



A W A

W A T E R

## Water 2022 - 2023

Water is critical to all aspects of our lives. Freshwater is precious and limited, a taonga of huge significance. The Waikato Regional Council (WRC) collects information on water quality, wetlands, lakes, rivers, ground water, storm water and water allocation. For the purpose of analysing the data at a local level, the two key components examined in this report are ground water availability and river water quality for recreational use.



### Groundwater

Groundwater is characterised by rainwater that has percolated through soil to underground rock fractures or porous sediment. These are known as aquifers. Groundwater accounts for 90% of the Waikato's fresh water resource. To access the aquifers, wells are drilled to pump the water away from the aquifers to where it is needed. For example, for drinking water, industrial and agricultural use. The amount, quality and usage of groundwater varies greatly within the region.

Ground water quality depends on how vulnerable the groundwater aquifers are to contamination. Contamination of groundwater can take place when pollutants travel through the soil into the aquifers. Once polluted, it can be challenging to reverse this entirely. Hence, the importance of ensuring optimal ground water protection. Contaminants in the ground water can be due to pollution from point source or non-point source. Septic tanks, leaking treatment ponds, waste disposal sites are examples of point source contaminants, while agricultural land use activities, saltwater intrusion, fertiliser and pesticide applications are examples of non-point source pollutants.

Groundwater use, also known as water allocation is monitored by the Waikato Regional Council to ensure these aquifers will sustain everyone's needs.

### Groundwater Availability – Waikato Regional Council

Waikato Regional Council monitors 'available' levels of groundwater to ensure groundwater resources are used sustainably.

'Available' groundwater is the total volume of groundwater that can be taken from an aquifer without affecting the aquifer. This simple assessment of available groundwater treats the aquifer in isolation to any connected streams and rivers. Areas listed as having low or medium stress may be having a significant impact on nearby streams and rivers. Where possible, the Waikato Regional Council encourages the use of groundwater rather than surface water.



Although in some catchments, groundwater is connected to surface water and groundwater allocation may be limited by surface water availability. Please read the section below if you would like more information on consented water take. As more water is taken from an aquifer, the volume of 'available' groundwater for future use drops. The Regional Council estimates the level of stress on groundwater resources by comparing the volume of 'available' groundwater to the volume that has already been allocated for use.

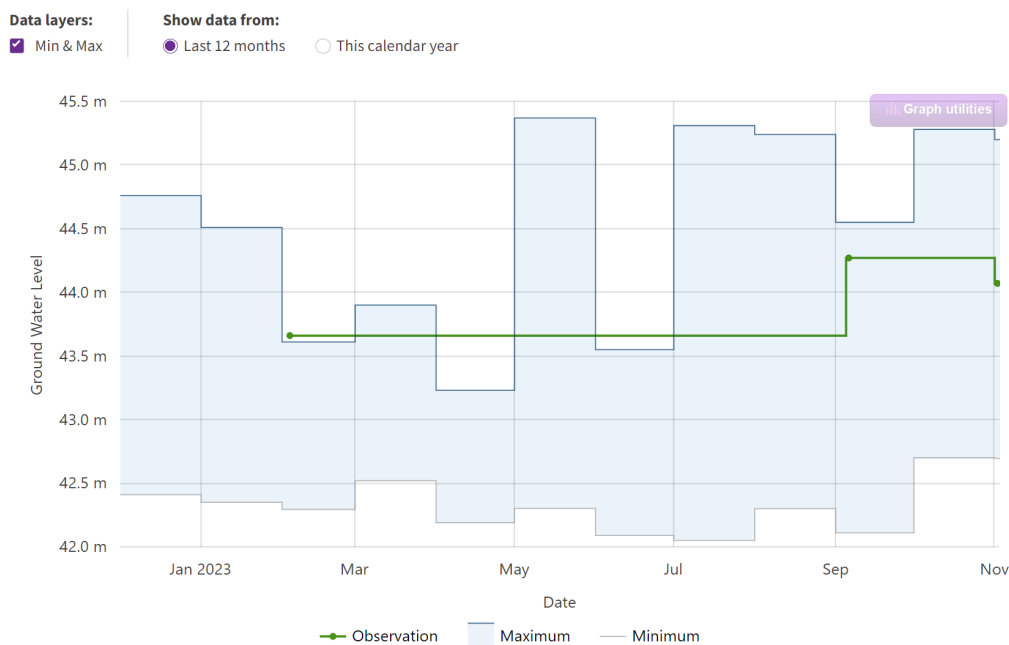
Waikato Regional Council divides the groundwater resources they monitor in our region into three categories: low, medium and high stress.

- Low stress areas have less than 10% of available groundwater allocated for use. This equates to around 90% of sites in the Waikato Region.
- Medium stress areas have between 10% and 30% of available groundwater allocated for use. This equates to just under 10% of sites in the Waikato Region.
- High stress areas have more than 30% of available groundwater allocated for use. This equates to around 1% - 2% of sites in the Waikato Region.

The graph below shows the recent groundwater level (green line) compared to the maximum and minimum range measured at Bore 64 - Station 831 (Waharoa Aerodrome), during the same time of the year. You can read the latest groundwater levels for our district at the following link:

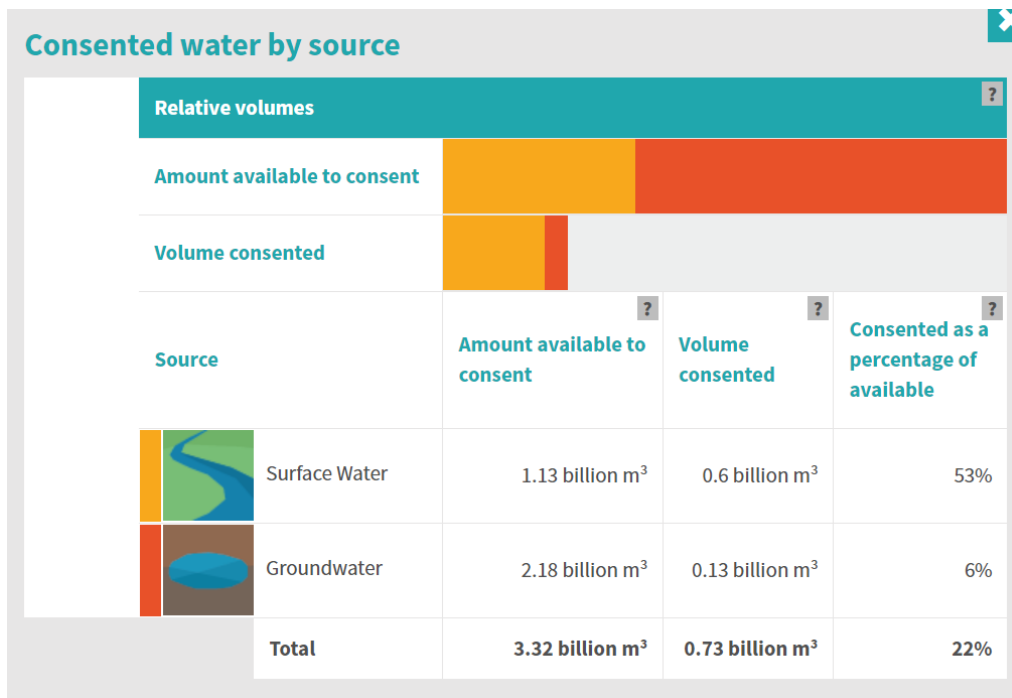
<https://www.waikatoregion.govt.nz/environment/envirohub/environmental-maps-and-data/station/15742/GWL?dt=Groundwater+Level>

#### Groundwater level by month



#### Groundwater Availability - Land Air Water Aotearoa (LAWA)

LAWA hold information pertaining to consented groundwater takes. Below is a breakdown if how much water is available to use compared with the amount that is actually consented for use. It also demonstrates how much of the water is surface water and how much is groundwater. Only 6% of groundwater that is available has been consented for use.



You can read more information on water quantity, purpose for water use, and the rates of take at the following link:

<https://www.lawa.org.nz/explore-data/waikato-region/water-quantity/>

### River Water Quality for Contact Recreation

Routine monitoring of rivers and streams in the region, is used to assess the suitability of the water for recreational water activities such as swimming and other water sports. Microorganisms from human and animal faeces can get into the waterways. This can be dangerous for people exposed to these organisms. Other matter such as silts and clay can enter the waterways, reducing the water clarity. There are a total of 115 sites across the Waikato Region, where testing takes place.



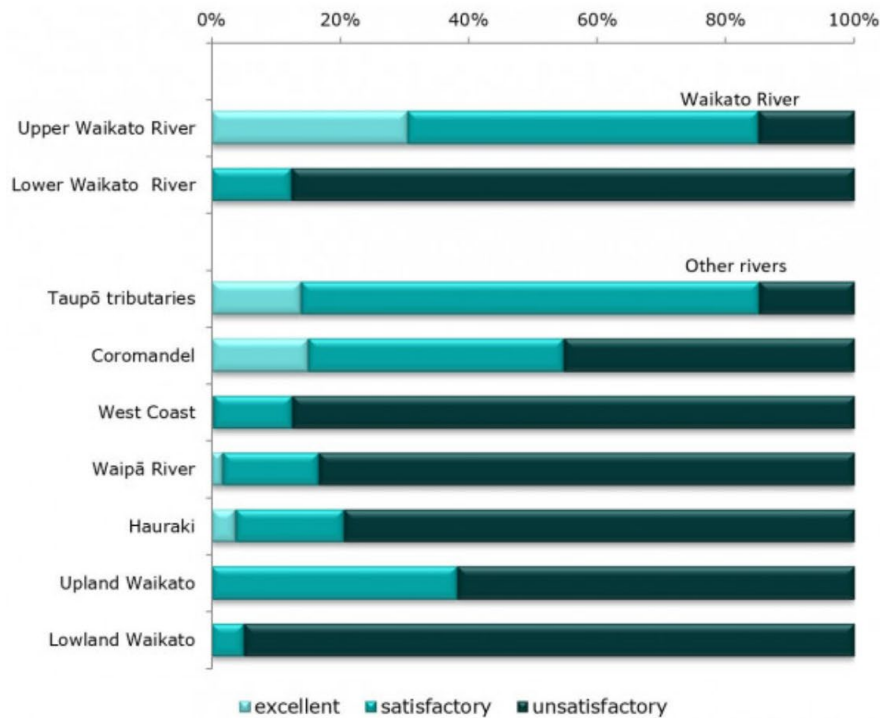
There are two important water quality measures taken for each site – faecal bacteria levels and water clarity. Using these values, a ‘pass rate’ is determined for each site.

There are some parts of the region where river water quality is good, such as the upper Waikato River, tributaries of Lake Taupo and Coromandel waterways. River water quality in the lowland areas such as the Hauraki Plains and lowland tributaries of the Waikato River are not as good, which is reflective of the greater land use activities in the lowland aspects of the region, and due to waterways collecting water pollutants and creating a pooling of these contaminants. Increased levels of faecal bacteria and fine silts, and impacts of non-point source contamination from runoff are significant attributing factors.

The graph below shows the percentage of samples from rivers around the region meeting or exceeding water quality guidelines for recreational use, collected between 2015 - 2019. These are categorised as excellent, satisfactory or unsatisfactory. River samples from within the

Hauraki area indicates that less than 5% of the sites sampled proved to have excellent river water quality for recreational use. Over 80% of sample sites from rivers within the Hauraki area had unsatisfactory water quality for recreational use. Please read below for information specific to each of our three rivers in a recreational use context.

Percentage of samples meeting our guidelines for excellent, satisfactory or unsatisfactory river water quality for contact recreation (2015-2019)



Information retrieved from Waikato Regional Council: <https://www.waikatoregion.govt.nz/environment/water/river-and-stream-monitoring/indicator-river-water-quality-contact-recreation/>

To focus on the Matamata-Piako District a little closer, below are three snapshots of river water quality for contact recreation in the Piako, Waitoa and Waihou Rivers. If you would like to view the safety of other sites that were tested, please visit the following link and use the interactive map on the bottom of the page to find your recreational swimming spot: <https://www.waikatoregion.govt.nz/environment/water/rivers/water-quality-monitoring-map/>



**Piako River:**

The dark blue shading indicates the water sample returned an 'unsatisfactory' result for both baseflow clarity and presence of E.Coli. The ecology tests show that the Piako River sample contained unsatisfactory levels of nitrogen, phosphorus and high turbidity (suspended particles). There was low levels of ammonia and a suitable pH level.

Despite over half of the indicators being either excellent or satisfactory – The Waikato Regional Council deemed the Piako River unsafe for recreational use.

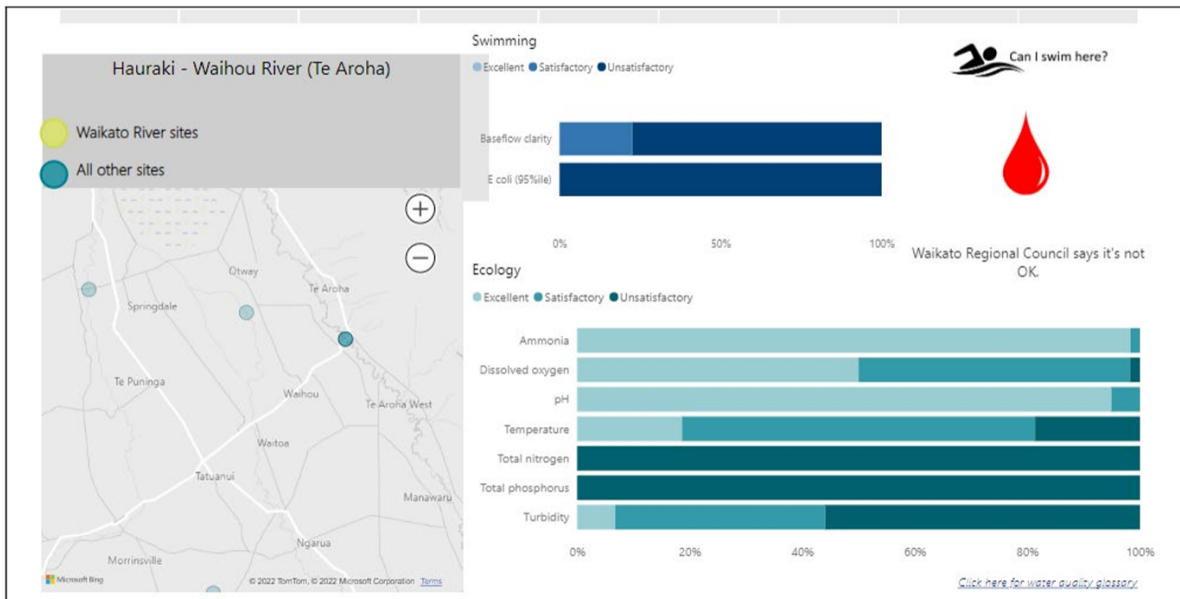


**Waitoa River:**

Similarly to the Piako River, both indicators showing water clarity and E.Coli levels have produced mostly unsatisfactory samples for recreational swimming.

The ecology samples from the Waitoa River show that there are still unsatisfactory levels of phosphorus present, and even higher levels of nitrogen compared to the Piako River. There is concerning levels of dissolved oxygen which suggest the water has a very poor ability to support aquatic life. There are also slightly higher levels of ammonia in the Waitoa River.

The Waikato Regional Council have deemed the river water in the Waitoa River unsafe for recreational use.



**Waihou River:**

The Waihou River samples have demonstrated low levels of ammonia, satisfactory levels of dissolved oxygen and excellent pH levels. Much like the Waitoa and Piako rivers, there are still very high levels of nitrogen, phosphorus and turbidity. There are also unsatisfactory levels of water clarity and E.Coli.

The Waihou River was deemed unsafe for recreational use.