
Invest Northern Ireland
In partnership with
niwater
Delivering what matters
SUSTAINABLE WATER CONNECT
MEET THE BUYER | NETWORK | SUPPORT
Harnessing AI for a Smarter Water Ecosystem

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Shane Hanna

Business Development Executive, Invest NI

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Peter Semple

Chief Information Officer, NI Water

Is this just another buzz word?

Digital Transformation continues

How do we spot the opportunities to :

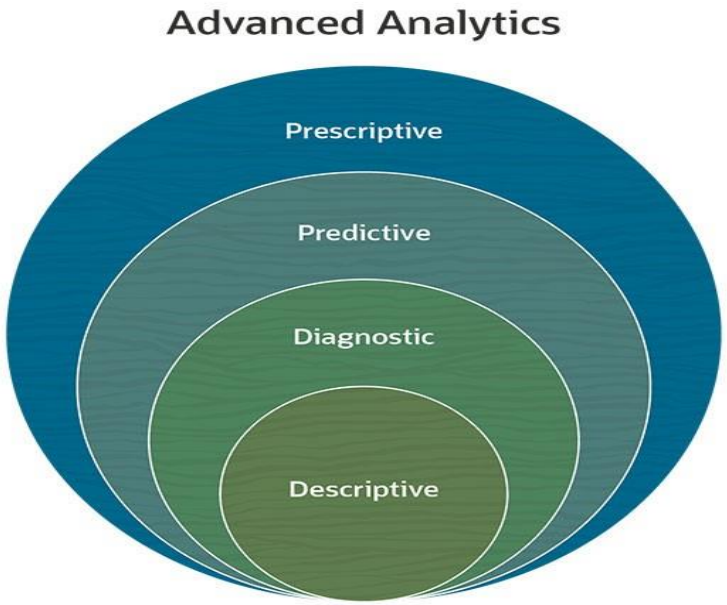
AI is suddenly everywhere!!

Expectations for AI are high

- Increase customer service
- Increased costs efficiencies
- Mitigate risks

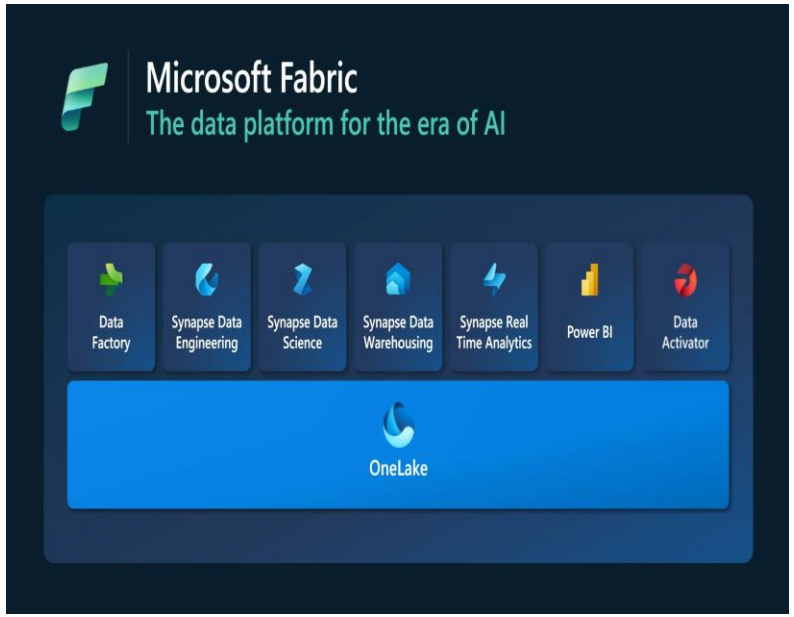
Our Data Analytics Journey is providing real value

- Masses of Data
- Investing in Quality and Accuracy
- Data - getting more disperse – more difficult to manage



- Diagnostic Phase
- Enabling Intelligent Decision Making
- Ambition to be Predictive / Prescriptive

Our Generative AI Journey has started



- Utilised Power BI heavily
- Moving to MS Fabric
- Ambition is to take advantage of these new AI capabilities

- Copilot – Chosen Gen AI Solution
- 50 licenses deployed
- Learning Phase
- Learning from others

Our 'Narrow AI' Journey has started

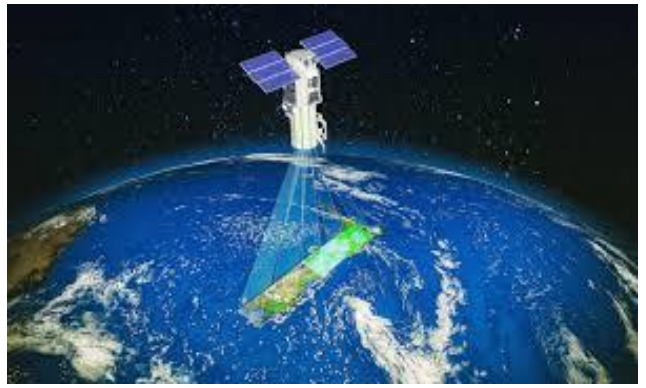
Drone Technology

- AI trained to detect manhole covers
- Updating Corporate Asset Register
- Facilitates investment decisions

Cyber Security

- Utilising AI which is already imbedded into the applications we purchase.
- Security Apps such as Palo Alto Firewalls & Bit Defender

Satellite Detection



- Experimental phase for Leakage and Ingress

Potential opportunities for AI within NI Water

Leakage Reduction

Waste-Water Development Constraints

Customer written responses

Evaluation of Waste-Water Spills data (EDM)

PC27 Planning Capital decision making

Enterprise Grade Chat Bots Call Volume deduction

Implementing AI is not straight forward

- Is our Data ready for AI (data dependent) ?
- Do we have appropriate security controls in place ?
- Have we created AI Standards ?
- Have we GDPR controls in place ?
- Have we considered our Ethics with using AI ?
- Have we trained our staff ?
- Have we communicated the AI journey to our staff ?
- Do we comply with the EU AI act ?

Supplier Partnership

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Mohammed Syed

EMEA Lead for Energy & Water, Amazon Web Services

Water Positive by 2030

By 2030, AWS will return more water to communities than we use in our direct operations

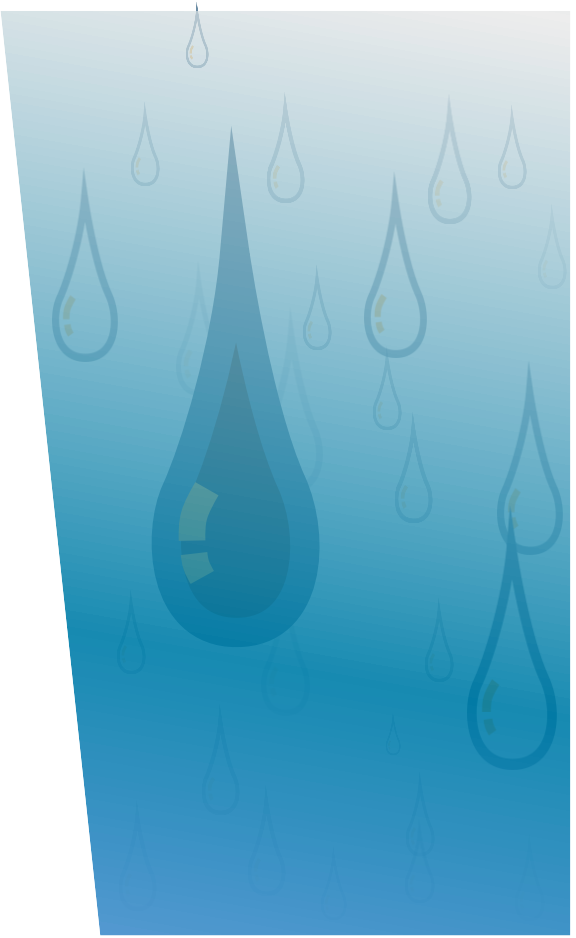
Water stewardship, reuse, and replenishment

2.4
billion liters
water returned to communities

20
Data centers using recycled water for cooling

0.19
Liters of water per kilowatt-hour of electricity used on avg across AWS date centers

96%
wastewater discharged from one US region datacenter reused by local utilities using infrastructure built with AWS



Blue Conduit develops an ML platform on AWS to detect and replace lead service pipes

1.5+ million
Service lines analyzed

2016
Originated ML approach to LSL in Flint

2019
Company founded

$100+ million
in savings

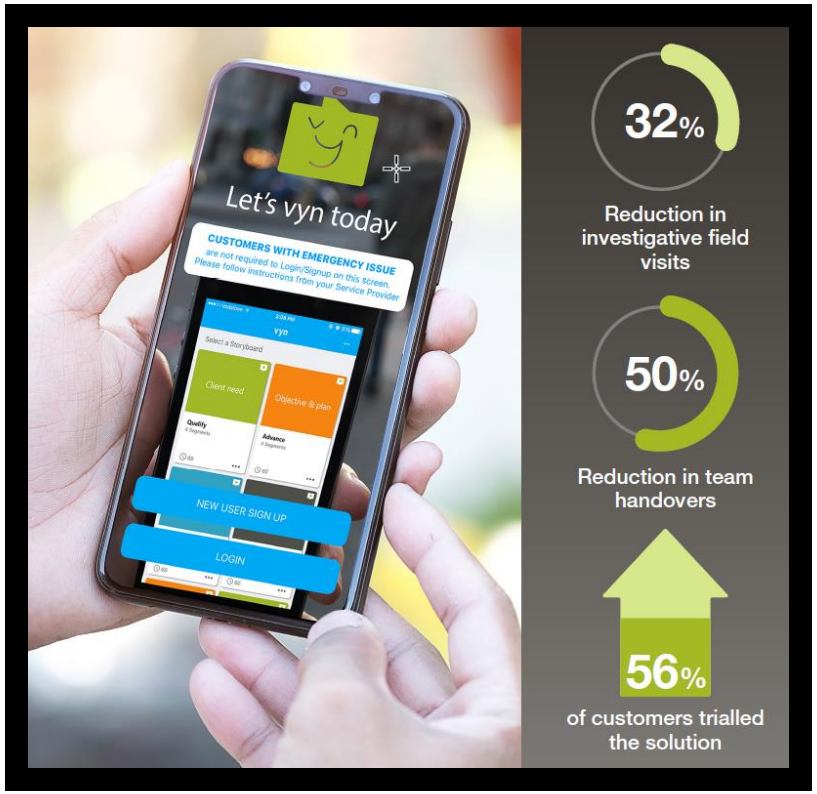
50+
Water systems

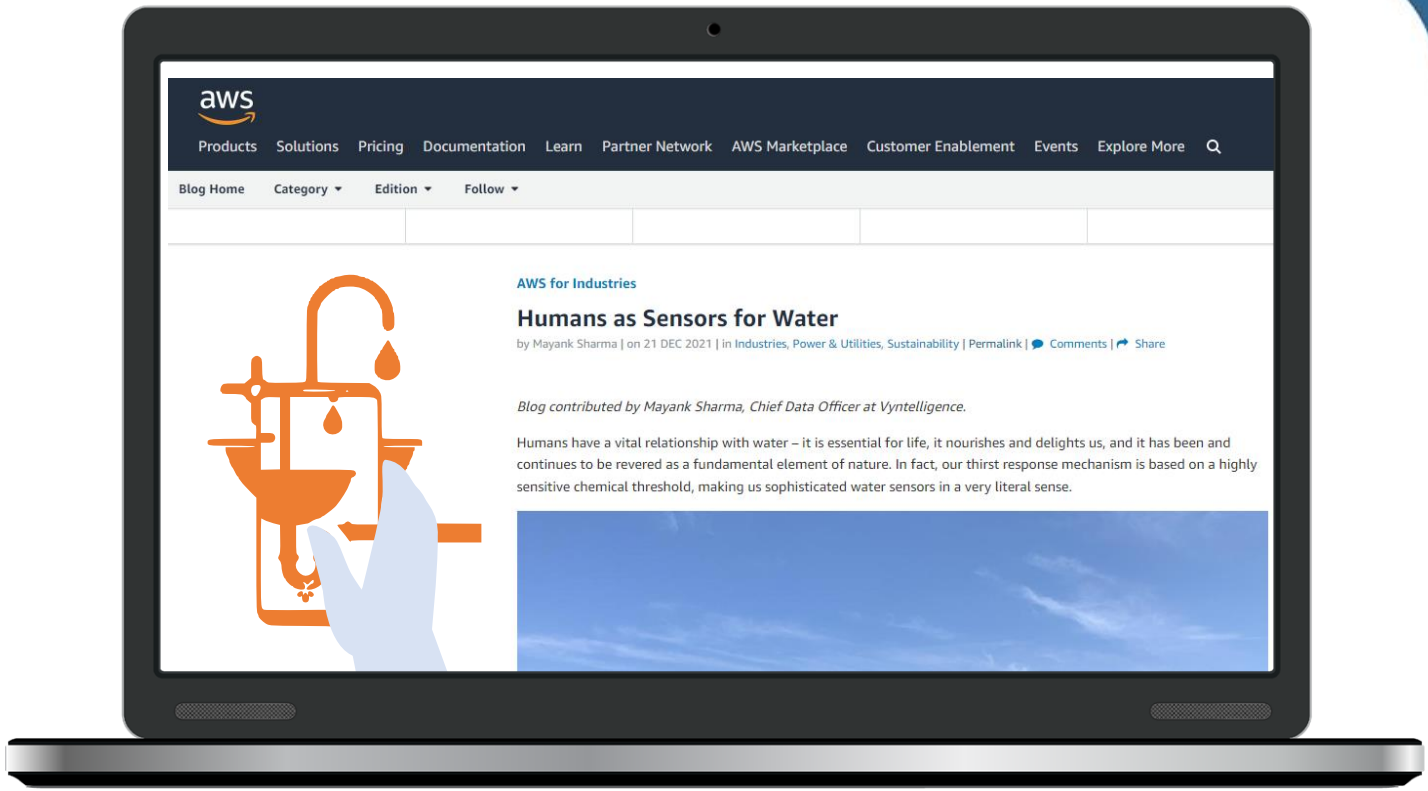
90%+
Hit rate

6 years
Experience in ML prediction

Using ML for maintenance of water filtration membranes at Veolia

Vyntelligence rolls out Video AI on AWS to streamline field engagement by water utilities





Built-in AI in Amazon Connect improves and accelerates consumer experience outcomes

Greater Efficiencies and insights, powered by Generative AI

Real-time agent assist

Conversational voice & chatbots

Conversational analytics, contact summarization, & quality management

Real-time caller authentication

Proactive outbound engagement

Forecasting, capacity planning, & scheduling

Automated identity resolution

Think big on the challenges

Unexpected failures

Unexpected costs

Incorrect assessments

Time consuming and manual

Start small, be specific and measurable

Predict pipe breaks

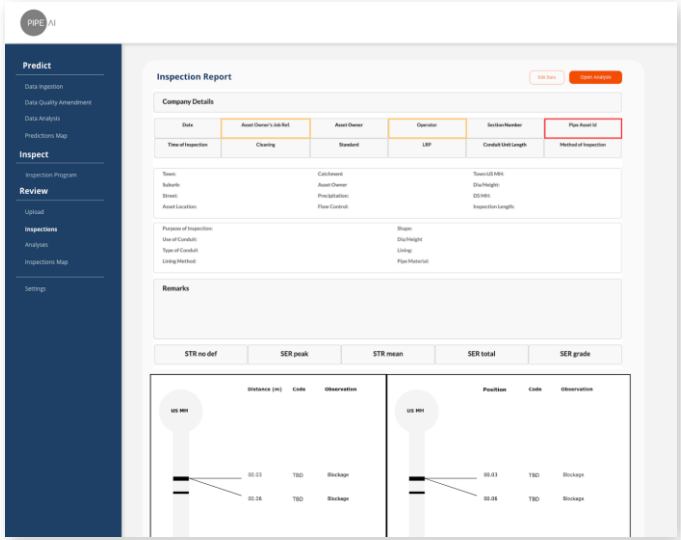
Optimize budget allocations

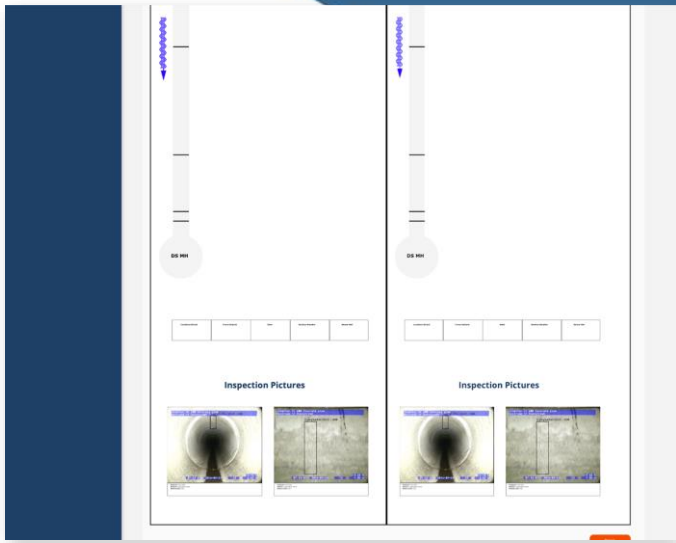
Leverage computer vision to assess pipes

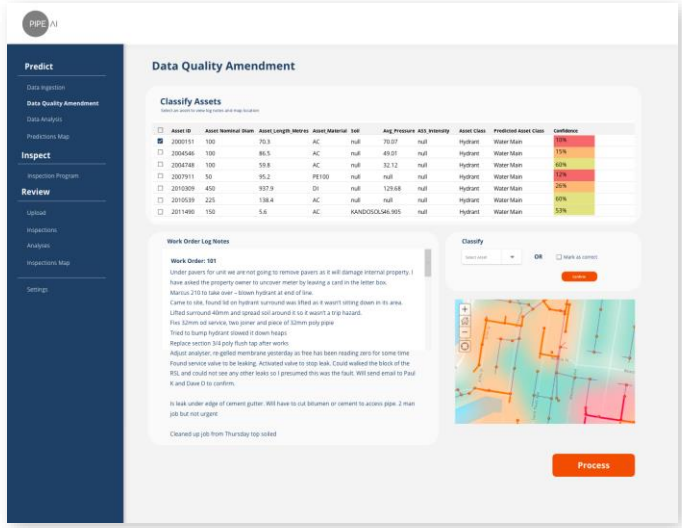
Use AI on repetitive tasks

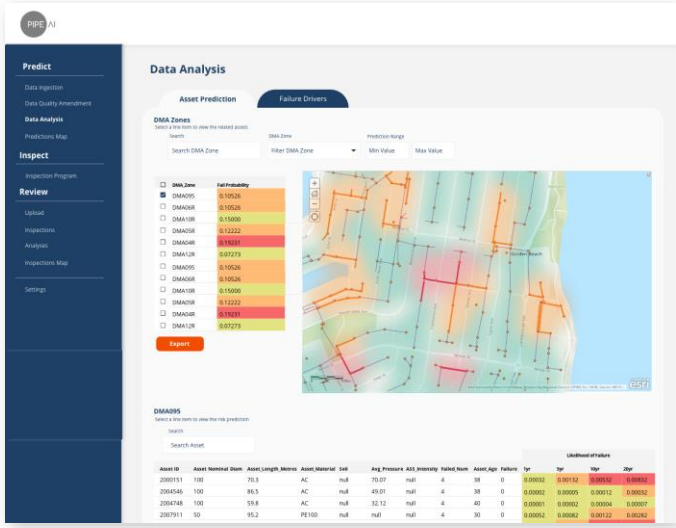
Design for Scale

Automated pipe defect detection using AI









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Connor McBratney

Technical Operations Account Manager

STORMHARVESTER

STORMHARVESTER

OUR MISSION

Harnessing the POWER OF AI to help Wastewater Utilities better manage their networks.

Our Journey

2017 — **2018** — **2019** — **2020** — **2021** — **2022** — **2023** — **2024**

Beginnings of smart control with Smart Tank/Attenuation product

Opportunity with Utilities - Blockage Prediction trials

Market leader for Blockage Prediction

Built out 4-5 product modules and grew team from 14 to 37

Market leader across multiple product modules

Northumbrian Water living water

Water for LIFE from Southern Water

love every drop anglianwater

Dŵr Cymru Welsh Water

South West Water

Wessex Water YTL GROUP

YorkshireWater

SEVERN TRENT

Putting us into perspective

2017
Company founded

50+
Team size

9/12
UK wastewater utility clients

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Revolutionising the future of Wastewater with AI Analytics.

We've got it covered.

Number of Sites:
80,000+

Data Points Per Hour:
2.5 million

STORMHARVESTER

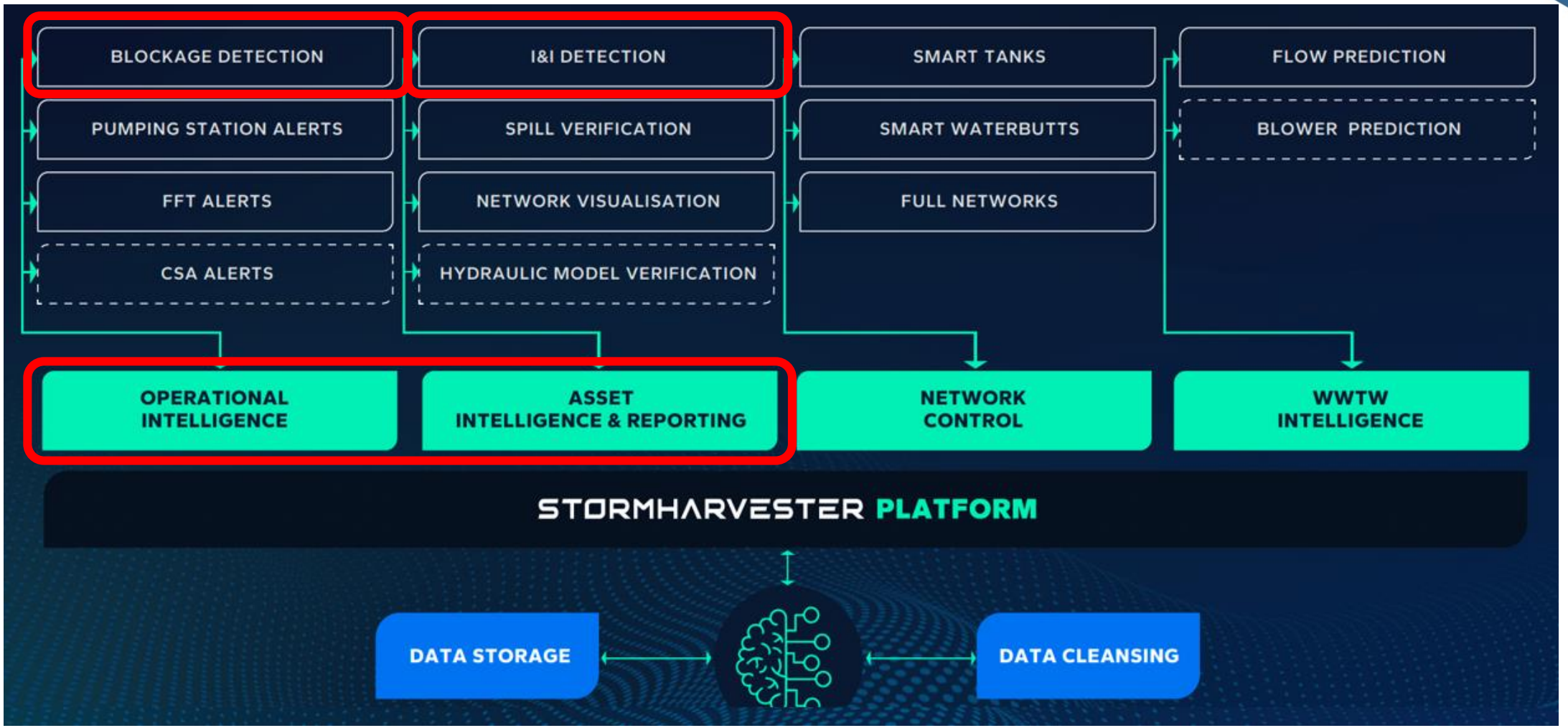
Our use of Amazon Web Services (AWS)

We are using over 10 different services that AWS provides to enable us to provide our solutions to our customers.

Some of these include:

- IAM (Identity and Access Management) for securing services/customer/user
- AWS Transfer family (SFTP) for secure data transfer for some customers
- S3 for storage
- Lambdas for API processing
- EC2 for cloud computing
- Cognito for authentication

Our Solutions:



Case Study: Blockage Detection - Wessex Water

POC 2020 – 89 EDMs

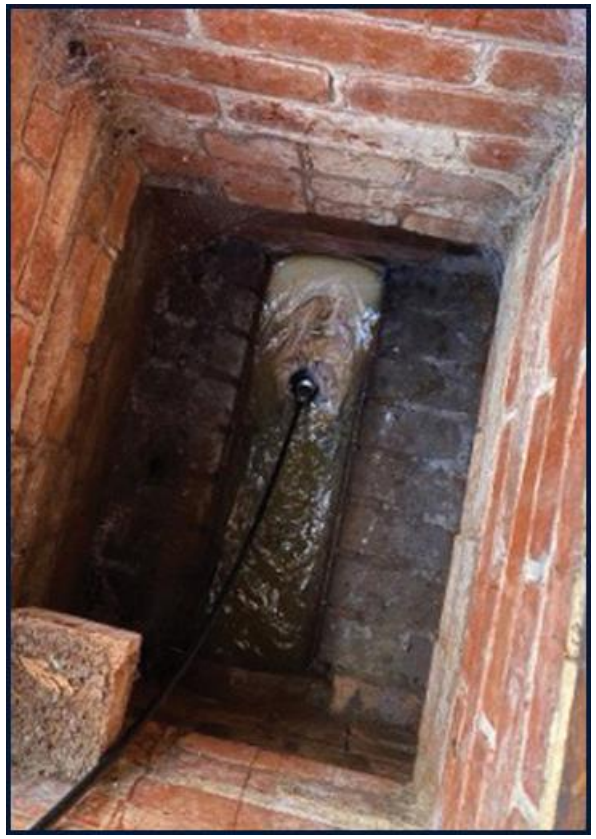
Results from the initial trial:

- The capability to reduce event duration monitoring alarms by **97%**.
- StormHarvester **detected over 60 early blockage** formations in real time, at least 2 of which would have caused significant pollution incidents (CAT 3 or worse) if it was not for these alerts.
- Over **60 telemetry and sensor faults** were also detected in real time.

2024 – Over 4,000 signals

(EDMs, SLMs, SPS)

Wessex Water: Blockage Example

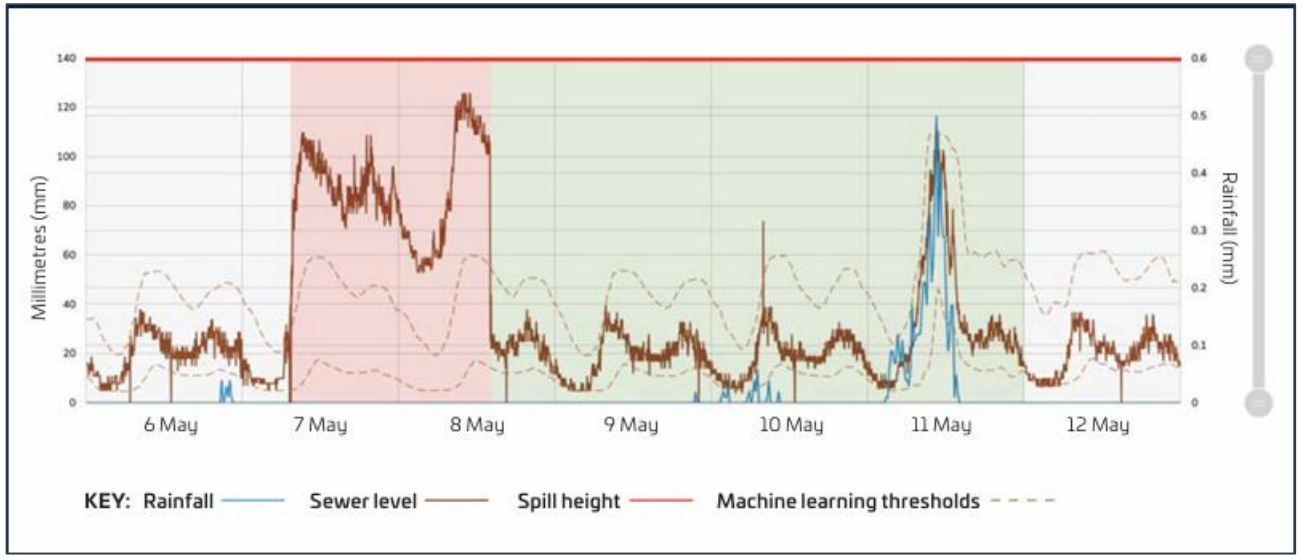


7th May – Sewer level breaches threshold. StormHarvester system generates an alert to Wessex Water.

8th May – Utility crew attend site and remove blockage. No impact to customer or environment as blockage is identified early.

9th May – Sewer level returns to previous behaviour within thresholds.

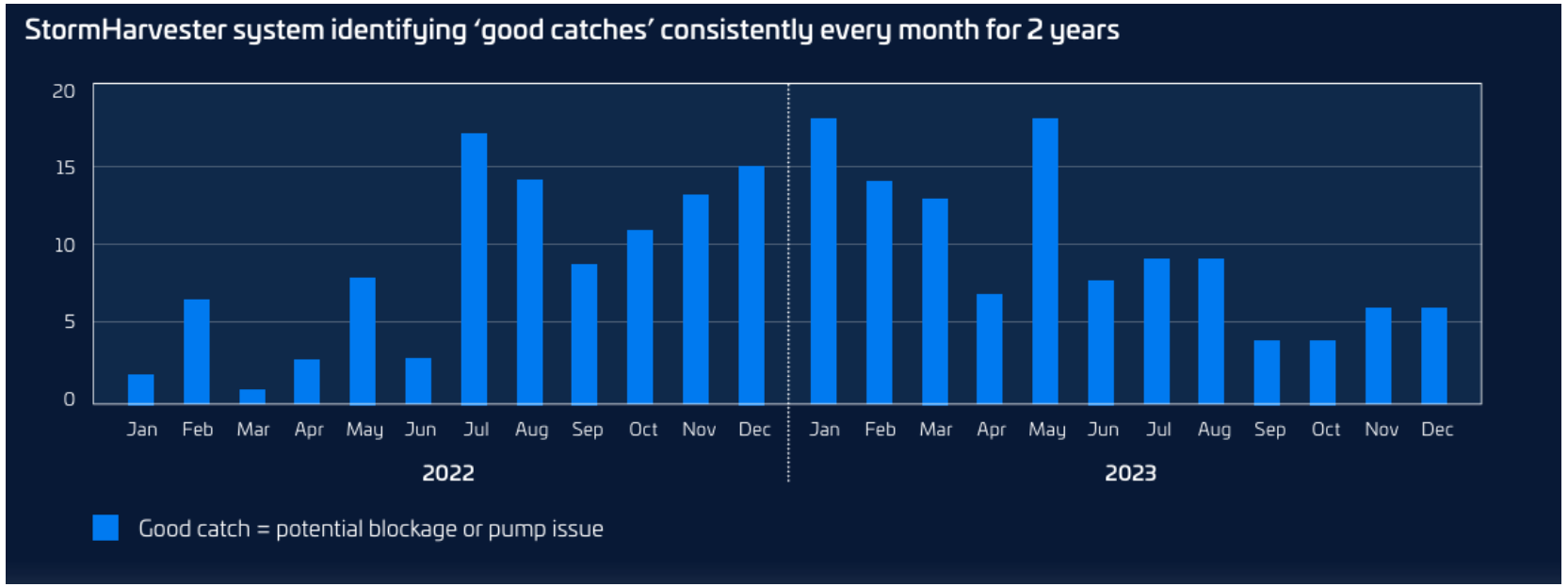
11th May – High rainfall event increases thresholds. This is expected behaviour – no threshold breached and no alert sent.



Blockage at site. Wessex Water crew successfully clear blockage before it impacts customers or the environment.

Case Study: Wessex Water

Currently, the StormHarvester system is running over 4,000 signals, with more being onboarded every month. Every month for the past 2 years, there have been many ‘Good catches’, which signals a clear move from reactive control to proactive control.



Helping reduce spills to the environment by moving from a reactive to proactive approach.

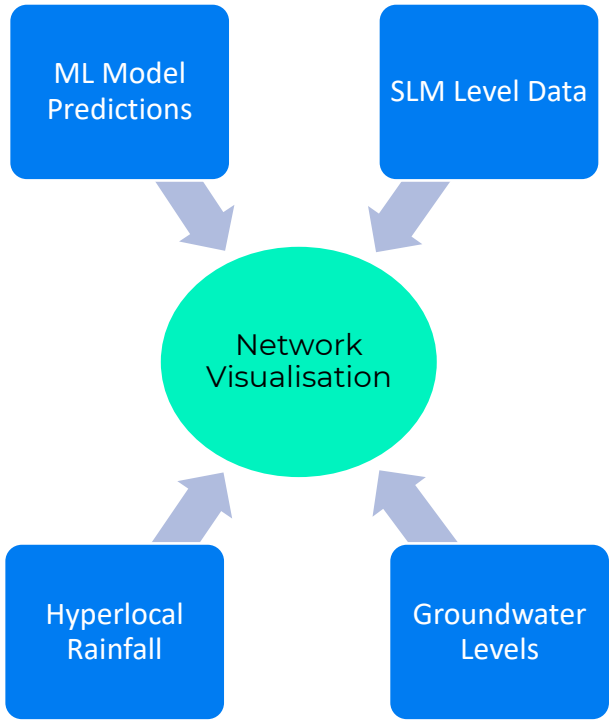
Case Study: I&I Detection – Southern Water

With the initial drive to install monitors in sewer networks for blockage detection to reduce spills to the environment the question was then asked:

Can we get more value from the data that is being collected??

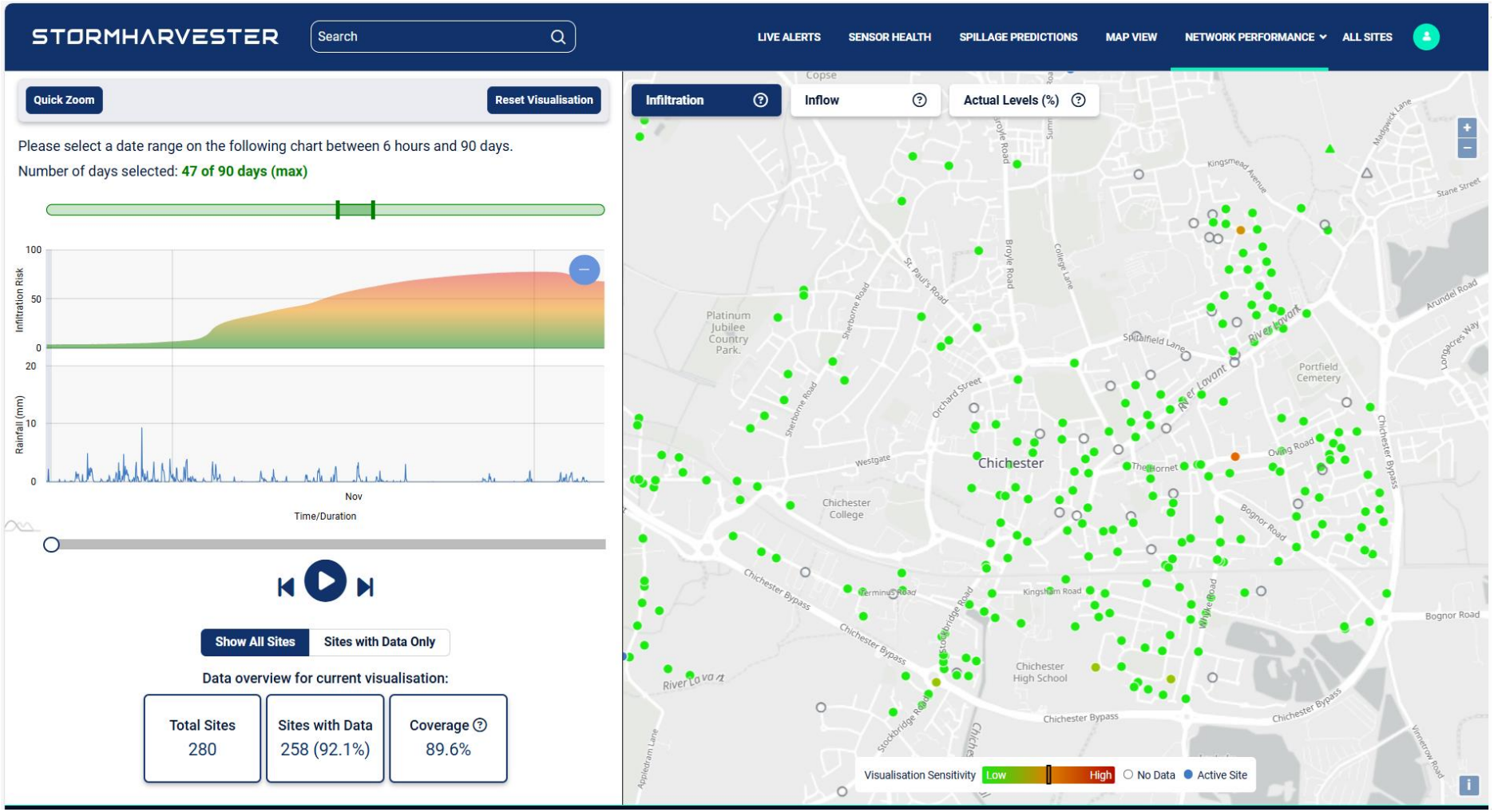
Case Study: I&I Detection – Southern Water

The problem: Discharging sewage into a small-town harbour for more than a month straight

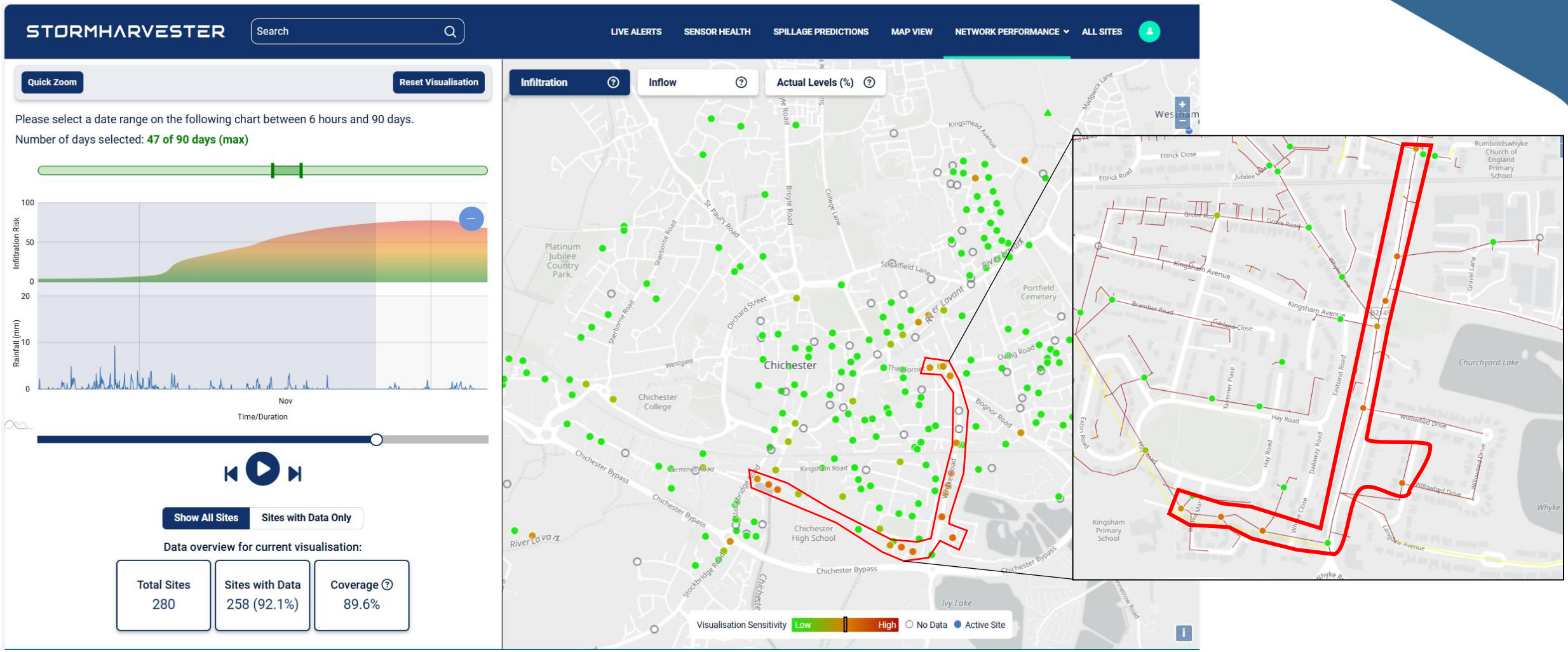


The solution: We visualised all the assets on our platform to show I&I risk based on machine learnt performance, GW levels, rainfall – all using level data.

I&I Network Visualisation – Start during low GW risk



I&I Network Visualisation – end during high GW risk



The results:

- ✓ Targeted lining being prioritised ahead of new wetlands in this catchment.
- ✓ SW are now using the tool to feed into capital investment planning.
- ✓ Data driven decision making.

WATER for LIFE from Southern Water.

West Sussex wetland to boost water quality and help drive down storm overflows into

05/04/2023 11:39:29

An image of the new wetlands at Lavant Wastewater Treatment Works

Thank You

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Q&A Session