



THINK TANK

NEWSLETTER

Issue 15 – Meeting 34

18 October 2017

This meeting was all about water quantity and the Tutaekuri and Ngaruroro Rivers. The Group looked back to the TANK Values, and weighed these against presentations on birds, fish, river habitat and flows, and water use modelling.

The goal of the meeting was to agree on (flow management & water allocation) scenarios for Tutaekuri and Ngaruroro, for further modelling by scientists and economists to help the Group make decisions (in the near future).

Native Birds and Habitat Needs – Matt Brady, Department of Conservation

Matt gave a good overview of birds and habitat, mainly focused on the Ngaruroro River because of the importance of the braided reach as a habitat for birds including several threatened species.

TANK has 3,180 km of waterways, with 83 species of birds on Ngaruroro River, tributaries, estuaries, wetland and riparian margins. Most of the food supply is on the water edge.

52 of these are water species and 15 of these commonly use the braided rivers. 16 of these species are considered threatened, including the Australasian Bittern and the Black-billed Gull – one of the most endangered gulls in the world (70% decline in 30 years). These river birds nest on exposed braids and islands – they don't like weeds – so that predators are easy to spot.

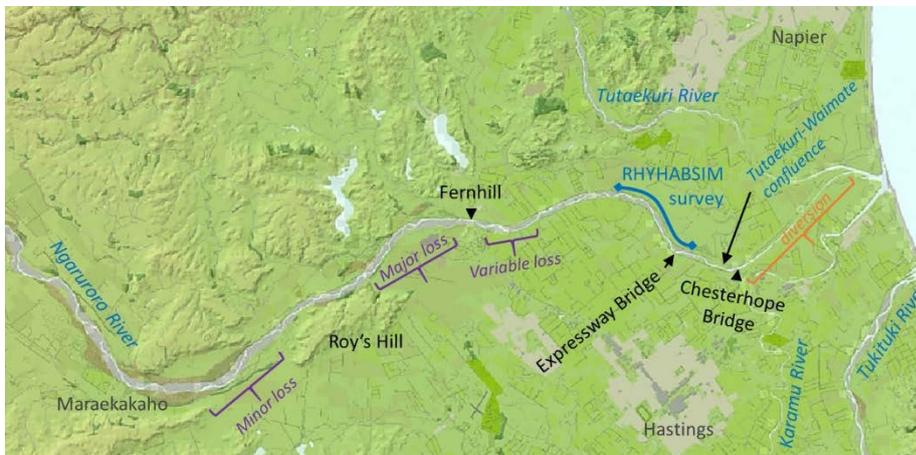


Low flows, predators, 4WDs, motorbikes, jet boats, etc. all affect bird habitat. Fewer channels and braids translates to fewer birds. More flow means channels, more food and less pressure from predators. Hedgehogs, cats, rats, ferrets, stoats and weasels can each decimate nesting bird populations, as do people. Matt pointed out that public river access, particularly 4WD and other vehicle access is a significant threat to bird habitat.

Due to extensive private land ownership in upper Ngaruroro reaches, there is no guarantee for long-term habitat security. Well-designed storage and recharge lakes can attract diving and dabbling species. Sediment and nutrient filtering can easily be part of a constructed wetland. Fencing and riparian planting can also lead to habitat for water and forest birds. The TANK Plan can work in with the Hawke's Bay Biodiversity Strategy 2015-2050, Predator Free 2050 and other plans. HBRC's gravel raking and weed reduction programme is helpful, operating with DOC with sensitivity to nesting.

Fish Habitat and Flows – Dr Thomas Wilding, HBRC and Joe Hay, Cawthron Institute

Thomas summarised river flows and waterway health findings from the RHYHABSIM survey model. Work completed 2009-2012 has been peer-reviewed and improved by Cawthron to inform TANK's Plan development.



The focus area selected for RHYHABSIM surveys is the most flow-altered section of Ngaruroro River, below Fernhill. The river loses 4,000 litres per second (L/s) between Roy's Hill and Fernhill. By contrast, Tutaekuri loses 800 L/s to

ground, upstream of Puketapu. Habitat modelling included working with iwi representatives, the Department of Conservation, Fish & Game, scientists from NIWA and Cawthron.

Thomas gave the following conclusions:

Tutaekuri

- Less water is abstracted than from Ngaruroro
- Even in dry years, there is enough flow for adult trout to remain healthy

Ngaruroro

- Flows already drop below recommended protection levels for torrentfish during dry summers primarily due to a lack of rainfall and to a lesser extent abstraction
- Increased water use will mean a higher risk of measurable effects on fish populations
- There is a lot more water abstracted from the Ngaruroro than from the Tutaekuri
- There are healthy native and trout fisheries present in the river.

Freshwater Ecologist Joe Hay spoke from long experience in this field with the Cawthron Institute.

Flow is a defining feature of streams, influencing the shape and depth of channels, the transport of sediment, nutrients, food, the distribution and behaviour of organisms. Flow changes are constant due to varying rainfall and floods, climate and water use. High flow events briefly create more habitat for fish and invertebrates (fish food). They stimulate fish migrations and spawning. Food, the need for space and availability can differ with flow, time of day, season and temperature. Altering these can make a big difference to fish numbers, the size of fish and fish behaviour.



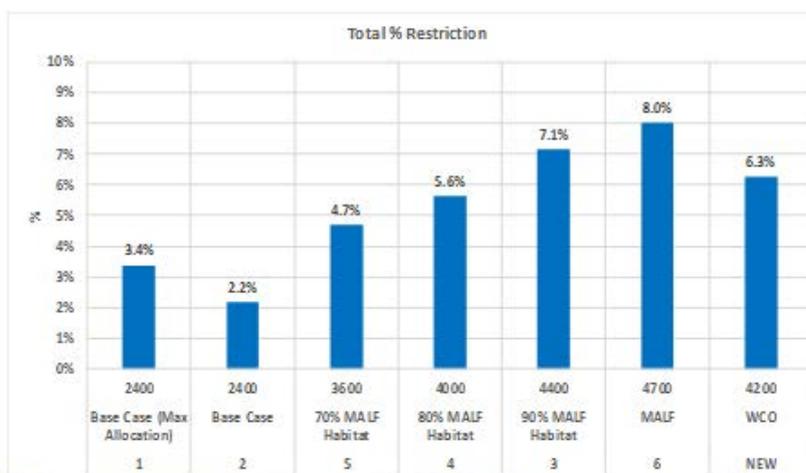
Augmenting flow can have a big impact on river dynamics, altering water temperature and other characteristics. Braided rivers are more productive than single thread rivers, offering safer nesting options for nesting birds and more space for fish and invertebrates (bugs and insects) to live.

Reliable Irrigation Supply – Rob Waldron

A reliable supply comes down to the capacity of a water resource to meet irrigation needs. The way to this is setting allocation limits and flow restrictions that meet water user needs and maintain healthy waterways.

The surface/ groundwater model had been used to give the Group information on what happens to reliability of supply using different minimum flow settings.

Rob explained what happened to different indicators of reliability under each flow model including how often a ban of more than 10 consecutive days occurred, how many days there were restrictions and how often there were restrictions longer than 3 days. One example is this graph showing how the percentage of ‘restriction days’ changes with each minimum flow.



Ngaruroro River at Fernhill

HAWKE'S BAY
WATERBANK CONSULTANTS

The group discussed the implications of various statistics and felt further work was needed to understand what statistics would be most useful to understand the effects for irrigators.

Another expected output from the modelling was more detail about the effects of different management regimes on the river, including any changes to the number of days the

river was below the specified minimum flow. This information would be generated by the next series of modelling results and reported back to the group in early 2018.

Water Storage and Takes at High Flow

The Group also considered the role of water storage to remedy situations where water security is affected. You can assess the costs of different/ lower reliability by working out how land uses might change if security of water supply changes. You can also work it out by calculating the costs of a dam to offset the effect of restrictions.

The role of water storage, the policies and rules required to manage this aspect of water allocation are being considered by the Water Augmentation sub-group of TANK.

Narrowing down the Scenarios

The TANK Group looked at modelling results for some scenarios to manage flows in the Ngaruroro and Tutaekuri rivers, then were asked to reduce the number of options for further modelling and assessment. A base case (the way we're managing the rivers now) is used as a benchmark to understand the current water use impact on community economic, social and cultural wellbeing. As well as considering the options for the minimum flow regime the Group also looked at staged reductions for use in conjunction with the minimum flow.

Restricting Water Takes and the Effect on Flows

The Group had previously decided that a hard cease-take water ban is not desirable. It would create perverse incentives for over-use of water. They favoured a more responsive, managed approach. Mary-Anne reviewed previously considered options for staged reductions and restrictions (including flow sharing) and proposed three options for further modelling:



- i. user groups meet minimum flows through voluntary rostering, i.e. Twyford approach
- ii. staged reductions - cease take
- iii. staged reductions - no cease take

The Group asked that the modelling include staged reductions involving a cease take, and no cease take to see how they might affect river flows.

Staged reductions Cease takes	Staged reductions at specific flows, i.e. 3 stage reduction with cease take at specific minimum flow 25% cutback - 50% cutback - 75% cutback - cease take	Start restrictions early but finish later. Choices for when to impose depends on time between events - too short a time between each restriction stage means big compliance effort for Council and operational costs for growers
Staged reductions NO cease takes	Staged reductions (same as above) with no cease take flow. Allocation to continue beyond specific minimum flow at a low % of allocation	Amount can be extracted beyond specific minimum flow by a small percentage determined by TANK.

There were seven NGARURORO management scenarios presented. The Group felt that as well as the base case, two other options focussing on higher levels of habitat protection should be modelled. These options were 70% and 80% of habitat protection for torrent fish - the most flow-dependant fish species in the Ngaruroro. The Group was also advised that further modelling would include the flows sought by the WCO application by the Council as part of its evidence for that process.

There were six similar scenarios for the TUTAEKURI. The Group wants further modelling for the 90% level of protection (modelled for trout as they are more flow sensitive in this river) and 75%, on top of the base case.

The Group requested that modelling consider a staged reduction with cease take at minimum flow, and an staged reduction with NO cease take, i.e. where a small amount of water could continue to be taken beyond the minimum flow.

Managing Flows alongside Water Takes – Mary Anne Baker, TANK Policy Advisor

Mary-Anne turned attention briefly to the significance of specific water body values and the other water management processes currently underway. The Water Conservation Order process will consider if any values are outstanding. The Council is also considering implementing its Regional Policy Statement requirement to identify outstanding water bodies.

The TANK Group was reminded of its responsibility to recognise Te Mana o Te Wai and to safeguard the life-supporting capacity of each of these waterways.

TANK Group members also recognised the rivers' other important values as they considered options for setting environmental flows or levels, avoiding over-allocation, providing for economic well-being and allocating water efficiently.

MEETING THIRTY-FIVE.

On 22 November, the TANK Group will focus on water allocation, wetland management and what a monitoring plan for the TANK Plan Change will entail.

In 2012, the Regional Council formed a stakeholder group to look at the best way to manage the waterways of the Tutaekuri, Ahuriri, Ngaruroro and Karamū catchments. **The project quickly became known as TANK.**

In 2018, the TANK Plan will give clear direction to consent holders and other water users. It's an opportunity to balance water use and environmental protection. The rivers and aquifer have to come first, but water users should also be able to rely on safe, secure water when they need it.

Who gets the water? Learn more: hbrc.govt.nz search: #tank



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