HULO

CASE STUDY | Portsmouth Water

PUBLIC WATER UTILITY · SOUTHERN ENGLAND, UNITED KINGDOM

PORTSMOUTH WATER

Ahead of the crew, without district metering

About half of Portsmouth Water's network is not in district metered areas, and is not going to be. The utility set a test to find out whether a burst can still be found and located. This is what came back, and where it did not work.

14/14
LEAKS FLAGGED AHEAD OF THE JOB

12.6 days
MEDIAN LEAD TIME

85→55%
COVERAGE, DESIGNED AGAINST ACTUAL

BACKGROUND

A network with no boundary to measure at

Portsmouth Water runs much of its network as Strategic Metered Areas rather than classic district metered areas, each carrying 30 to 60 km of main. About half of the network sits outside district metering altogether.

That was a deliberate trade off made years ago, for resilience and water quality, and it is true of a great many networks. An open network of this kind is not a backlog waiting to be finished, so any method that depends on sectorising first does not apply to it.

The question the utility wanted answered was therefore narrow and practical: can a burst be found and located in a network nobody intends to sectorise?

APPROACH

The arithmetic before the test

The network carries a natural rate of rise of 25 MLD a year. Delivering a 4.5 MLD reduction therefore means finding thirty, not four and a half.

Locating a single leak inside a large Strategic Metered Area took up to three weeks, about a week on average, because there is no boundary to measure at and the search begins on foot.

Missing the target costs roughly £431,000 for every megalitre a day. Campaign work alone never closes a gap of that shape: what decides the number is how quickly a new breakout is noticed, and how quickly a crew reaches the right street.

A test the supplier could not game

Nothing was installed. HULO read only the pressure and flow monitors already in the ground, and the HULO team worked from the Netherlands throughout. Nobody was on site.

Portsmouth Water's technicians first opened hydrants at locations HULO was never given, at a realistic rate rather than a full open blast. Then came the harder test: six months of platform events, March to August 2026, checked against every repair work order the utility's own crews raised.

The matching rules were fixed before any result was shared, and they are strict on purpose. A looser rule would have produced a bigger number and a weaker argument.

OUTCOMES

What it delivered

01

Fourteen leaks, every one ahead of the crew

Of 174 leak classified events, 14 survived strict one to one matching against a repair work order. Every one of the fourteen was raised before the job was opened.

02

A street rather than a zone

Median lead time was 12.6 days from event start to work order opening. The best match was 49 m from the repair point, 25 days early, and 11 of the 14 fell inside one kilometre.

03

The coverage gap nobody had measured

On paper 85 per cent of repair locations were detectable at 3 L/s. In practice it was 55, the difference being sensors that were not working on the day.

THE METHOD

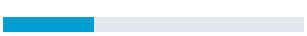
From 174 events to 14 results

Every event HULO raised in the six months is in the funnel below, including the 160 that are not counted as a result. The bar is drawn from the count beside it.

174

EVENTS

Leak classified events HULO raised between March and August 2026, on the monitors already in the ground.

53 

LOCATED

Carrying a location we are willing to defend. The remainder were detections with nowhere to send anyone.

18

MATCHED

Survived strict one to one matching against a repair work order the utility raised.

14

LEAK GENERATED

Generated by the leak itself, and every one of them was flagged before the job was opened.

The matching rules, fixed before any result was shared

- The event and the repair had to fall in the **same zone**.
- The repair point had to lie **within 2 km** of the centre of the three most likely cells HULO named.
- The work order had to be **opened inside 30 days** of the event starting.
- **Strictly one to one.** No event could claim two repairs, and no repair could be claimed by two events.

WHERE IT DID NOT WORK

What this test does not show

A result you can only agree with is not evidence. These are the limits the same six months exposed, at the same size as the wins.

Four of the eighteen matches were not leaks at all

Eighteen events survived the matching rules; fourteen were generated by the leak itself. On the other four the platform saw the repair activity rather than the leak, so their lead time is negative by definition and they are excluded from every figure in this document.

84 signals could not be placed on a map at all

They landed on days when fewer than three sensors in the zone were sending trustworthy data. Nothing can be solved from two, so no location was possible and no crew could have been sent.

Small leaks remain out of reach

At leak rates between 0.5 and 1 L/s, 93 per cent of the paired repair points were beyond detection even with every sensor healthy and reporting. This is a limit of the physics on this instrumentation, not of the analysis, and it applies to the alternatives too.

The largest number produced is not verified

Five areas carry a steady excess above the demand they should show, holding through the overnight trough, and combining to about 61 L/s while drawing. That is roughly one megalitre a day **as an upper bound**, and only at the pattern's busiest: the draw is intermittent, three or four events a day of thirty to sixty minutes. It is an order of magnitude rather than a metered total, and it has not been field verified. A missing logger, a legitimate unmetered supply and an illegal offtake all look like this, and they have very different answers.

A claim we withdrew

An earlier “nine out of ten” figure appeared in HULO material in July 2026. It does not reconcile with the controlled flush table from the May 2026 test, so it has been dropped rather than defended. The work order retrospective in this document is the stronger claim, because Portsmouth Water can audit it in their own systems.

Withheld by agreement. Zone identifiers, work order numbers, exact candidate coordinates and the place names of the five excess demand areas are not published here. They are recognisable places with identifiable customers behind them. Portsmouth Water holds all of it and can reproduce every figure in this document from their own records.

> “You should not underestimate it. You can end up with really good software that nobody follows up on.”
>
> MATTHEW FOSTER
> Head of Leakage Strategy, Portsmouth Water

BROADER RELEVANCE

Lessons for another network

What another utility can take from this, whether or not they ever speak to us.

- Your designed coverage is not your actual coverage. Measure the gap before buying anything from anyone.
- When a signal cannot be placed on a map it is one of three things, and two of them cost almost nothing to fix.
- A staged test proves the physics. Only your own work orders prove the operation.
- Fix the fleet you already own first, then instrument the places the data shows are worth it.