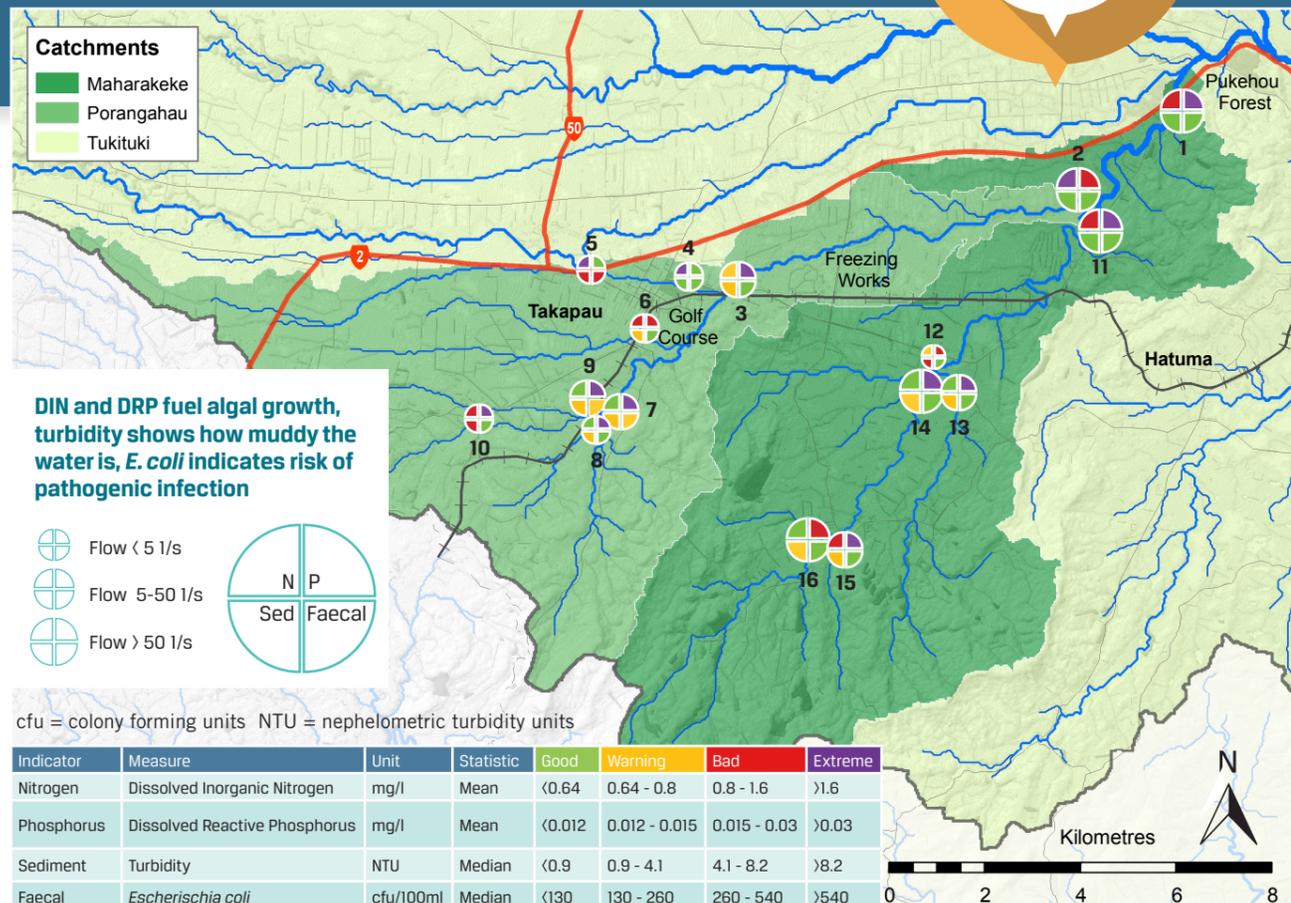




# Porangahau and Maharakeke results



SITE	NITROGEN	PHOSPHORUS	SEDIMENT	FAECAL	FLOW	SAMPLES
1. Maharakeke Stream at SH 2	1.583	0.033	0.79	68	403	7
2. Porangahau Stream u/s Maharakeke Stream	3.29	0.02	0.8	120	121	7
3. Porangahau Stream at Oruawhara Rd	0.781	0.04	1.04	90	80	7
4. Te Matau Stream u/s Porangahau stream at Takapau golf club	3.003	0.004	0.88	31	0	3
5. Te Matau Stream at Sydney St	3.411	0.012	5.05	365	1	4
6. Porangahau Stream Tributary at Paulsens Stock Route	1.176	0.015	3.5	70	9	7
7. Porangahau Stream Tributary at Paulson Rd	0.408	0.032	2	140	30	7
8. Otutatahi Stream u/s Porangahau Stream	0.103	0.037	2.9	33	7	7
9. Porangahau Stream u/s Otutatahi Stream	0.486	0.166	1.61	250	15	7
10. Porangahau Stream at Takapau Ormondville Rd	0.819	0.121	5	70	4	7
11. Maharakeke Stream u/s Porangahau Stream	1.397	0.051	0.8	120	252	7
12. Awanui Stream u/s Maharakeke Stream	0.718	0.231	5.95	61.5	3	6
13. Maharakeke Tributary at Seeforth	0.286	0.105	1.81	38	29	7
14. Maharakeke Stream u/s Seeforth Tributary	0.581	0.039	2.4	100	138	7
15. Maharakeke Tributary at Marlow Hill Station	1.034	0.031	2.5	80	16	7
16. Maharakeke Stream at Hinerangi Rd	0.634	0.029	1.01	120	92	7

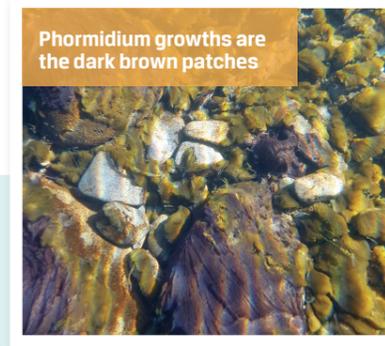
Sampling undertaken 2015/16. u/s = upstream

# What's going on in the Porangahau and Maharakeke sub-catchments?

**Porangahau and Maharakeke are two of 17 sub-catchments in the Tukituki area, together covering 15,800 hectares.**

There are 116 properties over 4 hectares in size, mainly sheep and beef, dairy and deer operations. Māori settled here around the late 1200s to 1300s in lowland and coastal areas and there are two marae in the catchment.

Further human activity has significantly altered the landscape here. Riparian health is particularly poor. 78% of the Porangahau and 90% of the Maharakeke have stream edges with moderate to high disturbance. Long term water quality monitoring has shown dissolved organic nitrogen (DIN) and dissolved reactive phosphorus (DRP) failing to meet targets under the Tukituki Plan. These two nutrients help fuel excessive algae and phormidium growth, which cause problems in the Tukituki River.



Phormidium growths are the dark brown patches



Slime algae in the Tukituki River

## What did we find?

**All sites sampled had elevated levels of at least 1 of the 4 main contaminants of concern.**

Across sites, faecal contamination was not a concern at most sites. Phosphorus levels were often more than double the target. Sediment levels were of concern at many sites, but the patterns appear to reflect localised issues, such as riparian management, and the water was clear at the bottom of both sub-catchments.

Nitrogen was elevated in parts of the upper Porangahau, and there was a large increase in nitrogen between the mid and lower parts of both the Porangahau and Maharakeke.

In general, nitrogen was the bigger problem in the Porangahau. It was double the target, whereas phosphorus was the bigger problem in the Maharakeke (also double the target). Both nutrients were above the target in both sub-catchments, highlighting that consistent and concerted efforts are required across the landscape.

**In future, a site at the bottom of each sub-catchment will be monitored for compliance.**

**These sites are: Maharakeke Stream at SH2 and Porangahau Stream upstream of Maharakeke Stream.**



The Regional Council has carried out a targeted monitoring programme across 16 sites to identify water quality patterns and help identify solutions.

This was a short term investigation to understand water quality patterns in greater detail, but may be repeated again in future.



# What can you do to improve the water quality in these sub-catchments?

Your tailored Farm Plan will identify approaches to reduce nutrient and sediment loss on your property. Some common solutions include:

Poor riparian habitat (right), and below an example of good riparian planting.

The greatest threats to stream health are usually sediment and poor riparian management.

## Managing Critical Source Areas

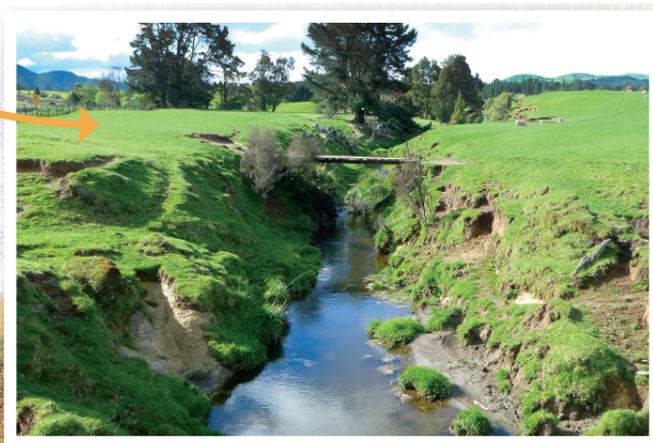
Anywhere with exposed soil is likely to be a 'critical source area'. Most of sediment and phosphorus losses (around 80%) come from a small part of the landscape (around 20%). They may include areas of erosion, stockyards, tracks, races and intensively grazed areas. Critical source areas should be targeted as a priority and their impact can be reduced through improved management techniques.

## Riparian management and stock exclusion

**Stock exclusion will contribute to improving stream health.** Riparian areas along both streams in 2013/14 were the least protected in the Tukituki catchment. 78% of stream edges in Porangahau and 90% of stream edges in Maharakeke catchments are classed as moderately to highly disturbed.\*

Wide buffer areas near streams and substantial planting will benefit these waterways by reducing phosphorus, sediment and bacteria levels.

\*Riparian assessments were based on imagery from 2013/14.



## Reducing nutrient loss (Nitrogen and Phosphorus)

**Test your soil before you fertilise it.** Olsen-P is a measure of the more mobile fraction of applied phosphorus (P) that is readily available to plants. It is this type of P that is easily lost to water if not taken up by vegetation. Olsen-P should be maintained at an economic and productive optimum, a higher level indicates a risk of surplus P that could be lost to waterways. Test your soil before you fertilise it.

As the Olsen-P increases above 20 mg/kg, the risk of phosphorus loss to waterways increases sharply. So, if you don't need Olsen P to be above 20 mg/kg for production, then don't be. There may be no benefit to production, it costs you more, and there is a big cost to waterways.

- Avoid applying nutrients when plants are not actively growing (i.e. not between May and August), or when heavy rain is forecast
- Winter crops can account for half of your farm's annual nutrient losses - follow best practice guidelines to minimise losses from this critical source area
- Locate silage pits away from waterways
- All else being equal, more stock units = more risk of nutrients lost

## Reducing sediment loss

The greatest threats to stream health are usually sediment and poor riparian management.

- Exclude stock from waterways and plant along stream banks wherever practical
- Incorporate buffer strips - thick grass or other heavily vegetated areas - between waterways and tracks, lanes or any other sources of sediment such as worked paddocks or winter crops
- Discuss soil conservation techniques with your Regional Council Catchment Advisor or FEMP provider
- Do not position winter crops near waterways or on steep hills
- Cultivate along the contour, not downhill

## Reducing faecal contamination (*E. coli*)

***E. coli* in water is an indicator of bacteria from excrement.**

- Prevent direct stock access to waterways wherever practical
- Faeces is concentrated on tracks, races, laneways, stockyards and around woolsheds - manage these so runoff does not flow straight into a waterway
- Clean your septic tank regularly and ensure it does not receive storm water
- Don't put offal pits near waterways



Stock exclusion (not happening above) and pole planting (below) are two ways to help improve water quality.

