Te Kōrero o te whakahaere i ngā kāhui wai māori o Tauranga Moana

The Tauranga Moana Freshwater Management Unit

The purpose of this booklet is to explain draft options to address requirements of the National Policy Statement for Freshwater Management 2020 (NPSFM) in the Draft Tauranga Moana Freshwater Management Unit (FMU). These options are to do with how we manage freshwater in Tauranga Moana to achieve outcomes the community wants there.

This booklet covers:

- A description of the draft FMU
- Freshwater management issues in this FMU
- Options for:
  - **A.** A long-term vision for freshwater;
  - **B.** Proposed outcomes for key freshwater values;
  - **C.** Water quality, ecosystem health and other issues and targets;
  - **D.** Water take limits and minimum flows; and
  - **E.** The kinds of rules and other methods being considered to achieve these things.

We are early in the policy development process and are seeking feedback from the community to help inform the important decisions.

Your feedback to the questions inside this booklet can be provided in writing on the corresponding question sheet, online via our website or in person at one of our community events.

TOI MOANA
BAY OF PLENTY
REGIONAL COUNCIL

Ko te wai te oranga o ngā mea katoa

Water is the life-giver and essence of all things

Ngā tohu

This design represents the multiple waterways and waterbodies such as streams, rivers, lakes, and sea. The overall flowing form represents a river/tributary carving its way through the whenua. The koru has been included to represent the life force that water embodies and gives. Haehae represent whakapapa, including the past, present and future. It is a visual celebration of water as a life-giver and the essence of all things.

Te Wairere represents a waterfall with huka (foam) the dynamic movement of the water and the connections between different tributaries as they flow from the land to the sea, mai i te whenua, ki te moana.

Te Mana o te Wai - Tirohanga whānui

Essential Freshwater - Overview

In 2020, the New Zealand Government released the National Policy Statement for Freshwater Management (NPSFM) which outlines the direction all regional councils must take in the management of freshwater. As a result, the Bay of Plenty Regional Council now needs to change its Regional Policy Statement (RPS) and Regional Natural Resources Plan (Regional Plan). This means changing some of the policies and rules we use to manage how freshwater and land is used.

Between April 2023 and September 2023 we will ask you about your aspirations for your local waterways and your feedback on our draft change options. Your elected regional councillors will then consider and decide on options.

By the end of 2024 we will notify formal proposed changes to policies and rules. Everybody will be able to make submissions and be heard by a freshwater hearings panel.

Draft change options *2022 - 2023*	**Community engagement** *April - Sept 2023*	**Amend options** *Late 2023*	**Councillors decide** *Late 2024*	**Notify propsed RPS and RNRP change** *Late 2024*	**Public submissions** *2025*	**Hearings** *Late 2025 - 2026*

We acknowledge there are already a lot of other changes happening due to a host of new national regulations and proposed new laws, and this is yet more. Nevertheless, we encourage your involvement because many of the proposals discussed are specific to this FMU and we need you, the community, to help work through and identify solutions that will work for us all.

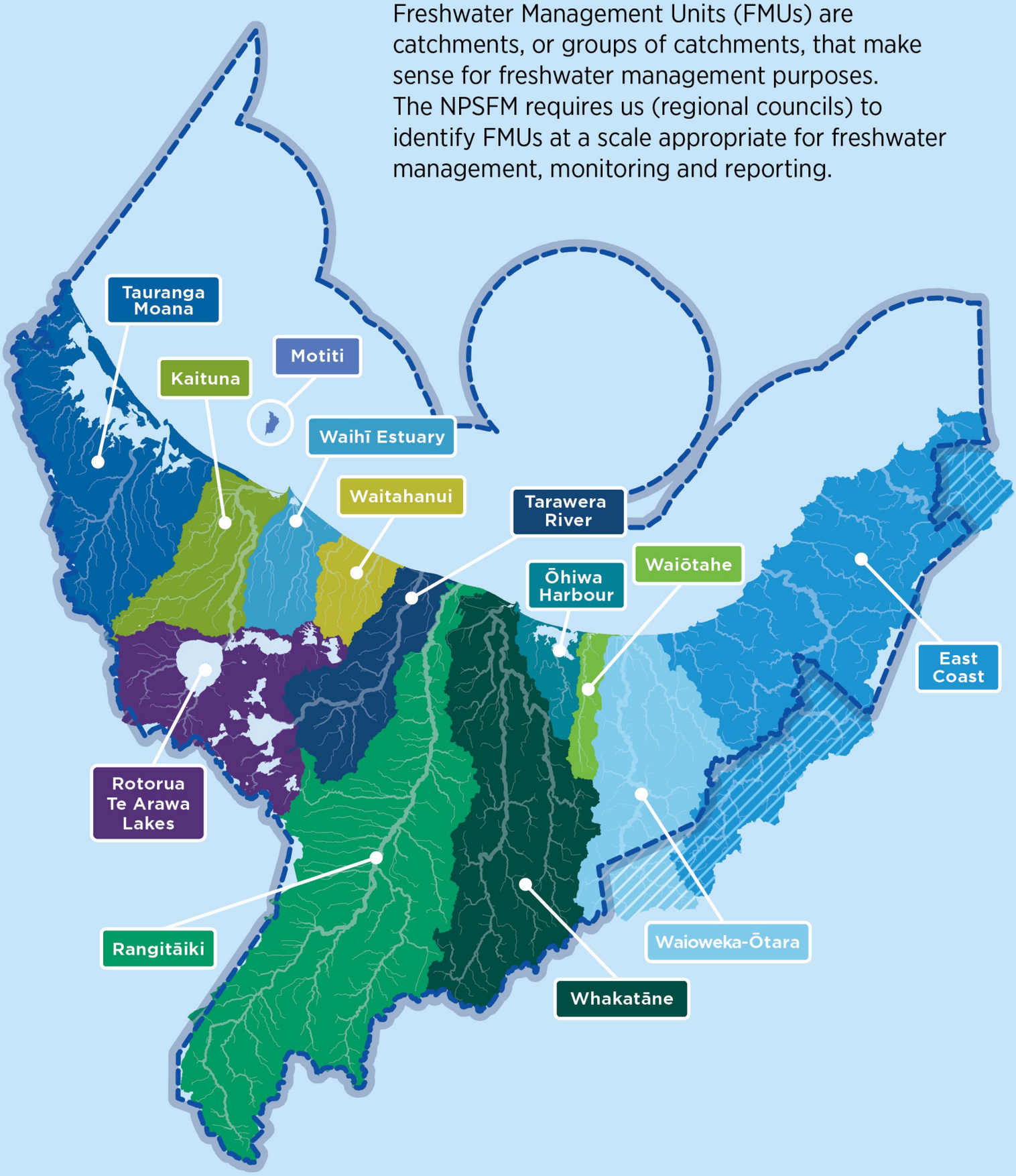
For more info

- Head to **boprc.govt.nz/freshwater**
- Read our Region Wide Overview booklet
- Sign up to receive our Freshwater Flash e-newsletter at **boprc.govt.nz/newsletters**
- Follow our social media
- Visit **participate.boprc.govt.nz**

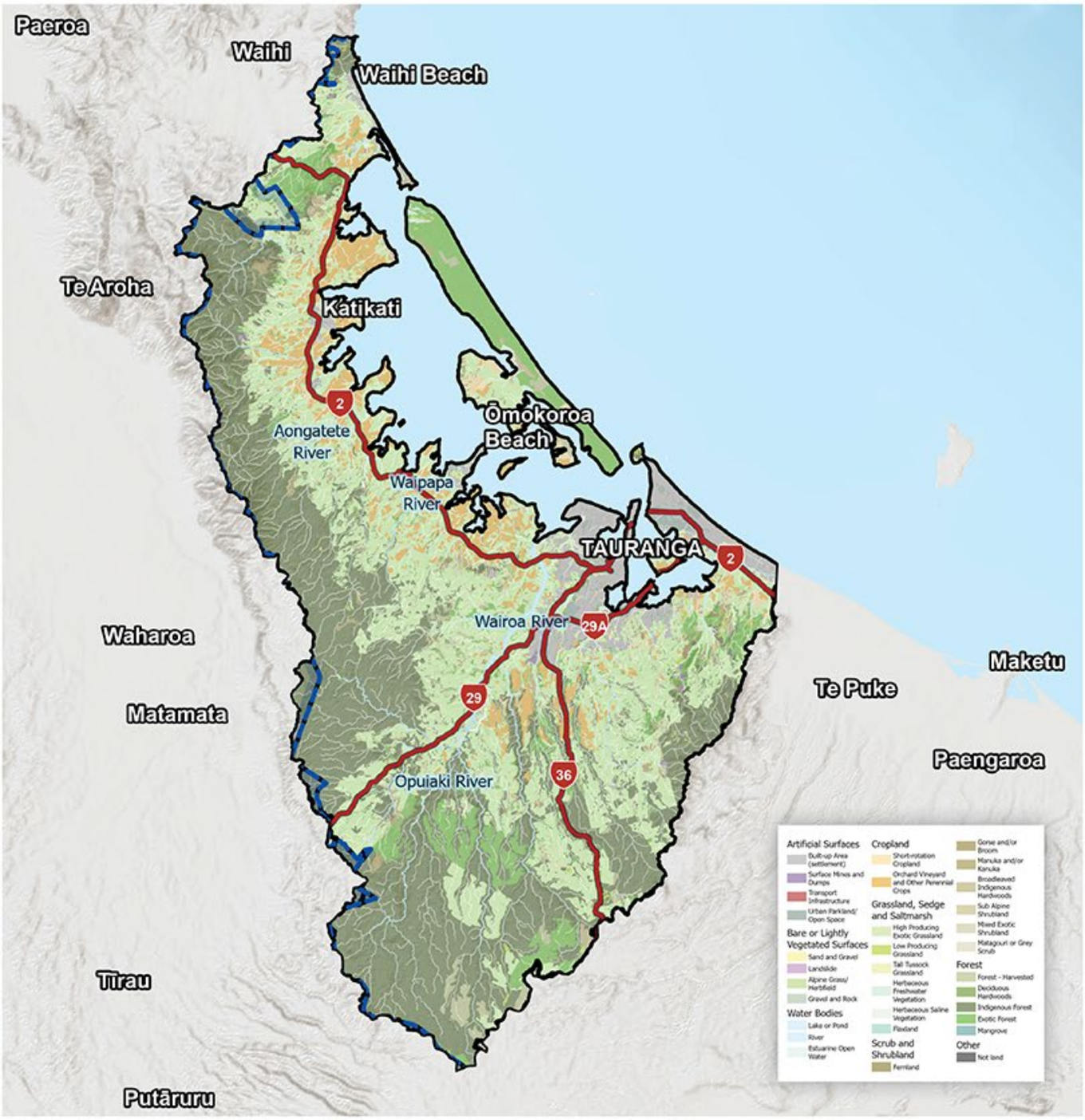
Ngā tauira o ngā rōpū whakahaere o te wai māori

Draft Freshwater Management Units

Freshwater Management Units (FMUs) are catchments, or groups of catchments, that make sense for freshwater management purposes. The NPSFM requires us (regional councils) to identify FMUs at a scale appropriate for freshwater management, monitoring and reporting.



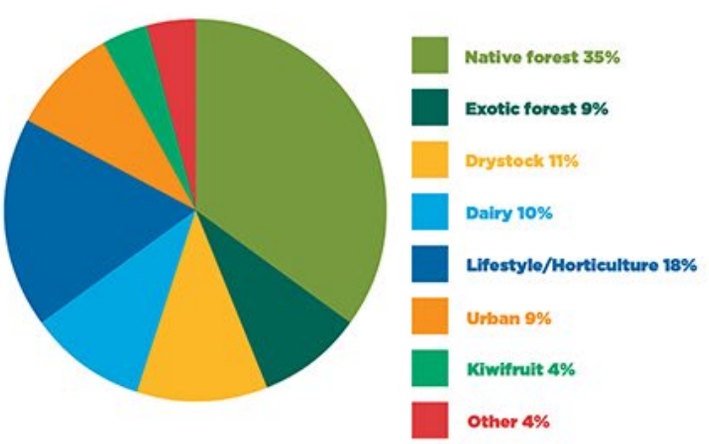
We are proposing 13 Draft FMUs in our region, based on surface water catchments (or groups of these with similarities) and whether they feed into lakes, estuaries, or the ocean. Each Draft FMU has special characteristics (e.g., water body, cultural, community, geology, landform, land use and economic characteristics) that make it unique. Each will have its own chapter in the Regional Plan. The Regional Plan will have region wide rules but may also have rules specific to each FMU. The rules in FMUs may vary depending on the issues faced in that FMU.



Tauranga Moana - FMU Map

Land area:
130,000 ha

Population:
176,100 people



Mō te Tauira o te whakahaere i ngā kāhui wai māori o Tauranga Moana

About the Draft Tauranga Moana Freshwater Management Unit (FMU)

The Draft Tauranga Moana FMU follows the catchment of Te Awanui/Tauranga Harbour, from Waihī Beach in the north, along the Kaimai-Mamaku Forest Park, to the Mamaku Plateau in the south, and out to Pāpāmoa in the east. With an area of approximately 130,000 ha, the Draft FMU includes many river catchments that drain from the Kaimai ranges and hill country behind Welcome Bay, and discharge to the Harbour including Waiau, Tuapiro, Uretara, Te Rereatukahia, Te Mania, Waitekohe, Aongatete, Wainui, Waipapa/Te Puna, Oturu, Wairoa, Kopurererua, Waimapu, Kaitemako, Welcome Bay, Waitao and Mangatawa. The Wairoa River Catchment is by far the largest. The Draft FMU also includes Matakana, Rangiwāea and Motuhoa Islands.

Tauranga Moana Draft FMU has the largest urban area in the region and supports New Zealand's largest commercial Port. The Kaimai Hydro-electric power scheme, in the Wairoa Catchment, has several tributary diversions and in-river dams and lakes, including McLarens Falls lake, which feed water to the Ruahihi power station on the Wairoa River.

Question 1 Do you think we have got this draft FMU boundary about right?

Tangata whenua

- There are significant whakapapa, cultural and historical connections and responsibilities for tangata whenua within this FMU. A number of iwi express their interests in the harbour and the catchments that run back into the Kaimai Ranges. Ngāti Ranginui, Ngā Pōtiki, Ngāti Pukenga, Ngāi Te Rangi are represented on Toi Moana's Tauranga Moana Advisory Group providing oversight of the management of the harbour.
- Waitaha has statutory acknowledgements relating to Waimapu Stream and Kaiate Stream in this FMU.
- Te Awanui/Tauranga Harbour and the catchments that feed into it all hold extremely significant mahinga kai, historical and cultural value for tangata whenua and their whanau as identified in iwi management plans throughout the FMU.
- There are about 17,500 hectares of Māori-owned land in the Tauranga Moana FMU, covering about 13% of the FMU land area. The majority of that land is in forest, both native (38%) and exotic (28%).

Communities

- As of 2022, the population of the Draft Tauranga Moana FMU was estimated to be 176,100 people, with the majority concentrated in Tauranga City. Other significant population centres include Waihī Beach, Katikati and Ōmokoroa.
- Community feedback so far has told us that people here value fresh water for recreation, natural character, mahinga kai, fishing, whitebaiting, drinking water supply, ecosystem health, economic uses and cultural values. There is widespread use of freshwater bodies for swimming, kayaking and fishing. Users want clean, swimmable water with healthy aquatic life and kaimoana downstream. Fresh water spots are also appreciated for their scenery, including some urban rivers, streams and wetlands. Notably, McLarens Falls

Lake is created as part of the hydroelectric power generation scheme and is a significant recreational area above and below the falls.

- Respondents sought some improvements to access, natural character and water quality. Concerns were raised about areas with permanent 'no swimming' health warnings. Some people wanted to see the economic value of water protected, streams to remain available for existing local property use, water storage to be encouraged or town water supply to be moved to groundwater.

Land and land use

- The Tauranga-Moana FMU is dominated by volcanic geology (85%), with nonvolcanic geology contributing the remaining 15%.
- Land use is a mix of native forest (35%) predominantly located along the Kaimai range, lifestyle and horticulture (18%), drystock (11%), dairy (10%), exotic forest which dominates land use on Matakana Island, urban (9%) and kiwifruit (4%). The main horticultural crops are kiwifruit and avocados.
- The Draft FMU includes Tauranga City and part of the Western Bay of Plenty District, so the FMU contributes towards economic figures for both. Agriculture and horticulture in Tauranga City are estimated to contribute $21 million and $43 million respectively to the Bay of Plenty regions GDP in 2020/21. Agriculture and horticulture in the Western Bay of Plenty District is estimated to contribute $116 million and $221 million respectively. The Western BOP figures also include the Kaituna, Motiti, Waihī Estuary, Waitahanui and Rotorua Te Arawa Lakes FMUs.

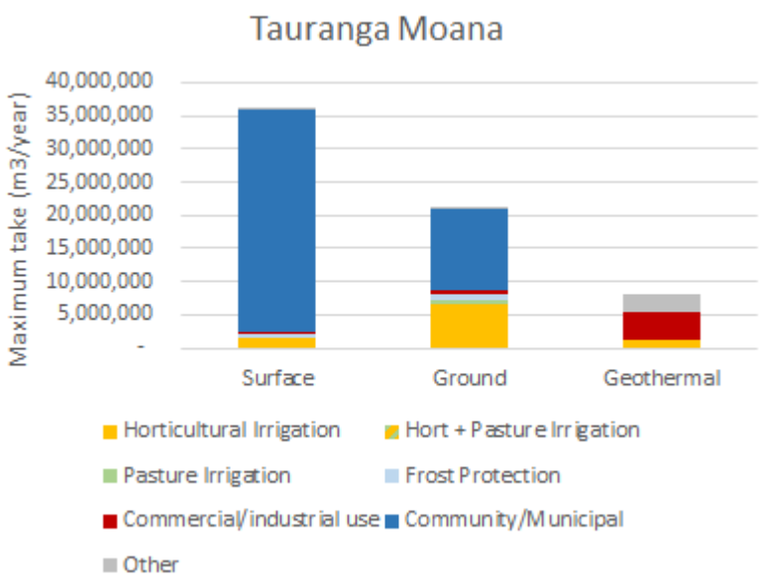
Rivers, streams, wetlands and estuaries

- Te Awanui/Tauranga Harbour covers an area of 210 km^2 and is one of New Zealand's largest estuaries. The entire harbour has been identified as an outstanding natural landscape.
- Tauranga FMU includes 94 areas with significant coastal biodiversity and threatened bird species. Twenty priority biodiversity sites involve a water body within this FMU.
- There are 456 ha (approximately 18% of the historical extent) of freshwater wetland remaining in the FMU.
- Headwaters in the Kaimai Ranges are identified as having high natural character with comprehensive native bush cover and recreational tracks near to and along the water bodies.
- Fish and Game identified adult trout and spawning sites along the Tuapiro Creek, Waimapu Stream and Wairoa River and some tributaries (including the Ngamuwahine, Omanawa and Ngātuhoa).

Water use, takes and discharges

- Water is used for a variety of purposes. It is used for a range of cultural purposes (such as karakia, iriiri, whakanoa), recreational purposes (such as fishing), mahinga kai and for food production (mostly horticultural irrigation/frost protection in the coastal area).
- As of January 2022, there were 548 water take consents in the Draft FMU (92 surface water, 325 groundwater and 131 "warm" geothermal).
- The biggest number of takes is for horticultural irrigation and frost protection.
- The biggest volume is for community and municipal supply, including Tauranga City's two consents to take from Tautau and Waiorohi streams, and Western Bay of Plenty District's six groundwater take consents. Municipal supply also includes commercial and industrial uses (around 30% of the total volume). In Tauranga City, there are 108 commercial users of the municipal water supply that take over 15 m^3 per day.

- This FMU has one of the highest numbers of geothermal water take consents in the region. Approximately 43% of the consented volume is used directly in swimming pools, or to extract heat for public swimming pools and other community facilities.
- There are no major point source discharges to fresh water in this Draft FMU but there are 209 discharge consents to land, 68 On-site Site Effluent Treatment discharge consents and 195 discharge consents to water. Urban industrial and trade discharges are directed to the municipal wastewater treatment facilities.
- There are four power stations within the Draft FMU in the Wairoa River Catchment and tributaries – Lloyd Mandeno Power Station and Lower Managapapa Power Station on the Mangapapa River, Kaimai 5 Power Station on the Mangakarengorengo River and the Ruahihi Power Station on the Wairoa River. Hydro-electric generation in the Western Bay of Plenty District is estimated to contribute $23 million to the Bay of Plenty's regional GDP in 2020/21.



Tauranga Moana Resource Consents to take water – volume m^3/year

What is likely to happen with climate change over the medium to long term (mid-late century)?

- Climate Change is predicted to cause more frequent intense rainfall events, and a large increase of soil erosion and sediment loads to the Harbour.
- Sea level rise may change low lying harbour margins and productive land uses on the most low-lying land may become affected by salinity and wetness, becoming less viable or unviable in the medium to long term. Some areas of pasture are already affected by salinity and so are less productive.
- Under climate change, reduced summer rainfall and increased evaporation (from land or water) and transpiration (evaporation from plants) may increase water demand while reducing stream flow. This would add stress to already limited water availability. In the period to 2040, the impact is expected to be more subdued in the more stable flow spring fed catchments nearer Tauranga city.

Question 2 Does this brief summary about the people, land and water in this FMU seem right to you?

He aha tōu kitenga mō te anamata o te wai māori?

What is your vision for the future of freshwater?

Draft long-term vision for freshwater

A key part of freshwater planning is being clear about what you seek to achieve. A long-term vision for freshwater is required by the NPSFM and must set out what tangata whenua and the community collectively want to see for freshwater in the FMU. Visions should be ambitious but reasonable.

We've drafted some options based on issues and what we've heard from tangata whenua and communities so far:

Option A The ecosystem health and mauri of all freshwater bodies within Tauranga Moana and Te Awanui (Tauranga Harbour) is restored and protected and water continues to contribute to the social, cultural and economic wellbeing of current and future generations.

1. Halt increases in the mud content of estuary sediments from land use practices.
2. Innovative and sustainable land and water management practices support food production, commercial and industrial uses and municipal uses so that waterways are safe for human contact, mahinga kai thrives and the ecosystem health is enhanced.
3. Faecal contaminants are reduced in the rivers valued for recreation and where shellfish are gathered.
4. Future urban growth and redevelopment applies water sensitive design, and reasonable and efficient municipal water supply needs of the growing city are met.
5. Any structures in or on streams are safe, appropriately located and don't adversely affect fish passage or ecological health.
6. Pasture affected by climate change salinity impacts will be reverted to a sustainable landuse such as saltmarsh.

This vision is to be achieved by 2045.

Option B The mauri of all water within Tauranga Moana is restored and protected, by ensuring:

1. Freshwater is plentiful and clean enough for drinking, swimming and sustaining mahinga kai.
2. Rivers, lakes, streams, wetlands and springs are accessible for customary use and mahinga kai.
3. Water is allocated fairly and used efficiently and responsibly.
4. People and communities are able to provide for their social, economic, and cultural well-being.

5 Iwi and hapū are actively involved and their mana and rangatiratanga is recognised.

6 Te Awanui as the receiving environment is healthy and abundant, kaimoana stocks are replenished, and levels of sedimentation and pollutants are low.

This vision is to be achieved within a 20-year timeframe, so that the mauri of any degraded water bodies is restored by 2045.

Question 3 As a draft vision do you prefer Option A or B?

Draft values and environmental outcomes

The NPSFM uses the term "values" to refer to important aspects of freshwater. We must manage freshwater to protect compulsory freshwater values and must also consider other values if present. We must set environmental outcomes for these values.

We have used iwi and community feedback as well as our own research to identify the values we think matter most in this draft FMU. This work has revealed that all values matter here; maintaining water quality, sustaining and improving the health of Tauranga Harbour, people want to be able to swim, and gather kai without risk of getting sick. Our online engagement revealed how extensively used the many inland waterbodies are, including places like Kaiate Falls, the Wairoa River, Poripori waterhole and McClaren Falls.

Water is also important to sustain the growth of people and communities – in marae and households, as drinking water for animals, for irrigation and food production, and for commercial and industrial uses. Water is particularly important for the livelihoods of horticulturalists and enables the city and urban areas to grow. But we must make sure its use does not damage ecological health or diminish mauri.

The following table contains some draft outcome statements, based on what we have heard so far.

Freshwater Values *The ways fresh water is important* *Shaded values are compulsory national values in the NPSFM*	**DRAFT Environmental outcome** *How we would like the values to be*
Ecosystem health	Water quality is maintained or improved where degraded and will assist in achieving Objective 7 of the Regional Coastal Environment Plan. Water flows in streams and rivers are maintained to provide protection for existing aquatic life. Riparian margins, wetlands and mahinga kai habitats are restored, protected and enhanced. Thriving indigenous species including kōura, tuna and whitebait with fish passage from the mountains to the sea. The streams and wetlands support diverse and healthy ecosystems.
Human contact	Water quality and access is maintained or improved to be suitable for swimming, where people wish to swim, and gathering kai with a low risk of getting sick.
Threatened species	Protect the critical habitats required to support the presence, abundance, survival and recovery of threatened species.
Mahinga kai	Taonga species are protected, and their cultural

	health and the continuation of mahinga kai practices and associated tikanga are provided for. Water is suitable to sustain abundant and diverse mahinga kai and kaimoana species which are safe to eat. Restore, maintain and protect the mauri of freshwater resources and Te Awanui/Tauranga Harbour
Natural form and character	In the Wairoa River catchment retain the wilderness values experienced on the river through esplanade reserves that will protect ecological and wilderness values.
Drinking water supply	People have sufficient, reliable and safe water for drinking and reasonable domestic use, to the extent possible and subject to providing for the outcomes shaded above.
Wai tapu	Wai tapu, waahi tapu, sites of cultural significance and the tikanga associated with these sites and waters are protected.
Transport and tauranga waka	Maintain or improve access along the Wairoa River.
Fishing	Fisheries within Tauranga Moana (coastal and freshwater) are restored and sustainably managed and enhanced.
Hydro-electric power generation	Water quality and quantity is sufficient to provide for hydro-electric power generation to be maintained, to the extent possible and subject to providing for the outcomes shaded above.
Animal drinking water	Farmed animals have sufficient, reliable, safe, and palatable drinking water, to the extent possible and subject to providing for the outcomes shaded above.
Irrigation, cultivation, and production of food and beverages	Reasonable and efficient irrigation and food processing freshwater needs are provided for with an adequate level of reliability, to the extent possible and subject to providing for the outcomes shaded above.
Commercial and industrial use	Reasonable and efficient commercial and industrial freshwater needs are provided for with an adequate level of reliability, to the extent possible and subject to providing for the outcomes shaded above.
Geothermal warm water	Significant geothermal warm water resources are protected from the cooling effects of activities and made available for efficient uses that require heat and/or heated water, while preserving, enhancing and protecting the mauri of the geothermal resource.

Question 4 What do you think of the draft values and outcomes identified for this FMU?

Te kounga o te wai me te oranga o te pūnahi hauropi

Water quality and ecosystem health

The vision, values and outcomes give a sense of where we want to be. How hard it is to get there depends very much on where we are right now. The things we do on the land can affect river, stream, wetland and estuary health. We measure lots of different things to check the health of the environment- these are called attributes. The state given below is what it was like in September 2017 – called baseline state as defined in the NPSFM. The NPSFM has a grading system for each attribute. The grades are A-D bands. A band = very good state, D = poor state. The trend tells us whether it is getting better or worse over time.

Estuary health

The main estuary attributes we measure are mud content, algae and seagrass cover, and sediment nutrients – like nitrogen and phosphorus. Like the NPSFM, the New Zealand Estuary Trophic Index (ETI) has a grading system that uses the same A-D bands.

Overall, the Tauranga Harbour is in a moderate state of ecosystem health, with variable impacts on the different sub-estuaries that make up this large harbour. Sedimentation is the greatest stressor on ecosystem health, followed by nutrient enrichment. Accumulation of sediment and contaminants mainly occurs in sheltered sub-estuaries. Sediment, nutrients, and faecal contamination impact these areas to varying degrees leading to degradation of seagrass beds, shellfish health and increasing potential of sea lettuce blooms. In-flowing rivers have elevated *E. coli*, which is carried through into the harbour.

The harbour is in the B band for overall NZ ETI trophic state and macroalgae cover, indicating a moderate level of eutrophication. For mud content it is graded in the C band, indicating sedimentation is a moderate stressor for biodiversity. The total nitrogen trophic state for estuary monitoring sites was within the C band and nitrogen is increasing within the harbour, while phosphorus is decreasing. Tauranga Harbour macroalgal growth (e.g. sea lettuce) is nitrogen limited, so it is sensitive to any increase of nitrogen.

River and stream water quality for ecosystem health

The main water quality attributes we measure in rivers and streams are the contaminants of concern for most areas, the nutrients nitrogen and phosphorus, and sediment. Find out more about how we monitor river health, here.

The Bay of Plenty Regional Council has 18 monitoring sites in Tauranga Moana FMU to measure state and trends in river and stream water quality. In areas where we don't have enough monitoring data, river health has been estimated by an Expert Panel using the best information available. This gives us a sense of states and helps us identify where changes may be needed to meet environmental outcomes. The NPSFM requires us to take action and make improvements if water quality is below a national bottom line or is degrading (shows a worsening trend over time), unless this is due to natural causes.

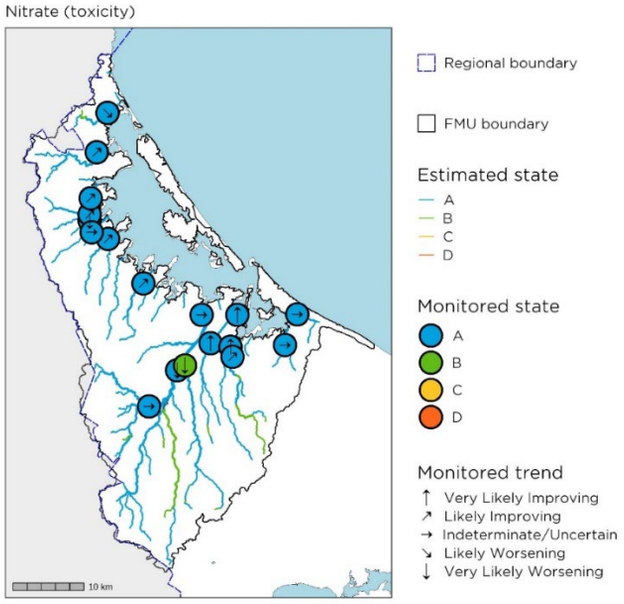
Measured nitrogen concentrations are generally in the A band, well below levels that can have toxic effects, but some sites are showing worsening trends. Whilst not toxic, nutrients like nitrogen and phosphorous can promote plant, weed and algal growth in streams and estuaries.

Measured dissolved reactive phosphorus (DRP) concentrations are elevated in most streams feeding into the southern basin of Tauranga Harbour, particularly in the Kopurererua and

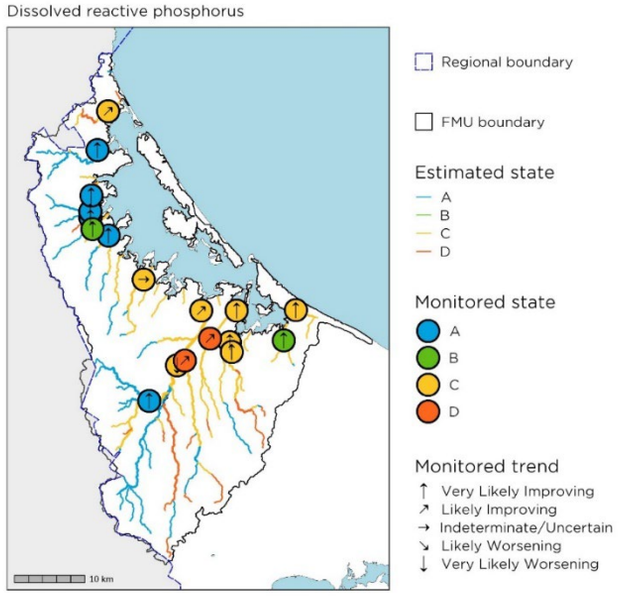
Omanawa Rivers which are graded ‘D’ band. DRP concentrations are generally lower in streams feeding into the northern part of the harbour due to a shift from pumice soils to allophanic and brown soils associated with the Kaimai range. The majority of sites are showing improving trends for DRP, except for Wairoa downstream of Ruahihi Station which is worsening.

Most sites have baseline states in the A or B bands for suspended fine sediment (by way of water clarity). Sites near urban areas (e.g. Kopurererua Stream) plus Te Mania at Sharp Road, are in the D band, and below the national bottom line.

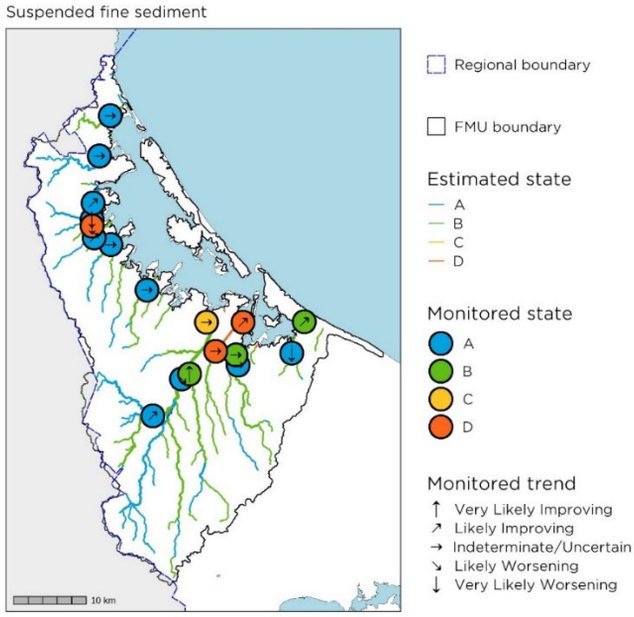
Nitrate (toxicity)



Dissolved reactive phosphorus



Suspended fine sediment



River and stream aquatic life for ecosystem health

The main aquatic life attributes we measure are fish, macroinvertebrates which include worms, snails and insects, both in their immature larval phase, and as adults (e.g., mayflies, caddisflies, beetles), and periphyton - algae and fungi that grow on the beds of our rivers, lakes and streams and can make it slippery and slimy. For ease of interpretation, invertebrate data is simplified as special indices such as the Macroinvertebrate Community Index (MCI). The MCI is based on the tolerance or sensitivity of species to organic pollution and measures the presence (or absence) of invertebrates. Higher MCI scores indicate better stream conditions at the monitoring site. Two other indices are also used to describe macroinvertebrate health – the quantitative MCI and Average Score Per Metric; check out our Water Ecology Tool at www.boprc.govt.nz/wet for more information.

Fish surveys show 22 freshwater fish species recorded in this FMU, the highest number in the region, and 15 of these are native. Longfin and shortfin eels, redfin bully, inanga, kōkopu and smelt were the most common. Many of these native fish are migratory, meaning any barriers could have a significant effect on fish. Only four native fish species have been recorded above the McLaren Falls: longfin eel, banded kōkopu, shortjaw kōkopu and common bully. These were present in surveys both before and after the Ruahihi power scheme was commissioned, suggesting that the McLaren Falls have acted as a natural barrier.

Apart from rainbow and brown trout, five other introduced species were found: mosquito fish, goldfish, grass carp, tench and rudd. Grass carp have been introduced at a number of sites around the Rangitāiki Plains in order to control excessive macrophyte growth. Records of rudd and tench found in Lake McLaren represent the only known occurrence of these pest species in the region. It is likely that these fish were deliberately released into Lake McLaren as part of coarse fishing by anglers.

Thirty-one river sites have been sampled for invertebrates in the Tauranga Moana FMU. A wide range of MCI state bands have been observed. Generally, streams are in excellent condition in native forest catchments. Urban streams show the greatest reduction in stream health and were in the D band. These streams are subject to discharges of stormwater containing urban related contaminants, as well as altered flow patterns. Habitat quality in these streams is also often poor, further stressing ecological communities.

Unlike many other rivers in the region, conditions in the Tauranga Harbour FMU often favour periphyton growth. Five sites are monitored for periphyton biomass in this FMU, and all have baseline states in the B band except Te Rereatukahia at SH2, which was in the C band. Moderate levels of inorganic nitrogen coupled with large cobble-dominated streambeds in many of the streams draining the Kaimai Ranges provides suitable conditions for excess periphyton biomass in some streams. This is regulated, to some degree, by invertebrate grazing and frequent flood events which constrain periphyton biomass to the moderate levels seen.

There are 49 known infestations of Alligator Weed in Tauranga Moana FMU, four Egeria, one Lagarosiphon, three Salvinia and one Water Poppy. All of these species are being managed as part of BOPRC's Regional Pest Management Plan.

Human contact

The main human health attributes we measure are bacteria and cyanobacteria (blue/green algae). Elevated levels of faecal bacteria from animal dung, human wastewater and birds can make water unsafe for people to swim in or gather kai from. This is often used as a measure of 'swimmability'. *E. coli* is the bacteria we measure in rivers and lakes as an indicator of other bacteria that could be present. Faecal coliforms and *enteorococci* are the bacteria we measure in estuaries and the sea. Find out more about how we monitor river health, here.

E. coli is an attribute of high concern within the Tauranga Moana FMU. There are seven monitored freshwater bathing sites within the Tauranga Moana FMU. Baseline states were 'fair' (C band) at three sites and 'poor' (D band) at four sites.

There are 11 monitored coastal bathing sites around Tauranga Harbour. Water quality for human contact at these sites is generally in the range of fair/acceptable (C band) to very good (A band).

Monitoring at four shellfish gathering sites shows they are often not safe to harvest due to faecal contaminants. Heavy metals in estuary sediments are at low levels (currently A band), but there are some worsening trends at sites near urban areas.

Mahinga kai

The mahinga kai compulsory value includes the freshwater-related plants and animals that tangata whenua traditionally subsisted on, the places these are harvested from, the traditional materials sources from the environment and the tikanga (practices) of collecting or harvesting them. This value is demonstrative of tangata whenua connections, responsibilities and kaitiakitanga obligations. It is important because the loss of these species and associated tikanga can have a profound effect on tangata whenua who rely on them.

We do know that within this FMU multiple streams and rivers are identified for their mahinga kai values. There were also three contributions regarding mahinga kai from online community engagement over 2021 and 2022 which identified whitebaiting locations in Te Puna and the Wairoa River.

We recognise the importance and value that tangata whenua and kaitiaki in the FMU place on mahinga kai, traditional materials sources and gathering sites throughout the FMU. Identifying these and understanding how tangata whenua and kaitiaki understand, assess and care for wai māori is critical to understanding and providing for the health of the mahinga kai compulsory value.

Where do contaminants come from?

Nitrogen, Phosphorus, Sediment and E. coli are primarily from all rural land use sources, including forestry. Native forest areas are often steep and so also contribute, particularly sediment and E. coli. Urban areas are the source of heavy metals (e.g., from industrial, port and urban stormwater), and a significant source of contaminants associated with stormwater discharges, including E. coli.

Nitrogen, Phosphorus, Sediment and E. coli loads primarily come from all rural land use sources, including agriculture, horticulture and forestry. Native forest areas are often steep and so also contribute, particularly sediment and E. coli. Urban areas will be the source of heavy metals (e.g., from industrial, port and urban stormwater), and a significant source of contaminants associated with stormwater discharges, including E. coli.

Within each land use, there is likely to be a wide range of practices on each property and associated risk of contaminant losses. For example, some kiwifruit and other intensive horticultural activities can have high nitrogen losses and contaminant runoff at similar levels to dairy farming.

Some areas of land naturally have a higher risk of losses. For example, steeper land with higher rainfall often has higher risk of sediment and E. coli runoff over land. Wet areas, overland flow paths, porous soils, and drainage areas pose greater risks that contaminants will enter rivers, streams, wetlands, groundwater and/or the harbour.

Freshwater health issues for this FMU

A legacy of land use and practice has caused erosion and sedimentation of sub-estuaries across the whole of Tauranga Moana FMU and deterioration of estuary ecological health. This will be exacerbated by ongoing heightened sedimentation rates, particularly as the climate changes.

Bacteria from animal faeces on the land wash off into water and this is a Tauranga Moana FMU wide problem. River swimming sites are graded poor for human contact. While estuary swimming sites are generally safe for human contact, shellfish gathering/mahinga kai sites are often not safe for harvest.

Tauranga harbour is sensitive to fluctuations in nutrient loads and efforts need to continue to be made to reduce that risk across the whole catchment. Nutrient susceptibility varies across sub-estuaries, as does macroalgae cover. In the past there have been extensive sea lettuce (macroalgae) blooms and significant response effort to reduce nutrient loading. Macroalgae can accumulate in regions across the harbour where there is no direct freshwater inflow as nutrients move around in the harbour.

Heavy metals (like Zinc and Copper) in Tauranga Harbour sediments are currently at levels that pose low risk of harm to ecological health and kaimoana values. However, trends are worsening at some sites in highly urbanised catchments, and the likely sources are urban and industrial stormwater discharges.

Aquatic life tends to be poorest in streams of urban catchments, and this is commonly the result of multiple stressors that affect stream habitat, including runoff from hard surfaces, diversion and discharge of stormwater, loss of stream side vegetation and wetlands, and modified stream channels.

Cultural indicators of health. We know there will be important cultural indicators that can provide a deeper understanding of wai ora. Identifying these and understanding how fresh water supports the cultural health and wellbeing of tangata whenua and how they understand, assess and care for wai māori is in relation to thier cultural health is critical to understanding and providing for the health of the mahinga kai compulsory value.

Question 5	Does this brief summary about water quality in this FMU seem about right to you?
Question 6	How satisfied are you with the water quality in this FMU?

What are we aiming for?

The NPSFM requires us to set targets for water quality that are at least as good as the baseline state of the rivers and better than the national bottom lines set in the NPSFM. These targets are the specific, measurable levels of water quality or ecosystem health, which will help us to achieve the environmental outcomes (on previous page). We also need to set targets for contaminant load reduction and attribute states in the Harbour.

For Tauranga Harbour:

- Nitrogen loads from all rivers and streams need to be reduced, with a particular focus on the southern harbour catchments.
- In order to meet the top of the top of B state band for mud content, sediment loads from all catchments need to reduce, with broad estimates for each sub-estuary ranging from 3%-18%.

- To achieve safe shellfish harvesting (and also improve *E. coli* levels in rivers so they are safer for human contact), it is estimated that *E. coli* loads from Waiau Stream need to reduce by 59% and Wairoa River by 65%. Load reductions from all river catchments will be needed to improve safety for swimming and other human contact activities in rivers.

Several attributes are in the A state band, and we will need to maintain this. This will require action to halt any degrading trends (e.g., for Ammonia at some sites).

The following monitored sites are worse than national bottom lines, and targets will need to be set to improve them unless they are in this state due to naturally occurring circumstances (work is underway to assess this):

- Dissolved Reactive Phosphorus at the Kopurererua at SH29 and Omanawa at SH29, which will be partly naturally occurring.
- *E. coli* (Primary Contact) at Kaiate Falls, Te Rereatukahia at SH2, Uretara at Henry Road Ford, and Wairoa Below McLaren Falls. All monitoring sites other than Aongatete at SH2 also rank in the C, D or E band for *E. coli* (Table 9).
- Suspended fine sediment for Kopurererua.
- Macroinvertebrates at least at four sites (Waiki at Ocean View Road, Waioraka at Welcome Bay Road, Otumanga at Waipunga Park and Rataroa Tributary at Soldiers Road).

From feedback we have received to date, we anticipate tangata whenua and communities will want:

- To achieve A or B band state for all attributes if this is achievable.
- To apply a reasonable timeframe to achieve this, so that any land and water users who need to make changes have time to transition. For this FMU a timeframe of 10 years is suggested.
- To accept C band state or worse only if that is naturally occurring, or if climate change predictions suggest no better can be achieved.

Indicative scale of nitrogen, phosphorus, sediment and *E. coli* load reduction needed to improve water quality and meet draft environmental outcomes.

KEY: Indicative scale of change needed to improve water quality, or likely water quantity constraint.

Small | Moderate | High

How can we meet the outcomes and targets we set?

The outcomes we set for freshwater will be met via a mix of voluntary measures (things people choose to do themselves), investment and works/actions by Council, regulations the government has set that everyone must follow, and extra rules Bay of Plenty Regional Council sets in the Regional Plan. The rules we set in the Regional Plan will be where these are the most appropriate way to address remaining issues that are not likely to be addressed by national regulations.

Regional Councils must implement national regulations relating to freshwater (via consents, monitoring, and compliance). We cannot change these but can make additional rules if we think they are needed to address local issues. It is important to have a sense of what national regulations currently say:

National regulations for freshwater

Current national regulations require:

- Stock exclusion (with a 3 m buffer) from large rivers (>1 m wide), lakes and wetlands for dairy cattle on all terrain, and for drystock on low slope land (<5 degrees).
- Controls on activities within and close to rivers and streams, lakes and wetlands.
- Feedlots and stockholding area requirements: sealed; effluent collection, storage and disposal; 50 m setback from rivers, lakes, wetlands, bores, drains and the coastal marine area.
- Cap of 190 kg/ha/yr on the amount of synthetic N-Fertiliser applied to dairy farms, along with reporting requirements.
- Controls on intensive winter grazing on forage crops – subject to conditions or consent required.
- Consent required for substantial land use change from forestry to pasture, anything to dairy or dairy support, or extending the irrigated area within dairy farms (provisional rule expires 2025).
- Plantation Forestry: a number of practice requirements, including setbacks from rivers, lakes and wetlands, and requirements relating to earthworks, harvesting, slash and other activities.

Pending national regulations in 2023 are:

- Certified Freshwater Farm Plans will be required for all farms over 20 ha and horticultural enterprises over 5 ha. Farm operators will need to identify activities that pose a risk of contaminant loss and identify actions to reduce risks.
- New regulations requiring Regional Councils to control activities in drinking water source protection areas.

Draft water quality policy options

National regulations and the actions already taken in the catchment will help address the issues. However, we think some additional action and requirements will be needed, with a focus on achieving a big reduction in faecal bacteria getting to water, and also on reducing sediment loads and holding the line on nutrients. Options we are exploring include:

- Using Freshwater Farm Plans, require good management practice, set some minimum standards, and seek continual improvement to address rural land use practices that pose a high risk of sediment, nitrogen, *E. coli* and phosphorus loss. Focus on maintaining vegetation cover, planting and stabilising river margins, stock exclusion from rivers and

streams, managing nutrient application irrigation, and also critical source areas and runoff.

- Requiring no net increases in *E. coli*, nitrogen, phosphorus, or sediment as a result of future land use and practice change (this may require offsetting).
- Requiring stock exclusion and a potential setback from harbour margins and encouraging retirement of land affected by salinity.
- Requiring stock exclusion from all large rivers, streams and drains (>1 m wide). Encourage stock exclusion from small rivers, streams and drains, along with good drain management practice through Freshwater Farm Plans. This includes maintenance of a thick grass sward on margins and/or planting of one side of drains to provide shade and bring down water temperature.
- Requiring lined animal effluent storage and set effluent irrigation rate, timing and volume requirements in consents.
- Controlling intensive grazing that removes vegetation cover (strip, block or break feeding) and cultivation, including active management of Critical Source Areas (e.g. overland flow paths), in a similar way to national Intensive Winter Grazing Regulations.
- Encouraging feral animal control in native forest to maintain river ecosystem health and reduce sediment and *E. coli* losses.
- Encouraging or requiring removal of stock from steep (>25 degrees), erosion prone land, and planting of native trees, or removal of heavy stock.
- Gathering data on stock, feed, fertiliser and other farm and horticulture nutrient inputs, and consider setting a cap on high nutrient inputs.
- Requiring plantation forestry management plans at the time of afforestation to address sediment loss during and after forest harvesting.
- Exploring and encouraging physical technological solutions such as sediment control bunds in appropriate locations.
- Supporting restoration of in-river habitat, and river and harbour margin habitat, including fish passage.
- Enabling land use change to land use that will contribute less contaminants and, in low-lying areas, are appropriate to future wetter conditions.

Before any of these suggestions are proposed as rules in our regional plan, we need to assess their appropriateness, effectiveness, efficiency (including costs and benefits) – a big part of that is understanding what you, as part of the community, think about them.

Question 7	Does our approach to setting the water quality targets seem about right to you?
Question 8	On balance, what is a reasonable timeframe to achieve these water quality targets for this FMU?
Question 9	Do you support the suite of draft water quality management options being considered for this FMU?
Question 10	What minimum good land management practice requirements do you think we should consider in this FMU?

Te nui o te waipapa me te tukunga

Surface water quantity and allocation

Surface water is the water that flows in rivers, streams and lakes. Across the region, water is taken for different uses, and is usually taken with a pump connected by pipe to rivers and streams.

What are we aiming for?

How much water we take from river and streams for people to use will affect how much water is left for native fish and macroinvertebrates that depend on it for their survival, and for in-river cultural, recreation and other uses.

One of our main aims with water quantity is for people to know how much water is available to be used without causing in-river harm. We do that by managing water takes to ensure plenty of water remains to sustain habitats for the fish that live in the river or stream, and generally thereby protect other values too.

The NPSFM hierarchy of obligations prioritises the health and well-being of rivers, streams, lakes, wetlands and groundwater first, then human health needs, and then ability of people to provide for social, cultural and economic wellbeing.

One of the ways we can do this is to protect native fish populations by setting limits on the total amount of water that can be allocated from each river and stream for people to use, and setting minimum flows, where users have to stop taking water if rivers and streams get too low. These limits can have a big influence of the health of rivers and streams, the things living in it, on the community, economic development and possible land use in the catchment.

The Wairoa River Catchment is home to the Kaimai Hydroelectric Scheme, which includes multiple dams and diversions. The National Policy Statement for Renewable Electricity Generation requires decision makers to recognise and provide for the national significance of renewable electricity generation activities.

How can we meet the outcomes we seek?

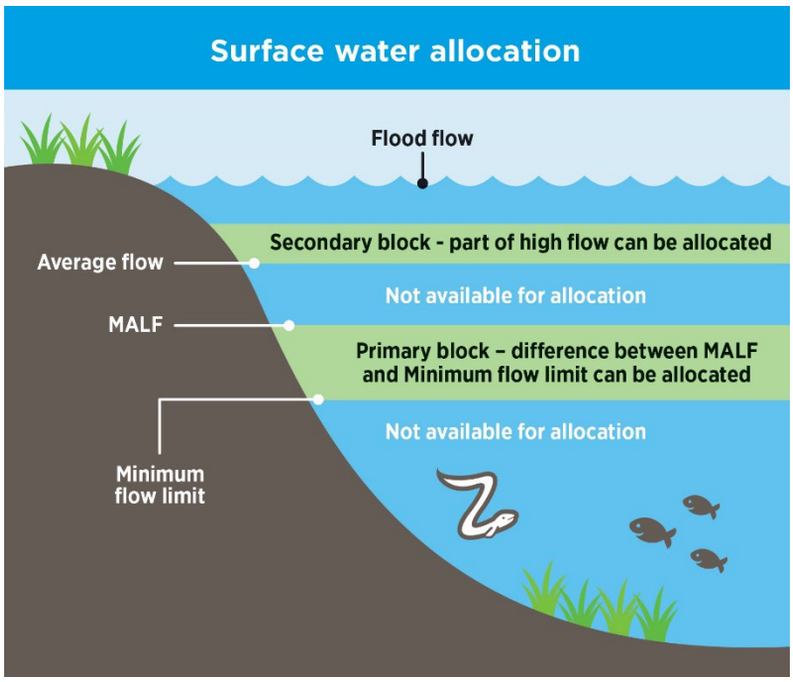
Our main tool for managing water quantity is the setting of minimum flows (limits to achieve the desired level of environmental protection).

Some rivers and streams are relatively resilient, and more water can be taken without affecting/damaging/stressing ecosystems, whereas others are more sensitive. Likewise, some fish prefer deep, fast flowing water and others prefer slower flowing, shallower rivers and streams.

Currently a ‘one size fits all’ approach is used to set limits for surface water takes from most rivers and streams in the region. This approach has a default minimum flow of 90% of the 1 in 5-year low flow (the average of the lowest flow recorded in a rolling 5-year period) and an allocation limit set at 10%.

In 14 Tauranga Moana rivers and streams, we now have river or stream specific scientific studies to help us understand the likely effects of different water levels on the different fish populations in each river or stream. We are using this information to draft new minimum flow limits for individual rivers and streams, based on achieving a consistent level of habitat protection for native fish (and sometimes trout).

For rivers and streams where such studies are not available, we've based the limits on our knowledge of river or stream characteristics and the results of other studies.



The above figure shows how the minimum flow limit, primary allocation block and secondary allocation block relate to the flow in rivers and streams. Mean Annual Low Flow (MALF) is a commonly used measure that describes the average amount of water expected in rivers and streams during times of low flow. It is calculated by averaging the lowest weekly flow in each year of the flow record.

If people are allocated or authorised to take more water than the total allocation limit, rivers and streams are over allocated. The NPSFM requires us to not allow over allocation. While nobody wants to be told to stop taking water, especially during a drought, there is a trade-off between managing effects on the health of rivers and streams (constraining takes at the minimum flow), the amount of water available for people to use (allocation limits), and how often restrictions are needed (reliability).

Habitat retention levels

With a lot riding on the limits we set, we need to get them right. A key part of the consideration is what level of habitat protection we want i.e. At times of low flow, how much stress should organisms living in rivers and streams experience (they will be used to some stress from natural causes).

A proposed habitat retention level we are aiming to achieve by setting these minimum flows is shown in the table below. The suggested levels for target native fish species are based on our understanding of how flows affect these fish species, and how scarce and vulnerable or resilient the species are. For example, shortjaw kōkopu and giant kōkopu are threatened species that are scarce and vulnerable, so the highest retention level is proposed.

We know other considerations may be needed too, including ensuring flows support mahinga kai, cultural or recreational values. For example, where trout are in rivers and streams, we suggest setting habitat retention levels for those to provide for fishing values, so these are in the table below as well.

Target Species	Habitat retention level
Shortjaw kōkopu	100%
Giant kōkopu	100%
Other kōkopu species	95%
Kōaro (adult)	90%
Inanga	90%
Bullies (excluding bluegill)	90%
Eels (tuna) juvenile	80%
Eels (tuna) adult	75%
Torrentfish	70%
Bluegill bullies	70%
Trout	95%

Question 11 We are moving to limits on water takes based on habitat protection for fish. Does this seem the best approach?

Water use

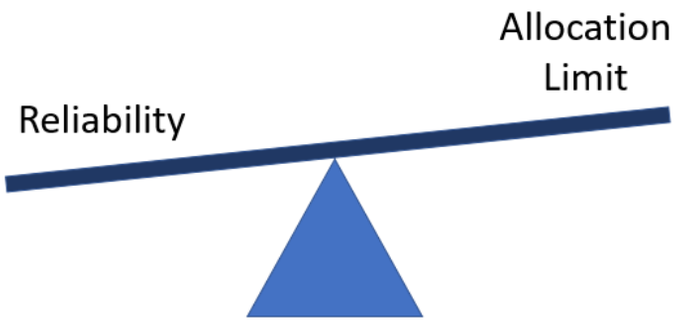
Once we've identified the minimum flow to protect the habitat for selected fish, we need to decide how much water is available to allocate to users.

The current default allocation limit is currently set at 10% of the 1 in 5-year low flow. Based on the current default allocation limits, several rivers and streams are currently considered over allocated in this FMU.

Reliability is a measure of how often authorised water users have to stop or reduce their water take (because rivers and streams are or would fall below the minimum flow). The higher the minimum flow, the more likely rivers and streams will fall to that flow due to natural conditions and the more frequently taking water will be restricted or stopped. The more water we allocate, the less reliable it is (the more often we need to restrict or stop water takes).

A study of flow patterns in the region's gravel bed rivers and streams (such as found in most of the Tauranga Moana FMU) found that if the minimum flow was 90% MALF there would be an average of 14 days per year that flow falls below this level, and no water would be available to take. In very dry years, the number of days below 90% MALF might be over 100. The Kopurererua is a spring fed stream and while reliability is less than the gravel bed streams when the minimum flow is 90% MALF, it is more reliable at lower minimum flows.

In this FMU, some water takes appear dependant on small dams, often in the head of a catchment or in a stream. Clarifying the extent of this activity, ensuring it is properly authorised and accounted for is important. In future, out of stream dams may make the make the option of allocating less reliable water more viable for users, so creating a secondary allocation block may be a good idea.



A balancing act: With a set minimum flow limit, there is a trade-off between the amount of water allocated for use and the reliability of water availability.

Question 12 Do you support or oppose the idea of encouraging more users to store water after heavy rainfall to help us all get through periods of drought?

Question 13 If you had to choose between a reliable water supply but very little water available and more water available but unreliably, which would you prefer and why?

Question 14 Sometimes our surface water challenges are because people take water at the same time. How willing would you be to work with others in your area to ensure water is taken from your stream(s) at different times?

Question 15 When the minimum flow is set at a high level, there isn't much water available to allocate and reliability is likely to be poor. Would you support reviewing the habitat retention levels of fish in over allocated catchments to increase the amount of water available for allocation?

Surface water quantity issues

Surface water demand in this FMU is high, with 92 resource consents, being approximately 40% of the region's total number, mostly for horticultural irrigation and frost protection. The volume allocated is dominated by municipal use. Consents are spread amongst a large number of mainly small and hydrologically independent streams. Some streams have no, or limited, allocation, but in others demand is high.

- The Tuapiro stream and Wairoa River catchments are identified by Fish and Game as important trout fishing or spawning areas. The minimum flow is informed by scientific studies and provides a habitat protection level of 95% for trout.
- A number of catchments are over allocated according to draft ecological allocation limits (see options below), including in the highly allocated Tuapiro Catchment.
- Actual use, even in peak times is much less than allocation.
- Frost protection and uses that don't require a resource consent are not currently included in water accounts, and in some locations may be significant.
- There are a lot of smaller horticultural irrigators with older consents that do not require metering of meter water use, so information is not always good.
- The poor reliability of allocation from streams with high (90%–95% MALF) minimum flows will likely cause problems for some users, as frequent restrictions or stops to takes will coincide with drought periods.
- As can be seen from the map and charts several catchments are over allocated when compared to the ecological limit. Municipal water takes have high use values and need high levels of reliability.

- From a water quantity perspective, there is limited demand for water above the hydroelectric schemes and therefore limited impact on other users.

In this FMU groundwater is also a heavily used resource.

Question 16 Does this brief summary about water quantity in this FMU seem about right to you?

Surface water quantity options

In the past, we used a single allocation block (10% of the 1 in 5-year low flow) because we didn't have enough information to do better. Now that we have more information about our rivers, we can approach allocation differently. In some areas habitats will now need to be better protected, and in other areas more water will be available to use. We are now considering key options for setting allocation limits.

Option set 1: Choosing Habitat Retention Levels (minimum flows)

The first set of choices we need to make concerns the level of protection we give to the main fish present in the river. Essentially, we are keen to know what you think of the Habitat Retention Levels in the table above which we can use to set a draft ecological minimum flow. We could make them more protective, which would mean water takes would have to be restricted or stop more often, or less restrictive, posing a risk that low flows may reduce usable habitat for some fish.

Protection of trout habitat is important in both the NPSFM and the RMA. However, the habitat retention level of 95% used for the ecological minimum flow is very high and would restrict existing allocation volume and reliability. For gravel bed streams (like Tuapiro), which dominate in this FMU, an alternative minimum flow is identified where there is a specific scientific study to inform minimum flow setting. The native fish habitat retention levels would still be met by the alternative minimum flow but trout would have a low habitat retention level. For the Tuapiro example, the trout habitat retention is reduced to 55%. There are likely to be other streams in this FMU where a lower minimum flow would still maintain native fish habitat, but future work would be needed to confirm this.

This alternative would make more water available for allocation and makes all allocation more reliable. There are other streams with science studies in this FMU where an alternative option could be considered as well.

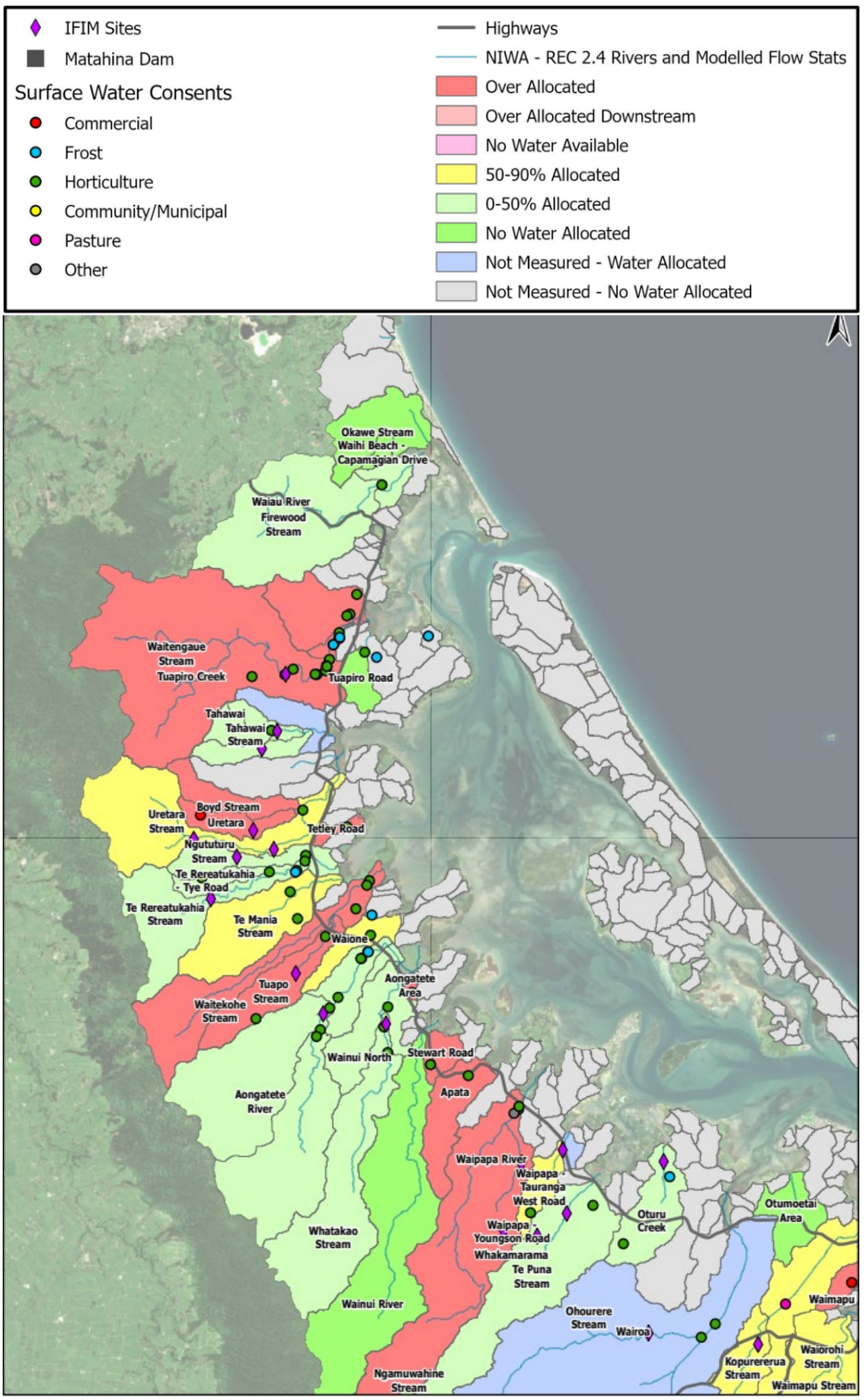
Option set 2: Deciding how much water can be allocated (primary allocation)

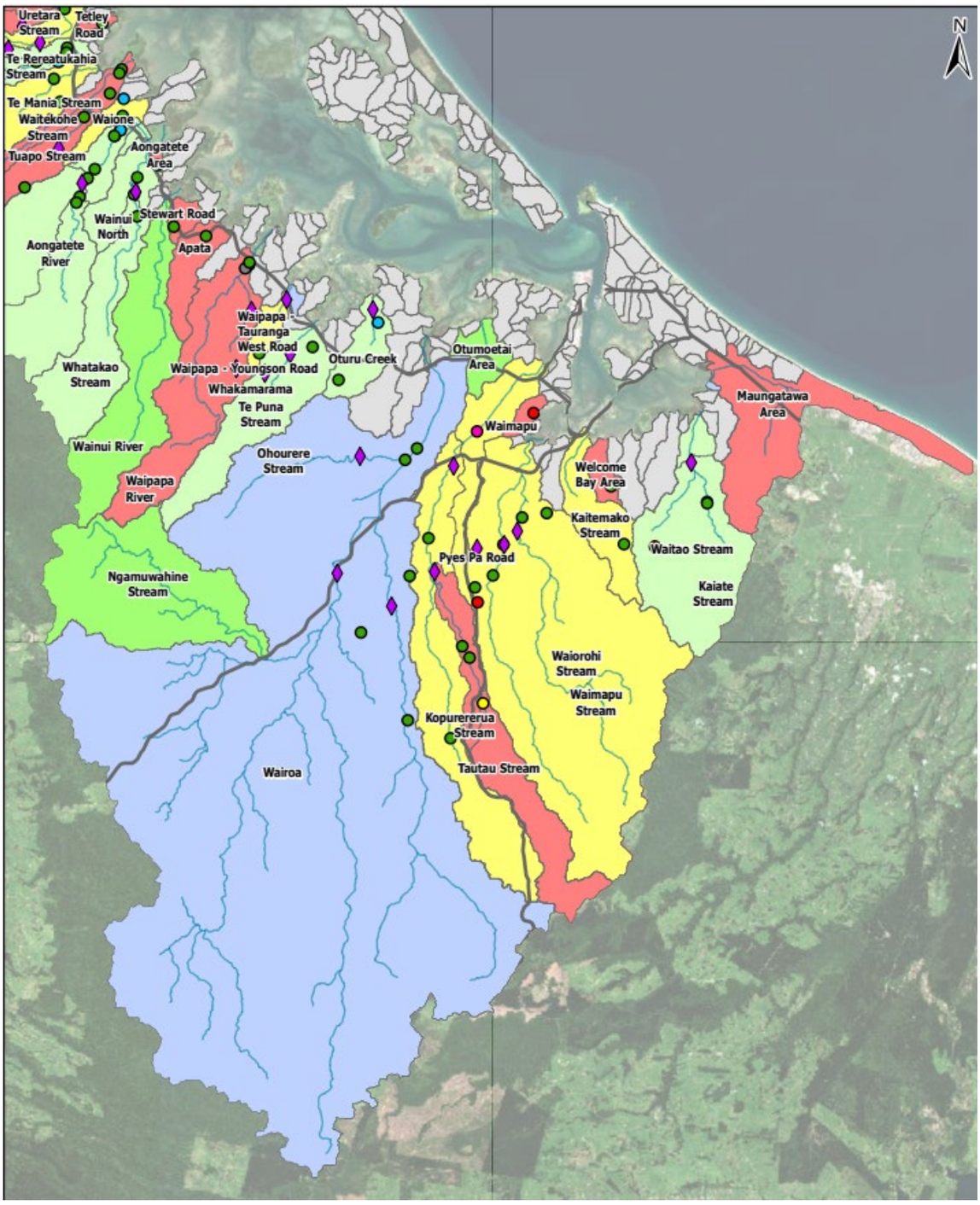
Our next choice concerns how much water to allocate and the effect of this on reliability for users. Our initial draft option is that the allocation limit should be the difference between the Mean Annual Low Flow (MALF) and the ecological minimum flow (that provides the habitat protection levels noted above. The maps on the following pages show the current allocation status using this option.

An alternative allocation limit could be set using the difference between MALF and the alternative minimum flow.

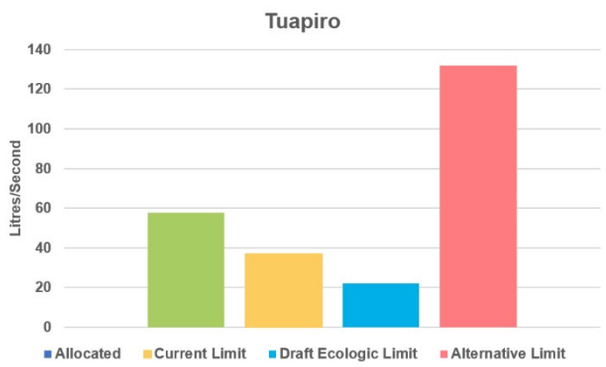
Option set 3: Primary and Secondary Block

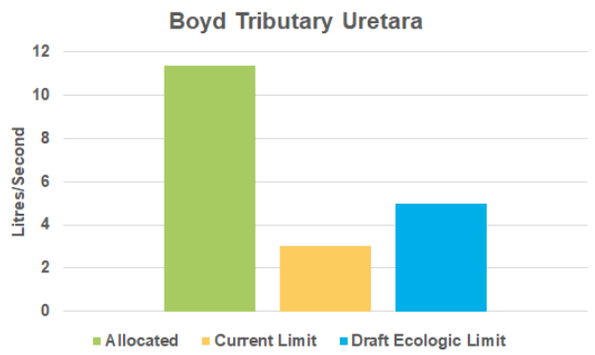
We could allocate a lot more water if we allocate a secondary block that can only be taken during periods of high flow. In this situation, users of the secondary block would probably need storage dams to provide reliable access to water during dry periods, because there will be more days when the allocated water cannot be taken.

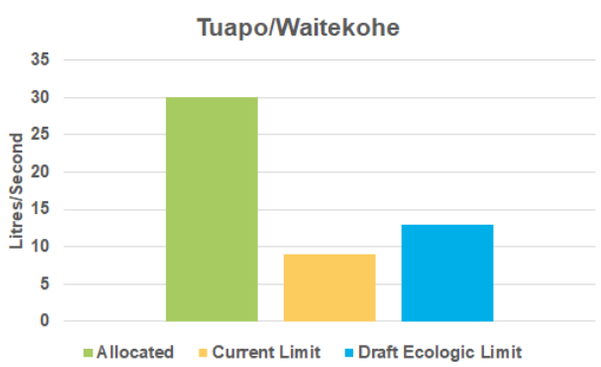

IFIM Sites
Matahina Dam
Surface Water Consents
Commercial
Frost
Horticulture
Community/Municipal
Pasture
Other
Highways
NIWA - REC 2.4 Rivers and Modelled Flow Stats
Over Allocated
Over Allocated Downstream
No Water Available
50-90% Allocated
0-50% Allocated
No Water Allocated
Not Measured - Water Allocated
Not Measured - No Water Allocated
Okawe Stream
Waihi Beach - Capamagian Drive
Waiau River
Firewood Stream
Waitengaue Stream
Tuapiro Creek
Tuapiro Road
Tahawai
Tahawai Stream
Uretara Stream
Boyd Stream
Uretara
Tetley Road
Ngututuru Stream
Te Rereatukahia - Tye Road
Te Rereatukahia Stream
Te Mania Stream
Waione
Tuapo Stream
Waitekohe Stream
Aongatete Area
Wainui North
Stewart Road
Apata
Aongatete River
Waipapa River
Waipapa - Tauranga West Road
Waipapa - Youngson Road
Whakamarama
Te Puna Stream
Oturu Creek
Otumoetai Area
Whatakao Stream
Wainui River
Ohourere Stream
Wairoa
Waimapu
Waiorohi Stream
Kopurererua Stream
Waimapu Stream
Ngamuwahine Stream

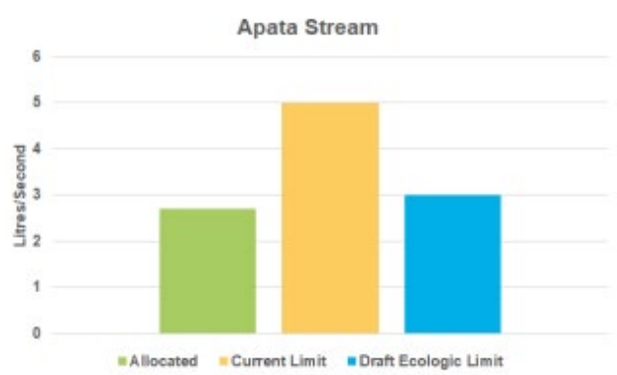


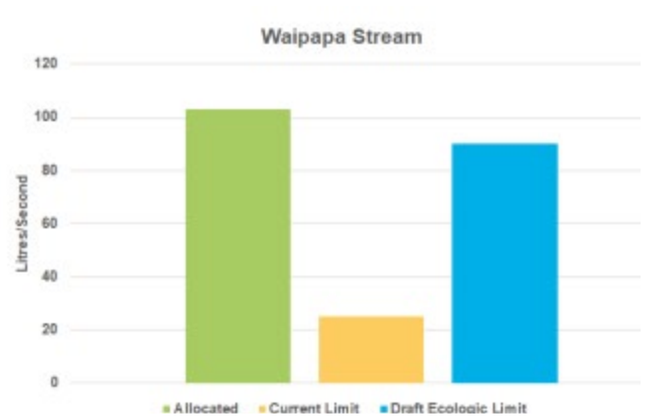
Allocation status based on draft ecological minimum flows, and an ecological allocation limit that is the difference between the Mean Annual Low Flow and minimum flow.

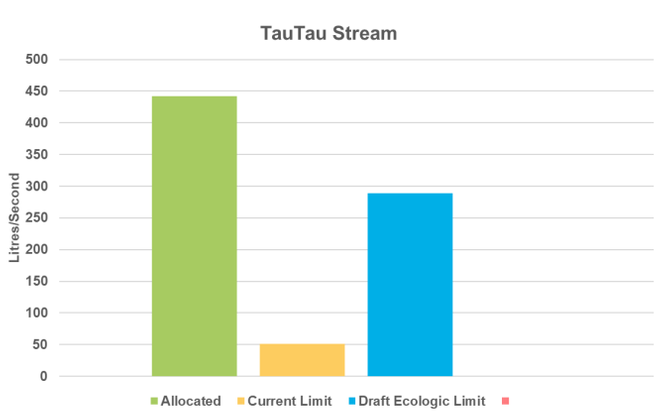


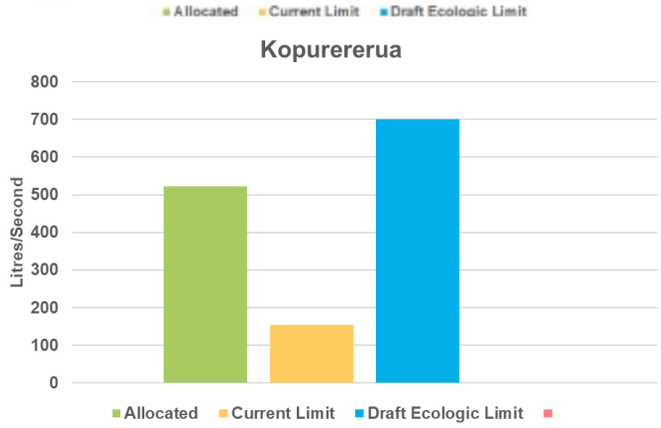


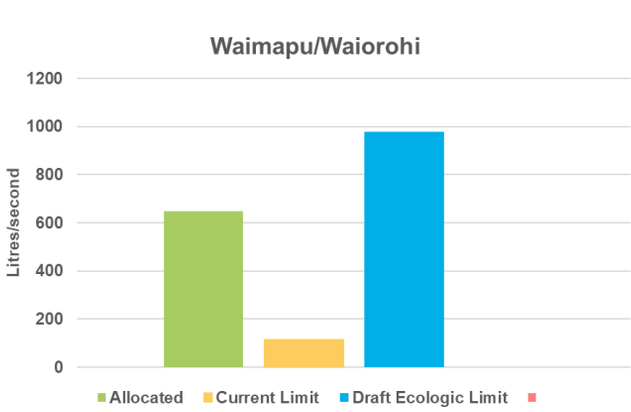












Total water currently allocated to water users, current allocation limit (default allocable flow in the current Regional Plan), draft ecological allocation limit (total allocable flow using the difference between the Mean Annual Low Flow and the ecological minimum flow) and, for Tuapiro Stream only, an alternative allocation limit that provides less habitat retention for trout.

Question 17 We have options to set water allocation limits for a catchment that are complex and species and area specific or more generic, simple and region wide. Which approach to water allocation limits do you prefer and why?

Question 18 A small number of catchments in the Tauranga Moana, Kaituna, Rangitāiki, and East Coast FMU's are currently over allocated. We may need to claw back or reduce the overall water allocation in some catchments. How do you think we should approach this i.e. prioritise particular uses, timeframes for transition?

Te nui o te wainuku me te tukunga

Groundwater quantity and allocation

Introduction

Groundwater is the water that flows underground – through gravels, sand, mud and between the crevices in rocks. Groundwater can be taken for irrigation or storage and can usually only be accessed via a bore drilled into the ground. In general, groundwater is more costly to access than surface water, especially if it is difficult to find or extract.

We manage groundwater differently to surface water. For groundwater, our focus is much more on the annual volume of water taken, while the surface water we are concerned about the rate of take at any one time. However, our concern for groundwater takes also relates to how they will affect surface water features such as wetlands, rivers and streams.

The Tauranga Moana FMU is dominated by rocks of volcanic origin, and sedimentary deposits that make up the Tauranga group sediments. Hydrogeologically the FMU can be divided into three regions:

- The unconfined or semiconfined sedimentary aquifers in the sediments exposed at the surface in the coastal plains and lowland that generally discharge discharge towards the coast.
- The ignimbrite rocks exposed at the surface in the north-western part of the FMU, which is the main source of groundwater abstraction across the FMU.
- The southern ignimbrite.

Generally, higher groundwater recharge and flows occur across the Mamaku Plateau. Aquifers in older volcanic geology in the north of the FMU, and around the Papamoa Hills and Minden support lower recharge and groundwater flows. Conceptually, this creates the situation of greater groundwater abundance to the Southwest, and less to the Northwest of the FMU.

Issues

Current consented groundwater abstraction from the Tauranga Moana FMU is 31.8 Mm^3/yr. This is significant and equivalent to a depth of 25 mm/year over the total FMU area of 1,279 km2. Considering the variable productivity of aquifers in this FMU, allocation pressure is likely to be high in some parts of the FMU, particularly in the north-western area where allocation density is greatest, and aquifer capacity/recharge is lower.

Particular issues in this FMU include:

- The coastal plains areas are underlain by semiconfined or unconfined aquifers that are susceptible to saline intrusion if large abstractions occur near the coast.
- There is a high groundwater demand concentration along the north-western Tauranga Harbour associated with high density kiwifruit development despite relatively low-moderate yielding aquifers. This may be an area of potential sustainability concern.
- The groundwater model used to inform limit setting in the FMU has not calibrated as well as in some other areas meaning a more hybrid best-information approach to limit-setting will be required.

Policy options

Region-wide model. The Tauranga Moana FMU is included within BOPRC's regional scale groundwater flow model. This model has not calibrated as well in this FMU as it has in some others and so will need to be checked carefully using other methods. Broad indications to date are that there may be less groundwater available in the Northern Tauranga Harbour catchments than previously thought.

Groundwater Management Zones. Next steps for this FMU include developing new Groundwater Management Zones within which allocation limits will be set. Given the potential for some localised areas of depletion, care will be needed to ensure these zones appropriately balance the need for administrative simplicity, equity and risk. How these zones are formed is something we want feedback on.

Efficient Use. Across all FMUs consideration is being given to how to achieve more efficient use of freshwater; i.e. ensuring water allocation (what we consent) more closely matches need (what is used). This is because allocation status (whether an area is overallocated or not) is calculated based on what is allocated and theoretically able to be used (not what is actually used).

Saltwater Intrusion. The significant volume of groundwater taken from this FMU, a lot of it close to the coast, creates an elevated risk of saltwater intrusion. There are a number of ways to manage saltwater intrusion including restricting takes in at-risk areas, more closely monitoring for saltwater and setting allocation limits specifically to avoid saltwater intrusion (often done with the benefit of a well-calibrated model).

Managing high use. If when sustainable allocation limits are identified, allocation exceeds these limits, choices will need to be made. Options for consideration include working harder to reduce allocation and the amount actually taken by improving the efficiency of use, phasing out some allocation over time, or accepting the risk of restrictions if water levels approach the minimum level and greater effects on nearby streams.

Question 19	Does this brief summary about groundwater quantity in this FMU seem about right to you?
Question 20	Groundwater is managed primarily to protect and maintain surface waters, and to meet current and future beneficial uses. What other things should it be managed for?
Question 21	Our understanding of groundwater availability is incomplete. We can set groundwater allocation limits that are lower i.e. more conservative or higher i.e. greater risk of overallocation. Where on the spectrum of risk are you?

For more information go to www.boprc.govt.nz/freshwater-info

Ngā mea e whai ake nei
Next steps

Feedback can be provided via our online platform, in person at community meetings, or in writing via post.

You can sign up to receive our Freshwater Flash e-newsletter at **boprc.govt.nz/newsletters** follow our social media or visit our website for regular updates.

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