CASE STUDY 8 SYDNEY WATER

# Conserving water through advances in leak prevention

Leaks and breaks pose an issue for all water utilities, and may increase with climate change's influence on soil moisture and tree root ingress. Advances in leak prevention to minimise unaccounted for water by Sydney Water and the University Technology of Sydney is a leading example of using acoustic sensing to detect leaks and breaks. This has resulted in a total of 70 likely leaks detected, with a total of 44 leaks confirmed and repaired since deployment.

**CLIMATE THEMES ADDRESSED**

CUSTOMERS + COMMUNITY

ADAPTIVE PLANNING

TECHNOLOGY + DIGITAL INNOVATION

**FIGURE 43** A Von Roll acoustic sensor and logger in the Sydney CBD

**SOURCE** Sydney Water

## Background

Leaks and breaks cause disruptions to the network and customers, resulting in costly pipe maintenance as well as water loss. With ever-advancing smart technology and the rise of the Internet of Things (IoT), acoustic sensors, as a method of leak detection can effectively identify potential leaks for proactive and targeted repairs.

To improve leak detection, Sydney Water in collaboration with the University of Technology Sydney (UTS), have deployed 229 acoustic sensors across five Central Business District (CBD) areas since December 2019. The Sydney CBD, Bankstown, Penrith, Chatswood and Liverpool CBDs have been prioritised for sensor deployment using a pipe failure prediction tool model.

Since December 2019, acoustic data from the sensors has been analysed, with signal processing algorithms being developed to automate the analysis and increase the reliability of leak alarms. A web portal has also been developed, which will host the data from the range of acoustic sensor models in one location for ease and efficiency of integration within Sydney Water's wider IT systems.

## Benefits to utility and to climate-related outcomes

Following the deployment of acoustic sensors, Sydney Water aims to reduce reactive leak detection work by 50% and reduce 50% of unaccounted water loss within three years in the five CBD areas.

So far, a total of 700ML/year has been saved in the Sydney CBD with an approximate water product cost of >$3 million saved.

These findings will also consolidate the current learnings of UTS and Sydney Water in its predictive MNF and predictive modelling of pipes for leaks to by reducing 25% of unaccounted water loss in 50% of the pressure zones over three years.

Furthermore, the lack of disruption to Sydney Water's network will benefit all customers, motorists, residents, and the public with reducing their need to call Sydney Water to report leaks or breaks and ensures water is reserved for customer consumption to support ongoing drought and climate change resilience efforts within NSW.

It will also reduce the need for manual surveying and increase safety standards for Sydney Water employees as they can better plan and schedule work.

**FIGURE 44** Online leak sensing map of acoustic sensors deployed across five CBD areas in Greater Sydney


**SOURCE** Sydney Water