

## Clear as mud?

### Water is under pressure

New Zealand's freshwater resources are under pressure like never before. Public disputes over damming rivers for irrigation, the contamination of water supplies in Havelock North in 2015, and the media drumbeat on the deterioration of water quality and swimmable rivers all put the matter firmly on the political agenda during last election.

Competition for water in some catchments and uncertainty about society's preferences about how water should be used creates conflicts and impedes resolution. What can economics tell us about how communities value water? What can economists do to help and inform those who have to make the hard decisions?

As part of NZIER's 60<sup>th</sup> birthday celebration we used 1000Minds<sup>1</sup> software to run an on-line survey to further understand New Zealanders' water quality preferences. This is an illustration – a teaser – of what can be done to deepen our understanding of water preferences.<sup>2</sup> It can also potentially assist in informing/moulding policy responses to other aspects of environmental management. More broadly, it can be a useful tool in further understanding non-market values in areas important to New Zealanders.

### Water policy is not settled

Fresh water quality is not a new problem. It has grown gradually over time, creating expectations about future water use. We are now trying to fix it when we are knee deep in the problem.

NZIER's (2014) water management paper<sup>3</sup> set out the stylised facts as:

- There is significant variation in water quantity and quality issues by catchment – scarcity and quality are not an issue across all of New Zealand all of the time but:
  - Most regions have at least one river (surface water) or aquifer (groundwater) that is either fully or over-allocated, or likely to become so soon
  - 39% of groundwater sites and 44% of lakes have nutrient levels above natural levels. However, they are not bad by international standards
  - The proportion of rivers that are swimmable is currently 7%<sup>4</sup>
- The full impacts of past and present water uses on water quality have yet to materialise
- Urbanisation and the growth of agriculture (mainly dairying) are the main sources of stress on the quantity and quality of water available, and they are expected to continue.

Long term problems need durable solutions and the Land and Water Forum has assembled diverse interest groups over a series of years to deliver recommendations to the previous Government on

<sup>1</sup> <https://www.1000minds.com/>

<sup>2</sup> <https://nzier.org.nz/publication/managing-our-freshwater-what-are-the-options>

<sup>3</sup> <https://nzier.org.nz/publication/water-management-in-new-zealand-a-road-map-for-understanding-water-value-nzier-public-discussion-paper-201401>

<sup>4</sup> This refers to category 4 rivers, which are made up of many tributaries and found well down a river's journey to the sea. They exclude headwater streams, many of which are in conservation land and mountains with higher water quality which are swimmable but not very accessible (and cold!).

agreed ways forward. What no-one has done yet is establish what value to attach to all the market and non-market effects of water uses with which to steer towards an optimal mix.

### What do New Zealanders want?

If New Zealand is to make the most of its freshwater resources, it is necessary to know what mix of uses have most value. Freshwater resources are found in and managed in the public sphere, so value encompasses both water's contribution to market production and public preferences for non-market uses.

Decision-makers in councils and the Environment Court grapple with how much water to allocate and how much protection be given to water quality, but they don't know what New Zealanders' water preferences are. Our on-line survey of the general public, teenage school-students, and invitees to NZIER's 60th anniversary celebrations<sup>5</sup> in November 2018 was a first tentative step in understanding society's preferences.

Our survey gauged how different groups within New Zealand society view water quality. We wanted to initially gauge preferences on:

- The importance of river visibility (water clarity)
- The role and importance of flora and fauna (and contribution to biodiversity)
- The proportion of rivers that are swimmable
- The willingness to pay an annual levy towards improving water quality.

This NZIER survey suggests that different parts of society have remarkably similar views. But there are also some intriguing differences between them. The general public cared most about river visibility, followed by flora and fauna, whether rivers were swimmable and, unsurprisingly, were least enthusiastic about the annual levy. High school students showed the same priority ordering. But NZIER's Wellington-based invitees put native flora and fauna at the top of their priorities for improvement, followed by river visibility, swimmable rivers and last (once again) the annual levy.

As this was a stated preference survey (i.e. what people think should happen) there is a distinct possibility that their views might change if they had to pay an annual levy.

**Table 1 Attribute ranking**

	NZIER's Wellington-based invitees	General public	High school students
River visibility	2	1	1
Flora and fauna	1	2	2
Number of swimmable rivers	3	3	3
Annual levy	4	4	4

Source: NZIER

### River visibility is tops for the general public...

The general public were keen on river visibility. To the point where given a choice between 20% of rivers being swimmable (with clear visibility) and 40% being swimmable (but being muddy and brown)

<sup>5</sup> Over 1,000 people participated in this survey, signaling the strong public interest.

they preferred 20% of rivers being swimmable with clear visibility. This result is open to interpretation. Further work is required to understand why this option is preferred. Is it because the general public don't trust the idea of brown and muddy being swimmable? Or do they have an idealised view – perhaps stretching back into their childhood (as one commentator put it) – that seeing the rocks/stones signified what a river should look like.

### ...flora and fauna?

Another point of difference was the preferences around flora and fauna. Two-thirds of the general public when given a choice between increasing native plants and animals by 10% with brown and muddy rivers or decreasing native plants by 10% but with clear river visibility, opted for the latter. Again, this raises more questions than answers. It could mean that the general public equate swimmable rivers with clarity and inability to swim in brown and muddy water. It could also mean that more information is required by the general public to inform their choices i.e. markers such as increased flora and fauna are symptoms of an improvement in fresh water quality.

### Increasing swimmable rivers is not anyone's top priority...

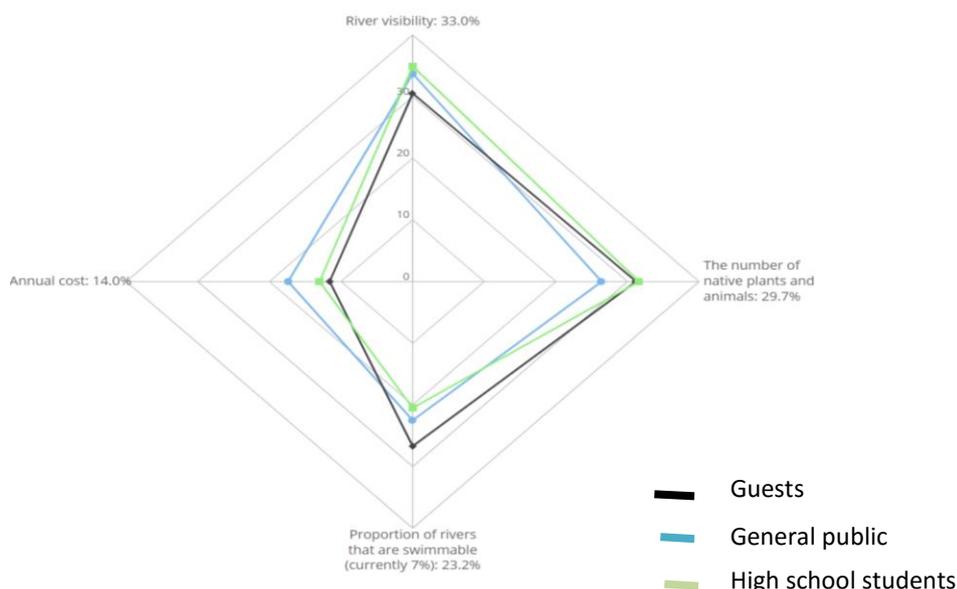
More than half of our Wellington guests and the general public preferred to leave the number of swimmable rivers and the state of flora and fauna unchanged. But just under half were prepared to see flora and fauna decrease by 10% to obtain a 20% increase in length of swimmable rivers.

### ...don't get too keen on taxing water

Despite the annual levy being at the bottom of the list of concerns there was some push back when it came to higher levies or taxes. While a majority of Wellington guests and high school teenagers were happy to pay an extra \$50 per year to increase flora and fauna, 60% of the general public were not.

Given this is a stated preference survey this is quite a strong signal to the government to approach tax increases on water carefully. This survey suggests there are definite limits to what the public are prepared to pay.

**Figure 1 Comparing preferences of the general public, guests, and high school students**



Source: NZIER using 1000Minds

## Conclusions

We have tried to further understand New Zealanders preferences around fresh water management. It is not the definitive word on the subject, more like an opening teaser. Our aim has been to shine a light on the preferences of different segments of the community about fresh water management outcomes. In this way we can highlight trade-offs and ensure that research and policy thinking is directed at things that people care most about not what interest groups and policymakers assume matters.

The results suggest that, faced with choices of outcomes, a lot of respondents expressed similar preferences. Swimmable rivers are not the highest priority for any of our respondent groups, and water clarity outweighed fauna and flora for all except our Wellington guests. Our survey has not explored whether there are differences in responses according to circumstances, for instance whether preferences vary according to geographical location or socio-economic characteristics that affect access to alternatives to swimmable rivers, such as the sea or extensive conservation lands where water quality tends to be better. A more detailed survey would be needed to explore those issues and map the pattern of preferences across the country and communities.

We hasten to add that this survey did not specifically include iwi or those who do not have access to a computer. Results should be treated with the appropriate caution. A full discussion paper will also be released in 2019.

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