Recreational Water Quality

Annual Report Card 2025

Otago Regional Council

Can I swim here?

Otago Regional Council monitors 35 popular recreation sites across the region weekly between December and March.

Samples are tested for *Escherichia coli* (*E. coli*) at 16 freshwater sites and enterococci at 16 coastal sites. These bacteria are indicators of faecal contamination and risk of illness from disease-causing pathogens.

Cyanobacteria or toxic algae risk is also monitored at some of these sites (three lakes and five rivers), as well as a further three lakes sites monitored for cyanobacteria only. Naturally occurring toxic algae can produce cyanotoxins which pose a risk to human and animal health.

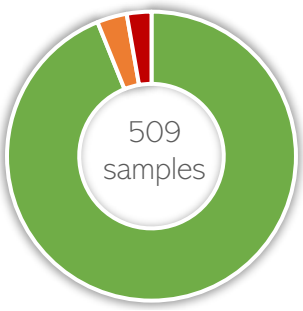
National Microbiological[1] and Cyanobacteria Guidelines[2] are used to assess the results and determine whether the water quality is safe for swimming.

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 are notified to Te Whatu Ora – Health NZ and district councils when public health warnings are required.

Summer 2024-25 results

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



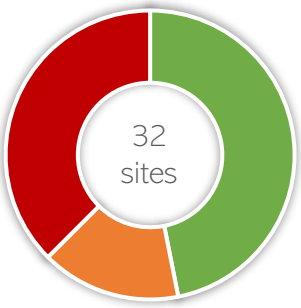
► 509 water samples were collected over the summer monitoring period

► 94 % of samples found water quality was suitable for swimming at the time of sampling

► 3 % 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

► At 15 sites all samples met the suitable for swimming guidelines. A further five sites were generally safe for swimming but had at least one result with slightly elevated bacteria levels (caution advised).



► Water quality was unsuitable for swimming at 12 sites – for most of these sites this meant single high bacteria result typically following rainfall in the catchment.

Results for each site are presented in **Appendix 1.**

Cyanobacteria (toxic algae)

Toxic algal blooms were observed in three of the six monitored lakes (e.g. Figure 1) and health warnings were issued for these sites. A permanent warning sign was installed at Butchers Dam as in recent years this site has been prone to persistent toxic algal blooms throughout the summer months (Figure 2). Toxic algae did not exceed the % coverage guidelines at any of the five river sites monitored for recreational water quality.

Warnings were issued for an additional three river sites and one lake site where high levels of toxic algae were identified during other routine monitoring activities:

▶ **Lakes**	Butchers Dam, Lake Waihola, Upper Tomahawk Lagoon, Lake Johnson, Aronui Dam
▶ **Rivers**	Manuherekia River (multiple sites), Dunstan Creek, Cardrona River

Figure 1. Cyanobacteria (toxic algae) bloom at Lake Waihola, December 2025

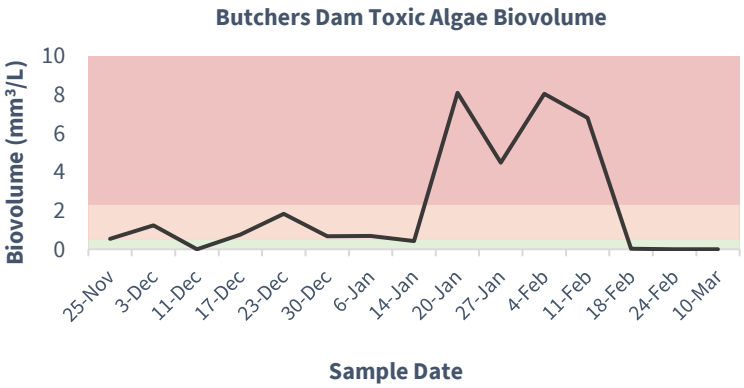


Figure 2. Biovolume (mm³/L) of toxic algae from weekly samples at Butchers Dam (near Alexandra) during the 2024-25 summer monitoring period. Action, Alert and Surveillance alert level thresholds are shown by the coloured bands.

What causes high bacteria levels?

Faecal indicator bacteria like *E. coli* live in the gut of warm-blooded animals and are introduced to the environment through animal droppings, effluent, wastewater discharges and stormwater run-off. When it rains contaminants from rural and urban land are carried to our waterways in run-off and stormwater. This means that even sites with good water quality can have high bacteria levels at times, following heavy rainfall. For some sites other factors can contribute to more frequent exceedances of bacteria guidelines. These may be both natural sources e.g. gull colonies, and as a result of human activities e.g. wastewater discharges or animal agriculture.

Most instances where high bacteria was recorded was associated with rainfall in the 72 hrs prior to sampling (Table 1). There was limited rainfall in the 72 hrs preceding the high bacteria result at

Taieri River at Outram (January 6) however the rainfall data shows over 10 mm just outside this window (within 79 hrs).

Exceedances at Tomahawk Beach on January 13 and Waikouaiti River at Bucklands on January 20 were not associated with rainfall. High bacteria levels are relatively uncommon at these sites (i.e. ≤5 % samples in the last five years). Faecal source tracking has previously identified ruminant sources of *E. coli* for the Waikouaiti River. Tomahawk Beach is monitored as part of the consent requirements for the Tahuna Wastewater Treatment Plant and it is thought theses results were likely influenced by the prevailing wind direction and large swell on at the time of sampling.

Table 1. Microbial water quality results exceeding the 'action/unsuitable for swimming' guideline (E. coli (freshwater) 540 MPN/100 mL; Enterococci (coastal) 280 MPN/100 mL) and preceding rainfall (up to 72 hrs) for monitored primary contact sites in the 2024-25 bathing period.

Date	Site	Count (MPN/100 mL)		Rainfall (mm)		
		E. coli	Enterococci	00-24 hr	25-48 hr	49-72 hr
9/12/2024	Otago Harbour at Macandrew Bay		594	0.2	4	1.2
16/12/2024	Lawyers Head Beach		580	0.6	8.6	0.2
23/12/2024	Otokia Creek at Bright Rd Bridge		2380	1	7.4	19.2
30/12/2024	Lake Hawea at Swimming Embayment	980		4	0.5	0
30/12/2024	Otokia Creek at Brighton Rd Bridge		1872	14	0	0
6/01/2025	Taieri River at Outram	1300		0	1.5	1.5
13/01/2025	Tomahawk Beach (East)		360	0	0	2
13/01/2025	Tomahawk Beach (West)		600	0	0	2
20/01/2025	Waikouaiti River at Bucklands	613		0	0	0
27/01/2025	Otokia Creek at Brighton		295	5.8	0.8	0
27/01/2025	Taieri River at Waipiata	980		13.8	0	0
27/01/2025	Clutha River at Dunorling St	649		13	0	0
27/01/2025	Manuherekia River at Shaky Bridge	1300		13	0	0
3/03/2025	Kakanui Estuary		650	3.2	0	0

Long-term Grades

Freshwater Sites: National Policy Statement-Freshwater Management (NPS-FM)

Under the NPS-FM (2020)[3] regional councils are required to assess primary contact sites using the 95th percentile from five years of bathing season monitoring data to categorise sites into four bands or grades (Excellent, Good, Fair and Poor). For the 2020-2025 period:

► Most sites (67 %) are graded Excellent or Good

► Four sites are graded Poor (below the national bottom line)

► For three of the 15 freshwater recreational water quality sites grades are considered interim because the data record is < 5 years.

Coastal Sites: Microbiological Assessment Categories (MACs)

For coastal sites MAC grades are similarly calculated based on five years of monitoring data to give an indication of general water quality over an extended period. For the 2020-2025 period:

- ► Most sites (88 %) are graded Excellent or Good
- ► One site is graded Fair and one site is graded Poor

Long-term grades and the percentage of samples exceeding guidelines are presented in **Appendix 2**.

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**

For information about water quality monitoring in Otago and to access previous reports see our website **www.orc.govt.nz Reports and publications – water quality**

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 –Recreational water quality 2024-25 monitoring results for primary contact sites in Otago by Freshwater Management Unit (FMU)

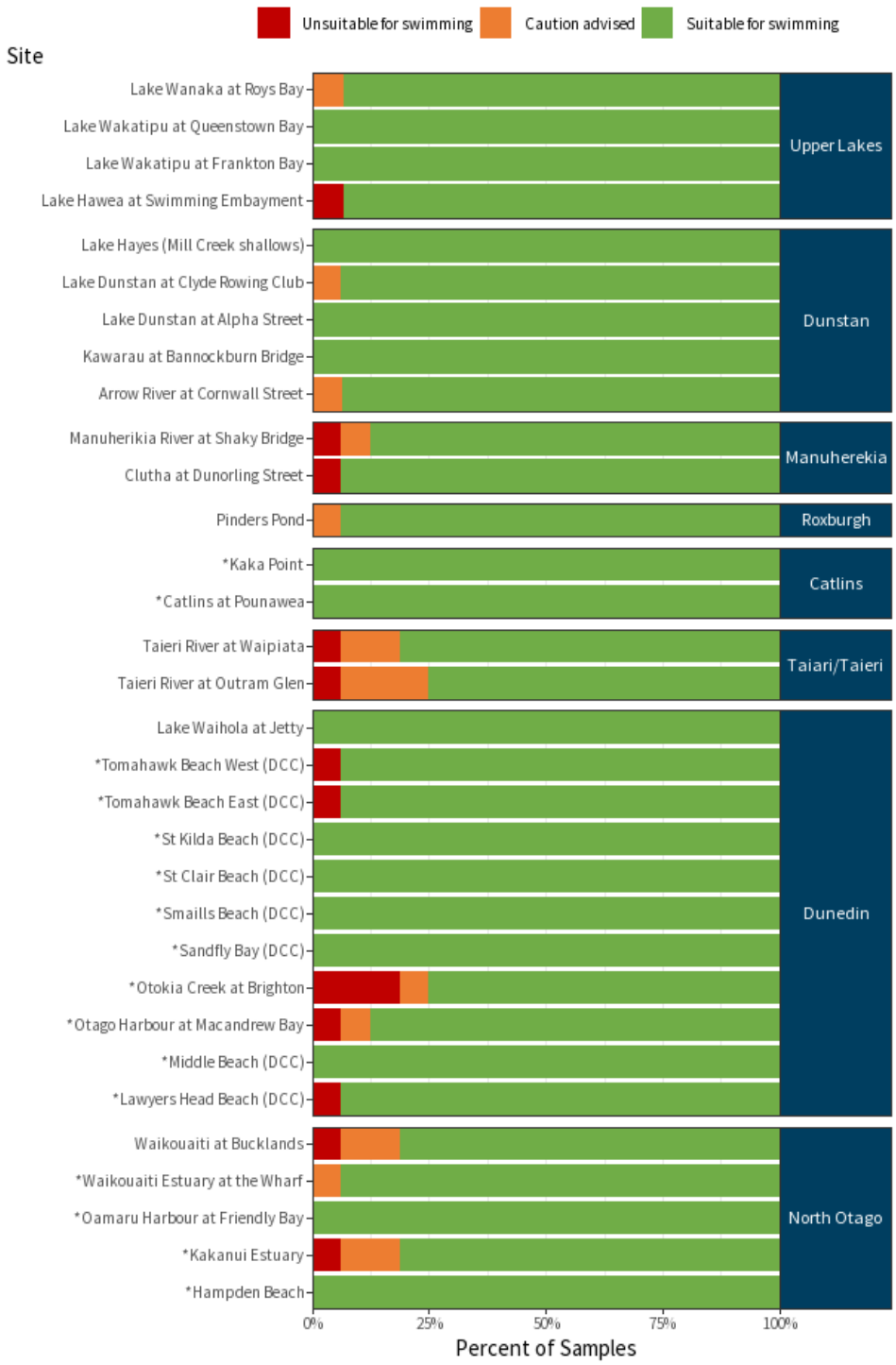


*Figure 3 Percentage of samples which met surveillance (suitable for swimming), alert (caution advised) and action (unsuitable for swimming) guidelines for primary contact sites monitored weekly across Otago (grouped by Freshwater Management Unit FMU/Rohe) in the 2024-2025 bathing season. For freshwater sites E. coli concentrations were assessed; for coastal sites (marked *) Enterococci concentrations were assessed.*

Appendix 2 – Long-term (five-year) recreational water quality monitoring results for primary contact sites in Otago

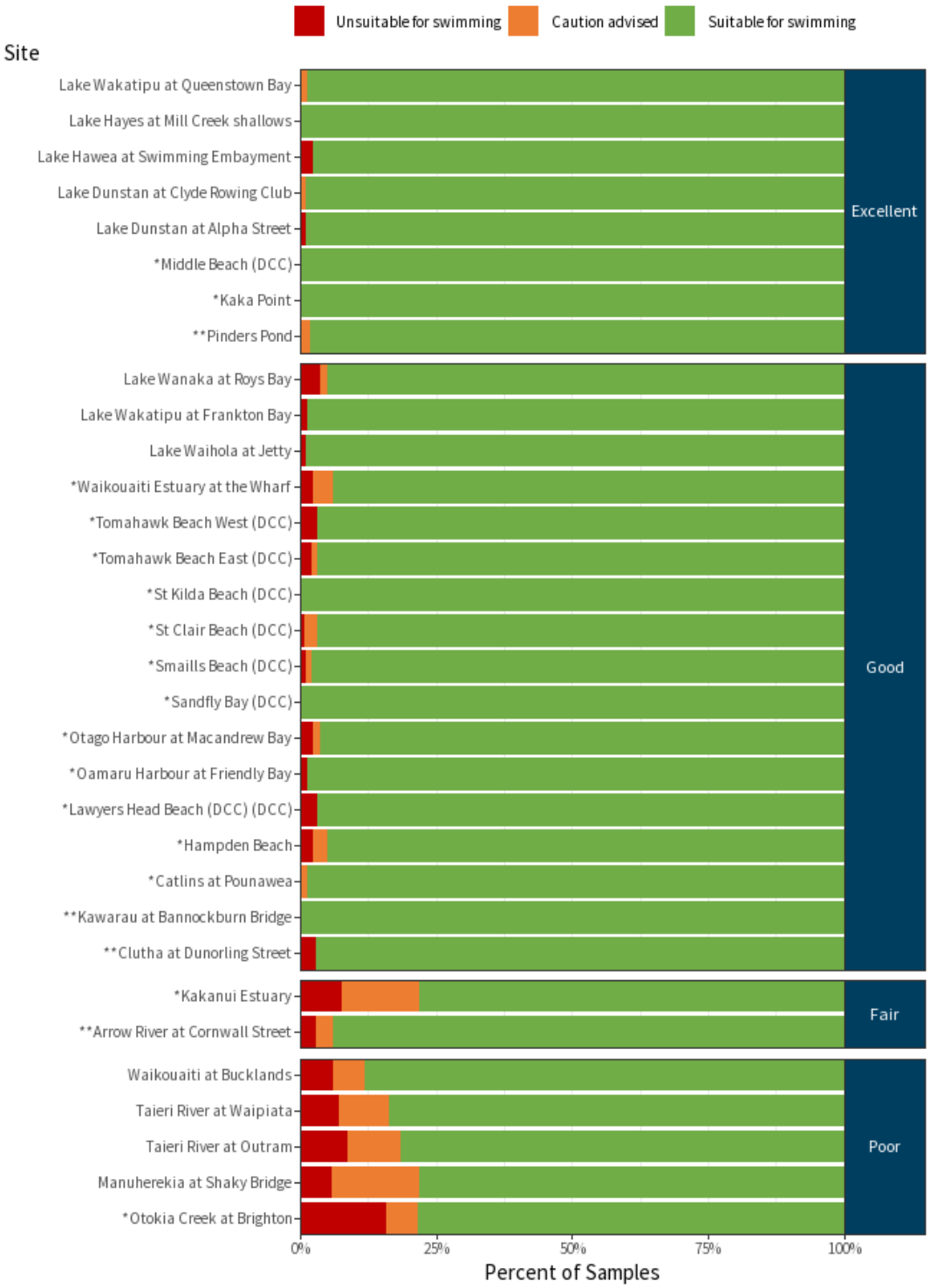


*Figure 4 Percentage of samples over the past five years which met surveillance (suitable for swimming), alert (caution advised) and action (unsuitable for swimming) guidelines for primary contact sites monitored weekly across Otago, grouped by the associated long-term grades (blue panels). Long-term grades are based on hazen 95th percentile results from five seasons of data (2020-21 to 2024-25). For freshwater sites E. coli concentrations were assessed; for coastal sites (marked *) Enterococci concentrations were assessed. Grades are interim for sites monitored for less than five years (**)*