GISBORNE / TAIRĀWHITI WATER SITUATION REPORT

MAY 2024

Te Kaunihera o Te Tairāwhiti GISBORNE DISTRICT COUNCIL

About

A summary for the end of the month, of the current and forecast water resources situation, is provided in this report. The intent of this report is to provide an overview of the trend of water resources in the region over time. Water status is categorised using indicator sites which are presented against their Monthly Normals[1] for rainfall and Long-Term Averages (LTA) for river flow. GDC data is combined with other national data sets such as the New Zealand Drought Index (NZDI) from NIWA to demonstrate the status of water resources in the region. Groundwater status is also presented later in the report.

Indicator sites are distributed across the region and are selected due to their length of record[2] and/or geographic location. Categorisation is provided in **Table 1**.

10 rainfall indicator sites have been selected from the 59 rain gauges in the district, and 7 river flow sites have been selected from the 29 river flow sites across the region.

Table 1: Legend for the Water Situation report and metrics for each category.

Description / Category	Raingauge Indicator Sites (% of rain compared to Monthly Normals)	River Flow Indicator Sites (Q value compared to Long-Term Average[3])
Exceptionally High	<200%	More than the Q5
Notably High	150% to 200%	Between the Q5 and Q10
Above Normal	125% to 150%	Between the Q10 and Q30
Normal	75% to 125%	Between the Q30 and Q70
Below Normal	50% to 75%	Between the Q70 and Q95
Notably Low	25% to 50%	Between the Q95 and Q99
Exceptionally Low	>25%	Less than the Q99

[1] Monthly Normals are sourced from NIWA. Refer to NIWA for information on how these are calculated.
[2] Indicator sites have different lengths of record so the respective LTAs are relative to the site and should not be compared against each other. The shortest record is Oweka which goes back to 2014 and the longest record is at Kanakanaia (flow) which goes back to 1966. There is partial data prior to 1966 at Kanakania but this is not considered reliable.
[3] 'Q' statistics are generated using long term records to show the current flow relative to its historic record. This does not account for future flow ranges as a result of climate change. A Q5 means a flow that is exceeded less than 5% of the time meaning a very high or 'flood' flow.

End of May 2024 Summary

Significant rainfall was experienced in Tairāwhiti between the 21st and 23rd of May. The region south of Ūawa experienced the heaviest rainfall, with the most significant accumulations in Te Arai catchment (south of the region). This rainfall has alleviated dry conditions, particularly in the Poverty Bay flats that has been observed in the last 3 months.

Monthly mean river flows across Tairāwhiti ended the month between the 'Exceptionally Low' to 'Normal' range. Flows are now considered to be within their normal or near their normal range for the majority of indicator sites. Oweka is the exception; however, the historical record at this site is much shorter relative to other sites in the region so is likely skewed. We are now transitioning out of El Niño.

Rainfall

A wet May followed on from a very dry 3 months. Due to the amount of rainfall in May, rainfall totals over the previous 3 to 6 months are now considered to be near normal (i.e., Below Average or Average) across most of the region despite the drier than average Feb-April. Refer to **Figure 1**.

Rainfall totals at the available rainfall indicator sites show a range from 'Notably Low' to 'Exceptionally High' for the month of May. The wet weather event at the end of May has reduced dry conditions across the region as per **Figure 2**. Sites in the north of the region received less rainfall relative to their LTAs with Pakihiroa receiving 32% of what it would normally receive for May.

Please note that in April data was not available for Pakihiroa, Ruatoria and East Cape. The damaged radio receiver has now been repaired, and the data for this period is now available, and is presented in this report.

River Flow Data

River flow ranges from Exceptionally Low to Normal conditions across the district.

Table 2: River flow data for each site as of the 31/05/2024 relative to their LTAs for that date.

Site	Status at the end of May 2024
Waipaoa River at Matawhero Bridge	Below Normal
Waipaoa River at Kanakanaia	Below Normal
Te Arai River at Pykes Weir	Normal
Whakaahu Stream at Brunton Rd	Below Normal
Hikuwai River at Willowflat	Normal
Waiapu River at Rotokautuku Bridge (SH35)	Below Normal
Oweka River at SH35 Bridge	Exceptionally Low

Groundwater Data

For the seasonal tracking of groundwater levels, the aquifer statuses indicate the comparison of the current groundwater levels against percentiles of the three-month moving average. This uses the entire history of each bore's groundwater levels, often dating back to the 1980s.

Groundwater status is categorised using the below categories:

Table 3: Groundwater status categories

Description / Category	Groundwater
Very High	*90-99th Percentile*
High	*75-90th Percentile*
Normal	*25-75th Percentile*
Low	*25-10th Percentile*
Very Low	*<10th Percentile*

Aquifer statuses are chosen as the average result from representative bores in each aquifer. It is important to note that the statuses in this report are only short-term seasonal views. Prior to the intense recharge events of 2023, the Makauri and Matokitoki aquifers were known to be in a long-term decline. Historically the aquifers have returned to this decline shortly after major recharge events. This is likely to happen again.

Table 4: Groundwater indicator site status

Aquifer	Summer 2023/24	Autumn 2024
Makauri	High	Normal
Waipaoa Gravel	Normal	Low
Shallow Fluviatile	Very High	Very High
Matokitoki	Normal	High
Te Hapara Sands	Very High	Normal

Drought Status

As at the end of May the dry conditions observed in the previous 3 months have largely been alleviated. This is reflected in the NZDI.

The NZDI is an index of different indicators of drought helping to define when the environment is dry, very dry, extremely dry, in drought or in severe drought. It has been created by NIWA which has made a regional data set available for presentation in this report. NZDI data is presented in **Figure 2**.

The NZDI shows that there are some limited dry conditions in the Poverty Bay flats, but the rest of the region is not considered to be dry at the moment.

Refer to the Drought forecasting dashboard (niwa.co.nz) for the modelled geographic distribution of drought conditions in the next 35 days.

3 Month Forecast

Forecast data are sourced from NIWA and are for the Gisborne and Hawkes Bay regions and are for the period June to August:

- Temperatures are about equally likely to be above average (45% chance) or near average (40% chance).
- Rainfall totals are about equally likely to be below normal (40% chance) or near normal (35% chance).

- Soil moisture levels are most likely to be near normal or below normal (45% chance each)

Probabilities are assigned in three categories: above average, near average, and below average. Please note these differ from the GDC data. The rainfall forecast summary for the next 3 months is presented in **Figure 3**.

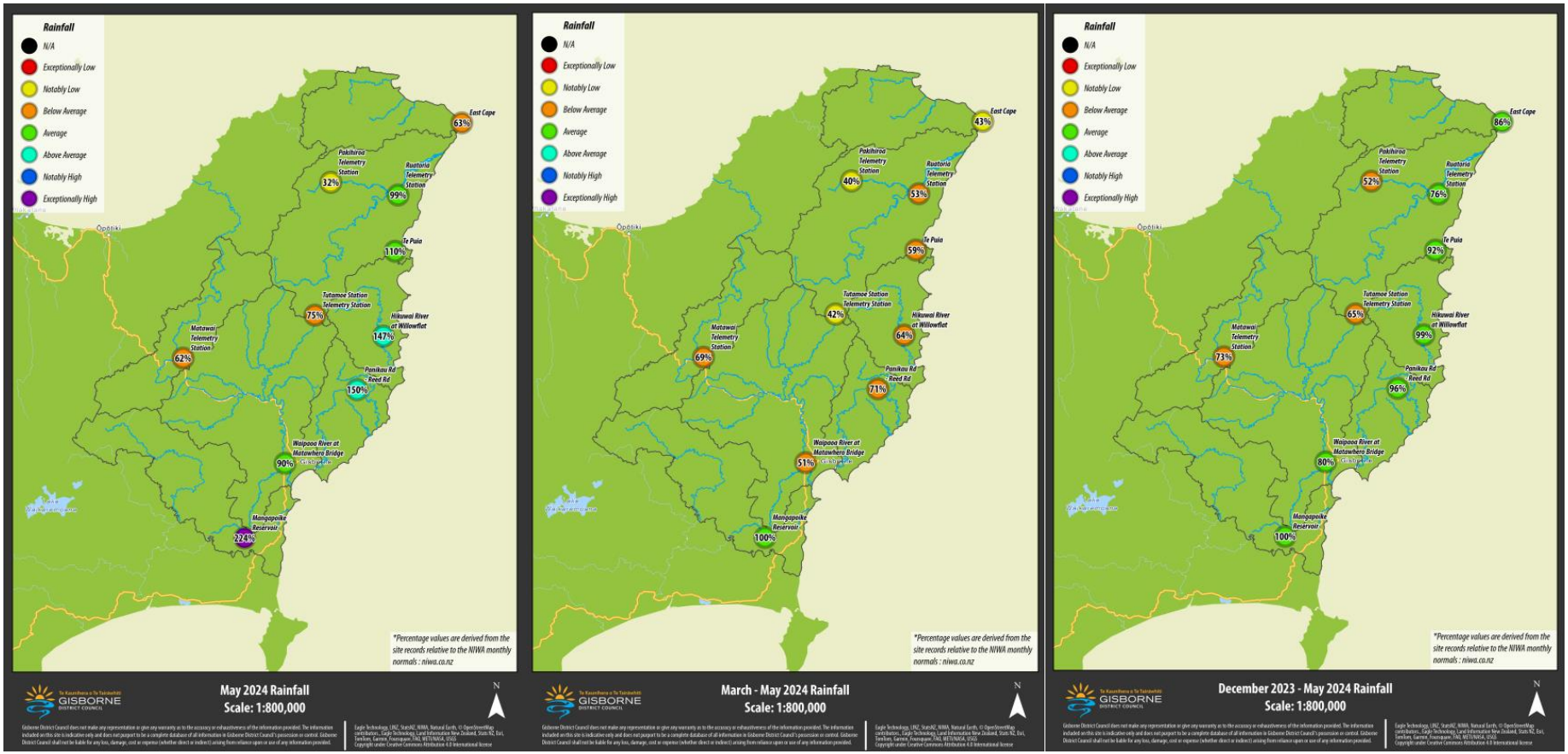

Figure 1: Rainfall maps showing 10 indicator sites across GDC and rainfall at these sites relative to their Monthly Normals for the last month, 3-months and 6-months.

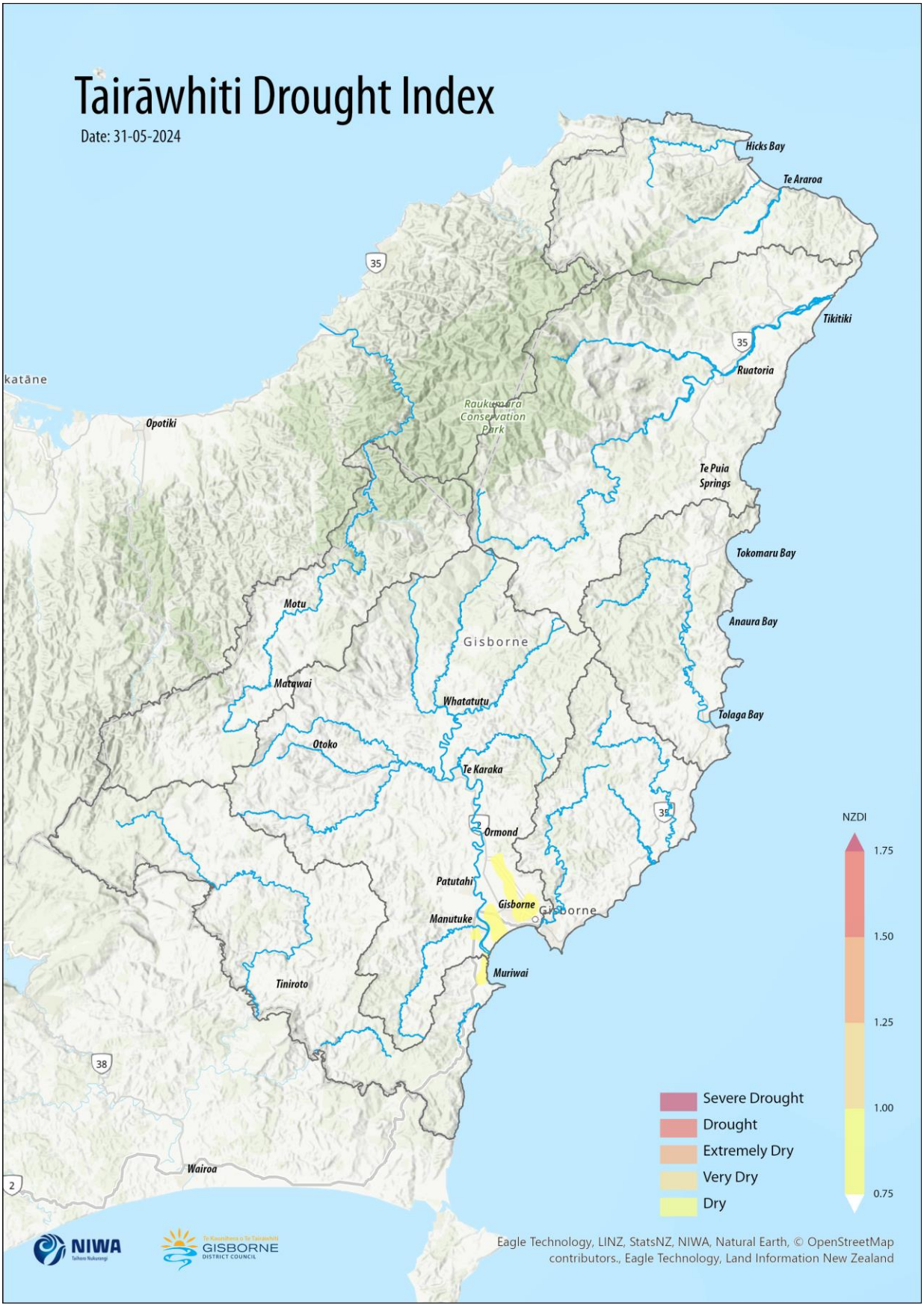

Figure 2: NZDI data for GDC as of the 31st May 2024

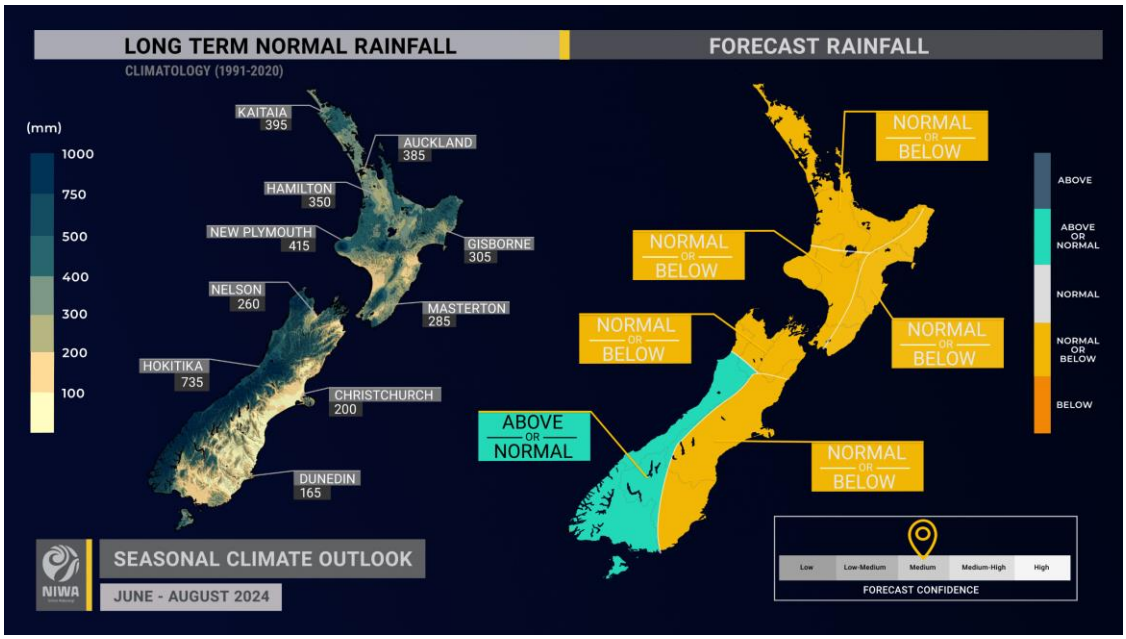

Figure 3: NIWA rainfall forecast for the next 3 months (June to August)