



PORANGAHAU MAHARAKEKE

sub-catchments

December 2015

PORANGAHAU - MAHARAKEKE SUB-CATCHMENTS

Porangahau - Maharakeke are priority areas. Your support and action will help address water quality issues in your catchment and further down the Tukituki river.

If you have 4 or more hectares, rules in plan change 6 for Tukituki catchment apply to you. However doing the bare minimum to meet rule requirements will not do enough to improve the health of these catchments.

Porangahau and Maharakeke are two of 17 sub-catchments in the Tukituki area. Together, they cover 15,800 hectares. There are 116 properties over four hectares in size, mainly in sheep and beef, dairy and deer operations. These two areas, along with four other sub-catchments, have higher than acceptable nutrient levels. They will be a focus of work for HBRC in the next few years.

Even without this Plan Change, we need to improve how we use land to improve freshwater. We need to find a way to make a living from land use while improving the quality of our streams, rivers and wetlands for future generations.

BACKGROUND

Takapau is the area's largest settlement with a primary school, various sporting and cultural clubs and two local marae. The Silver Fern Farms meat works, near Takapau, is the districts largest employer. Surrounding farms are also important employers.

'Seventy mile bush' once bordered Takapau village and extended to the Manawatu Gorge. This native stand held Matai, Kahikatea, Totara, Rimu, Maire as well as many other native plants. Modification started with Māori settlement and continued with the arrival of Europeans. Little now remains of the original forests, other natural habitats and wetlands which covered most of the plains.

Māori settled here around the late 1200s to 1300s by lowland and coastal areas. There are two marae in the catchment.

Te Rongo-A-Tahu is in the village, and Te Poho O Whatuiapiti at Rakautatahi is about 5km south of Takapau. Māori recognise the role that flowing water and water quality have in sustaining the mauri (life sustaining essence) of the Tukituki River. Prior to land use changes, the streams in this catchment provided for an abundance of mahinga kai (food harvesting) along the river corridors.

Human activity has significantly altered the landscape in these catchments. Combined human activity can also significantly improve water quality in the future.

FAST FACTS: PORANGAHAU

Total area: 7,255 hectares

Average rainfall: 700-1000mm/year

Soil types: Range from alluvial to ash formed soils, free draining to imperfectly drained with a pan.

Length of waterways: 67km 2nd - 4th order streams (indicative)

Stock excluded waterways: 22% **Origin:** Spring fed

QEII covenants: Zero

Contaminant issues: Phosphorus, Nitrogen, bacteria

FAST FACTS: MAHARAKEKE

Total area: 8,545 hectares

Average rainfall: 700-1000mm/year

Soil types: Range from alluvial to ash formed soils, free draining to imperfectly drained with a pan.

Length of waterways: 58km 2nd - 4th order streams (indicative)

Stock excluded waterways: 11% **Origin:** Spring fed

QEII covenants: 1

Contaminant issues: Phosphorus, Nitrogen, bacteria

An aerial photograph of a river flowing through a lush, green landscape. The river is surrounded by dense vegetation, including tall grasses and ferns. A person wearing a white shirt and dark pants is standing in the shallow water, holding a sampling device. A white rope is stretched across the river, and a tripod is visible on the right bank. The water appears slightly murky with some green algae or sediment. The overall scene is a natural, rural setting.

The thing is..

these two sub-catchments have the least protected waterways in the Tukituki and are majorly exceeding target phosphorus levels in-stream.

**TUKITUKI
PLAN CHANGE 6**

is HBRC's first catchment-specific plan change, required by the National Policy Statement for Freshwater Management 2011.

CURRENT ISSUES

Simply put, what comes from the land ends up in the water and affects water quality. Land managers hold the keys to improving water quality. Porangahau and Maharakeke streams add high concentrations of nitrogen, phosphorus, sediment and *E. coli* to the Tukituki River.

SOME GOOD NEWS

Porangahau and Maharakeke are recognised as providing trout spawning and trout habitat, and they are home to a number of native fish species. Some good work has already been done on local farms to look after water quality. Extending this work across a greater area can make a measurable difference in the future.



Phosphorus (P)

Phosphorus levels in the Porangahau/Maharakeke are higher than most other monitored sites in the Tukituki catchment, and are more than double the target level.

Critical source areas

Most of the phosphorus losses (around 80%) come from a small part of the landscape (20%) – areas that generate significant phosphorus (P) loss. They may include areas of erosion, stock yards, tracks, races and intensively grazed areas, however these losses can be reduced through improved management techniques.

Anywhere with exposed soil is likely to be a 'critical source area'. Identifying ways to reduce P loss is a core component of your farm environmental management plan or FEMP.



Bacteria

E. coli in water is an indicator of bacteria from excrement. Levels of *E. coli* in the Porangahau/Maharakeke are higher than most other monitoring sites in the Tukituki. There has been an average annual increase in *E. coli* in both streams of more than 10% over the last 10 years.

Faecal source tracking work indicates this is from livestock, not human sources.

So what are the effects?

The combined effects of high in-stream nutrient concentrations, long low-flow periods in the summer months and high temperatures, lead to excessive growth of algae and slime. This reduces water quality.

Stream catchments that begin on the Ruataniwha Plains have lower rainfall and lower flows than stream and river catchments originating in the Ruahine Ranges. This limits the dilution of nutrients and contaminants and strongly influences nutrient concentrations in-stream.



Nitrogen (N)

Nitrogen is 50% higher than the target level and large peaks occur during winter.

Nitrogen is typically more difficult to stop than phosphorus, because it literally 'leaks' through the landscape. For intensive grazing systems, urine patches are usually the major source. Winter grazing practices can be a major source of nitrogen loss and should be given careful consideration.



Sediment

The greatest threats to stream health are sediment and poor riparian management. These sub-catchments have high levels of stream bed sedimentation.

Too much sediment eroding from the land, fills in the nooks and crannies where fish and bugs live.

Studies have shown that a small stream with fine sediment added lost 90% of its fish, and that removing riparian habitat resulted in 75% less inanga.

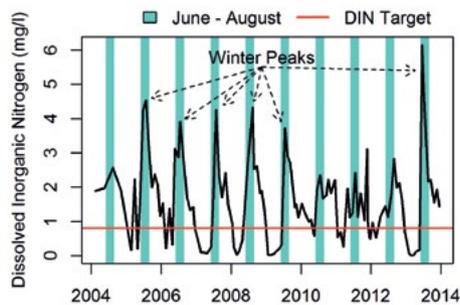


Stock Access

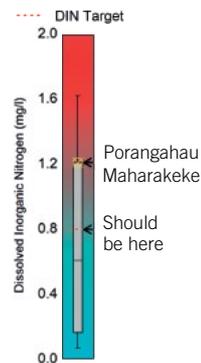
Riparian areas along both streams are the least protected in the Tukituki catchment. 78% of stream edges in Porangahau and 90% of stream edges in Maharakeke catchments are classed as moderately to highly disturbed.

Stock exclusion will contribute to improving stream health. Increasing protection by widening buffer areas near streams and planting will have even greater benefits to reduce phosphorus and bacteria levels.

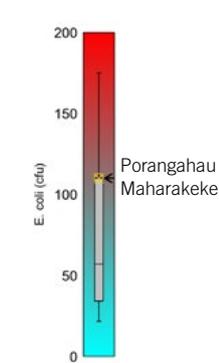
AT A GLANCE



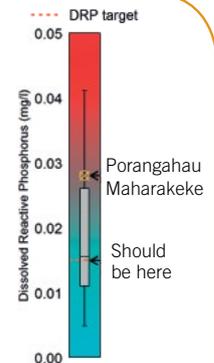
Seasonal variations in dissolved nitrogen levels at the long-term Porangahau Stream monitoring site.



Nitrogen levels at Tukituki catchment monitoring sites



E. coli levels at Tukituki catchment monitoring sites



Phosphorus levels at Tukituki catchment monitoring sites

WHAT ELSE IS BEING DONE?

Water Quality Monitoring

HBRC's science team is running a targeted investigation taking water quality samples and gauging flows at 16 sites in the Porangahau and Maharakeke streams and their tributaries. The intention is not to single-out specific properties or land uses but to understand how catchments are contributing as a whole, and how we can better manage the land to reduce in-stream contributions.

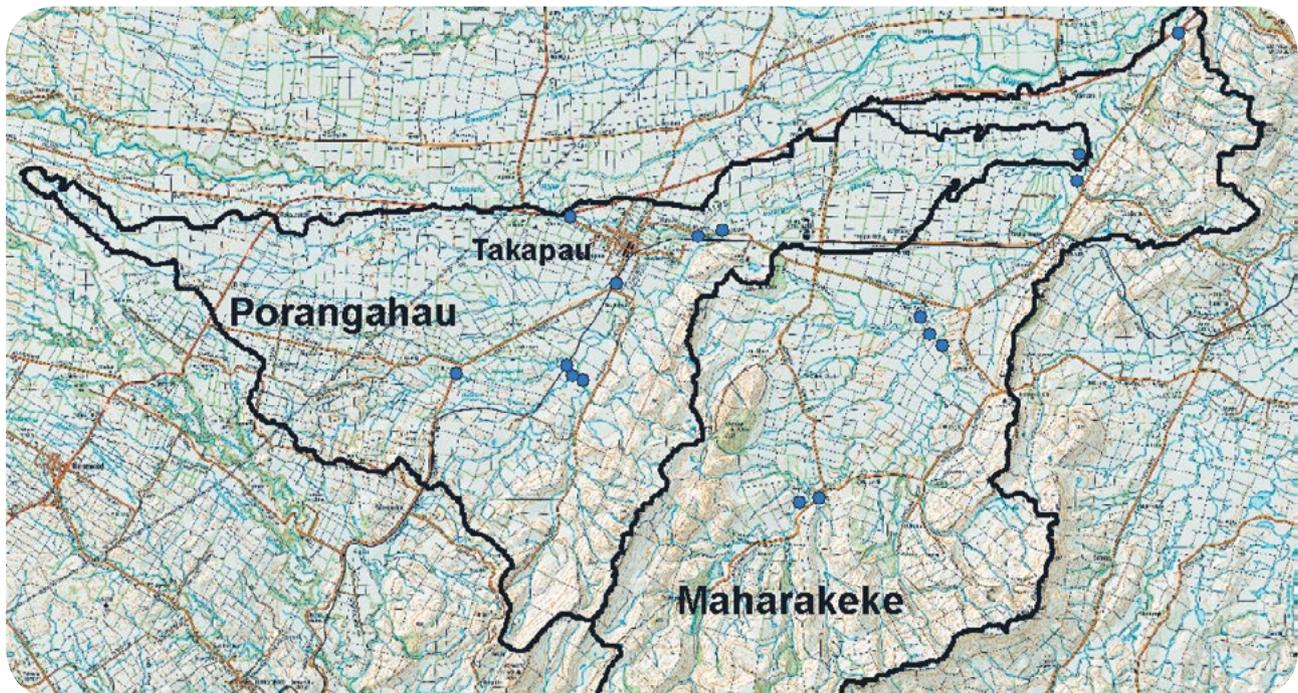
Water Quality Monitoring Sites

The broad array of sites helps HBRC scientists to compare nutrient levels to targets, and to the rest of the Tukituki sub-catchments.

Implementing Plan Change 6

Stock exclusion requirements do not take effect until 2020, but are expected to make a significant impact to reduce in-stream phosphorus levels in the Tukituki River.

Plan Change 6 will require landowners or farm managers with four hectares or more to have a Farm Environmental Management Plan or FEMP by 2018. Making a start, planning and taking action early, and doing a manageable bit at a time, will reduce stress when these actions become requirements.



ACKNOWLEDGING PAPANUI

The first priority catchment to begin focused work in the Tukituki is Papanui. The Papanui catchment Focus Group was formed in 2014 with the help of HBRC staff. A group of landowners and taiwhenua representatives together helped to develop the Papanui Catchment Management Strategy.

Their agreed priority is to protect the economic sustainability of the catchment, while contributing to improved water quality - locally and in the Tukituki River.

LET'S GET STARTED

HBRC started a riparian planting programme in 2014. Due to its success it will be available again next winter. A selection of native plants are available, with free planning and planting advice for landowners undertaking a riparian planting scheme.

The local sourced plants are \$2.00 - \$3.00, PB3 good quality seedlings.

Contact Maddy Clark (below centre) on **06 833 8067** to get your order in.



Contact HBRC Land Management Advisors on **0800 108 838** for help to clarify any of the issues raised in this document or help to design some practical solutions on farm.