

20 September 2021

Dear Resident,

We are writing this letter to inform you about Otago Regional Council's (ORC) project to develop a natural hazards adaptation strategy for the head of Lake Wakatipu area. While we know many residents have had some contact with ORC's natural hazards project through attendance at drop-in sessions in December 2020 and April 2021, we wish to ensure everyone in the area knows about this ongoing work and has opportunity to be involved.

Why are we doing this project?

The area at the head of Lake Wakatipu is a very active landscape with a high natural hazards exposure.

Flooding and other floodplain hazards such as erosion are the most frequent natural hazard events in this area. Their occurrence is expected to increase in the future as the Dart and Rees braided rivers and delta systems continue to develop, and with climate change effects on rainfall, river flows and lake levels.

Other less frequent natural hazards could also have large impacts in this area. For example, landslides or debris flows, earthquakes and liquefaction, tsunamis triggered by a large landslide or collapse of delta sediments.

We recognise that adapting to, or preparing for, these changes and natural hazard events will require a long-term strategic approach, involving the local community and other organisations such as Queenstown Lakes District Council (QLDC), Kai Tahu and the Department of Conservation (DoC).

What are we doing?

Since mid-2019, ORC has been leading a natural hazards adaptation project for the area at the head of Lake Wakatipu, in collaboration with QLDC and involvement from our project partners, DoC and Kai Tahu. ORC has also been working on adaptation projects in other areas, including South Dunedin-Harbourside, Taieri Plains and the Clutha Delta areas.

This project at the Head of Lake Wakatipu aims to increase natural hazards resilience by developing and implementing an adaptation strategy. This strategy will likely include a mix of short, medium, and long-term (100 years and longer) adaptation options or pathways.

Our approach to developing this strategy is to build in flexibility to anticipate future uncertainty, working with the community through all stages of the project.

What has been done so far?

- Bringing together a team of expert project advisors from NIWA, University of Canterbury, and Tonkin + Taylor to ensure we have the best information and advice available
- Completion of technical investigations and reports to better understand the natural hazards and risks in this area
- Updated topographic surveys undertaken and new water-level monitoring stations installed so we have a higher detail view of topography, and lagoon and lake levels.
- Review of Civil Defence planning and developing new ORC flood response procedures for Glenorchy
- Two drop-in sessions providing an opportunity for residents of the area to:
 - Discuss with ORC, QLDC staff and natural hazards experts their concerns and experiences with natural hazards
 - Consider how the future hazards may change and how we may adapt to new challenges

What work is currently happening?

Currently, we have two technical studies going on to better understand specific natural hazards and risks:

- Flood hazard investigation to assess flooding behaviour and detailed hazard characteristics in Glenorchy
- Geotechnical investigations to assess liquefaction susceptibility and possible consequences of a major earthquake in Glenorchy

Upcoming Geotechnical Investigations

The proposed geotechnical investigations will enable the first detailed study of the sediments underlying the Glenorchy township area, and an assessment of the susceptibility of these sediments to liquefaction or lateral spreading.

Liquefaction is a natural process triggered by earthquake shaking, which causes some soils to behave like a fluid. This results in temporary loss of the soil strength and can cause significant damage to land, buildings and infrastructure, through sediment being ejected to the ground surface, and subsequent ground settlement, cracking and lateral spreading.

The field investigation phase of the geotechnical study is planned to start late September or early October 2021, and this is expected to be completed within about one week. This field work will be going ahead only at Covid-19 alert level 2 or lower, so works may be delayed if there are changes to alert levels.

The geotechnical field investigations will involve completion of 20-25 cone penetrometer tests (CPTs) and 3-4 boreholes across the township area. These will be undertaken on road reserves, with the majority located along Oban, Coll, Islay and Mull Streets (Figure 1). Investigations will be completed using truck-mounted equipment, similar to the example photos shown in Figure 2 below. We do not expect there to be any significant disruption to residents. This work is planned to be carried out fully within road reserves, so no road closures or delays are expected.

The findings of this study will help better understand what effects earthquake shaking may have on the township and its people. This will assist with planning and preparation for earthquake events and will help natural hazard adaptation planning. All investigation reports will be made available on our project webpage (listed below), and we also intend to provide opportunity to discuss these findings in-person with ORC staff and other technical experts.

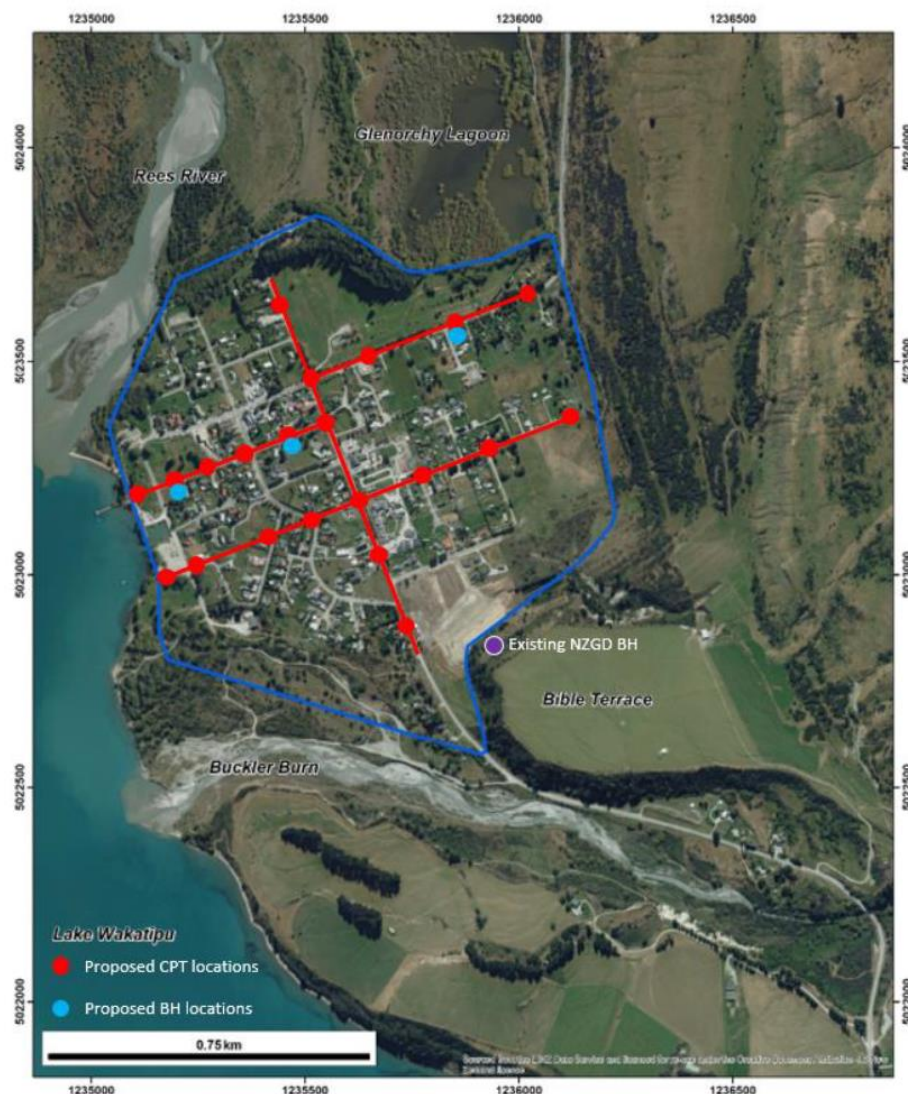


Figure 1: Map showing approximate locations of proposed geotechnical investigations.



Figure 2: Examples of CPT testing equipment (left), and a drilling rig working on a similar geotechnical investigation programme in Dunedin (right).

To find out more:

Our project website has additional project information including:

- Posters, presentations, and technical reports
- ORC's monthly project update newsletters (and a link to sign up if you wish to receive these).

Head of Lake Wakatipu project webpage:

<https://www.orc.govt.nz/holw>

To contact us

If you have any questions or would like to get in touch with us, please email us at headofthelake@orc.govt.nz or call 0800 474 082.

Yours sincerely,



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Otago Regional Council