

Survey and Spatial New Zealand

12.07m between Nelson and Tasman

Positioning and Measurement Stream

From 1st July 2017, both Nelson City and Tasman District Councils became the first Territorial Authorities to use New Zealand Vertical Datum 2016. Now more than half of NZ territorial authorities plan to be using NZVD2016 by 2022.

New Zealand Vertical Datum 2016

NZVD2016 is New Zealand's official height system. It allows for the consistent collection and seamless exchange of heights across New Zealand. This means that heights used in GIS, infrastructure, planning, consents and works can now be nationally standardised.

Sea level as a height reference

Traditionally a height from tide gauge has been used as a reference point. However, these heights can be misleading as local sea level varies around the coastline and the reference points are historic.

As such each local authority has determined their own height level reference. In some cases multiple height systems are used within a district.

In the case of the upper-South Island:

- Tasman District Council was using **Nelson Vertical Datum 1955** – which is approximate to sea-level, while
- Nelson City Council use using **Nelson City Datum** – which is 12.07m below sea-level, and was the height of the lowest point in the catchment (to avoid using negative numbers).



The shared boundary between Nelson City and Tasman District council's, Champion Road, became a "Canyon" in the regional GIS viewer *Top of the South Maps*. Jumping from 9 metres on the Tasman side to 22 metres on the Nelson side - a difference of 12.07 metres.



This photo of Champion Road (at C7T2 – SS 95) demonstrates that the height difference between the two regions is mathematical only

The change process

Changing the vertical datum of a data set is relatively straight forward, with a number of tools available to make the changes i.e.:

- LINZ Online Converter: <https://www.geodesy.linz.govt.nz/height-conversion>
- Instructions to re-project point cloud files: <https://medium.com/on-location/reprojecting-point-clouds-to-nzvd2016-b8724bbe1635>
- Within various GIS and GNSS software products

Over coming challenges

Some users may encounter issues, when transforming an entire workplace to NZVD2016, as metadata may not be correctly recorded. As such it may be difficult to determine which datum the data was originally in terms of.

However, the shift to NZVD2016 can provide an opportunity to improve the metadata capture. From uptake date all data should be collected with:

- A date, and
- The datum (NZVD2016)

This way all users can quickly see that data collected after uptake date is in terms NZVD2016.

And any data prior to this date can be treated with historic assumptions and individually investigated.

Want to know more?

Contact the Survey and Spatial New Zealand Positioning and Measurement Stream:

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Join our LinkedIn Group:

🌐 <https://www.linkedin.com/groups/6922254/>

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