Case Study

Water CS42

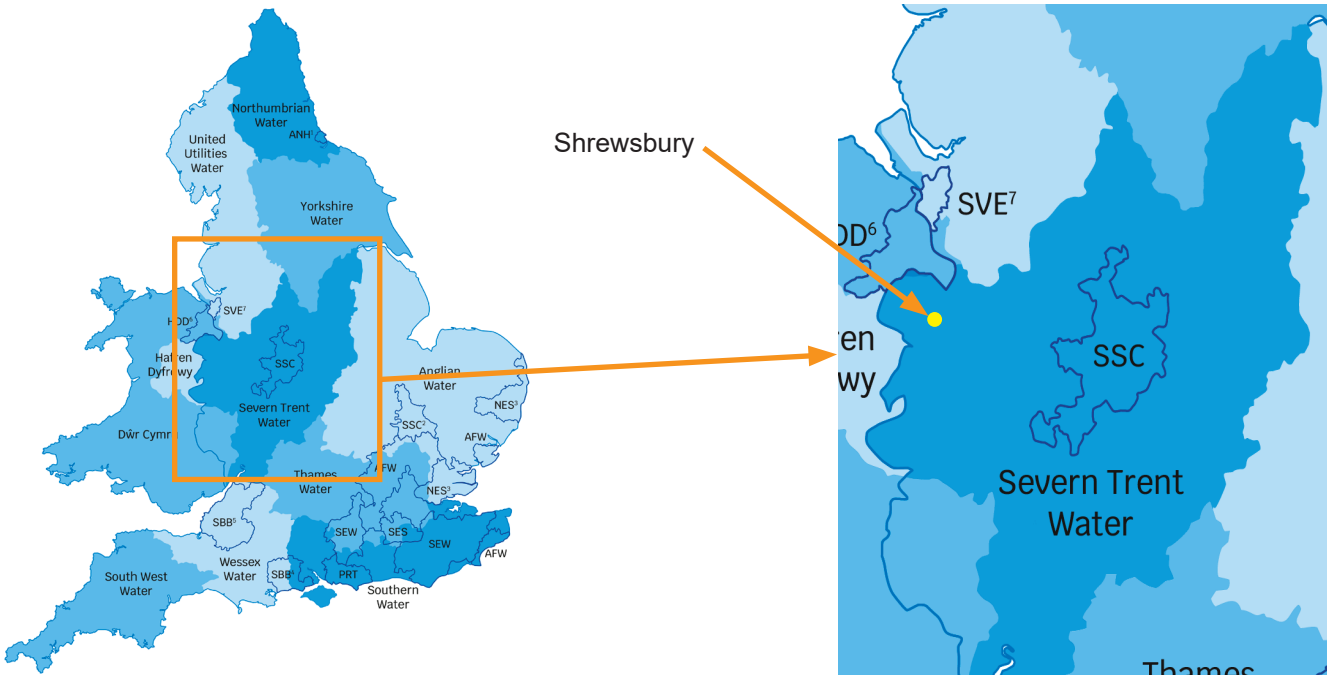
DuraTracker® Ex's excel in wastewater treatment works bi-directional flow measurement study

The English Bridge across the River Severn, Shrewsbury, Shropshire, England

Situation

Severn Trent Water is based in Coventry, England. It supplies 4.6 million households and businesses across the Midlands and Wales. Due to infiltration, the wastewater treatment works was processing large volumes of river water in addition to normal foul and surface waters. This caused significant, costly technical challenges.

As a pivotal first step in remediation, Severn Trent contracted with the experts at UK-based Environmental Monitoring Solutions, rebranded as **Cura**Terrae in 2025, to conduct a complex, multi-phase monitoring project lasting 18 months. The company provided data collection, analysis, and reporting on network behaviour.



Solution

CuraTerrae determined 100 monitoring points in the region of Shrewsbury, located inside a loop of the River Severn in the county of Shropshire. Twenty of these locations required bi-directional monitoring due to the river infiltration. **Cura**Terrae purchased 22 of Teledyne ISCO Water's DuraTracker Ex's in 2023, the first to be deployed in the UK, to provide the bi-directional flow monitoring required by the project.

The intrinsically safe, CSA-, ATEX- and IECEx-compliant DuraTracker Ex flow meter supports flow measurement technologies including non-contact laser area velocity, submerged Doppler area velocity, and ultrasonic level.

Monitor installation

Sensor installation

Challenges included:

- Frequent severe flooding and high river-levels compromised access to measurement locations
- Poor GSM signal and access issues impacted data availability, making QA/QC difficult

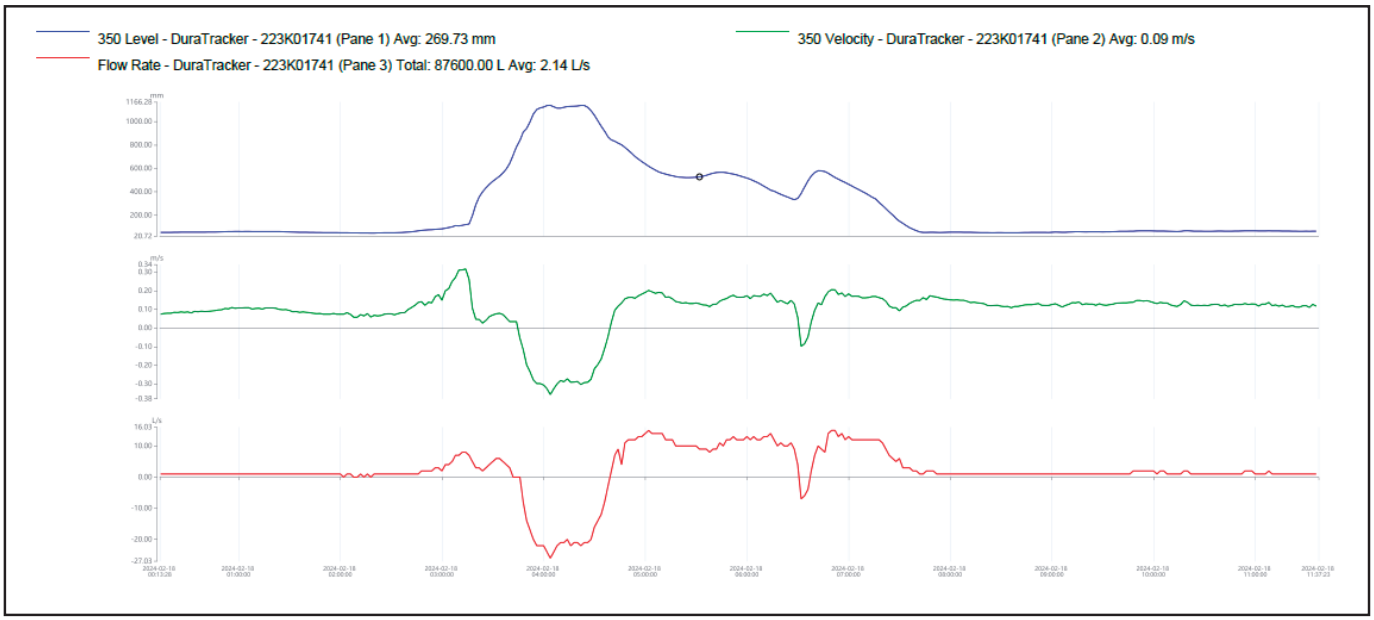
Despite this, **Cura**Terrae successfully delivered all data on time and resolved client queries. The flow data supplied by the DuraTracker Ex's enabled Severn Trent Water to determine the effect of infiltration on the wastewater treatment works.

Example of results

Below, one of the points, FM20, requiring bi-directional flow measurement.

Results show several events with typical level response alongside negative velocities at peak depths due to infiltration.

Single event shown over a 12-hour period shows impact of infiltration on sewer flow behaviour.



CuraTerrae observations and update

- The DuraTracker Ex's provide detailed diagnostics that increase data confidence and add value to the client — particularly significant when developing or verifying hydraulic models being used to inform significant asset investment decisions
- The **Cura**Terrae workshop team found DuraTracker Ex's to be very robust and user-friendly. They particularly liked the communication process, extensive information available on measurements, diagnostics, and ease of setup
- The data analysis team report better performance than competitor instruments in slower flow conditions, with the data provided to be more defined, with less drift, requiring fewer calibrations. Since the first deployment, clients routinely request bi-directional capability as standard.
- Based on the above, **Cura**Terrae purchased an additional 220 DuraTracker Ex's during 2023 and 240 more in 2025, bringing the number of DuraTracker Ex's in their fleet to almost 500 units.

Jake Stevenson – **Cura**Terrae Workshop Manager

"The Teledyne ISCO DuraTracker is a very robust and user-friendly instrument. It is easy to set up the flow meter and when communicating with the DuraTracker through Flowlink, we are provided with abundant information on measurements, diagnostics and setup. These diagnostics allow for easy testing and the data provided from the units on soak test appears to be very accurate. The units are easy to store and do not feel excessively bulky even when fully loaded. The support form Teledyne ISCO with the DuraTrackers has been very responsive and has helped a great deal with integrating these units into our fleet."

Luke Bolton – **Cura**Terrae Data Manager

"From a data analysis perspective, the data is more defined, fewer calibrations have needed to be applied and fewer depth drifts have been identified. In addition, DuraTrackers seem to work better than other brands or methods in slower flow conditions; the bi-directional option works well and is becoming requested more and more by clients. Product support is exceptional and in general any issues are resolved within 48 hours of raising."

The following information provided by Teledyne ISCO

DuraTracker® Ex Flow Meter

This intrinsically safe flow measurement and remote communication system is built to last, even in tough environments. DuraTracker Ex works with all our intrinsically safe sensors, including LaserFlow® Ex, addressing all hazardous area requirements.

The DuraTracker Ex flow meter is the most efficient and reliable flow measurement solution on the market today for a wide range of open channel flow applications. It supports flow measurement technologies including non-contact laser area velocity, submerged Doppler area velocity, and ultrasonic. The flow meter calculates flow using standard open channel level-to-flow and area velocity conversions, user defined equations, level-to-area data points, or level-to-flow data points.

The DuraTracker Ex package cost-effectively integrates cellular communications and multiple flow technologies within a single module. The standard Bluetooth capabilities make the programming, sensor calibration, and data retrieval job easy through wireless devices. A remote cell phone communication option is also available.

Shown with the 350 Ex area velocity sensor

About Teledyne ISCO Water

Teledyne ISCO Water is a leading manufacturer of a wide range of innovative products and services designed to increase productivity while improving the quality of life on our planet. Our water and wastewater flow meters, samplers, and related products are used across the world and known for their robust construction, accuracy and dependability. Teledyne ISCO is continually improving its products and reserves the right to change product specifications, replacement parts, schematics, and instructions without notice.

For further information contact your local Teledyne ISCO Water representative or distributor.

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