

Proposed Waikato Regional Plan Change 1 – Waikato Waipa River Catchments

Submission on “Healthy Rivers”

To: Waikato Regional Council

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We could not gain an advantage in trade competition through this submission.

I am not directly affected by an effect of the subject matter of the submission that:

- (a) Adversely affects the environment, and
- (b) Does not relate to the trade competition or the effects of trade competition.

Submission

I wish to speak to this submission.

I am submitting on the totality of the “Healthy Rivers” plan. As it applies to all farmers, and in particular those growing kiwifruit crops.

Introduction

The potential for cropping in the Waikato is still in its infancy. The soil of the Waikato is most suitable for it to become the breadbasket of the northern North Island. The Horotiu silt loam and the Bruntwood series in particular, (http://nzsoils.org.nz/Topic-Classifying_Soils/Example_Waikato_Soil_Groups_and_Series/WaikatoSoils-Horotiu_Series/) and the vast area of rolling ash soils loosely referred to as “Maeroa Ash”, not to mention the large area of organic peat soils.

As a community we need education on the value of the soil and how to maintain and grow its quality, so that it will continue to be productive not for the next 100 years but for thousands of years – something the Greeks, Babylonians and the Romans were not considering.

What isn't required is an expansion red tape limiting use of these soils and tying up the time and energy of those willing to build their businesses, leading to community wealth, rather than community poverty.

Maintaining the soils of the Waikato

It is proposed in the “Healthy Rivers” document that cultivation be restricted to land with a slope of less than 15 degrees. This is expected to result in less water runoff and hence less sediment loss from the land to rivers, taking with it phosphate.

Taken literally this implies that land that is 14 degrees slope will not have water runoff and loss of sediment? We all know that this is not the case, and that there are other factors that should be considered. The length of the slope and hence the potential catchment area, dictating the volume of water trying to flow from the slope, must also be a consideration. It is the volume of flow related to time that will determine the depth of the rill erosion and hence sediment loss.

An important consideration is that once the sediment has left the farm it is no longer working for the farmer. Once the sediment is in the river it is unlikely to be of any further value to the community. If we are wanting to have the soil productive for more than the next 50-100 years, then we have to prevent the loss of sediment, and ideally, implement technologies that will allow the soil to grow not decline.

This technology is available. It has been so for the last 40 years. **It is called No-tillage cropping.**

Rather than create regulations that will do little but annoy people, and create large enforcement and policing costs, why not create incentives for positive change. A model for this already exists on “The Palouse” in Washington State, USA. The equivalent of the Waikato Regional Council (WRC) in Spokane have a long term goal to prevent any further soil degradation and soil loss. Recognising the effect of continuous cultivation on the stability of the soil, they have set up a program help fund farmers and contractors out of cultivation equipment and into no-tillage equipment.

Legislating on slope will send the right signal, but will not stop the thing that continues year upon year to destroy the basis of our civilisation, loss of our soil.

Rather than legislate on slope, why not legislate on soil infiltration rates. This will have the effect of challenging farmers to make change so that they do not affect water infiltration rates. Positives would be that less cultivation would be done as crops are established using the “No-tillage system”. It would also have a positive effect on the other factor that affects infiltration – soil pugging.

Expectations are that adoption of no-tillage would not occur overnight, but in the spirit of the Healthy Rivers, allow perhaps 10 years for all cropping to be converted from cultivation to minimum-tillage, strip-tillage or no-tillage systems, driven by the requirement not to impact water infiltration rates.

Different soils will have different infiltration rates according to the soil and according to what has been done to it. It should be noted that the organisms that create the soil drainage (earthworms etc) do not survive the passing of a power harrow cultivator. By not affecting infiltration rates, by minimising (or removing altogether) cultivation, soil organism populations will expand, soil organic matter will increase, soil infiltration rates will improve, soil moisture holding capacity will increase, ground water reserves will increase, less runoff will be the result, hence less sediment loss and less phosphate in the river.

Experience is that the soil grows under no-tillage. One example near Pukekohe from less than 10% organic matter to 15% organic matter over 15 years of no-tillage. While cultivated soils dropped to 4-5% organic matter. More organic matter means more moisture holding capacity for the soil, more nutrient exchange sites both resulting in yield improvements, all the while preventing soil loss.

Hill Country Cropping with Helicopters

A recently proven technology is cropping with helicopters. Farmers are converting poorly performing pasture into winter brassica crops and then into plantain and clover crops for lamb fattening. All of this is being done using only a helicopter. It works on both steep land and flat land.

What should be of great interest to all, is that it is effectively an aerial no-tillage cropping program. The soil is not disturbed, the soil organisms are not disturbed, the soil infiltration rate is unaffected, and soil carbon (organic matter) is not lost.

In comparison to what happens with cultivation, even on flat land, the soil is essentially left undisturbed by what is being called Heli-Cropping. The crop is grown and harvested, and another crop is established. Value is created for both the farmer and the greater community.

Sediment loss (hence P loss) is low even from steep ground, because the soil has not been disturbed. No more soil is lost than if it was left in pasture.

I introduce this to indicate that technology keeps getting better. Overtime, and without regulatory over reach, new, better ways are found to do things. However, if Waikato Regional council introduces rules that prevent innovation (eg 15 degree slope) then innovation will decline.

The issue regarding cultivation on sloped land is not about the slope, it is about water infiltration rates. If the cropping technique used leaves the infiltration rates unaffected, sediment loss will be similar to that from similar sloped pasture land. This can and should be investigated. **WRC could support the program and the community by helping to fund research in this area.**

The kiwifruit opportunity.

Most if not all of the Horotiu silt loam would be suitable for production kiwifruit. This crop has gone from nothing 40 years ago to earning NZ around one billion dollars annually. The industry recently outlined its plan to grow that to two billion dollars annually – PSA has been a minor set-back for them.

What holds up the development of the Waikato basin into Kiwifruit is the availability of water for irrigation. Although irrigation is useful for crops grown in the Bay of Plenty, it is essential for crops grown in Waikato to be irrigated. When BOP receives cyclonic summer rains, the Waikato receives showers. This crop is very productive, requires a lot of inputs (\$25,000/ha/annum) and generates lots of industrial activity with transport and packaging and labour, bringing value to the greater community.

With the right leaders in the Waikato, there could be more Kiwifruit grown in the Waikato than in the BOP. For this to happen those leaders need to ensure that water resources are available, that

the land in question doesn't go under houses (as is happening around Cambridge), and that the rules that govern food production in the "Rural Zone" are upheld, as those less interested in rural activities move to the rural zone.

In relation to "Healthy Rivers", not a lot is known about nutrient loss under kiwifruit. The funding for the work ceased some years ago with the untimely death of the researcher, Dr Linda Boyd. However considering that the orchards are not grazed by cows (that concentrate nitrogen into 800+ kg/ha spots), that less is applied annually to grow the crop than is applied to pastures (120-140 kgN/ha), and that there is a vast network of deep kiwifruit roots that support the plant all year round, and pasture roots, it could be predicted that losses would be low, possibly 20-30 kg N/ha at the outside. Work would need to be funded to clarify this.

On top of this the crop does not require a lot of phosphate. Orchard fertility is kept in the very reasonable Olsen P range of 20-30. The main means of phosphate loss from land into waterways is with sediment loss. Unlike the soils around Pukekohe that are cultivated 2-3 times annually, and that lose large amounts of sediment annually in the process of growing vegetable crops, kiwifruit land is not cultivated after planting, and last more than 40 years, hence opportunity for P loss is very low.

It would appear that an expansion of kiwifruit cropping in the Waikato would be beneficial to both the environmental health of the river and the economic wealth of the community. This will not happen if bureaucratic rules prevent the fair and reasonable use of natural resources, in particular access to irrigation water from the river or from ground water.

General Comment on the plan change

1. It does nothing to pressure the towns to reduce N & P in their effluent discharges into the Waikato River. Taupo city discharges city effluent to land. It goes to a farm that has NO grazing animals, the liquid effluent is irrigated via centre pivot irrigators, onto free draining pumice soil, with 1100mm rain (+ irrigation), applying upwards of 550 kg Nitrogen/ha/year, and has losses of only 10-15 kg N/ha/year as measured by lysimeters.

If Hamilton City, Cambridge, Huntly, Ngaruawahia were to irrigate their effluent to land in a similar manner, how much N & P would be removed from the river? This should be known, and as part of their commitment to having swimmable rivers, town people should have to fund this activity, sooner rather than later. Why should farmers be regulated, when towns continue to allow effluent with dissolved N & P to be released into the river?

2. Most farm effluent is discharged to land. Very little goes directly into water ways. Overseer model is used to estimate losses of nutrient N & P from the root zone, largely driven by cow urinations on the land/rainfall and soil type. To reduce N loss from farm, cow urinations to land need to be reduced. This will lead to more and more cow housing systems that capture urine/dung and distribute it back to land evenly. The community will need to be accepting of this.
3. There is still very little known about "attenuation" of nitrogen after it leaves to root zone. This was made very clear at the recent (February 2017) Fertiliser & Lime Research Centre

workshop run by Massey University. Recent research had identified up to 90% attenuation on some soils in the Rangitikei catchment (Overseer predicts 50%). If this was the case across the Waikato soils, then actual farm N loss will be significantly less than that currently predicted by Overseer.

4. For the Waikato Regional Council to put in place regulation that will likely have serious effects on property values, and will reduce farm productivity flowing on to reduced community wealth, using a less than perfect model, that the owners argue is not suitable to be used as a regulatory tool, is likely to lead to litigation, that WRC will surely lose.
5. It is surprising that WRC is going to limit N use on farm via a “grand-parenting” program, knowing that N will escape below the root zone from any urine patch and it is not known how much is attenuated from that point. Knowing also that 80% of the Waikato/Waipā catchment is NOT over the 80 year N limit.
6. I understand that most streams are over the P limit. Hence it would appear logical that by having a program of no-tillage system technology introduction and education, most sediment and hence phosphate that enters the river during normal flows, and a large amount that enters during peak flows could be prevented. With this approach the WRC is taking the (honourable) moral high ground, focussing the community on prevention of sediment loss. It is sediment loss that destroys civilisations, P & N can be brought on at any time, thanks to modern fertilisers, but sediment lost to the river is no longer working for the community. This is surely a better goal?
7. Phosphate and sediment loss has been made worse by the release of koi carp into the lower reaches of the river. These carp undermine stream banks and lead to loss of sediment. Perhaps in the interests of the river, there is a need for the WRC to aggressively target this fish for eradication.
8. Further to this, WRC should implement a “sub-catchment management approach”, where farmers/towns in clearly defined small catchments monitor and take responsibility for their own nutrient losses against their own targets, rather than have a much less efficient “total river catchment” goal.
9. The amount of N & P that leaves the river via the Waikato Heads, must be known. What are the numbers? The “Healthy Rivers” program is expected to reduce N & P by ?%. What are these numbers and have they been set in stone? If they have not been set in stone, it is time they were. Otherwise the community will be agreeing to an open ended contract likely to change with political pressure!

The Healthy Rivers program should not be supported unless the final N, P, sediment and E.coli goals, in tonnes/year passing through the Waikato heads, is set in stone. Without this, it is likely that the target will be reset to lower levels once reached.

Summary Statement

Don't restrict adoption of river friendly cropping with regulation. The Waikato could grow more Kiwifruit than the BOP. One of the requirements for this to happen is access to irrigation water.

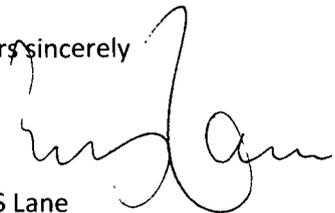
No-tillage and aerial cropping both leave the soil organism and soil structure intact, leading to the improvement of soil rather than its degradation (as happens with cultivation). Rather than build regulations, WRC should spend money on education and incentives to adopt this soil saving, river saving technology.

Targeting nitrogen would seem to be folly. The tool being used to assess losses (Overseer) is not designed as a regulatory tool. Not a lot is known about attenuation of N below the root zone. Most of the sub-catchments currently have N concentrations below the 80 years target. That WRC has decided to use a "grand-parenting" system is grossly unfair. WRC would do better to reduce P loss by targeting sediment loss. By doing this the WRC is taking the moral high ground, and I believe will be supported by the community. It is grossly unfair if farmers are to be restricted over their N & P inputs, while towns and cities continue to release city effluent with dissolved N & P directly into the river.

I wish to speak at the hearing in support of this submission.
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If others make a similar submission, I DO NOT wish to present a joint case.
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Yours sincerely


PMS Lane

February 2017