

SITUATION REPORT

Bay of Plenty Regional Council

Data Services Team



SitRep number:	SitRep # 7	SitRep effective as at:	1 March 2021
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Key points since last SitRep

- This is the seventh SitRep of the summer of 2020/2021.
- So far this summer, the country's climate patterns have been influenced by a non-traditional central Pacific La Niña. This is expected to continue over the next 2 months.
- High pressure is expected to be a prominent feature in the New Zealand region, leading to more extended dry spells over the upcoming three months, assuming we don't get a sub-tropical cyclone event which cannot be forecasted and can bring significant rain.
- 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, this now includes the Kopurererua catchment which flows into the Tauranga Harbour.
- Soil moisture levels have recovered following February rainfall.

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

1 Forecast

1.1 NIWA seasonal forecast

- So far this summer, the country's climate patterns have been influenced by a non-traditional central Pacific La Niña. This is expected to continue over the next three months.
- An example of the impact of the non-traditional La Niña is the ongoing unusually dry conditions across parts of the northern and eastern North Island, according to NIWA's New Zealand Drought Index. Meteorological drought is occurring in the Far North and East Cape.
- High pressure is expected to be a prominent feature in the New Zealand region, leading to more extended dry spells over the upcoming three months.
- Patterns of high pressure and occasional tropical winds will continue to produce periods of above average warmth into autumn, although variable air flow patterns can allow for some cooler air masses to emerge from the Southern Ocean from time to time.
- Rainfall is about equally likely to be near normal or below normal in the north and east of the North Island and west of the South Island. Near normal rainfall is expected in all other regions.
- Soil moisture levels and river flows are most likely to be below normal in the north and east of the North Island, near normal in the east of the South Island, and equally likely to be near normal or below normal in the remaining regions of the country.

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







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 most likely to be above average (50% chance).
- Rainfall totals are about equally likely to be near normal (40% chance) or below normal (35% chance).
- Abnormally dry conditions are occurring across the western Bay of Plenty, northern Waikato, Auckland, and Northland according to NIWA's New Zealand Drought Index. Meteorological drought and severe meteorological drought are occurring in Northland's Far North District.

- Extended dry spells are expected to continue with the potential for sporadic heavy rainfall.
- Soil moisture levels and river flows are most likely to be below normal (45% chance).

1.2 Short-term forecast (MetService)

MetService are predicting the following for the coming week:

Regional Forecast		
Bay Of Plenty		
	Today Mon 01	Cloudy. Isolated showers, especially about the ranges afternoon and evening. Northeasterlies. <small>Issued at 9:12am Monday 01 Mar 2021</small>
	Tomorrow Tue 02	Cloud increasing. Isolated showers, becoming widespread in the afternoon. Northerlies. <small>Issued at 12:10am Monday 01 Mar 2021</small>
	Wed 03	Early showers, then mainly fine. Westerly breezes. <small>Issued at 12:10am Monday 01 Mar 2021</small>
	Thu 04	Showers, possibly heavy about the eastern ranges, clearing late. Northwesterlies. <small>Issued at 10:12am Monday 01 Mar 2021</small>
	Fri 05	Mainly fine. Possible afternoon showers. Westerlies tending northerly. <small>Issued at 10:12am Monday 01 Mar 2021</small>
	Sat 06	A few showers developing, turning to rain for a time. Northwesterlies. <small>Issued at 10:12am Monday 01 Mar 2021</small>

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

2 Rainfall

February 2021 monthly rainfall totals showed deficits from long term normal for central inland area's including Rotorua and upper Rangitāiki. Lower to mid-altitude gauges across the rest of the region showed normal to above normal rainfall, with the western edges of the region showing double long term normal. Higher altitude gauges across the region were showing a deficit, presumably indicating that the source of the rain was from systems coming off the sea to the east which deposited rain at lower altitudes.

Year-to-date rainfall totals for January and February show a similar pattern of response.



Bay of Plenty Regional Council
Thriving together. Mō te taiao, mō ngā tāngata

Rainfall Summary

Rainfall.Rainfall Summary Report

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Period Selected: 2021-02-27 00:00 to End of Record

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	Year To Date - Complete Months (mm)	Year To Date % of Normal
Tuapiro at Farm Bridge	01/03/2021 07:00:00	0.0	0.5	2.0	4.0	0.5	252.0	227 %	290.5	120 %
Te Puna at Odey Rd	01/03/2021 07:00:00	0.0	2.5	1.0	4.5	2.5	191.5		250.0	
Wairoa at Lower Kaimai	01/03/2021 07:00:00	0.0	1.0	3.0	4.5	1.0	160.0	115 %	209.0	79 %
Ngongotaha at Relph Rd	01/03/2021 07:00:00	0.0	0.0	0.5	0.5	0.0	79.3	124 %	141.7	73 %
Rotorua at Upper Oturoa Rd	01/03/2021 07:00:00	0.0	0.0	0.0	0.5	0.0	71.7	65 %	136.8	50 %
Waimapu at Glue Pot Rd	01/03/2021 07:00:00	0.0	1.0	1.0	2.0	1.0	110.5	75 %	181.5	66 %
Waimapu at McCarrolls	01/03/2021 07:00:00	0.5	1.0	0.0	1.5	1.0	91.0	80 %	134.0	63 %
Rotorua at Whakarewarewa	01/03/2021 07:00:00	0.5	9.5	3.5	13.5	9.5	57.9	59 %	134.1	68 %
Paraiti (Mangorewa) at Kaharo	01/03/2021 07:00:00	0.5	3.0	3.0	6.5	3.0	88.8	71 %	195.7	79 %
Okaro at Okaro Rd	01/03/2021 07:00:00	0.0	1.5	1.0	2.5	1.5	73.0	87 %	135.5	76 %
Lake Rotoiti at Okawa Bay	01/03/2021 07:00:00	0.5	4.5	3.5	10.5	4.5	63.6	65 %	167.1	76 %
Tikitere at SH30	01/03/2021 07:00:00	0.5	2.5	2.5	6.0	2.5	84.6		181.0	
Paraiti (Mangorewa) at Upper	01/03/2021 07:00:00	0.0	2.5	2.0	6.5	2.5	215.5	154 %	297.0	107 %
Paraiti (Mangorewa) at Link	01/03/2021 07:00:00	0.0	2.5	2.5	6.0	2.5	145.0	120 %	204.0	90 %
Raparapahoe at Collins Lane	01/03/2021 07:00:00	0.5	2.5	1.0	4.5	2.5	88.0	55 %	143.5	58 %
Kaituna at Marshalls Farm	01/03/2021 07:00:00	0.0	1.0	1.0	2.5	1.0	83.5	66 %	110.5	59 %
Kaituna at Te Matai	01/03/2021 07:00:00	0.0	1.5	2.0	5.0	1.5	97.0	107 %	165.0	96 %
Rangitaiiki at Kokomoka (Bore 1	01/03/2021 07:05:00	0.0	0.0	0.0	0.0	0.0	52.0	55 %	54.0	26 %
Pongakawa at Pongakawa Bush	01/03/2021 06:00:00	0.0	3.0	5.5	9.5	3.0	100.5	84 %	155.5	71 %
Outlet at Waitangi Soda Spring	01/03/2021 07:00:00	1.0	2.5	2.0	5.0	2.5	91.3		202.6	
Te Whaiti at Minginui	01/03/2021 06:01:00	0.5	2.0	0.0	2.0	2.0	50.0		110.5	
Kawerau at Plunket St	01/03/2021 07:00:00	0.0	3.5	0.0	3.5	3.5	114.7		225.3	
Tarawera at Hogg Rd	01/03/2021 07:00:00	0.0	4.0	0.0	4.0	4.0	129.5		228.5	
Ohinekoao at Harris Saddle	01/03/2021 07:00:00	0.5	4.5	0.5	5.0	4.5	130.3	82 %	256.5	88 %
Galatea Basin at Horomanga R	01/03/2021 07:00:00	3.0	12.0	3.0	15.5	12.0	44.5	56 %	114.0	77 %
Waihua at Clearing	01/03/2021 06:14:00	0.5	1.0	2.5	6.5	1.0	91.0	86 %	168.5	67 %
Rangitaiiki at Te Teko	01/03/2021 07:00:00	0.0	1.5	2.0	5.0	1.5	129.0	147 %	243.0	139 %
Edgecumbe at Edgecumbe	01/03/2021 07:00:00	0.0	1.5	5.5	9.0	1.5	128.0	136 %	244.3	146 %
Tarawera at Awakaponga	01/03/2021 07:10:00	0.5	1.0	0.0	1.5	1.0	114.2	118 %	281.5	147 %
Rangitaiiki Plains at Flax Rd	28/02/2021 12:00:00	0.0	0.0	0.5	0.5	0.0	167.5	168 %	388.0	211 %

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	Year To Date - Complete Months (mm)	Year To Date % of Normal
Tarawera at ORC Pump Station	01/03/2021 07:00:00	0.0	0.0	0.0	1.0	0.0	57.5	73 %	239.5	165 %
Whakatane at Kopeopeo	01/03/2021 07:00:00	0.0	0.0	0.0	11.0	0.0	86.5	118 %	238.8	146 %
Rangitaiiki at Thornton	01/03/2021 07:00:00	0.0	0.0	0.0	4.5	0.0	94.5	115 %	270.5	173 %
Whakatane at Huiarau Summit	01/03/2021 06:00:00	0.0	0.0	0.0	1.0	0.0	127.0	89 %	238.7	77 %
Whakatane at Huitieke rain	01/03/2021 07:00:00	2.0	6.0	0.0	8.0	6.0	97.5	99 %	210.0	108 %
Whakatane at Awahou Rd	01/03/2021 07:00:00	0.0	10.0	4.0	21.0	10.0	129.0		330.0	
Wainui-te-whara at Munro's	01/03/2021 07:00:00	1.0	1.5	0.0	5.5	1.5	113.5	122 %	278.5	158 %
Tauranga at Omahuru (Ogilvies	01/03/2021 07:10:00	0.5	6.0	4.0	11.5	6.0	95.5		226.9	
Nukuhou at Nukuhou North	01/03/2021 07:00:00	4.5	6.0	0.5	9.0	6.0	96.0		366.0	
Ohope Spit at Ohope Golf Course	01/03/2021 07:00:00	0.0	0.0	0.0	1.0	0.0	54.5		233.5	
Waioeka at Koranga	01/03/2021 07:00:00	0.0	0.0	0.0	0.5	0.0	75.0	61 %	157.7	58 %
Waioeka at Cableway	01/03/2021 06:15:00	0.0	0.5	1.5	2.0	0.5	134.0	96 %	363.5	122 %
Waioeka at Mouth of Gorge	01/03/2021 06:15:00	0.0	2.5	2.5	5.5	2.5	100.0	89 %	333.8	148 %
Otara at Opatiki Wharf	01/03/2021 07:00:00	0.0	7.0	4.5	12.5	7.0	86.9	106 %	229.4	139 %
Otara at Tutaetoko	01/03/2021 07:00:00	0.0	6.5	4.5	11.0	6.5	122.0	78 %	264.0	80 %
Otara at Browns Bridge	01/03/2021 07:00:00	0.0	2.0	0.0	2.0	2.0	124.0	163 %	250.5	152 %
Pakihī at Pakihī Station	01/03/2021 07:05:00	0.0	1.5	0.0	1.5	1.5	119.0	88 %	215.0	81 %
Pakihī at Rakanui	01/03/2021 07:00:00	0.0	0.0	0.5	1.0	0.0	111.5	96 %	204.1	85 %
Haparapara at Haparapara	01/03/2021 07:00:00	0.0	0.0	0.5	0.5	0.0	102.0	45 %	170.0	35 %

Table 1 Rainfall statistics for January 2021

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 February 2021 has shown the developing effects of summer months on the 3 month SPI figures (Figure 1). Notable is the continuing lack of rain in the western Rotorua focus area and a developing signal of dry conditions for the East Cape, which are also being seen in NIWA's drought indexes.

The 12-month SPI figures (Figure 2) show a continued easing of this longer term index relating to hydrological drought.

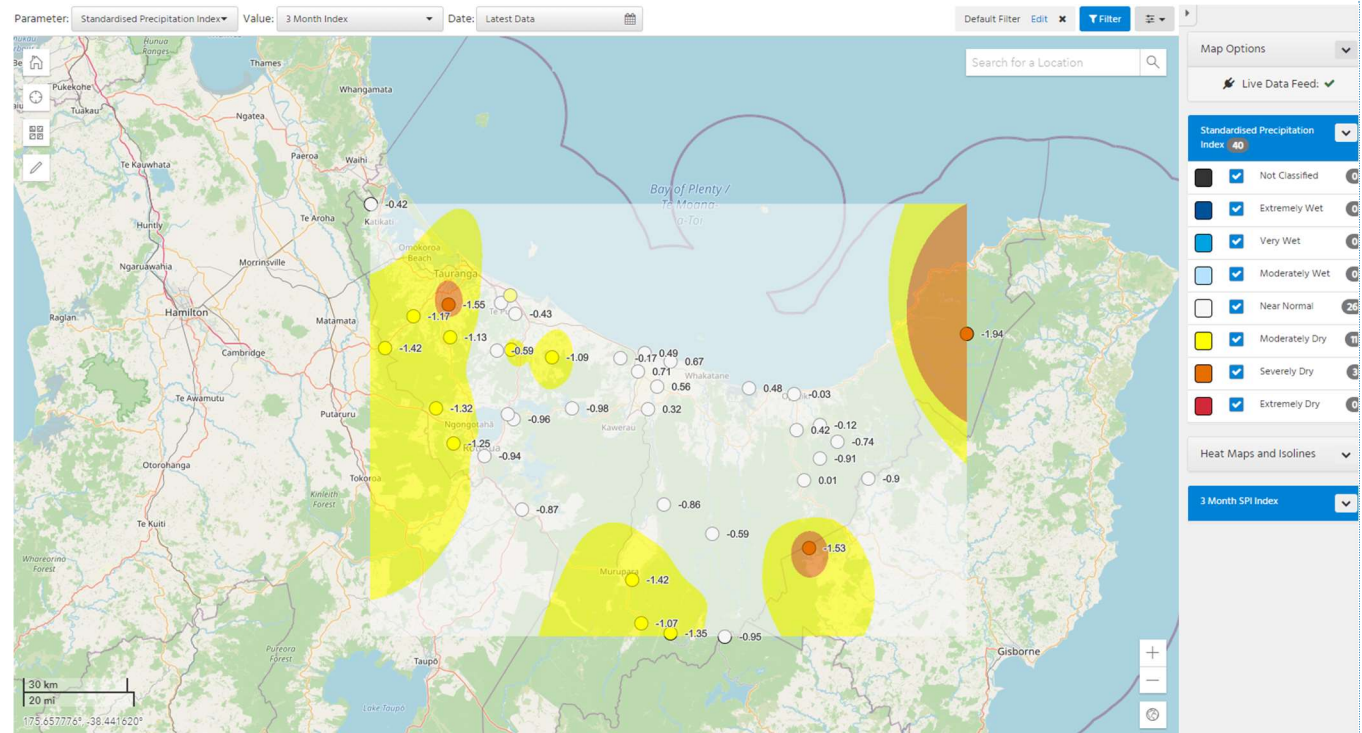


Figure 1 3 month SPI

¹ Precipitation being another name for rainfall.
Version 1, 1 March 2021

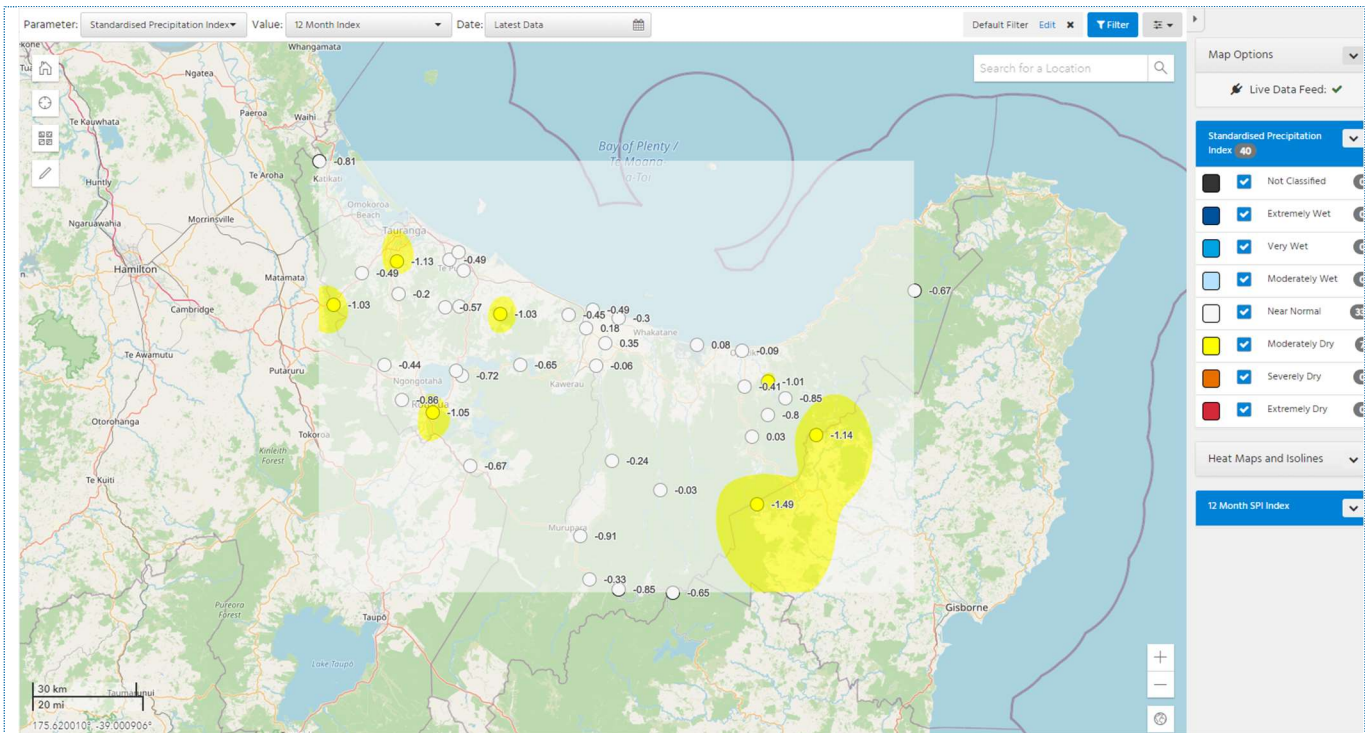


Figure 2 12 month SPI

3 River Flows

The Rotorua focus area identified in the previous two SitReps continues to be an area of concern, with flows at or approaching record low levels in many cases. Notable is the steady decline in the Waiari and Paraiti base flows over the last 12 months with little apparent lasting response to rainfall events.

The Kopurererua catchment which flow into Tauranga Harbour is still of concern being lower than last year and it may well be that this is due to the top of this catchment being up in a similar area to the Rotorua focus catchments.

Western and eastern Bay of Plenty catchments have responded to February rainfall and are not of concern currently.

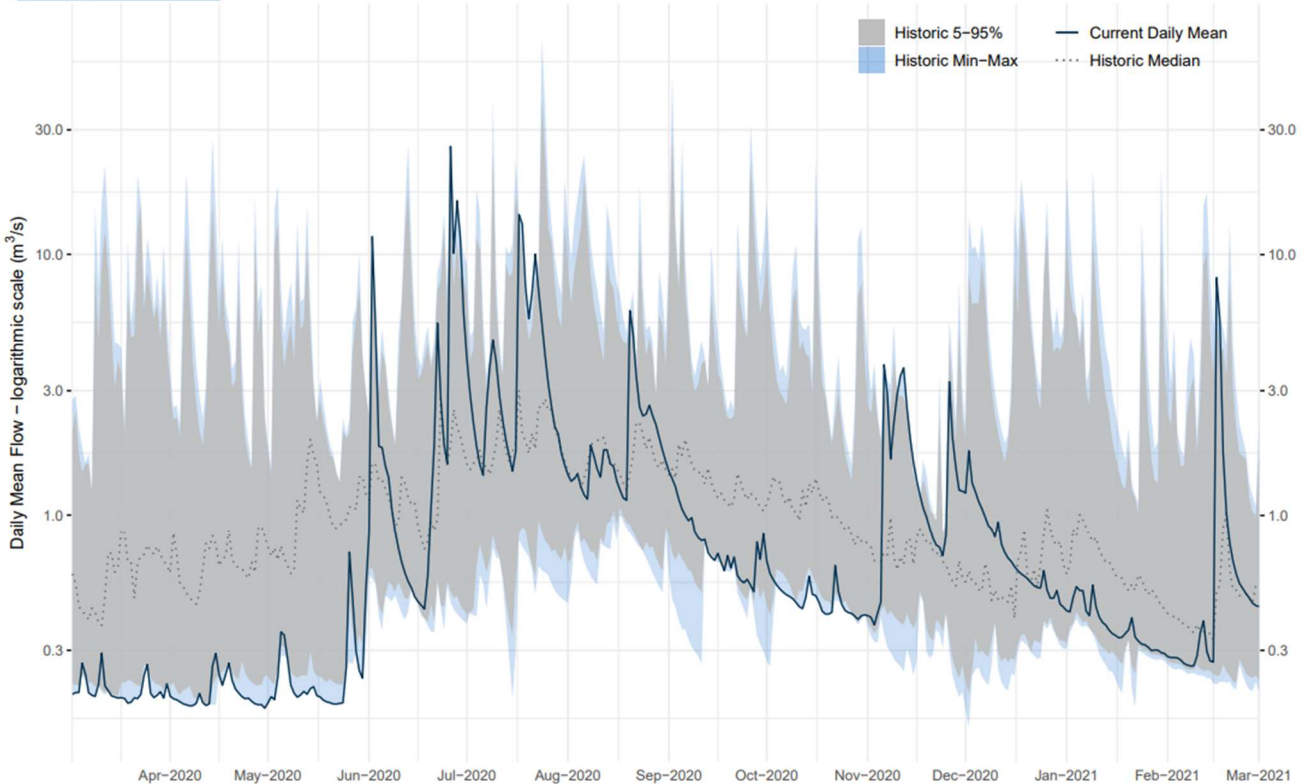
Bay of Plenty Regional Council staff have been undertaking low flow measurement surveys in a variety of catchments over the month of February to collect low flow data, however this has been somewhat curtailed due to rainfall and resulting quick flow run-off from catchments.

3.1 Western BOP flow monitoring sites



Tuapiro at Farm Bridge – Current vs Historic Daily Mean Flow

Flow Record Begins – 02 Dec 2010

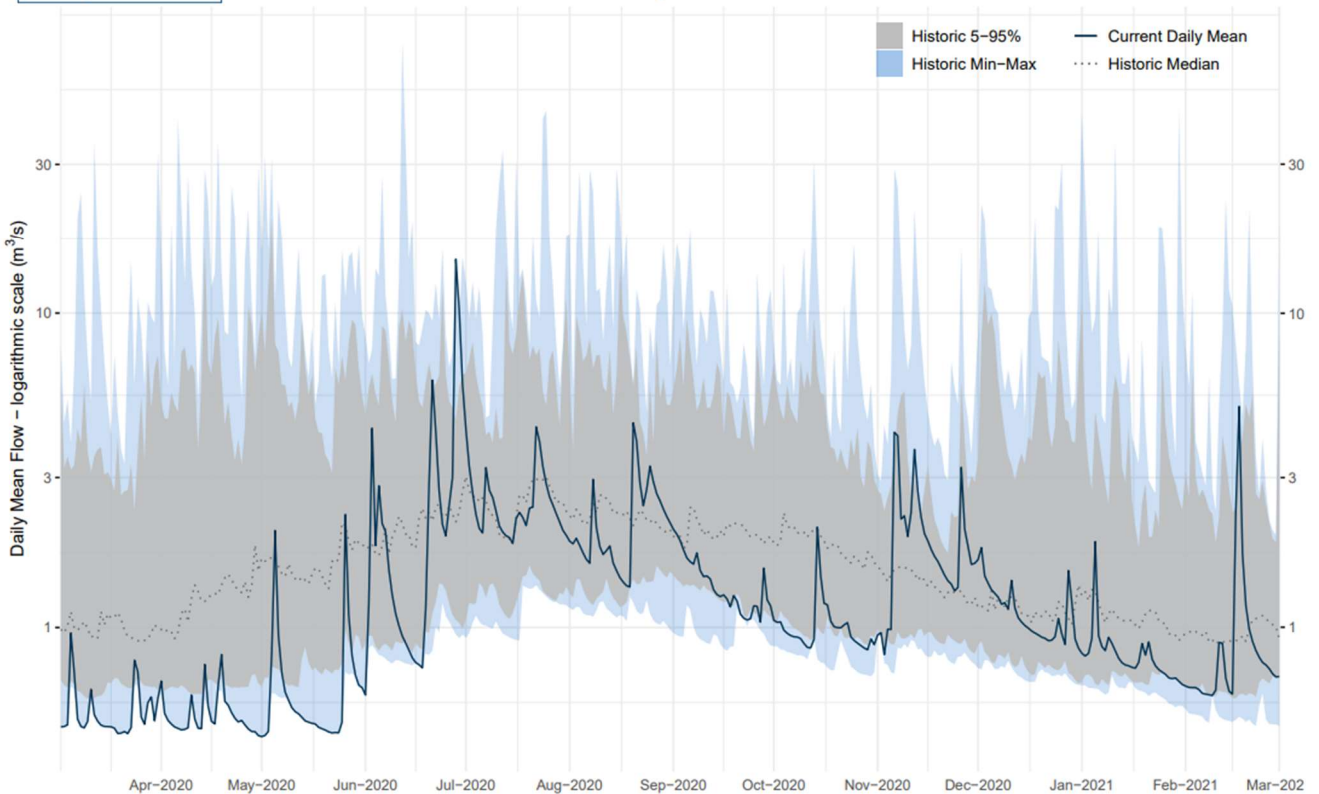


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Council's telemetry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

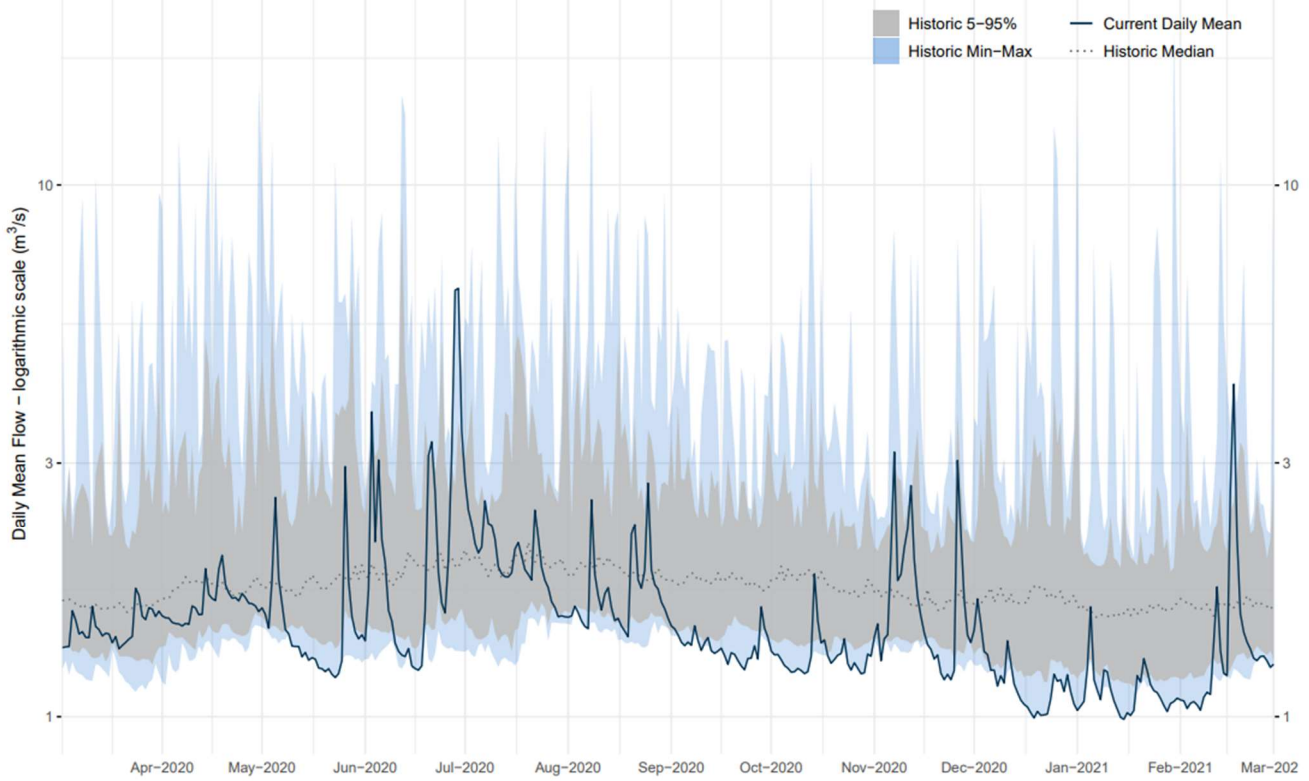


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Council's telemetry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



Kopurererua at SH29 – Current vs Historic Daily Mean Flow

Flow Record Begins – 28 Jun 1990



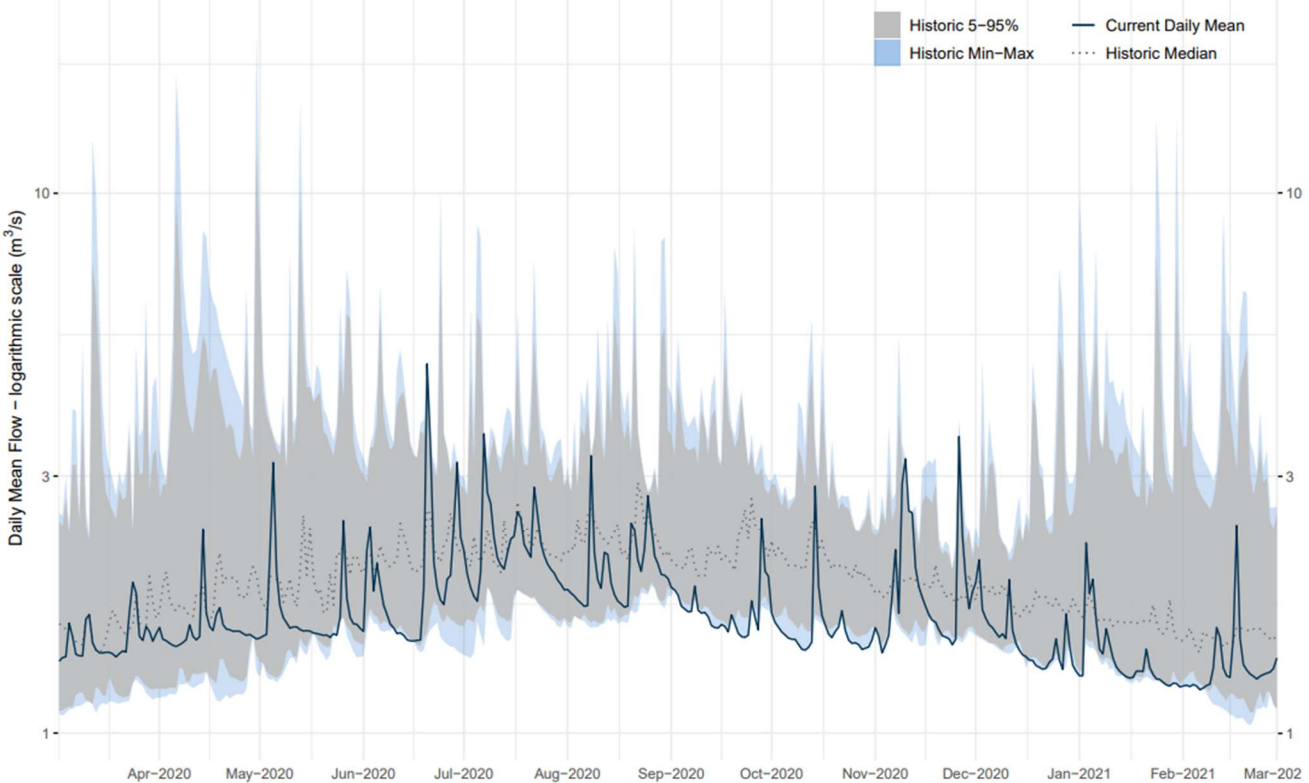
* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry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

3.2 Central BOP flow monitoring sites



Puarenga at SH30 – Current vs Historic Daily Mean Flow

Flow Record Begins – 11 Nov 2009

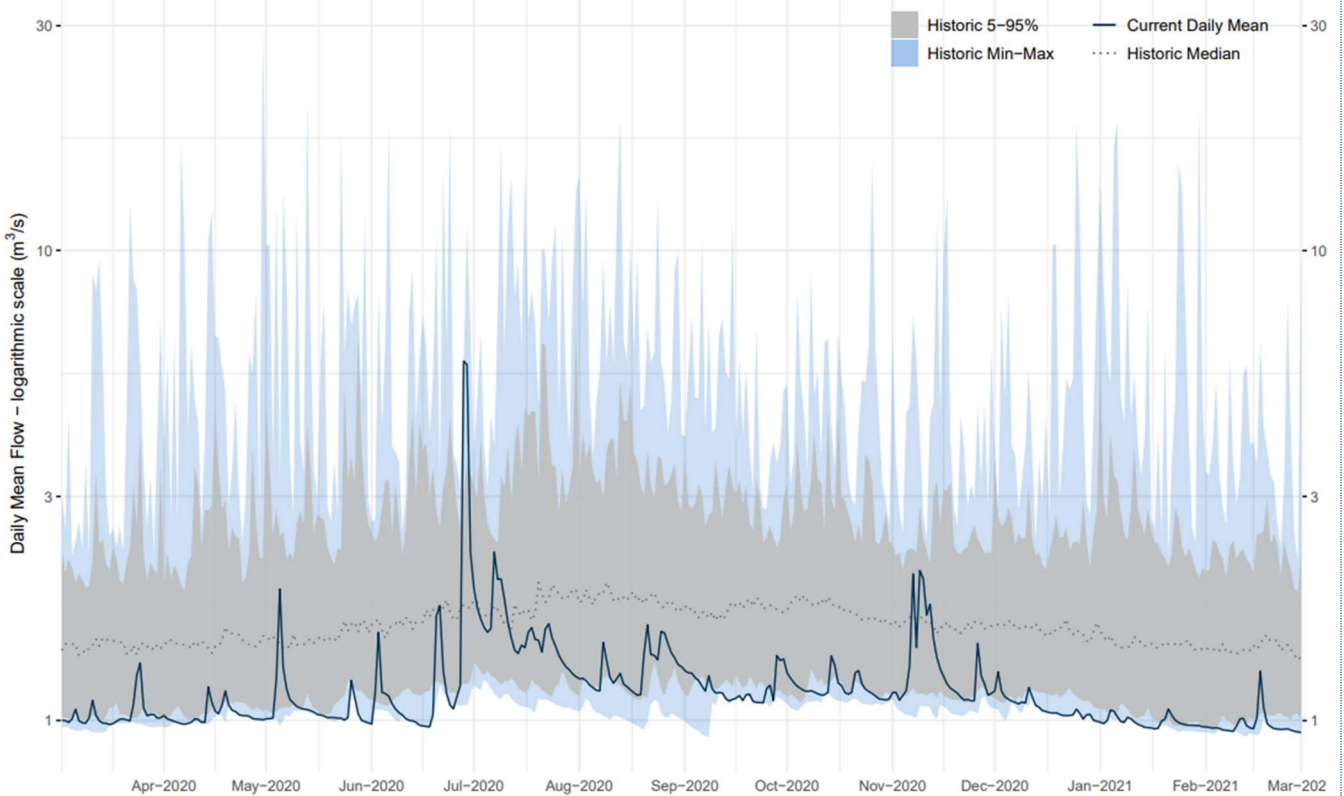


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry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

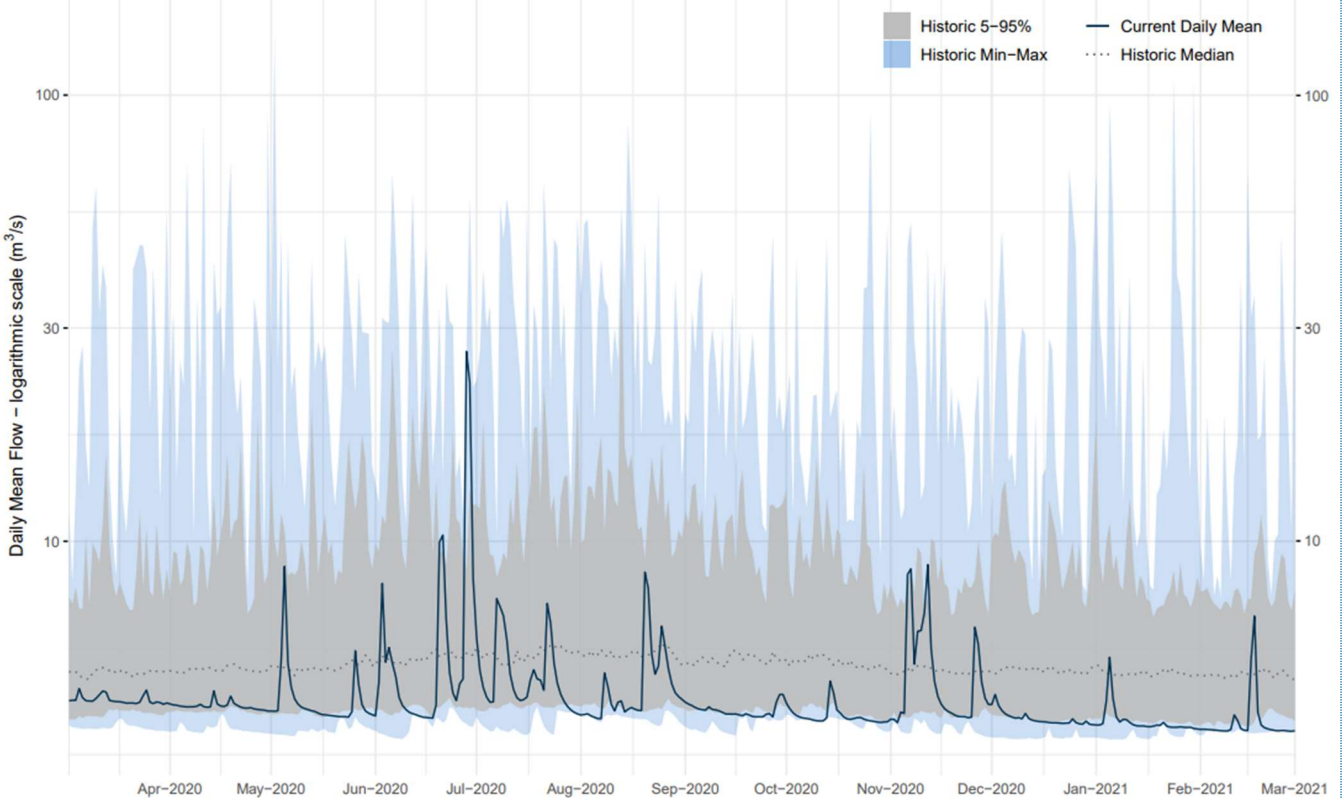


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry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

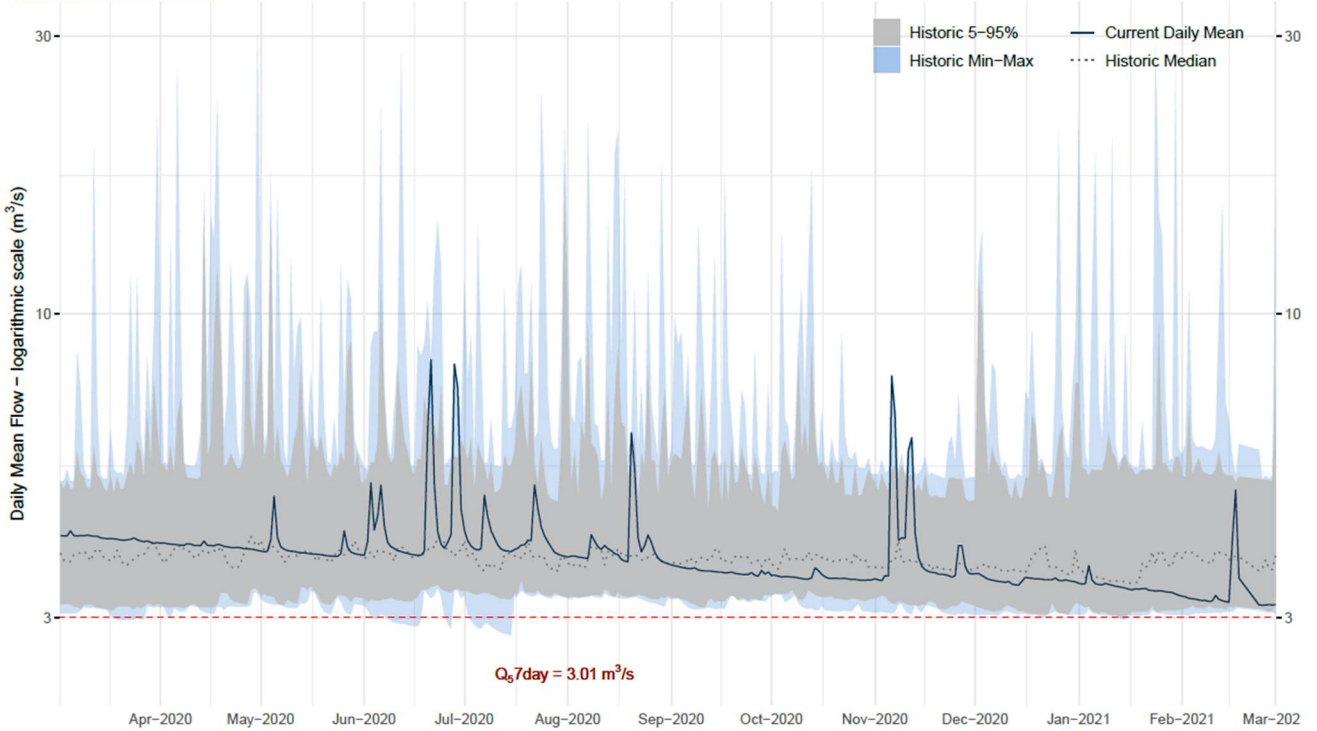


* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry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



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

Flow Record Begins – 14 Nov 2000

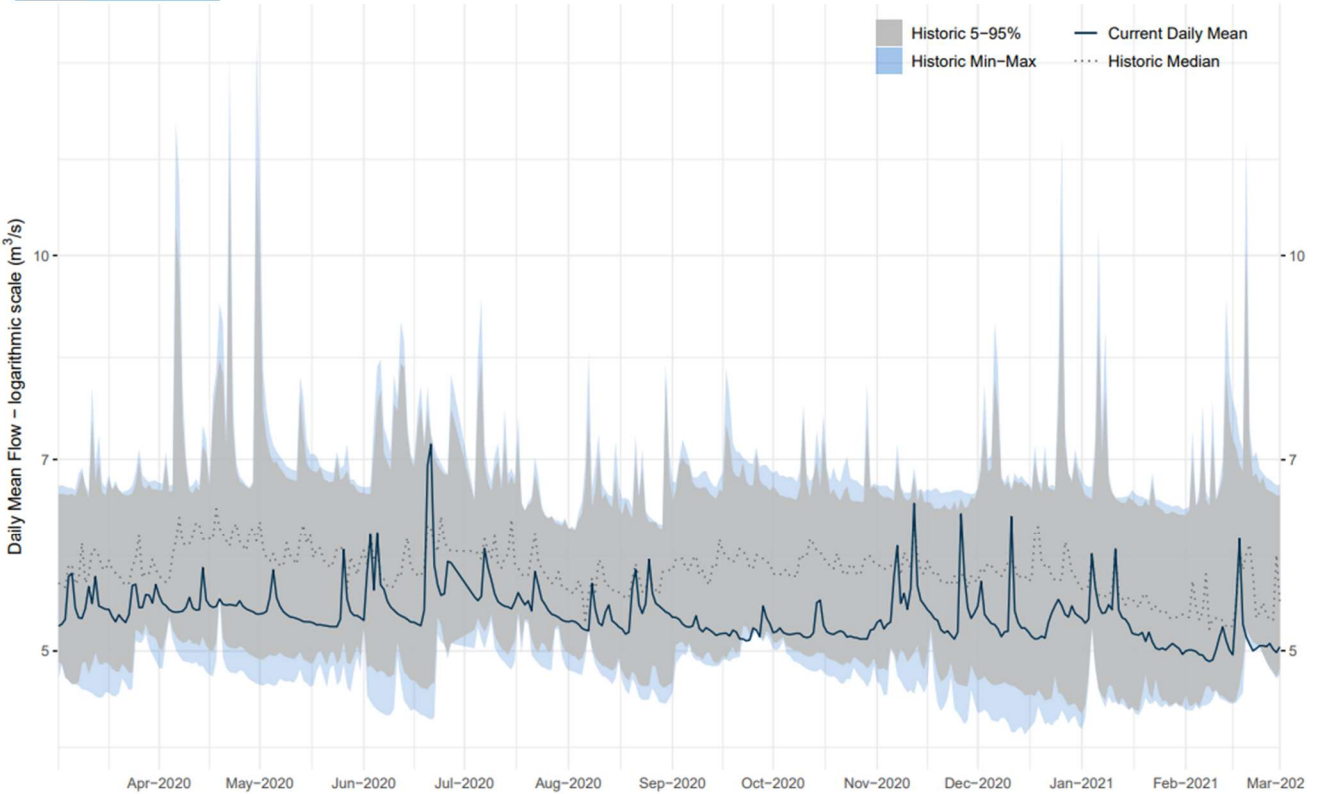


Site	Q5 7day	Latest Date	Latest Discharge	Latest Discharge (% of Q5)	Lowest Discharge	Lowest Discharge Date	Lowest Discharge (% of Q5)
Waiari at TCC Intake (NIWA)	3.01	2021-02-28	3.16	105	3.152	2021-02-24	105



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

Flow Record Begins – 11 Sep 2012



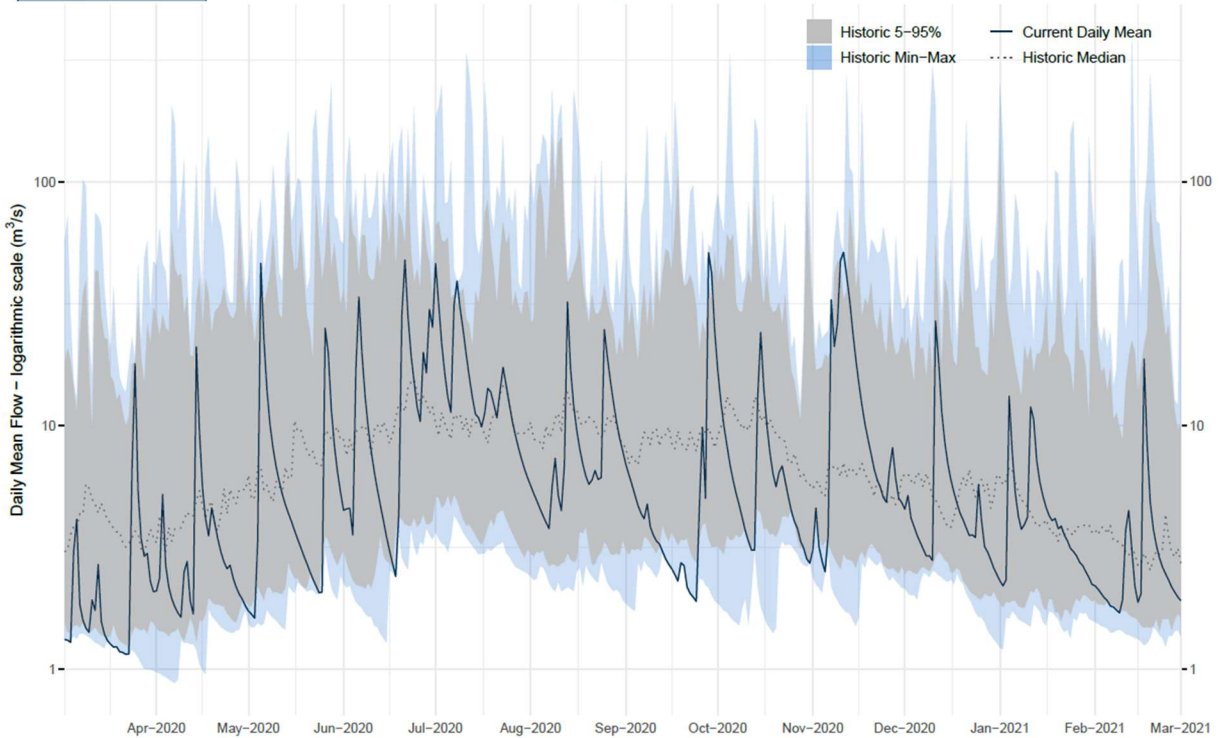
* Solid line shows the daily mean flow at this site over the last 12 months (logarithmic scale). Historic values show the range of flow for the same time period over the entire record. Users should be aware that the most recent discharge data may contain raw data directly from the Councils telemetry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

3.3 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 Councils telemetry system which has yet to go through quality assurance processes.

4 Soil Moisture

Soil moisture trends have shown a positive response across the region resulting from the February rainfall.

Daily Soil Moisture Averages and Monthly Rainfall Totals

Soil Moisture, Tauranga Harbour, Wairoa at Lower Kaimai

Mar 1, 2021 | 1 of 1

Period Selected: 1921-03-01 00:00 to End of Record

Soil Moisture: Soil Moisture (Tot).Root Zone@C0672223, Wairoa at Lower Kaimai

UTC Offset: +12:00, Start Time: 2013-06-20 12:30:00, End Time: 2021-03-01 03:00:00

Units: mm

Precipitation: Precip Total.Primary@C0672223, Wairoa at Lower Kaimai

UTC Offset: +12:00, Start Time: 1963-01-01 09:00:00, End Time: 2021-03-01 03:00:00

Units: mm

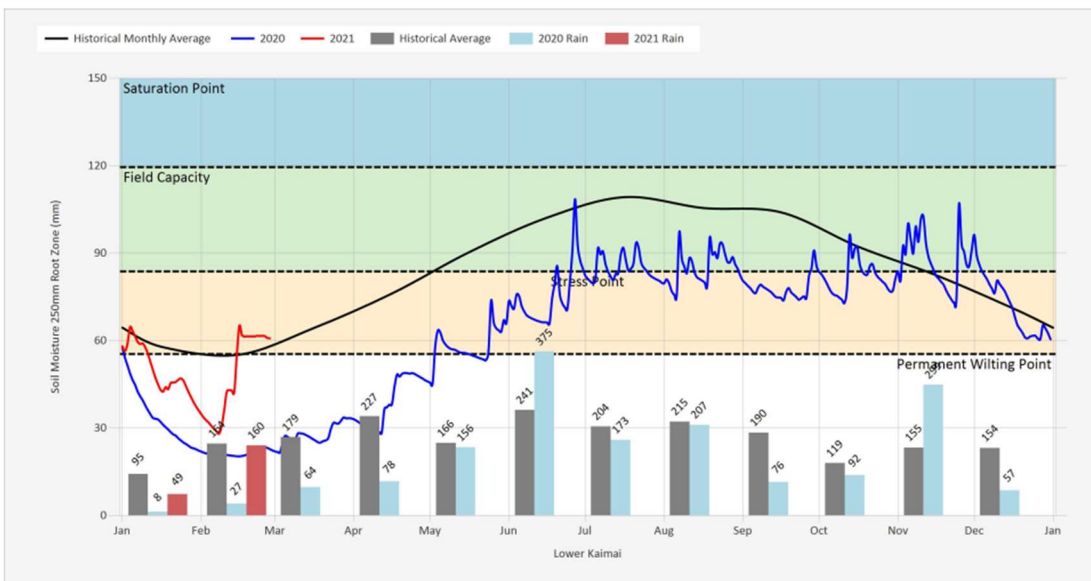


Figure 3 Lower Kaimai, Tauranga soil moisture.

Daily Soil Moisture Averages and Monthly Rainfall Totals

Soil Moisture: Rotorua Lakes, Rotorua at Oturoa Rd

Mar 1, 2021 | 1 of 1

Period Selected: 1921-03-01 00:00 to End of Record

Soil Moisture: Soil Moisture (Tot).Root Zone@DL230552, Rotorua at Upper Oturoa Rd
 UTC Offset: +12:00, Start Time: 2008-10-17 08:30:00, End Time: 2021-03-01 03:00:00
 Precipitation: Precip Total.Primary@DL230552, Rotorua at Upper Oturoa Rd
 UTC Offset: +12:00, Start Time: 2008-06-11 17:00:00, End Time: 2021-03-01 03:00:00

Units: mm

Units: mm

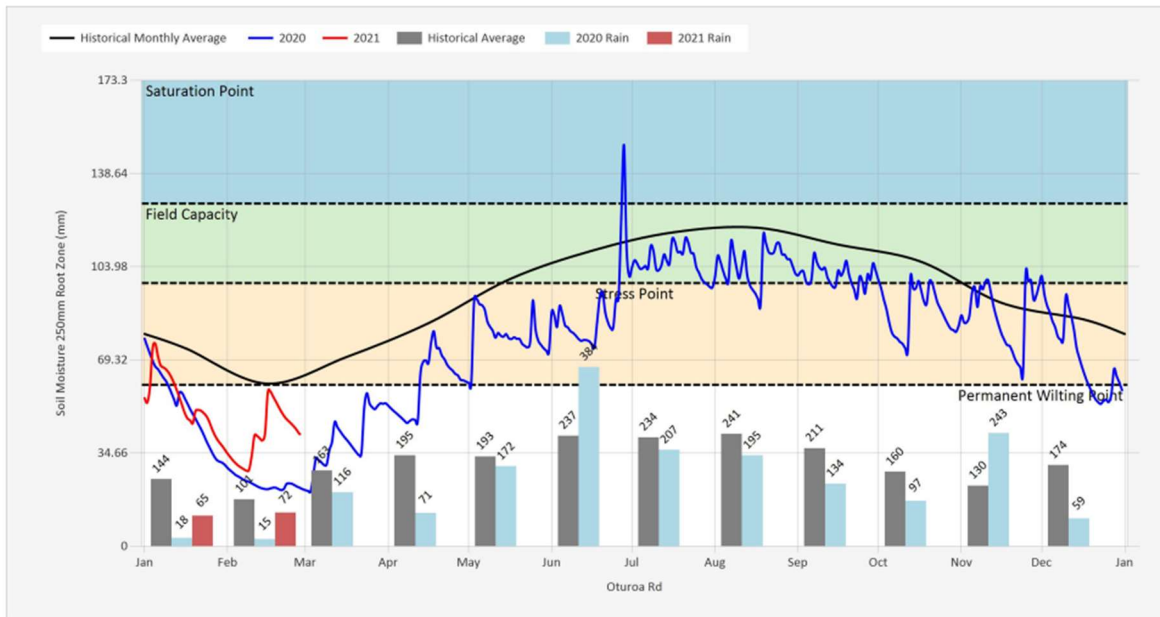


Figure 4 Oturoa Road, Rotorua soil moisture

Daily Soil Moisture Averages and Monthly Rainfall Totals

Soil Moisture: Kaituna, Maketu and Pongakawa, Pongakawa at Pongakawa Bush Rd

Mar 1, 2021 | 1 of 1

Period Selected: 1921-03-01 00:00 to End of Record

Soil Moisture: Soil Moisture (Tot).Root Zone@GM691816, Pongakawa at Pongakawa Bush Rd
 UTC Offset: +12:00, Start Time: 2010-07-28 00:00:00, End Time: 2021-03-01 03:15:00
 Precipitation: Precip Total.Primary@GM691816, Pongakawa at Pongakawa Bush Rd
 UTC Offset: +12:00, Start Time: 1996-06-26 11:30:01, End Time: 2021-03-01 03:14:00

Units: mm

Units: mm

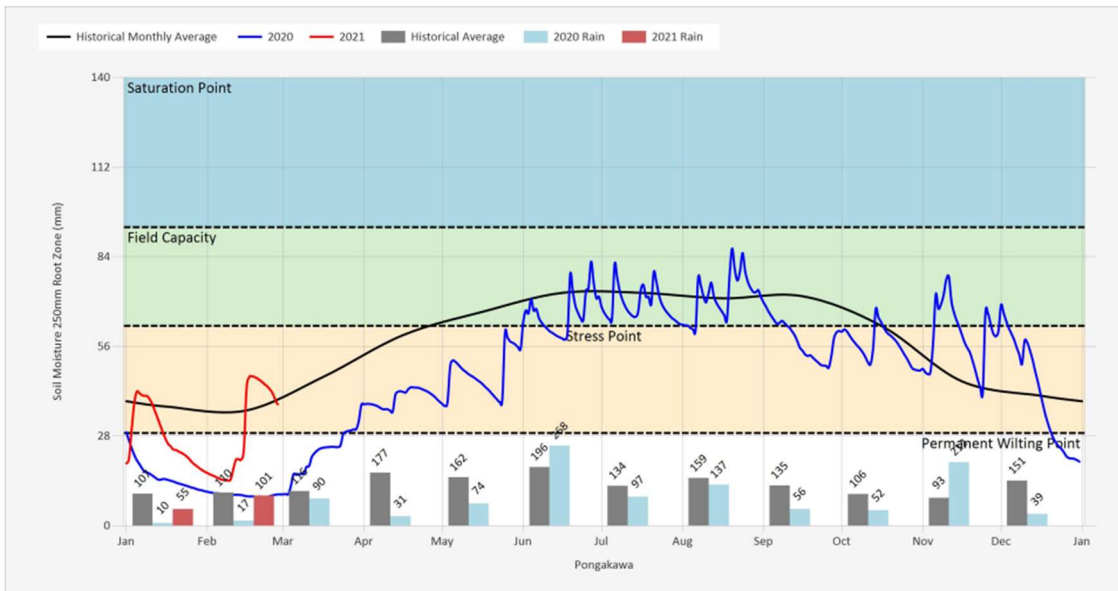


Figure 5 Pongakawa soil moisture

Daily Soil Moisture Averages and Monthly Rainfall Totals
 Soil Moisture, Rangitaiki, Rangitaiki Plains at Flax Road

Mar 1, 2021 | 1 of 1
 Period Selected: 1921-03-01 00:00 to End of Record

Soil Moisture: Soil Moisture (Tot),Root Zone@JM124696, Rangitaiki Plains at Flax Rd
 UTC Offset: +12:00, Start Time: 2011-03-07 07:50:00, End Time: 2021-02-28 12:00:00
 Precipitation: Precip Total,Primary@JM124696, Rangitaiki Plains at Flax Rd
 UTC Offset: +12:00, Start Time: 2011-03-07 07:50:00, End Time: 2021-02-28 12:00:00

Units: mm

Units: mm

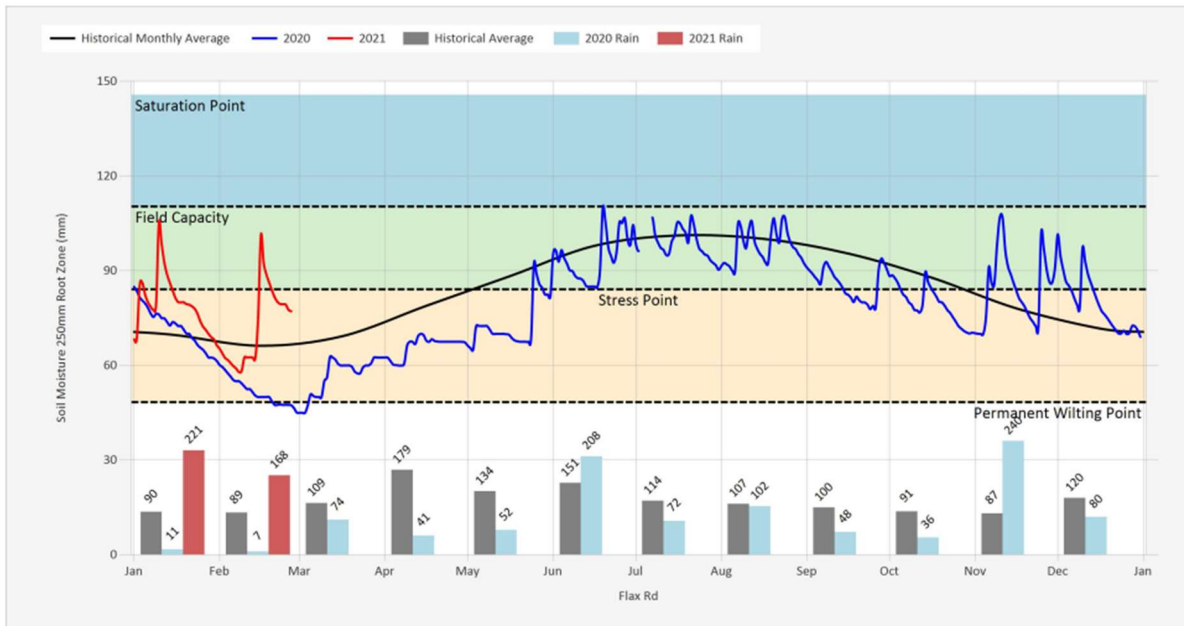


Figure 6 Rangitaiki Plains soil moisture

Report prepared by:
 Glenn Ellery, Data Services Manager

Report authorised by:
 Glenn Ellery, Data Services Manager

Next Situation Report will be issued at:
 April 2021

Time, date of approval:
 1 March 2021