

SITUATION REPORT

Bay of Plenty Regional Council

Data Services Team



SitRep number:	SitRep # 5	SitRep effective as at:	11 January 2021
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Key points since last SitRep

- This is the fifth SitRep of the summer of 2020/2021.
- La Nina conditions currently being experienced are non-traditional so tropical cyclone and possibility of increased rainfall are predicted to be delayed until towards the end of summer.
- Extended dry spells are expected to continue over the coming three months. Three month rainfall totals are about equally likely to be near normal or above normal in the north of the North Island, however sub-tropical air flows may fuel areas of localised heavy rainfall as we have already seen in January in the eastern BOP.
- Generally river flows are not under pressure - the exception being the catchments with their headwaters to the west-southwest of Lake Rotorua which are very low.

Predicted event development (how is the situation expected to evolve?)

Longer scale forecasts in SitRep#3 have not been updated since the start of December but have proved accurate to date.

1.1 NIWA seasonal forecast

- Although moderate La Niña conditions continued during December, the impact was non-traditional for parts of New Zealand due to persistently warm ocean waters in the tropical Indian Ocean.
- While extended dry spells are expected to continue over the coming three months, predicted three month rainfall totals are about equally likely to be near normal or above normal in the north of the North Island.
- Sub-tropical air flows may fuel areas of localised, heavy rainfall that can cause flooding, similar to what was experienced in parts of the country during late December and early January. It is not possible to pinpoint exactly which regions may experience extreme weather months in advance, hence the need to keep an eye on day to day weather forecasts through the season.
- Extended dry spells will likely continue to be interspersed with the unsettled conditions, a by-product of the ongoing non-traditional La Niña and a predominantly positive Southern Annular Mode (SAM).
- Tropical cyclone (TC) development is unlikely in the Southwest Pacific over the next several weeks. However, for the current TC season (continuing through April), the risk for New Zealand remains elevated.

Regional predictions for January – March 2021 Northland, Auckland, Waikato, Bay of Plenty

The table below shows the probabilities (or percent chances) for each of three categories: above average, near average, and below average. In the absence of any forecast guidance there would be an equal likelihood (33% chance) of the outcome being in any one of the three categories. 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 (65% chance).
- Rainfall totals are about equally likely to be near normal (40% chance) or above normal (35% chance).
- Abnormally dry conditions are occurring across northern Waikato, Auckland, and Northland according to [NIWA's New Zealand Drought Index](#).







- Extended dry spells are expected to continue with the potential for periodic heavy rainfall, particularly later in the three month period.
- Soil moisture levels and river flows are most likely to be near normal (45-50% chance).

1.2 Short-term forecast (MetService)

MetService are predicting only scattered rain until the 20th of January.

Regional Forecast

Bay Of Plenty

	Today Mon 11	Fine, but cloudy periods from evening with isolated showers possible. Southwesterlies turning northerly at midday, dying out at night. <small>Issued at 5:36am Monday 11 Jan 2021</small>
	Tomorrow Tue 12	Morning and evening cloud, otherwise long fine spells. Chance of an evening shower about the coast. Light winds and sea breezes. <small>Issued at 12:34am Monday 11 Jan 2021</small>
	Wed 13	Long fine spells. Isolated afternoon and evening showers inland. Light winds and sea breezes. <small>Issued at 12:34am Monday 11 Jan 2021</small>
	Thu 14	Cloudy periods. Scattered showers east of Whakatane. Southerlies. <small>Issued at 9:12am Monday 11 Jan 2021</small>
	Fri 15	Becoming fine. Southwesterlies. <small>Issued at 9:12am Monday 11 Jan 2021</small>
	Sat 16	Fine. Westerlies. <small>Issued at 9:12am Monday 11 Jan 2021</small>

Summary of event (summary of what has happened and any critical issues/decisions made)

2 Rainfall

December 2020 monthly rainfall totals were 10-50% of normal for most of the region continuing the dry trend present over a large part of the 2020 year.

Annual rainfall totals for 2020 were in the range of 65-85% of long term normal across the region.

January 2021 has delivered some heavy rainfall for eastern and central parts of the region near the coast, with some sites already getting more than twice their monthly normal. However sites around Rotorua and western BOP are at currently nearer normal with 25-70% of normal January totals being present.

Rainfall Summary

Rainfall.Rainfall Summary Report

Period Sel

Location Name	Most Recent Sample	Intensity (mm/hr)	Today (mm)	Yesterday (mm)	Last 5 days (mm)	This Month (mm)	Last Month (mm)	Last Month % of Normal
Tuapiro at Farm Bridge	11/01/2021 08:00:00	0.0	0.0	0.5	16.0	25.0	30.0	15 %
Te Puna at Odey Rd	11/01/2021 08:00:00	0.0	0.0	0.0	7.0	24.0	47.5	
Wairoa at Lower Kaimai	11/01/2021 08:00:00	0.0	0.0	0.0	7.0	25.5	56.5	36 %
Ngongotaha at Relph Rd	11/01/2021 08:00:00	0.0	0.0	0.0	11.5	42.5	55.5	37 %
Rotorua at Upper Oturoa Rd	11/01/2021 08:00:00	0.0	0.0	0.5	8.5	41.0	59.0	32 %
Waimapu at Glue Pot Rd	11/01/2021 08:00:00	0.0	0.0	0.0	12.0	35.0	38.3	21 %
Waimapu at McCarrolls	11/01/2021 08:00:00	0.0	0.0	0.0	7.5	25.5	22.5	16 %
Rotorua at Whakarewarewa	11/01/2021 08:00:00	0.0	0.0	0.0	8.5	60.5	63.5	50 %
Paraiti (Mangorewa) at Kaharo	11/01/2021 08:00:00	0.0	0.0	0.0	10.5	91.0	43.0	26 %
Okaro at Okaro Rd	11/01/2021 08:00:00	0.0	0.0	0.0	17.5	48.0	22.9	24 %
Lake Rotoiti at Okawa Bay	11/01/2021 08:00:00	0.0	0.0	0.0	15.0	96.5	32.0	24 %
Tikitere at SH30	11/01/2021 08:00:00	0.0	0.0	0.0	14.0	94.0	37.0	
Paraiti (Mangorewa) at Upper	11/01/2021 08:00:00	0.0	0.0	0.0	18.5	59.5	34.5	21 %
Paraiti (Mangorewa) at Link	11/01/2021 08:00:00	0.0	0.0	0.0	7.0	45.5	29.0	19 %
Raparapahoe at Collins Lane	11/01/2021 08:00:00	0.0	0.0	2.0	8.0	41.5	34.0	27 %
Kaituna at Marshalls Farm	11/01/2021 08:00:00	0.0	0.0	0.0	5.0	15.0	39.0	35 %
Kaituna at Te Matai	11/01/2021 08:05:00	0.0	0.0	14.0	19.5	56.0	45.5	42 %
Rangitaiki at Kokomoka (Bore 1	11/01/2021 08:10:00	0.0	0.0	0.0	0.0	0.0	15.5	11 %
Pongakawa at Pongakawa Bush	11/01/2021 08:00:00	0.0	0.0	0.0	6.0	45.5	39.0	28 %
Outlet at Waitangi Soda Spring	11/01/2021 08:00:00	0.0	0.0	2.5	11.0	91.0	43.5	
Te Whaiti at Minginui	11/01/2021 07:00:00	0.0	0.0	1.0	12.0	32.0	53.0	
Kawerau at Plunket St	11/01/2021 08:00:00	0.0	0.0	3.0	14.5	90.5	47.5	
Tarawera at Hogg Rd	11/01/2021 08:00:00	0.0	0.0	5.0	23.0	80.0	74.7	
Ohinekoao at Harris Saddle	11/01/2021 07:00:00	0.0	0.0	65.5	84.0	119.5	93.5	54 %
Galatea Basin at Horomanga R	11/01/2021 08:00:00	0.0	0.0	1.0	31.0	59.0	25.5	24 %
Waihua at Clearing	11/01/2021 07:00:00	0.0	0.0	3.5	37.5	73.5	38.5	25 %
Rangitaiki at Te Teko	11/01/2021 08:00:00	0.0	0.0	39.5	61.5	105.0	57.5	53 %
Edgecumbe at Edgecumbe	11/01/2021 08:00:00	0.0	0.0	39.5	48.0	113.5	63.5	50 %
Tarawera at Awakaponga	11/01/2021 07:10:00	0.0	0.0	65.0	93.0	157.0	94.1	85 %
Rangitaiki Plains at Flax Rd	10/01/2021 12:00:00		0.0	143.5	163.0	211.5	79.5	61 %

Location Name	Most Recent Sample	Intensity (mm/hr)	Today (mm)	Yesterday (mm)	Last 5 days (mm)	This Month (mm)	Last Month (mm)	Last Month % of Normal
Tarawera at ORC Pump Station	11/01/2021 08:00:00	0.0	0.0	98.5	107.0	180.0	45.0	54 %
Whakatane at Kopeopeo	11/01/2021 08:00:00	0.0	0.0	66.5	75.0	152.0	27.6	25 %
Rangitaiki at Thornton	11/01/2021 08:00:00	0.0	0.0	76.0	84.5	171.0	44.5	47 %
Whakatane at Huiarau Summit	11/01/2021 07:00:00	0.0	0.0	13.0	49.5	73.5	119.0	57 %
Whakatane at Huitieke rain	11/01/2021 08:00:00	0.0	0.0	13.0	34.0	109.0	56.0	38 %
Whakatane at Awahou Rd	11/01/2021 08:00:00	0.0	0.0	58.5	68.0	187.0	53.0	
Wainui-te-whara at Munro's	11/01/2021 08:00:00	0.0	0.0	75.0	83.0	157.5	46.0	36 %
Tauranga at Omahuru (Ogilvies)	11/01/2021 07:10:00	0.0	0.0	16.5	35.5	115.5	107.0	
Nukuhou at Nukuhou North	11/01/2021 08:00:00	0.0	0.0	35.5	46.0	260.0	37.5	
Ohope Spit at Ohope Golf Course	11/01/2021 08:00:00	0.0	0.0	101.5	108.0	177.0	31.1	
Waioeka at Koranga	11/01/2021 08:00:00	0.0	0.0	13.0	55.5	81.0	67.0	37 %
Waioeka at Cableway	11/01/2021 07:25:00	0.0	0.0	16.5	43.5	200.5	118.0	57 %
Waioeka at Mouth of Gorge	11/01/2021 07:15:00	0.0	0.0	32.5	40.5	137.0	72.9	45 %
Otara at Opotiki Wharf	11/01/2021 08:00:00	0.0	0.0	68.0	75.5	151.0	36.5	30 %
Otara at Tutaetoko	11/01/2021 08:00:00	0.0	0.0	22.0	44.0	126.5	110.5	51 %
Otara at Browns Bridge	11/01/2021 08:00:00	0.0	0.0	33.5	41.0	123.0	50.6	40 %
Pakihi at Pakihi Station	11/01/2021 08:10:00	0.0	0.0	26.5	41.5	85.0	114.5	55 %
Pakihi at Rakanui	11/01/2021 08:00:00	0.0	0.5	17.5	44.0	86.0	81.5	48 %
Haparapara at Haparapara	11/01/2021 08:00:00	0.0	0.0	5.0	27.5	43.5	228.0	62 %

Table 1 Rainfall statistics for 2020

2.1 Standardised Precipitation Index

The Standardised Precipitation¹ Index (SPI) is used for high level presence/absence definition of drought type conditions.

The rainfall in the last 2 months of 2020 has resulted in near-normal 3 month SPI figures (Figure 1) which indicate an easing of pressure on agricultural and horticultural users of water for the shorter term. However 12-month SPI figures (Figure 2) still show large areas of the region in long term rainfall deficit, meaning low water supply may still be evident in streams, reservoirs and groundwater.

¹ Precipitation being another name for rainfall.
Version 1, 11 January 2021

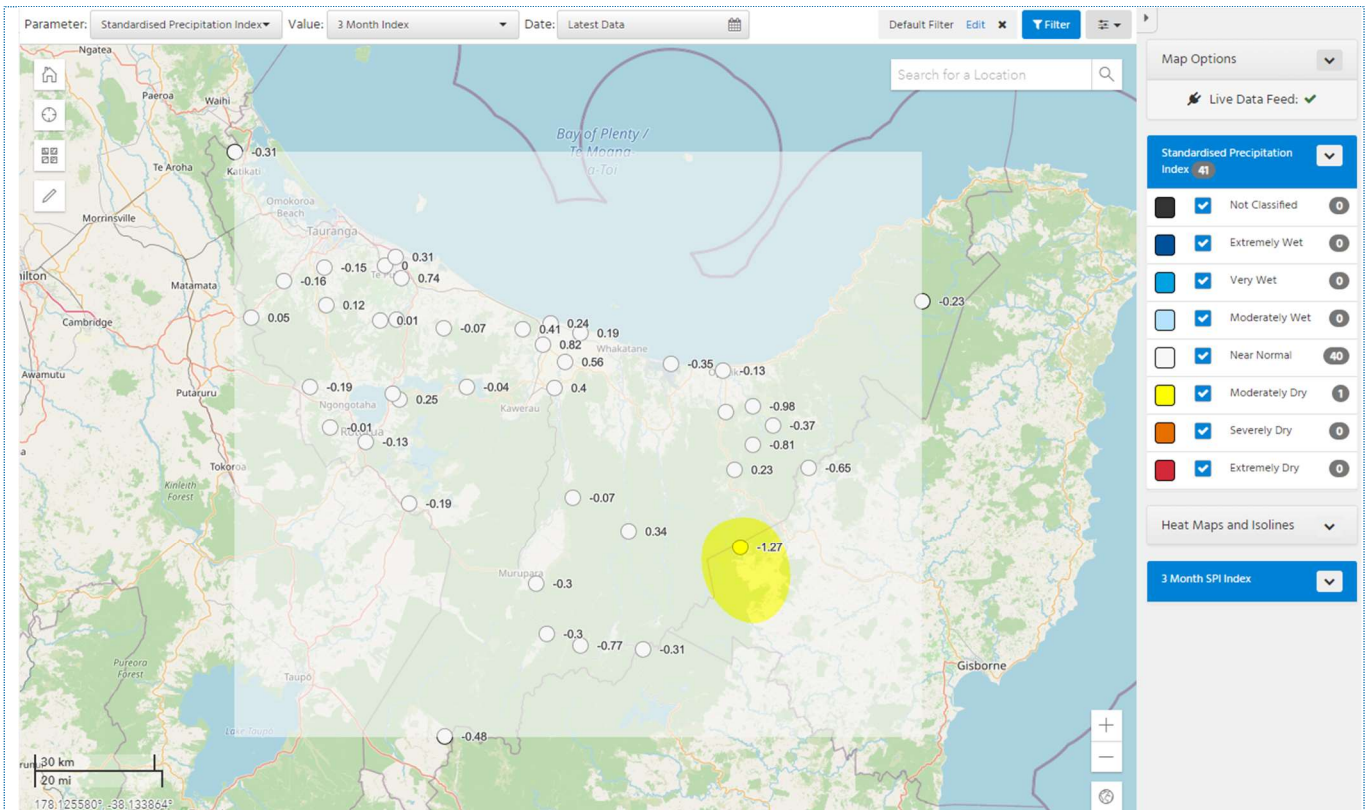


Figure 1 3 month SPI

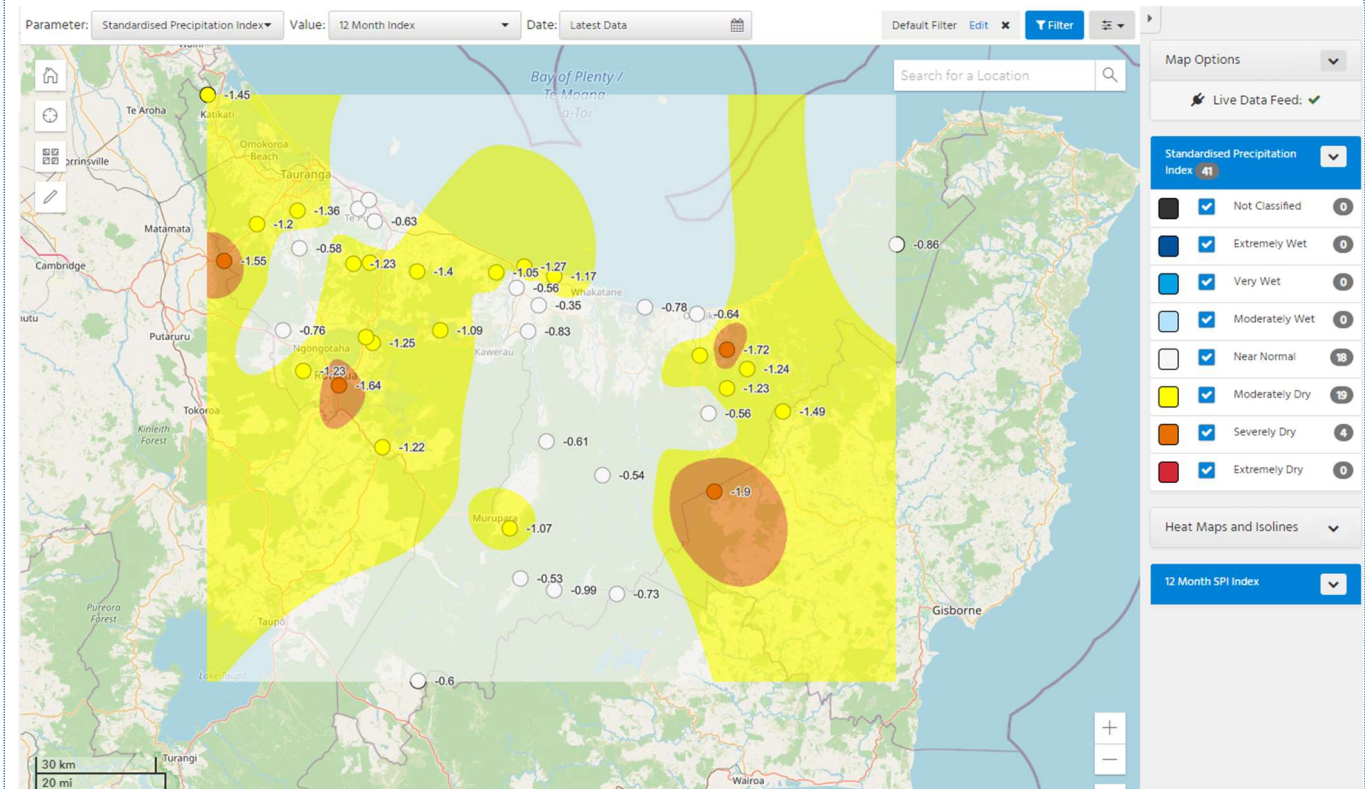


Figure 2 12 month SPI

3 River Flows

In general rivers have responded positively to the rainfall over the last couple of months of 2020 and are currently not of any concern in terms of low flows, the exception to this being some of the catchments with their headwaters to the west-southwest of Lake Rotorua.

3.1 Water Shortage Direction focus area for Rotorua catchments

Recently it has come to our attention that the Ngongotahā catchment was showing significant low flows compared to other parts of the region, validation of these flows and investigation into surrounding catchments have resulted in the development of a targeted water shortage focus area that is responding differently to the rest of the Bay of Plenty.

It appears that affected catchments are coming from the Mamaku Plateau or headwaters to the south-west of Rotorua, refer Figure 1. The majority of rivers in this area have flows that are in the bottom 5% of historical recorded flows and are approaching or below default management Q₅7day flows. The exception to this is the Waiari catchment, which is the most northern catchment within the identified area and while not as low as the other sites, is showing a steady fall in base flow over the last 12 months.

Examples of impacted streams are in 3.3 in the Puarenga, Ngongotahā and Paraiti catchments.

This focus area may be altered or removed should conditions change.

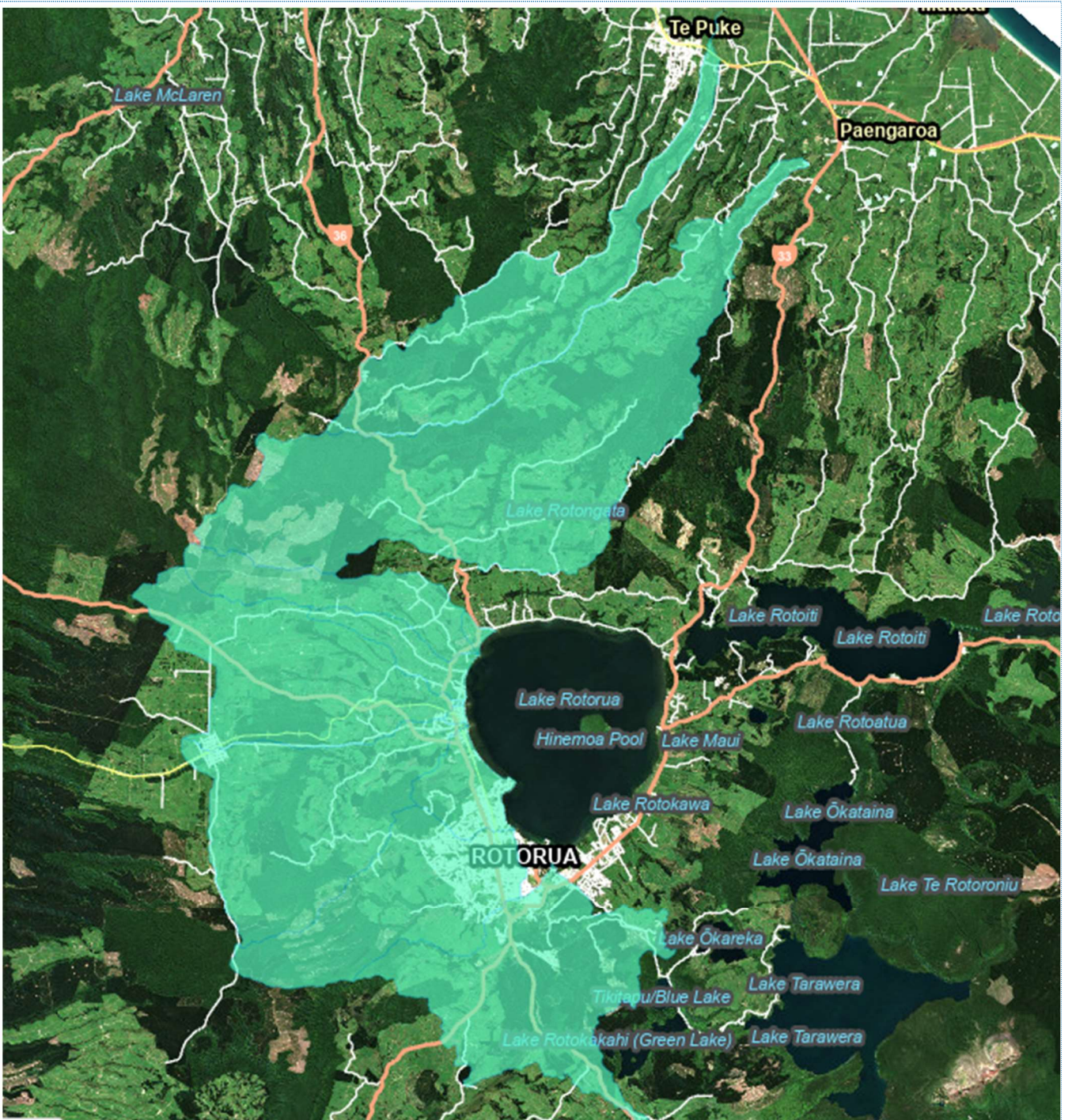


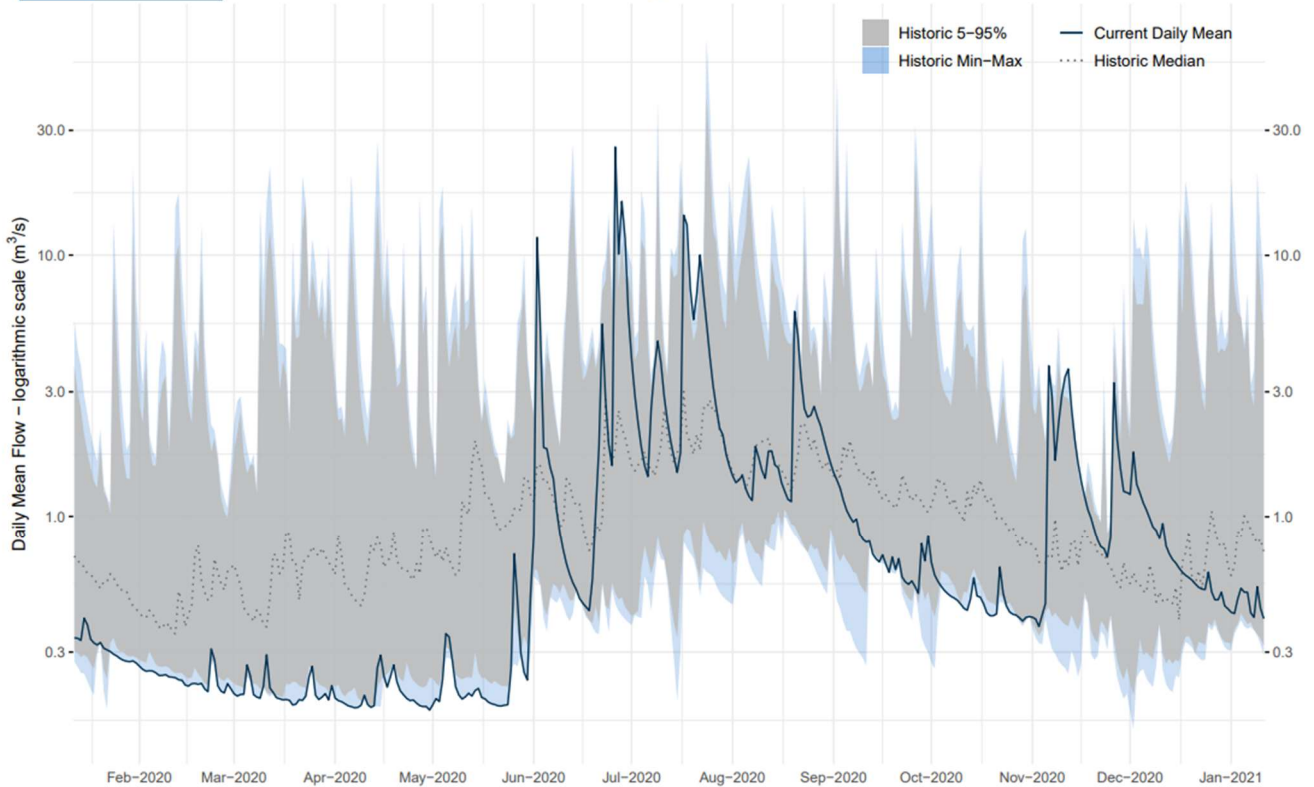
Figure 3 Rotorua water shortage catchment focus area

3.2 Western BOP flow monitoring sites



Tuapiro at Farm Bridge – Current vs Historic Daily Mean Flow

Flow Record Begins – 02 Dec 2010

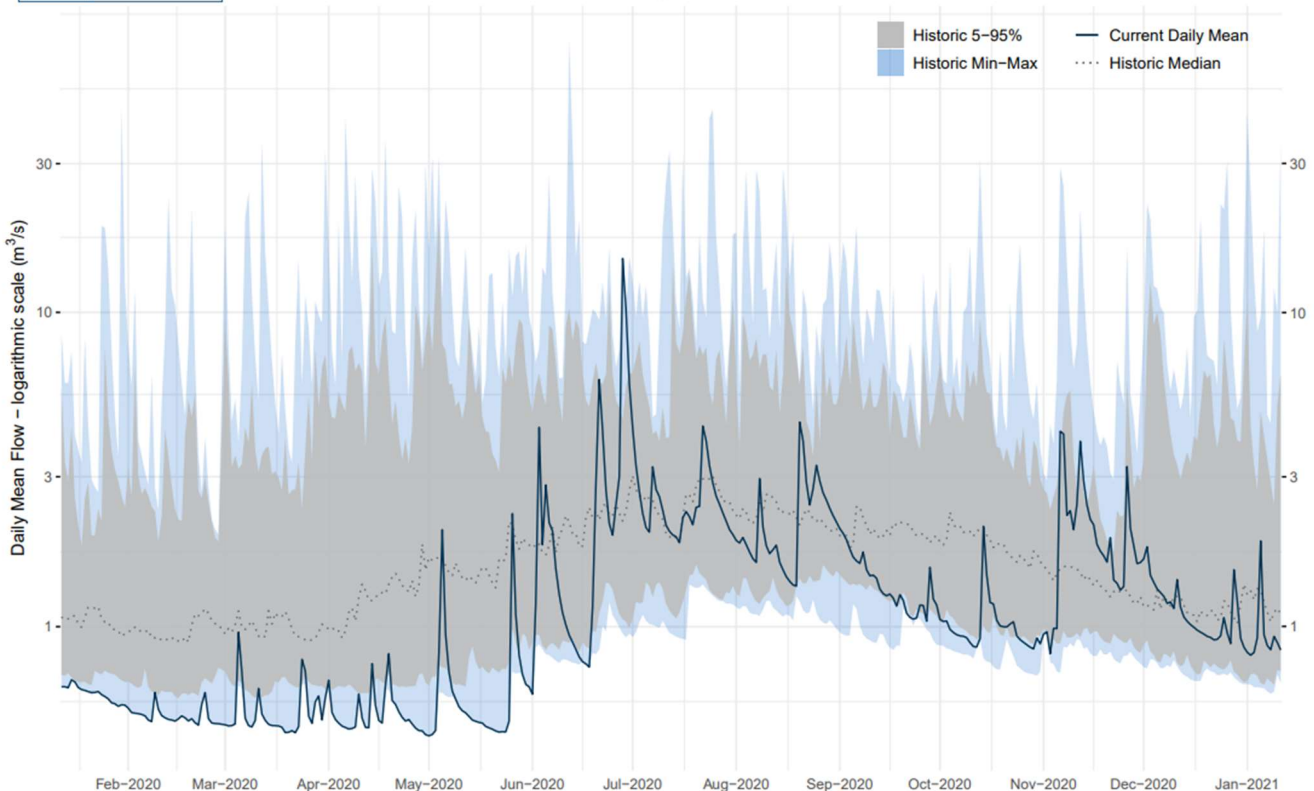


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry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



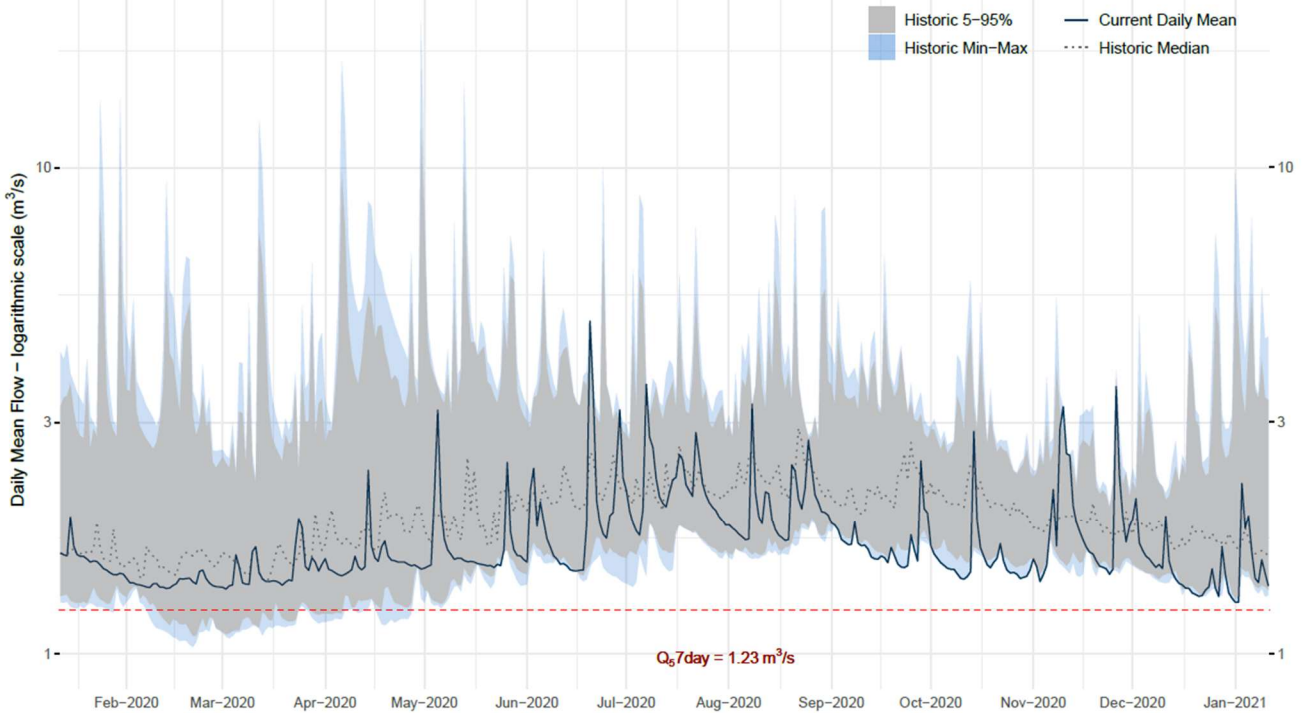
* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry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

3.3 Central BOP flow monitoring sites



Puarenga at SH30 – Current vs Historic Daily Mean Flow

Flow Record Begins – 11 Nov 2009

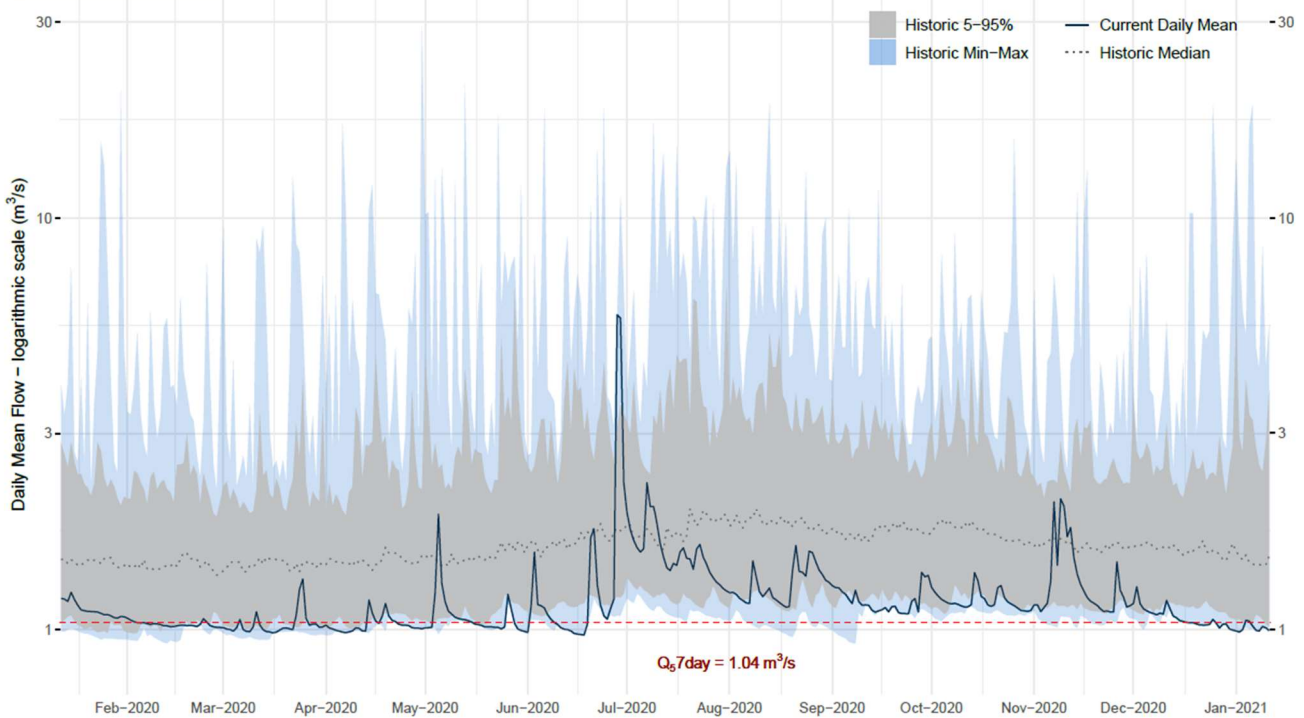


Site	Q5 7day	Latest Date	Latest Discharge	Latest Discharge (% of Q5)	Lowest Discharge	Lowest Discharge Date	Lowest Discharge (% of Q5)
Puarenga at SH30	1.23	2021-01-10	1.378	112	1.276	2020-12-31	104



Ngongotaha at SH5 – Current vs Historic Daily Mean Flow

Flow Record Begins – 03 Jun 1975

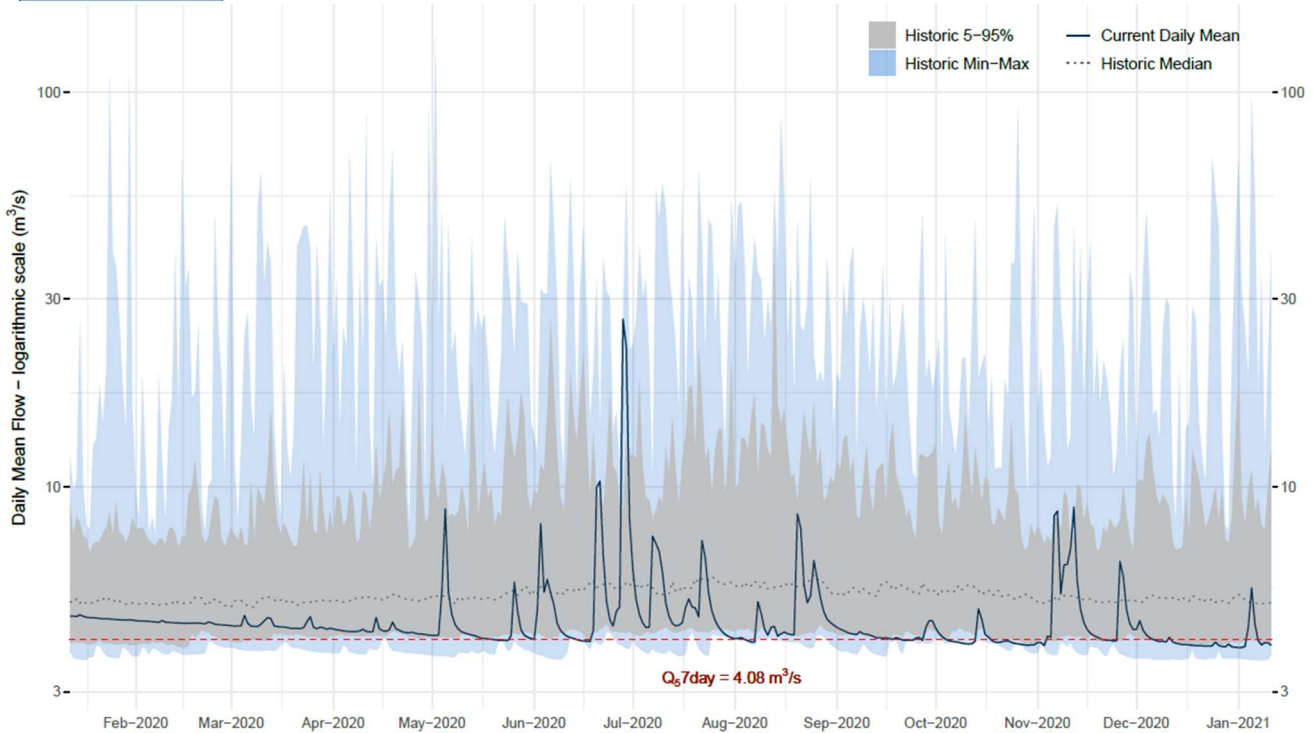


Site	Q5 7day	Latest Date	Latest Discharge	Latest Discharge (% of Q5)	Lowest Discharge	Lowest Discharge Date	Lowest Discharge (% of Q5)
Ngongotaha at SH5	1.04	2021-01-10	0.992	95	0.985	2021-01-01	95



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

Flow Record Begins – 05 Aug 1967

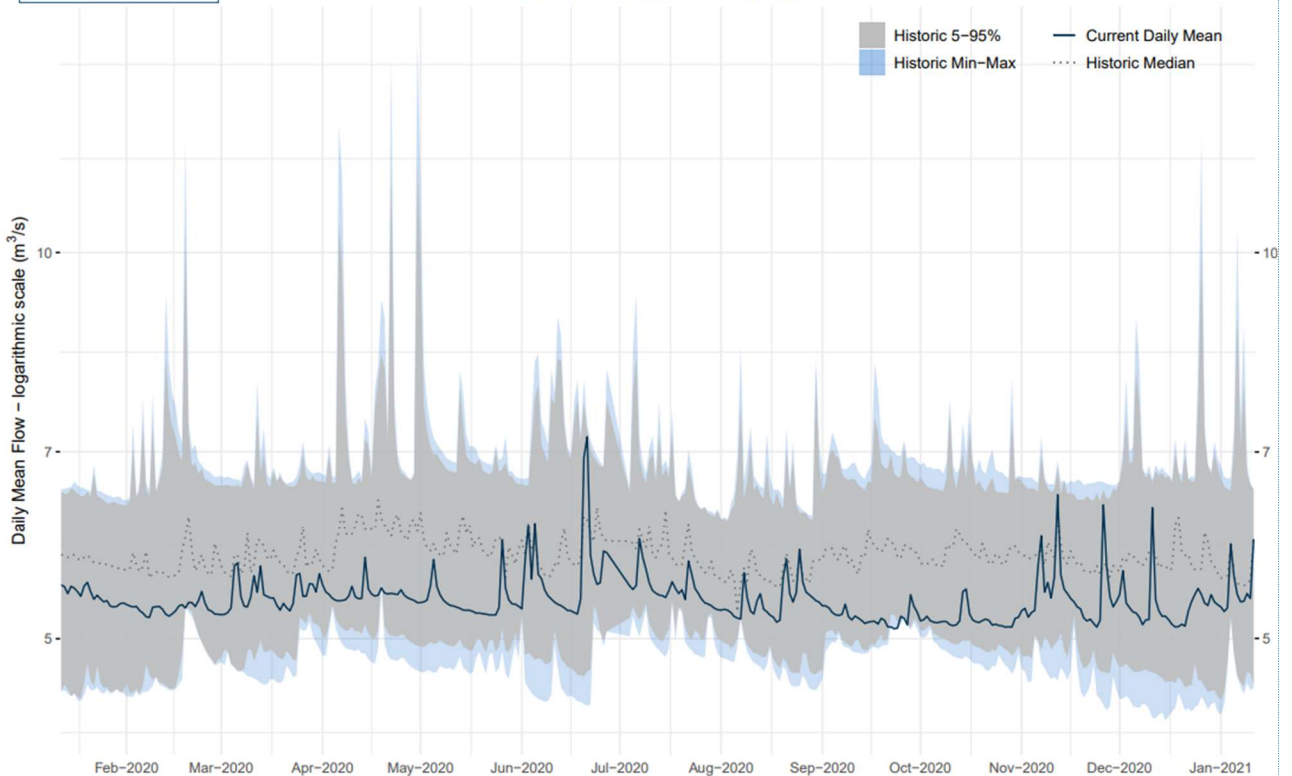


Site	Q5 7day	Latest Date	Latest Discharge	Latest Discharge (% of Q5)	Lowest Discharge	Lowest Discharge Date	Lowest Discharge (% of Q5)
Paraiti (Mangorewa) at Saunders	4.08	2021-01-10	3.934	96	3.882	2021-01-01	95



Waitahanui at Otamarakau Valley Rd – Current vs Historic Daily Mean Flow

Flow Record Begins – 11 Sep 2012



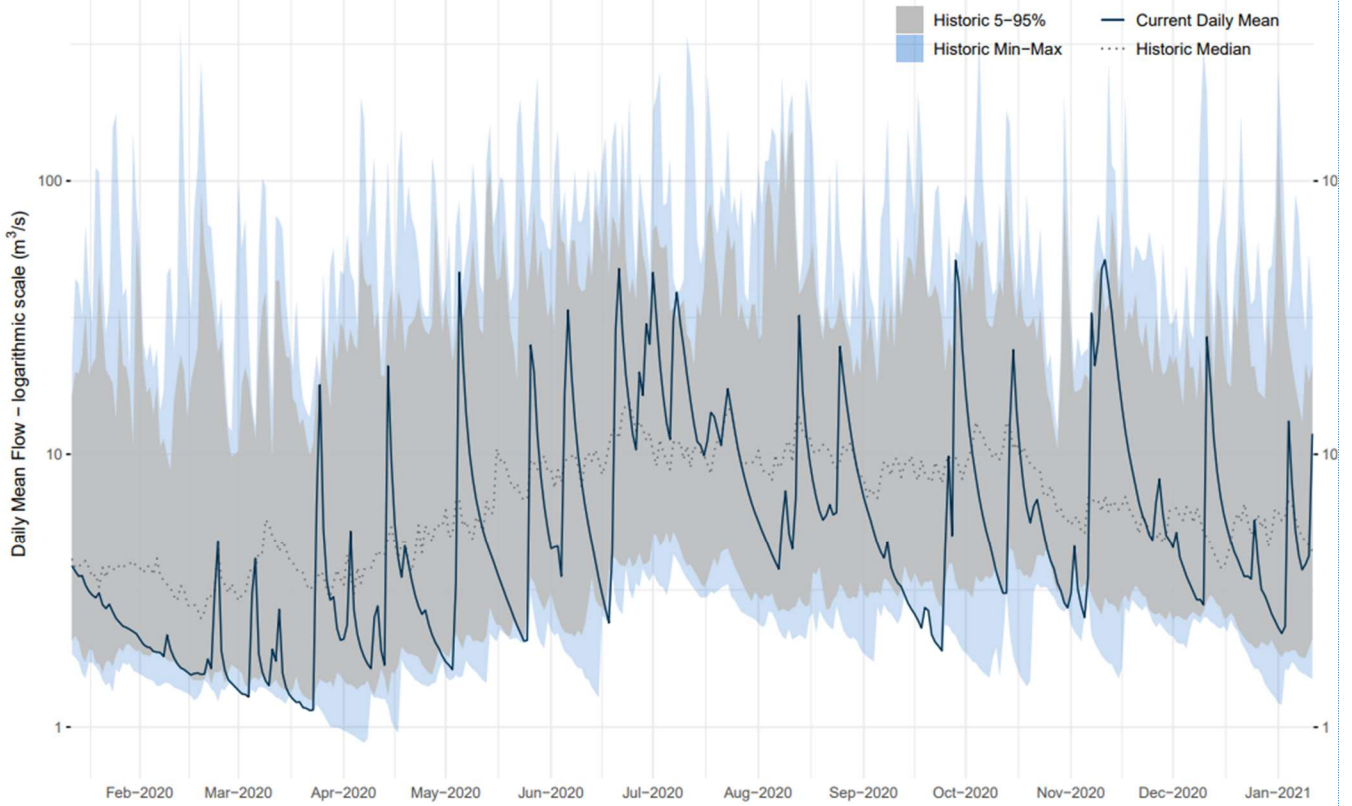
* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry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

3.4 Eastern BOP flow monitoring sites



Otara at Browns Bridge – Current vs Historic Daily Mean Flow

Flow Record Begins – 08 Mar 1984



* 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 Council's telemetry system which has yet to go through quality assurance processes.

Report prepared by:

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Report authorised by:

Glenn Ellery, Data Services Manager

Next Situation Report will be issued at:

February 2021

Time, date of approval:

11 January 2021