Choose Clean Water hearing to the Local Government and Environment select committee

13 OCTOBER 2016 TRANSCRIPTION AND SLIDES

Chairperson:
Scott Simpson,
National Party,
Coromandel

Scott: Okay, look, I think we'll get underway. I'll make it ten past eleven. So welcome to this reconvened meeting of the Local Government and Environment Select Committee. We are looking forward to hearing what you have to say in support of the petition. We've got initially, about 30 minutes. It's largely over to you how we use that time. But, just for your own information, members like to engage and ask questions and what have you. So, my advice would be to perhaps not use the entire 30 minutes talking at us and leave a little bit of time so that we can engage with you. And then what we will have happen, we have got advisers from the Ministry for the Environment in the room as well. And so at the end of that period of time, we're going to ask the ministry advisers to come up to the table and say their piece and then once that's finished, we'll invite the petitioner and company back again to have another right of reply or comment if you like. I'm conscious that this room doesn't occupy everybody who has come here to hear this submission this morning and I'm conscious that there are some people who are in an overflow room. I hope that those people can, even though they can't see us, can hopefully hear us clearly. So can I just invite people who are speaking to speak clearly into the microphones for the benefit of not only everyone in the room but there are in a room nearby. So welcome, to the committee. Over to you. We're looking forward to hearing from you and maybe you could just begin by some introductions. Thank you.

Kyleisha Foote,
Manawatū,
MEnvMgmnt

Miriama (Marnie) Prickett, Auckland, BAgSci

Tom Kay, Hawke's Bay, BSc

Marnie Pricket,
Choose Clean Water

Marnie: Kia ora koutou. So my name is Marnie Prickett and yeah, so we're going to use about 25 minutes of the time to speak because there's Tom Kay who is going to speak, Kyleisha Foote and myself and we've also invited Kapiti College students to give their perspective on the future of freshwater for New Zealand. So, and then, yeah, hopefully there will be five minutes at the end where people can yeah, that we can have a bit of a dialogue. That'd be great, yeah.

So, good morning everyone. As I said, my name is Marnie Prickett. Honorable members of the committee, we are here as young New Zealanders working for a future of healthy rivers and lakes. Clean, safe freshwater. We are also here as members of the Choose Clean Water Campaign, which aims for strong legal protection for freshwater in our national policy statement for freshwater management. We are here as representatives of 13,000 New Zealanders who signed the petition,

calling for the acceptable, swimmable standard to the New Zealand's bottom line for freshwater. Not the government's wadeable to bottom line. We are here for those New Zealanders who signed the petition, but we're also here for the many, many more who don't want to risk the people or the places that they love. We are also here for the youngest New Zealanders. If we lack the courage today to act, or lack the humility to take responsibility for the mistakes made in the past in polluting

freshwater, it is our youngest people who have the most to lose.

Honorable members of the committee, the National Policy Statement for freshwater management is an impotent and reckless piece of legislation that risks what is most important to New Zealanders, including their health and that of their families. It does so on flimsy ground. Flimsy scientifically, as it does not accurately represent the risks to human health or to animal and wildlife health. Flimsy because it does not support the values of New Zealanders who have widely and repeatedly called for a strong protection for freshwater and law and a swimmable bottom line. Flimsy because it cannot achieve its own stated objectives of safeguarding the life supporting capacity of waterways, and of safeguarding human health. This policy has strayed a long way from its worthy objectives. It has gotten lost from the well researched, robust work presented in the Ministry of Health and Ministry for the Environment's guidelines on recreational freshwater contact.

And it's now a long way from being in line with the Ministry of Health's guidelines on drinking water which came out earlier this year. The national policy statement for freshwater management contains some magical thinking, which was sadly also present in MFE's submission to this hearing. They both work from the starting point that we can have more faecal matters in streams, rivers and lakes. More contaminated freshwater. More instances of algal blooms which in some cases are so toxic that a teaspoon could kill a child. We can have lakes and rivers which we are advised not to even visit and we can still imagine that despite all this, we are safeguarding people's health and well being and we are safeguarding the life supporting capacity of rivers and lakes. This unfortunately cannot be argued to be true. It is sadly a fantasy.

At a time when recently over 5,000 people suffered and a large part of a town was shut down from contaminated groundwater. When 23% of our groundwater is already too contaminated with E.coli to drink. When 74% of our freshwater fish are threatened with extinction, and 62% of the length of our waterways are so high in E.coli that they aren't safe for swimming. When all of this is going on, this policy still contains the suggestion that we do nothing and we take no action. And its national objectives framework conceals the true state of freshwater in New Zealand. Through this policy, the government does not honor its duty of care to New Zealanders to protect what is most vital to all life. Clean, safe freshwater. Instead it places the full weight of the role of protection of freshwater onto communities.

The government and MFE avoid their undeniable responsibility to protect freshwater for the people of New Zealand by using communities to do the challenging work of protecting their water from contamination. Demanding of them large amounts of time which is likely to have

significant financial and personal repercussions for ordinary Kiwis. We ask how genuine community desires will be protected in the face of pressure from organisations who stand to gain financially from releasing waste to water or from sucking water from the rivers or the ground. This is not a question that has been answered so far by MFE. Downstream communities would be at the mercy of any decisions made upstream. At the same time, communities are expected to carry out this challenging work. They are expected to do so using a policy that contradicts its own objectives and does not accurately represent risks. This policy does not support our communities. In its current state it undermines them. And in its current state, it is a handicap to them.

Honorable members of the committee, in its current state, New Zealanders cannot be confident that the national policy statement will be effective in achieving what we all want which is clean, safe freshwater, healthy rivers and lakes, and a secure future for our people. We call on you to use your members, use your position as members of this committee and as members of parliament, to strengthen this legislation. New Zealanders, particularly young New Zealanders are not asking for the world. We are asking for clean, safe freshwater.

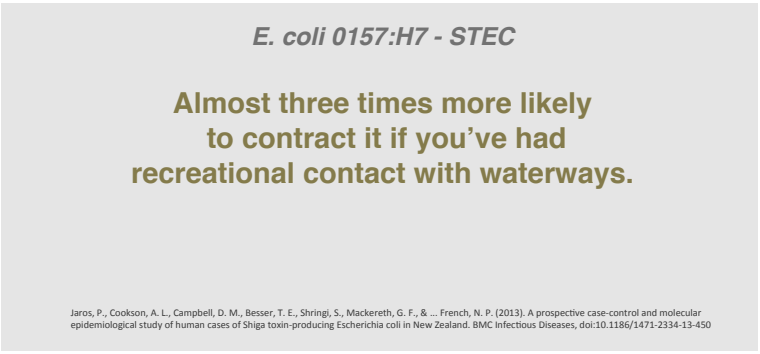
So today here, we call for a rejection of the secondary contact bottom line. We call for the adoption of the acceptable swimmable standard as our bottom line, the addition of nutrient limits which account for the role that nutrients play in algal growth and their risk to human health, and the opportunity to present this information to the Health Select Committee as it is also a health issue. And for the full and independent review of the National Policy Statement for freshwater management, as promised in the 2014 version of this document, to be urgently carried out by a body that has not been involved in its development to date. So truly an independent review. So, I will hand over to Tom, who will be speaking on E.coli.

Tom Kay,
Choose Clean Water

Tom: Kia ora. I'm Tom. So I'll just jump straight into it and take you through this ecoli stuff. So E.coli is an indicator of the amount of faecal contamination in our water, faecal material in our water. And it's an indicator organism for a number of waterborne pathogens, including the

zoonosis colony-forming enteritis, cryptosporidiosis, salmonellosis and campylobacteriosis. All of which New Zealand has the highest per capita frequency of an OECD. And there's also some really dangerous strands of E.coli in itself. And while the risks associated with these pathogens are often downplayed as a sore stomach and a bit of vomiting for a few days, these pathogens can have some really serious health impacts, including vomiting, bloody diarrhea, paralysis and death. And while it sounds extreme, we have seen this firsthand. Thousands of people became sick in Havelock North as the result of a campylobacter outbreak. And

associated death, in two cases of Guillain–Barré syndrome.



"The highest number of STEC (*E. coli 0157:H7*) cases reported in this study was in the youngest age category (children aged 0-4 years), which is consistent with New Zealand's health surveillance reports"

Jaros, P., Cookson, A. L., Campbell, D. M., Besser, T. E., Shringi, S., Mackereth, G. F., & ... French, N. P. (2013). A prospective case-control and molecular epidemiological study of human cases of Shiga toxin-producing Escherichia coli in New Zealand. BMC Infectious Diseases, doi:10.1186/1471-2334-13-450

So these pathogens pose a really serious public health risk. And we know that there are certain strands of these pathogens, such as E.coli STEC, that you're almost three times more likely to contract if you've been in recreational contact with waterways in New Zealand. It's even scarier then, that the prevalence of this particular strain of E.coli is highest in one of our most vulnerable populations, as zero to four year olds. So we need to think really carefully when we're looking at the national policy statement for freshwater management about whether it's consistent with its own purpose and objectives. Whether it's safeguarding the health of people in communities, and not only for secondary contact. Because as

Safeguarding?

a) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and

b) the health of people and communities, at least as affected by secondary contact with fresh water

you'll see, secondary contact is inadequate for protecting human health. And New Zealanders don't think that's good enough. So we have found the best way to do that is to back track a little bit to 2003, to some guidelines the Ministry for the Environment wrote in partnership with the Ministry for Health, called the Microbiological Water Quality Guidelines for Marine and Freshwater Recreational areas. And as the Ministry would know in these guidelines, three quality bands for recreational water will sit out, which the ministry referred to somewhat disparagingly in their submission to the Select Committee as precautionary.

Ministry for the Environment
Manatū Mō Te Taiao

< 260 cfu/100ml: ACCEPTABLE for contact recreation

260 – 550 cfu/100ml: ALERT for contact recreation

> 550 cfu/100ml: ACTION for contact recreation

Regardless, these bans state that any waterway with less than 260 colony forming units for 100 mls of water is to be considered acceptable for contact recreation. Any water body with a concentration of colony forming units between 260 and 550 is placed in a band referred to as the alert category. And anything over 550 falls into an action category. So you can see those up on the screen there. And it's relatively straightforward if we flip to the next slide. Each one of these bands falls, or is assigned a grade. An A is below 130 units. B up to 260 so that's two acceptable grades, and anything above that is giving a grade of C and D respectively. Alert and action categories.

Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas

Ministry for Health and Ministry for the Environment

Table E1: Microbiological Assessment Category (MAC) definitions	
A	Sample 95 percentile ≤ 130 *Escherichia coli* per 100 mL.
B	Sample 95 percentile 131–260 *Escherichia coli* per 100 mL.
C	Sample 95 percentile 261–550 *Escherichia coli* per 100 mL.
D	Sample 95 percentile >550 *Escherichia coli* per 100 mL.

Ministry for the Environment. (2003). *Microbiological water quality guidelines for marine and freshwater recreational areas.* Retrieved from http://www.mfe.govt.nz/sites/default/files/microbiological-quality-jun03.pdf

And it's worth adding a little bit of detail here. It doesn't get too complicated. So note that these values are based on the risk of infection to the public when we come into contact with these waterways. So those acceptable bands for contact recreation, the A and B, show that we're unwilling to accept any level of risk greater than 1% or we were willing to, or weren't willing to accept any greater risk than 1%. So that's one in 100 people becoming infected at the most. At the most. In order for us to call these waterways safe. When we start to get above those

for Marine and Freshwater Recreational Areas

Ministry for Health and Ministry for the Environment

Table B2: Guideline values for microbiological quality of freshwater recreational waters		
95th percentile value of *E. coli*/100 mL (rounded values)	Basis of derivation	Estimated risk of *Campylobacter* infection
≤ 130 A	This value is the NCRL for *Campylobacter* infection.	< 0.1% occurrence. This relates to less than one case of *Campylobacter* infection in every 1000 exposures.
131–260 B	The 260/100 mL value is above the threshold of *Campylobacter* infection (above the NCRL).	0.1–1% occurrence. The upper 95th percentile value of 260 relates to an average probability of one case of *Campylobacter* infection in every 100 exposures.
261–550 C	This level represents a substantial elevation in the probability of *Campylobacter* infection compared to the New Zealand background rate.	1–5% occurrence. This range of 95th percentiles represents a probability of 1 in 100 to 5 in 100 of *Campylobacter* infection.
> 550 D	Above this level there may be a significant risk of high levels of *Campylobacter* infection.	> 5% occurrence. The upper 95th percentile value of 550 represents a greater than 1 in 20 chance of *Campylobacter* infection.

Ministry for the Environment. (2003). *Microbiological water quality guidelines for marine and freshwater recreational areas.* Retrieved from http://www.mfe.govt.nz/sites/default/files/microbiological-quality-jun03.pdf

bands, we enter levels of risk at which the ministry for the environment says we should become concerned. Up to one in 20 people becoming infected after contact with waterways that fall into that alert category. And at those concentrations above 550, over one in 20 people becoming infected, we should move into a state of action.

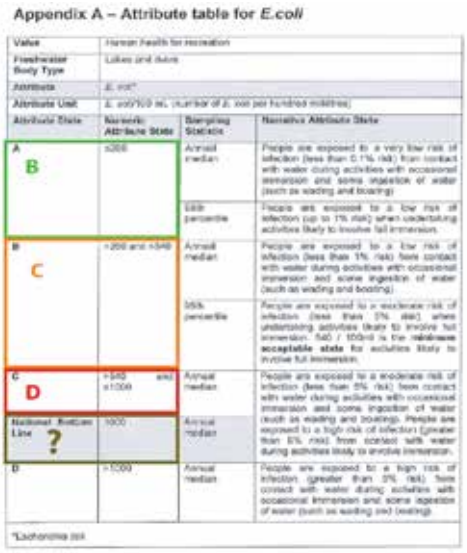
"These risks do not relate to children, the elderly, or imunocompromised people who would have lower immunity and might require a greater degree of protection."

Ministry for the Environment. (2003). *Microbiological water quality guidelines for marine and freshwater recreational areas.* Retrieved from http://www.mfe.govt.nz/sites/default/files/microbiological-quality-jun03.pdf

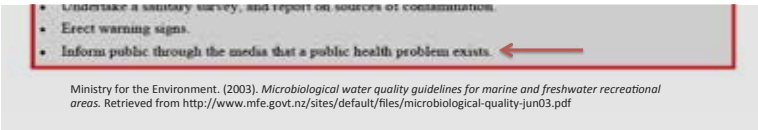
And the Ministry explicitly states in these guidelines that we're not talking about the risk to children, those people that we know contract these illnesses in the highest numbers. We're not talking about risk to the elderly, or the risk to those vulnerable people who have lower levels of immunity. So for these people, the risks might be significantly higher. So we were really confused when we started to look at the Ministry for the Environment's submission to you, to the Select Committee. Because we couldn't match up the water quality standards from the microbiological

guidelines to the values that they had put on their submission. And then we realized that when you overlap those values, those values in the guidelines with the table from the Ministry's submission, there are these inconsistencies. And one of those is that the A band, the quality band for water with up to 130 colony-forming units in it, wasn't there anymore, or isn't there anymore.

So the B category, up to 260 units has been renamed the A band, and every category respectively below that has been renamed. So a C becomes the B, and so on, thereby shifting the goal posts. And that E.coli value previously referred to as an alert value, is renamed the minimal acceptable, minimum acceptable state for full immersion. And the bottom of the new B band, is only ten colony forming units away from the value at which a public health problem exists. And it's not us suggesting a public health problem exists. This is the Ministry for the Environment and the Ministry for Health explicitly stating in these guidelines that any concentration of E.coli above 550, at any concentration of E.coli above 550, a public health problem exists, as you can see on that screen there taken directly from those guidelines that the Ministry for the Environment wrote.



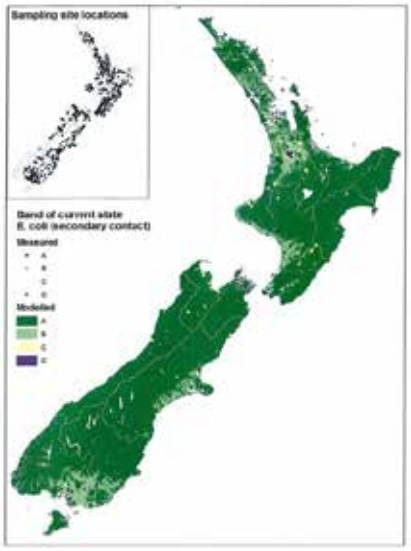
So it's crazy to go back to that table and see that the suggested national bottom line for E.coli concentrations is a value almost twice that at which the Ministry themselves has stated a public health problem exists. And



Ministry for the Environment. (2003). *Microbiological water quality guidelines for marine and freshwater recreational areas.* Retrieved from http://www.mfe.govt.nz/sites/default/files/microbiological-quality-jun03.pdf

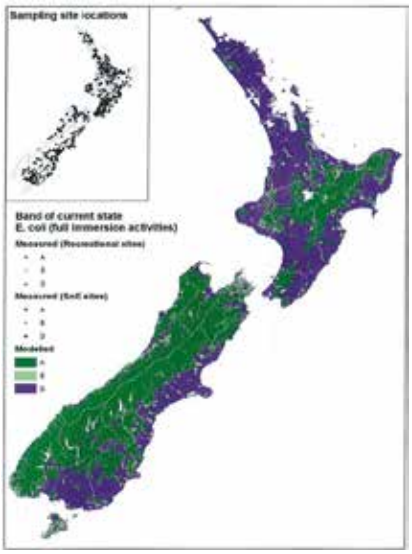
it's also worth noting here that they introduced two levels of risk to the E.coli standards. One for secondary contact, wading as its been referred to, and one for primary contact for swimming. And what comes out of those risk values is really concerning because when you put those values onto a map of New Zealand, most locations fall onto the A and B categories.

Under the proposed NPS standards the problem disappears



This is for secondary contact. So any issues with quality have been concealed. As soon as we consider these locations in terms of the risks associated with primary contact recreation, the original risk values from the microbiological guidelines that the Ministry for the Environment wrote, we find a huge proportion of New Zealand falls into the D band, those

We have a faecal contamination problem.



values over 540 and likely to be over 550, the value at which the ministry for the environment states, explicitly says that a public health problem exists. And we should move into that band of action. And it's consistent with NIWA data where all these values here in darker orange and red fall into that unacceptable state for contact recreation.

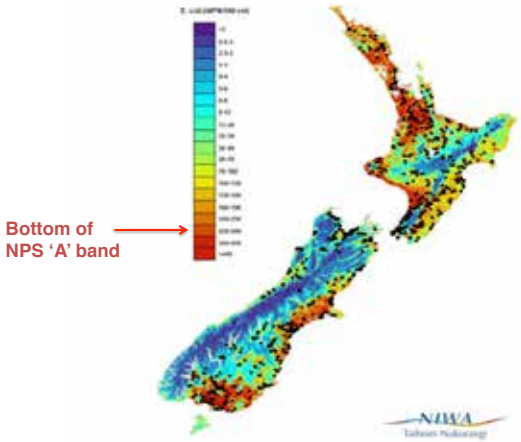


Figure 10. Current state E. coli (faecal pathogen indicator) distribution. The ministry of Health guideline level for contact recreation is 260 MPN/ml so all dark orange and red waterways are unsafe to swim in[10].

NPS-FM is not safeguarding

a) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and

b) the **health of people and communities**, at least as affected by **secondary contact with fresh water.**

So we have a problem and the National Policy Statement for Freshwater does not safeguard our health. The Ministry for the Environment knows we have a problem. According to their own standards by their own definition, we have a problem. But it's being concealed under a flimsy piece of policy. Given that we have a health problem, a public health problem, this issue should be heard at the Health Select Committee

For NPS-FM to achieve its objectives, it must:

- **Set the MfE acceptable swimmable standard <260 cfu/100ml as the national bottom line**
- **Retain acceptable, alert and action categories**

Local Govt & Environment Select Committee:

- **Recommend these changes to the NPS-FM.**
- **Recommend a fully independent review of NPS-FM is urgently carried out.**
- **Forward this petition to the Health Select committee**

and given the discrepancies within the Ministry for the Environment's own documents, an independent review of the policy forming process is required. We must see less than 260 colony forming units is the acceptable level for contact recreation. And retain the acceptable alert and action categories, as they stand in the microbiological guidelines. We have a problem with pathogens in our water. We've seen what it can do. We know it exists, the Ministry for the Environment knows it exists. Let's stop concealing the problem and make some decent legislative changes to fix it.

Kyleisha Foote,
Choose Clean Water

Nutrients

Kyleisha: Kia ora koutou. My name is a and I'm just going to go through some information on nutrients. So over the past decade or so we have seen increasing occurrence of cyanobacterial blooms in our lakes, rivers and streams. Last summer, these blooms resulted in the death of dogs and farm animals.

Investigations into dog death after visit to Tukituki

Otaki toxic algae dog death reported

Algae warning for Southlanders

Posted on 13 January 2016

Algal mats of potentially toxic cyanobacteria are present in the Waiau River.

Environment Southland monitoring shows a high abundance of the naturally occurring and potentially toxic cyanobacteria drab/green or brown/black algae) in the northern Southland river. Cyanobacteria algal mats have been observed floating downstream, which means the algae could also be present in the Mataura River, but this is yet to be confirmed.

People and animals (particularly dogs) should avoid contact with the Waiau River from Piano Flat downstream, including the main stem of the Mataura River until health warnings are removed.

Cyanobacteria can produce toxins that are harmful if swallowed or if they come into contact with skin. Exposure may cause skin rashes, nausea, stomach upsets, and tingling and numbness around the mouth or fingertips. If you experience symptoms after contact with contaminated water, contact Public Health South and see a doctor immediately. Boiling contaminated water does not remove the toxins and drinking it is not recommended. Animals that consume cyanobacteria should be taken to a vet immediately.

Cyanobacteria algal mat in the Waiau River. Picture courtesy Environment Southland

Marlborough dog owners warned of cyanobacteria outbreak in Marlborough

Toxic algae levels increasing in Tasman area rivers, councils urge caution

Toxic algae makes Masterton's Waipoua River unsafe for swimming

MICHAEL FORBES
Last updated 11:56, January 19 2016

Masterton's Waipoua River is off-limits due to the rapid growth of toxic algae that are dangerous to dogs and people.

Toxic algae warnings in Hawke's Bay after dog's death in Tukituki River

OLIVIA WANNAN
Last updated 18:24, January 11 2016

The Phormidium algae growing on this rock often produces a toxin that can kills dogs in just half an hour if eaten.

Nutrients promote the growth of algae in plants. So increasing nutrients in water lead to increasing growth of cyanobacteria. For healthy rivers and streams, we need to consider the risks from toxic cyanobacteria and the nutrient limits we set for freshwater. Health risks from the toxins that can be present in cyanobacteria can range from a number of things, including death. These impacts are a risk to our drinking water and to recreation.

Swimming ban as toxic algae levels grow in Hutt River

OLIVIA WANNAN
Last updated 15:11, January 29 2015

Toxic algae has spoiled the plans of those wanting to cool off with a dip in the Hutt River.

Greater Wellington Regional Council tests show levels of cyanobacteria are so high in Hutt River it is no longer safe for swimming.

A warning earlier this week to keep dogs away from the river is still in place.

Toxic algae can kill animals that eat it, and in humans often leads to vomiting, diarrhoea and skin irritations, council senior environmental scientist Summer Greenfield said.

Large algal mats have been recorded in the waters at the Boulcott monitoring site between the Melling and Kennedy Good bridges, at Poets Park and at Silverstream. Warnings not to swim have been put in place at the three sites.

A similar alert was issued for Masterton's Ruamahanga River at Te Ore Ore, and warnings were also in place for Henley Lake and

SUPPLIED
The blue green toxic algae, cyanobacteria.

NEW ZEALAND / REGIONAL

Toxic algae warning for Selwyn River

Potentially toxic blue-green algae has been discovered in Canterbury's Selwyn River, sparking a health warning.

The algae was found in the Selwyn-Waikirikiri River at the Whitecliffs Domain. The algae was also found two weeks ago in the river at Coes Ford.

Exposure to the algae can cause skin rashes, nausea and stomach cramps, Canterbury Medical Officer of Health Dr Alistair Humphrey said.

People should avoid the area until the health warning is lifted.

Selwyn District Council said people and animals should not drink from the river, even if the water is boiled as it does not remove the toxins.

Cyanobacteria

skin irritations and allergic reactions

gastro-intestinal issues

respiratory problems

extensive kidney and liver damage

death

risk to drinking water and recreation

McAllister, T. G., Wood, S. A., & Hawes, I. (2016). *Review: The rise of toxic benthic Phormidium proliferations: A review of their taxonomy, distribution, toxin content and factors regulating prevalence and increased severity.* Harmful Algae, 55282-294. doi:10.1016/j.hal.2016.04.002

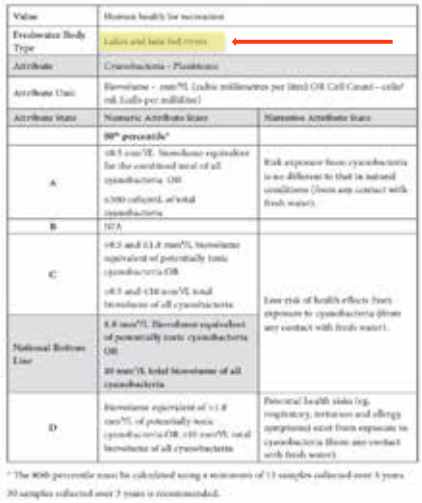
Hunter, P. R. (1992). Cyanobacteria and human health. Journal Of Medical Microbiology, 36(5), 301-302.

"Members of the population at greatest risk when exposed to cyanotoxins are children, and those who already have damaged organs that may be the target of the toxins.

Recreational exposure is the most probable pathway for ingestion."

Ministry of Health. (2016). Guidelines for drinking-water quality management in New Zealand (2nd Ed). Wellington, New Zealand.

Children at the most, are at the most risk and recreational exposure is the most probable pathway for ingestion. So our children swimming in our rivers are at the greatest risk. The proposed legislation only requires monitoring for planktonic cyanobacteria in lakes or lake fed rivers. This



fails to account for benthic cyanobacteria that can occur in all rivers and streams. This is irresponsible due to the serious public health effects that can be caused by cyanobacteria. Places where it has caused public health concern already, killing pets and farm animals, have occurred in rivers that would not be covered by the sampling regime. Recent dog deaths around New Zealand have been from blooms and non lake fed streams and rivers. For example, the Tukituki and the Waitaki river. These blooms are become so bad that people have been warned to stay away from these places. These sites, which we have been warned against visiting, still pass under the proposed nutrient limits and slip under the radar of cyanobacterial monitoring. This legislation says that these toxic sites are okay. Without effective nutrient limits, we are going to see more cyanobacterial blooms and these situations get worse and worse.

"Exposure to the algae can cause skin rashes, nausea and stomach cramps, Canterbury Medical Officer of Health Dr Alistair Humphrey said. **People should avoid the area until the health warning is lifted.**"

"Members of the public should not swim, fish, or carry out any other recreational activity in an affected river."

"The poison can be absorbed through the skin, so direct contact should be avoided"

"The Otago Regional Council says the toxic algae which caused the death of two dogs in the Cardrona River this week can be toxic to people and is warning people to stay away from the river."

"Greater Wellington Regional monitoring detected the algae, which can kill livestock and dogs when ingested, or vomiting, diarrhoea and skin irritations in humans who come into contact with them."

"Dog owners have been warned to keep their animals out of the Hutt River around Silverstream after toxic algae was found there."

A river that runs through Masterton has so much toxic algae in it that **people are being warned to avoid the area."**

Source: Multiple New Zealand newspapers

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A river that runs through Masterton has so much toxic algae in it that **people are being warned to avoid the area."**

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Without effective nutrient limits
we will see more cyanobacterial blooms

The stated objectives of the National Policy Statement are to protect the last supporting capacity ecosystem processes and indigenous species of freshwater and the health of people and communities by secondary

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contact with freshwater. We have seen that these standards are not protecting the health of people, because there are places we have warned against visiting, that we can't even touch. And that it is even a health risk to walk our dogs there. This legislation fails, even under secondary contact, because we can't even go to these places or touch the water. Furthermore, Tom has already shown that secondary contact is inadequate for protecting human health. The NPS also fails to protect adequate nutrient limits to protect or maintain the ecological health of New Zealand rivers and streams. The NPS has used toxicity limits of

Value	Ecosystem health		
Freshwater Body Type	Rivers		
Attribute	Nitrate (Toxicity)		
Attribute Unit	mg NO_3-N/L (milligrams nitrate-nitrogen per litre)		
Attribute State	Numeric Attribute State		Narrative Attribute State
	Annual Median	Annual 95th Percentile	
A	≤1.0	≤1.5	High conservation value system. Unlikely to be effects even on sensitive species
B	>1.0 and ≤2.4	>1.5 and ≤3.5	Some growth effect on up to 5% of species.
C	>2.4 and ≤6.9	>3.5 and ≤9.8	Growth effects on up to 20% of species (mainly sensitive species such as fish). No acute effects.
National Bottom Line	6.9	9.8	
D	>6.9	>9.8	Impacts on growth of multiple species, and starts approaching acute impact level (ie risk of death) for sensitive species at higher concentrations (>20 mg/L)

nitrate. However for nitrate concentrations, even get high enough to be lethal for fish, are the changes that are happening that impact on the ecology of the river, such as increased algal blooms and decrease to oxygen concentrations. These will kill fish and destroy their associated ecosystems. The fish cannot die twice. They'll be long dead before they

die from the toxicity limits.

But an A under the proposed NPS says that it corresponds with a high conservation value system. This is simply not true when the effects from ecosystems will occur at much lower levels. Many New Zealand scientists have discredited the use of nutrient toxicity levels in managing ecological health, saying that they don't protect against increasing algal blooms. These increase in algal blooms are affecting the health

Prof Jenny Webster-Brown, Director – Waterways Centre for Freshwater Management
"Issues of particular concern: The lack of any guidance on nitrogen and phosphorous limits to prevent nuisance algal growth in rivers."

Dr Clive Howard-Williams, Chief Scientist, National Institute of Water and Atmospheric Research
"These toxicity limits are by no means the sole considerations when managing nutrient levels in rivers. Nitrate and other nutrients in rivers may also affect ecosystem health by causing excess growths of river-bed algae (periphyton)."

Dr Angus McIntosh, Professor of Freshwater Ecology, University of Canterbury:
"Most importantly, the bottom lines described in the National Policy Statement are far away from where negative effects first start to happen. Once water quality gets to these bottom lines, the horse has effectively bolted and local communities will be faced with decades of expensive and difficult rehabilitation. Likewise, focusing on toxicity effects (e.g., for river nitrate) misses the potentially more important chronic effects."

Dr Marc Schallenberg, Fresh water scientist, University of Otago
"The nitrogen levels allowed in rivers are determined by toxicity, not by the effects of nitrogen on freshwater ecosystem health. There are no limits specified for phosphorus in rivers. So under this limits framework, rivers are allowed to have levels of nitrogen and phosphorus that far exceed levels that would safeguard aquatic ecosystems from algal blooms."

Science Media Centre NZ. (2014). *Freshwater national standards set – Experts respond. Retrieved from http://www.sciencemediacentre.co.nz/2014/07/03/freshwater-national-standards-set-experts-respond/*

of our rivers, of our people and our wildlife. We need to have nitrogen and phosphorous concentrations set for ecological health. Currently, phosphorous isn't even included in the NPS for rivers. Single nutrient management does not safeguard ecological power. Total nitrogen and dissolved reactive phosphorous are included for lakes, and it should be for rivers as well.

So we can see that the NPS is not protecting the life supporting capacity ecosystem processes in indigenous species of freshwater like it says it

NPS is not safeguarding

a) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and

b) the health of people and communities, at least as affected by secondary contact with fresh water.

does. But we can have something different. We can manage nutrients for ecological health. Freshwater ecologist Russell Death has prepared nitrate and DRP attributes to correspond with ecosystem health.

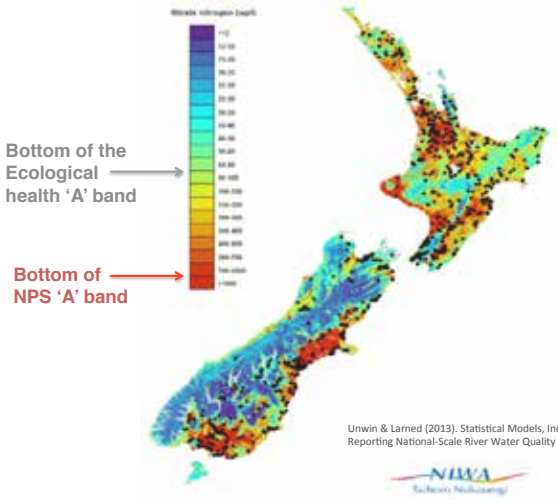
Ecological health

Nitrate (NO_3)

Value	Ecosystem health	
Freshwater Body Type	Rivers	
Attribute	Nitrate	
Attribute units	mg/l (milligrams per litre)	
Attribute State	Numeric Attribute State	Narrative Attribute State
	Annual median	
A	≤ 0.08	River ecosystem health high, similar to natural reference condition.
B	> 0.08 and ≤ 0.39	River ecosystem health good. Some degradation of life supporting capacity but ecosystem still functioning well.
C	> 0.39 and ≤ 1.33	River ecosystem health moderate to poor. Life supporting capacity degraded but acceptable.
National Bottom Line	1.33	
D	> 1.33	River ecosystem health bad. Severely polluted.

Death, R. (2016). National Environmental Objectives Framework (NEOF). (Defining ecologically relevant limits for rivers and streams in New Zealand).

These numbers align with other research including NIWA data. His band A set for nitrates, set at .08 milligrams per liter, is well below the A band proposed in an opposite at one. His bottom line is 1.33 and the proposed NPS' bottom line is 6.9. Modeling by NIWA shows the nitrate levels across the country. This is the range of nitrate concentrations that NIWA thought appropriate to model, based on the range of nitrate concentrations that you'll find in New Zealand rivers.

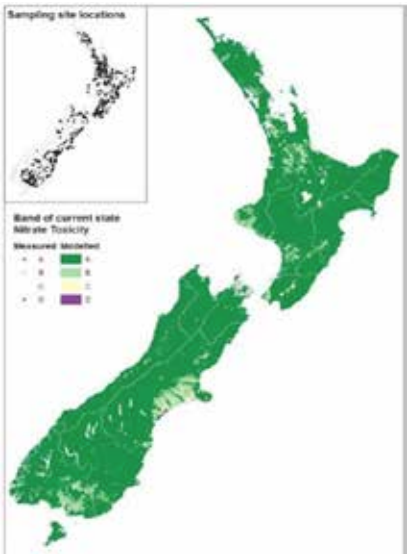


Unwin & Larned (2013). Statistical Models, Indicators and Trend Analyses for Reporting National-Scale River Water Quality (NEMAR Phase 3). NIWA.

This is where the A band for ecological health sits. And this is where the A band for the proposed legislation sits, where the toxicity A band is. As you can see, the variation of nitrate within New Zealand sits largely above this A band. These levels have an ecological impact and it is clear that human activity is impacting water quality.

So what are the Mnistry for the Environment doing to manage this problem under the proposed legislation? They conceal it. This is what it looked like under the proposed NPS. Just about everything fits into that

Under the Proposed NPS standard the problem disappears



A band. This legislation denies that there is a problem. These limits are letting our rivers degrade much more.

So we can see that the proposed objectives of the NPS are not going to be met under the attributes that they have set for nitrate, but not including phosphorous and for the lack of cyanobacterial monitoring. This legislation is not protecting the health of people or ecosystems and we are concerned about that. It's clear that we need responsible nitrogen and phosphorous limits that were more closely aligned with ecological

NPS-FM is NOT safeguarding

a) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and

b) the health of people and communities, ~~at least as affected by secondary contact with fresh water.~~

and human health. But setting nutrient bottom lines using toxicity levels rather than the ecologically sensible levels, undermines the purpose of this legislation. Not requiring the measurement of cyanobacteria where cyanobacteria has been found to be a public health risk is irresponsible. Both nutrients and cyanobacteria are related to each other and an important fact is in ensuring human health and the swimmability of New Zealand rivers. These factors were either not considered in the drafting of the NPS legislation, or if they were, the level of risks the authors were willing to place on New Zealanders was extremely reckless. Thank you.

For NPS-FM to achieve its objectives, it must:

- Set the MfE acceptable swimmable standard <260 cfu/100ml as the national bottom line
- Retain acceptable, alert and action categories
- Include nitrogen and phosphorus levels that protect ecological integrity of rivers
- Monitor cyanobacteria in rivers and streams

The National Policy Statement for Freshwater Management is:

- Irresponsible & contributing to the contamination of freshwater
- Inconsistent with:
  - its objectives
  - the documents its based on
  - the science its based on
  - NZ public's calls for strong protection
- Conceals NZ's freshwater problems by weakening standards
- Inaccurately describes public health risk by changing crucial definitions & descriptions

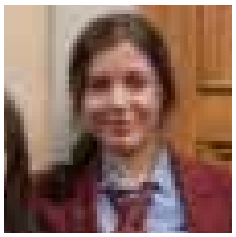
We call on Local Govt & Environment Select committee to:

Recommend these changes to the NPS-FM.

Recommend a fully independent review of NPS-FM is urgently carried out.

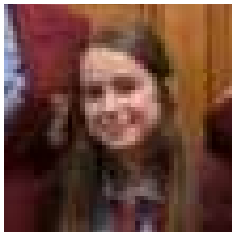
Forward this petition to the Health Select committee.

Marnie: Now we're going to have young New Zealanders to talk about what they want their future to be.



Bree Renwick,
Kapiti College student

Bree: Honorable members of the committee, my name is Bree Renwick. I have lived in Kapiti all my life. When I was five, I remember splashing across the Wharemauku stream rather than using the bridge. It was fun. When I was nine, I remember trying to jump across the stream and failing. I failed. It was what happened. But I ruined my shoes, due to the color they changed and the smell they obtained. When I was 12, I didn't try it. I didn't want to risk falling in and getting sick. That time, I chose the bridge. That is the problem. As Kiwis, we collectively value two things, having fun in the water and our supposed clean green image. But both of these canvases, these pictures I've painted on, are being destroyed. Water pollution levels are rising and species are dying due to it. As young New Zealanders, what we identify with is changing rapidly, compared to what our great grandparents, our grandparents and even our parents identified with. We don't remember the same things, recognise the same things. Their stories of joys are ours of dirt and disease. Water pollution has got to a point of being so unhealthy it makes our future look unhappy. We are the future, but we want to change the future, now. Thank you.

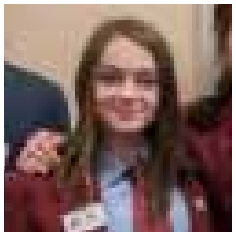


Pippa McCormack Wolf
Kapiti College student

Pippa: Hi, I'm Pippa McCormack Wolf and I'm a year ten at Kapiti college. Now, everybody knows that in the most recent of years, the quality of waterways in New Zealand has rapidly declined. What many people don't know is that it has a massive effect on youth all over the country. I have seen it firsthand. Rivers where I once swam and played as a child grown over and grown dirty. Just like the Paekakariki River, a river which I hold great significance to. Places where memories are born destroyed, now filled with pollutants. Not having good enough freshwater quality standards changes our lives growing up in New Zealand. We want to live and be in a clean, green and beautiful country, but today's children can no longer make the memories of our country having a clean environment like my generation was able to do. This is our future, our legacy. And if we can continue to let our waterways become more polluted, the next generation will grow up without the blessing of having fresh, swimmable water. Raising water standards will give our youth back their ability to live in New Zealand as the green place as it was before perceived. Give us back our right to make memories your generation made in freshwater rivers and lakes. We should be cleaning and protecting our waterways instead of letting them be destroyed. Raise water quality standards. Give our youth what they deserve to inherit. A clean, freshwater Aotearoa New Zealand.

Sophie Handford
Kapiti College student

Sophie: It's our future. My future. When I grow old slowly losing my sight, I want to tell my children about the beautiful things I have seen. Murky, stinky, boggy rivers would be a waste of breath. I hope to tell them about the pristine, sparkling, swimmable rivers from which New Zealand has regained its clean, green image. I desire to see my children laughing, smiling, swimming, just like I had the chance to awhile back. I remember when I was maybe this tall, playing in the Pikariki stream, having the time of my life. Now walking past this waterway brings back such amazing memories. But it's tragic that i can't create any new ones to pass down onto generations. And why should I be held back, kept on the edge of something that means so much to me, my family and all of my friends? As a country that prides itself on our green reputation, we must do something about this and soon. As a future leader, businessperson, teacher and mother, I demand swimmable freshwater quality standards apply to our rivers and lakes urgently. Thank you.



Ruby Hayvice
Kapiti College student

Ruby: Growing up, I was quick to be told our country was environmental friendly and sustainable. To be told that my parents could safely drink from the rivers when they were young. To be told that I should be proud to live somewhere that upheld such high standards. Told but never shown. I saw for myself and learned how different things really were. That the stigma was gone. Our practices have become careless and we have gradually thrown away a natural necessity of life. Whether it goes my sense of stability for a bright, healthy future for not only myself but my children and those who come after, you. The past generations have caused the deterioration in water quality. But I am the one who will be affected. I am the scapegoat, the victim, the child. And we're happy to claim that children of the leaders of tomorrow. But today I choose clean water. Because that is what will lead my tomorrow. Swimmable water quality is not a luxury. It's something that with your health, we can obtain. I am Ruby Hayvice a voice for our youth. And we choose our future. We choose clean water, and we strongly urge you to do the same. Put nicely by Chuck Palahniuk, the goal isn't to live forever, but to create something that will. Thank you.

Marnie: So, to remind everyone what we're talking about, we're talking about pathogens in the water. That's the E.coli. That's the stuff that makes us sick and that currently this legislation is trying to increase the risk of. We're talking about nutrients which lead to cyanobacteria blooms which are toxic. They do not, it does not cover secondary contact because as you saw from the reports that are on your sheets of paper, both say people are, the councils are advising people not even to go to these places. That is not secondary contact and secondary contact is inadequate. So, just to sum up, this is an irresponsible piece of legislation in its current form although it does have worthy objectives apart from that secondary contact line. It's contributing to the current state of freshwater which is in decline and it's contributing to the continuing contamination of freshwater. It's inconsistent with its own objectives. It's inconsistent with the documents it is based on. It's inconsistent with the science that it's based on. And it's also, very importantly, it's inconsistent with our people's wishes for swimmable bottom line which they have repeatedly feared for many years now.

Alarmingly, you can see that it conceals the state of our freshwater. It hides it. So it is not a useful tool for communities choosing what they want their future to be. It innacurately describes health risks by changing crucial definitions and descriptions. So we call on the local government and Environment Select Committee today to recommend our changes to the National Policy Statement. To recommend a full and urgent, independent review of the national policy statement for freshwater management. And we also call on you to forward this petition to the Health Select Committee because this is a health issue for people as well as an environmental issue. Thank you very much.

Scott: We've used all the time so I'm now going to ask the advisers from the Ministry to come and take the table and to present their views.

Catherine Delahunty, Green Party

Catherine: Good morning Mr. Chair. I know we've used a lot of the time but there's been an awful lot of information presented. Could we have at least some time to ask questions?

Scott: Well, let's just have, say, five minutes. Happy to do that but away you go.

speaker 9: Thank you.

Scott: Very quickly.

Catherine: Thank you very much. Because the committee prepares a report, it would be of assistance if [INAUDIBLE 31:34] it out today, if we provided this. But my question is, what you're saying, what I'm hearing is that there's been a failure of the institutions. How would you see an independent inquiry working. Who would be on it and who would undertake that inquiry? Is it something like a Royal Commission?

Marnie: It could be a royal commission, yeah. It definitely needs to be people who haven't been involved in the development of this policy to date. So that includes the Land and Water Forum. They should not be involved in an independent inquiry. They are not independent as we have seen. So definitely not them. Yeah, and it could be a Royal Commission, yep. Absolutely.

Scott: Matt Doocey, you have a question?

Matt Doocey, National Party, Waimakariri

Matt Doocey: Oh I thank you very much for the presentation. A couple of just pragmatic questions, I'm a member of parliament from Waimakariri. We have a lot of focus on land use, should we say that, and primary production. We have 1400 kilometers of waterway and [INAUDIBLE 32:28]. So pragmatically, how can we make that swimmable. Secondly, the question is around faecal matter, so I went to a meeting recently, the scientists for EPM and Waimate district council. They found that in Waimate, faecal matter from birds, is 99% and ruminants is 1%. And [INAUDIBLE 32:48] pragmatic...

Marnie: So there seems to be three questions in there. I would say, please send us the data that you have on the 99% birds and the 1% faecal material from ruminants because that sounds very unlikely.

Matt Doocey: It's publicly available from the site.

Marnie: Which, yeah, so...

Matt Doocey: Waimate District Council.

Marnie: We would like to see the raw data, I think of that, rather than the report of that data, because yeah, to be perfectly honest, that sounds very unlikely. The second, I think you also said how pragmatically would we go about making it swimmable? So, well that's the really interesting thing that comes up also in the MFE submission. There is an imaging that land use will never change, that what we have now is always going to be what we have. And we know that's not true. The land use in New Zealand over the last 20 years has been an extremely big shift. So it's likely that in the next 10 to 20 years that we can have another big shift. What exists, our economy is not going to look exactly the same. Hopefully it's not stagnant. It's going to keep moving. And so it's unlikely that, we can make changes which will have an affect on land

use and that is very likely and we've had a huge benefit to making things swimmable.

Tom: I'll just add to that. In terms of you having this huge catchment that you're trying to manage for swimmable rivers everywhere, when you look at an ambition like to make New Zealand pest free, do you see the entire country as a very difficult place to pull every single rat and mouse and possum out of it? It's an ambition that's worth chasing, regardless of how, to be honest I would say a pest free New Zealand is must less realistic than having 1400 kilometers of swimmable rivers in your catchment.

Meka Whaitiri,
Labour Party,
Ikaroa-Rawhiti

Meka: Thank you for your presentation. I think, I agree with you that it is an ambition that we have to hold in this country to have swimmable rivers and we see that we have here parliamentarians giving up on that ambition. But one of the things I'm interested in is the Parliamentary Commission of the Environment and their report on water quality. It talked about some other measures such as invertebrae index and these other tools of measuring health. Are these also measures that you would like to see implemented in terms of an ecological look at our waterways?

Kyleisha: Yeah, absolutely. It's not just about the nitrogen and the phosphorous. The MCI, the macroinvetebrate community index has already been proposed to be included. But we thought we should just focus on a few things. So it's not just about one measure of water quality. It is quite a lot as you can see today.

Meka: For the whole ecological look. Okay, fantastic, and great work. Thank you.

Scott: Okay, look, thanks very much. I'm very aware that other members have questions. And I'm sorry, the Greens have had one, the Nats have had one and Labour have had one. We're going to move on. But now we're going to hear from the Ministry for the Environment. Thank you.

Scott: Okay. So thanks very much. You have heard the submission and we're in your hands now in terms of advice from the Ministry.

Peter Brunt,
Director, Water Policy at Ministry for the Environment

Peter: Hey. Hello. So, many thanks.

Scott: Can you just pull that microphone closer?

Peter: I can

Scott: Thank you

Peter: Is that better?

Scott: Yeah

Peter: So, many thanks for the opportunity to speak today and to respond to the petition. So I'll introduce myself. I'm Peter Brunt, so I'm the director of the Ministry for the Environment responsible for freshwater. I'll just get my two colleagues to introduce themselves.

Sheree De Malmanche,
Manager for evidence and information in the water directorate at Ministry for the Environment

Sheree: Hi, I'm Sheree Demamaunch. I'm the manager for evidence and information in the water directorate at MFE.

David Wansbrough,
Director Resource Policy at New Zealand Ministry for Primary Industries

David: I'm a. I'm the Director of Resource Policy of Ministry for Primary Industries and we jointly work on water policy with the Ministry for the Environment.

Peter: So, if the committee is happy, I'm going to say a few opening words of context. And then I'm going to hand it over to my colleague Cherie who is going to, she has a few slides which hopefully you've got. If not we'll have that and make sure the colleagues in the petitions also have it. Which basically just set out some of the scientific context, and also some specific case studies around particular rivers that may assessed. And in that context, we might just kind of return to the table that the people in the halls put up. Because I think one thing we're learning through this process is maybe we're not so good at explaining the policy framework with the science or what's in the National Objectives framework and in some instances as the past we could do. So you've got our written submissions so I'm not going to repeat all of that, but I'll try and draw out some of my key point and considerations there. So firstly, what's really deep there and what in a sense people really care about are freshwater, so they want to see an improvement to our freshwater. And they want to see swimmable rivers.

So just my context, I'm from the UK. I would have hesitated back in the UK to let my kids swim in local rivers. Here it's just part of the lifestyle. It's a given. So we've heard some really genuine concern to commitment expressed by the people who have taken the time to be here today. And from those who signed the petition. And what I want to say is that's a message that we also have heard loud and clear at public meetings when we consulted of earlier this year on next steps for freshwater proposals. And those were a set of proposals to amend the National Policy Statement on Freshwater, including adding in the natural, the MCI, the macroinvertebrates, kind of measure we just talked about. But also introducing things like dissolved in organic nitrogen as a kind of monitoring requirement which as we've heard, nitrate toxicity is not a sufficient measure of ecosystem impacts. But also to exclude self exclusions from waterways. So we received thousands and thousands submissions on this issue, and on swimmability particularly. So what, the remark, one of the big opening remarks I wanted to make was level of public engagement from freshwater is really growing. The turn out for this consultation was a magnitude greater for the consultation when the national objectives framework and the original NPS was put out there. So that we think that's a really positive sign for the way in which the NPS is going to be implemented on the ground which I'll come to in a minute.

So ministers have heard the message that people want swimmable rivers and have made a commitment to look, following this consultation and considering things like this petition on how we can make some practical, workable changes to respond to this. So they're thinking about this actively and we expect to do another round of consultation on amendments to the national policy statements of freshwater management before the end of the year, when ministers are expecting to bring that response. So really important to underline that and to sort of say ministers are thinking about it actively and they have heard what the petitioners, and what a lot of people on the road have to say. So the petitioners spoke with a real passion about prioritising the health of people, of wildlife and the environment. So we think we're on the same page and I think as they pointed out, that's the intent of the National Policy Statement and Freshwater management. That's why it requires regional councils to safeguard freshwater ecosystems, indigenous flora and fauna and the health of people and communities. So and that includes protecting and improving freshwater quality. So we think we're on the same page.

The question we're talking about really is how we achieve that. So the National Policy statement is I think, Marnie pointed out earlier, is written on the basis, the community is the best place to make decisions about water improvements that are needed in their water bodies and how quickly those changes are made. So based on good science

and evidence. So that's the point and taking local values, needs and conditions into account as well as costs and time frames. So that's the point here. So the reason why the National Policy Statement took that approach, because every catchment is different. There are different pressures, different environmental and ecological conditions, but also different communities who have different priorities for different water bodies. That's why the NPS, the National Policy Statement was designed that way. But it's, as it's been pointed out, it's not completely open slather either. There are two conditions.

So the first condition is the requirement for the national policy statement is water quality must be maintained, where it's already good, or improved. So nationally, you want decisions that made water qualities not degrade and get better. And that's the kind of, as a key principal in the national policy statement. Communities can't choose to let things get worse. That's a kind of key principal. Secondly, as you have heard, our most degraded water bodies must be the very least improved to a bare minimum standard. So these are the bottom lines of which secondary contact you just heard which is also commonly known as wadeability, is one. These bottom lines, it's really important to stress a design to be a, and I don't think we had explained this as well as we might. Designed to be a safety net. It's an absolute minimum for the most degraded places, so an aspiration or a desired standard. It's a, here's a line. You shall not cross. You should get your degraded bodies up to this point. But consultation has shown that the real, that the section, that wadeability and the other bottom line is the government's target, is where we want to get for all water bodies and which is not designed to be the way in which this process works. So secondary contact rather than primary contact, including swimmability was chosen for bottom line for a couple of broad reasons.

Firstly because national bottom lines apply for all water bodies all of the time. So practically, it won't be possible, practically, regardless of what assumptions you make about land use change, to achieve swimmability in all lakes, rivers, streams, ground waters, and estuaries all of the time. It's just, it's just a constraint. Most rivers are unsuitable for swimming after heavy rainfall, for example. Some rivers and lakes will have natural pollution or turbidity or flow rates, or other factors that will make them unsuitable for swimming. So that's the kind of reason number one. And secondly, for some communities, not making an assumption that land use will remain the same for all time, some communities, the costs and impact of achieving swimmability will be disproportionately higher than others. So even over the longer term. So large areas of land might need to be retired, and both urban and rural development removed from a catchment in order to achieve a swimmable standard. So for this and other reasons, some communities might want to prioritise values other than swimming in a catchment, or a particular water body. So that was why secondary contact rather than primary contact was originally chosen as that bottom line.

However, we expect that most communities want to improve water quality regardless of whether they've got a highly degraded water body or not, above bottom lines. We're expecting that most communities who aim way above that, and we also expect many communities to prioritize swimming and to achieve swimming standard. That's the kind of really important point. That's our expectation. The national policy statement provides the opportunity for any community to aspire to swimmability and for this to be set as a management objective. And in many processes like the healthy rivers, the process that is going forward in Waikato, this is proving to be the case. Communities are aspiring to swimmable standards. So we have hope and that will play out in other contexts. And we have reasons to think it will play out in other contexts too. What we think is really important to bear in mind this is still early days in the process of implementing national policy statements, so we're really at

the beginning of a journey to address, because I think the points that we made be made, the effects of over 100 years of land use here. But currently in National Policy is really only been in place complete with its National Objectives framework since 2014.

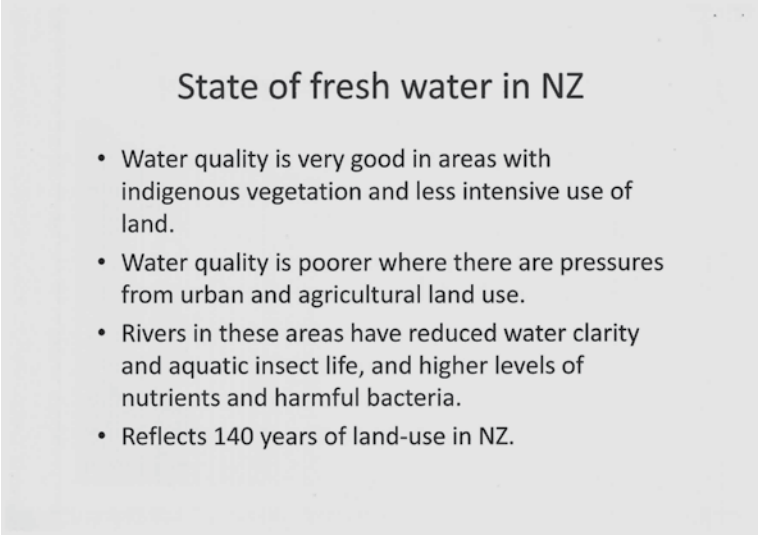
Communities are going through now their processes, throughout the country of setting limits and objectives. And we'll have a better picture over the next couple of years about what the level of aspiration is including around swimming and ministers have asked us to keep a really close eye on implementation on how that's tracking and what that level of aspiration is. And we expect people like the Parliamentary Commission on the Environment to also continue as she has done to make commentary on how that aspiration is played out. So just to kind of round out before I hand it over to Cherie to talk about the signs, increasing level of engagements and genuine commitment people have to improving freshwater we have heard today, to express in the petition, at public meetings. Submissions down at the community level, it says to us that communities are ready to direct their councils to set strong objectives locally. We think that's what we're hearing. But again I want to stress that ministers have heard the message that people want swimmable rivers and that they really are committed to look at some practical options and are planning to think about bringing back that response in the next couple of months. So, if it's useful, I would now like to invite my colleague just to take you through some of the scientific backdrop with some slides that she's got. That's our expectations.

Cherie: Do know how to close this?

Peter: Yes, I think you can. Yeah.

Cherie: Right, so hopefully in front of you you've got a little pamphlet

that says New Zealand's Freshwater Quality for Swimming and I hope there's enough for some people at the back as well. So I'm just going to go through this for you now. So what I wanted to provide here was a little bit of an overview of the science and information that we collect in the context of managing freshwater. So, second page. State of freshwater in New Zealand. In October last year, we, the ministry in collaboration Sats New Zealand put out environment Aotearoa 2015, which included a chapter on freshwater. In April next year, there will be a freshwater domain report that will also come out which is part of the Environmental Reporting Act. Some of the information that I'm going to give you today has come from that. So water quality in New Zealand is very good in areas with indigenous vegetation and less intensive use land.



Catherine?: Mr. Chair, I think we know all of this.

Scott: Can we skip onto the...

Cherie: I can skip this thing?

Scott: Oh 100% sure that, I mean it's quite...

Catherine?: ... been in countless MFE...

Scott: Yeah, well I think this might be useful for the people present to go over this because we have some members of the committee up here.

Catherine?: Just for clarification, Mr. Chair, how much longer that we have to work with this presentation?

Scott: It should only take about 20 minutes for the Ministry.

Catherine?: But how much longer have we got then?

Scott: We've got about another ten.

Catherine?: At lets ask the officials to get through this in three or four minutes, we can have some time for...

Scott: Look, we didn't badger the previous submitters and I indicated very clearly that it's over to submitters and our advisers on how we use the time. I'm very happy to continue hearing from Cherie if she wishes to continue.

Catherine?: Well the other option is we just got some extra time for questions like we did for the previous submitters.

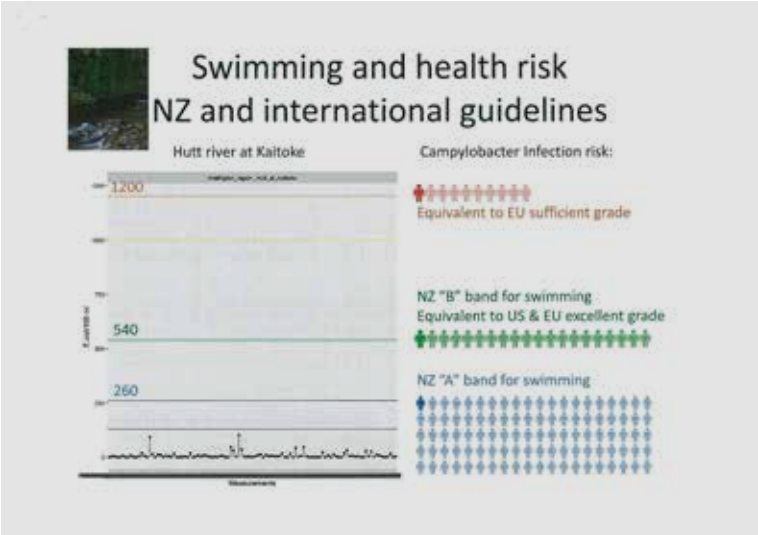
Scott: We're in your hands. But if you want to continue, you could please...

Cherie: I think the context is important and I also think that the information about swimming is often a little bit misinterpreted and it's worthwhile just stepping through it slowly. So as you know water policy is poor in urban and agricultural land use areas, and we have reduced water clarity, aquatic insect life which we talked about which is macroinvertebrates, high levels of nutrient and harmful bacteria in those regions, in those areas. And this does reflect, as Peter said, 140 years of land use in New Zealand. One of the things that came out of environment Aotearoa is trends over the past 20 years. We just see increasing trends of nitrogen and up to 0.55% of monitored sights which is of concern.

But also you see things like phosphorous declining at up to 40% of sites throughout New Zealand. E.coli and aquatic insects at most sites have been no significant changes over the last ten years.

Next slide. So, as you would know, often a range of factors contribute toward a poor water cause in the catchment. And as Peter talked about, we have a national objectives framework for setting objectives and limits. But communities decide their values and uses for freshwater. And I think a key point which is worth repeating is that you must maintain or improve water quality. And as a bit of a safety net at the bottom, there is those National Bottom Lines of Ecosystem Health and Human Health. But maintain and improve always trumps that.

Next slide just is really just to lead into the examples that I'm going to show you that the National Policy Statement provides a new way of working together but every catchment is different. And that's why it's really important that values of a catchment comes before, that there is a discussion of the community level about what communities desire and want and use and their uses in their community. And that a process has gone through to accept objectives and limits for that community that affect the community.



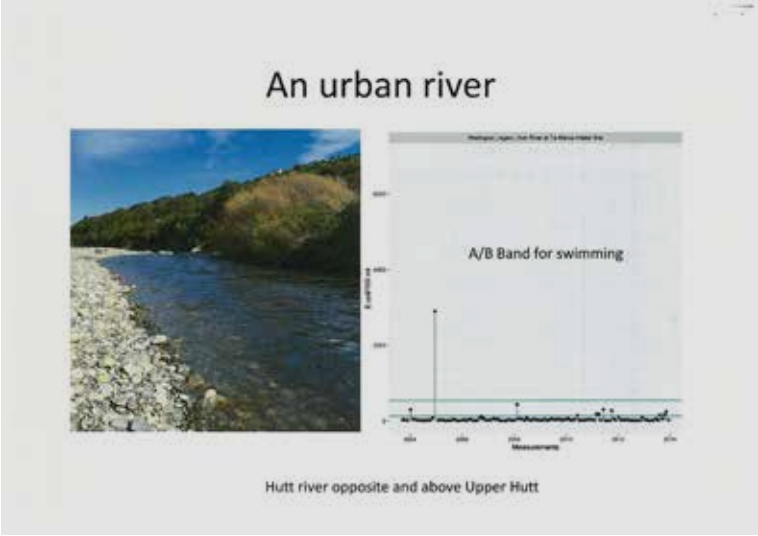
So the next slide I have is on swimming and health risk. And I think this is the one that is probably, I want to spend a little bit more time on because it's a scenario that's often a point of confusion. So what I've got here is a graph. And it shows, there are lollipops at the bottom, are actually monitored values for Hutt River at Kaitoke just north of Upper Hutt. So this river here has good water quality at this location. And what you can see is a whole lot of lines. So there's a purple line. Now that's the 130, E.coli level. And a few below that line, there is minimal or no risk of campylobacter infection at a site if your samples are below that line. And this is what is reflected in those microbial guidelines that were published in 2003, but also the 260 and the 540 in the National Policy Statement for Freshwater Management. So the next line is the 260.

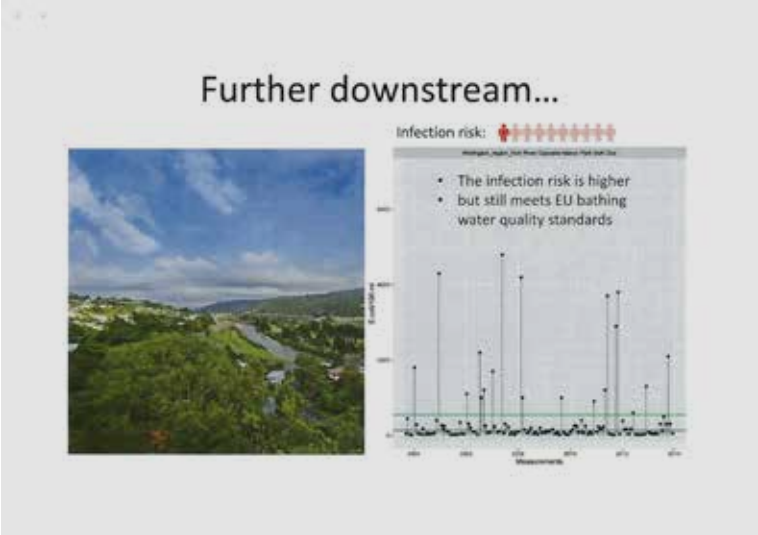
Catherine?: When was this, what year?

Cherie: Between 2000 and 2014. Some of the other slides, unfortunately at the bottom, the dates got a bit mucked up. But on some of the other slides, it does actually show the date range. And so 260, that's that New Zealand A band for swimming in the North. The likelihood of infection at

that level, if you're exceeding that band is if, 100 people were swimming at that site, one person is likely to get infect with campylobacter and one person in probably 200 is likelihood to get ill from that infection. And that takes, that goes right back to those microbial guidelines that were set in 2003 in the sites that underpinned that in terms of determining health risk from swimming in waters based on faecal material being in that water body.

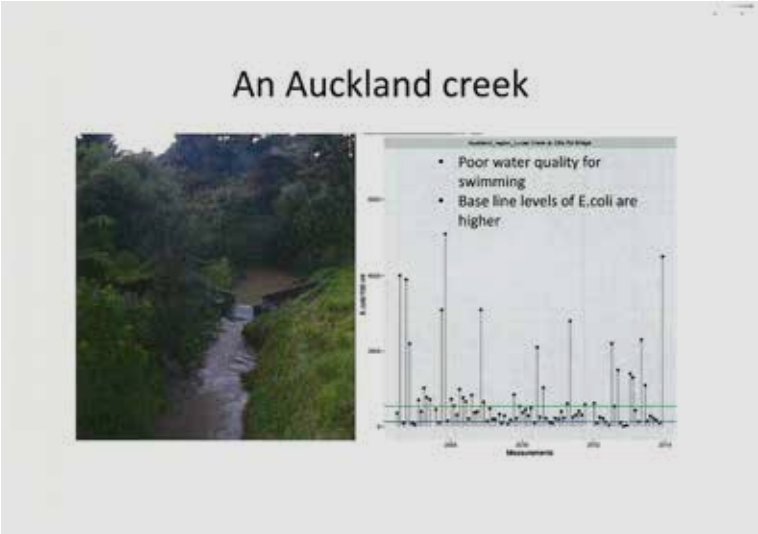
The next line is 540. If you see that line, the risk increases. So if 20 people were swimming at that river, you'd expect one person potentially from ingesting the water and swimming to get a campylobacter infection, and one in 40 to get sick. And then what is shows is a few other lines that show, well with the 540, this is equivalent to the US and EU excellent grade. So I'm just showing you some international comparisons there. And higher up is the 1200, that's equivalent to the EU sufficient grade that is the bathing water quality that is set in the EU bathing water quality regulations. So as you can see there, New Zealand has a, is one of the best in the world in terms of our standards for, and our requirements for E.coli and waterways for swimming. Those guidelines are consistent from 2003 all the way through to the North. I think the confusion comes from them being expressed in different terms. I'm happy to answer questions on that though.



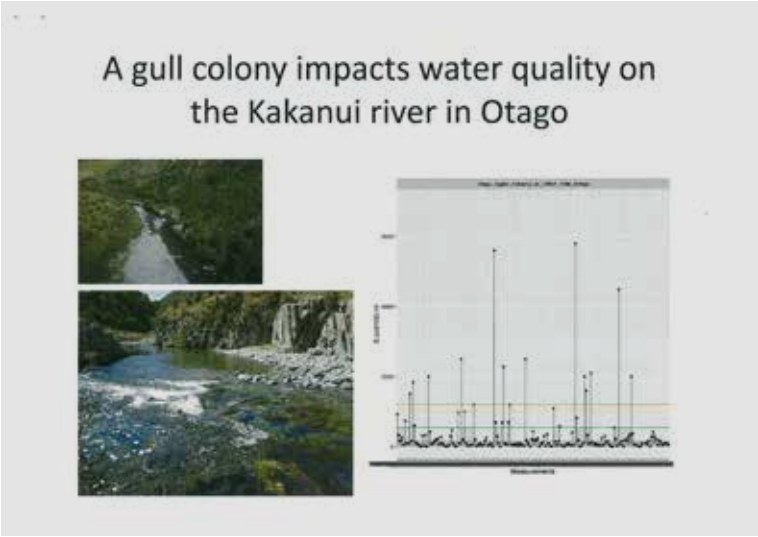


And then what I wanted to show in the next few slides is just a flavor of every catchment being different and in different considerations that need to be taken into consideration on those catchments. So the first, the next one is the Evan River which is the Hutt River opposite Upper Hutt. At this point, that, the river is still in the A or B band for swimming. You can see that it's below the 540 line still for those, for E.coli. Further downstream

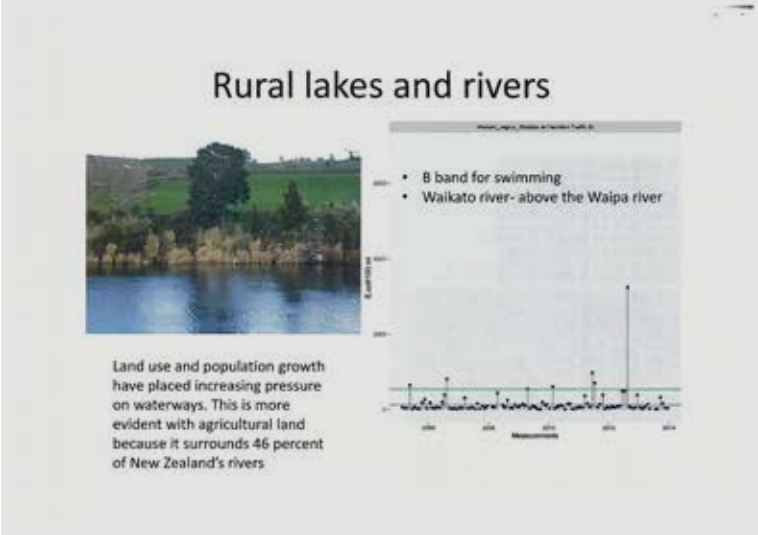
though, past Silver Stream, infection risk is higher. So the water body still meets the EU bathing water quality standards but it is slightly above that 540. So it's not in the A or B band in the North at this point. The risk of infection is higher, one in ten.

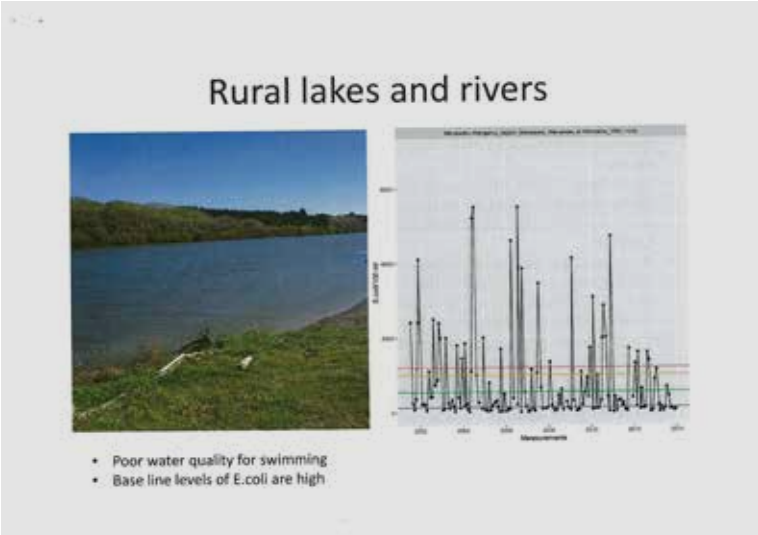


And now I just have a few more examples of an Auckland Creek, the Lucas Creek, where again water quality is poorer for swimming. You have higher baseline levels. So because the levels of E.coli are consistently above that 130 line, at any time, water quality, there is a risk of infection, whereas in the Hutt River example, over 50% of the time even the water quality is spiking above the recommended guidelines, it is actually a level that will be safe for swimming. Next example is a gull colony on

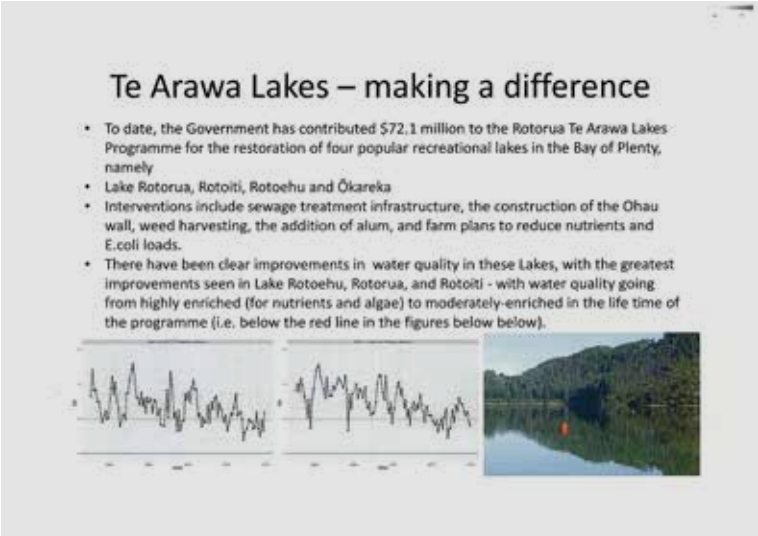


the Kakanui River that impacts water quality at the Clefton Forth Bridge, where again you can see this massive increases in spikes that the gull colonies have an impact on the border in that place. So what I'm trying to tell do here is just give you a flavour of what E.coli looks like in water bodies and how that translates in terms of infection risk.

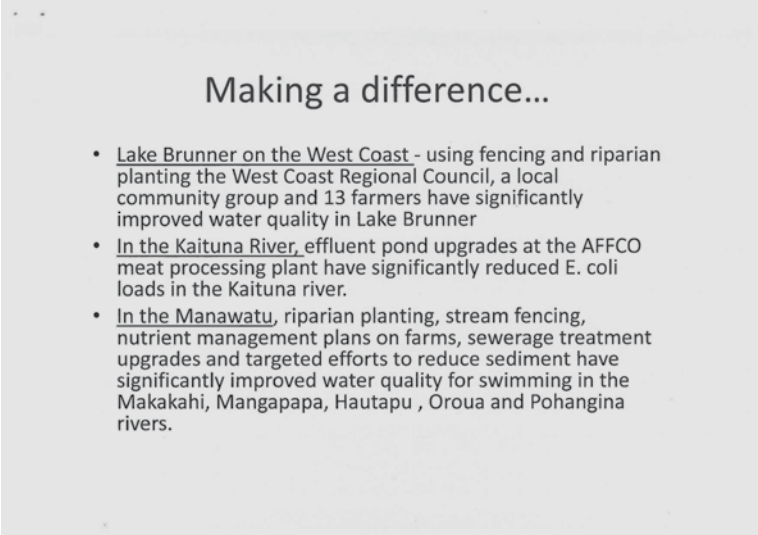




Another couple of examples of rural lakes. One is the Waikato and the other one is the Manawatu, at the bottom near Foxton. And if you go between the two and the Waikato above Hamilton, water quality is suitable for swimming. It's in the B band. When you go to the Manawatu, you can see that quite a change in the profile where the E.coli levels are spiking above those guideline values consistently. And we would not recommend swimming at that site. Now a site like that is going to take some time to improve and there's a lot of actions that would be needed to put in place to actually improve water quality at the bottom of Manawatu River. And that's just going to take a little time.



I just wanted to finish on a couple of examples where there is some really great stuff happening out in the community that is really starting to make a difference. My first example is the Te Arawa Lakes. Where the government has contributed 72 million to the Rotorua Lakes Program for the r of four popular recreational lakes, namely Rotorua, Rotoiti, Rotoehu, and Okareka. A Number of interventions have been put in place. And one I've got at the bottom of that slide, you can see these profiles trending down. What that shows at the nutrient levels decreasing in the lifetime that that program has been in operation, and it's showing that even in the lifetime of that project which started in 2004, I believe, or around 2007 perhaps, yes. There has been some significant improvements and that you actually make a difference in a relatively short period of time. And my last slide is just a few examples and other places where communities or industry have got together and actually made a real difference to the water bodies in the last few years.



Lake Brunner, the Kaituna and the Manawatu, you can read through the examples of the actions that have been taken there but they're really encouraging. And it's actually showing that things that are happening out on the ground are actually making a difference already.

Scott: Okay, right. Meka first then Catherine and then Paul. Well one labour person first.

Meka: Thank you, Mr. Chair. I'm going to go to the first gentleman that spoke. I just want to aska question in terms of your report. Point 46. Whereyou say some areas the improvements required to make water bodies suitable for swimming would make retiring large areas of land or removing development from the catchment would result in a significant social impact. Will you tell the committee what are some of the other things you've done to say that there's going to be the significant social and economic impact and if you done any, I'd like to see them.

David: I can do that. So I'm David from the Ministry for Primary Industries and we've run a joint project over a couple of years to build some of that economic basis and we've been doing it as joint ventures of regional councils. What we really want to do is to have communities have better economic basis. So we started with a few catchments. Wapiti, Canterbury and Southland. And some of those results have been published on various websites, mainly the Ministry for the Environment website. And what we've been doing is building some economic models consistently with some methodology across the country to actual help those communities. So the models that we helped build are now being used by the Wapiti Community in modeling that kind of impact of what they're doing. We've published some around Canterbury, some of the Waimakariri and I think there was the Hinds Catchment that we looked at. And there's been some work done in Southland as well.

Meka: Sorry, I'd like to supplement you a bit. So you say that you're building modelings, modelings.

David:: Yep.

Meka: Especially, what analysis have you done to make a statement like this.

David: Yep, so we've done some studies at particular catchments using those models to look at the economic impacts of different policy options for water. And so allowing the communities to actually put some different options in there. So I don't have them with me today, but there are some of those that have been published around the Wapiti River looking at the economic impacts of various different choices for policy in the Wapiti River. There's some in the Waimakariri Catchment being published.

Scott: You can make them available to us?

David: Absolutely. Absolutely we can get them.

Meka: Thank you.

David: All right.

Catherine: I want to ask you a question about national leadership on water because you said in your submission that swimmable rivers, swimming in rivers in Aotearoa is a given. But if it's a given, when are you going to change the NPS. Because, you've heard from communities. The bird/ organic ash strategy is not working. It is a story. I'm sorry. It's just not working for you. If I were you, I'd start thinking about actually making a given in the NPS. So can you give us a reason why you're allowing councils to interpret this as wadeable and not prepared to take leadership?

Peter: So I think what I was trying to say earlier is it's not clear to us if the councils are interpreting the objectives as wadeable because we, I gave the example of Waikato and...

Catherine: 100 years before it's swimmable. That's their bottom line.

Peter: But that's, so there's a difference between the ambition and where you want to end up and the amount of time it takes to get there. There are a lot of catchments. It will take that amount of time to turn around.

Catherine: Allowed to? take that amount of time

Peter: Yeah but the point is that communities having discussions now to set those ambitions and to set the pathways.

Catherine: : But I'm just questioning you about national leadership.

Scott: Last one, Catherine.

Catherine: : I'm just, it's supplementing. It's just about the national leadership.

Scott: No, it's the last one.

Peter: So the point again was, is that ministers are thinking about how they can support these aspirations. So I think the point we make, setting it in a national bottom line probably given that certain, or some cases it won't be scientifically possible. Probably isn't the solution, but ministers are thinking for a wide range of other options to potentially, to give it a oomph to kind of get that progress and setting that sort of signal.

Catherine: And we're having another consultation process again, after the one that we've just had.

Peter: Before the end of the year.

Scott: Yeah, okay.

Peter: Because that's the way it gets processed.

Scott: Paul.

Paul Foster-Bell,
National Party

Paul: [INAUDIBLE 1:01:59] What's the rough I suppose ratio across the New Zealand population [INAUDIBLE 1:02:17]

Cherie: Generally it's difficult to actually determine if someone turns up to the doctor with the cause of their infection. So there is potential that they've had takeaways recently or they've eaten chicken or that they've been swimming. And so often the cause of illness is uncertain. So the way that these guidelines are produced are actually from understanding overall risk in the community and then applying that in terms of, this is a really a precautionary approach in terms of what would be the safest level where you could be certain that the infection risk is at an acceptable level to make all health organization standards.

Paul: [INAUDIBLE 1:03:14]

Cherie: So they're just starting to occur and scientists from around the country are starting to determine that some strains of campylobacter come for example from species like Pukeko and that those animals but don't carry any certain pathogenic strains of campylobacter although you could see the E.coli in the waterway, you may not necessarily get sick. And there are obviously other cases where there are clear instances of the faecal material being in the water either coming from human or animal sources.

Scott: All right, Ron Mark

Ron Mark,
NZ First

Ron: I need to get a bit of context and a question. This is a question about the model and the question the rose to the socioeconomic costs to the community. I think it ties into the other aspiration which is giving communities themselves, given them credit to decide which standards they wish to have imposed. Now I'll give you some background pointing to this question. In Carterton when I was the Mayor we set an aspiration goal, of zero discharge to the Mungatere Spring from the West. Zero. When we looked at our rating and the impact on the rate players of some of the projects we had in mind, we kept in mind also that $80,000 worth of extra expenditure made a 1% increase in the rates, to every ratepayer. We had elderly people living alone, 80 years of age paying $4,000 a year on rates. When we start looking, consequential impacts on those grandparents.

Scott: We need to get quickly to the question, I know this is...

Ron: This is context, so...

Scott: I know. But please get to the question.

Ron: We had to tamper and moderate the way in which we went about or work. So when you did your economic model, did you get sense if you take that model, what the rate in impact is going to be on some child's grandmother? Or what would be if you took this model? And overall, does it leave you the satisfaction that the rate players were themselves were the best people to start on what standards they should seek?

David: I think we would have modeled total costs, not where they fell. That's something. But overall, change drives cost. So the more change you want, the bigger the cost will be and the only way to really mitigate that is to give it time to adjust. So that's one of the reasons why the National Policy Statement allows time and allows communities to choose how much time. And to choose their own level of exceptions to various things.

Ron: And that's where you got to money over time. So it's just information where it almost hit zeros. It just changed now, weeks later.

Scott: Okay, Eugene. And then Nuks is going to have the last one.

Eugene Sage,
Green Party

Eugene: In your document, you said at the cost of achieving water quality suitable for swimming may be prohibitive to some communities. In both the modeling that MPI has done and in MFE's work, have you included in that costs, the cost to the community of treating water, the cost to the community of loss of recreation or opportunity, the cost of the community of species going extinct. Are those costs in there or is it just, because I'm hearing, a business as usual cost.

David: It's not just the business as usual cost. In the Waikato we did a survey of people's willingness to use recreation. And so we did a non-market evaluation of people's desire and value. We tried to value the recreational value of the Waikato River and that's published as part of the Waikato stuff. It could be on the Regional Council's website.

Eugene: And the cost to, things like the Hawke's Bay gastro outbreak?

David: Well, I don't think we knew about that when then, so no, we haven't counted that.

Peter: Some of those costs weren't needed in our analysis.

Meka?: [INAUDIBLE 01:07:16]

David: They'll be detailed in each of the studies but we're trying to look at a range of valuation of various things, so some of the economic costs are easy to put into dollar figures. Some of the other ones aren't easy to put in dollar figures and we don't necessarily try to. We try to make the information available to communities so that they can see that and actually think about how they want to, what decisions they want to make.

Scott: Okay, last one, Paul.

Tutehounuku (Nuk) Korako
National MP

Nuk: Kia ora koutou. Can I just clarify one thing because in the presentation for Marnie's petition, there was a statement there around that you don't actually monitor phosphorous in the rivers.

Cherie: Cyanobacteria.

speaker 24: Okay. But I just, yeah I realize that but I mean the situation here is that you're saying that phosphorous is 40% down. Would that actually have a kind of an, it's an imbalance thing isn't it because you're not doing all rivers. We're doing the other ones.

???: Don't the regional councils do that? Because we certainly have got readings in our council.

Cherie: Yes, so councils monitor a range of factors, including nitrogen, phosphorous, toxic algae, cyanobacteria, clarity and all of those things informed. We do. I only concentrated on a few of the things here. But certainly, where there are issues or where there are emerging issues, councils are monitoring those things.

Scott: Okay, on that note, thank you all very much. Appreciate it. And we will now call Marnie back.

Scott: All right so this needs to be brief, got about five minutes.

Marnie: Oh, awesome. Okay, so just to clarify with that phosphorous question, that means that there's no limits in the National Policy Statement. It's not, yeah it's not around monitoring and monitoring doesn't, yeah. But there's so limit so there's no guideline for it. First of all, I just want to say that I don't see any references in this document, not a single reference. So I don't know where any of this data has come from and I don't think that we can have confidence in it until we're showing the references of it. I'd like you to note that our presentation has references at the bottom of every slide where it's needed. So the peer review process is not robust around this and I'd ask you to take that into consideration. First of all, I wanted to say that we are not the US or the EU. We have far fewer people and we are, so I think comparing ourselves to the US and to the EU is insignificant. We are Aotearoa New Zealand and we have different standards. We have high standards because what people expect of New Zealand and what New Zealanders expect of New Zealand is a clean, green, swimmable, safe, healthy country. We should not be comparing ourselves to the US or to the EU which have far longer histories of pollution and degradation.

Secondly, I'd like to, thirdly, maybe I'm onto and I'm going to go quite fast and I'm sorry about that. But there are lots of things I have wanted to cover. The B Band, so it's excellent according to the US. But as you'll note, in our slides that we have there, that the map of where we fall below is a huge proportion of the country. And you know it's where most of us live. It's almost, it's all our, most of our towns are on a river or the coast. It's where we all live. The places where it doesn't fail in our National Parks. That's not where we are. And it makes sense that the National Parks don't fail. If the National Parks fail, that would be, we'd be in an even more dire situation. So I want to remind you that even though

that B band may be excellent, we failed that B band and we fail it in a huge part of our country, a huge, I think according to 49% or something like that. I also want to say that is that a risk that you are willing to take, if say that we didn't fail.

So currently we do fail so we've got a more than one in 20 risk at all those sites that are purple on that map, if you use them recreationally, you have a more than one in 20 risk, more than one in 20 because it's worse than that 550 B Band, more than one in 20 risk of getting sick, sorry, contracting illness. And a one in 40 of getting sick. You can also contract illness and pass it onto other people. So you can be a bearer of that. So it's not your necessarily your own illness. You can pass it onto your children, your family, your grandparents, and I would say that if we were all sitting in this room 20 of us, somebody brought in some chicken and 20 of us, sorry 19 pieces of those chicken were going to be okay, one of them we were going to contract campylobacter, would you eat the chicken that was in front of you? I would say that you would not eat that chicken. That would exclude you.

Further to that, I just want to say that there was, we talked about, I think maybe, I'm sorry, Paul I think maybe, brought up the issue of those rates of contraction and you asked whether or not it's higher for recreational or eating food. Where the E.coli strand, that various dangerous strand of E.coli which is indicated by those purple, that purpleness on our map, we have got a reference report in there which says that it's three times more likely to catch it from recreational values. And the food values, they say explicitly in that report, it is not, the outbreak that we have had had not been attributed to food. So there is a distinction. And I'm really happy to send you the full report, the references here, but I can, if it's easier, I will forward it to you.

Finally, I want to say that we have not taken into consideration, we cannot value people's health financially. I think that that is a dangerous place to go. But at the same time, I will say that a recent article, sorry, an article from 2014 on the Darfield outbreak, was looking at the cost, the financial cost of that outbreak and they calculated, there was 138 people who contracted illness down there and they calculated that it was $75,000 for each of those people who contracted that illness and then additional sort of general costs too that healthcare providers. So 75, so if you extrapolate that out from what just happened, to what horrendously happened to Hawke's Bay, we are not talking, this is not insignificant in terms of its cost to our economy and productivity. And I would stress that we don't, the people who come after us don't get this choice. You are risking them. You are risking, and it doesn't matter, yeah, anyway, I'll leave it at that.

Scott: Anything else?

Tom: I think it's just really important to put this whole birds thing to bed this, what you were saying that, sorry, about that one particular case of seagulls in the catchment. There's actually a policy in the NPS, policy CA3, if you want to look at it that says, regional councils, this is a quote, regional councils can set limits below bottom lines given existing natural problems. It's already written in and we can have exceptions where we need it. It's better to legislate to protect everything and then make exceptions after than make exceptions for everything from the start.

Scott: Okay, look. Thank you very much. That concludes this submission process. But can I, on behalf of the committee, thank you for taking time to be with us and to everybody else who has been here in support of you, thank you for coming to advise us. Thank you for your contribution and input and if we could now please clear the room and we'll just then consider the rest of our business.

Marnie: Kia ora everyone. Thank you very much.

Scott: Thank you.