Otago Regional Council

Sand bagging in Wanaka in 1999 (picture supplied by Otago Daily Times)

Flood hazard | **WANAKA**

Flooding of Lake Wanaka is a natural process resulting from extended periods of heavy rain and snowmelt in the catchment headwaters.

North-westerly fronts moving over the southern part of the South Island can cause heavy rainfall in the lake's headwaters, especially if they 'stall' and hover over the Southern Alps for days at a time.

However, it generally takes a series of these fronts to raise the lake to the point where it floods. Several large rivers and streams flow into the lake, and only one (the Clutha River/ Mata-Au) flows out.

Flooding can occur when more water is flowing into the lake than can flow out, and when there is insufficient time for levels to drop between heavy rainfall events.

The Otago Regional Council (ORC) works with the Queenstown Lakes District Council (QLDC) to provide flood warning and information services. These aim to help people prepare for, and respond to, a major flood event.

Ardmore St during November 1999

Breaking waves and debris can cause additional damage within low-lying parts of the Wanaka CBD if strong onshore winds coincide with high lake levels.

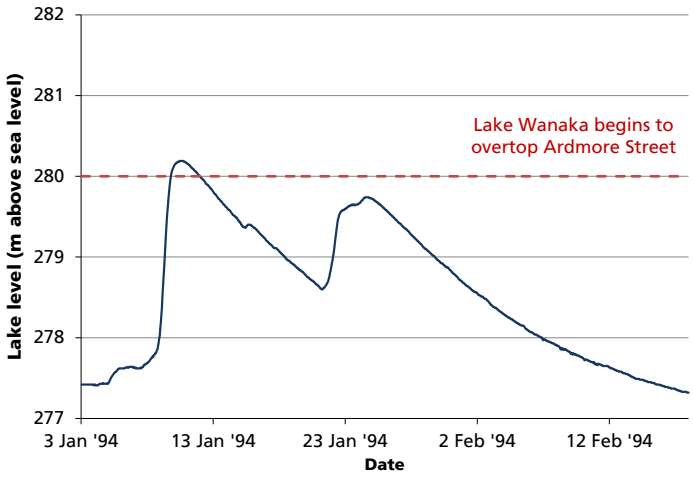
Residents should be aware that strong winds can whip up when the lake is high.

Characteristics of flood events

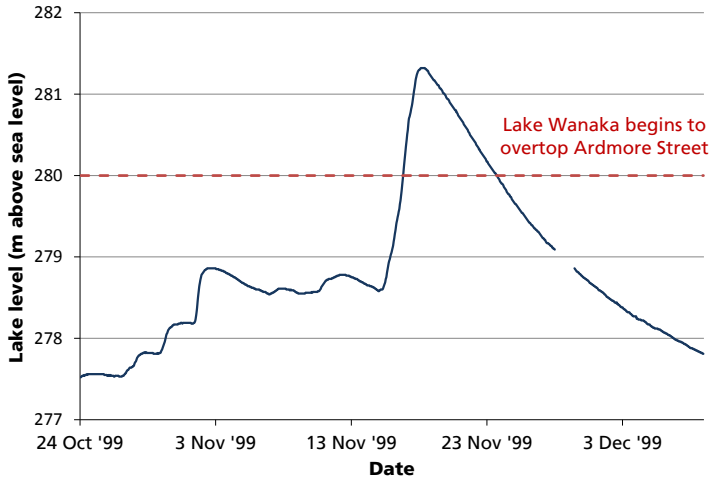
How quickly do floods occur?

Every flood is different and the speed with which they begin to affect Wanaka depends on the duration, extent, and intensity of rainfall across the entire catchment, and how high the lake is when this begins. Lake Wanaka can rise quite quickly. For example, during the January 1994 flood, it rose more than 2 metres in one day (see Figure 1 below).

Because the lake was relatively low prior to this event, only minimal flooding occurred as a result. However, when the lake is already reasonably high (due to snowmelt or previous storm events) then heavy rainfall can lift the lake to a very high level, as observed during the November 1999 flood.



Figures 1 and 2. The level of lake Wanaka during January 1994 (above) and November 1999 (below) flood events.



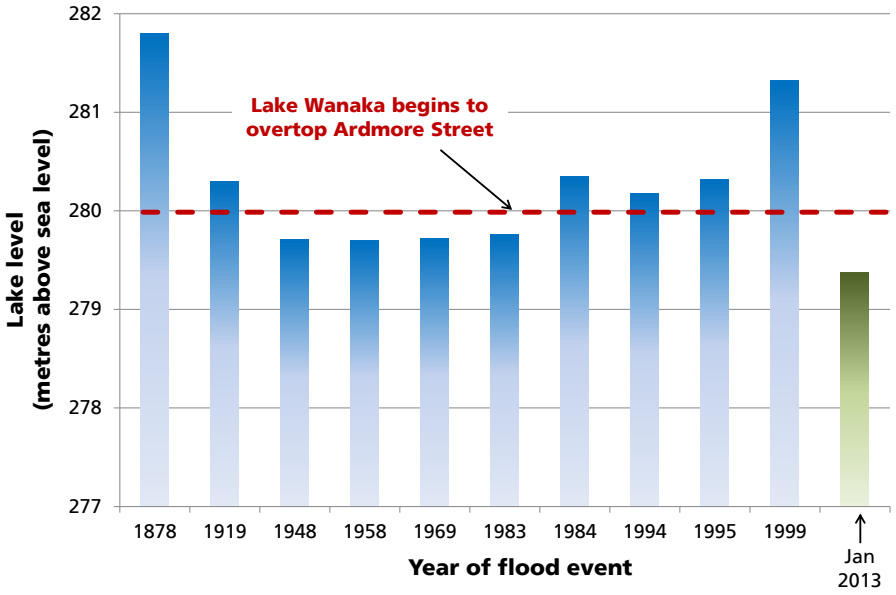
How often do floods occur?

Although there have been few major floods events during the last 10 years, there were several large events during the 1980's and 1990's. Figure 3 shows the most significant floods on record occurred in 1878 and 1999.

When do floods start to threaten the town?

When the lake reaches 280m, it begins to flow over Ardmore Street. There's a five percent chance of the lake reaching this level in any year, and during the next 10 years, there's about a 40 percent chance. Flooding of low-lying areas adjacent to Ardmore Street may occur at lower levels when water enters through the stormwater system.

Figure 3. The 10 highest lake levels since 1878, and the most recent flood event



What are the effects of flooding in Wanaka?

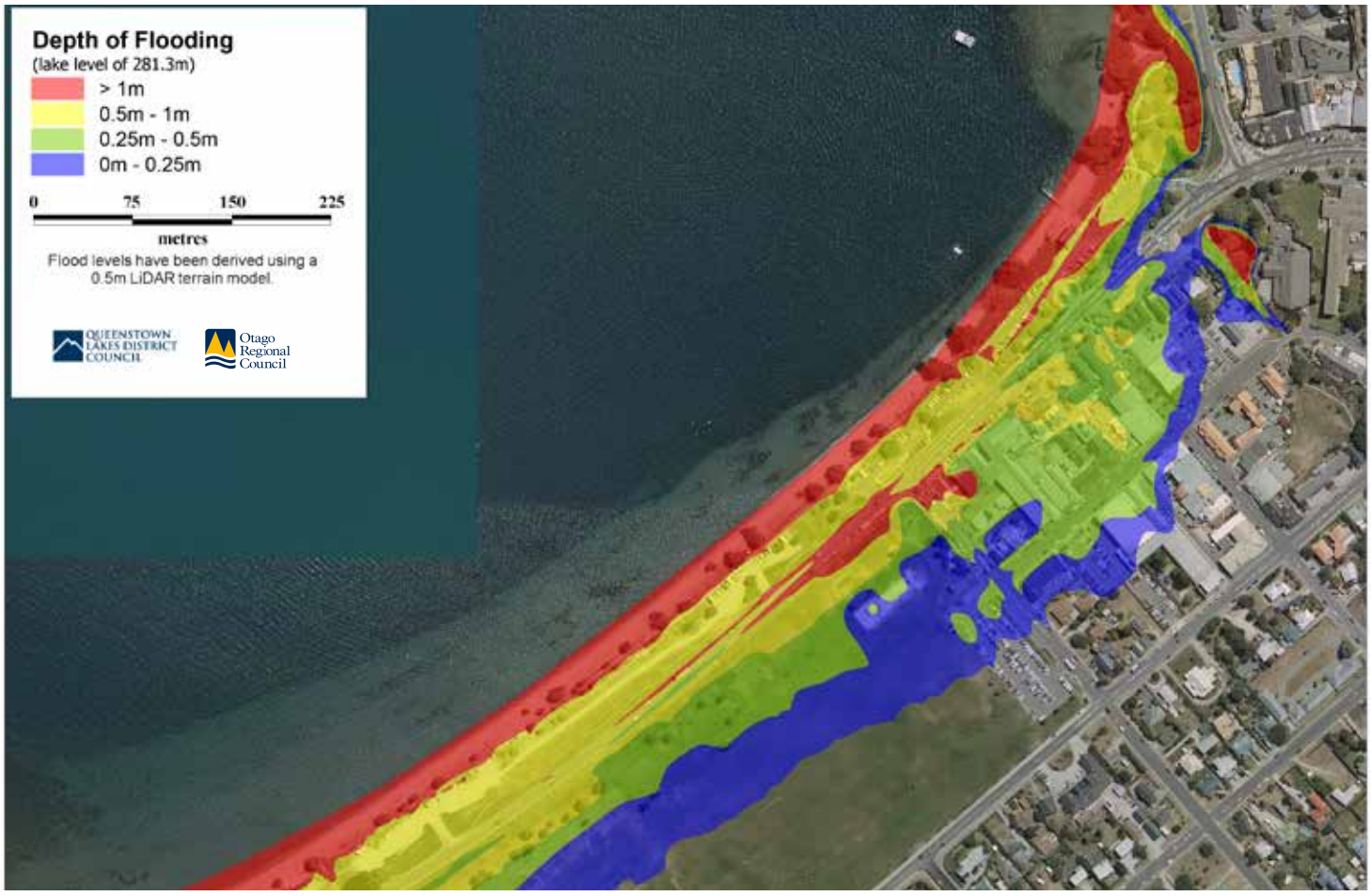
The November 1999 flood produced the second-highest lake level on record at 281.3m. The depth and extent of water in Wanaka if such an event were to occur is shown in Figure 4. Waves and surges can cause the lake to be even higher. Where the floor level of a building is lower than the level of the ground (e.g. basements, carparks), it may have a greater vulnerability to flooding.

Once floodwater enters the town, it can result in damage to buildings and other property. The nature of this damage will vary depending on the length of time properties remain under water; and may include waterlogging, the accumulation of sediment, and damage due to breaking waves and debris.

Remember that it can be a week or more before the lake drops back below flood levels.

Figure 4. Depth of flooding in the Wanaka CBD at a water level of 281.3m

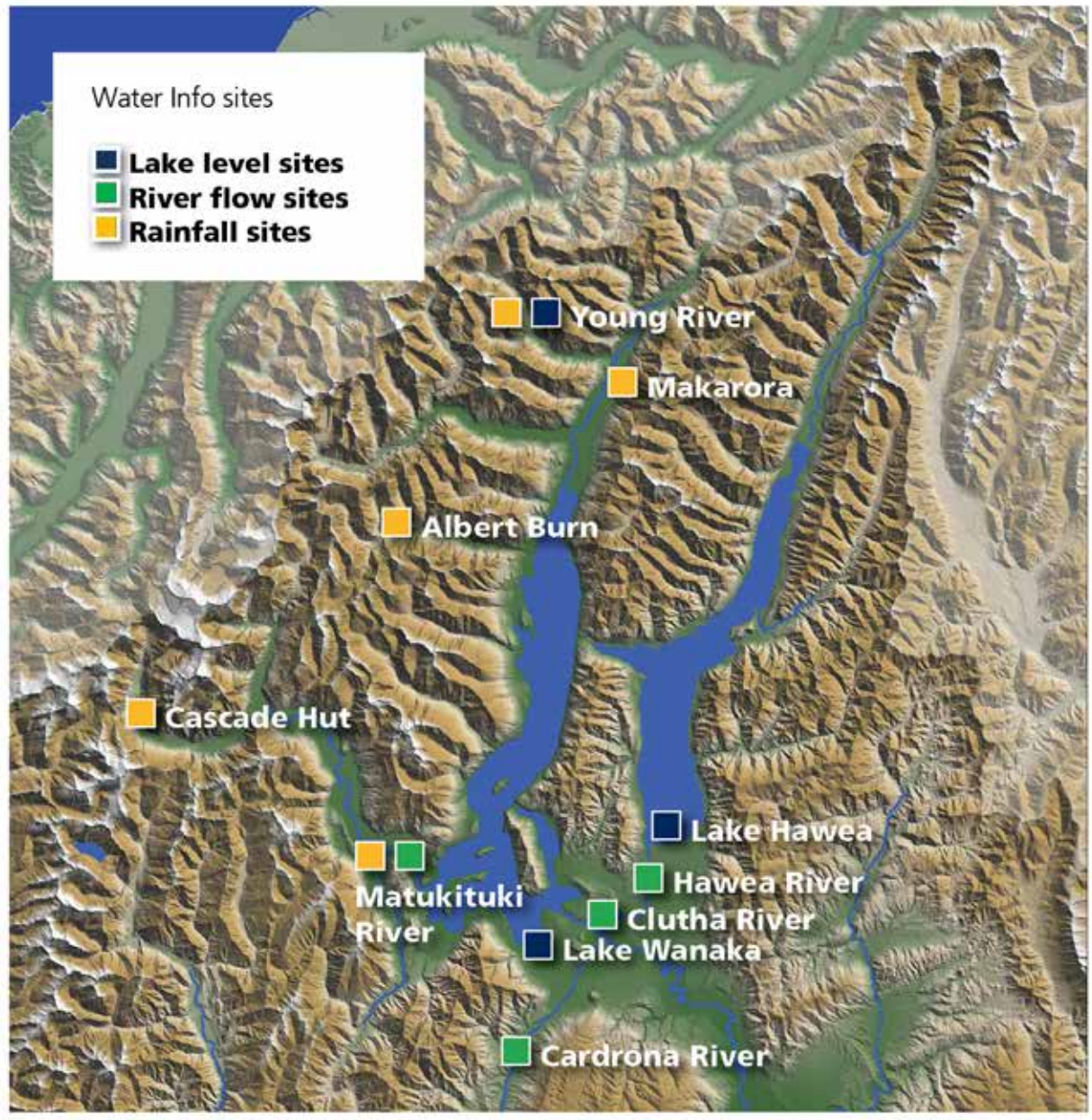
(Note that this image shows depth of flooding over the ground. Floor levels can be elevated above, or lower than the surrounding land).



Stay informed

Detailed flood and hazard information can be accessed at:
www.orc.govt.nz/waterinfo

- Using the ORC's WaterInfo service gives you the most recent river, lake, and rainfall information for the Lake Wanaka catchment. Information is updated hourly during floods. To get alerts about flood events straight to your cellphone, subscribe to ORC's flood alert service (see website on how to do this).
- For more information on a range of natural hazards in the Otago region, check out our Natural Hazards Database.



ORC also uses weather and rainfall forecasts to predict when Lake Wanaka is likely to peak, what level it's likely to reach, and how long it is expected to remain above flood levels.

These predictions are supplied to the media, and are also available through the ORC and QLDC websites
www.orc.govt.nz and **www.qldc.govt.nz**

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For more information contact:

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