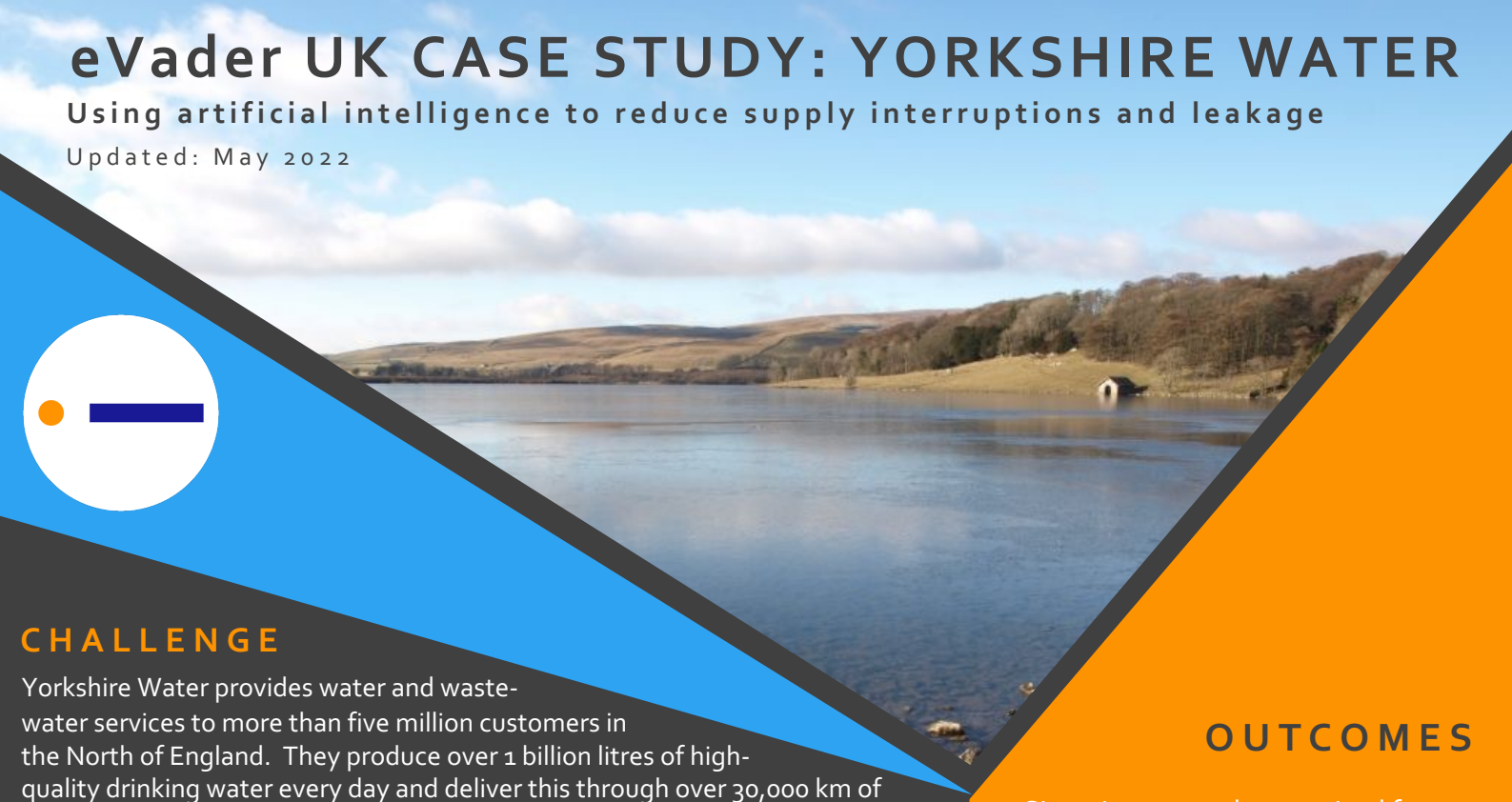
eVader UK CASE STUDY: YORKSHIRE WATER

Using artificial intelligence to reduce supply interruptions and leakage

Updated: May 2022



CHALLENGE

Yorkshire Water provides water and waste-water services to more than five million customers in the North of England. They produce over 1 billion litres of high-quality drinking water every day and deliver this through over 30,000 km of distribution network. Continuously providing this service with minimal interruption is a challenge that Yorkshire has historically performed well in. However, they recognised that in order to continue to meet challenging targets over the next 5 years more needed to be done.

Until recently, confirmation of bursts usually only occurred after customers notified Yorkshire about them. It was understood that there were also bursts that could go unnoticed for quite some time. Yorkshire Water wanted a solution that would help to identify visible and invisible bursts earlier so that they could resolve them more quickly – minimising water lost from the network and the effect on customers.

PROJECT OVERVIEW

Yorkshire Water embarked on a large-scale "intervention enabled networks" (IEN) project, and as part of this project, event detection algorithms were evaluated. eVader has been part of this project since 2018, and in 2021, was extended to operate on the whole network. Currently, data is ingested from more than 3,000 loggers every 5 minutes and prepared for analysis.

As new data is received, the eVader algorithm runs and checks if it is normal or not, and categories any abnormalities that are identified. It also updates its model of what 'normal' is. Between the hours of 10pm and 6am, Yorkshire Water receives emails of Events Detected from the iNet system as soon as they are identified. The email includes information about the location of the issue as well as the size of the anomaly, the percentage change from normal, and the categorisation.

This data is used by the control room, the leakage team and by analysts to enable quick operational decisions to be made before customers make contact.

OUTCOMES

Since Jan 2021, alarms raised for 93 supply interruption events, with a potential to save **84.6s** from customer minutes lost (CML).

The potential CML savings corresponds to a potential reduction in ODI penalty of between **£209K and £2.09M**, depending on the speed of eVader's response.

More than **300 l/s leakage saved** over a single 12-week period with bursts ranging from 5 l/s to 27 l/s.

An average **of 6.5 notifications per night**. 2,373 per year across 2,628 DMAs. Less than 1 notification per DMA per year.

FEEDBACK

*"It is a **valuable** and **useful** tool for the control room."*

*"From a leakage perspective, it's **great**. We usually have at least one a night that we will [deal with]. **It works**."*

*"A large proportion of leaks are now identified by Event Detection; currently, a number of different systems are used but eVader gives the potential to **reduce duplication**".*

*"eVader is a useful tool which is **smart**, gives more information and automatically updates. All the other engineers would **agree**."*