CaseStudy

Trunk Main Leak Location

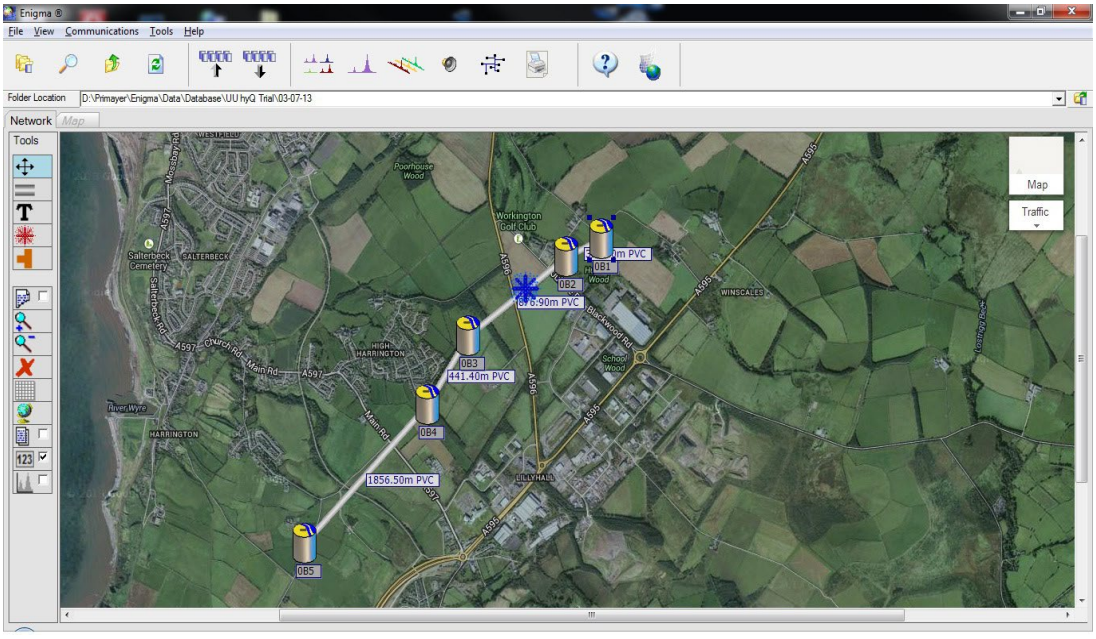
United Utilities
Trunk Main Trial
Leak located on 500mm PVC main over 876m

Introduction
Leak detection on trunk mains using correlation techniques has always had potentially limited success for reasons of poor sound propagation and scarcity of accessible fittings. With **Enigma-hyQ** digital noise correlation and signal coherence frequency analysis processing these previous limitations have been far exceeded.

Trial Details
During July 2013 controlled tests were carried out by Ian Greenwell, Andrew Mackenzie (of Primayer) and Paul Cunliffe, Shaun Graham (of United Utilities) on a 500mm diameter PVC trunk main within the Winscales and Scilly Banks service reservoir zones. Local United Utilities NCI / NIA had previously split the main and quantified losses of 4 litres/sec and 2 litres/sec in the respective halves. United Utilities supplies water to 3 million homes and 200,000 businesses in North West England.

Scilly Bank
The **Enigma-hyQ** loggers were programmed to record three sound epochs to separate genuine water usage from constant leakage. The loggers were deployed during working hours at multiple access points along the main.

Shown below is the schematic of the five **Enigma-hyQ** loggers positioned on the main over a total distance of 3527.7m. These schematics interface with Google Maps and are a feature in the software allowing users to easily lay out pipe networks. The schematic gives easy visualisation of logger positions and correlations requiring investigation; it also allows clicking on any **Enigma-hyQ** logger to hear the noise recorded.

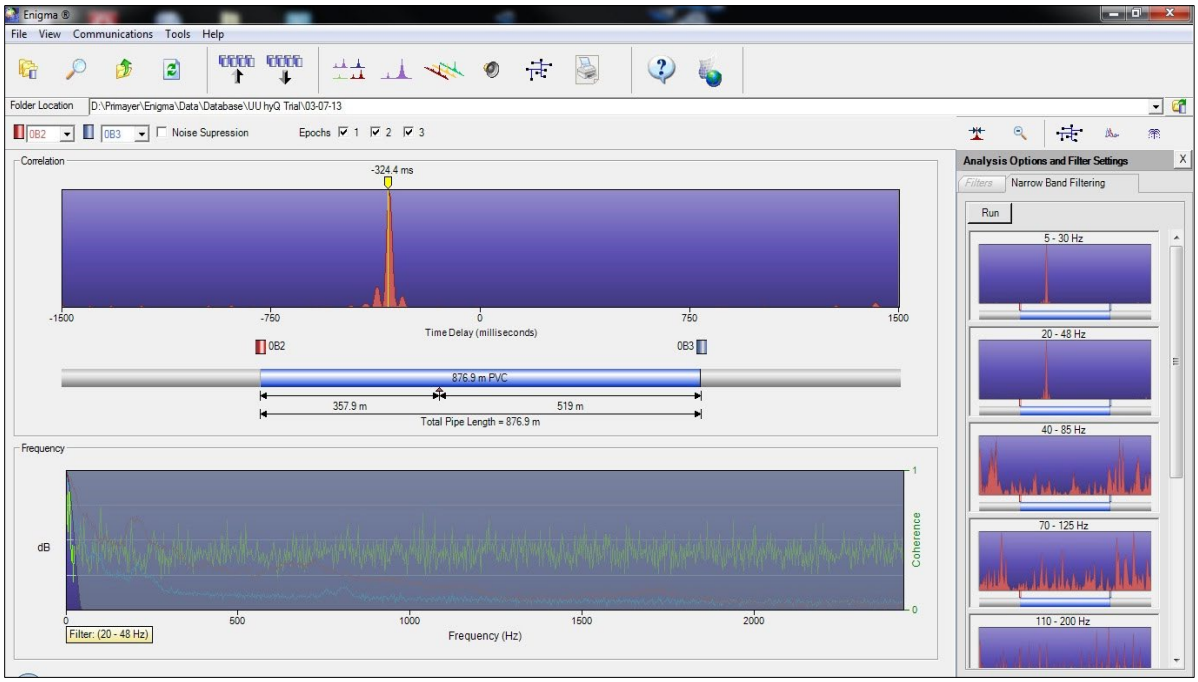


Primayer

technology for network management and leakage control

Results

As shown below indicates what was found on the main after deployment, read back and post analysis processing of the data. A leak was indicated between loggers OB2 and OB3 over a distance of 876 metres. The leak was located at 357.9metres from logger 0B2.



Enigma-hyQ *logger installed on 500mm PVC main via fire hydrant*

Follow Up

Shortly after the position was highlighted by the **Enigma-hyQ** the area was excavated and the leak located. It was later verified as a 4 litres/sec leak. This equates to wastage of 345,600 litres every 24 hours, costing £528.76 per day. (1000 litres @ £1.53 http://www.unitedutilities.com/Our-charges-2012-2013.aspx)

Paul Cunliffe*, Regional Leakage Team Leader,* ***United Utilities****, Manchester, quoted "Absolutely magic result, Shaun and I did say on the day of the trial that if there is a leak where indicated we would be very impressed. What can I say!!!! Bang on and over that distance, really impressed. It's the only kit that I have seen work on plastic, not to mention the distance. All the hard work on the day has proved dividends."*

Follow this link to learn more about the **Enigma-hyQ**
https://www.primayer.com/products/enigma-hyq/

CS3-EHQ-044_1.3

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