

SURVEY REPORT

SOUTHERN CLAMS OTAGO HARBOUR SURVEY – Sept 2012

BRIEF

Acting on instruction of Roger Belton of Southern Clams Ltd. I carried out a bathymetric/topographic survey of the two proposed clam harvest sites in Otago harbour between the 18th and the 21st of September 2012.

The objective being to undertake surveys from which two transect could be created and repeated to a high precision in years to come. These surveys would be used to monitor the change in relief over the period and possibly show the influence of the harvesting activity.

EQUIPMENT USED

The Equipment used included Trimble 5700 RTK receiver and base station, a Reson 210 echosounder, Trimble HydroPro software loaded onto a HP laptop, and survey vessel "Sea Quill" M.S.A.133262.

PERSONNEL

The personnel involved included Richard Brooks as HHS boatman/chainman and myself (P. G. Hunter) as surveyor in charge.

SQUAT (survey vessel)

No allowance was made for squat on the Sea Quill as RTK technique used eliminates the need for this factor.

BAR CHECK

Echo sounder calibration was carried out, in the Port Chalmers basin, against a bar suspended below the boat at depths to 6.0m. The bar line was checked against a standard tape. Tags were located better than +/-0.01m.

POSITION CHECK

Dynamic position checks were carried out adjacent to beacons in the harbour channel.

TIDE

This survey was reduced using orthometric height at trig A24L at Observation Point Port Chalmers and ellipsoid GPS transfer, no Geoid Ellipsoid separation or EGM model was used.

SITE CONDITIONS (Boat Work)

The site was worked with respect to prevailing conditions. Light winds were experienced on both sites. Scend was approximately 0.1 metre or less. No significant swell or scend was observed.

QA/QC

A check of the correlation between long and cross lines was excellent. Some editing was required (as previously) to the waterborne survey in areas where large crops of sea lettuce were evident.

OBS

With good spring tides and knowledge of bathymetry from the previous survey the sand flats were able to be surveyed in total from the survey boat. I.E. quad motorcycle was not needed on this occasion.

COVERAGE

All areas requiring survey within the scope of this contract were covered. Long lines were run at a nominal 50m c/c. generally as previously covered.

GEODESY

This survey was performed using GD49 control.

SURVEY STATEMENT/DECLARATION

The survey was carried out with results to my satisfaction. Confidence levels for this work are better than 0.25m horizontal and 0.05m vertical for the transect dataset.

NOTE

To ensure repeatability it is recommended that subsequent surveys for these transects are performed using the same methodology. The dataset provided to the client on CD includes HydroPro project files that can be used as seed files for future work.

P G Hunter
HUNTER HYDROGRAPHIC SERVICES

Methodology Statement

With accuracy and repeatability being of paramount importance the following methodology was proposed and employed. It is intended that similar survey technique will be used for future work.

- ◆ RTK base was located at Trig A24Y on Portobello Peninsula. The base station co-ords were entered as NZGD49 North Taieri circuit and orthometric height of 93.391m was used. Antenna height was added.
- ◆ Data logging was performed using HydroPro. Again set to NZGD49 North Taieri circuit.
- ◆ Data logged was processed to produce reduced levels. (not reduced using water level techniques usually associated with hydrographic survey)
- ◆ No Earth Gravity Model or Ellipsoid/Geoid separation was used. The project files are supplied to the client to enable replication on future collection.
- ◆ On the quad the antenna was located over the rear axle and height was measured, with all equipment and rider in place, and applied. The height was also checked at speed.
- ◆ Our installation required an echo sounder cycling at 10Hz to trigger time stamps. Other methods should be possible.
- ◆ The 5700 receiver was set to output at 10Hz in low latency mode.

This system gave a reduced level of 2.48m over the steel plate at the Broad Bay Boat Club. This plate covered Trig AFF6 and although this may appear to be 0.037m in (actual level 2.3275 plus 0.115mm i.e. 2.4425) difference to recorded level for this item no adjustment was made to correct for this. It is proposed that and repeat survey calibrates to achieve this same level at speed over this plate. (i.e. calibration offsets should not be necessary if system set up as above). Also note that northing and easting data was within 0.02m at this trig.

This system was deployed onto the sand banks and lines approximately 50m apart were ran and data collected where tidal condition allowed.

The system was then placed on “Sea Quill”, HHS’s alloy survey boat, and data was then collected at high tide to fill the sites as needed. Overlap of data provided the vertical offset required to align reduced level boat gathered data with the quad gathered data.

Both clam beds were surveyed using this methodology and the same setup, including same base station and offsets.