Ūawa Catchment Working Group

Water Quantity Issues in the Ūawa Catchment

11 December 2024

1.0 Introduction

As part of the development of the Ūawa Catchment Plan we need to identify how water quantity and subsequently water allocation should be managed.

1.1 Current TRMP approach

Permitted Takes

Currently the Tairāwhiti Resource Management Plan (TRMP) has some Permitted Take uses with resource consent required for larger takes. Permitted Takes are as follows:

- The taking and use of surface water, spring water or groundwater at rates of less than 5 litres/second to a maximum of 10m^3 per day per property provided that the take and use is not for irrigation of more than one hectare.
- The taking and use of surface water, spring water or groundwater for the purpose of stock drinking water at rates of less than 5 litres/second per property (or at not less than 1km from another take on the same property)

Flow Limits and Allocation Blocks

The TRMP anticipates that flow limits (on rivers) and groundwater volumes (for aquifers) will be set in catchment plans.

Where no limits are set, default minimum flows for rivers are 90% of Mean Annual Low Flow (MALF) or 100% of MALF for aquatic ecosystem waterbodies. A default allocation block of 30% of MALF is also provided for.

While the approach for river flows is based on the draft NES – Environmental Flows, it is now acknowledged that this approach may not well protect environmental values of small streams.

Groundwater Limits and Allocation Blocks

There are no default provisions for groundwater, however if an aquifer is in close proximity to a stream or river there is a practice of assuming that there is a relationship and consent conditions around riverflow are often included.

The TRMP proposes a default approach of 30% average annual rainfall recharge for groundwater that isn't directly connected to surface water.

1.2 Other Work Going On

Water Abstraction from Small Streams

As part of the wider work in reviewing the TRMP, science work is being undertaken to develop criteria to identify streams where water takes are inappropriate due to their size and ecological value.

Effects of Water Abstraction on Temperature

NIWA is currently undertaking work for the Council on the effects of water abstraction on temperatures of rivers. Abstraction during periods of low flows will have a greater effect on water temperature than when flows are higher. In the river systems of the Ūawa, water temperatures can already be high, with the absence of riparian cover increasing heating.

2.0 Water Demand

A regional water assessment was commissioned by the Council in 2023. This identified that the major demands for water use in the Ūawa Catchment were from:

- Stock drinking water
- Water for residential use
- Irrigation of crops

2.1 Stock Drinking Water

Based on estimates of stock numbers, drinking water for stock is the largest user of water in the Ūawa catchment. The report assumes about 100,000 sheep, and around 70,000 cattle live in the catchment with about 300 dairy support cows and 300 deer. Based on these stock numbers an estimated average demand of approximately 1250m^3/day of water.

This demand will be spread across the catchment, with most water sourced directly from streams.

2.2 Water for Residential Use

Tolaga Bay/Ūawa community is the second largest community in Tairāwhiti not currently serviced with a drinking water supply.

The report estimated that the current annual daily demand for residential water in the Ūawa Catchment is 500m^3/day which will increase to 600m^3/day by 2055.

Residential water needs are currently met from rainwater tanks, and small (Permitted) groundwater takes. Anecdotally the Titirangi spring is used as a water supply for many households, despite warnings that it is contaminated by E.coli.

Based on the available information to Council staff, the source for drinking water supply in Tokomaru Bay is the Mangahauini Spring. We assume that the drinking water supply situation is similar to Tolaga Bay, where most residential water needs are currently met from rainwater tanks. **Is this information correct?**

2.3 Irrigation Demand

The report looks at areas where irrigation occurs, crops that are not irrigated and the likely future demand out to 2055, including considering climate change effects.

Figure 1 below show the projections for the Ūawa Catchment.

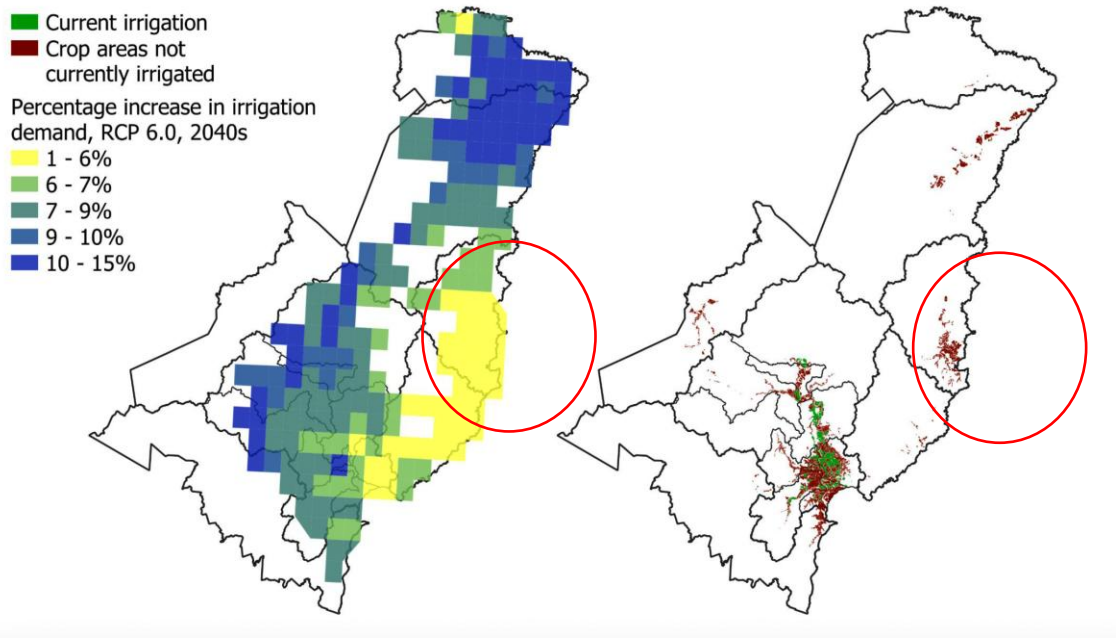

***Figure 1**: Projected irrigation demand increase for RCP 6.0 (2040s), and current irrigated area alongside potential future irrigated crops (Source: Jane Alexander, Nicole Calder-Steele, Andrew Dark (2023) Gisborne Regional Water Assessment Aqualinc Report RD23011*

There is currently one, with a consented rate of take of 27.7l/s. Now that more information is held on the MALF of the river, it is likely that this means the river is fully - or potentially overallocated.

3.0 Availability of Water

There are two main potential sources of freshwater for use in the catchment – the river systems and the groundwater systems.

3.1 Surface Water River Systems

The Council has flow monitoring sites on the Mangaheia and Hikuwai Rivers. These gauging sites indicate that the normal summer flows in these rivers is small. Both rivers have extensive tidal reaches – which gives the impression that they are much larger rivers than their freshwater flows. The Hikuwai River is tidal nearly until the Mangatokerau River confluence – 15km upstream of the Ūawa River mouth.

While analysis is still being undertaken to provide you with detailed hydrological information about these rivers, I have some basic statistics in **Table 1**.

The key things to note are:

- **The Mangaheia is a very small river** – with a 7-day MALF of 46 l/s this is equivalent to 4 buckets of water per second.

- **The Hikuwai is a larger river**, but is still small at a regional scale with a 7 day MALF of 391 l/s. For comparison the Waipaoa River has a 7 day MALF of 2550 l/s.

***Table 1**: Summary of flow data at monitored sites in the Ūawa catchment.*

Site	Catchment area (km2)	Mean	Median	Upper Quartile	Lower Quartile	Q5 (flow exceeded 5% of the time	7-Day MALF (summer low flow)	Record used for flow statistics	No. of years discounted from analysis of MALF
Mangaheia at Willowbank	*41.08*	*1.021*	*0.258*	*0.604*	*0.106*	*3.536*	*0.046*	*Jul-1989 to Jun-2023 MALF (Jul-1989 toJun-2022)*	*7*
Hikuwai River at Willowflat	*306.56*	*9.006*	*2.503*	*6.368*	*0.873*	*31.467*	*0.391*	*Jul-1975 to Jun-2023 MALF (Jul- 1994 to Jun-2022)*	*2*

3.2 Groundwater Systems

Bay Geological Services undertook a drilling survey on behalf of the Gisborne District Council and Te Aitanga Hauiti to investigate the groundwater sources in the Ūawa Catchment. Their report was completed in July 2022.

In summary this report found that the large gravel aquifer under the Ūawa flats is brackish water – too saline for use for economic or drinking purposes.

The small shallow sand aquifer around Tolaga Bay township was also better quantified, but it was identified that this is contaminated with E.coli, which limits its use for drinking water.

4.0 Allocation Priorities for Water

As is outlined above, the water resources in the Ūawa Catchment are very limited and in the case of the Mangaheia River already fully allocated in terms of TRMP limits.

Under the TRMP there are no priorities placed on different types of water use, however under Te Mana o Te Wai, water for drinking water and human health and saftey has a higher priority than water for commercial uses such as irrigation – or drinking water for animals.

A key question for the Ūawa Catchment Plan therefore is how we should prioritise the very limited freshwater available for use.

In order to address the water quality issues in the catchment – particularly as they relate to E.coli, having less direct access of animals to waterways is very desirable, however this would create a need for reticulated stock drinking water systems.

Under the current TRMP such stockwater systems might trigger a resource consent requirement (depending on pump size). Where water is already allocated for irrigation, this could create a perverse outcome whereby stock drinking water could not occur.

In relation to drinking water and water for residential use, the Tolaga Bay/Ūawa community may wish to see a future drinking water supply created. If the water is already allocated for other uses, then given the very limited availability, the water allocation system could prevent a drinking water supply being established.

Another use of water that the group have discussed is firefighting water. With the understanding now that the groundwater system is mainly saline, this water is unsuitable for most uses, but firefighting is able to use saline water.

5.0 Summary

This paper introduces the issues around water quantity in the catchment. Feedback from the group is sought around how the Ūawa Catchment Plan should prioritise water use.