



Sea Level Rise Map Differences

GWRC - WCC

Data accuracy

Data used in this sea-level rise model (SLR) map was initially based on primary data sources and methodology similar to the [NIWA/PCE project of 2015](#). It was based on a laser-airborne (LIDAR) elevation survey from 2013. An [earlier independent SLR map of Wellington City](#) was created by [Tonkin & Taylor for WCC in 2012](#), based on a 2009 LIDAR survey.

There were some initial differences noted between the 2 maps. To reconcile these differences, the GWRC map was updated for the Wellington harbour area in May 2021 to use updated LIDAR DEM data sources from WCC (2020) and HCC (2016). In addition, the GWRC map data was updated to incorporate the same estimates used for tidal offsets in Wellington Harbour, as based off the Wellington Wharf tide gauge.

Issues

We are aware of some remaining minor differences in SLR inundation areas shown by these 2 map sources, particularly in areas of Wellington CBD.

Cause of differences

The main remaining cause of differences between the 2 datasets is a difference in data modelling methods. The 2012 WCC map data included a 0.25m “tidal variation” offset, as suggested by MfE (2008) to account for other factors such as natural tide variation over time (not including SLR), and wave setup etc. This offset was not included in the GWRC data, in order to retain compatibility with the earlier NIWA/PCE (2015) study.

Thus a SLR value of 1.00m in the WCC data is equivalent to a SLR value of 1.25m in the GWRC data, etc.

Other minor causes of variation include :

- Survey control of vertical accuracy of ground levels has improved over time, especially with the [adoption of the new national vertical datum](#) (NZVD2016). This applies especially in Wellington south of the Mt Victoria tunnel;
- Tectonic effects, [including slow-slip between seismic events](#), are causing the land mass of the Wellington area to vary in elevation, independent of ocean sea level changes. Overall, the region is generally subsiding punctuated by the crustal response from significant earthquakes.

- The GWRC map now uses newer (2020) LIDAR elevation data as supplied by WCC. This elevation data shows minor differences from the 2009 LIDAR elevation data due to data capture & interpretation, earthworks, and other changes over time.

Future updates

As new LIDAR survey data becomes available, it will be integrated into our SLR modelling products. As new SLR model products are developed across NZ, national standards will emerge and be adopted. These standards will recognise differences between national-scale exposure mapping (national to regional screening of risk exposure e.g. NIWA/PCE study) to detailed local-scale mapping to inform land-use planning.

No-one knows the rate at which sea level will rise in future. Thus these maps are only indicative of relative vulnerability to inundation. In all cases of property transactions in vulnerable areas, seek the advice of a professional surveyor.

Dated : 21 May 2021