

A scenic photograph of a sunset over a body of water. The sky is filled with dramatic, colorful clouds in shades of orange, yellow, and blue. The sun is low on the horizon, creating a bright glow. In the foreground, a dark silhouette of a dead tree stands in the water, its reflection clearly visible on the calm surface. The background shows a distant shoreline with trees and some structures.

# ***Side Scan Sonar***

## ***– Hazard Detection & Debris Clearance***

### **Situation**

Total Hydrographic were approached with a brief to map over 35km of Inland River Waterways. The council were after survey data that could help provide them with a clear understanding of the bathymetry and the location of hazards and debris that could be a problem for recreational boating. The data was also to assist with new developments within the watercourse. Part of the new developments that are underway is the potential for a water ski route through a shallow water lake that is highly vegetated and lacks any significant water movement through it.

### **Survey Requirements**

For the main river watercourse, the objective was to provide high resolution multibeam echo sounder and mobile laser scanner data for above and below water line bathymetric and topographic modelling. Unfortunately, utilising the multibeam echo sounder system wasn't effective for the shallow water lake extents. Our survey solution was to provide our CEE-ECHO Single beam Echo Sounder with RTK GNSS positioning coupled with our Trittech Starfish 990f side scan sonar.

## What We Encountered

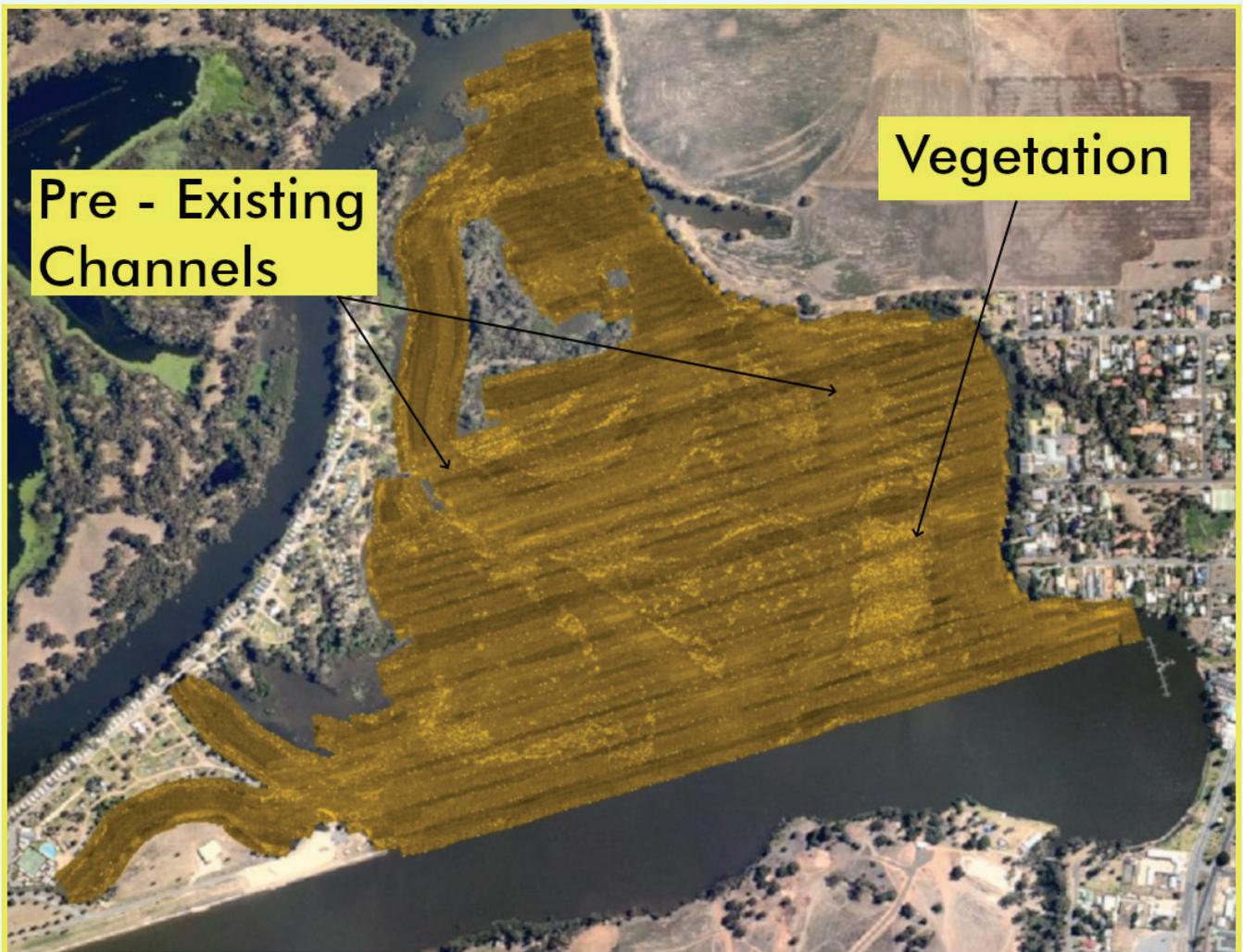
Side scan sonars are often operated as towfish in deep water environments, however the lack of water depth meant it was best to attach the side scan sonar to over the side mount or our single beam echo sounder. The Starfish 990f is a high-resolution side scan sonar unit that can be used for extreme image definition and target detection. It operates at a 1MHz CHIRP transmission with an extremely narrow horizontal acoustic beam to provide sharp and defined side scan images.

In the shallow water environment, we were able to gain high resolution geo-referenced imagery, across a 25m swath with the side scan sonar unit. Running 20m survey lines we had sufficient overlap with the side scan imagery that we were able to provide the client with a geo-referenced side scan mosaic. This geo-referenced image provides a clear understanding of the hazards and debris that were located on the lakebed. The imagery can offer the location and size of debris beneath the water allowing the council to give a safe route for which recreational boaters and water skiers can use.



## Survey Outcome

The single beam echo sounder captured depth data that was used to provide general bathymetric contours for the lake extents. It was able to pick up previous river channels that were present in the lake that could be used for potential boating access. The campaign provided detailed bathymetric and side scan sonar data that would allow the council to make informed decisions about the management and development of its waterways. The side scan sonar imagery should help the council determine where access to the lake can be safely navigated and which areas needed to be restricted from recreational boating activities.



To find out more on how Total Hydrographic can help you mitigate risks and supply you with current data for your reservoir please contact: