

COMMUNITY UPDATE 14 | DECEMBER 2021 / JANUARY 2022

Kia ora koutou. This month, we are talking about a new study on the Buckler Burn alluvial fan, and updates on the two ongoing hazards studies.

What's happening now?

- **Buckler Burn alluvial fan**

Glenorchy township is situated on an alluvial fan deposited by the Buckler Burn.

A physical geography team from Massey University are currently investigating the natural processes that formed Buckler Burn alluvial fan. They are looking in detail at the sedimentary deposits in drill cores from the ongoing [Glenorchy liquefaction study](#) to do this. This investigation will help us better understand the potential alluvial fan hazards of the area such as flooding and debris deposition.

If the team finds any organic material that can be age-dated, they could also tell us the timing of events in the deposition of those sediments.

Interestingly, a [previous research project](#)¹ has estimated that Lake Wakatipu stabilised at its current height relatively recently (in geological terms), about 500 years ago. The near-surface sediments in this area may also be relatively young.

^[1] A study by Simon Cook, Sam McColl and Tim Stahl, 2013. Surveying and Dating Post-Glacial Lake Shorelines in New Zealand. Royal Institution of Chartered surveyors (RICS).



Drill core photographs showing sediments from borehole BH01, the location of this hole is shown in the aerial view of Glenorchy image below. These are examples of coarser gravels near the surface (0-3 metres depth, left), and finer sands and gravels deeper in the hole (6-9 metres depth, right).

Ongoing projects

- **Glenorchy liquefaction study**

Investigations and analysis from the cone penetrometer tests* (CPTs) and boreholes in Oban, Coll, Islay and Mull Streets are progressing well. We are aiming to finalise the findings to share with you all in early 2022.

Read more about this study of Glenorchy's liquefaction risks [here](#).

General information about earthquakes can also be found [here](#).

**Cone penetrometer tests are used to check whether soil layers are likely to liquefy under different levels of earthquake shaking.*



Aerial view of Glenorchy, showing the approximate locations of geotechnical boreholes and CPTs undertaken for the liquefaction susceptibility study.

- **Flood hazard study**

We are progressing the hydraulic modelling and flood hazard assessment.

We have now run a model to simulate the February 2020 flood event, and the modelled floodwater coverage has matched well with observations of the flood extent in Glenorchy – a good test of the model accuracy.

Next, we will model other scenarios with different river flows and lake levels, and to see what flood characteristics might look like if there was an outbreak from the Rees River.

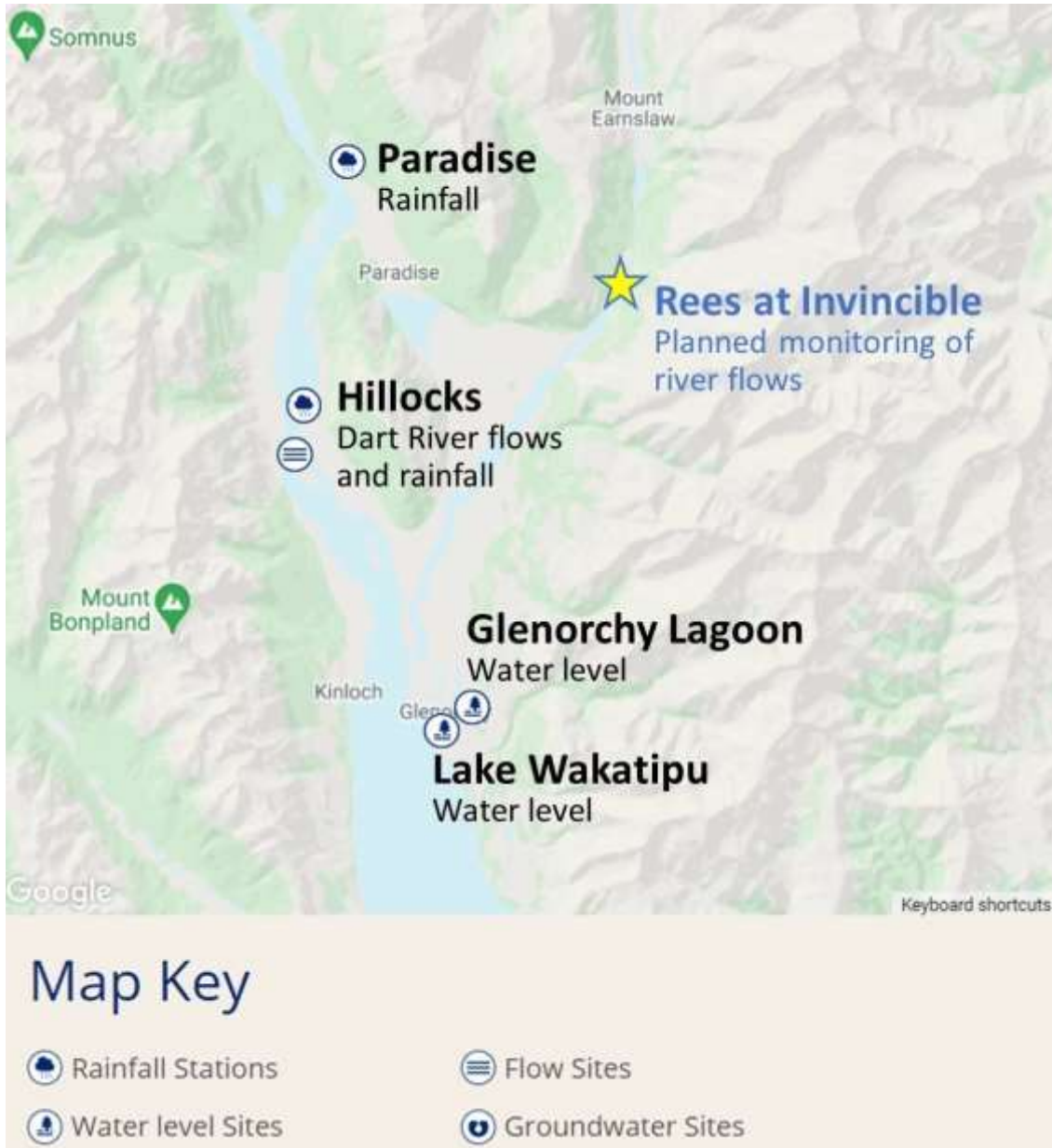


Drone image of a view upstream of Rees River, taken during our consultant's recent site visit (photo by Matt Gardner, Land River Sea Consulting Ltd).

Read the last month's update on this study [here](#).

- **Rees River flow monitoring**

In our [last newsletter](#), we wrote about installing a new river flow monitoring station in the Rees River near Invincible. We are planning to have this installed and operational by the end of 2021. We will let you know once it's up and running. Water flow data will be available in real-time on our [WaterInfo website](#) for anyone to access.



Map of the Head of Lake Wakatipu area, showing locations of water monitoring sites. Lake Wakatipu levels are also monitored by NIWA at Frankton.

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Contacts

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