

Freshwater - Fresh Thinking

Enhancing impact assessment in water management



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Proposed changes to freshwater impact assessment; the big leap backwards

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ki Pūrehuroa



- Will the proposed changes to the national objectives framework (NOF) halt the decline of freshwaters in New Zealand?

Will they achieve the goals of the NPS



Freshwater ecosystem and human health

- What are the important components of freshwater ecosystem health and function?
- What is important for freshwater human health
- Can these things be measured?
- Do we have accepted ways to measure them
- Are any of those components being measured now?
- Will the proposed changes to NPS and NOF measure these things and make a difference?

Attribute of ecosystem and or human health	Crucial aspect to measure	National assessment standard and or sampling protocols available
Water temperature	Continuous/ maximum	NA
Oxygen	Continuous variability	Yes (GPP)
Water clarity/ sediment	Deposited sediment	Yes (sampling protocols)
Biological communities	Indices of biotic integrity – IBI, MCI	Yes sampling protocols fish and inverts


Attribute of ecosystem and or human health	Crucial aspect to measure	National assessment standard and or sampling protocols available
Periphyton levels	Periphyton cover, Chlorophyll a	Biggs
Physical impacts	Dams, barriers, channelising, stop-banking	Some regional databases
Nutrients N & P (primary drivers of many other attributes)	Max/median levels of DRP and N	ANZECC guidelines

Too much nutrient = secondary ecosystem and biodiversity impacts long before toxic levels



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Contact recreation (swimability)	Crucial aspect to measure	National assessment standard and or sampling protocols available	
Pathogens	E. Coli or similar indicator pathogen	Ministry of Health guidelines	
Periphyton/ cyanobacteria	Area covered, Chlorophyll a levels & species phormidium	Biggs standards & PeriWCC (A periphyton weighted composite cover)	
Clarity	Suspended sediment	black disc	

National objectives framework

Not covered by NOF:

1. Groundwater
2. Estuaries
3. Barriers to fish migration

Attribute of ecosystem health	Crucial aspect to measure	National assessment standard and or sampling protocols available
Water temperature	Continuous	Yes
Oxygen	Only below point sources. GPP Manawatu no point sources (GPP)	Yes
Water clarity/sediment	Deposited sediment	Yes (sampling protocols)
Biological communities	Indices of biotic integrity – IBI, MCI	Yes sampling protocols fish and inverts

Attribute of ecosystem and or human health	Crucial aspect to measure	National assessment standard and or sampling protocols available
Periphyton levels	Periphyton cover, Chlorophyll a	Biggs
Physical impacts	Dams, barriers, channelising, stop-banking	Some databases
Nutrients N & P (primary drivers of attributes)	Max levels of DRP and N Toxic levels way too late	ANZECC guidelines

Contact
recreation
(Swimability –
human health)

Crucial aspect to
measure

National
assessment
standard and or
sampling
protocols
available

Pathogens
Secondary contact – safe if
you are in a boat
E. Coli or similar
indicator
pathogen

Ministry of Health
guidelines

Periphyton/
cyanobacteria

Area covered,
Planktonic Cyanobacteria
Chlorophyll a
only - benthic not included
levels & species
phormidium

Biggs standards
& PeriWCC (A
periphyton
weighted
composite cover)
black disc

Clear

Suspended
sediment

New Zealand's harsh 'clean-green' reality:

- 68% of native fish threatened
- > 90% lowland pastoral and urban rivers unswimmable
- 18 – 34,000 humans contract waterborne diseases/yr
- > 43% lakes polluted (nearly all lowland lakes)
- Groundwater nitrate levels increasing at most intensively farmed areas (ticking time bomb)

100% PURE NEW ZEALAND



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National objectives framework

The bottom lines:

- Bottom-lines set so low our already massively degraded freshwater ecosystems come out the above bottom-lines
- What do you do then when it hits the bottom line?
- what about lag times?

National objectives framework

The bottom lines:

- The bottom lines for N are an order of magnitude weaker than what is found in our worst rivers now
- Maybe only one river in NZ that would fail bottom lines at present
- The periphyton bottom line is way lower than existing guidelines



National objectives framework

The bottom lines:

- The recreation bottom line for allows for a 'moderate risk' of infection from *Campylobacter*, *Salmonella*, *Cryptosporidium* or *giardia*. So moved from contact recreation to secondary contact = so don't worry you will be safe as long as you stay in your boat!

National objectives framework

Are all the metrics and guidelines developed at great expense through envirolink tools etc. are they now redundant?

More than 2 decades of freshwater ecological research and development of tools thrown out?

National objectives framework & NPS changes consultation

- Consultation with communities, collaboration...
- “stakeholder-led collaborative process”
- Great BUT scientific reality can’t be consulted away.
- Is it collaboration or blackmail?

- Will the proposed changes to the national objectives framework (NOF) halt the decline of freshwaters in New Zealand?

Will they achieve the goals of the NPS



National objectives framework?



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