Enhancing Structural Surveys with the TriDrone USV Real-World Use Case: Bridge and Waterway Inspections

Project Background

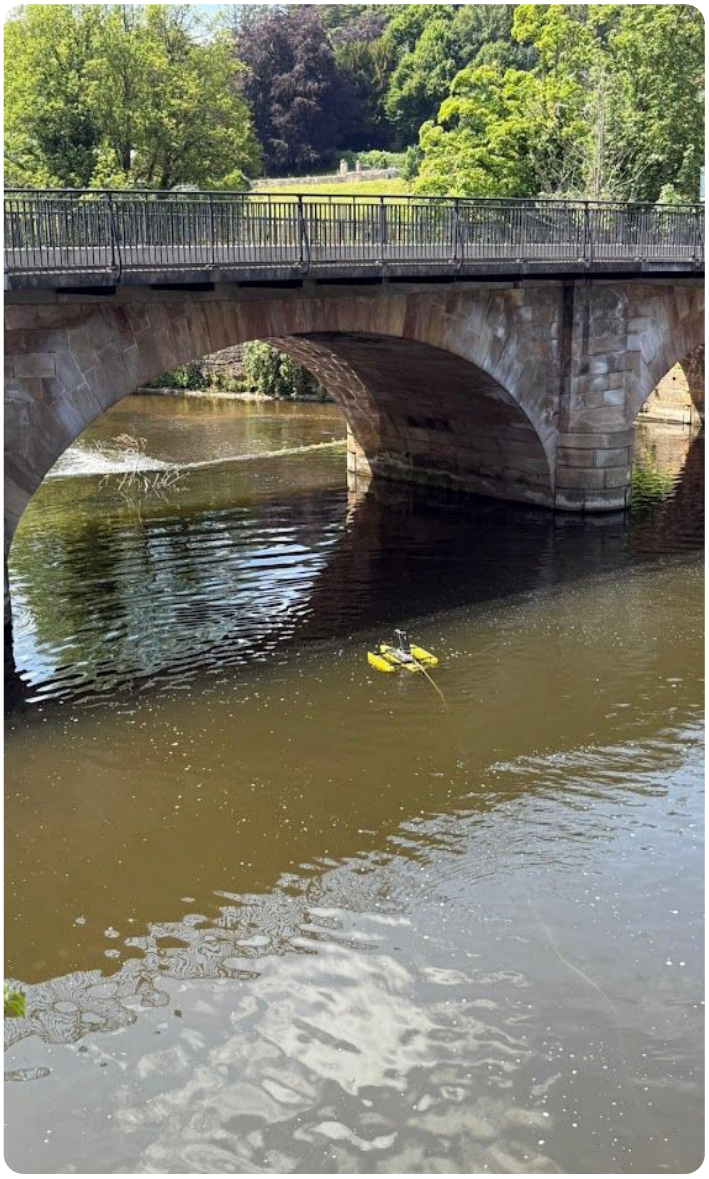
RWB Group UK was recently contracted to conduct a detailed structural condition survey of two critical areas: a bridge and a set of underground waterways running beneath a public footpath. These locations presented limited access, low clearance, and confined aquatic conditions; challenging factors for traditional survey methods.

Survey Challenge

Surveyors are often tasked with collecting high-quality data in hard-to-reach or potentially hazardous environments. Structures like culverts, underground waterways, and bridge undersides can be especially difficult to assess using conventional methods, often requiring divers, temporary scaffolding, or confined-space entry; each of which adds complexity, time, and risk.

TriDrone in Action

To address these constraints, RWB Group deployed the TriDrone, a compact, floatable USV (Unmanned Surface Vehicle) purpose-built for remote inspection and hydrographic survey work. The TriDrone was remotely piloted into the confined water systems and beneath the bridge, where it captured valuable geospatial and structural data without the need for personnel to enter the water or enclosed spaces.



Key Benefits for Surveyors

- Access Hard-to-Reach Areas: Navigate narrow culverts, low-clearance bridge decks, and underground channels without manual entry.
- Remote Operation: Maintain safety and control while surveying from the surface or shoreline.

- Integrated Sensors: Capture high-resolution bathymetric data and video/imagery for visual inspections.
- Efficient Workflows: Reduce time on site, minimize setup, and eliminate the need for divers or scaffolding.

Deliverables & Outcome

The TriDrone enabled the team to complete a full structural assessment of both the bridge and subterranean waterways. The resulting data informed the client's maintenance planning while ensuring the work was completed safely and efficiently; without disrupting nearby pedestrian traffic.

Seafloor™ Product Application Brief

Ideal Applications for Surveyors

The TriDrone is built for survey professionals working in:

- Bridge inspection and scour analysis
- Wastewater culvert and drainage surveys
- Urban waterway and canal mapping
- Tunnels, retention ponds, and confined basins
- Pre- and post-construction site verification

Operational Impact

The deployment of the TriDrone provided several important benefits for both the survey team and their client. Safety was greatly improved, as the unit eliminated the need for confined-space entry or diver deployment. Surveys were carried out with minimal disruption to the area, allowing nearby pedestrian activity to continue without interruption.

The TriDrone also helped reduce the time required on site, allowing the team to complete the work efficiently and deliver data faster. Despite the challenging environment, the system collected accurate bathymetric and visual data, supporting detailed structural assessments. In addition, the use of the TriDrone lowered overall project costs by reducing the need for additional personnel and heavy equipment, offering a practical and cost-effective solution for difficult survey environments.

Conclusion

For surveyors facing the growing demands of modern infrastructure inspection, the TriDrone USV offers a smart, field-proven solution. Compact, versatile, and reliable, it empowers field teams to safely access data-critical sites and deliver the actionable insights clients rely on for asset management, repair planning, and regulatory compliance.