

The New Zealand Geotechnical Database

A National Resource

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Background

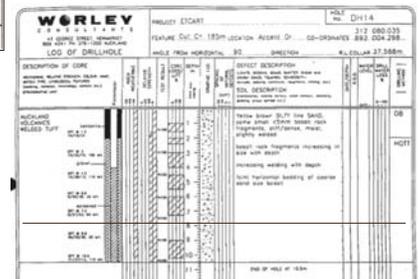
The New Zealand Geotechnical Database (NZGD) is an online platform that stores geotechnical data from across New Zealand. Active since June 2016, the database contains >80,000 geotechnical datapoints. The database stores collar (i.e. location, depth, client, project, etc...) information along with digital logs of a variety of data types including boreholes, hand augers, and test pits. As the database amalgamates subsurface information that has previously been inaccessible, its application to scientific research is extensive.

DEVORA Linkages and Applications

Although the AVF contains ~53 volcanoes, most of them have been built over and are currently covered by the city's infrastructure. Because of this, the volume and eruptive extents of the majority of AVF volcanoes are still unknown. The NZGD can assist in filling in some of these gaps.

Determine Cone Volumes & Map Lava Flow Extents

0.5 km SW of Mt Wellington:
30 m of basalt underlain by sandstone/siltstone



Map ash-fall extents

~0.5 km S of Otara Hill:
10.5 m of AVF tuff

Order of Eruptions

Ash above or below basalt

Evidence of Changing Eruptive Style

Layers of basalt-ash-basalt-ash, etc...

Relative Ages

Material from one volcano above another, etc...

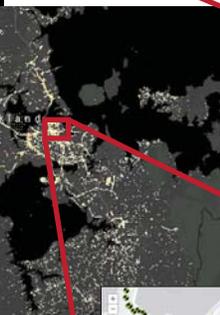
Map the Substrate

To compare with modelled hazard maps based on substrate

Search for Unknown Faults

Current Status

There are now >12,500 geotechnical logs available across the Auckland region. These including the entire Auckland Council waterbore database, as well as data from NZTA, Watercare, AC Stormwater, Kiwirail, and several other organizations.



GNS is working to digitize data across the South Auckland region as part of their Urban Mapping Project. To date, several Honors, MSc, and PhD projects are making use of the information available in the NZGD.

Access

The database can be accessed at: <https://www.nzgd.org.nz>.



Due to the monetary value of the information, the database is not entirely public. Users are required to register with the Ministry of Business in order to gain access. However, users from government agencies, consultancies, and universities will be granted access. To apply for access, simply go to the website and register as a new user. Access can take up to 3 working days to be granted.

Current Honors and MSc Projects:

Determining the eruptive history and volume of Puketutu

Sirini is working to use >100 borehole available within and around Puketutu volcano to create a 3D model showing the current state of the island. When combined with pre-1970s aerial photography (which yields information on the pre-quarried state of the volcano), her work will yield insights into the original eruption products, size and volume of a small AVF eruption.

Mapping tephra across the AVF

Caitlin is working to map out the total thicknesses of tephra across the AVF. Her work will be helpful in understanding the amount and extent of tephra that is associated with AVF eruptions. This will help inform future scenarios and eruption forecasting for the AVF

Mapping buried faults using geophysics

Using borehole information, Jill Kenny suggested that the subsurface of Auckland was riddled with unknown faults. Caleb is working to combine borehole information and several geophysical techniques to locate and constrain some of these previously unknown faults.

Acknowledgements

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