

# Identify more leaks with Satellite Leak Detection

## Case Study – South Staffs Water

Why satellite leak detection has become part of the South Staffs Water’s leakage reduction plans.

### The issue

In their five-year Asset Management Plan (AMP) the major UK utility company, South Staffs Water, incorporating Cambridge Water, committed to reduce water leakage. The target is to reduce total leakage by a minimum of 15% from 2019/20 levels by 2024/25. This transformational reduction is to be achieved through a combination of prevention and active leakage control, identifying innovation in both areas to improve efficiency

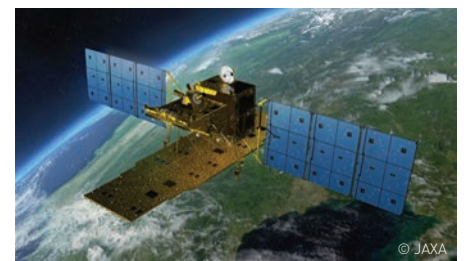
### The solution

The Leakage Strategy Manager from South Staffs Water turned to SUEZ for assistance and were introduced to Utilis’ satellite leak detection technology. To verify the new technology the water company conducted extensive trials and subsequently

implemented the technology across two parts of their territory, a total of 6000km of distribution and trunk mains pipework. Several project parameters were measured and compared with regular leak detection without satellite aid.

### The results

- **Leakage savings of over 2 million litres per day**
- **Total costs per MLD of £180,000** which included the satellite leak detection, follow up by ground technicians and all repairs
- **Leaks detected across all types of asset types** (mains, customer, ferrule, valve, hydrant, etc)
- **Leaks detected across all types of ground cover** (tarmac, earth, concrete, brick, etc)
- **Leaks detected across all pipe materials.**



**2 ML/d SAVED**

At **£180k** per ML/d

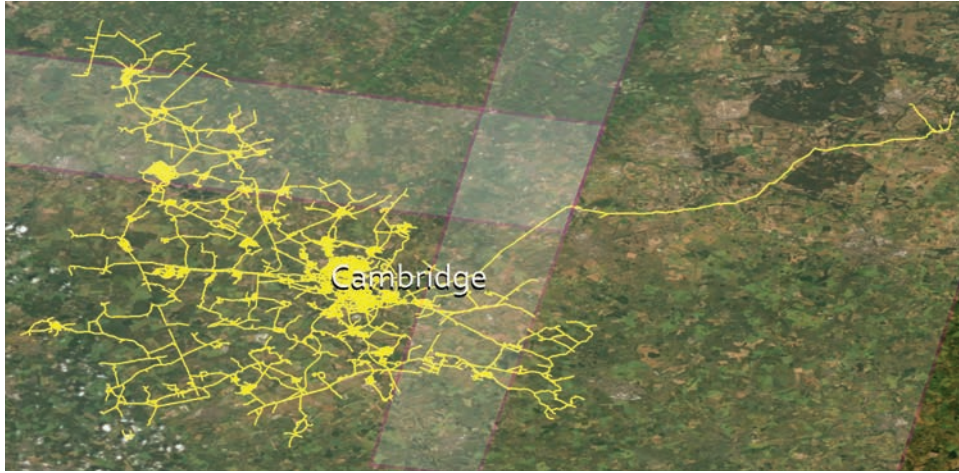
### Results table

	Existing Methods	Satellite Leak Detection	Increase
<b>Detection: Leaks per technician per day</b>	0.3–0.5	2.5–3.1	700% ↑
<b>Leak Size: Average litres per second per technician day</b>	0.04–0.07	0.28–0.40	618% ↑



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## How it works

The Utilis leak detection product uses satellite images that cover large areas of approximately 3,500 sq. km. They use satellites with L-band synthetic aperture radar (SAR) sensors on board. This is because of SAR's day/night, cloudy/clear, capability along with the L-band signal's ability to penetrate the first few meters of earth. Using a patented algorithm, Utilis filters out the signature of drinking water and provide points of interest (POI) to the customer. The POIs are displayed in user-friendly GIS reports, and direct the utility's own field crew with the areas to search and pinpoint the previously undetected leak. This innovative technology has been adapted from the search for water on other planets, underscoring its high reliability and outstanding capability here on Earth.

## Differentiating factors

Utilis offers a fresh approach which provides a non-invasive method to the problem of water network leakage. When compared with other leak detection methodologies, satellite-based leak detection has many benefits:

- No preparation or upfront investment
- Lower operational costs
- Identification of more leaks per day
- Increased efficacy from existing field technicians
- Survey of entire systems up to six times a year
- No disruption to customers.

## Implementation

1. Raw spectral satellite images of the area are acquired
2. The raw data is prepared for analysis by filtering out signals from buildings and other manmade objects, vegetation, hydrologic objects, and more
3. Utilis uses advanced algorithmic analysis to track the spectral 'signature' of drinking water under the ground
4. The leaks are displayed in user-friendly GIS reports, including street locations, and sent to the ground technicians via mobile app
5. The field crew pinpoint the previously undetected leaks.

## The future

South Staffs Water are looking to deploy satellite leak detection on an annual basis and ad-hoc runs for short, focussed campaigns in difficult district metered areas.

### About South Staffs Water

South Staffs Water supplies high quality drinking water to approximately 1.3m people and approximately 35,000 commercial customers over 1,500 square km in the South Staffs region and to approximately 351,000 customers in the Cambridge region.

### About Utilis

Utilis is a specialist in satellite-based infrastructure intelligence. The company provides data driven solutions for utilities, government agencies, and the greater infrastructure industry.

### About SUEZ

A world leader in water and waste management for 160 years. SUEZ operates on five continents, on which SUEZ harnesses all its desire for innovation to achieve a smart and sustainable management of resources throughout the world. SUEZ works with its customers to restore and conserve the planet's fundamental elements: water, air and soil. SUEZ Smart & Environmental Solutions Business Unit aims to accelerate the development and deployment of smart environmental solutions on a global scale.

### For more information

Please contact: Nick Haskins, Business Development Manager, SUEZ  
Email: [nick.haskins@suez.com](mailto:nick.haskins@suez.com)  
Mobile: +44 (0) 7767 675295

**“ We've carried out a very thorough analysis of Utilis/Suez's satellite leak detection. We clearly understand the benefits it can bring in detecting leaks and we are confident in using it as part of our toolbox for reducing leakage through AMP7. ”**

– James Curtis, Leakage Strategy Manager at South Staffs Water



Utilis Amal St. 13, Park Afeq, Building A, 1st floor,  
Rosh Ha'ayin 4809249, Israel

Phone: +972 3 510 8119 Twitter: @UtilisCorp  
[www.utiliscorp.com](http://www.utiliscorp.com)



SUEZ Smart & Environmental Solutions Severnside Energy  
Recovery Centre, Severn Road, Hallen, Bristol, BS10 7SP

Phone: +44 (0) 1454 804040 Twitter: @suezUK  
[www.suez.co.uk](http://www.suez.co.uk)