Tairāwhiti Regional Freshwater Planning Advisory Group – Hui 9

Date: 10 July 2024

Title of report: Municipal and community water supply – managing water demand

Report no: 2

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Purpose of this report

This report provides information on the current municipal and community water supplies in Tairāwhiti, the current approach to managing those supplies and options to manage water demand in the new Regional Freshwater Plan.

Outcomes sought

- Members to provide feedback on the current regulatory and non-regulatory approach to municipal and community water supplies in Tairāwhiti in order to give effect to the 2nd priority on the hierarchy of obligation.
- Members to understand that the functions of the TRMP is to:
    - ensure that water is able to be taken for drinking water purposes, and
    - manages the environmental effects of that take.

Getting ready for the hui

Please consider the questions in this report ahead of the next hui. This will aid the discussion at the hui.

Contents

1. Background

1.1. Te Mana o te Wai – 2nd priority obligation

As discussed in earlier hui, Council is required to give effect to Te Mana o te Wai and its hierarchy of obligations. The three priorities are:

- **1st priority**: put the health and wellbeing of wai first.
- **2nd priority**: health needs of people (such as drinking water).
- **3rd priority**: ability of people and communities to provide for their social, economic and cultural wellbeing.

Drinking water is a 2nd priority in the hierarchy of obligations, where the hierarchy denotes that drinking water must be provided for before other uses of water (that is social, economic and cultural) – but only after the health and wellbeing of the source of water is provided for.

For Gisborne City and two townships (Te Karaka and Whatatutu), drinking water is supplied through Council-owned municipal and community water supply networks. For other rural townships and communities, drinking water for these communities is sourced from a combination of rainwater tanks, water takes within the permitted take limit[1], and water carrier services (i.e. private water supply operators with tankers supplying drinking water into rainwater tanks on properties).

The purpose of this report is to provide members information on the current municipal and community water supplies in Tairāwhiti **(see subsection 1.2)** and identify changes needed to ensure new provisions give effect to Te Mana o te Wai and the hierarchy of obligations.

Subsection 2.1 looks at the current municipal water usage and how population growth will impact future water demand in the city.

Subsections 2.2 and **2.3** outlines how Council currently manages the supply and demand through a combination of regulations (through the Tairāwhiti Resource Management Plan) and non-regulatory methods, which are the Demand Management Plan and water restrictions.

1.2. Current municipal and community water supplies

Municipal water supply

The municipal water supply is mainly sourced from two locations – the Mangapoike dams (located in the Southern Tairāwhiti catchment area) and Te Arai River (located in the Waipaoa catchment area). Untreated water from these sources is piped for treatment at the Waingake

[1] **Rule 6.1.2(1)** – The taking and use of surface water, spring water or groundwater at rates of <5 L/s to a maximum of <10 m^3/day per property provided that the take and use is not for irrigation of more than 1 hectare.

Water Treatment Plant before being conveyed through the Council-owned reticulation network for supply to Gisborne City.

In spring and summer when peak demand exceeds the available supply, water is sourced from the Waipaoa River (and treated at the Waipaoa Water Treatment Plant) to augment the municipal water supply. The Waipaoa pipeline joins the Waingake pipeline at the edge of the City.

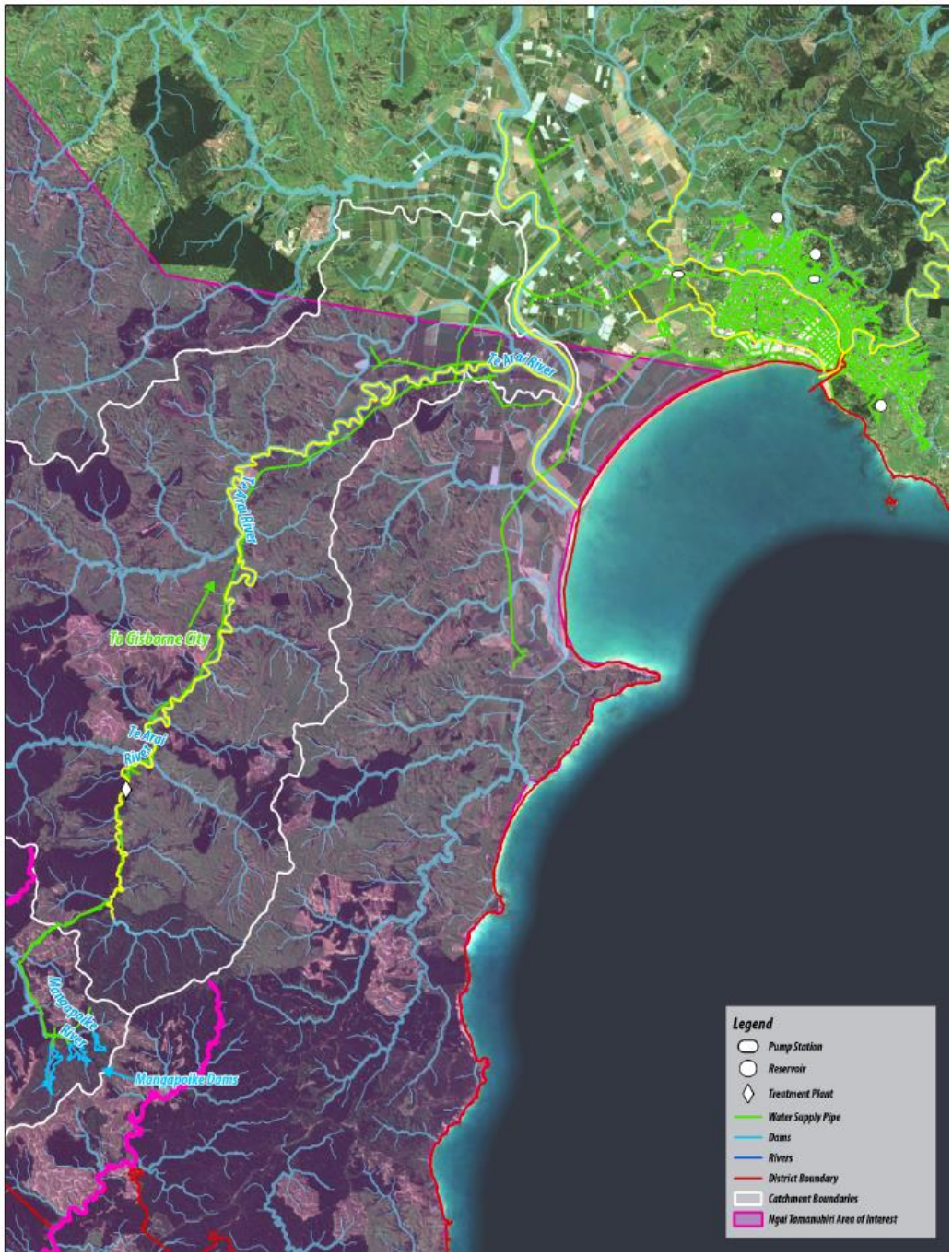

Figure 1: Map of the municipal water supply (green line), starting from the Mangapoike dams (bottom left), travelling up Te Arai towards the city. The yellow line highlights Te Arai River as under Rongowhakaata's Statutory Acknowledgement, while the pink overlay is Ngai Tamanuhiri Area of Interest.

The municipal water supply is used for

- domestic, commercial and industrial purposes
- fire protection for Gisborne City
- public services and community facilities such as schools, hospitals, public pools, sporting facilities and grounds
- tanker filling collection locations for bulk water deliveries.

The municipal water supply is only partly metered, with 90% of the connections unmetered. The municipal water supply network includes storage reservoirs and pump stations, and the connections from the street water mains to property boundaries. Patutahi, Muriwai, Makaraka are connected to the municipal water supply network and therefore considered as an extension to the network instead of being regarded as community water supplies like that of Te Karaka and Whatatutu.

Council's Drinking Water team manages the municipal water supply and has prepared Water Supply Demand Management Plans for Te Arai and Waipaoa Water Supplies.[2]

Through recent engagements with mana whenua at Ohako Marae, Council staff were told that the residents living in Manutuke are not connected to the municipal water supply – despite the fact that the municipal water supply pipeline passes through the township.

- [2] Te Arai "2017 Te Arai Water Supply Demand Management Plan"
- Waipaoa "2021 Waipaoa Water Supply Demand Management Plan"

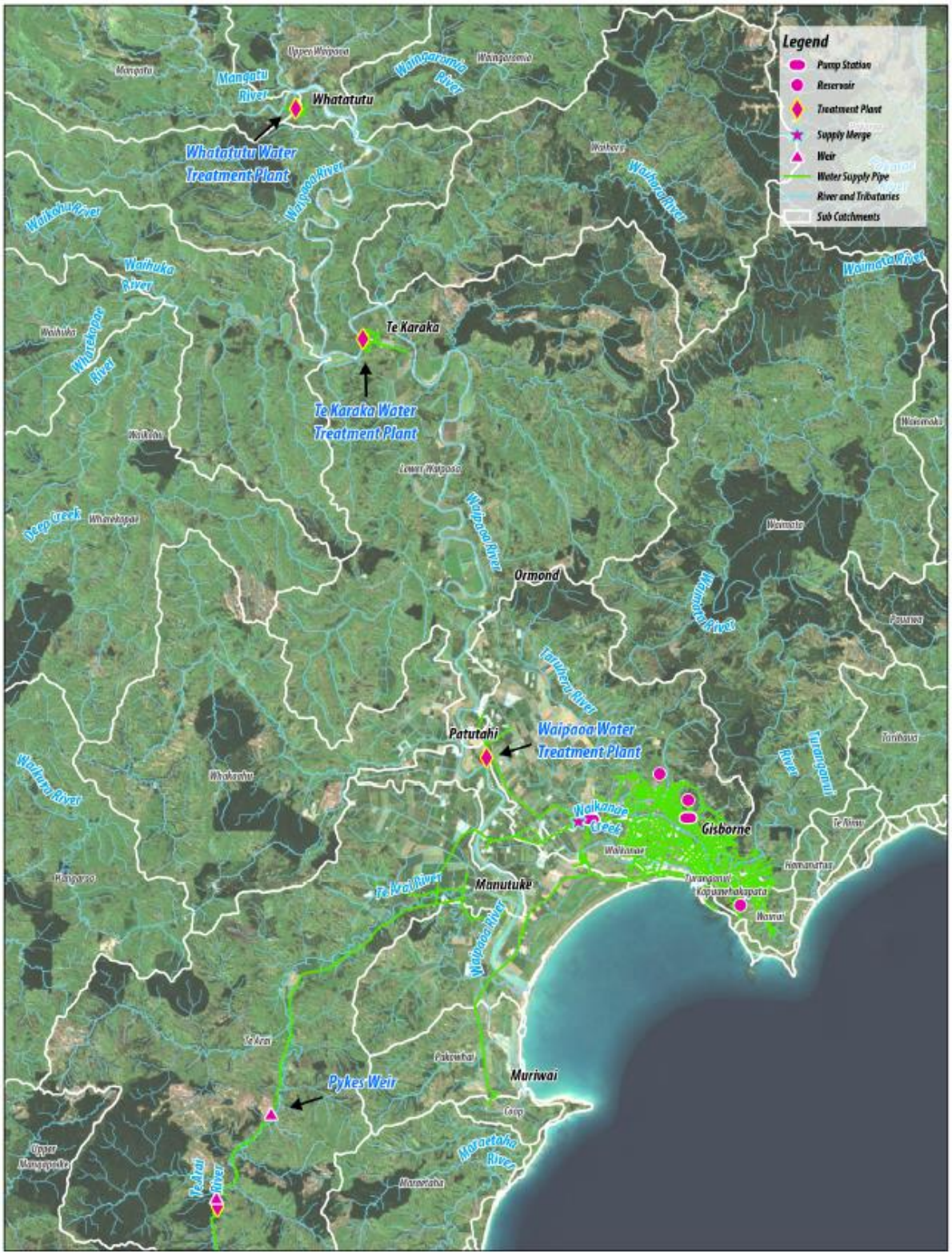

Figure 2: Map of the municipal water supply and the community water supplies (Te Karaka, Whatatutu).

Community water supply – Te Karaka, Whatatutu

Council currently manages the community water supply to two other communities: Te Karaka (162 households) and Whatatutu (43 households; while 17 properties unconnected to the supply). These community water supplies are designed to operate as a supplementary supply, with rainwater and tank storage the primary supply for each property.

For Te Karaka, the source water is groundwater abstracted from the Waipaoa Gravel Aquifer through shallow bores adjacent to the Waipaoa River. The water is then treated at the Te Karaka Treatment Plant, before directly piped (under low pressure) into the rainwater tank on each property connected to the reticulation network.

At Whatatutu, the source water is groundwater abstracted from the Shallow Fluvial Aquifer through shallow bores adjacent to the Mangatu River. The water is then treated at the Whatatutu Treatment Plant, before being directly piped (under low pressure) into the rainwater tank on each property connected to the reticulation network.

There is a joint Water Supply Demand Management Plan "2023 Te Karaka and Whatatutu Water Supply Demand Management Plan" that the Council's Drinking Water team implements as the management of the community water supply for these two communities.

Community water supplies elsewhere

For other communities in the region, they rely on rainwater or operating within the permitted water take limit for drinking water. There are water carrier services that supply water (at a cost) via tankers that take water from the tanker filling point at the Waipaoa Water Treatment Plant, from river or springs closest to the community that the water carrier services are supplying water to, as an augmented supply.

2. Managing supply and demand

2.1. Current water use versus future water demands

Table 1 shows the annual treated water usage according to the two sources Waingake (Te Arai River and Mangapoike Dams) and Waipaoa. From 2015 – 2022, treated water from the Waingake source comprised of approximately 90 – 99% of the municipal water source. This changed in 2023 following the devastation of Cyclone Gabrielle in February. Slips into the two main Mangapoike dams affected water quality and broke various water supply pipelines in the network. While water restrictions were put in place to reduce the city demand, more water from the Waipaoa River had to be abstracted and treated to meet the water demand of the city.

Table 1: Annual municipal water usage (Jan - Dec) by source.

	Source (Waipaoa) m^3	Source (Waingake) Te Arai River* m^3	Source (Waingake) Mangapoike Dams* m^3	Production losses (Waingake Treatment Plant) m^3	Annual Total Treated Water m^3
2015	62,482	2,240,256	3,614,728	141,260	5,776,206
2016	96,653	1,906,526	3,779,392	136,717	5,645,854
2017	435,313	1,782,268	3,818,836	135,268	5,901,149
2018	0	2,099,030	4,113,673	336,150	5,876,553
2019	232,059	1,842,787	4,248,828	215,695	6,107,979
2020	638,211	1,400,328	4,421,078	210,013	6,249,604
2021	576,682	1,126,141	4,496,521	214,785	5,984,559
2022	389,020	1,673,714	3,870,489	486,858	5,446,365
2023	2,038,109	1,366,588	2,044,130	366,973 ***Note 1***	5,081,854

Note 1: *Losses include raw water pipeline losses/scouring follow Cyclone Gabrielle and emptying Waingake clarifier for retrofit works.*

The asterisks (*) in the Te Arai River and Mangapoike Dams volume columns includes production losses. It is important to note that the volumes recorded in **Table 1** are largely based on information obtained from treated water (from each source) produced at the treatment plant – not the actual water usage.

2023 Census data – population growth

The 2023 census data[3] (published 29 May 2024) reports that Gisborne saw an increase of 7.6%, since the 2018 census in the region's usually resident population[4], to 51,135. While the 2022-2023 severe weather events may negatively impact future net migration into the region, Council has taken a proactive approach in planning for future population growth through its Future Development Strategy 2024 – 2054.

Council's strategic direction to provide the potential capacity for about 5,400 new houses in and around Gisborne, with the expectation that population growth will continue to be within the Gisborne urban area. Council will need to enable intensification within the existing urban area over the next 30 years – which includes understanding and preparing for the water demand accompanying population growth. Monitoring and evaluating the efficiency of the municipal water supply network becomes a challenge when the network is not fully metered and water demand is expected to increase with population growth in the region.

Questions

- The impacts of Cyclone Gabrielle demonstrated the vulnerability of the Gisborne Municipal Water supply. Increasing the resilience of the water supply network to ensure drinking water is available to communities in light of the projected impacts of climate change, including extreme weather events and to accommodate increased water demand, what are your views on:
  - Water being taken from the Waipaoa River more frequently, becoming a greater proportion of the overall municipal supply?
  - What alternative options should be considered including new storage options or alternative water sources?
  - Or other suggestions?

2.2. Regulatory tool - Tairāwhiti Resource Management Plan (TRMP)

The Tairāwhiti Resource Management Plan (TRMP) sets out the regulatory framework for Gisborne's municipal and community water supplies. **Table 2** shows the provisions for both types of supplies under the current TRMP.

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[3] 2023-Census-national-and-subnational-usually-resident-population-counts-and-dwelling-counts.xlsx (live.com)

[4] Usually resident population refers to people who usually live in Gisborne and were present in Gisborne on census night. It excludes visitors from overseas, visitors from elsewhere in New Zealand, and residents temporarily overseas on census night. (Information taken from: Census usually resident population count – 2023 Census: Information by concept - Stats NZ DataInfo+)

Table 2: Analysis of the current TRMP provisions for municipal and community water supply.

	Municipal water supply	Community water supply
Definition	No specific definition under the current TRMP.	*"a reticulated publicly or privately owned drinking water supply connecting at least 2 buildings on separate Certificates of Title and serving at least 1,500 person days per year (for example, serving 25 people at least 60 days per year) but excluding the Gisborne city municipal water supply."*[5] The policy for community water supply (see the next row) mentions small community water supply, however there is no definition of how many people are served within a small community water supply as opposed to a community water supply.
Policy	There are two policies for the municipal water supply. The first policy states that the municipal water supply is given priority over other water uses by being able to continue beyond the minimum flows set in the relevant catchment, provided that: a) There is a Water Demand Management Plan (**Appendix H29**), with demand and efficiency targets are being met; and b) Complying with water restrictions when other water users in the same water quantity zone are restricted; and c) For the Waipaoa River, water takes below minimum flows are only for the purpose for domestic use (excluding garden watering) and sanitation purposes – not for industrial or commercial use. The second policy allows the municipal water supply take at Te	The policy provides for community water supply (or specifically ***small*** community water supply), small water takes and reasonable domestic and animal drinking water needs as permitted activities. These activities, including (small) community water supply are able to continue beyond the minimum flows and water levels set in the relevant catchment plan, unless: a) The taking or use will have, or is likely to have, in combination with other permitted activity takes a more than minor adverse effect on the environment; or b) The taking or use is for irrigation of more than one hectare; or c) The take is from a wetland or an outstanding waterbody as identified in Schedule G18; or d) A water shortage direction is given. This policy implies that only small community water supplies are able to continue takes beyond minimum flows

[5] Page 23 (Tairawhiti-Resource-Management-Plan-Master-Copy-Part-E-Definitions-A1360151.pdf (gdc.govt.nz))

	Municipal water supply	Community water supply
	Arai Bush Intake to continue as a priority use (i.e. without requiring water permits) until the minimum flow for Te Arai River is set in 2026, under 2 conditions: a) Modification to the Bush Intake structure to allow a small year-round flow and native fish passage to the upper catchment; and b) Sufficient hydrological, cultural and ecological monitoring is undertaken from 2017 to 2026 for the establishment of the minimum flow for Te Arai River. With the recent NIWA (2023) report on the minimum flow for Waipaoa and Te Arai Rivers, further discussions on the minimum flow and the implication of changes to the overall water take framework for Te Arai River will be discussed in the Waipaoa Catchment Advisory Group session.	and water levels set in the relevant catchment plan unless triggering any of the matters a) to d). Community water supply as defined above is assumed to apply to this policy.
Rule	Under Rule 6.1.2(1), small community water supplies remain a permitted activity as long as the take and use of surface water, spring water or groundwater at rates of less than 5 litres per second (L/s) and 10m³ per day per property – provided that the take and use is not for irrigation of more than 1 hectare. Based on this rule, small community water supplies are implied for drinking water and other use, such as irrigation (of less than 1 hectare). The intent in the permitted take policy for small community water supply do not match with the intent of Rule 6.1.2(1).	
	Rule 6.1.2(8) identifies that the take and use of water for municipal and community water supplies are a Restricted Discretionary activity. This means that the renewal of existing, or the establishment of new municipal and community water supplies will require a water permit. Council will evaluate the water permit application based on the matters a) to t) in Rule 6.1.2(5) and the 6 matters of discretion specific to Rule 6.1.2(8). The 6 matters in Rule 6.1.2(8) are summarised as follows: • That there is a Demand Management Plan (**Appendix H29**); • Minimum flow of the river to establish restriction and abstraction limits; • Alternative supply options; • How water restrictions will be applied and implemented; • For Te Arai municipal water supply take, the 2 conditions outlined in the second municipal water supply policy.	

	Municipal water supply	Community water supply
	The matters a) to t) in Rule 6.1.2(5) apply all types of water permits that were lawfully established prior to the 2015 Freshwater Plan coming into legal effect. This means that the matters a) to t) include criteria that are irrelevant to a drinking water supply, such as matter t) which requires an Irrigation Management Plan (Appendix H22).	

It should be noted that Te Arai and the Waipaoa rivers are listed in Schedule G15 (Aquatic Ecosystem Waterbodies) in the TRMP. For any take and use of water, including for municipal water supply, Policy 8 of Part C6.1.1 requires the values for which any waterbodies scheduled under Schedule G15 be maintained. This means that the values for Te Arai and the Waipaoa rivers should remain as they were prior to the take and use of water for the municipal water supply.

Protecting the values of the water source will require a combination of regulatory and non-regulatory tools. The main non-regulatory tools used to manage the municipal and community water supplies are the Demand Management Plan and water restrictions.

Questions

- Considering the population size of the rural townships and communities in our region, how do you think community water supply be defined and managed through the new freshwater plan provisions? Should community water supplies be managed any differently from (or the same as) municipal water supply?
- Small community water supply is classified as a Permitted activity where the rate of take is less than 5 litres per second and 10m³ per day. All other community water supplies are a Restricted Discretionary activity. Given that drinking water is a 2nd priority in the hierarchy of obligations, should the permitted rate of take for community water supply be increased? If it is increased, do these supplies need to include demand management plans?
- Should water carrier services (i.e. private water supply operators supplying drinking water through tankers at a cost) be regarded the same as a community water supply, therefore sharing the same policies and regulations as community water supplies?

2.3. Non-regulatory tools – Demand Management Plan, Water Restrictions

The Demand Management Plan presents the current and future demand management approach to abstraction for each water source taken for the supply. The Plan considers the three interdependent components of a water supply system – supply, demand, and system operation.

Appendix H29 outlines the required information in the Demand Management Plan for municipal and community water supplies:

- Total population in the service area, the number and type of customers supplied by the water supply scheme (with and without meters).
- Water rates charging policy and pricing for water supply, including frequency of meter reading.
- An assessment of the overall water demand in the most recent year – includes total annual production, average and peak daily demands, monthly totals across each water use category, water use per resident calculation.
- Identification of the 20 largest commercial/industrial users, with annual and seasonal demands.
- Identification of historic and seasonal water supply shortages.
- Key economic drivers over the next 5 – 10 years.
- An outline of existing and new water efficiency options.
- Water shortage trigger points and stages, actions to be enforced for each stage.
- Communication strategy.

Water restriction is used to control water abstractions when water demand exceeds water supply. Council has different water restriction trigger points for municipal and community water supplies.

Municipal water supply

The trigger points for each water restriction level is based on the Waipaoa River water level (**Table 3**). The alert levels are currently based on the flow levels of the Waipaoa River due to no minimum flows yet to be set for Te Arai River.

Table 3: Water restriction alert levels and its implications for domestic and commercial/industrial users reliant on the municipal water supply.

Alert Levels	Domestic Users	Commercial / Industrial Users
Waipaoa flow <1,600 L/s	GDC issues "conserve water now" campaign	
1	Voluntary reduction	Voluntary reduction
2	Limited sprinkler use (6am – 8am only)	Voluntary restrictions
3	Total sprinkler ban, use a hand-held hose only	Limited outdoor use
Waipaoa flow <1,300 L/s **4**	Total outdoor water ban	No non-essential outdoor water use Total sprinkler ban Implement Business Continuance Plans
5 **(Emergency / Drought Declaration)**	Total outdoor water ban	Total outdoor water ban Top 20 users to demonstrate significant usage reductions and supply daily meter readings

Community water supply

Water restrictions are triggered when there is no rainfall for 5 consecutive days. Unlike the municipal water supply, because there is no minimum water level set for the Waipaoa Gravel and the Shallow Fluvial aquifers, no water levels are used to set the trigger point for the community water supplies (**Table 4**).

Table 4: Water restriction alert levels for Te Karaka and Whatatutu community water supplies and implications of each level.

Alert Levels	Trigger points (in addition to no rainfall for five consecutive days)	Action
1	Water supply production balanced with demand	Inform consumers – Voluntary conservation with Council's Conserve water now campaign
2	No water to reticulation for more than 12 consecutive hours due to treatment facilities unable to produce at rates to meet demand	Inform consumers – Limited outdoor use (sprinkler restriction from 6am – 8am only), conserve indoor use
3	No water to reticulation for consecutively 24 hours due to extraction rate or treatment facilities unable to produce at rates to replenish minimum reservoir levels	Inform consumers – Restricted outdoor water use (sprinkler ban, hand-held hose only), conserve indoor use
4	No water to reticulation for consecutively 48 hours or more due to extraction rate or treatment facilities unable to provide at rates to replenish minimum reservoir levels	Total outdoor water ban, conserve indoor use
5 (Emergency / Drought Declaration)	Extraction rate or treatment facilities unable to produce at rates to replenish minimum reservoir levels	Total outdoor water ban, conserve indoor use

Questions

- In times of low flows, how can individuals and businesses change their practices to ensure we achieve the first obligation of Te Mana o te Wai? Are there additional steps/actions that should be added to the alert levels in **Tables 3 and 4**?
- What is needed to support improvements in efficiency and demand management?

3. Next Steps

This report has presented the information necessary to understand how Council define and manage municipal and community water supplies in Tairāwhiti through the TRMP. At the next meeting (Hui 10), we will revisit water quality with staff reporting back seeking this Group's confirmation on what was previously discussed in the series of hui on discharges.

Staff will continue to refine the input received from the Group on water quantity before reporting back in the following meeting (Hui 11).