Waipaoa Catchment Planning Advisory Group – Hui 1

Date: 12 July 2023

Title of report: Overview of the current Waipaoa Catchment Plan

Report no: 1

Report author: Sarah Thompson, Senior Planner, Gisborne District Council

Purpose of this report

This report provides the following:

- Context on the Waipaoa catchment
- An overview of the current Waipaoa Catchment Plan
- An outline of how the plan has been implemented to date
- Findings from a review of the plan's effectiveness
- Information on some of the key issues identified by Council staff that will need to be addressed in the review
- Proposed plan review process.

Outcome sought

Members of this Advisory Group will have a clear understanding of the current state of the Waipaoa catchment and how the current Waipaoa Catchment Plan has been implemented.

Table of contents

1 Introduction 4
1.1 The Waipaoa Catchment Plan area 4
1.2 Development of the current Waipaoa Catchment Plan 4
1.3 Overview of the current Waipaoa Catchment Plan 5
1.4 Resource consents in the catchment 7
2 Water quantity implementation in the Waipaoa catchment 9
2.1 Transfers of water 9
2.2 Water metering and water efficiency 9
2.3 Flow monitoring 9
2.4 Groundwater level monitoring 10
2.5 Managed Aquifer Recharge trial 11
2.6 Alternative use and disposal of treated wastewater 12
2.7 Te Arai municipal water supply intake 12
3 Water quality implementation in Waipaoa catchment 12
3.1 Tile drainage consents 13
3.2 Solid discharges to land that may enter water 13
3.3 Gisborne Urban FMU – wastewater overflows (point source discharge) 13
3.4 Gisborne Urban FMU - stormwater management plans (point source discharge) 14
3.5 Farm Environment Plans (Non-point source/diffuse discharges) 14
3.6 Te Arai water quality 14
3.7 Lakes and wetlands in the Waipaoa catchment 15
4 State of Environment 15
4.1 Water quantity and hydrological modelling of the Waipaoa catchment 15
4.1.1 Surface water 15
4.1.2 Groundwater 16
4.1.3 Alternative water sources/storage 17
4.2 State and trends of water quality in the Waipaoa catchment 17
4.2.1 River water quality 18
4.2.2 Water quality by FMU 21
4.2.3 Groundwater quality 22
4.2.4 Lake water quality 22
5 ‘Effectiveness review’ of the Waipaoa Catchment Plan 23
6 Review process and next steps 25
7 Appendix 26

7.1 Appendix 1: Draft meeting schedule summary for Waipaoa Catchment Plan.....26

1 Introduction

1.1 The Waipaoa Catchment Plan area

The Waipaoa Catchment Plan area covers an area of 2,205km² including the Waipaoa River water catchment and its sub-catchment areas. The area is largely defined by the water catchment boundary of the Waipaoa River but also includes the separate catchment areas of the Waikanae Stream and Taruheru River. These two areas do not drain directly into the Waipaoa River but are both important components of the Poverty Bay Flats and to the Poverty Bay groundwater system.

The catchment is extensively farmed and represents some of the most versatile and productive soils in the region. Most surface water use and virtually all groundwater use in the region occurs here and is essential to the region's economy.

As the only city in the region, Gisborne also plays a role in the quality and quantity of freshwater in the Waipaoa catchment. Several waterways flow through the city and are highly significant for amenity and recreational values. The municipal water supply for Gisborne is taken from the upper reaches of the Te Arai River and the Waipaoa River.

Some of the sub-catchments are particularly susceptible to soil erosion, notably in the Waingaromia and Mangatū areas. As a result, the bed in the upper and lower reaches of the catchment is building up due to sediment and gravel deposition. Annual suspended sediment load for the Waipaoa catchment is approximately 15 million tonnes.

Many of the tributaries in the headwaters provide habitat for a range of indigenous fish species. These species rely on the ability to migrate up the river system as juveniles and return to the sea as adults. Eels are one example of the fish that require this ability to migrate. Trout are also present in the Wharekopae tributary. They have been introduced and are not known to migrate.

Alongside the river systems there are a small number of lakes and wetlands located in the Catchment Plan area. The largest lake is Lake Repongaere in Patutahi, and the largest wetland is Te Maungarongo o Te Kooti at Matawhero.

The Catchment Plan area includes a substantial groundwater system under the Turanga/Poverty Bay Flats. This is made up of five aquifers in total:

1. The shallower Te Hapara Sands Aquifer
2. Waipaoa Gravels Aquifer
3. Shallow Fluvial Aquifer
4. The deeper Makauri Aquifer
5. Matokitoki Aquifer.

1.2 Development of the current Waipaoa Catchment Plan

The current Waipaoa Catchment Plan was developed between 2010 – 2015. The direction and content were driven primarily by the National Policy Statement on Freshwater Management (NPS-FM) 2011, with minor changes added to the draft to reflect the NPS-FM 2014 when it was introduced.

The proposed plan was notified in October 2015, and following submissions and hearings, decisions were released in October 2017. All appeals on the Waipaoa Catchment Plan were settled by consent order in 2018**.**

1.3 Overview of the current Waipaoa Catchment Plan

The NPS-FM 2014 required freshwater objectives and freshwater quality limits for Freshwater Management Units (FMUs) to be established to give effect to the NPS-FM, as well as methods to avoid over-allocation. Where FMUs do not meet these freshwater objectives, targets and methods must be specified. The Waipaoa Catchment Plan has four FMUs shown on Map 1:

1. Waipaoa Hill Country FMU
2. Poverty Bay Flats FMU
3. Gisborne Urban FMU
4. Te Arai FMU.

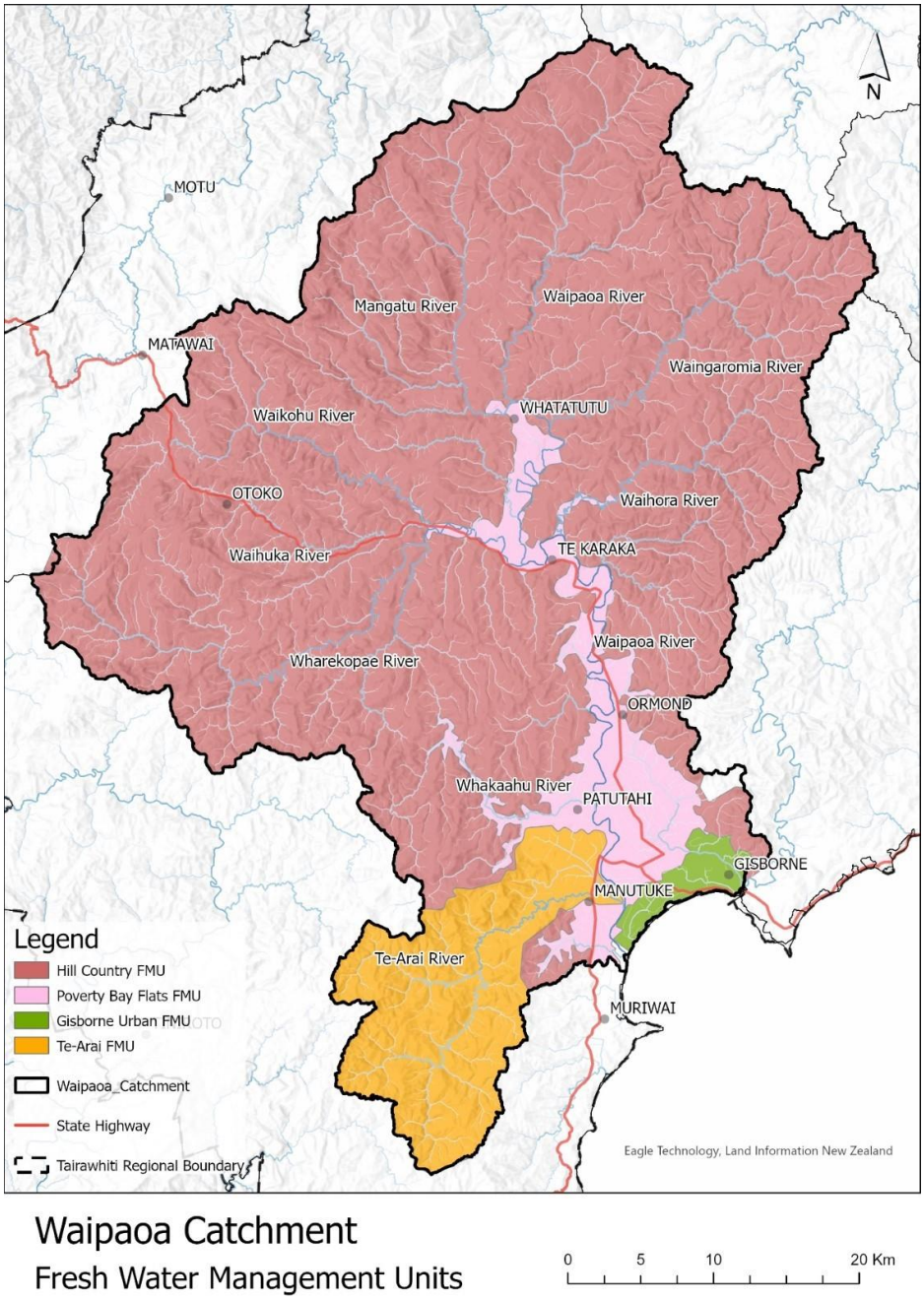


Figure 1: Map of the Waipaoa Catchment Plan area showing the FMUs.

For each of these FMUs, the Waipaoa Catchment Plan contains:

- **Freshwater values** – these were guided by the National Objectives Framework (NOF) and developed with stakeholders.
- **Objectives** – these relate to freshwater attributes in the FMU, such as dissolved oxygen, nitrate toxicity, pH levels, E. coli concentrations.
- **Targets** – these aim to improve freshwater quality when it is degraded or to better provide for the priority values.
- **Freshwater quality limits** – freshwater attributes are established that provide for the values of the FMU and will form the basis for monitoring and reporting on the limits.
- **Freshwater quantity limits** – surface water minimum flows and allocation limits are established to provide for the values of the FMU or specific freshwater quantity zones and will form the basis for monitoring and reporting on the limits.
- **Non-regulatory methods** – these were identified to resolve some local freshwater issues and to help achieve targets for improvement.

The values of each FMU are identified in Table 1:

Value	Te Arai FMU	Waipaoa Hill Country FMU	Poverty Bay Flats FMU	Gisborne Urban FMU
Compulsory Values under the NPSFM 2014				
Ecosystem Health	✓ Prominent Value	✓ Prominent Value	✓	✓ Prominent Value
Human Health for Recreation	✓	✓Prominent Value (Secondary contact)	✓	✓ Prominent Value (Swimming)
Other Values				
Mauri	✓Prominent Value	✓	✓	✓
Natural Form and Character	✓Prominent Value	✓Prominent Value	✓	✓
Mahinga Kai	✓Prominent Value	✓	✓	✓
Fishing				✓ Prominent Value
Irrigation and food production	✓		✓ Prominent Value	
Animal drinking water	✓Prominent Value	✓ Prominent Value	✓	
Wai tapu	✓	✓		✓
Water supply	✓Prominent Value	✓ Prominent Value	✓ Prominent Value	
Transport and tauranga waka			✓	✓ Prominent Value

Table 1: Values of each FMU

The objectives, targets and limits in the Waipaoa Catchment Plan reflect the priority of ensuring that prominent values are maintained in the first instance.

There were no environmental outcomes set for each FMU, with the Tairāwhiti Resource Management Plan (TRMP) setting the overall objectives for management.

Alongside objectives, targets and limits, ten non-regulatory projects were developed where water quality issues were identified. These projects were intended, alongside the rules in the TRMP, to address the water quality issues.

The projects were:

- Gisborne Urban Stormwater Management
- Waikanae Stream Restoration
- Waipaoa Fish Passage Enhancement
- Lower Te Arai and Waipaoa Inanga Spawning Enhancement
- Taruheru River Restoration
- Rere Falls and Rockslide Water Quality Enhancement
- Awapuni Lagoon Water Quality Improvement
- Managed Aquifer Recharge Pilot (MAR)
- Waingaromia Riparian Restoration
- Forestry Harvest Mitigation Project.

1.4 Resource consents in the catchment

Prior to the development of the freshwater planning provisions and Waipaoa Catchment Plan, resource management matters relating to water were dealt with solely under sections 13 and 14 of the Resource Management Act 1991 (RMA).

All activities required resource consent as discretionary activities by default, and any guidance around regional specific issues was provided by the Regional Policy Statement (RPS) 1999.

Once notified, implementation of the provisions in the 2015 Gisborne Regional Freshwater Plan commenced. The Plan includes both regional and Waipaoa Catchment freshwater planning provisions as well as the freshwater provisions of the RPS. While there are 'Other Methods' within the Plan, resource consents are still the main tool for resource management within the region.

Prior to the provisions being notified, all resource consents for water takes were publicly notified, and in almost all cases a maximum term of five years for the consents was provided. In anticipation of the Proposed Plan provisions, staff had been aligning resource consent expiry dates by water source, and this meant that quite quickly, existing resource consents came up for renewal.

Resource consents for water takes have now been renewed by water source and in most instances were renewed for five-year periods. This was in line with the policy direction for fully and over allocated water bodies, and to enable the five-yearly reductions indicated in the Waipaoa Catchment Plan.

Resource consents for discharges to land or water vary between 5-to-10-year consent durations, with the majority being 10 yearly durations. Detailed site monitoring often formed a significant part of the consent conditions.

The following table indicates the number of consents granted by Council for each activity type, within each FMU since the notification of the Freshwater Plan in 2015.

Table 2: Number of consents granted by Council for each activity type, within each FMU, since the notification of the Freshwater Plan in 2015

FMU	DL Discharge to Land	DW Discharge to Water	LB Land Use Bore	LD Land Use Dam	LR Works in beds of lakes and rivers	LS Gravel extraction	WD Discharge Wastewater to land	WG Water permit Groundwater take	WI Water permit Divert water	WM Water permit Dam water	WS Water permit Surface water take
Hill Country	11	8	5		77	11		3	15	1	8
Poverty Bay Flats	28	28	46	2	9	11	8	120	21	2	84
Gisborne Urban	23	26	6		3		2	8	17		3
Te Arai	3	5	3	1	16		2	5	2		14

Table 2: Number of resource consents by consent type for each FMU in the Waipaoa catchment. Only consents granted after notification of the Regional Freshwater Plan in October 2015 up to 2023 are shown here, includes also consents that have expired but excludes incomplete, withdrawn and rejected applications.

2 Water quantity implementation in the Waipaoa catchment

The following are some of the key activities and concepts that the regional and Waipaoa catchment planning provisions introduced to the way water quantity is managed in our region.

2.1 Transfers of water

The freshwater planning provisions set up a new framework that allowed for transfers of water within a 'Water Quantity Zone'. Water Quantity Zones are:

- tributaries of the same river; or
- hydraulically connected surface and groundwater bodies; or
- hydraulically connected groundwater bodies; or
- miscellaneous surface water and groundwater grouped together where there are few or no water takes.

The Gisborne Regional Freshwater Plan originally allowed for these only where water was cut back to the actual use of the person transferring the water. Very few applications for transfers were received under this framework. However, the appeals on the Plan changed the framework, and transfers were allowed of water that had not been used (paper allocation) where the new use met the reasonable use test. As a consequence, there have been large numbers of transfers of water within the catchment since the Plan became fully operative.

2.2 Water metering and water efficiency

A key part of the freshwater planning provisions was the requirement for the introduction of water meters on water takes. While Council required the installation of water meters on all consents for several years prior to the freshwater planning provisions being introduced, in practice not all water takes met the Resource Management (Measuring and Reporting of Water Takes) Regulations 2010 until after the Proposed Plan was notified.

Significant work has been undertaken to bring water meter reporting in line with the national regulation as well as meeting resource consent conditions. This means there is now a comprehensive picture of water use across the different water quantity zones.

Water efficiency has been a major focus of the renewal of resource consents and there have been significant gains in this area over the last 10 years. All consent holders are required to have irrigation management plans, with a focus on achieving 80% irrigation efficiency. It is likely now that there are few efficiency gains able to be made through the resource consent process.

2.3 Flow monitoring

Automated flow monitoring has been in place for the minimum flow sites in the Waipaoa Catchment Plan for several decades. Extensive low-flow monitoring and cross-section work, including the inclusion of additional flow monitoring sites to support the implementation of the Waipaoa Catchment Plan, have supplemented this.

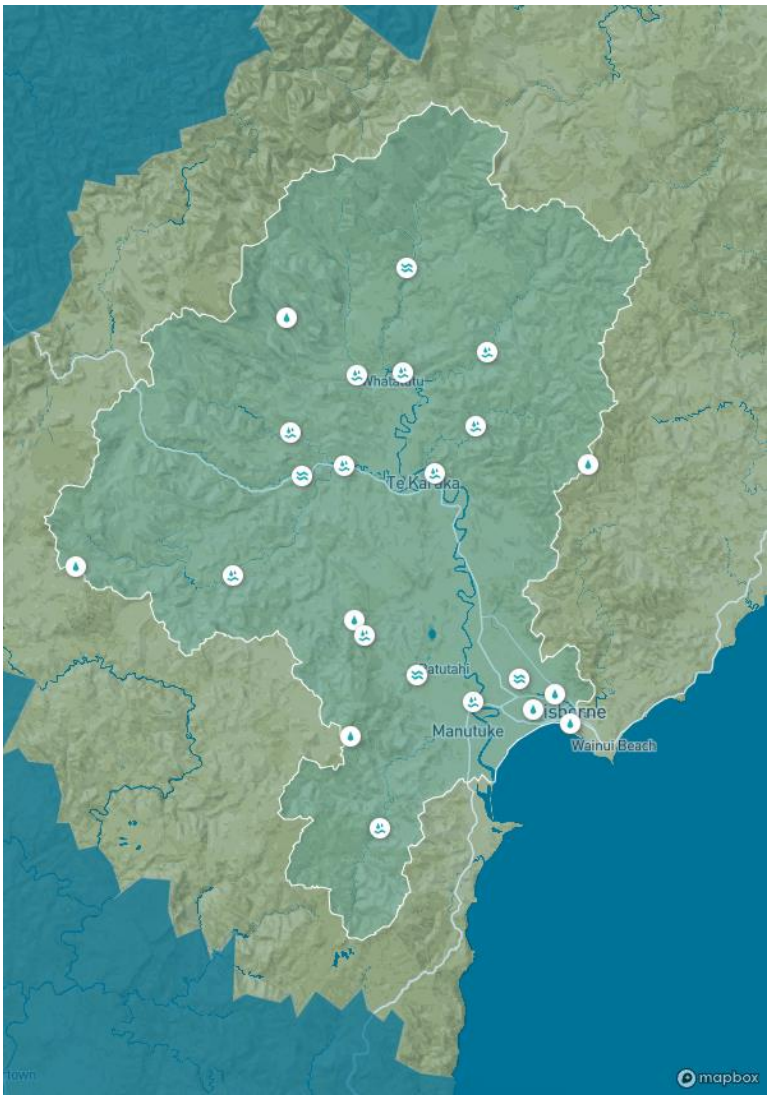


Figure 2: Flow and rainfall monitoring sites in the Waipaoa Catchment (Source: LAWA)

2.4 Groundwater level monitoring

Groundwater levels in the five aquifers are monitored in a network of bores across the Waipaoa Catchment Plan area. Some of these are monitored in real time through telemetry, while others have levels checked on a monthly or quarterly basis. A review of the network condition found some bores were failing, and as a result some older bores in poor condition have been replaced.

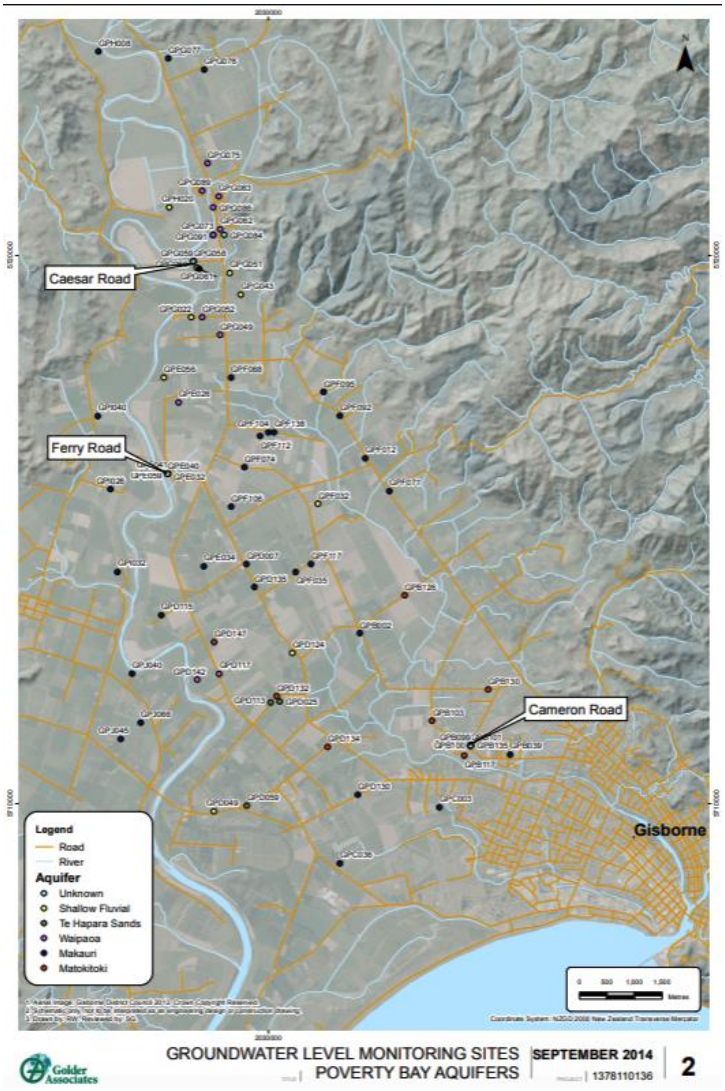


Figure 3: Groundwater Monitoring Sites on the Turanga/Poverty Bay Flats

2.5 Managed Aquifer Recharge trial

A Managed Aquifer Recharge (MAR) trial of the Makauri aquifer has been undertaken, using a bore located at Kaiaponi Farms. This bore takes water from the Waipaoa River and gravity feeds this into the Makauri aquifer.

Figure 4: Managed Aquifer Recharge - Waipaoa River intake on the left and MAR injection bore on the right

The Waipaoa River is the source of recharge water into the aquifer, but land modification has reduced the recharge rate, and current water takes are greater than the rate of recharge.

The trial has proved that MAR is feasible. Extensive monitoring of water quantity and quality was undertaken during and after the trials. The results show that the approach has very minor impacts on water quality in the Makauri aquifer. The monitoring also identified that there is increasing salinity within the aquifer, as a result of saline intrusion from the part of the aquifer beneath the Patutahi area (the Western Saline Aquifer).

The trial identified that if multiple recharge sites were developed, with a total water take of 150 l/s from the Waipaoa River during higher flow (B block) periods, the aquifer could be replenished to the level where the aquifer decline would be halted.

Two iwi were directly impacted by the MAR trial. A Mauri Compass Assessment and a Cultural Impact Assessment were commissioned through these iwi by Council. At the end of this process both iwi cautiously supported the MAR trial and recommended addressing the extremely degraded state of mauri, continuation of the mātauranga Māori programme and restoration of the mauri of the aquifer and river.

2.6 Alternative use and disposal of treated wastewater

Following recommendations from the Wastewater Management Committee (WMC) around alternative use of treated municipal wastewater, a pre-feasibility study was undertaken by the Gisborne Chamber of Commerce into the use of the water for horticulture. This study indicates that re-use of treated wastewater for horticultural irrigation is feasible, and commonly undertaken overseas. The treated wastewater volume would be sufficient to provide as much water as is currently used for irrigation on the Turanga/Poverty Bay Flats.

Wastewater re-use represents the only identified new water source available for irrigation, as well as supporting Turanga iwi aspirations for reducing the discharge into Turanganui-a-Kiwa/Poverty Bay[1].

2.7 Te Arai municipal water supply intake

The municipal water supply intake from Te Arai River currently has no minimum flow and at times 100% of the water is taken from the river at the bush intake location. In preparation for setting a minimum flow, flow monitoring recorders were installed above and below the intake. A bypass to allow five l/s of water to pass the intake was also installed. The bypass and the flow monitoring equipment was destroyed in Cyclone Gabrielle and will be replaced once safe access is available.

Te Arai is the awa of Rongowhakaata and there is a long history of Rongowhakaata seeking improved environmental outcomes for this river. Te Arai is located in a separate FMU and the setting of a minimum flow for the water supply intake is a key matter for resolving as part of this freshwater planning process.

3 Water quality implementation in Waipaoa catchment

The following are some of the key activities and concepts that have emerged from the introduction of the freshwater planning provisions and Waipaoa Catchment Plan in relation to water quality and the way it is managed in our region.

1 Reports relating to the ‘Alternative use and disposal of treated wastewater’ can be provided on request.

3.1 Tile drainage consents

Tile drains are subsurface drains used to divert excess moisture from the soil, allowing waterlogged land to be more productive. Prior to the development of the freshwater planning provisions, tile drainage was considered (in the regulatory sense) only where there was a concern that pumped systems might flood adjacent properties. The Freshwater Plan introduced new water quality requirements. Since the Plan was notified, large amounts of the Poverty Bay Flats have been tile drained, mainly to support changes in crop type.

Nationally, tile drainage has become a concern in terms of water quality impacts, as the drainage system quickly transports nutrients to water, which otherwise would first have to travel through the soil. It is possible that the decline in water quality in the Taruheru Catchment, in particular, may be associated with increased tile drainage.

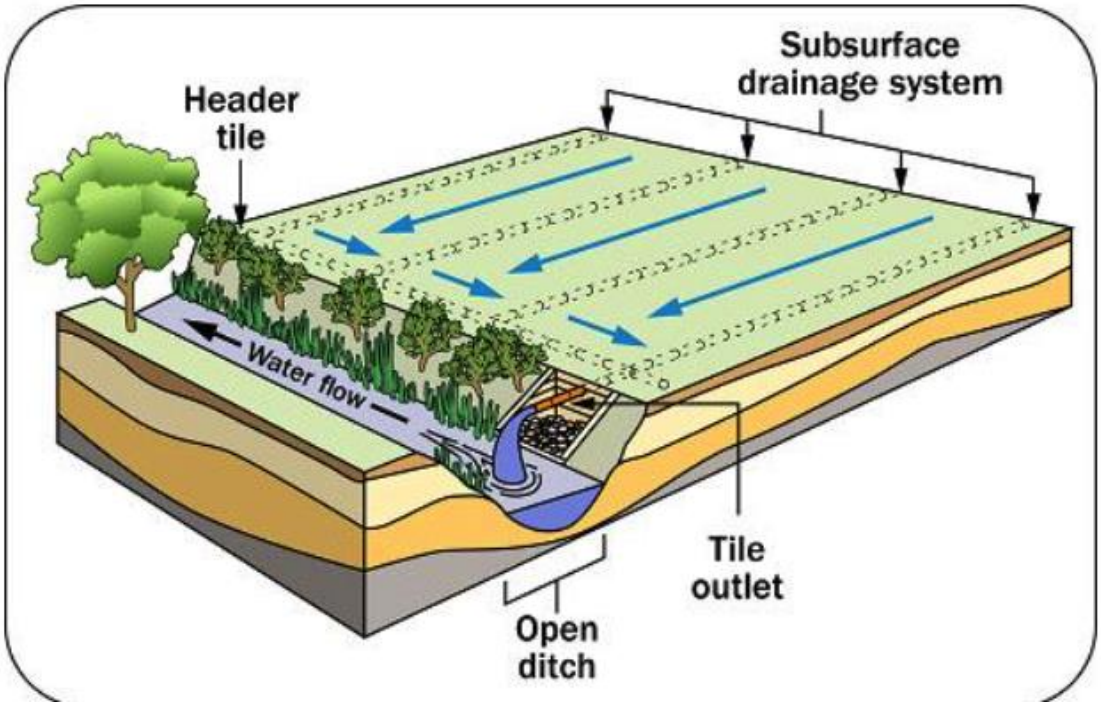


Figure 5: Tile drainage system

3.2 Solid discharges to land that may enter water

There have been few solid discharges consents issued, with reliance on unmonitored Permitted Activity standards. This is an area where there has been complaints and compliance action, but only in relation to very large discharges. Council staff have identified a specific concern that fertiliser is not included in the definition of agrichemicals and that this is causing adverse effects on water quality, particularly as relates to aerial distribution where it can lead to contamination of smaller waterbodies.

3.3 Gisborne Urban FMU – wastewater overflows (point source discharge)

The overflow of wastewater from the network into the Gisborne City rivers was a major source of contention in the development of the freshwater planning provisions. It is viewed by iwi and hapū groups as being an unacceptable activity as it is so culturally offensive. Specific policy and rules around this were included in the plan with a requirement that resource consents be applied for by 2020.

Since the Plan became operative, a 15-year consent was granted to Council for the overflow events during heavy rain, as well as for accidental discharges of wastewater during network

failures. The Council is investing in a program to reduce the discharges, however no significant reductions in frequency of overflows is likely until the program is substantially complete.

3.4 Gisborne Urban FMU - stormwater management plans (point source discharge)

Stormwater is a major supplier of contaminants such as heavy metals and hydrocarbons from roads and houses in the city. There are specific policies and rules in the operative Plan requiring integrated catchment plans to be prepared for the stormwater network by 2025. Work is underway preparing the required plans and there have been a wide range of technical and science investigations around the urban stream network to support these. This has meant there is a much greater understanding of the water quality issues in the Gisborne Urban FMU.

They show that the Waikanae Stream in particular is very heavily contaminated and is affected by stormwater discharges. Metals such as Zinc and Copper, as well as hydrocarbons, are the major contaminants, but sediment, E.coli and nutrients are also part of the stormwater contaminant load.

3.5 Farm Environment Plans (Non-point source/diffuse discharges)

Farm Environment Plans (FEPs) were required to be prepared by all landowners who undertake vegetable cropping, and intensive livestock farming. Implementation has been mixed. The industry body New Zealand Good Agricultural Practice (NZGAP) is managing the implementation from horticulture businesses, and plans have also been developed principally by livestock farmers that are catchment group members such as at Mōtū.

Horticulture New Zealand, Foundation for Arable Research and Beef and Lamb have supported growers to prepare the plans. However, only an estimated 60% of the landowners who should have prepared the plans, have done so. The plans have not been audited for effectiveness and generally have not operated as envisaged during the last Waipaoa Catchment Plan development process. Implementation of compliance action for the FEPs under the TRMP has been troubled by ambiguity in the rules as well as capacity and capability within the sector to prepare and audit FEPs. Council's Compliance, Monitoring and Enforcement team is also not currently resourced to monitor FEPs, given that they are a permitted activity in many cases and costs are not recoverable.

Government has now introduced a new requirement under the NES–FM that all farms nationally must prepare Freshwater Farm Plans[2]. The compliance date is however unclear. Freshwater Farm Plans will cover much of the content that was included in the Gisborne Farm Environment Plan and have an independent third-party process to accredit and audit the plans.

3.6 Te Arai water quality

Information about the water quality in the Te Arai catchment is confined to the State of Environment (SOE) monitoring site at Pykes Weir and the aquatic ecosystem monitoring sites at Waugh Road, Pykes Weir, a tributary stream at Waingake Road, Waingake Water Treatment Plant, and sites below and above the intake weir.

It is acknowledged that the Pykes Weir site gives a poor representation of water quality in the catchment, due to being so high upstream, and above the major horticultural and urban activity. Attempts were made to establish a flow monitoring and water quality site in the

[2] Freshwater farm plans | Ministry for the Environment

Whakatere Road area; however, equipment was damaged. The steepness of the banks, and the difficulty of access means that a suitable site has not been found.

In addition to Council's monitoring program, Rongowhakaata Iwi Trust have a Taiao group who gather data as required while also actively upskilling the wider whanau in water quality sampling, aquatic ecosystem monitoring and eDNA sampling and analysis.

3.7 Lakes and wetlands in the Waipaoa catchment

Currently not much is known about lakes and wetlands in the Waipaoa catchment as Council does not have a lake and wetland monitoring programme. The NPS-FM 2020 puts in place new monitoring and management requirements for lakes and wetlands. Lakes have specific attributes required through the NOF process (3.7(3)(a)). Alongside the review of the regional freshwater provisions, Council will also establish an appropriate lakes and wetlands monitoring programme for the region.

In the current Plan, Lake Repongaere is identified as an 'Outstanding Waterbody' and Maungarongo o Te Kooti wetland is identified as a 'Regionally Significant Wetland'. The NPS-FM 2020 requirements that lakes and wetlands are mapped and monitored, may also lead to other areas being identified as significant.

4 State of Environment

4.1 Water quantity and hydrological modelling of the Waipaoa catchment

4.1.1 Surface water

Council has a much better flow record than in 2014 for Te Ari and Waipaoa rivers and has invested significantly in improving data quality. A review of the Mean Annual Low Flow (MALF) of both Te Arai and the Waipaoa rivers is currently being undertaken by NIWA.

The science work by NIWA will provide information with regards to appropriate minimum flows and allocation blocks for the ecological health of the river. To support this process, an economic analysis of a range of options is also planned.

Figure 6: Te Arai at Pykes Weir (L) and Waipaoa at Kanakanaia (R) water level monitoring sites

4.1.2 Groundwater

The five aquifers under the Turanga/Poverty Bay Flats all have the Waipaoa River as their original water source. The shallow aquifers are more closely connected to the river and have younger water, while the deep aquifers have older water.

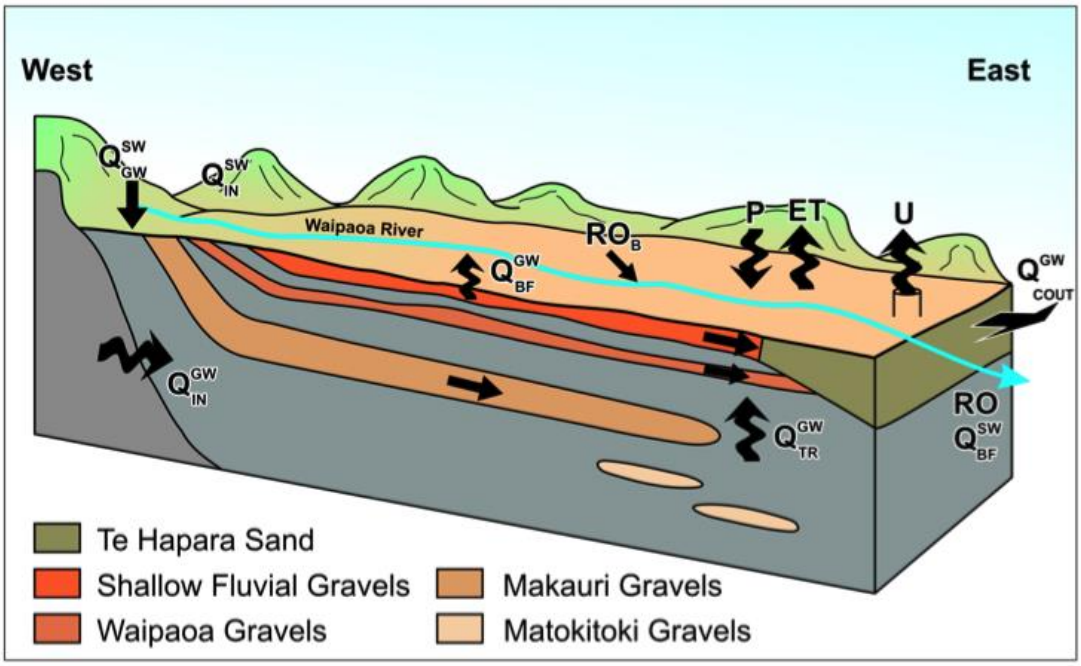


Figure 7: Conceptual Model of Groundwater System on the Turanga/Poverty Bay Flats

A detailed hydrological model of the aquifer systems in the Turanga/Poverty Bay Flats has been developed by WGA and Quasoil. This has been done to better understand the groundwater system as well as quantify the volume of groundwater available for use under a range of different scenarios.

The groundwater model has confirmed the continued decline of the Makauri aquifer, and a sustainable (no further decline) level of abstraction. The model identifies that if groundwater is abstracted from the Makauri aquifer at current consented levels, it could be expected to drop a further 3m by 2090.

The model has also identified that the Waipaoa gravels and shallow fluvial aquifers may not be as strongly linked to the Waipaoa River as previously thought.

Table 3 shows the 2020-2021 actual use and the modelled sustainable allocation based on the groundwater model. It should be noted that for all aquifers, the current annual allocation is significantly greater than the 2020-2021 actual use.

Aquifer	Actual Use 2020-2021 (m^3/annum)	Sustainable Level (m^3/annum)
Makauri	1,073,812	847,000
Matokitoki	113,450	62,000
Te Hapara Sands	152,175	69,000
Waipaoa Gravels	110,793	107,000

Shallow Fluvial Aquifer	129,959	103,000

Table 3: 2020-2021 actual use and the modelled sustainable allocation based on the groundwater model

The model has also been used to assess the implications of climate change on the aquifer. Changes in rainfall and reduced recharge rates in the aquifers, as well as sea level rise, create particular risks for Te Hapara Sands aquifer. Potentially also for the Makauri aquifer, which is now considered to be connected to the sea.

Under the NPS-FM 2020, councils are not allowed to over allocate water sources and a process to get to a sustainable level must be identified. The review of the Waipaoa Catchment Plan will need to determine the timeframes and processes to meet appropriate allocations for all groundwater sources.

An economic analysis of a range of options is planned to support this decision-making process.

4.1.3 Alternative water sources/storage

As discussed above, the only likely alternative water source option available on the Turanga/Poverty Bay Flats is the reuse of the treated municipal wastewater.

Investigations of above ground storage options indicate that there is no easy large-scale option for water storage – principally because of the sediment levels in the rivers. Water storage at a property level is now becoming more common however, with many B block (higher water flow) consents specifically including storage of water.

4.2 State and trends of water quality in the Waipaoa catchment

As part of its monitoring the State of the Environment (SOE), the Council has a river and groundwater water quality monitoring network that covers a wide range of river sites across Tairāwhiti. Depending on the site, data is collected monthly, quarterly, or annually around different water quality attributes.

The river water quality monitoring component of the SOE monitoring undertaken by Council was comprehensively reviewed in 2014 to ensure that attributes of relevance to the new NPS-FM framework were being monitored. This meant that a number of attributes were added to the monthly monitoring schedule and some changes were made to monitoring locations and frequency. This also led to the introduction of an aquatic ecosystem-monitoring programme, which commenced in the summer of 2015.

There are a total of 20 SOE river water quality monthly monitoring sites within the Waipaoa Catchment Plan area – five sites in the Waipaoa Hill Country FMU, one site in Te Arai FMU, five sites in the Poverty Bay Flats FMU and nine sites in the Gisborne Urban FMU. Alongside this there are a further nine annual aquatic ecosystem monitoring sites across the catchment.

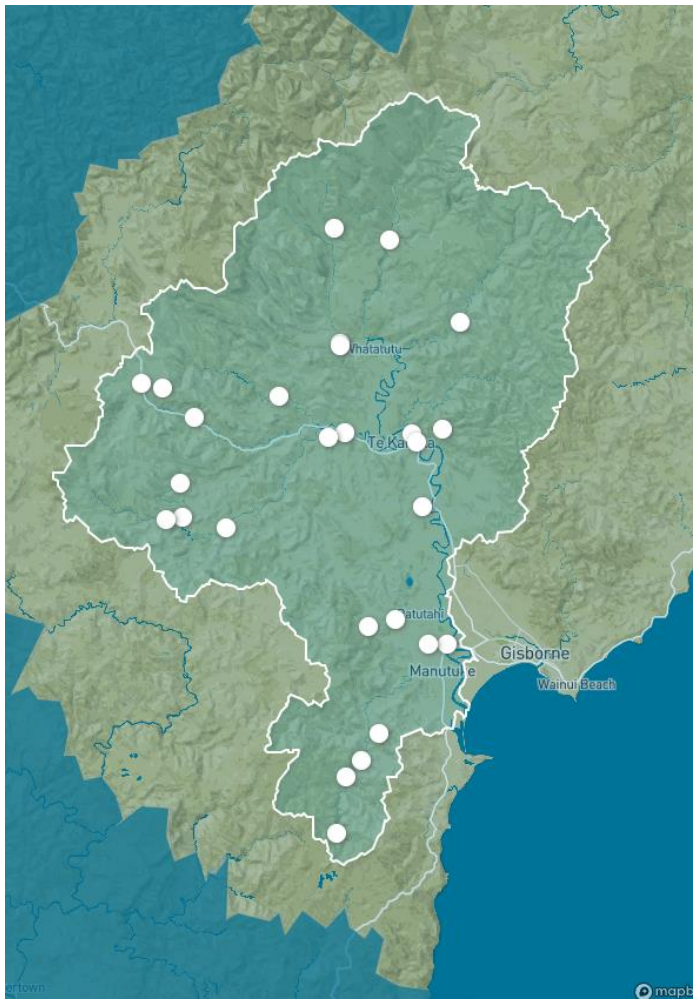


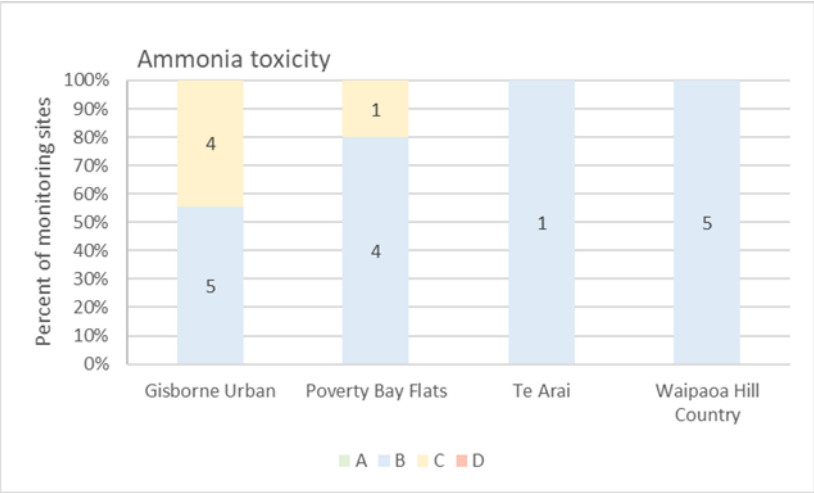
Figure 8: Water Quality monitoring sites in the Waipaoa Catchment (Source: LAWA)

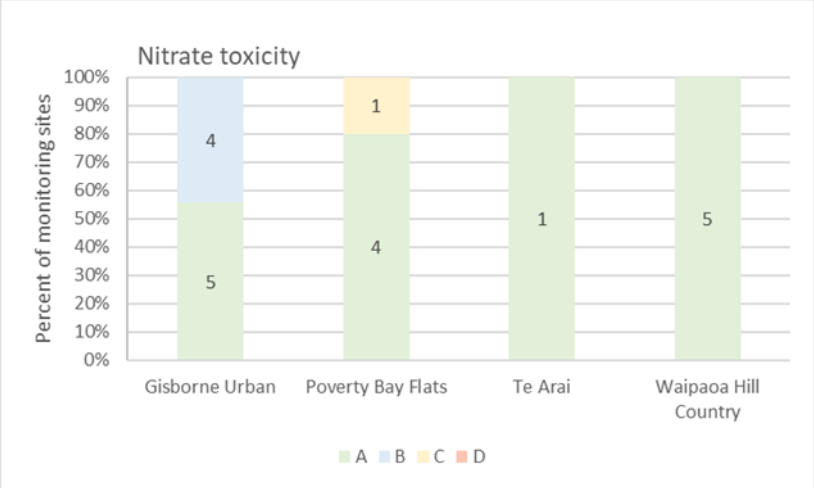
4.2.1 River water quality

An analysis of the state and trends of water quality within rivers in the Waipaoa catchment has been undertaken against the National Objectives Framework (NOF) in April 2023 by Aquanet Consulting using the 2017 – 2022 water quality monitoring data. The NOF sets out bands (A – E) for water quality and national bottom lines for each attribute. Anything that is in the D or E band is below the national bottom line.

The following graphs show the current state of water quality in the Waipaoa Catchment. A more detailed water quality analysis is discussed further in relation to each FMU below.

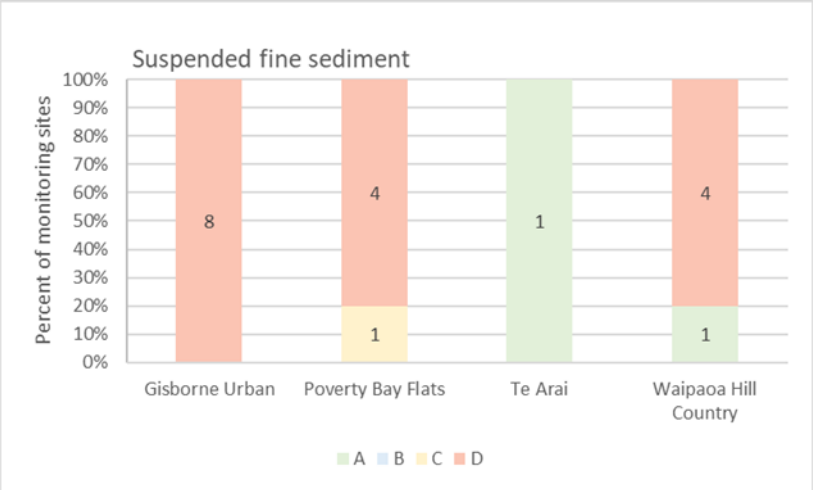
The following 4 graphs show the attribute states for ammonia toxicity, nitrate toxicity, DRP and E. coli – percentage of sites per Waipaoa catchment in each attribute band. The numbers in black on the bars indicate number of sites. State is based on results for the period July 2017–June 2022.

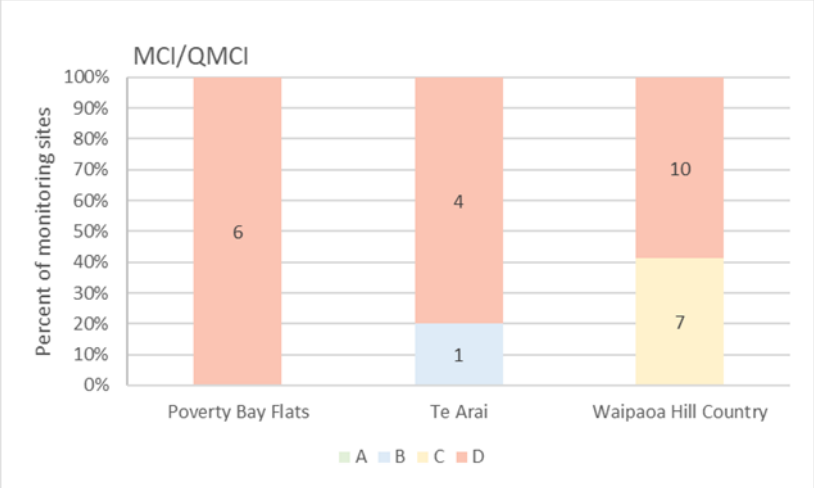

Ammonia toxicity
Percent of monitoring sites
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
4
5
1
4
1
5
Gisborne Urban
Poverty Bay Flats
Te Arai
Waipaoa Hill Country
A B C D

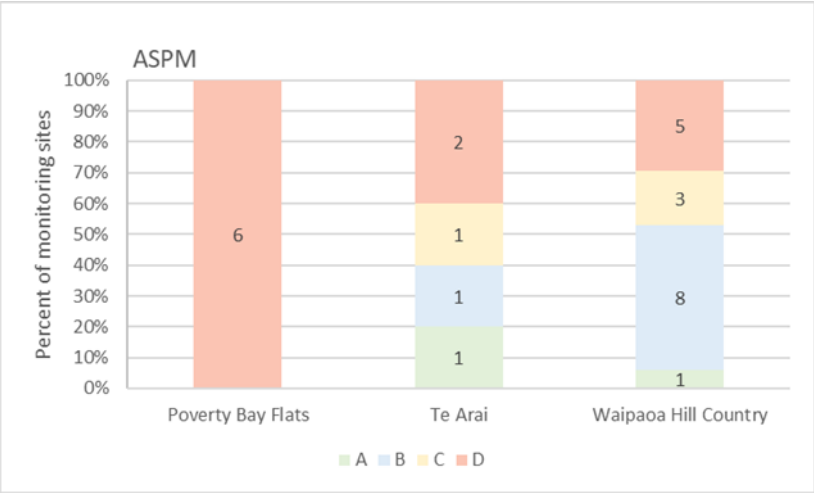

Nitrate toxicity
Percent of monitoring sites
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
4
5
1
4
1
5
Gisborne Urban
Poverty Bay Flats
Te Arai
Waipaoa Hill Country
A B C D


DRP
Percent of monitoring sites
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
9
2
3
1
2
2
1
Gisborne Urban
Poverty Bay Flats
Te Arai
Waipaoa Hill Country
A B C D

The following 3 graphs show attribute states for suspended fine sediment (using black disk clarity) and macroinvertebrates (MCI/QMCI and ASPM) – percentage of sites per Waipaoa catchment in each attribute band. The numbers in black on the bars indicate number of sites. State is based on results for the period July 2017–June 2022. Note the assessment for suspended fine sediment is indicative only.







4.2.2 Water quality by FMU

The results of the April 2023 analysis by Aquanet Consulting for each FMU is outlined below.

Waipaoa Hill Country FMU

- Nutrients are within the A or B band for all sites, except dissolved reactive phosphorus (DRP) which is in the D band at the Waihirere Domain and Wharekopae River Sites
- Suspended fine sediment and E.coli are in the D band at all sites except the Wharekopae River which is in the E band for E.coli
- Dissolved oxygen is in the B band across all sites
- MCI/QMCI (Macroinvertebrates) are in the C or D band across all sites

In terms of trends since the 2015 proposed Plan:

- There are degrading trends for nutrients across the FMU
- There are improving trends for E.coli across the FMU

Te Arai FMU

- All nutrients are in the A or B band
- Suspended fine sediment is in the A Band
- E.coli is in the D band
- MCI/QMCI (Macroinvertebrates) are in the D band except at the site located in Waingake waterworks bush which is in the B Band (from 3 sites)

In terms of trends since the 2015 proposed Plan:

- There are degrading trends for all nutrient attributes
- There is an improving trend for E.coli

Poverty Bay Flats FMU

There are two water quality zones in this FMU reflecting that when the operative Plan was prepared, water quality was worse in the Taruheru River than the rest of the FMU. This situation has continued.

In the Waipaoa Water Quality Zone

- Ammonia is in the B band at all sites
- Nitrate is in the A band at all sites
- DRP is in the C band except that it is in the D band in the Whakaahu Stream
- Suspended fine sediment and E.coli are in the D or E band
- Dissolved oxygen is in the D band at all sites
- MCI/WMCI is in the D band at all sites

In the Taruheru Water Quality Zone

- Ammonia and Nitrate are in the C band
- DRP, suspended fine sediment and MCI/QMCI are in the D band
- E.coli is in the E band at all sites

In terms of trends since the 2015 proposed Plan:

- These are mixed across sites in relation to E.coli – some have degraded while some have improved.

4.2.3 Groundwater quality

Groundwater quality is monitored quarterly across the five aquifers within the catchment.

There are five aquifers. Three of these aquifers - Te Hapara Sands, Waipaoa Gravels and Shallow Fluvial - are shallow and water levels are influenced strongly by land-use activities. A review of water quality monitoring data of the shallow bores as part of the 2020 SOE report[3] shows that 52% of these have E.coli detected and are unsafe for drinking.

Nitrate is another key contaminant monitored as this is toxic to aquatic life and people in high quantities. The 2020 SOE review found that 13 bores had elevated levels of nitrate, with one bore considered to be very high.

The review also identified a worrying trend of increasing salinity with the Makauri Aquifer – the largest deep groundwater aquifer under the Turanga/Poverty Bay Flats. This has led to one bore changing from freshwater to saline as saline water is pulled from the west over towards the heaviest use areas of the aquifer.

Council also participates in a five-yearly survey of pesticides and emerging contaminants in groundwater. This shows that the herbicide Atrazine (predominantly used on maize) is regularly found in our shallow groundwater systems. While not present in high levels compared with other parts of the country, it had been declining over the 1990 – 2013 period. In 2018 however the atrazine levels at one shallow bore increased substantially to the highest levels since the 1990s. Other herbicides previously detected in groundwater (alachlor, metolachlor, DEA and terbuthylazine) were however not detected in the 2018 study.

4.2.4 Lake water quality

Council does not have a water quality monitoring programme for lakes, however, there is a national lakes monitoring programme that has assessed the health of most lakes in Tairāwhiti, called ‘Lakes 380’. This programme identified 15 lakes in the Waipaoa catchment, and used modelled data to predict their health:

- One lake is identified as mesotrophic/ fair water quality

3 State of our Environment 2020 Report available on request

- Four lakes are identified as eutrophic/poor water quality
- Ten lakes are identified as supereutrophic/very poor water quality. This includes Lake Repongaere (an outstanding waterbody)

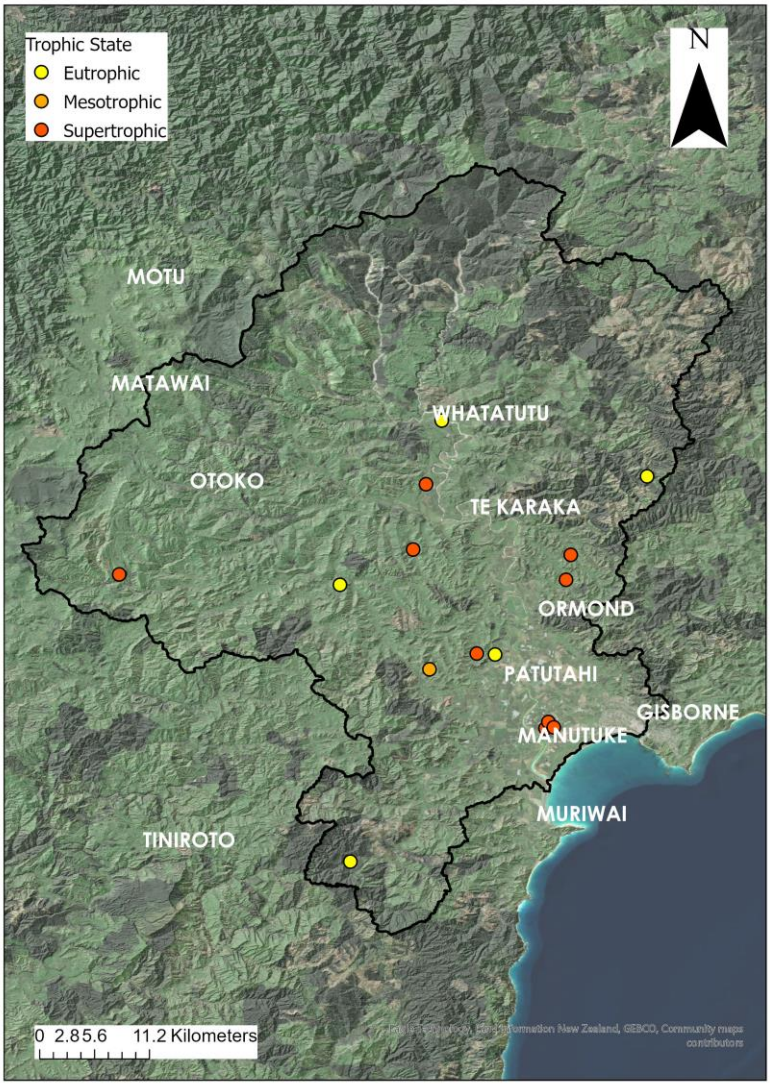


Figure 9: Map showing modelled assessment of lake health from Lakes 380 programme

5 'Effectiveness review' of the Waipaoa Catchment Plan

As part of preparations for the review of the Waipaoa Catchment Plan, an 'Effectiveness Review' under section 35 of the RMA was undertaken by Kereru Consultants during the second half of 2022. This looked at the current provisions, and how effective their implementation has been. The assessment is against the objectives that were set for the Plan. This considered both the effectiveness in terms of whether they were actually implemented, and then also whether the outcomes expected have been delivered on.

The review found that:

1. In relation to <u>water quantity</u> management, the Waipaoa Catchment Plan is:
    a. Highly effective as relates to:
        - Ensuring water allocation meets the reasonable use test
        - Providing for survival water for rootstock of permanent crops

- Ensuring high flows in the Waipaoa Hill Country FMU and Te Arai FMU provide for other uses without affecting freshes and flushing flows.
- Ensuring B Block allocations provide for water storage and irrigation needs without affecting freshes[4] and flushing flows
- Providing for the Gisborne municipal water supply
- Providing for irrigation uses from the Waipaoa River
- Use of the reasonable use test

b. Moderately effective as relates to:
- The freeing up of water for new uses
- Reducing overallocation and making progress towards targets
- Having a good degree of compliance with resource consents and plan provisions

c. Low in effectiveness as relates to:
- Maintaining ecological health in the Te Arai River during low flows
- Providing for ecological health in the Waipaoa River during low flows
- Ensuring Matokitoki and Makauri aquifers' allocations do not result in significant decline
- Ensuring Te Hapara Sands aquifer allocations do not result in salt water intrusion

d. Unable to be assessed in relation to the following matters:
- Effectiveness of permitted takes regimes
- Appropriateness of flows in the Gisborne Urban FMU to support transport and tauranga waka
- Flow variability in the Gisborne Urban FMU to support interaction between freshwater and the coastal environment

2. In relation to <u>water quality</u> management, the Waipaoa Catchment Plan is:
   a. Moderately effective as relates to:
      - Meeting nutrient related objectives in the Waipaoa Hill Country and Te Arai FMUs
      - Meeting periphyton objectives in all FMUs
      - Meeting most other freshwater objectives in Te Arai FMU
   b. Low in effectiveness as relates to:
      - Safeguarding the life-supporting capacity of freshwater, including ecosystem processes and indigenous species and the health of people and communities
      - Maintaining water quality and improving this where it is degraded or does not meet freshwater objectives

[4] A fresh is a small flood in a stream or river that results from heavy rains.

- Meeting Waipaoa Hill Country FMU and Te Arai FMU freshwater objectives as relates to MCI and E.coli
- Meeting Poverty Bay Flats FMU freshwater objectives as relates to MCI, E.coli and in the Taruheru Water Quality Zone as relate to nitrate and E.coli
- Meeting Gisborne Urban FMU freshwater objectives as relate to Enterococci and in the Waikanae Creek, nitrate

c. Unable to be assessed in relation to:
   - Effectiveness at meeting freshwater objectives in all FMUs in relation to fish and birds.

Overall, the effectiveness of the Waipaoa Catchment Plan provisions is considered to be **moderate** in relation to water quantity and **low** in relation to water quality.

6 Review process and next steps

The review process of the Waipaoa Catchment Plan is intended to follow the following steps:

1. Review values and vision for the catchment
2. Set environmental outcomes that will achieve the values
3. Consider what 'target attribute states and limits are required in order to achieve the values
4. Identify any policies, rules and actions that will be needed to achieve the target attribute states and limits.

This is the work of Council in collaboration with this Advisory Group for the Waipaoa Catchment Plan.

A summary of the meeting schedule for the Waipaoa Catchment Plan Advisory Group is attached as Appendix 1.

The Waipaoa Catchment Plan covers a large area including the separate Te Arai catchment. This is recognised by Te Arai River being in its own FMU. In accordance with the agreement made in the operative Plan, the setting of values/objectives/targets and limits for Te Arai FMU is being undertaken through a parallel process working with Rongowhakaata. This process will be reported on periodically as the Waipaoa Catchment Plan review process is undertaken, with the parallel work to be included within the draft Waipaoa Catchment Plan.

A similar parallel process is being undertaken regarding Te Maungarongo o Te Kooti Wetland, with the owners, Te Uri o Te Kooti.

7 Appendix

7.1 Appendix 1: Draft meeting schedule summary for Waipaoa Catchment Plan

Hui	Proposed Agenda	Proposed date and location	Reports
Hui 1	Waipaoa Catchment Plan • Overview • Scene setting, inclusive of Te Mana o te Wai specifics • Draft Terms of Reference – for discussion • Overview of catchment planning process • Overview of operative Catchment Plan • Current State of the Environment • Aspirations and goals • Sub-projects – Te Arai and Maungarongo	12.30pm – 3.00pm 12 July 2023 Waikanae Surf Club	Report 1 • CP process, focus • Setting, state, key land uses • Existing content Report 2 - TMOTW Presentation: Scope of two Waipaoa CP sub-projects • Te Arai • Maungarongo
Hui 2	Waipaoa Catchment Plan: Values and long-term vision • Review FMUs • Environmental outcomes • Catchment objectives	12.30pm – 3.00pm 16 Aug 2023 Rose Room	Report 1 – vison, values, outcomes • Review of Values, FMUs, Objectives • Issues and options • Evaluation and recommendation
Hui 3	Waipaoa Catchment Plan: Review and propose • Recap vision and values • Confirm FMUs • Proposed environmental outcomes	12.30pm – 3.00pm 13 Sept 2023 Rose Room	Report 1 – water quality • Recap NOF process • Water quality by FMU • Baseline state, environmental outcomes • Target states

	Water quality • Values and NOF • WQ by FMU • Baseline state env. Outcomes • Target states discussion		
Hui 4	Waipaoa Catchment Plan: Review and propose • Recap values and EOs • Recap baseline and target states Water quality 2 • Issues and options – targets Significant values • OFBs, wetlands, scheduled waterbodies	12.30pm – 3.00pm 11 Oct 2023 Waikanae Surf Club	Report 1 – Water quality 2 • Options for managing water quality • Limits and allocation • Action planning Report 2 – Significant values • OFBs • Wetlands • Other significant values
Hui 5	Waipaoa Catchment Plan: Water quantity 1 • Catchment plan provisions • Aspirations and goals for water quantity • What works, what doesnt • Discussion	12.30pm – 3.00pm 15 Nov 2023 Rose Room	Report 1 – Water quantity 1 • Current state • Research • Water security
Hui 6	Waipaoa Catchment Plan: Water quantity 2 • Review of provisions • Issues and Options • Discussion around options	12.30pm – 3.00pm 13 December 2023 Rose Room	Report 1 – Water quantity 2 • Options for managing water quantity
Hui 7	Waipaoa Catchment Plan: Water quantity 3 • Review and propose • Recap discussion • Proposed approach to allocation	12.30pm – 3.00pm 14 Feb 2024 Rose Room	Report 1 – Water quality • Options - evaluation and recommendation

Hui 8	Waipaoa Catchment Plan – Review of plan topics • Evaluation of options and recommendation	12.30pm – 3.00pm 13 March 2024 Rose Room	Report 1 Water quantity options • Evaluation and recommendation Report 2 – Te Arai freshwater planning process Report 3 – Maungarongo wetland freshwater planning process
Hui 9	Waipaoa Catchment Plan - synthesis • Recap of process • Synthesis of plan components	12.30pm – 3.00pm 17 April 2024 Rose Room	Report 1 – Synthesis of WCP components • Recap of process • Draft Catchment Plan provisions • Draft Action Plan Report 2 – next steps • Public feedback • Governance approval • Public notification
Hui 10	tbc	12.30pm – 3.00pm 15 May 2024 Rose Room	tbc
Hui 11	tbc	12.30pm – 3.00pm 12 Jun 2024 Rose Room	tbc