

Dry weather water management SITUATION REPORT



SitRep number: WSAE21-22:03 **SitRep effective as at:** 12 January 2022

Key points



- This is the third SitRep of the summer of 2021/2022.
- La Niña conditions continue to be a key climate driver for Aotearoa New Zealand this summer.
- Higher than normal air and marine water temperatures are present and are consistent with the previous record-breaking event of summer 2017-18.
- Although overall rainfall for the next 3 months is forecasted to be near average there may be dry periods combined with occasional sub-tropical low-pressure systems which can bring heavy rainfall and possible flooding to NZ, particularly in the northern and eastern parts of the North Island.
- Generally, rivers flows are in a healthy state as we enter the warmer period, but a careful watch is being taken on those rivers that formed part of the Rotorua Focus Zone last summer and have their headwaters in the Mamaku area behind Rotorua. These rivers are still low, and it may take some time for the impacts of the recent rainfall to impact base flows.
- There has been a lack of groundwater recharge over the last three years, however recharge levels this year are generally equal to or higher than last year. Recharge is still low in the Rotorua Focus Zone.
- Groundwater levels are generally stable when compared to last year. Shallow well systems may be unreliable through summer as shallow water table levels lower.
- Monitoring for saline intrusion in high demand areas will be enhanced this summer following localised area of concern raised by users.
- The Rotorua Focus Zone (RFZ) will move to Level 1 of the Water Shortage SOP. This area of the region continues to experience low flows which are trending downwards.

Weather forecast



[NIWA forecasts](#) January 2022 – March 2022 suggests:

- La Niña conditions strengthened in the equatorial Pacific during December. It is expected to continue to be a key climate driver for Aotearoa New Zealand over the next three months, with an 80% chance for its continuation.
- Marine heatwave (MHW) conditions intensified in New Zealand's coastal waters during December. NZ's coastal sea surface temperatures ranged from 1.6°C to 2.5°C above average. This is expected to continue to have a strong upward influence on air temperatures and humidity. In the western and eastern North Island, the event has been consistent with summer 2017-18.
- For the next three months as a whole, temperatures are very likely to be above average across the country. Warm nights and periods of high humidity will continue to be a factor.
- Rainfall is most likely to be near normal in the east of both islands and about equally likely to be near normal or below normal in all other regions. Extended periods of higher than normal air pressure may influence long dry spells, particularly about the interior and west of both islands.
- Tropical cyclone activity is likely to the north of the country during January. New Zealand has an elevated risk for cyclone activity through to April. As was experienced during December, moisture from ex-tropical cyclones can increase the risk for flooding. Marine heatwave conditions may contribute more moisture for weather systems to tap into as they approach the country.
- Soil moisture levels and river flows are most likely to be near normal in the east of the North Island and about equally likely to be near normal or below normal in all other regions.

Forecast information from local and global guidance models is used to indicate the deviation from equal chance expected for the coming three-month period, with the following outcomes the most likely (but not certain) for this region:

- Temperatures are very likely to be above average (75% chance). Due to marine heatwave conditions, periods of high humidity and warm overnight temperatures are more likely. An increased frequency of onshore winds may reduce the number of hot days, however.
- Rainfall totals are most likely to be near normal (45% chance). An elevated chance for ex-tropical cyclone activity can increase the risk for heavy rainfall events, particularly across Gisborne and northern Hawke's Bay.
- Soil moisture levels and river flows are most likely to be near normal (40-45% chance).

Rainfall



December brought rainfall totals near or slightly above normal across the region.

The 2021 annual rainfall totals are currently being finalised, but preliminary results indicate near normal rainfall (90-120% of long term normals) across the region.

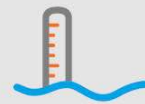
Rainfall Summary

Rainfall.Rainfall Summary Report

Location Name	Most Recent Sample	Intensity (mm/hr)	Today (mm)	Yesterday (mm)	Last 5 days (mm)	This Month (mm)	Last Month (mm)
Tuapiro at Farm Bridge	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	6.0	143.0
Te Puna at Odey Rd	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	17.5	215.8
Wairoa at Lower Kaimai	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	10.0	224.5
Ngongotaha at Relp Rd	11/01/2022 08:00:00	0.0	0.0	0.0	1.0	1.0	193.8
Rotorua at Upper Oturoa Rd	11/01/2022 07:00:00	0.0	0.0	0.0	5	18.0	14
Waimapu at Glue Pot Rd	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	22.0	208.9
Waimapu at McCarrolls	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	6.5	141.5
Rotorua at Whakarewarewa	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	0.5	134.4
Paraiti (Mangorewa) at Kaharo	11/01/2022 08:00:00	0.0	0.0	0.0	2.5	2.5	232.8
Okaro at Okaro Rd	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	0.0	127.5
Lake Rotoiti at Okawa Bay	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	4.5	179.0
Tikitere at SH30	20/09/2021 12:00:00		0.0	0.0	0.0	0.0	0.0
Paraiti (Mangorewa) at Upper	11/01/2022 08:00:00	0.0	0.0	0.0	2.0	4.0	282.0
Paraiti (Mangorewa) at Link	11/01/2022 08:00:00	0.0	0.0	0.0	2.0	2.5	235.5
Raparapahoe at Collins Lane	11/01/2022 08:00:00	0.0	0.0	0.0	1.5	13.5	144.5
Kaituna at Marshalls Farm	11/01/2022 08:00:00	0.0	0.0	0.0	1.5	5.0	130.5
Kaituna at Te Matai	11/01/2022 08:00:00	0.0	0.0	0.0	12.0	20.5	160.0
Rangitaiki at Kokomoka (Bore 1	11/01/2022 08:05:00	0.0	0.0	0.0	0.0	0.0	111.0
Pongakawa at Pongakawa Bush	11/01/2022 08:00:00	0.0	0.0	0.5	2.5	15.0	217.5
Outlet at Waitangi Soda Spring	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	7.0	267.8
Te Whaiti at Minginui	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	0.0	112.0
Kawerau at Plunket St	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	18.0	211.5
Tarawera at Hogg Rd	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	42.0	212.5
Ohinekoao at Harris Saddle	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	16.0	187.5
Galatea Basin at Horomanga R	11/01/2022 03:00:00		0.0	0.0	0.0	0.0	112.0
Waihua at Clearing	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	12.5	165.0
Rangitaiki at Te Teko	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	19.5	156.5
Edgecumbe at Edgecumbe	11/01/2022 08:00:00	0.0	0.0	0.0	7.0	48.5	140.5
Tarawera at Awakaponga	11/01/2022 08:00:00	0.0	0.0	0.0	9.5	19.5	139.5
Rangitaiki Plains at Flax Rd	10/01/2022 12:00:00		0.0	0.0	14.5	26.5	143.0

Location Name	Most Recent Sample	Intensity (mm/hr)	Today (mm)	Yesterday (mm)	Last 5 days (mm)	This Month (mm)	Last Month (mm)
Tarawera at ORC Pump Station	11/01/2022 08:00:00	0.0	0.0	0.0	7.5	12.5	98.0
Whakatane at Kopeopeo	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	11.0	137.0
Rangitaiki at Thornton	11/01/2022 08:00:00	0.0	0.0	0.0	5.5	11.5	116.0
Whakatane at Huiarau Summit	11/01/2022 08:05:00	0.0	0.0	0.0	1.0	2.0	199.5
Whakatane at Huitieke rain	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	0.5	208.0
Whakatane at Awahou Rd	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	6.0	287.5
Wainui-te-whara at Munro's	11/01/2022 07:30:00	0.0	0.0	0.0	2.0	21.5	199.9
Tauranga at Omahuru (Ogilvies)	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	4.0	215.5
Nukuhou at Nukuhou North	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	1.0	237.1
Ohope Spit at Ohope Golf Course	11/01/2022 08:00:00	0.0	0.0	0.0	1.0	4.5	161.7
Waioeka at Koranga	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	1.0	174.2
Waioeka at Cableway	11/01/2022 08:05:00	0.0	0.0	0.0	0.0	0.0	271.0
Waioeka at Mouth of Gorge	11/01/2022 08:05:00	0.0	0.0	0.0	0.5	4.5	230.7
Otara at Opotiki Wharf	11/01/2022 08:00:00	0.0	0.0	0.0	1.5	8.5	167.1
Otara at Tutaetoko	11/01/2022 08:00:00	0.5	0.5	0.0	1.0	1.0	282.9
Otara at Browns Bridge	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	0.0	224.6
Pakihi at Pakihi Station	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	0.0	246.5
Pakihi at Rakanui	11/01/2022 08:00:00	0.0	0.0	0.0	0.5	1.0	153.9
Haparapara at Haparapara	11/01/2022 08:00:00	0.0	0.0	0.0	0.0	17.5	411.5

River flows



Generally, rivers flows are in a healthy state for this time of year, but a careful watch is being taken on those rivers that formed part of the Rotorua Focus Zone (RFZ) last summer and have their headwaters in the Mamaku area behind Rotorua. These rivers are still low and it looks like a protracted period of significant rain will be required to halt their declining trend.

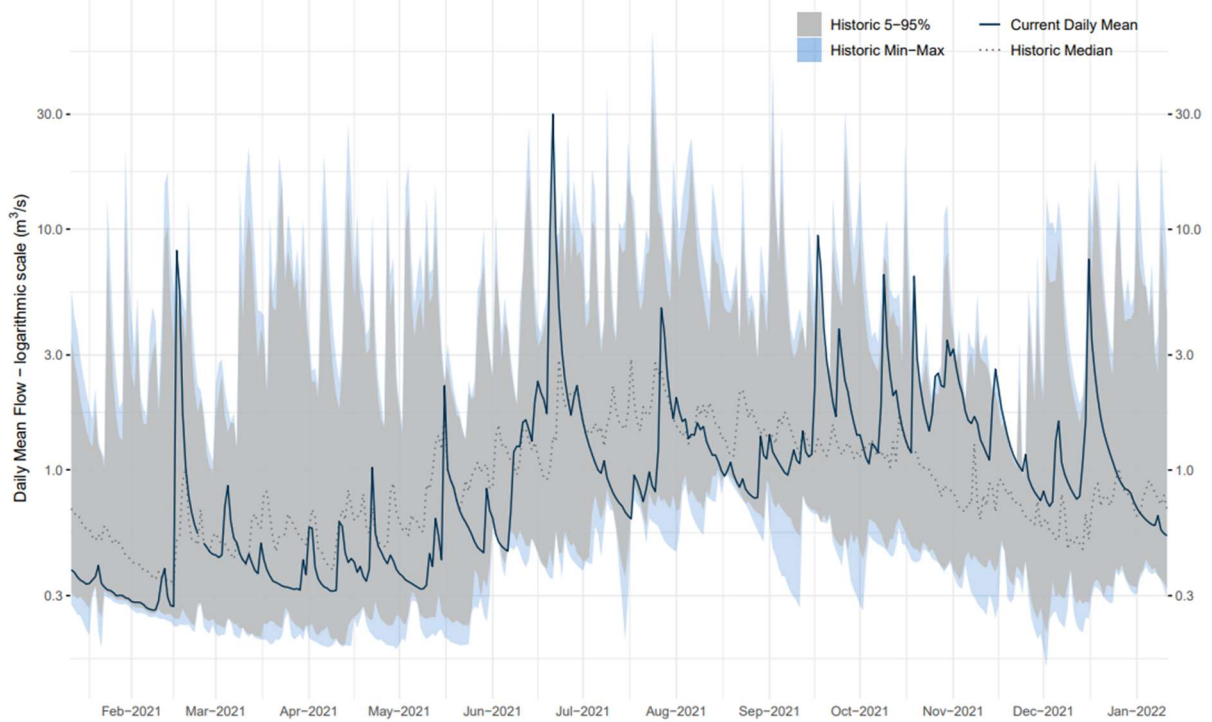
Note: The following graphs are based upon preliminary data and will undergo refinement as further information is collected.

Representative western Bay of Plenty rivers



Tuapiro at Farm Bridge – Current vs Historic Daily Mean Flow

Flow Record Begins – 02 Dec 2010

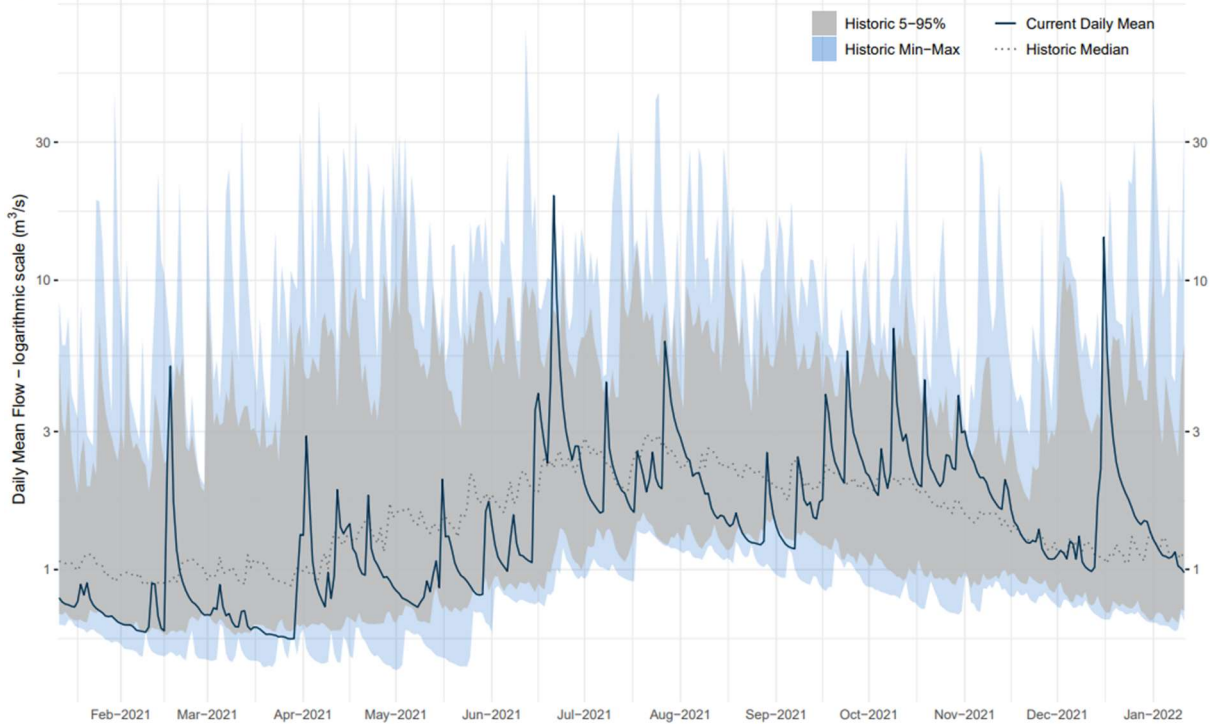


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry system which has yet to go through quality assurance processes.



Waimapu at McCarrolls – Current vs Historic Daily Mean Flow

Flow Record Begins – 12 Mar 1991

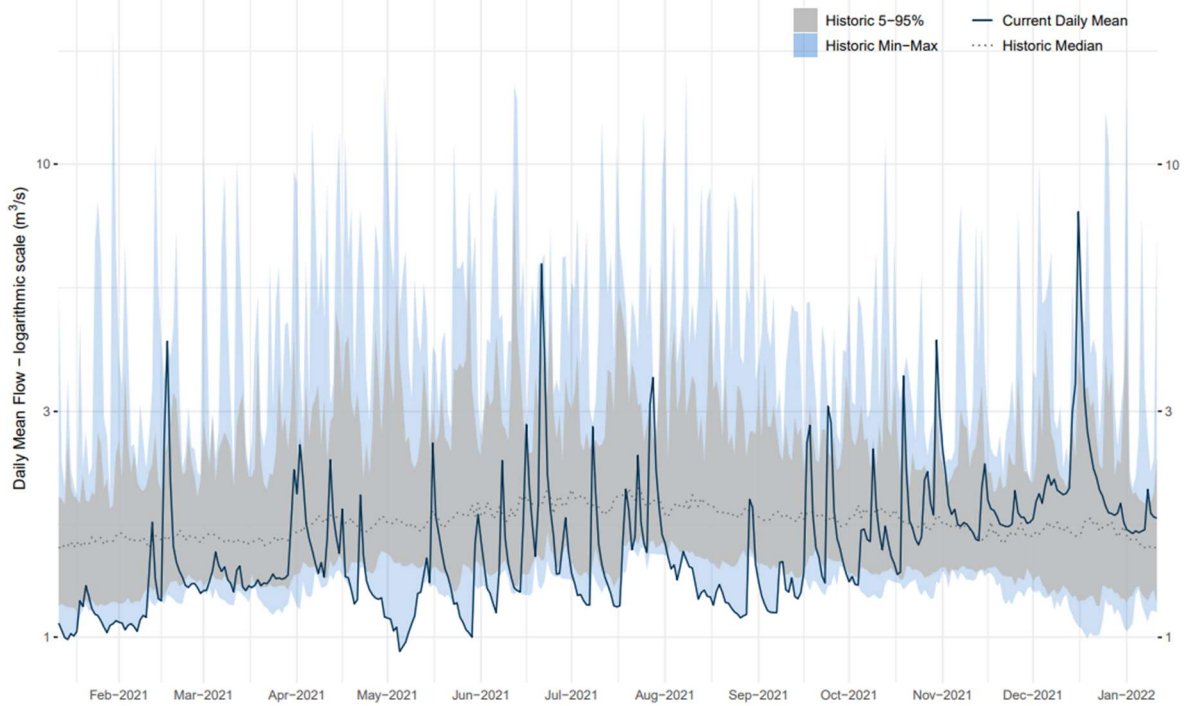


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Kopurererua at SH29 – Current vs Historic Daily Mean Flow

Flow Record Begins – 29 Jun 1990



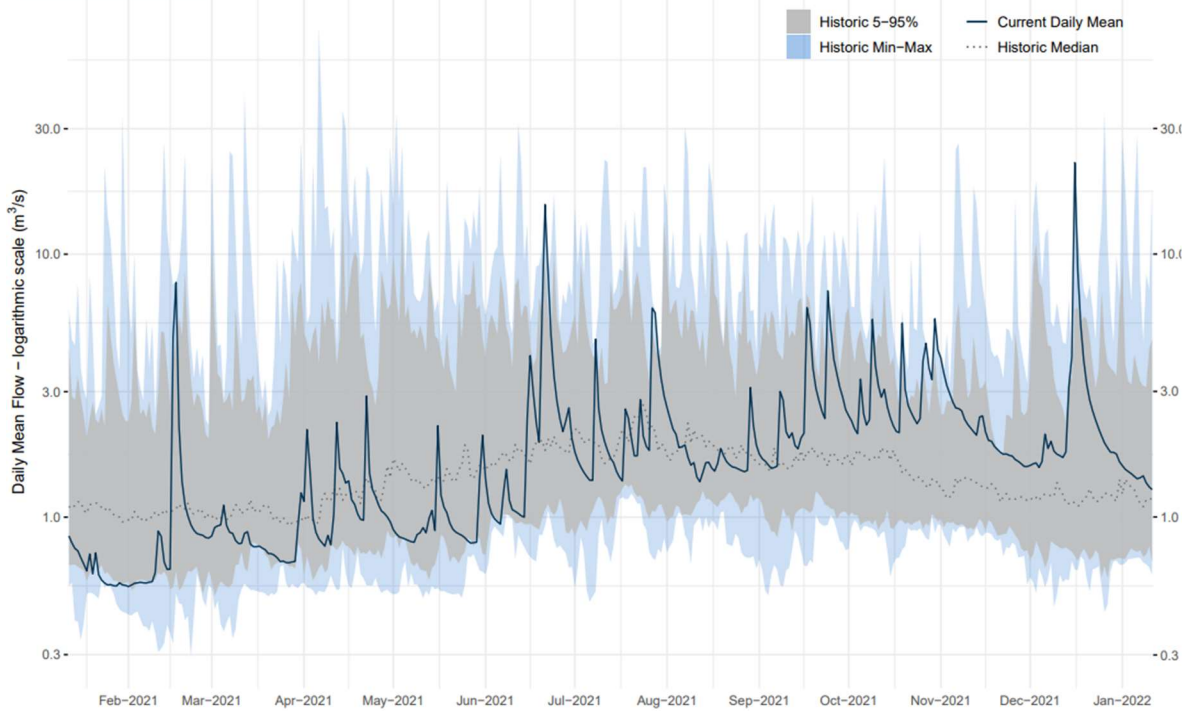
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Representative central Bay of Plenty rivers



Raparapahoe at Above Drop Structure – Current vs Historic Daily Mean Flow

Flow Record Begins – 14 Oct 1991

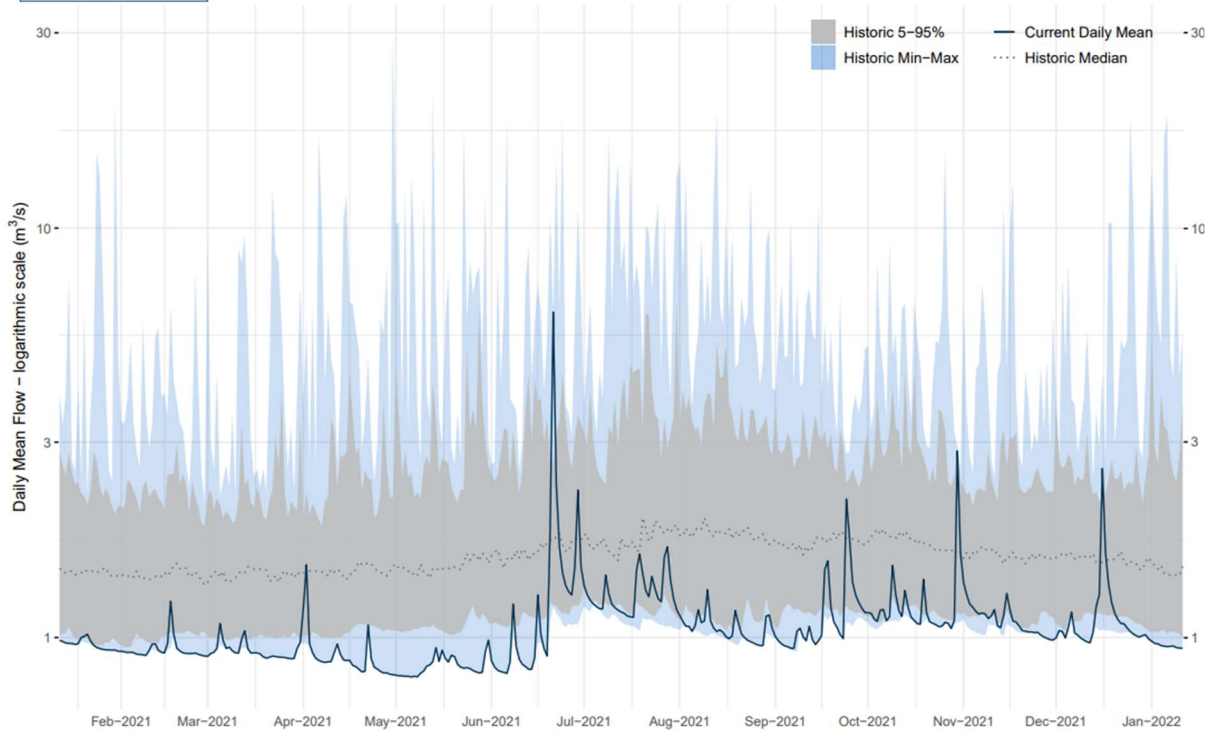


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry system which has yet to go through quality assurance processes.



Ngongotaha at SH5 – Current vs Historic Daily Mean Flow

Flow Record Begins – 03 Jun 1975

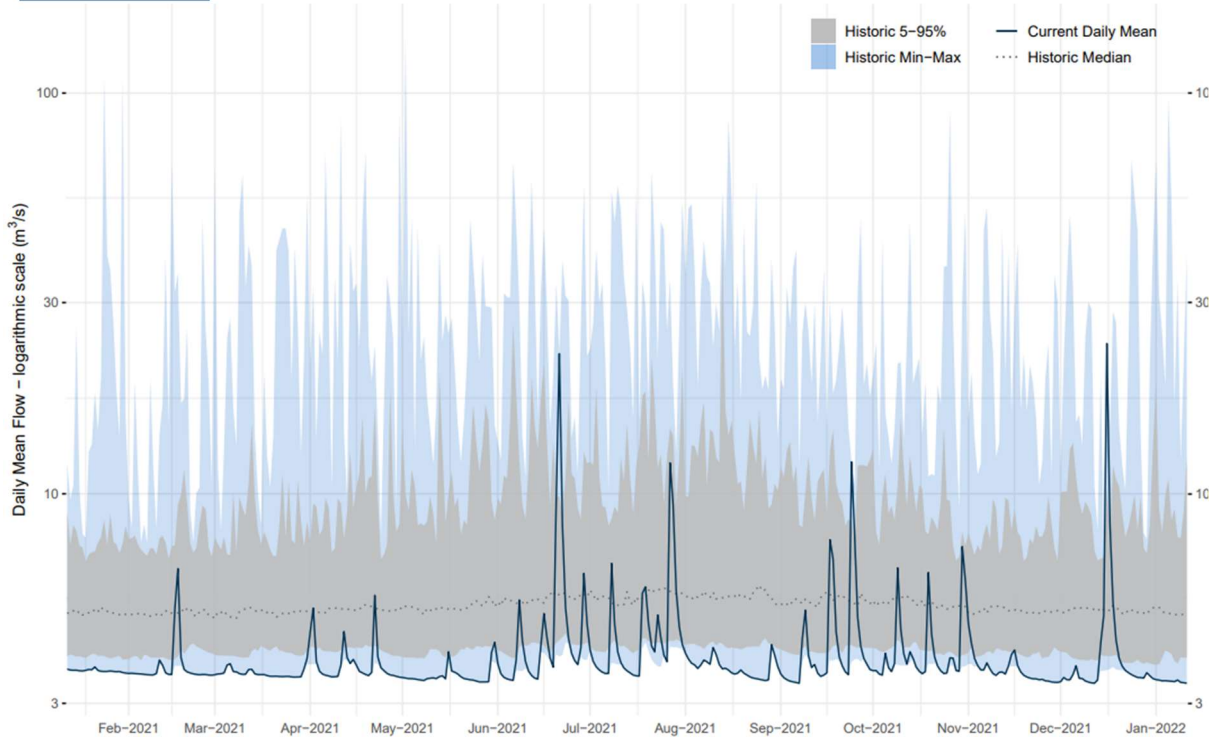


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry system which has yet to go through quality assurance processes.



Paraiti (Mangorewa) at Saunders – Current vs Historic Daily Mean Flow

Flow Record Begins – 05 Aug 1967

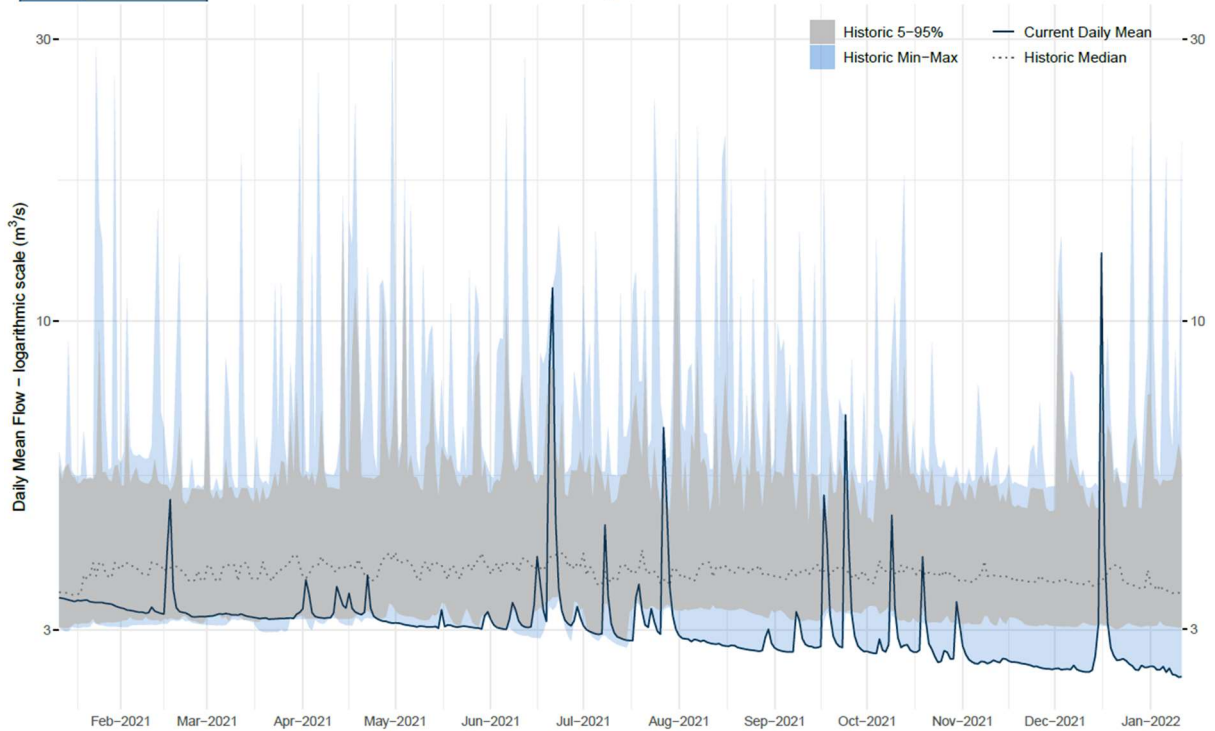


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry system which has yet to go through quality assurance processes.



Waiari at TCC Intake (NIWA) – Current vs Historic Daily Mean Flow

Flow Record Begins – 15 Nov 2000



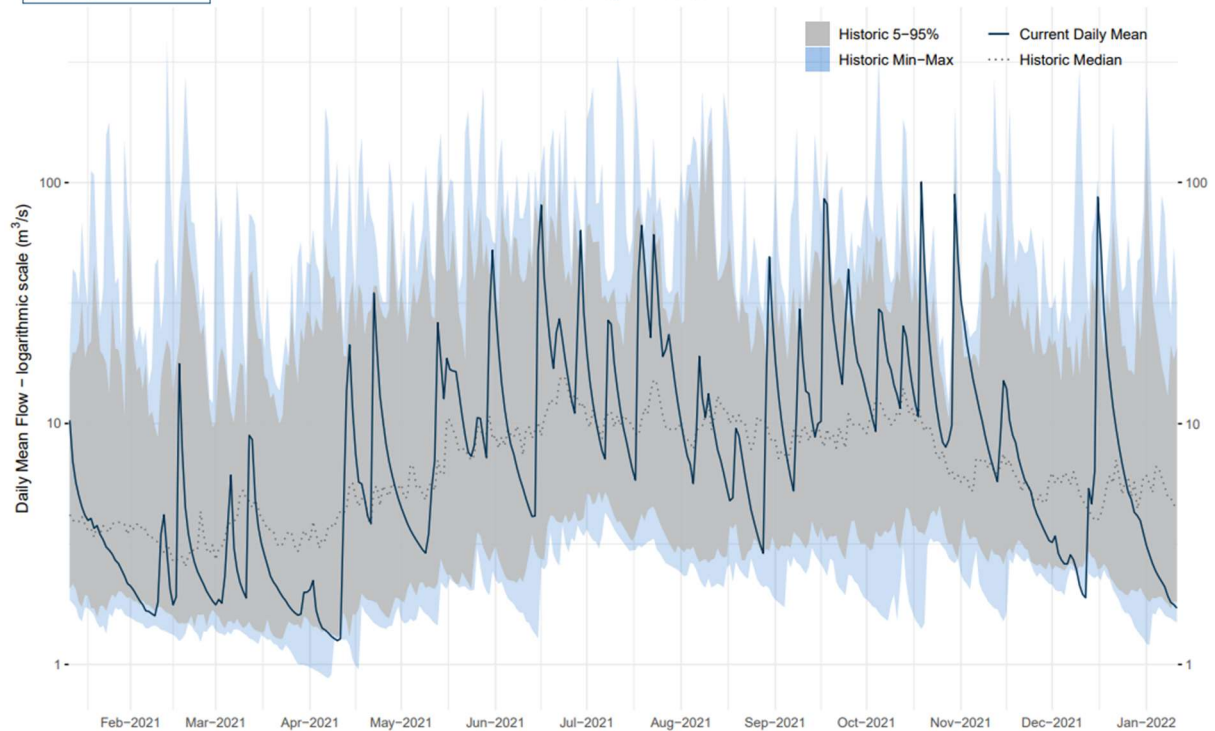
* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry system which has yet to go through quality assurance processes.

Representative eastern Bay of Plenty rivers



Otara at Browns Bridge – Current vs Historic Daily Mean Flow

Flow Record Begins – 08 Jan 1990

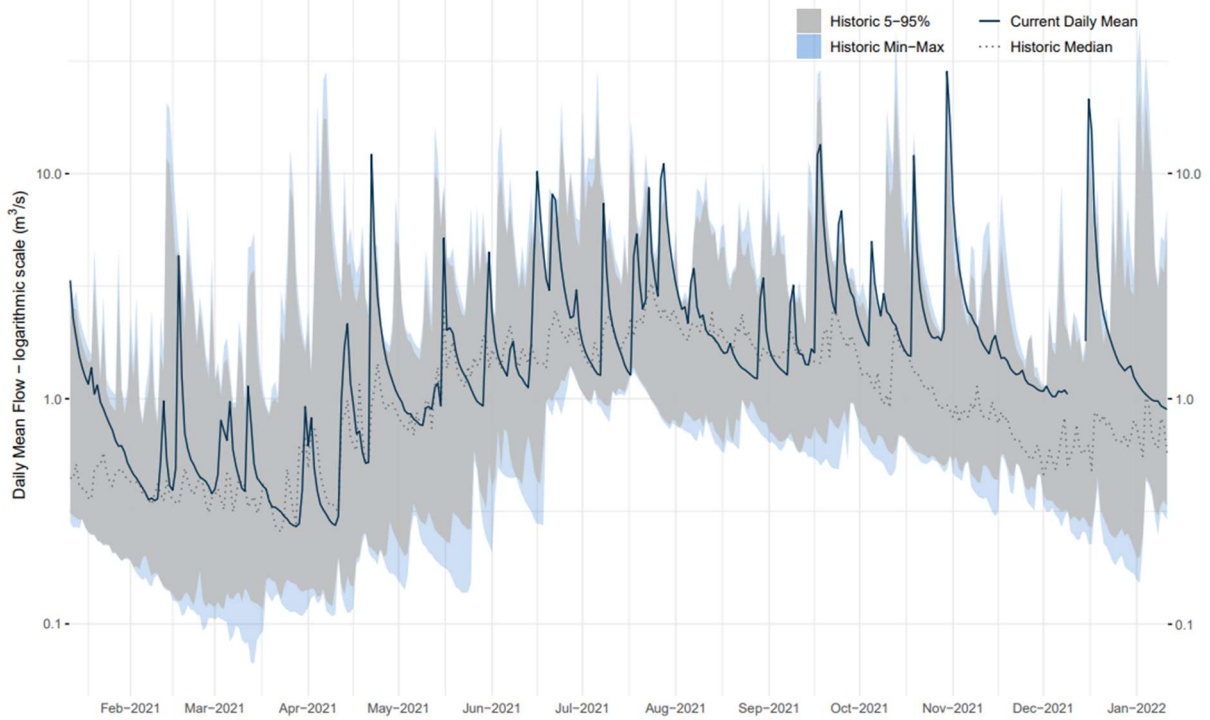


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry system which has yet to go through quality assurance processes.



Nukuhou at Glenholme Rd – Current vs Historic Daily Mean Flow

Flow Record Begins – 07 Oct 2011



* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry system which has yet to go through quality assurance processes.

Groundwater



In general, groundwater levels across the Bay of Plenty are stable when compared to last year, with demand increasing as we enter the summer months.

In some very shallow well systems, there is still a risk that access to water may become unreliable during the coming dry months as shallow water table levels lower. These shallow systems are typically used for stock water and/or rural domestic use, rather than large volume irrigation, commercial or municipal use.

Recharge (the rainwater component that enters the groundwater system) totals are generally equal to or higher than last year. However, in some areas (for example in the headwaters from the eastern end of the Kaimai-Mamaku range) recharge is still low compared with the levels seen prior to 2019. This is being seen in lower base flows entering some of the rivers and streams in the area e.g. Paraiti, Kopurererua, Waiari, etc.

The programme of monitoring for saline intrusion into the groundwater systems along the Bay of Plenty coast will be enhanced this summer, with selected existing private wells being monitored for conductivity. Monitoring conductivity is often used to help identify if abstraction pressure is allowing salt water to flow from the sea back inland. This can be caused by a combination of high cumulative abstraction along with reduced groundwater flow (which can result from dry conditions with prolonged periods of low recharge occurring).

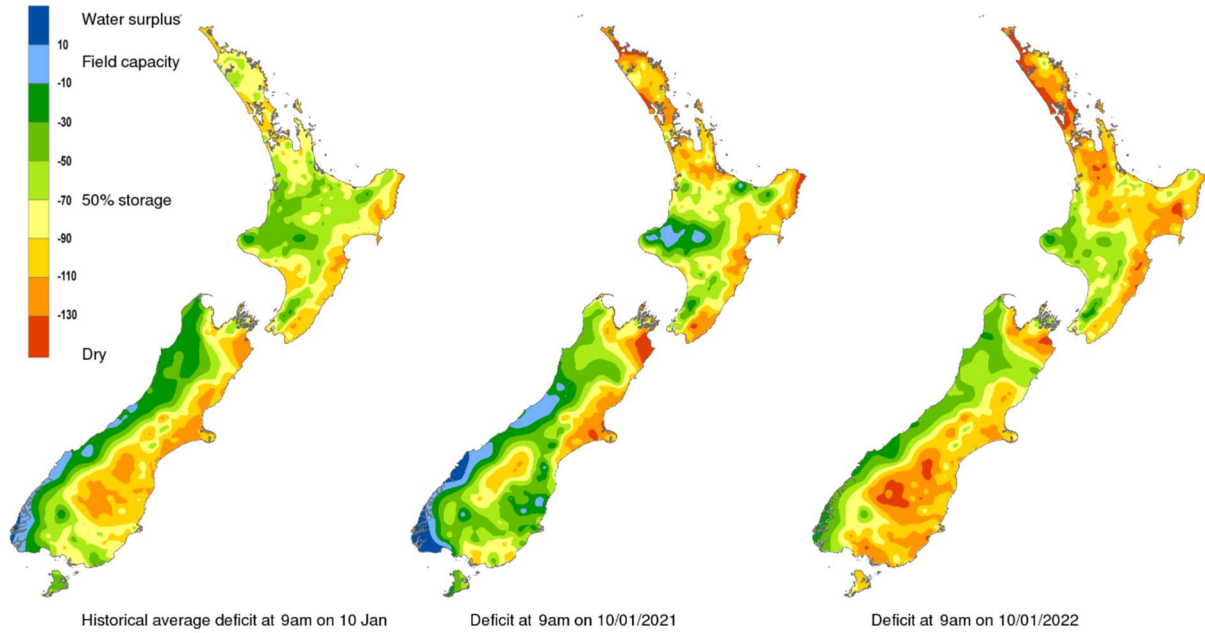
Although there have been a couple of localised issues of concern identified by users, proactive salinity monitoring near high demand areas will help provide early alert and will allow Council to implement restrictions on water abstraction if needed.

Soil moisture

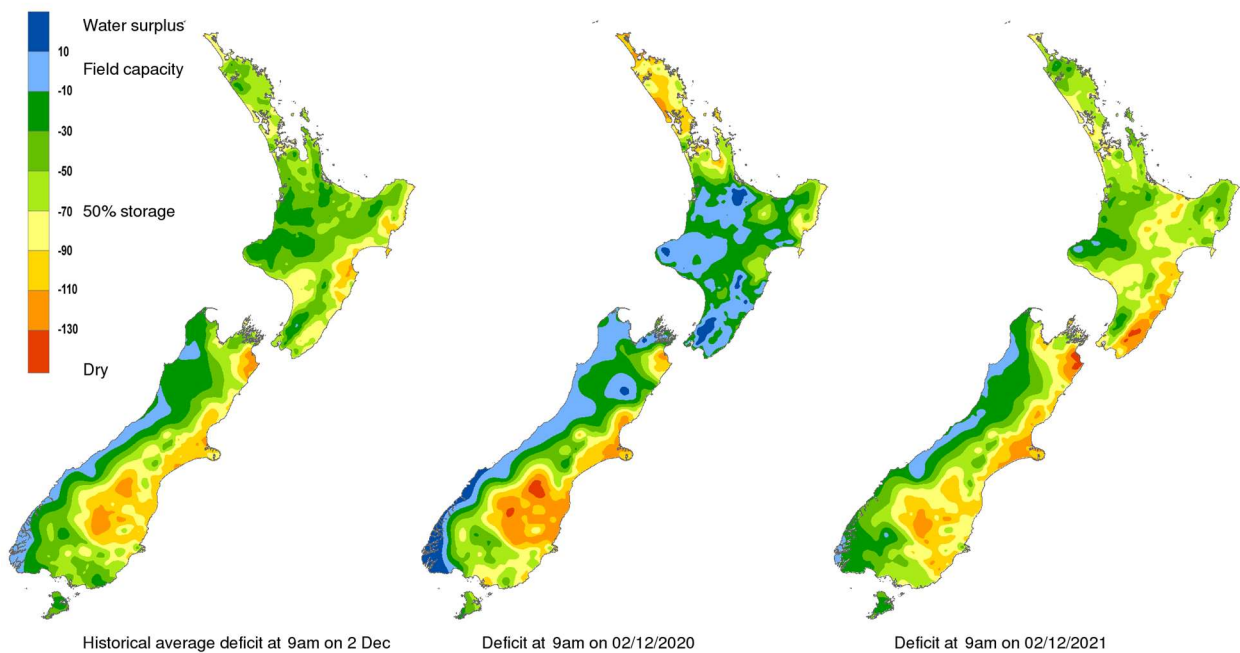


Soil moisture levels have dropped considerably over the last month in response to the warm temperatures being experienced.

Soil moisture deficit (mm) at 9am on 10/01/2022



Soil moisture deficit (mm) at 9am on 02/12/2021



Water Shortage Event Status



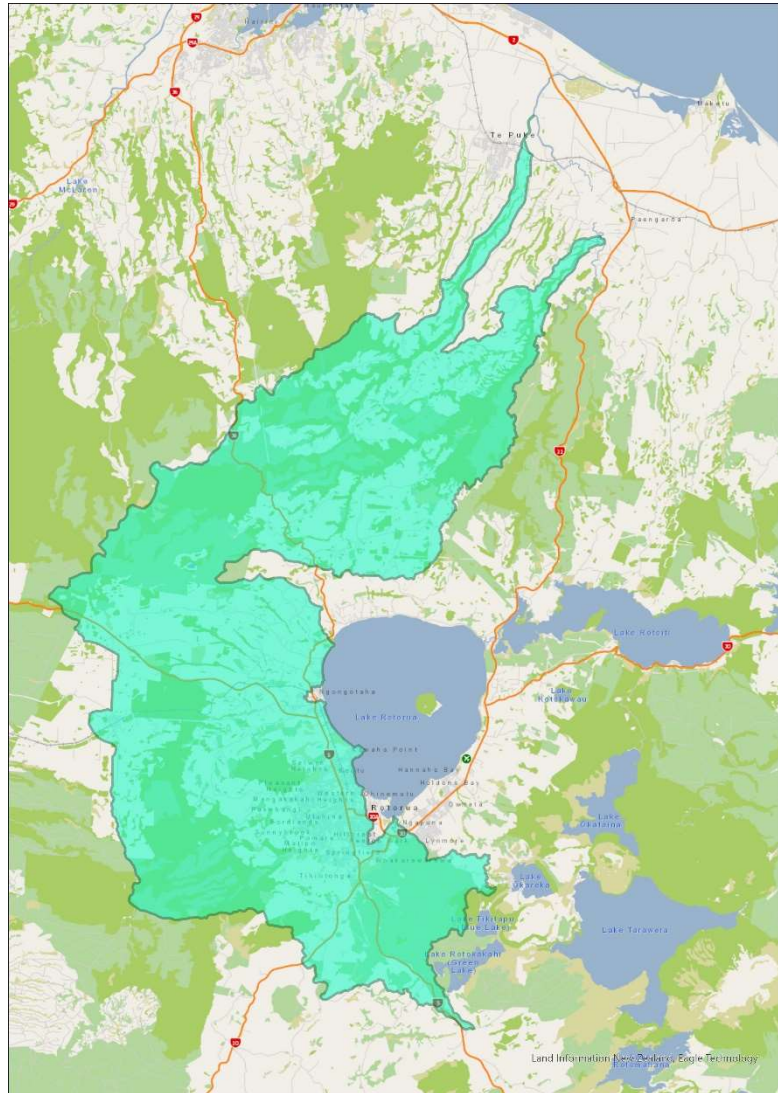
Based on last month's SitRep the whole of the Bay of Plenty was maintained at 'Level 0' of the Standard Operating Procedure (a summary of the SOP is included at the end of this SitRep), however staff noted that the Rotorua Focus Zone (RFZ) was again an area of concern given the low flows observed in the area (the RFZ is highlighted in green in the map below).

The December flow figures reported in this SitRep show that most monitored streams in the RFZ continue to be reducing. It is now deemed appropriate to **raise the Alert Level for the RFZ to 'Level 1 – Reducing Water Availability'**. This should signal to users in the RFZ that if dry conditions continue, there could be a need for possible interventions.

The rest of the Bay of Plenty will remain at 'Level 0'.

Regional Council staff will now increase monitoring of the RFZ streams, which will include undertaking additional manual gauging's of the relevant streams to ensure accuracy of the automated data.

In addition, consented water users within the RFZ will be contacted to advise of the elevated Alert Level.



Report prepared by:

Glenn Ellery, Data Services Manager
Raoul Fernandes, TL Science – Water Quantity

Next Situation Report will be issued:

February 2022

Report authorised by:

Steve Pickles, Water Shortage Event Manager

Date of approval:

12 January 2022

Water Shortage Standard Operating Procedure (July 2021)

The following Levels can be in place for the whole of the Bay of Plenty, or only apply to certain Focus Zones. Focus Zones can refer to specific waterbodies, whole catchments, multiple catchments, or districts. The Focus Zones will always be identified via a Focus Zone map.



No Water Shortage Concerns – Streams, groundwater and rainfall within expected range. No issues of concern

- Normal BAU review of data from Council's monitoring network



Reducing Water Availability – Lower than expected levels of any of the following occurring: Rainfall, stream flows, groundwater and/or soil moisture

- Appoint Water Shortage Manager
- Increased review of stream, soil and groundwater state
- Analysis of short and long-range weather forecasts
- Review and refresh (if needed) Stakeholders Communications Plan
- Update webpage
- Commence issuing of regular Situation Reports (usually 1-2 monthly)



Impending Water Shortage – Any or all of the following occurring: Continued reduction in stream flows and/or groundwater levels, lack of rainfall i.e. growing risk to waterway health

- Closer assessment of forecasts, rainfall, stream, soil and groundwater state
- Convene subject matter expert meeting to evaluate all available data
- Increase frequency of Situation Reports (at least monthly) – place on website
- Define catchments/waterbodies of interest (known as Focus Zones)
- Generate list of potentially affected consent holders (ensure contact details are accurate)
- Communicate as per Stakeholders Communications Plan – keep webpage updated
- Specifically, inform consent holders, iwi/ hapū, Councillors, stakeholders, local authorities within Focus Zones of elevated risk of water shortage event



Water Shortage Event – Low flow and/or drought conditions affecting waterways i.e. risk to waterway health

- Focus Zone Situation Reports increased to every two weeks (unless no change)
- Convene Water Shortage Decision Group (WSDG) made up of at least four of the following: GM Regulatory Services, GM Integrated Catchments, Environmental Data Services Manager, Science Manager and a Regulatory Compliance Manager (or a senior/experienced delegate)
- The WSDG shall review recommendations from Water Shortage Manager, including any possible Water Shortage Direction before recommending to CE for approval
- CE approves issuing a Water Shortage Direction as allowed for by s.329 RMA
- Inform affected consent holders, iwi/hapū, Councillors and stakeholders at least 5 working days prior to issuing a Water Shortage Direction (NB: this may not always be possible)
- Increase compliance monitoring of consented and unconsented (where possible) water takes and discharges (if relevant)
- Water Shortage Manager to review Water Shortage Direction every 14 days. Decision to cancel or re-issue to be reviewed by WSDG, prior to CE approval (if decision is to re-issue)