WATER SHORTAGE ADVERSE EVENT

2021/22 SITUATION REPORT

BAY OF PLENTY REGIONAL COUNCIL TOI MOANA

SitRep number:	WSAE21-22: 01	**SitRep effective as at:**	11 October 2021

Key points since last SitRep

- This is the first SitRep leading into the summer of 2021/2022.
- NIWA forecasts a developing La Niña pattern but the lack of a strong climate driver may lead towards a degree of climate variability over the coming months.
- Soil moisture levels and river flows are about equally likely to be near normal or below normal, with high air temperatures present. Rainfall total are predicted by near normal.
- Generally, rivers flows are in a healthy state as we enter Spring, but there is an exception for those rivers that formed part of the Rotorua focus area last summer and have their headwaters in the Mamaku area behind Rotorua. These rivers are showing lowest ever flows for this time of the year which is of concern as we approach the warmer summer months.
- There has been a lack of groundwater recharge over the last three years.
- Groundwater levels are generally lower than in winter of 2018 but similar to last year.
- If dry conditions continue, in areas where there is lower rainfall expect some shallow bores to dry up. Smaller streams, springs and wetlands are likely to see reduced flow or dry up too.
- Similar to rainfall, recharge follows a seven-to-ten-year cycle. We appear to be in a lower recharge cycle.

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

NIWA forecasts October – December 2021 suggest:

- A lack of a strong climate driver will likely be associated with more variability in Aotearoa New Zealand's weather patterns during the coming months.
- La Niña Watch remains active, but the event is less advanced compared to this time last year. The short-term influence on New Zealand's climate likely won't be as substantial, but is expected to grow over the next three months.
- October-December rainfall is most likely to be near normal in the north of both islands and about equally likely to be near normal or below normal in all other regions. The first half of October, however, is expected to be unsettled, with periods of rain and possible thunderstorms.
- Temperatures are very likely to be above average across New Zealand. More north-easterly winds are expected to cause periods of warmth and humidity, such as in early October.
- NZ's coastal sea surface temperatures (SSTs) were 0.4˚C to 1.0˚C above average during September and are predicted to become more unusually warm by November-December.
- Soil moisture levels are most likely to be near normal or below normal for the Bay of Plenty.
- River flows are most likely to be near normal or below normal for the 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 very likely to be above average (60% chance).
- Rainfall totals are most likely to be near normal (45% chance).
- Soil moisture and river flows are about equally likely to be below normal (45% chance) or near normal (40% chance).

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

1 Rainfall

Year to date rainfall across the region varies from slightly lower than normal (70-90%) in the western and central parts of the region to slightly above normal (100-120%) in the eastern parts of the region.

September rainfall helped with the improving rainfall picture as normal to above normal rainfalls for the month were seen.

BAY OF PLENTY REGIONAL COUNCIL TOI MOANA

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

Rainfall Summary

Oct 1, 2021 | 1 of 2

Rainfall.Rainfall Summary Report

Period Selected: 2021-09-29 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	01/10/2021 09:00:00	0.0	0.0	10.0	10.5	0.0	206.0	103 %	1412.0	84 %
Te Puna at Odey Rd	01/10/2021 09:00:00	0.0	0.0	8.5	9.5	0.0	190.0		1289.2	
Wairoa at Lower Kaimai	01/10/2021 09:00:00	0.0	0.0	15.0	16.5	0.0	192.5	123 %	1319.0	92 %
Ngongotaha at Relph Rd	01/10/2021 09:00:00	0.0	0.0	4.5	7.5	0.0	192.0	97 %	1219.2	84 %
Rotorua at Upper Oturoa Rd	01/10/2021 09:00:00	0.0	0.0	7.5	11.0	0.0	197.5	89 %	1239.8	70 %
Waimapu at Glue Pot Rd	01/10/2021 09:00:00	0.0	0.0	5.5	6.0	0.0	172.0	110 %	1327.8	87 %
Waimapu at McCarrolls	01/10/2021 09:00:00	0.0	0.5	4.5	5.5	0.5	139.0	109 %	925.0	71 %
Rotorua at Whakarewarewa	01/10/2021 09:00:00	0.0	0.0	2.5	11.0	0.0	166.5	149 %	962.6	93 %
Paraiti (Mangorewa) at Kaharo	01/10/2021 08:00:00	0.0	0.0	2.0	5.0	0.0	202.5	129 %	1329.7	91 %
Okaro at Okaro Rd	01/10/2021 09:00:00	0.0	0.0	0.5	5.5	0.0	139.5	130 %	942.4	91 %
Lake Rotoiti at Okawa Bay	01/10/2021 09:00:00	0.0	0.0	0.5	6.0	0.0	160.0	119 %	1055.1	85 %
Tikitere at SH30	20/09/2021 12:00:00		0.0	0.0	0.0	0.0	113.8		1236.5	
Paraiti (Mangorewa) at Upper	01/10/2021 09:00:00	0.0	0.0	4.5	7.0	0.0	220.0	133 %	1525.4	96 %
Paraiti (Mangorewa) at Link	01/10/2021 09:00:00	0.0	0.0	2.5	4.5	0.0	195.0	136 %	1299.0	93 %
Raparapahoe at Collins Lane	01/10/2021 09:00:00	0.0	0.0	5.0	6.5	0.0	143.0	95 %	941.5	71 %
Kaituna at Marshalls Farm	01/10/2021 09:00:00	0.0	0.0	4.5	11.5	0.0	137.5	107 %	822.5	71 %
Kaituna at Te Matai	01/10/2021 09:00:00	0.0	0.0	2.0	4.0	0.0	136.5	133 %	976.5	90 %
Rangitaiki at Kokomoka (Bore 1	01/10/2021 09:10:00	0.0	0.0	4.0	21.0	0.0	151.5	113 %	1111.0	95 %
Pongakawa at Pongakawa Bush	01/10/2021 09:00:00	0.0	0.0	4.0	8.0	0.0	160.5	129 %	1078.5	86 %
Outlet at Waitangi Soda Spring	01/10/2021 09:00:00	0.0	0.0	2.5	7.0	0.0	195.5		1455.6	
Te Whaiti at Minginui	01/10/2021 09:00:00	0.0	0.0	4.0	13.0	0.0	177.0		891.2	
Kawerau at Plunket St	01/10/2021 09:00:00	0.0	0.0	0.0	10.5	0.0	228.5		1238.3	
Tarawera at Hogg Rd	01/10/2021 09:00:00	0.0	0.0	0.5	9.0	0.0	238.9		1334.6	
Ohinekoao at Harris Saddle	01/10/2021 09:00:00	0.0	0.0	2.5	8.5	0.0	169.0	119 %	1290.5	85 %
Galatea Basin at Horomanga R	01/10/2021 09:00:00	0.0	0.0	0.0	8.5	0.0	138.0	134 %	879.4	94 %
Waihua at Clearing	01/10/2021 09:00:00	0.0	0.0	0.0	9.5	0.0	183.5	133 %	1234.5	91 %
Rangitaiki at Te Teko	01/10/2021 09:00:00	0.0	0.0	0.5	9.5	0.0	157.0	157 %	1111.5	110 %
Edgecumbe at Edgecumbe	01/10/2021 09:00:00	0.0	0.0	0.0	7.5	0.0	130.0	112 %	1012.2	93 %
Tarawera at Awakaponga	01/10/2021 09:05:00	0.0	0.0	0.0	5.5	0.0	147.0	144 %	1102.5	102 %
Rangitaiki Plains at Flax Rd	30/09/2021 12:00:00		0.0	0.0	7.0	0.0	143.0	135 %	1133.0	102 %

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	01/10/2021 09:00:00	0.0	0.0	1.0	6.5	0.0	96.0	117 %	721.5	87 %
Whakatane at Kopeopeo	01/10/2021 09:00:00	0.0	0.0	0.0	4.5	0.0	131.5	129 %	972.3	94 %
Rangitaiki at Thornton	01/10/2021 09:00:00	0.0	0.0	0.0	5.5	0.0	122.0	128 %	882.5	91 %
Whakatane at Huiarau Summit	01/10/2021 09:00:00	0.5	0.5	10.0	31.5	0.5	268.5	135 %	1998.7	110 %
Whakatane at Huitieke rain	01/10/2021 09:00:00	0.0	0.0	0.5	11.5	0.0	233.5	173 %	1349.5	121 %
Whakatane at Awahou Rd	01/10/2021 09:00:00	0.0	0.5	0.0	6.0	0.5	197.5		1494.7	
Wainui-te-whara at Munro's	01/10/2021 09:00:00	0.0	0.0	0.0	6.5	0.0	166.2	127 %	1293.0	110 %
Tauranga at Omahuru (Ogilvies	01/10/2021 09:05:00	0.0	0.0	0.0	0.0	0.0	259.3		1619.9	
Nukuhou at Nukuhou North	01/10/2021 09:00:00	0.0	0.0	0.0	7.5	0.0	183.3		1449.0	
Ohope Spit at Ohope Golf Coure	01/10/2021 09:00:00	0.0	0.0	0.0	5.5	0.0	129.5		986.9	
Waioeka at Koranga	01/10/2021 09:00:00	0.0	0.0	5.0	18.0	0.0	235.5	118 %	1215.7	75 %
Waioeka at Cableway	01/10/2021 09:05:00	0.0	0.0	3.0	27.0	0.0	367.0	165 %	2101.9	113 %
Waioeka at Mouth of Gorge	01/10/2021 09:05:00	0.0	0.0	0.5	15.0	0.0	255.8	178 %	1642.6	125 %
Otara at Opotiki Wharf	01/10/2021 09:00:00	0.0	0.0	0.5	9.0	0.0	175.5	174 %	1112.9	110 %
Otara at Tutaetoko	01/10/2021 09:00:00	0.0	0.0	1.5	24.0	0.0	337.0	160 %	2035.5	111 %
Otara at Browns Bridge	01/10/2021 09:00:00	0.0	0.0	0.0	9.5	0.0	198.7	163 %	1226.1	112 %
Pakihi at Pakihi Station	01/10/2021 09:05:00	0.0	0.0	1.0	26.5	0.0	330.5	170 %	1922.5	114 %
Pakihi at Rakanui	01/10/2021 09:00:00	0.0	0.0	5.5	24.5	0.0	288.5	153 %	1572.6	103 %
Haparapara at Haparapara	01/10/2021 09:00:00	0.0	0.0	16.0	48.5	0.0	623.0	159 %	3434.5	103 %

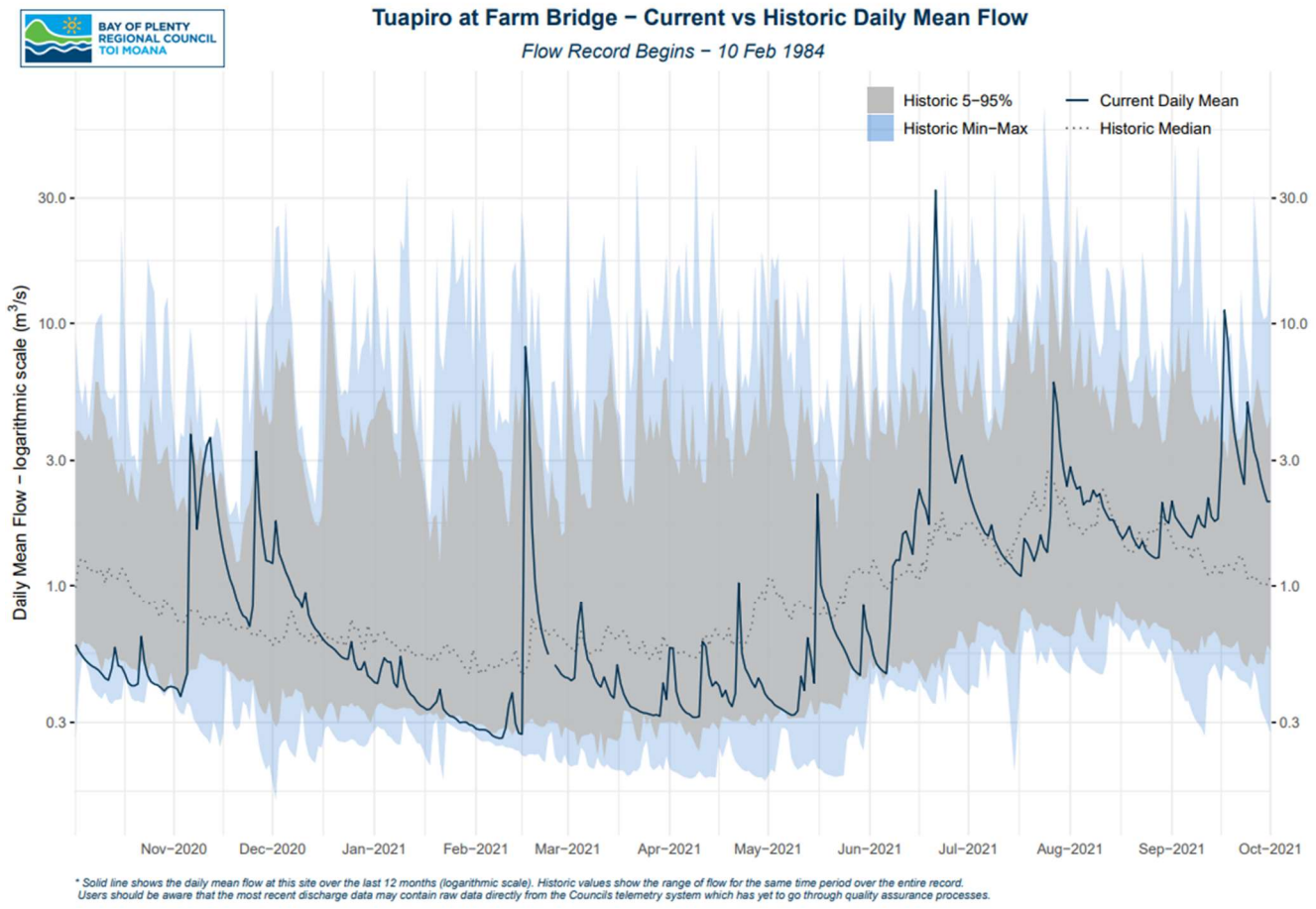
Table 1 Rainfall statistics for 2021.

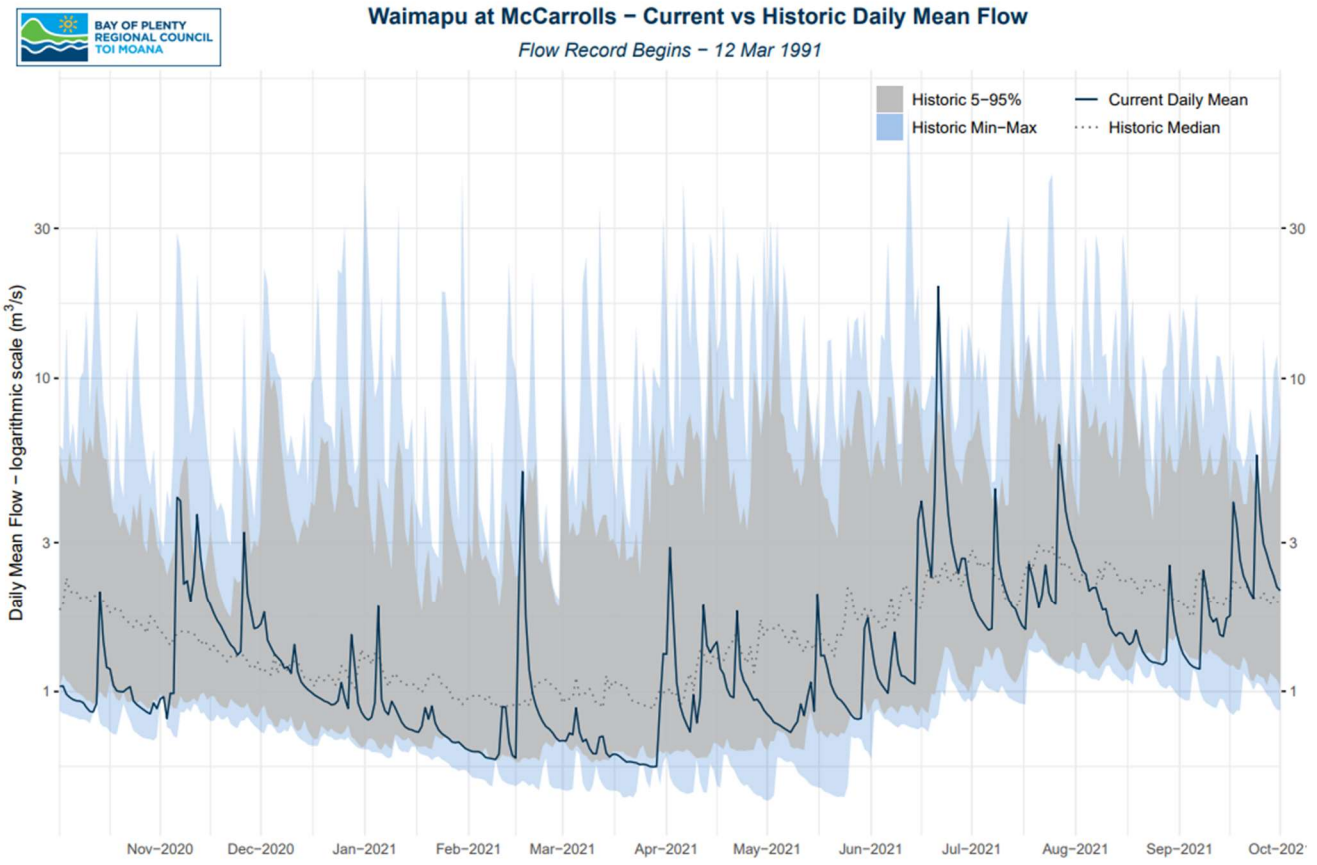
2 River Flows

Generally rivers flows are in a healthy state as we enter spring, but there is an exception for those rivers that formed part of the Rotorua focus area last summer and have their headwaters in the Mamaku area behind Rotorua. The Kopurererua, Ngongotahā and Paraiti rivers are all showing lowest ever recorded flow for this time of the year. Examples of these affected streams can be seen in 2.1 & 2.3 below.

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

2.1 Western BOP flow monitoring sites

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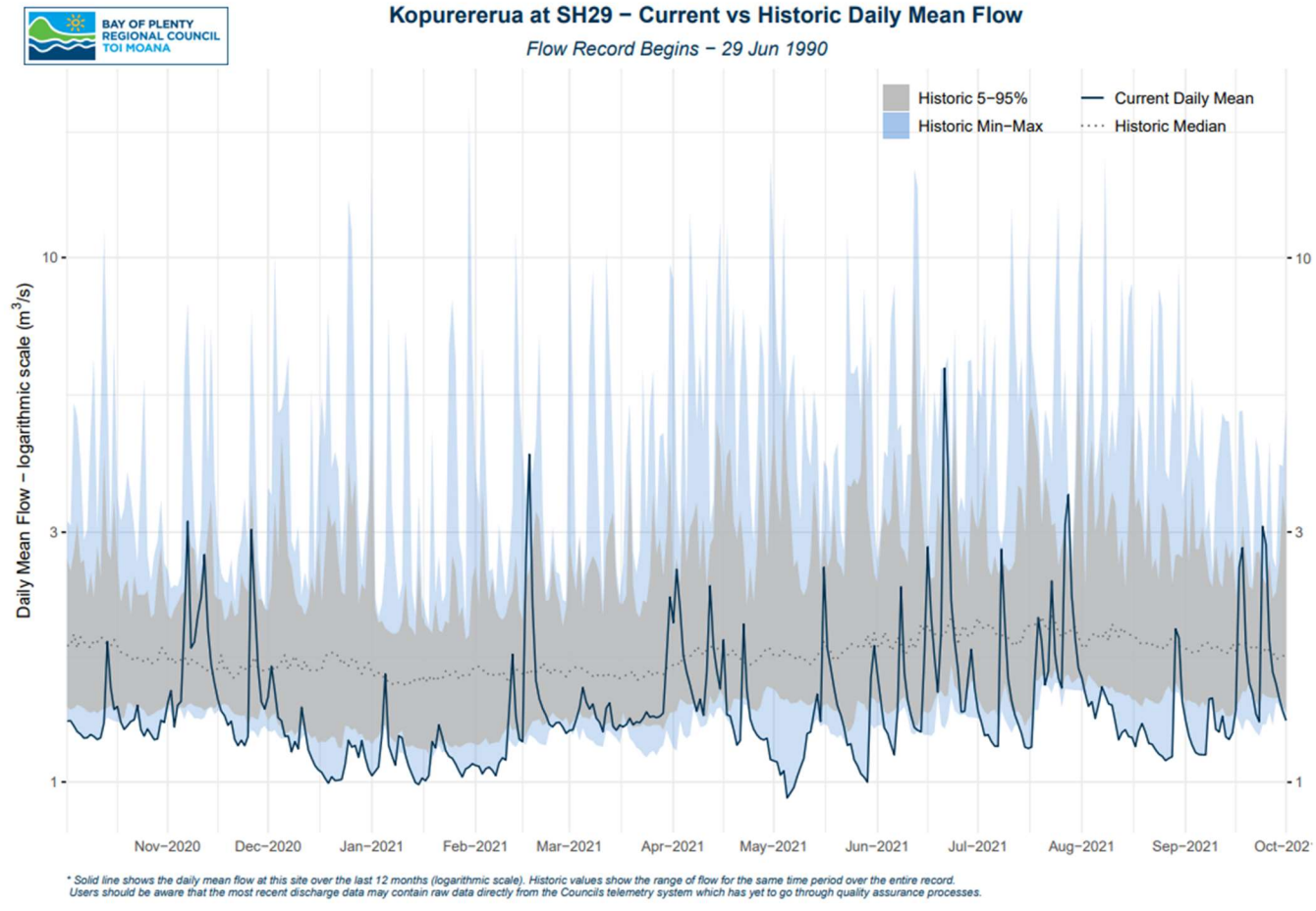
Waimapu at McCarrolls − Current vs Historic Daily Mean Flow
Flow Record Begins − 12 Mar 1991
Historic 5−95%
Historic Min−Max
Current Daily Mean
Historic Median
Daily Mean Flow − logarithmic scale (m³/s)
30
10
3
1
Nov−2020
Dec−2020
Jan−2021
Feb−2021
Mar−2021
Apr−2021
May−2021
Jun−2021
Jul−2021
Aug−2021
Sep−2021
Oct−202
* 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.


BAY OF PLENTY REGIONAL COUNCIL TOI MOANA
Kopurererua at SH29 − Current vs Historic Daily Mean Flow
Flow Record Begins − 29 Jun 1990
Historic 5−95%
Historic Min−Max
Current Daily Mean
Historic Median
Daily Mean Flow − logarithmic scale (m³/s)
10
3
1
Nov−2020
Dec−2020
Jan−2021
Feb−2021
Mar−2021
Apr−2021
May−2021
Jun−2021
Jul−2021
Aug−2021
Sep−2021
Oct−202
* 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.
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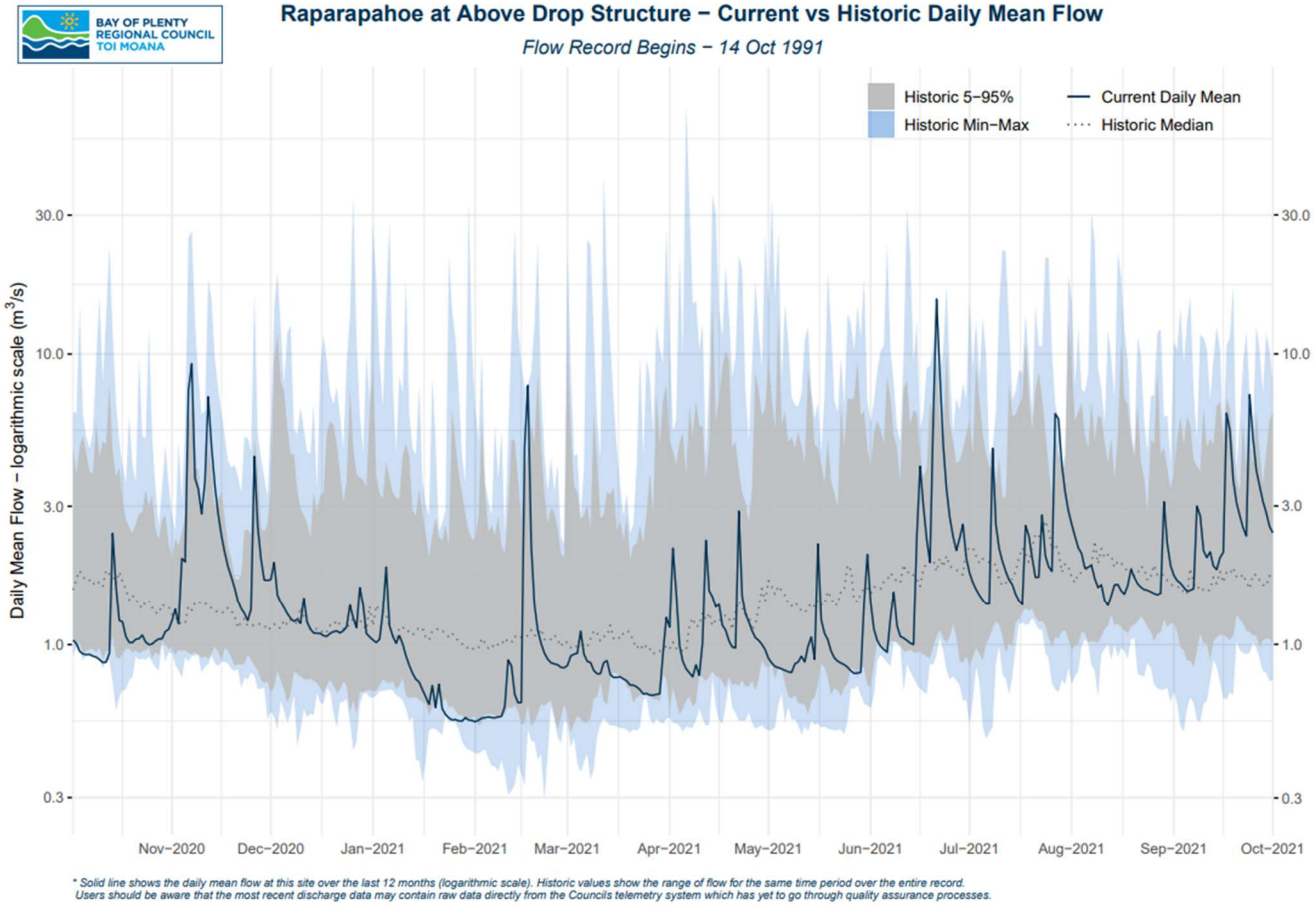
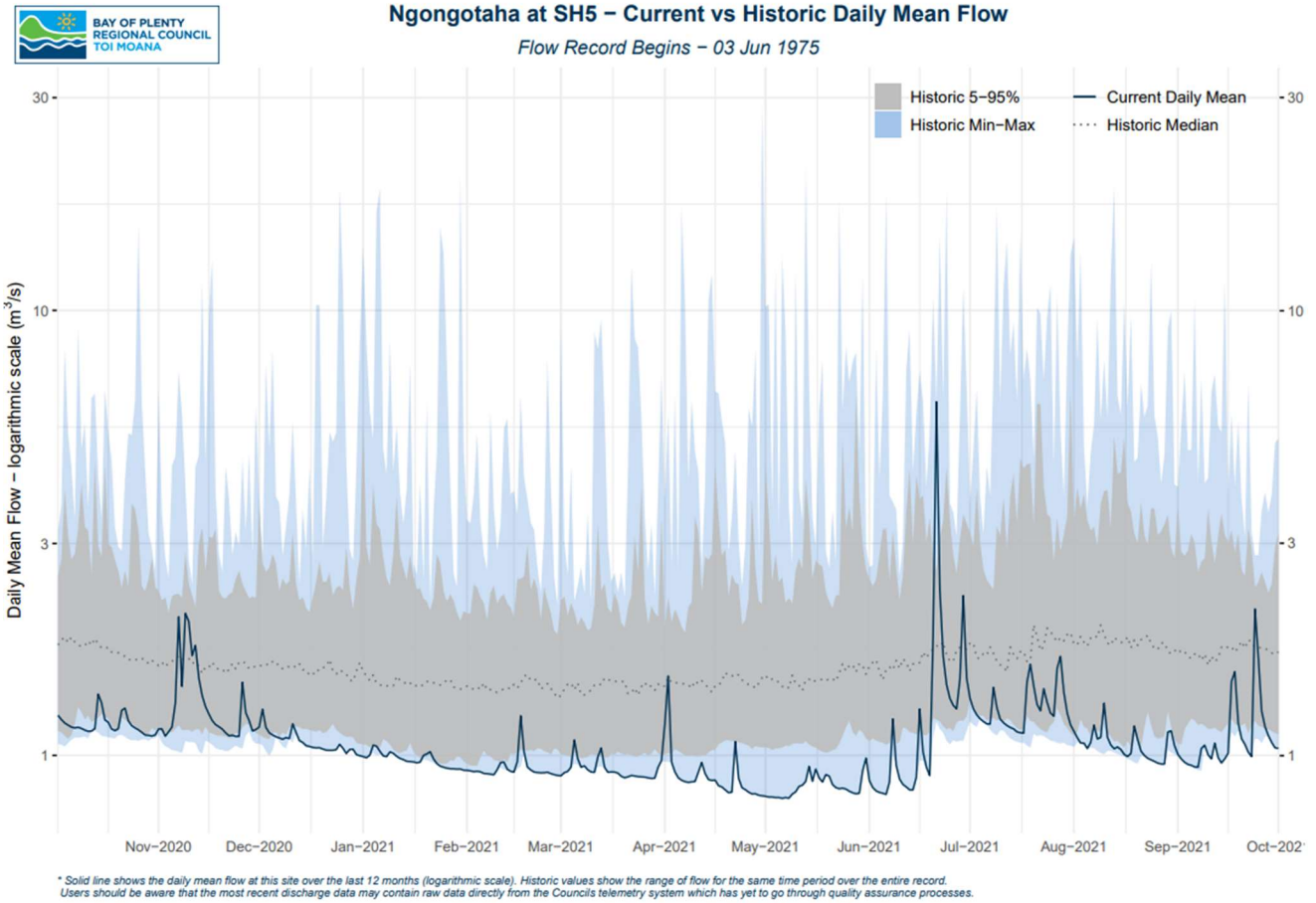
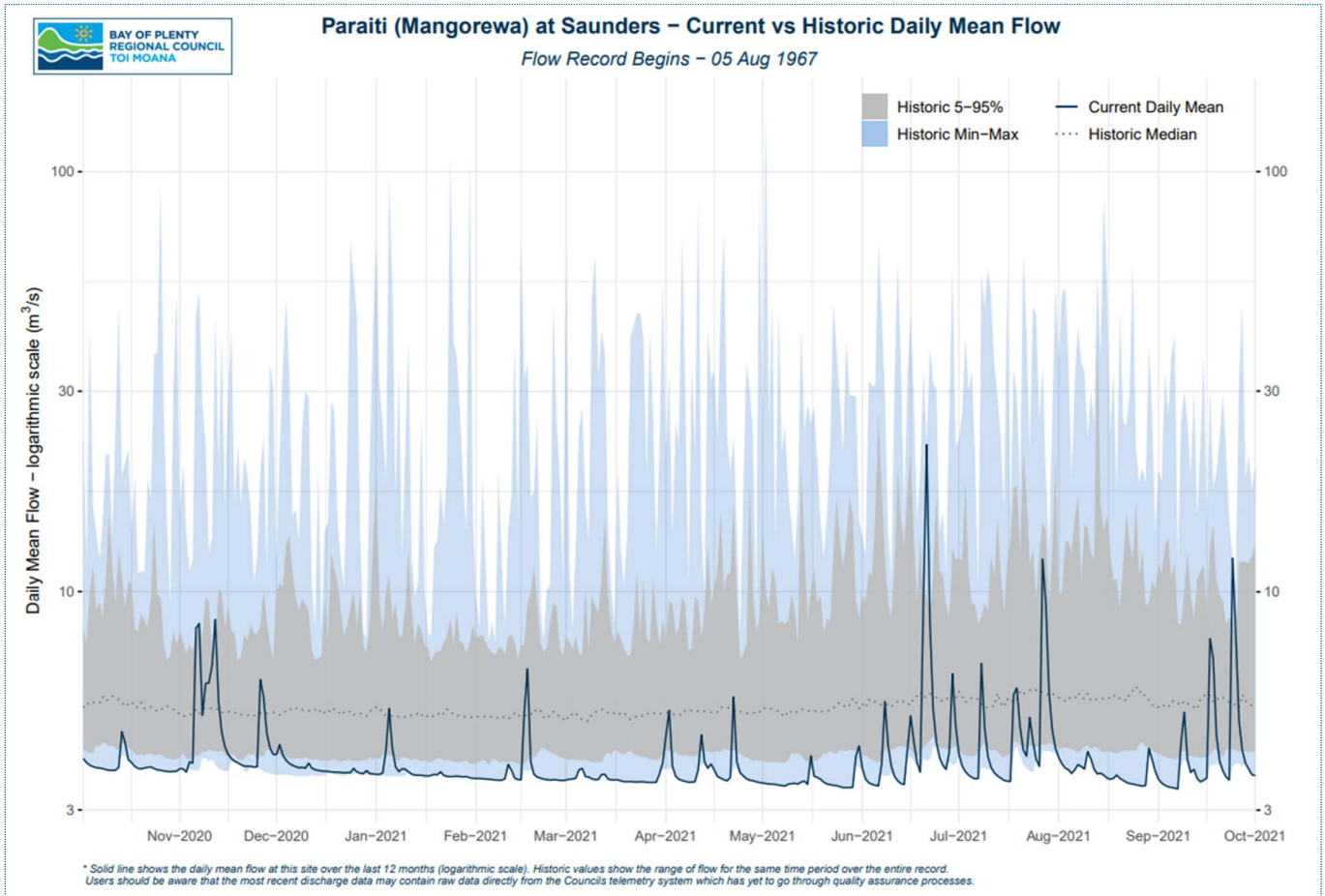
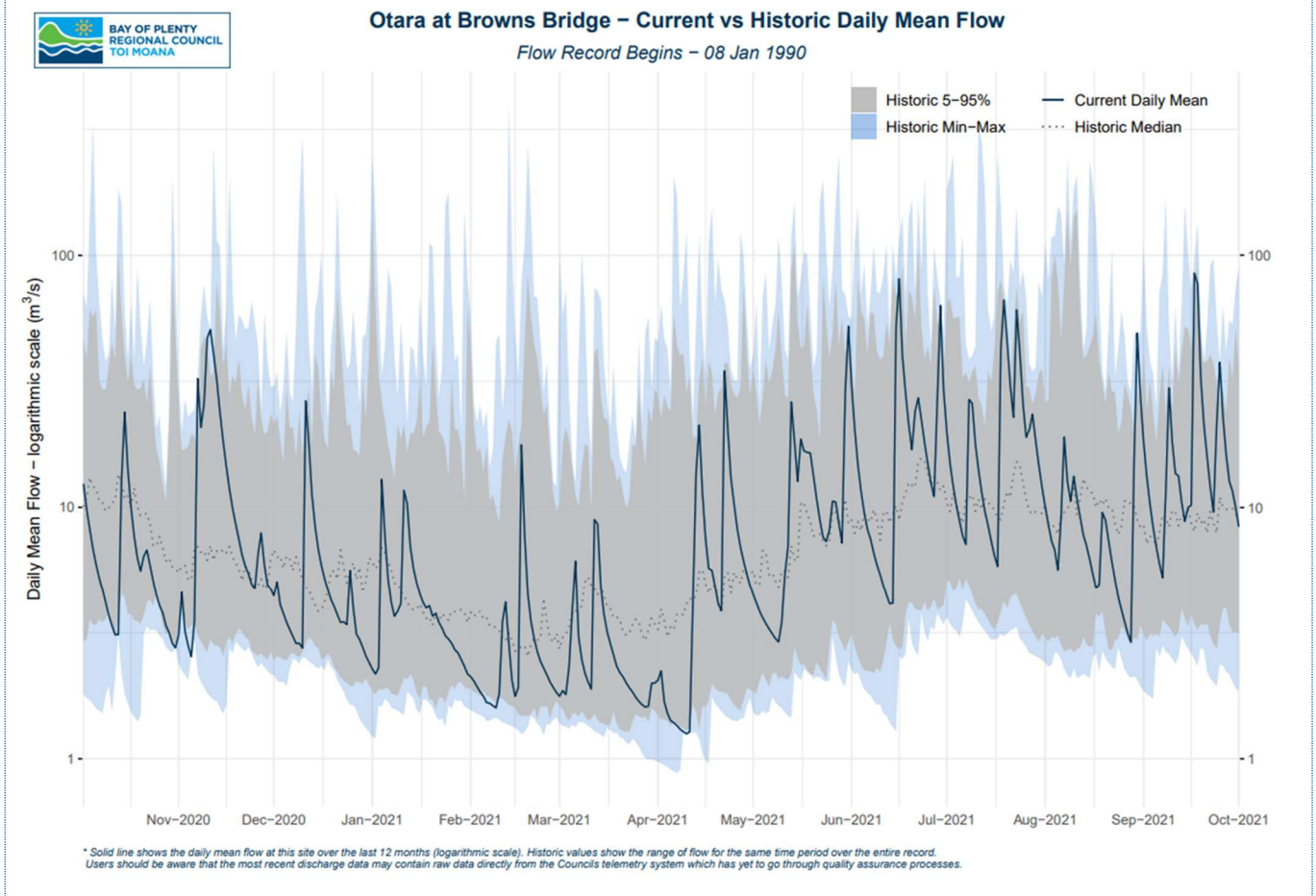


2.2 Central BOP flow monitoring sites





2.3 Eastern BOP flow monitoring sites



Report prepared by: Glenn Ellery, Data Services Manager Raoul Fernandes, TL Science – Water Quantity	**Report authorised by:** Steve Pickles, Water Shortage Event Manager **Date of approval:** 11 October 2021
Next Situation Report will be issued: Early November 2021	