



Version No: 02 Issue Date: 24/06/2021 Portfolio: Survey	Horizons Regional Council	Section No: 3.10 Page: 1 of 2
	Hydrology Operations Manual	

Five-year station survey (Levelling)

[Operations Manual table of contents](#)

Five-yearly Station Surveys - Levelling Requirements

Photograph and record the location of all primary benchmarks – store these in the site folder with the survey

Level in the following points of interest:

- All primary benchmarks (minimum 3 per site)
- All Staff Gauges
- EPB Reference height (if present)
- Orifice height (where possible)

Note: If the site has fewer than 3 primary benchmarks, note this on the survey document and return to add a new primary benchmark as soon as practicable

For each of the primary benchmarks, and other points listed above, the survey requires a close with a maximum difference of 1mm. A minimum of **two** independent measurements at each location is also required.

During the survey, the following secondary points should also be measured:

- Water level (taken on a 5 minute reading e.g. 14:05, 14:10 etc.)
- Intake pipe levels (for tower sites)
- Other points of interest (Floor of hut, weir heights etc.)

For the above secondary points, a single reading is sufficient.

For additional procedures on how to level in EPB reference points see operations manual section 3.2

http://tqm.horizons.govt.nz/Hydrology/SOPs/cd_OM_3.2_Site_Surveys_Dumpy_Laser.pdf



Calculation of Survey

Surveys should be calculated before leaving the site, based on the adopted RL (typically 100.000m when not to MSL).

All RL's to be checked against adopted RL's for the following points:

- All primary benchmarks
- All staff gauges to their respective RL zero
- EPB Reference zero

Differences of more than 2mm from the adopted RL's need to be re-checked by further survey work or calculations to ascertain which benchmark(s) have moved. Staff gauges that are deviate by more than 2mm from their respective RL zero should be re-plated and surveyed to confirm they meet the accuracy requirement.

Version No: 02 Issue Date: 24/06/2021 Portfolio: Survey	Horizons Regional Council	Section No: 3.10 Page: 2 of 2
	Hydrology Operations Manual	

Five-year station survey (Levelling)

MSL Datum

Establish RL to MSL for **one** (only) primary benchmark (choose the most stable) – GPS levelling is acceptable for this purpose.

Record of Survey

Survey and Level book information to be recorded in the “Things” database. If changes are required to the adopted RL’s, then the changes must be noted in the site continuity table, and on the survey in the ‘Description’ section. New site RL’s and new adopted RL’s should be added to Hilltop.