



TOMAHAWK LAGOON

WATER QUALITY REPORT CARD

February –
November
2018



A keen group of citizen scientists and students from Bayfield High School, John McGlashan College, Otago Girls High School and Tahuna Normal Intermediate School have met fortnightly to monitor the biodiversity, chemical and physical patterns of the Tomahawk Lagoon.

Samples were taken from five locations around the Lagoon and the results are presented on the reverse. These were compared with the National Policy Statement for Freshwater Management and the limits found in the Otago Water Plan.

ECOTAGO was funded for this project in 2017-8 by the Participatory Science Platform (PSP). The Dunedin City Council's Te Ao Tūroa Grant has funded ECOTAGO in 2018 in recognition of the value and importance of their citizen science monitoring programme and their contributions to giving a large number of students from different parts of the city active learning opportunities over the years.

What are we testing for?

Nitrogen + Phosphorus

These nutrients are essential to plant and algae growth, if levels of these nutrients are too high there can be excessive plant or algal growth, which can affect the Lagoon ecosystem.

Algae

A measure of the amount of biological activity in the Lagoon – high values can be an indicator of an algal bloom.

Turbidity

A measure of the cloudiness of water, if too cloudy this may affect the feeding tubes of filter feeders or cover plant surfaces so grazers have feeding problems.

E.coli

An indicator of the suitability for swimming or stock drinking water. If too high there is an increased risk of illness if in contact with the water.

Results

Site	Nitrogen	Phosphorus	Algae	Max Algae	Turbidity	E. coli
Creek (Site 3)	Fail	Fail	-	-	Fail	Fail
Upper Lagoon (Site 2)	Fail	Fail	C	D	Fail	Fail
Upper Lagoon (Site 1)	Fail	Fail	C	D	Fail	Fail
Lower Lagoon (Site 4)	?*	Fail	C	C	Fail	Fail
Lower Lagoon (Site 5)	?*	?**	C	C	Fail	Fail

All results were compared with the Otago Water Plan Receiving Water limits, except for Algae and Max Algae which were graded based on the guideline values found in the National Policy Statement for Freshwater Management (NPSFM).

* We are unable to determine a result as Nitrate-N was measured whereas limits contained in the Otago Water Plan are for Total Nitrogen.

** We are unable to determine a result as Dissolved reactive phosphorus was measured whereas limits contained in the Otago Water Plan are for Total Phosphorus.



Tomahawk 2018 Monitoring Sites

What the results mean

Nitrogen + Phosphorus

These nutrients usually exceed the limits contained in the Otago Water Plan, and indicate that the Lagoon could have a tendency towards excessive plant or algal growth.

Algae

We have graded the algae results according to the NPSFM guideline values. The levels measured indicate that the Lagoon's ecological communities are moderately impacted by additional algal and plant growth arising from nutrient levels that are elevated above natural reference conditions.

There is a possibility of the reoccurrence of algal blooms. Reduced water clarity is likely to affect habitat available for native aquatic plants.

Turbidity

Turbidity did not meet the limits contained in the Otago Water Plan, and this indicates that the Lagoon and creek are cloudy, which can affect the function of the aquatic ecosystem.

This is not unexpected due to the shallow nature of Tomahawk Lagoon.

E.coli

All sites did not meet the limits contained in the Otago Water Plan, indicating there is an increased risk of illness if coming in contact with this water.

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