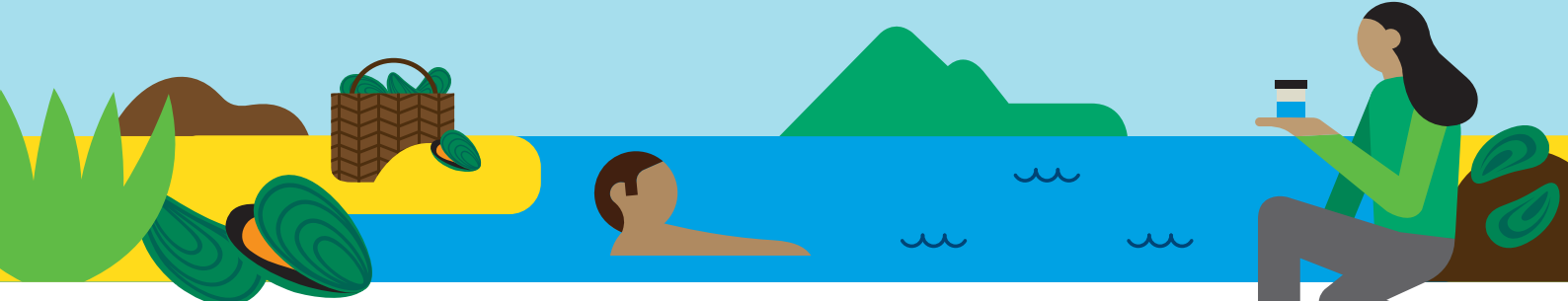




'Swim-ability' and shellfish risk in the Bay of Plenty



From late October 2022 to the end of March 2023, Toi Moana Bay of Plenty Regional Council collected weekly water samples from 68 popular coastal, river and lake recreation sites and 11 shellfish harvesting sites around the region.

The samples were checked in a laboratory for bacteria concentrations that are indicative of organisms that can cause infections or make people sick. The main bacteria indicators are *Escherichia coli* (*E. coli*) in fresh water, Enterococci in sea water, or the broader faecal coliform bacterial group for shellfish beds. We also check for toxin-producing algae (cyanobacteria) that can be harmful to people.

Our sampling results are sent to Toi Te Ora Public Health who are responsible for issuing health warnings if unsafe levels of bacteria or toxic algae are detected. Current warnings and health risk advice can be found at toiteora.govt.nz/health-warnings Local district or city councils are responsible for putting warning signage up, if needed, in locations that have a health warning in place.



We regularly monitor our waterways to help keep our communities safe.

This data is also shared with LAWA, who rates the water's 'swim-ability' using a traffic light system – green means it is suitable for swimming, yellow means caution is advised and red means it's unsuitable for swimming. Each week, their website is updated to reflect the most recent water sample result.

You can view these results by visiting: www.lawa.org.nz/swim

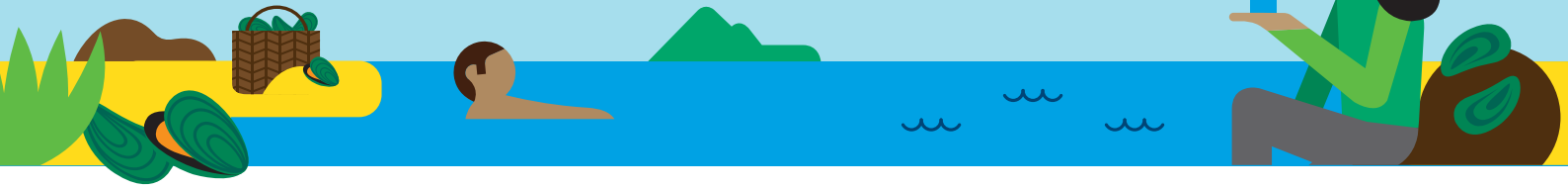


Look before you leap



Water quality can change between sampling visits. Regardless of the latest water sampling result and health warning status, you should always:

- Avoid swimming for at least 2 - 3 days after heavy or prolonged rain. Land run-off often contains contaminants that take time to settle out or flush away.
- Avoid swimming near potential contamination sources such as flocks of birds, stormwater or wastewater outlets.
- Check that the water looks clean and clear – if the water looks unusually green, or you can't see your toes in calf-deep water, it's best to swim somewhere else.



'Swim-ability' for the 2022/23 monitoring season

Bathing and shellfish monitoring sites



Figure 1: Suitability for recreation grades for Bay of Plenty contact recreation monitoring sites 2022/23.

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'Swim-ability' and shellfish risk in the Bay of Plenty



Where does bacteria come from?

E. coli and *Enterococci* bacteria are both commonly found in the guts of warm-blooded mammals (including people) and birds. *Enterococci* is also found in the guts of fish and reptiles; it survives longer in sea water than *E. coli* bacteria does.

The detection of either bacteria is an indicator that a waterway is contaminated with faecal matter, which also carries other harmful

bacteria and viruses. The higher the bacteria concentration, the greater the health risks to people that come into contact with or eat shellfish taken from the water.

Faecal matter can enter a waterway in many ways including through direct excretion by animals or humans, sewer overflows, septic tank seepage, or rain run-off from the land.

River and stream monitoring site results

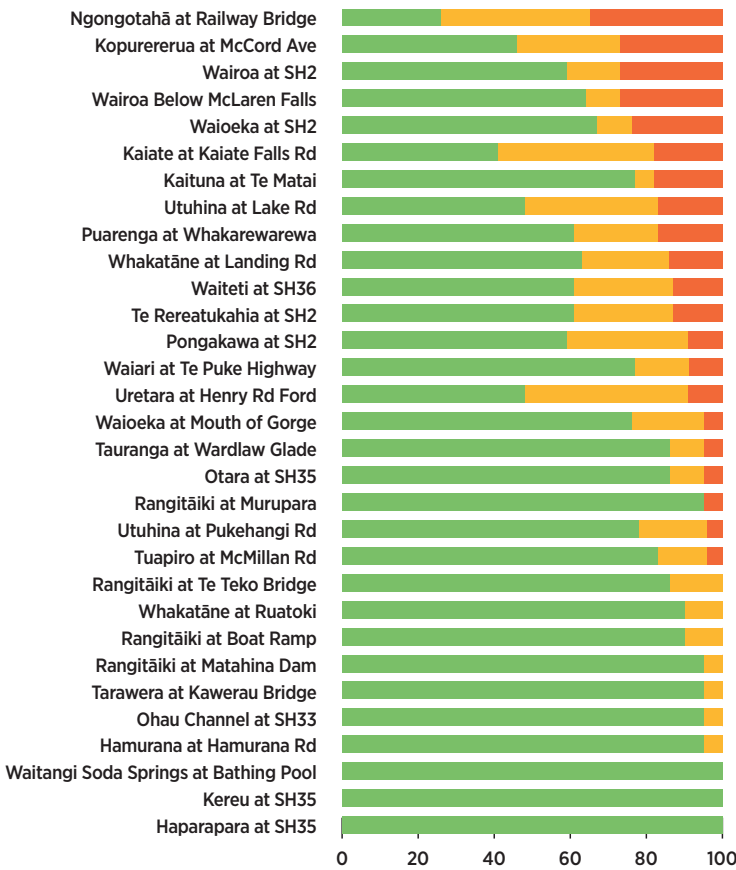


Figure 2: Percentage of samples from river and stream swimming sites that can be classed as safe, a potential health risk, or unsafe over the 2022/23 bathing season.

Safe for swimming (<260 cfu/100ml)
 Potential health risk (>260 and <550 cfu/100ml)
 Unsafe for swimming (>550 cfu/100ml)

Lake monitoring site results

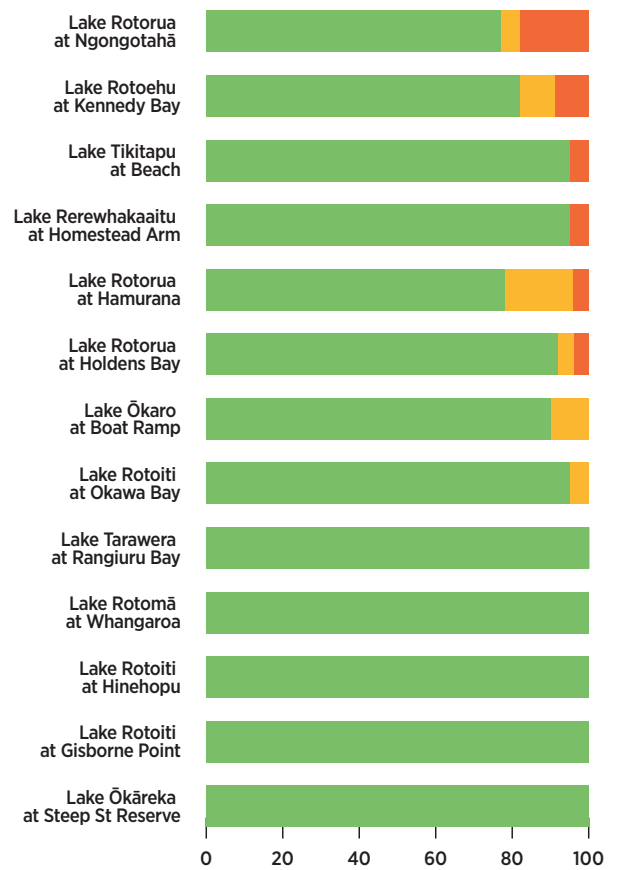


Figure 3: Percentage of samples from lake swimming sites that can be classed as safe, a potential health risk, or unsafe over the 2022/23 bathing season.

Safe for swimming (<260 cfu/100ml)
 Potential health risk (>260 and <550 cfu/100ml)
 Unsafe for swimming (>550 cfu/100ml)

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'Swim-ability' and shellfish risk in the Bay of Plenty



Coastal beach monitoring site results

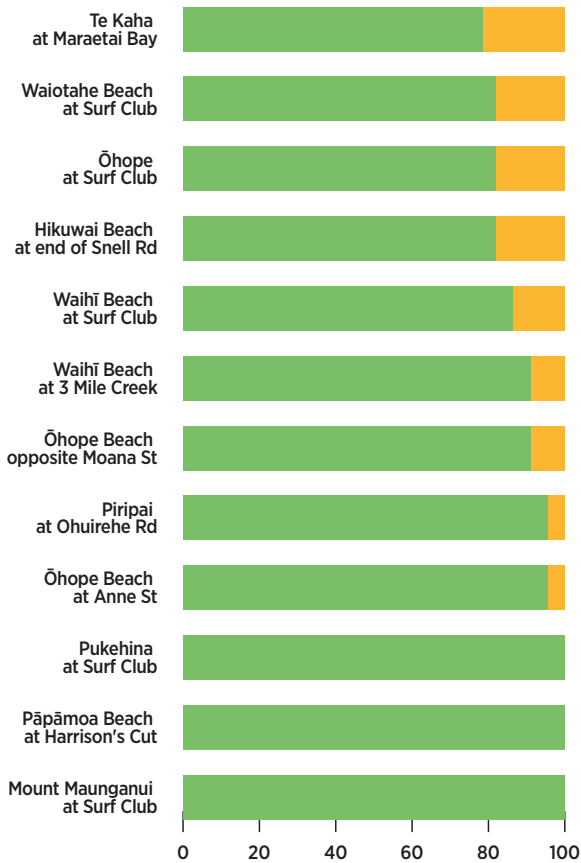


Figure 4: Percentage of samples from coastal beach swimming sites that can be classed as safe, a potential health risk or unsafe over the 2022/23 bathing season.

■ Safe for swimming (<140 cfu/100ml)
■ Potential health risk (>140 cfu/100ml)
■ Unsafe for swimming (>280 cfu/100ml (2 consecutive))

Estuarine or harbour monitoring site results

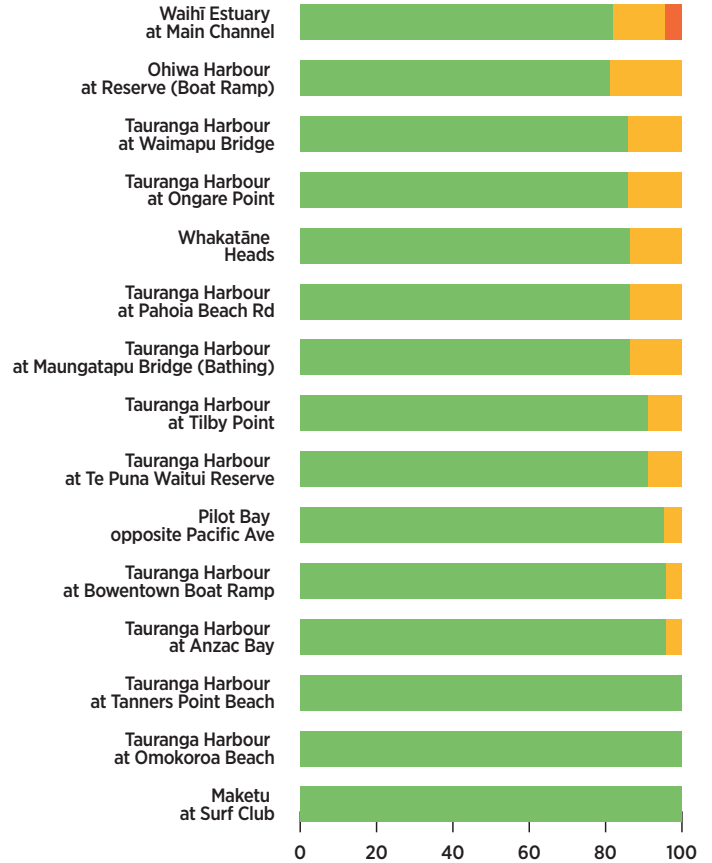


Figure 5: Percentage of samples from estuarine or harbour swimming sites that can be classed as safe, a potential health risk or unsafe over the 2022/23 bathing season.

■ Safe for swimming (<140 cfu/100ml)
■ Potential health risk (>140 cfu/100ml)
■ Unsafe for swimming (>280 cfu/100ml (2 consecutive))

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'Swim-ability' and shellfish risk in the Bay of Plenty



Where does toxic algae come from?

Cyanobacteria (blue-green algae) are naturally found in lakes and rivers in low concentrations. When water temperatures rise and excess nutrients are present, these algae can form blooms and even produce toxins (called cyanotoxins). Cyanotoxins can pose a serious health risk to people and animals that drink, swim or wade in the water.

Regional Council's cyanobacteria monitoring programme has been designed to monitor risk at 13 representative sites that our community frequent over the summer period. Each site is monitored weekly and the volume of cyanobacteria cells present in the water is calculated. The volume of cells is directly related to community risk, which is reported to Toi Te Ora Public Health at the end of each week. Toi Te Ora Public Health reviews the results and issues health warnings to ensure our community is informed of any risk.

Cyanobacteria monitoring site results

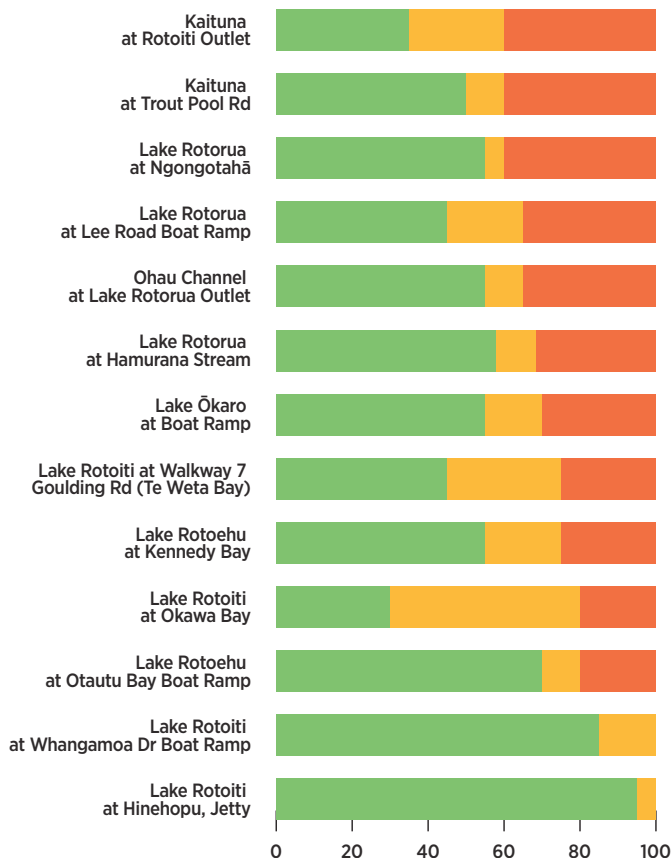


Figure 6: Percentage of samples from cyanobacteria monitoring sites that can be classed as safe, a potential health risk or unsafe, over the 2022/23 bathing season.

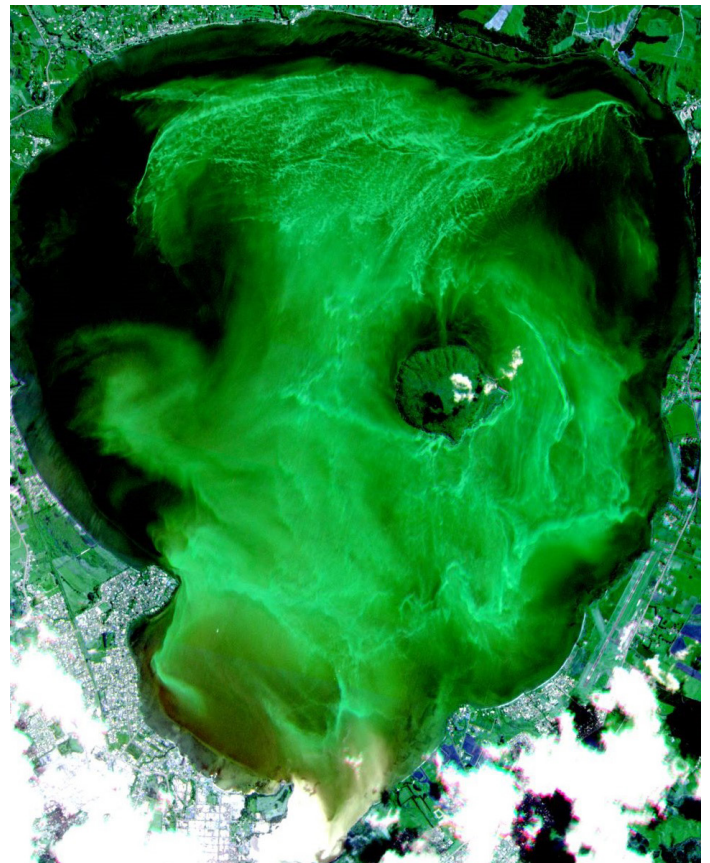
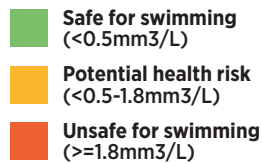


Figure 7: Satellite image of a cyanobacteria bloom in Lake Rotorua (October 2020).

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'Swim-ability' and shellfish risk in the Bay of Plenty



Bacteria in shellfish

We also test for faecal coliforms at 11 popular shellfish areas, regarded by communities as desirable shellfish gathering locations. Faecal coliforms (FC) are used as the indicator because they form a relationship with pathogenic bacteria, viruses, and protozoa. This indicator is also used by the shellfish export industry.

The guidelines (NZMWQG) for safe shellfish consumption are:

- The median FC threshold should not exceed 14cfu/100 ml.
- The 90th percentile threshold, no more than 10% of samples should exceed 43cfu/100 ml.

We supply our results to Toi Te Ora Public Health who issue health warnings against gathering shellfish when high faecal coliform levels in the water create a health risk to people that eat shellfish gathered from those areas.

This is different to paralytic shellfish poisoning and other shellfish toxins, which Ministry for Primary Industry monitors and issues health warnings for.

Recreational shellfish bacteriological guideline metrics

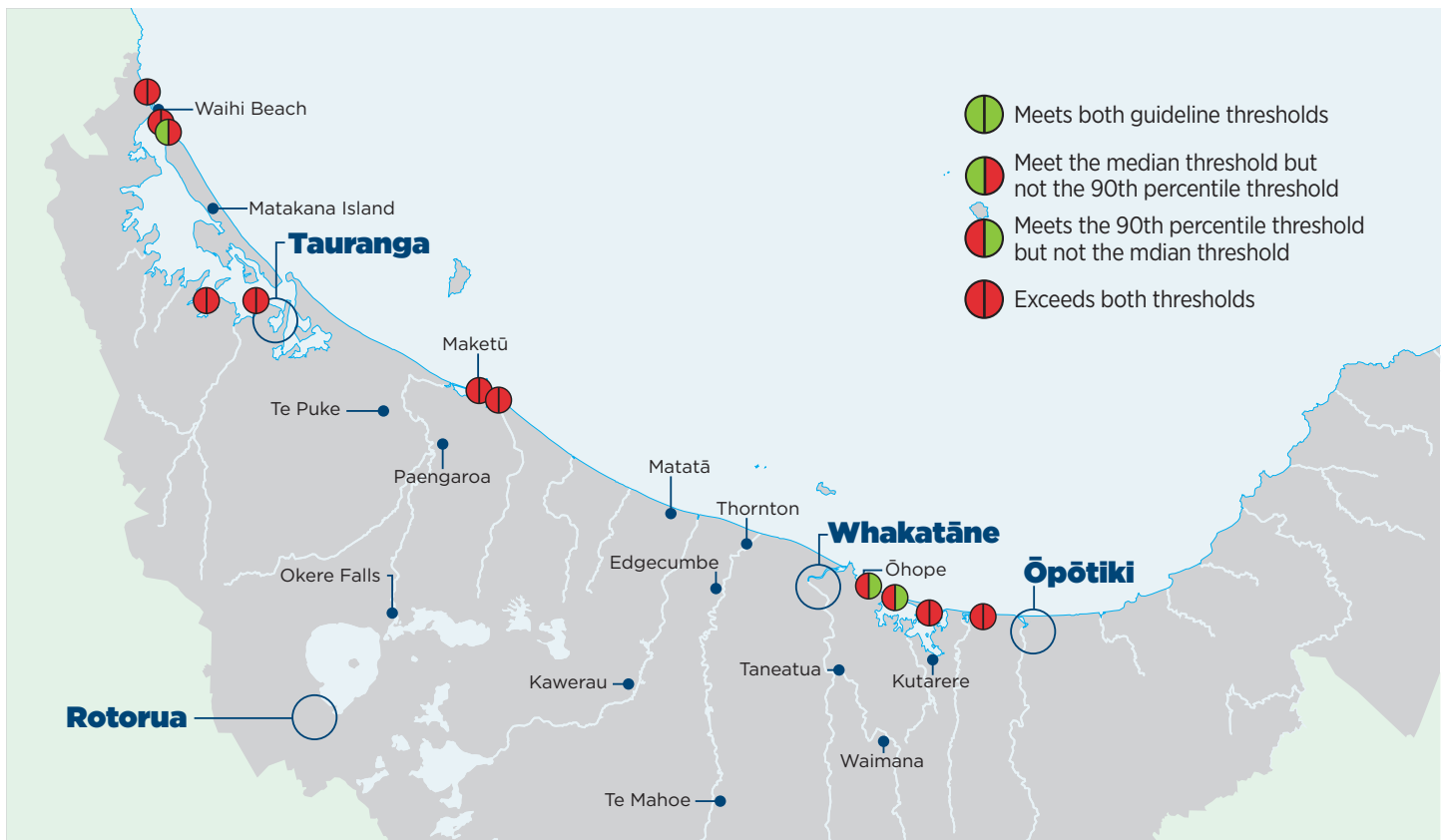
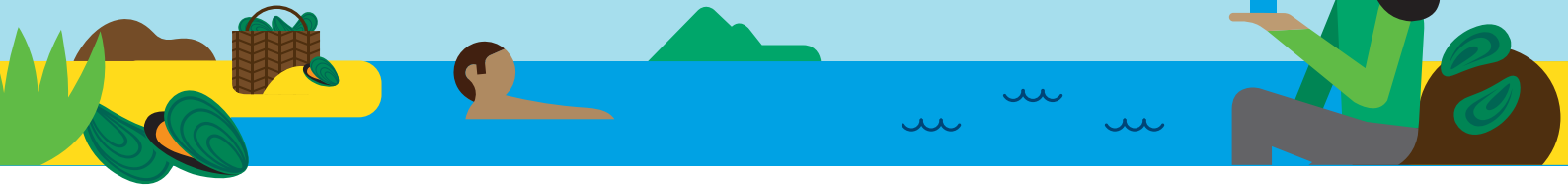


Figure 8: Recreational shellfish results for the 2022/23 harvesting season.

Science Snapshot Report Summer 2022/23

'Swim-ability' and shellfish risk in the Bay of Plenty



Our work to improve water quality

As well as gathering and sharing monitoring information, Regional Council works with iwi, industry, landowners, other councils and the wider community to maintain and improve the region's water quality.

Together with landowners we've already delivered more than 500* Environmental Programmes across the region that are focused on reducing land run-off and protecting local rivers and streams. We also conduct more than 1,000 compliance checks on high-risk activities, such as dairy effluent, stormwater and wastewater systems, each year.

We're aiming to raise the number of Bay of Plenty rivers that are swimmable by national standards from 94.5 percent to 95.7 percent by 2030.

**Environmental Programmes delivered since 2020.*

Find out more

Regional Council sampling results are assessed against the National Microbial Water Quality Guidelines for Marine and Freshwater Recreational Areas (2003) that have been set by New Zealand's Ministry for the Environment and Ministry of Health.

Our weekly swimming suitability test results and gradings are updated each week during summer and can be viewed along with historical records for each site at www.lawa.org.nz/swim

Our full Recreational Waters Surveillance Report for previous bathing season are available in the environmental publications section of our website www.boprc.govt.nz/publications and through the Bathing and Shellfish Water Quality Tool boprcsoftware.shinyapps.io/Bathing_Shellfish_WQ_Tool

Contact us on info@boprc.govt.nz or visit: boprc.govt.nz/freshwater to find out more about Regional Council's water work.