

Water Quality Results 2015/16

Various types of monitoring is completed to protect and restore water quality in the Rotorua Te Arawa lakes. That information is compiled to calculate its annual Trophic Level Index (TLI).

What is the Trophic Level Index (TLI)?

The Trophic Level Index is a number used to indicate the health of lakes in New Zealand. As a general rule of thumb the higher the number, the worse the water quality in the lake.

How is TLI calculated?

The TLI number is calculated using four separate water quality measurements:

- **total nitrogen**
- **total phosphorous**
- **water clarity**
- **chlorophyll-a**

Total nitrogen and total phosphorous are nutrients that plants thrive on. Large amounts of these nutrients in the lakes encourage the growth of algae which can lead to poor water quality.

Water clarity is a measurement of how clear the water in the lake is. In general, the clearer the water, the better the water quality.

Chlorophyll-a is the green colour in plants. Knowing how much chlorophyll there is in a lake gives us a good idea of how much algae the lake has. It's okay to have algae in a lake, just not too much. The more algae present, the poorer the water quality.

The Trophic Level Index combines these four measurements into one number.

What do the TLI numbers mean?

The TLI number for a lake indicates the lake water quality, what type of lake it is and what characteristics it would show. See explanation below:

Trophic Level Index	Lake Type	Characteristics
Less than 2	Very good water quality (microtrophic)	The lake is clear and blue with very low levels of nutrients and algae.
2 - 3	Good water quality (oligotrophic)	The lake is clear and blue, with very low levels of nutrients and algae.
3 - 4	Average water quality (mesotrophic)	The lake has moderate levels of nutrients and algae.
4 - 5	Poor water quality (eutrophic)	The lake is green and murky, with higher amounts of nutrients and algae.
Greater than 5	Very poor water quality (supertrophic)	The lake is fertile and saturated in phosphorus and nitrogen, often associated with poor water clarity.

Annual TLI Results 2012-2016					
Lakes	2012	2013	2014	2015	2016
Rotoma	2.5	2.4	2.3	2.5	2.4
Okataina	3.0	2.8	2.7	2.9	2.8
Tikitapu	2.9	2.8	2.8	2.9	2.9
Tarawera	3.0	2.9	3.0	3.1	3.0
Okareka	3.4	3.1	3.3	3.3	3.2
Rerewhakaaitu	3.7	3.5	3.4	3.3	3.4
Rotoiti	3.8	3.4	3.4	3.8	3.8
Rotomahana	4.0	3.9	3.8	4.0	4.0
Rotokakahi	3.9	3.7	3.6	4.0	3.7
Rotoehu	4.2	4.0	4.0	4.5	4.6
Rotorua	4.1	4.2	4.2	4.4	4.4
Okaro	5.5	5.4	4.5	4.5	4.6

The Regional Council has calculated a Trophic Level Index for each of the lakes in the Rotorua area to assess the overall health of each lake. The Trophic Level Index for each lake is compared over time to see if water quality is getting better or worse.

Water Quality Trends and TLI



● Improving
 ● Stable
 ● Declining
 ● To be investigated