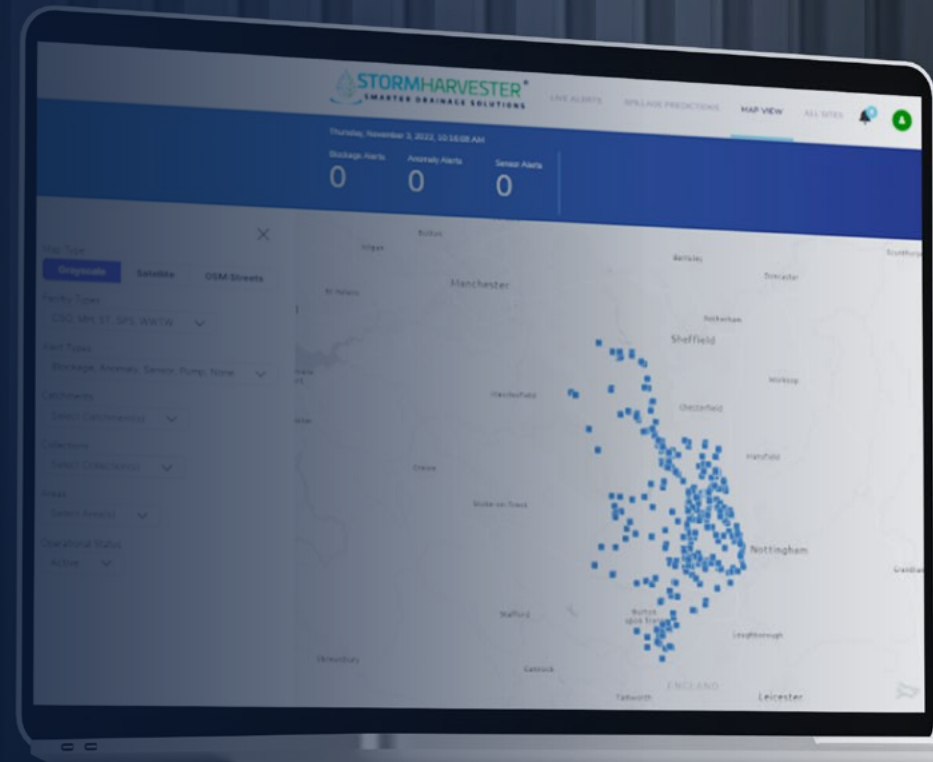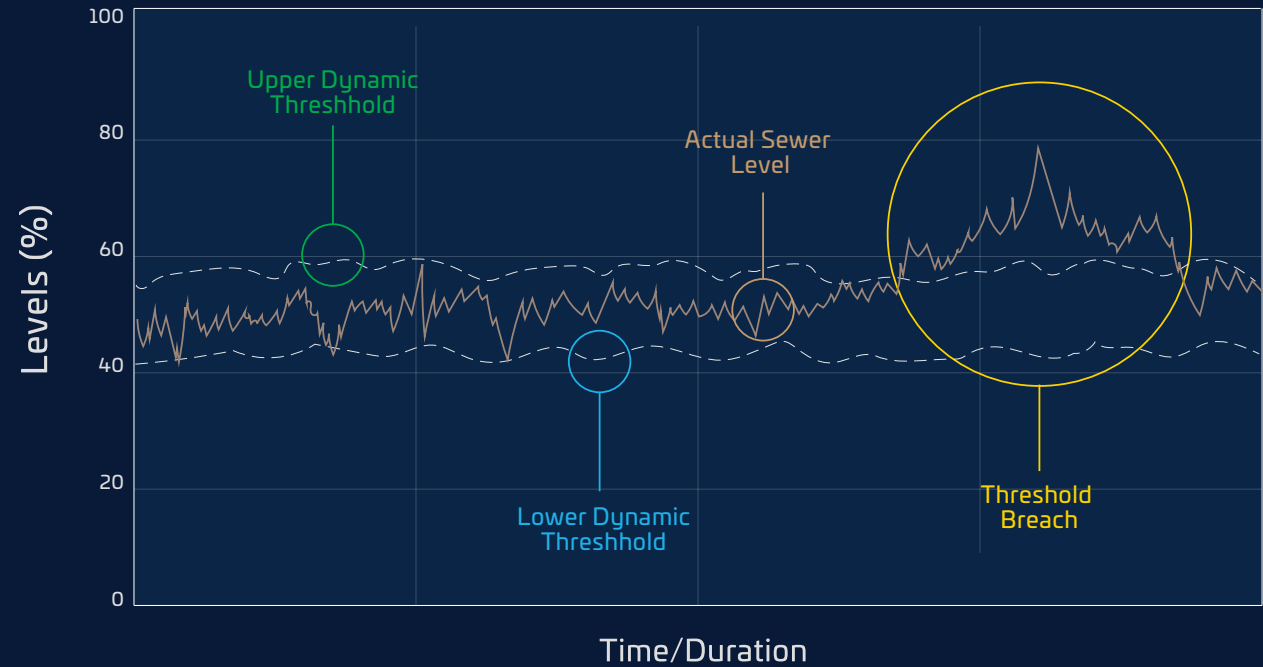
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DIAGRAM BREAKDOWN

The diagram outlines the key elements of how the StormHarvester alert system blockage predictor works. Machine learning algorithms set thresholds for sewer levels. When these thresholds are breached, an alert is sent to water utility operations staff.

The staff can proactively review the issue and take remedial action before the sewer spills and affects the public or the environment.

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BLOCKAGE **ALERTED:**

BLOCKAGE **REMOVED:**

⚠️

Levels
are above
expected and
StormHarvester
sends an alert
to customer.

🛡️

Operation
staff uncover
3 rod irons in
the sewer and
remove these.

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"

We wanted to pilot using StormHarvester for EDM operational response to understand how this would perform against our current system.

It was a great experience working with StormHarvester to set this up for Derbyshire on about 10% of our overflows.

Within the first few months the difference in performance was clear to see not only in the accuracy and timeliness of alerts meaning we were able to attend and prevent issues before they cause problems, but also crucially during storm events the reduction in volume of alerts was very impressive. This gave us confidence to go ahead and roll out across our entire network.

Jason Dearlove

Waste Smart Networks Lead
Severn Trent Water

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