application brief

Port and Coastal Hydrography

Customer:

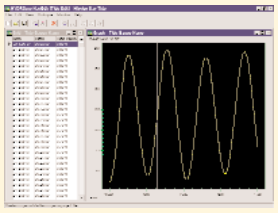
PortsCorp, South Australia

Project:

Surveying the Ports and Beaches of South Australia

Project Date:

1999–present



SYSTEM FEATURES

- High volume bathymetric surveying
- Marine GPS equipment for beach surveys
- HYDRO*pro* NavEdit for cleaning data and tide correction
- Terramodel processing for large data sets

PortsCorp have a responsibility to monitor the hydrographic conditions of 10 ports and various beaches in the state of South Australia. There are a total of 96 km of dredged channels that form the approaches to the ports. The port surveys are to ensure the waterways are free from obstructions and the channel depth is sufficient for safe shipping. They also provide hydrographic services to Government Departments for beach and near shore surveys—to both monitor for accretion and erosion as well as ensuring dredging for restoration is being carried out effectively. The customer owns a considerable amount of Trimble GPS and HYDRO*pro*™ software which is used to ensure the survey work is carried out quickly and accurately.

The surveyors at PortsCorp have a variety of echosounding and positioning tools to use to carry out their surveys. For the majority of the work they use the Odom Echotrac single beam echosounder. This can also be used in the multi-transducer mode where they use five transducers located across the boat and on booms. This allows the 8 m deep channel bed to be sounded with a 4 m wide swath. They have also used multibeam system for a deeper water survey.

The majority of the surveys are carried out with Trimble 4000DSi™ in DGPS mode. An investment was also made in Real-Time Kinematic GPS (RTK) for the precise onshore beach profiling—using

both man-packs and 4WD mounted systems. When not in use onshore the RTK systems are used on the survey boat to provide real-time tide and heave corrections.

The Trimble HYDRO*pro* software is used for navigation and data collection on the boat and the 4WD motorbike. Data is edited with the NavEdit module then exported to the Terramodel® software for:

- building the large 3D models from marine and land based surveys
- rapid 3D visualization for quality control
- planimetric and cross-section plotting
- determining volumes

The majority of the beach monitoring surveys are carried out on a yearly basis. The profile lines have been established many years ago and start in the dunes and run directly offshore up

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to a maximum of 5 kms. Surveying the beach side is done with a 4WD bike fitted with RTK and HYDRO*pro*. Jeff Heppner of PortsCorp states they carry this work out when the tidal range is the greatest during the month so the survey boat can come in further to overlap the beach survey. Beach elevations from the 4WD and reduced level depth data from the boat is transferred into Processing to produce continuous cross-sections through both beach and surf zone.

In the case of the river channel surveys the multi-transducer system is used on a catarmaran. Transducers are mounted on each pontoon and in the center of the boat. Small booms either side hold a transducer each. All five transducer depths are passed to HYDRO*pro* and data is recorded along with their coordinates. The survey boat is driven up and down the river along a centerline route with parallel offset routes.

For more information on the systems used here please visit http://www.trimble.com/marine

The equipment used on this project includes:

- HYDRO*pro* Navigation and NavEdit software
- Terramodel processing and reporting software
- Trimble 4000DSi (DGPS) and Trimble RTK GPS receivers
- Odom Echotrac echosounder

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