Recreational Water Quality

Annual Report Card 2024

Otago Regional Council

Background

Otago Regional Council monitors 36 popular recreation sites weekly across the region between December and March each year. A map of sites is provided in **Appendix 1**.

We test the water for *Escherichia coli* (*E. coli*) at freshwater sites and enterococci at coastal sites. These bacteria are indicators of faecal contamination and risk of illness from disease-causing pathogens.

We also monitor cyanobacteria or toxic algae in both lakes and rivers. Naturally occurring toxic algae can produce cyanotoxins which pose a risk to human and animal health.

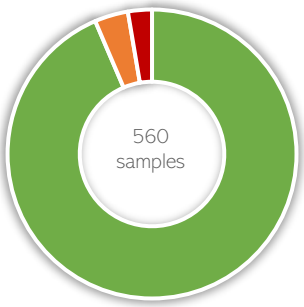
National Microbiological[1] and Cyanobacteria Guidelines[2] are used to assess the individual results and determine whether the water quality is safe for swimming.

SUITABLE FOR SWIMMING	CAUTION ADVISED	UNSUITABLE FOR SWIMMING
The monitoring result met the national water quality guidelines at the time of testing - safe to swim!	Slightly elevated result at the time of testing. Water quality generally suitable for swimming	High bacterial or algal count exceeding national guidelines at the time of testing

Results are reported on LAWA using a traffic light system and we work with Health New Zealand – Te Whatu Ora and district councils to notify the public of any health warnings.

Summer 2023-24 results

Microbial water quality (*E. coli* and enterococci)



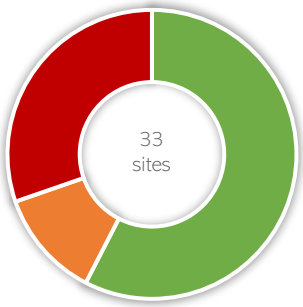
► 560 water samples were collected over the summer bathing period

► 93 % of samples found water quality was suitable for swimming at the time of sampling

► 4 % of samples exceeded the caution advised guideline due to slightly elevated bacteria levels

► 3 % of samples found water quality was unsuitable for swimming and a health warning was issued to the public

Most sites (58 %) were safe for swimming every time we tested. A further 12 % were generally safe for swimming, but 'caution was advised' after at least one sample due to slightly elevated bacteria levels.



Water quality 'unsuitable for swimming' for at least one sample at 30 % of sites – for most of these sites this was due to a single high bacteria result, typically following rainfall.

Results for individual sites are presented in **Appendix 2**.

Cyanobacteria (toxic algae)

Toxic algae blooms were observed in 4 of the 6 monitored lakes and health warnings were in place for 3-8 weeks at these sites. Toxic algae did not exceed the % coverage guidelines at any of the five river sites monitored for recreational water quality.

ORC issued warnings for an additional three river sites and one lake site where staff found high levels of toxic algae during their routine State of the Environment monitoring.

► **Lakes**	Butchers Dam, Lake Waihola, Pinders Pond, Falls Dam, Lake Tuakitoto
► **Rivers**	Manuherekia River (Ophir), Kauru River (Ewings), Waianakarua River (Browns Pump)

National Freshwater Policy

Under the National Policy Statement for Freshwater Management (2020)[3] regional councils must assess primary contact sites using the 95th percentile from five years of bathing season data to group sites into four bands or grades (Excellent, Good, Fair and Poor). Results for individual sites are presented in **Appendix 3**.

► 65 % of sites are graded Excellent or Good

► 35 % of sites are graded Poor (below the national bottom line). No sites are graded Fair

► The grades for 5 of the 17 freshwater recreational water quality sites are interim because they have been monitored for less than 5 years

Challenges & opportunities

When it rains contaminants are carried from rural and urban land to our waterways in run-off and stormwater. This means that even sites with good water quality can sometimes have high bacteria levels after heavy rainfall. For some sites other factors (both natural and as a result of human activities) can contribute to high levels of bacteria. In the 2023-24 monitoring period three sites had elevated bacteria levels more often than others (>40 % of samples).

► **Kākanui Estuary**	Low flows and prevailing weather conditions during the summer meant the estuary mouth was often closed and reduced the flushing of contaminants from the estuary. Faecal source tracking identified ruminant (e.g., cows, sheep) and avian (gull) sources of bacteria.
► **Waianakarua River**	Monitoring at Graves Dam has found frequent high levels of bacteria associated with upstream gull colonies. Faecal source tracking has also identified ruminant sources.
► **Manuherekia River**	High bacteria concentration at the Shaky Bridge site were associated with rainfall and low flows. In low flow conditions irrigation associated waters can impact water quality. Faecal source tracking has found ruminant and avian sources contribute to high bacteria levels at this site.

The warm, stable weather experienced for extended periods in some parts of Otago this summer were ideal conditions for **toxic algal blooms** to occur. While toxic algae are naturally occurring, elevated nutrient and sediment inputs can further promote their growth. However, blooms can also occur in rivers with relatively good water quality so it challenging to predict where blooms will occur and to monitor trends.

We can't monitor all sites where toxic algae occur, so the programme includes targeted public awareness communications to improve knowledge about the risks and how to identify blooms.

Ongoing improvements & new technologies

ORC is exploring new monitoring solutions that could provide real-time data about recreational water quality. This will enable us to quickly communicate health risks to the public, without waiting for results back from a lab. The use of DNA analysis for Faecal Source Tracking is also helping us to identify sources of faecal contamination.

We regularly review our programme to ensure we have good coverage of popular sites and potential risks across Otago. This year ORC added two new sites to the programme (Kawarau River and Arrow River).

Informing our communities

Keeping you and your whānau safe from illness when swimming is all about understanding the risks and knowing how to make good choices about where and when to swim.

We continue to work with Health New Zealand - Te Whatu Ora and other agencies to raise public awareness about recreational water quality and provide information and data through LAWA, the ORC website and social media.

Want to learn more?

Find factsheets, weekly monitoring results, long-term grades & health warnings for routinely monitored sites at **LAWA www.lawa.org.nz**

Additional toxic algae warnings are listed on the Toxic Algae Notifications page on our website **www.orc.govt.nz/toxic algae**

Contact Have a question? Get in touch… science.enquiries@orc.govt.nz

References

[1] Ministry for the Environment and Ministry of Health (2003). Microbiological water quality guidelines for marine and freshwater recreational areas. Ministry for the Environment, Wellington.

[2] Ministry for the Environment and Ministry of Health (2009). New Zealand Guidelines for Cyanobacteria in Recreational Fresh Waters – Interim Guidelines. Prepared for the Ministry for the Environment and the Ministry of Health by SA Wood, DP Hamilton, WJ Paul, KA Safi and WM Williamson. Wellington: Ministry for the Environment

[3] Ministry for the Environment (2017). National Policy Statement for Freshwater Management 2020 (amended January 2024). Ministry for the Environment, Wellington

Appendix 1: Monitored primary contact sites in Otago

Appendix 2: 2023-24 Recreational water quality monitoring results by site (and Freshwater Management Unit)

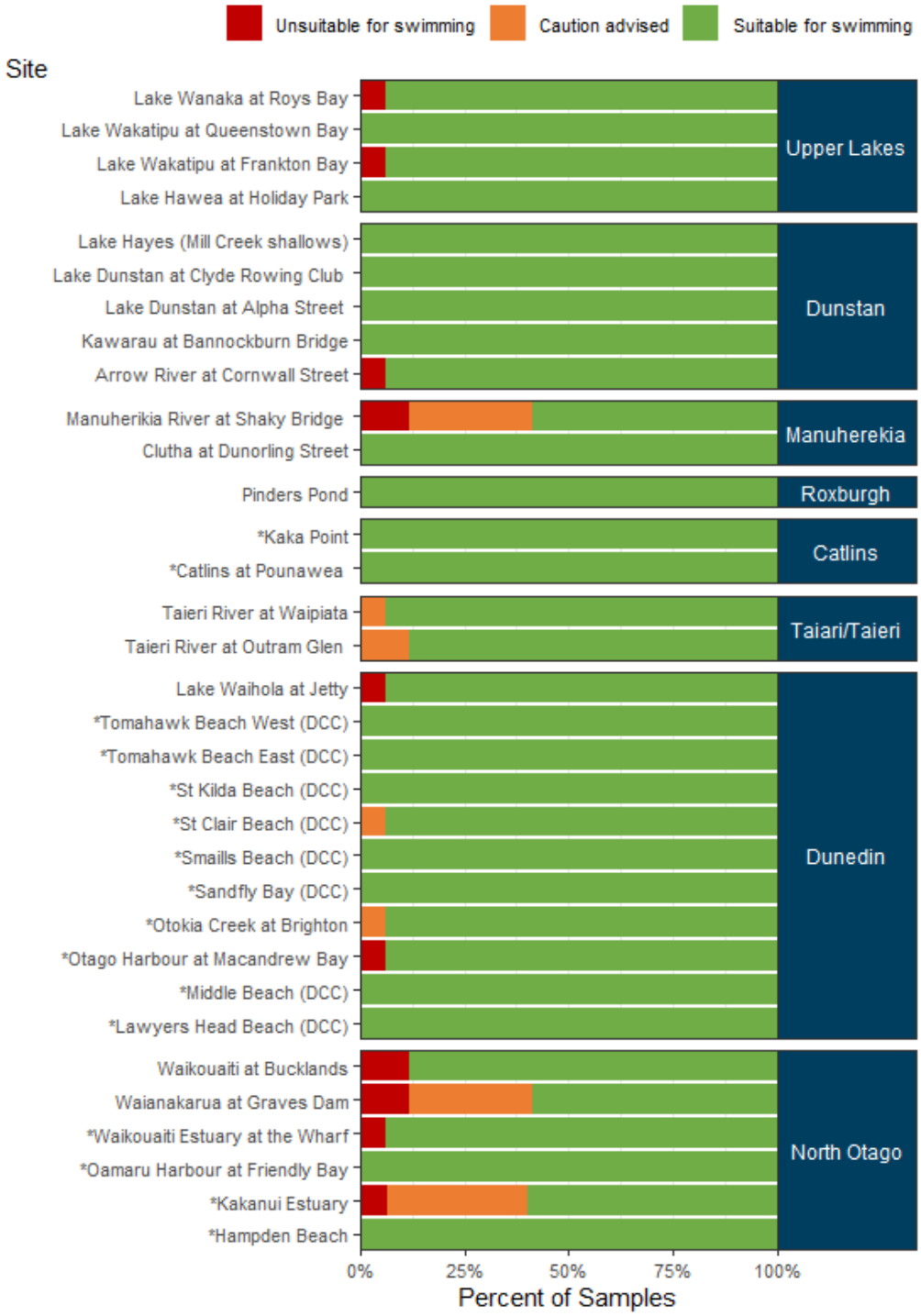


Figure 1. Percentage of samples which met surveillance (suitable for swimming), alert (caution advised) and action (unsuitable for swimming) guidelines for sites monitored weekly across Otago (grouped by Freshwater Management Unit FMU/Rohe) in the 2023-24 bathing season (Dec-Mar). For freshwater sites *E. coli* concentrations were assessed; for coastal sites (marked *) enterococci concentrations were assessed.

Appendix 3: Long-term grades for recreational water quality monitoring sites (2019-2024)

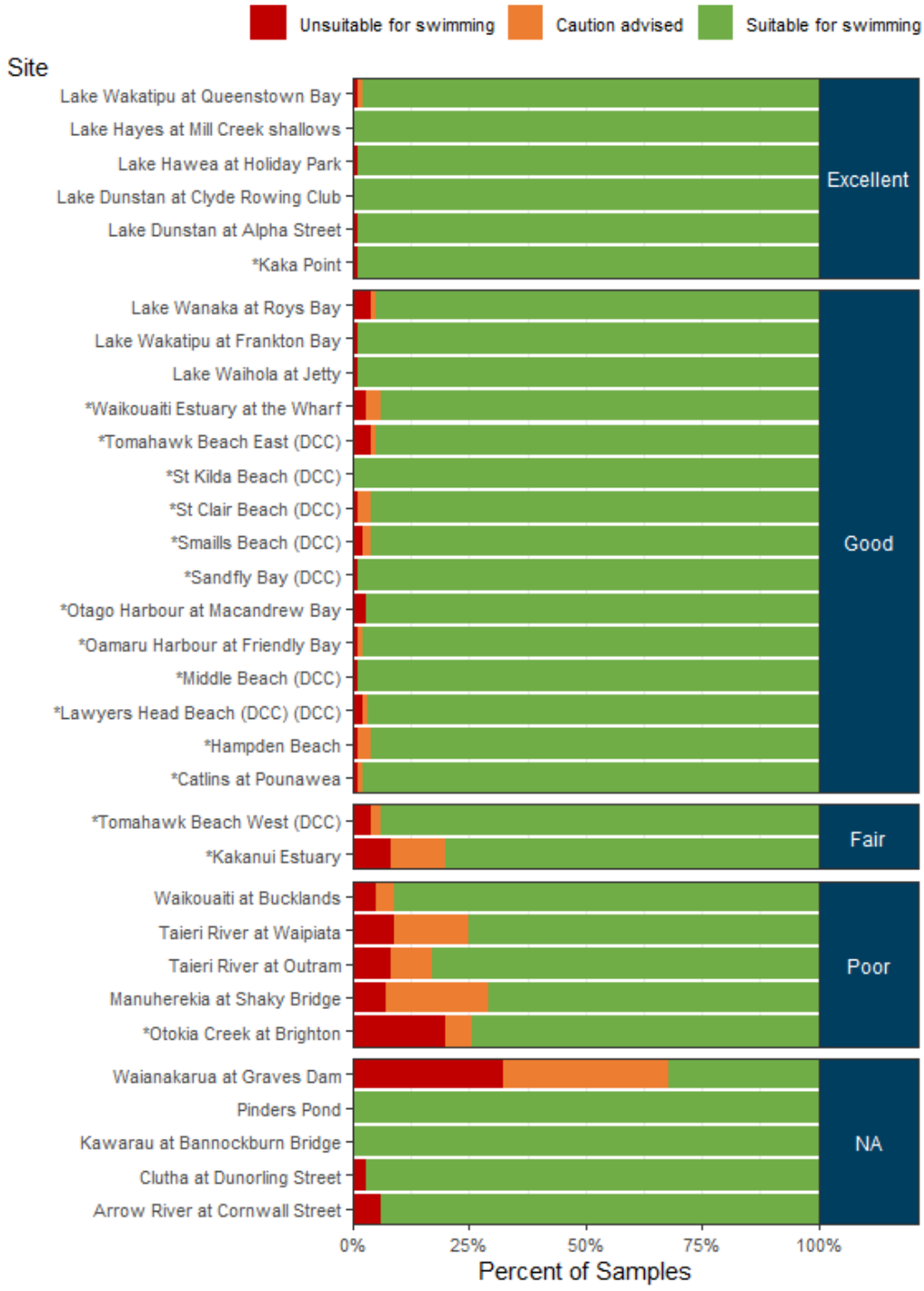


Figure 2. Percentage of samples over the past 5 years which met surveillance (suitable for swimming), alert (caution advised) and action (unsuitable for swimming) guidelines for primary contact sites monitored weekly across Otago during the bathing season (Dec-Mar), grouped by the associated long-term grades (blue panels). Long-term grades are based on hazen 95th percentile results from 5 seasons of data (2019-20 to 2023-24). For freshwater sites E. coli concentrations were assessed; for coastal sites (marked *) enterococci concentrations were assessed. Sites grouped in the 'NA' panel have been monitored for less than 5-years and therefore a long-term grade has not been applied.