

Underwater Inspection Surveys

Background

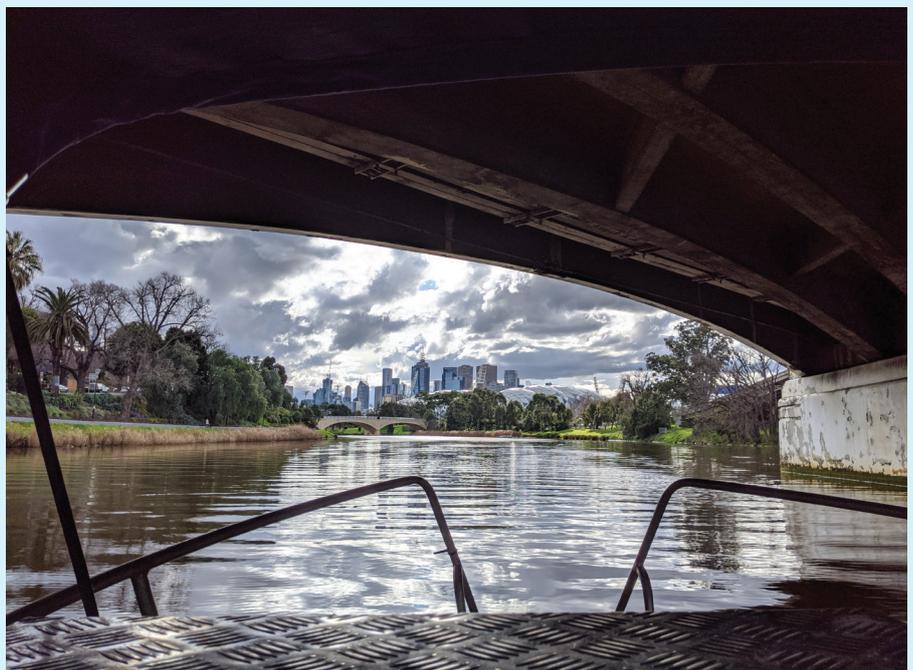
Subsurface structures and assets such as bridge footings, dam walls and wharf piles are all examples of assets that require inspection to assess their condition. This can be done either routinely or after a significant storm or impact event.

Problem

Often these structures are in waters that are difficult or hazardous waters for traditional monitoring methods such as diver inspections to be undertaken. This results in costly operations that require significant safety precautions and the right conditions to allow for diver inspections.

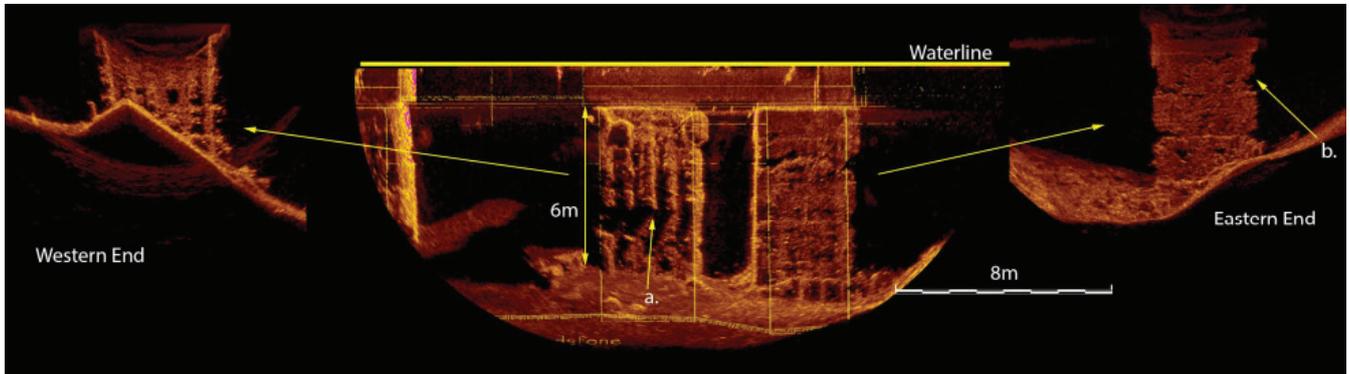
Total Hydrographic was tasked to provide a scanning solution for a bridge situated in a busy, fast flowing metropolitan waterway. The environment was extremely turbid due to it being semi-tidal and recent heavy rains.

The objective was to scan the faces of the 4 bridge footings to identify signs of deformation and damage. Limited information was available when the last inspection was undertaken.



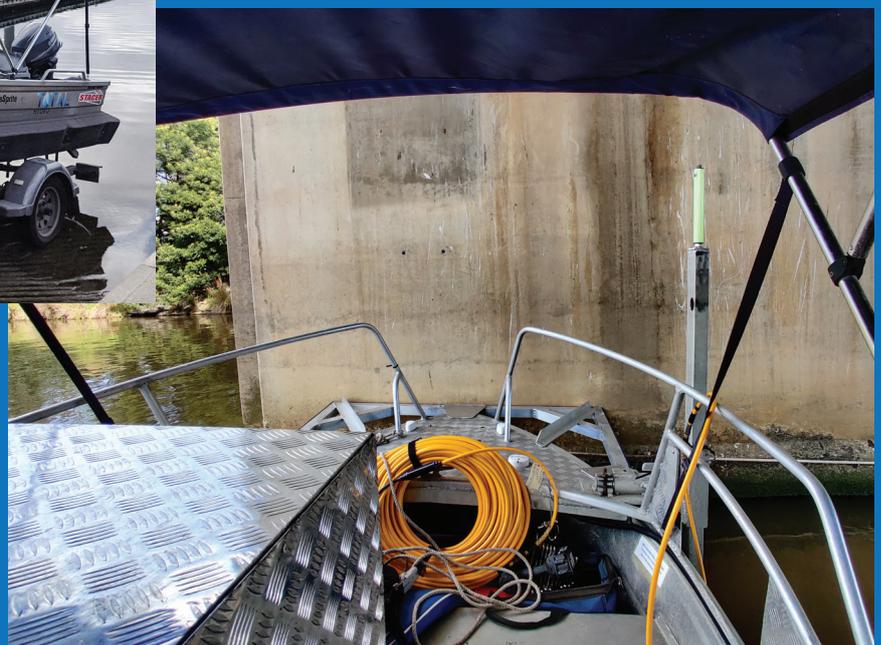
Solution

Instead of traditional monitoring methods such as diver inspections, Total Hydrographic proposed inspection using a Kongsberg MS1000 Mechanical Scanning Sonar. This system can produce high resolution sonar imagery and point cloud scans of assets to identify signs of damage, deformation and scouring.



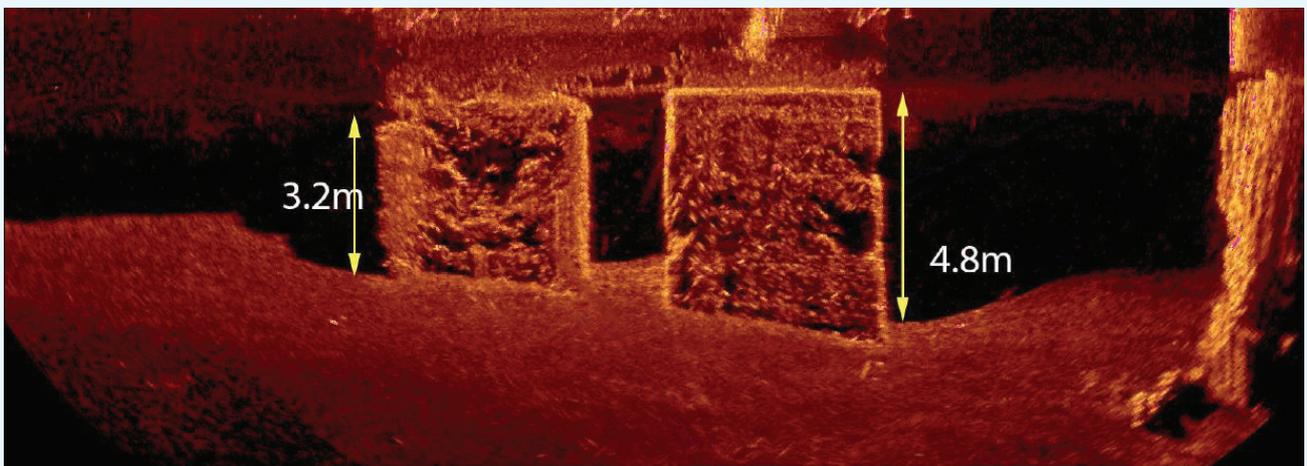
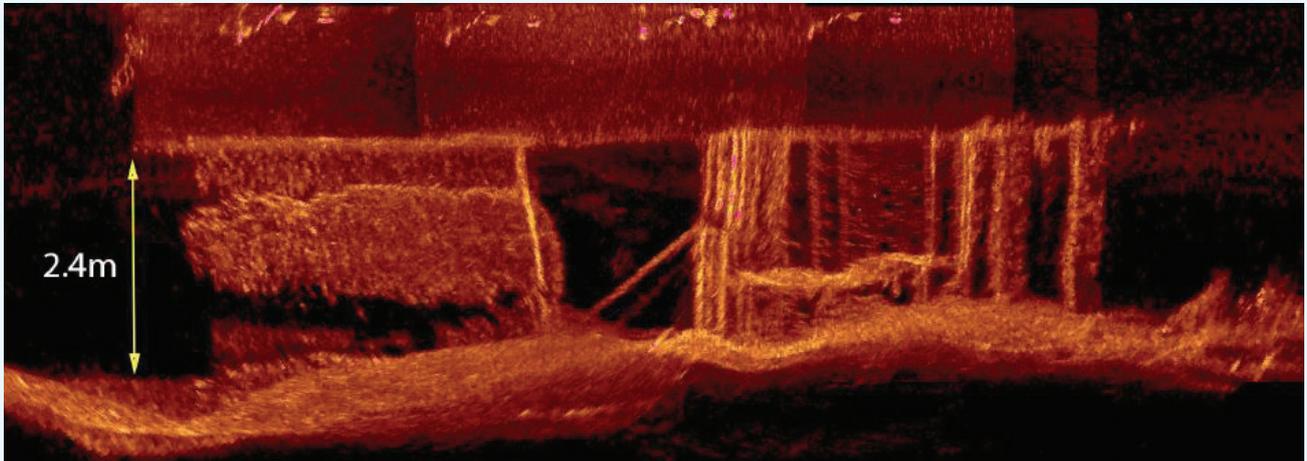
Equipment

The survey took place using relative survey positioning in the areas with overhead obstructions such as underside of the bridge. The system was mounted to a commercially registered survey vessel that has been modified specifically to scan vertical subsurface structures. This vessel provides a safe and reliable platform to conduct inspections and can operate efficiently in turbid and fast flowing environments.



Results

Total Hydrographic was able to identify signs of deformation and damage such as cracks, exposed reinforcing bars (rebar) and structural undermining as seen in the images below. Once identified we were able to quantify these observations through accurate measurements within our specialised hydrographic software.



This provided a roadmap for future scans to monitor changes over time and enabled the client to make the most informed decision about their asset. Because of the efficiency of the scanning system, client operations did not have to be impacted during survey and all personnel remained dry above the surface of the water. The client was also able to see a picture of the bridge footing that they had never seen before.

How can this scanning solution be applied to your own assets?

Do you have assets or infrastructure that could benefit from inspection to assess their condition and make the most informed decisions? Can a non-invasive monitoring solution save time and money for yourself and clients?

Contact Total Hydrographic today to discuss a scanning solution best for you.



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