



MEMO

TO Te Awarua-o-Porirua Whaitua Committee, Te Awarua-o-Porirua Project Team

COPIED TO

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SUBJECT Key messages from scenario assessments for periphyton, macroinvertebrates and native fish

What we're looking at

This committee meeting we are looking at three ecological attributes for freshwater:

- Periphyton – algae/slime attached to hard surfaces e.g. rocks, tree roots in the water. It is an important food source for invertebrates and some fish, and can absorb contaminants (e.g. nitrate, ammonia, phosphorus and heavy metals) from water. However, too much of it can limit the habitat of macroinvertebrates (e.g. insects, snails and worms) and ability of fish to find food.
- Macroinvertebrate Community Index (MCI) – a score based on presence/absence and pollution tolerances of freshwater invertebrates (e.g. snails, worms, insects) in a river/stream. A high MCI score indicates a clean stream with low disturbance and good habitat for diverse and sensitive macroinvertebrates, while a low score indicates the loss of those sensitive species, polluted water and poor habitat.
- Native fish – diverse and abundant native fish populations indicate good ecosystem health. Fewer species, declining or stressed populations may indicate poor habitat, poor water quality and/or barriers to migration through the catchments.

Key messages

Periphyton

Periphyton is typically in C band across most of the whaitua with a couple of exceptions. There are opportunities to make improvements in periphyton at most places in the whaitua, particularly in the rural areas in mid to upper parts of the catchments. These improvements are largely driven by stream shading and reduction of sediment from riparian planting or retirement of grazed land. There appears to be less improvement in lower reaches in urban areas due to wider channels and lesser ability to shade them with riparian planting.

MCI

MCI is typically in C or B band in most places across the whaitua. Many of the rural parts of the catchment show opportunity to improve MCI with stream shading and reduction of sediment from riparian planting or retirement of grazed land again being significant drivers. Reductions in toxicants, urban stormwater runoff and wastewater overflows are likely to contribute to improvements within the band for urban areas. However, the absence of significant physical

habitat changes in the scenarios (e.g. improvements to straightened, concrete, channelled or piped reaches) limits the assessed improvement of MCI in many of the urban WMUs.

Native fish

Of the 10 example streams looked at for native fish, the Hongoeka, Takapu, Stebbings and Mahinawa streams have no available data/information that our experts could find. **If you have knowledge of native fish in these streams historically or at present, please let us know.**

Many streams in the Whaitua have excellent diversity of fish species. However, because many of the populations may be under stress or in decline from poor habitat and/or obstructed passage from the sea throughout the catchment, and/or pollutants in the water, most streams have been assessed as B or C band.

There are opportunities to make improvements for native fish in most rural places in the whaitua. This is largely related to shading, stream bank stabilisation and improved habitat of riparian planting and retirement of grazed land.

Opportunities for improvement in urban WMUs also include shading and bank stabilisation through riparian planting (even though this is more difficult in dense urban areas) as well as reducing toxicants from urban stormwater runoff and improving physical habitat in straightened, concrete, channelled or piped reaches where possible.

The lower parts of urban WMUs are often important links to upper parts of the catchments. Barriers to fish passage may currently prevent migration, particularly through urban areas, to some upper catchment sites. While physical restoration of any obstructions to fish passage was not part of the scenario modelling it is clear this would be an additional beneficial action for fish.

Many lower reaches of both rural and urban WMUs near the harbour have inanga spawning habitat, and protection and/or enhancement of inanga spawning habitat would benefit inanga populations.

Material provided

The document entitled *TAoPW information for objective setting - Ecological* shows the current state for the three ecological attributes for 10 example sub-catchments. They also show our summary-level predictions of what improvement can be achieved under the scenarios. While this material gives predictions for just 10 sub-catchments, one in each WMU, the pattern of what can be achieved with the scenarios is likely transferable to other streams in each WMU type.

The document entitled *Ecological Assessment Summary Sheets* provides further detail explaining how we arrived at each assessment. It describes what aspects of the scenarios are delivering change and by how much.

How we assessed it

We used expert assessment that drew on existing monitoring or modelling of the attribute, a review of modelled scenario changes and how they might affect the many individual factors

affecting each of these attributes. And finally, an overall assessment based on changes to the multiple factors.

It is difficult to evaluate a particular single 'reporting point' for these ecological attributes. Instead, these assessments are at the sub-catchment scale, taking into account the varying nature of habitat types for different species within a catchment, the varying nature of stressors and refuges within a catchment and the varying deployment of interventions across catchments.