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Auckland Hydrology Situation Report

Research and
Evaluation Unit

RIMU



Rainfall | Soils | Rivers | Aquifers

Regional summary

The New Zealand Drought Index for the Auckland Region remains below the first category of Dry. Regional monthly rainfall was 24% above the long-term average for August. A significant portion of the monthly total came from the storm event on 30-31 August. The most intense areas of the storm were in central-west Auckland where rainfall intensities were recorded up to 93mm/hour. Soil moisture varied considerably across the region, with low soil moisture still recorded at southern sites. All rivers are above the mean annual low flow (MALF), with record-breaking floods recorded in the Kaipara River and streams of the western Waitematā Harbour. Groundwater levels are variable, but low levels persist in deep aquifers and those which respond slowly to rainfall.

Current drought index

The New Zealand Drought Index (NZDI) is used to determine the severity of drought conditions across the country. The latest NZDI value for Auckland was 0.18 (30 August 2021), which is below the first NZDI category of Dry (0.75-1.00). A chart of the NZDI for the Auckland region is shown in Figure 1.

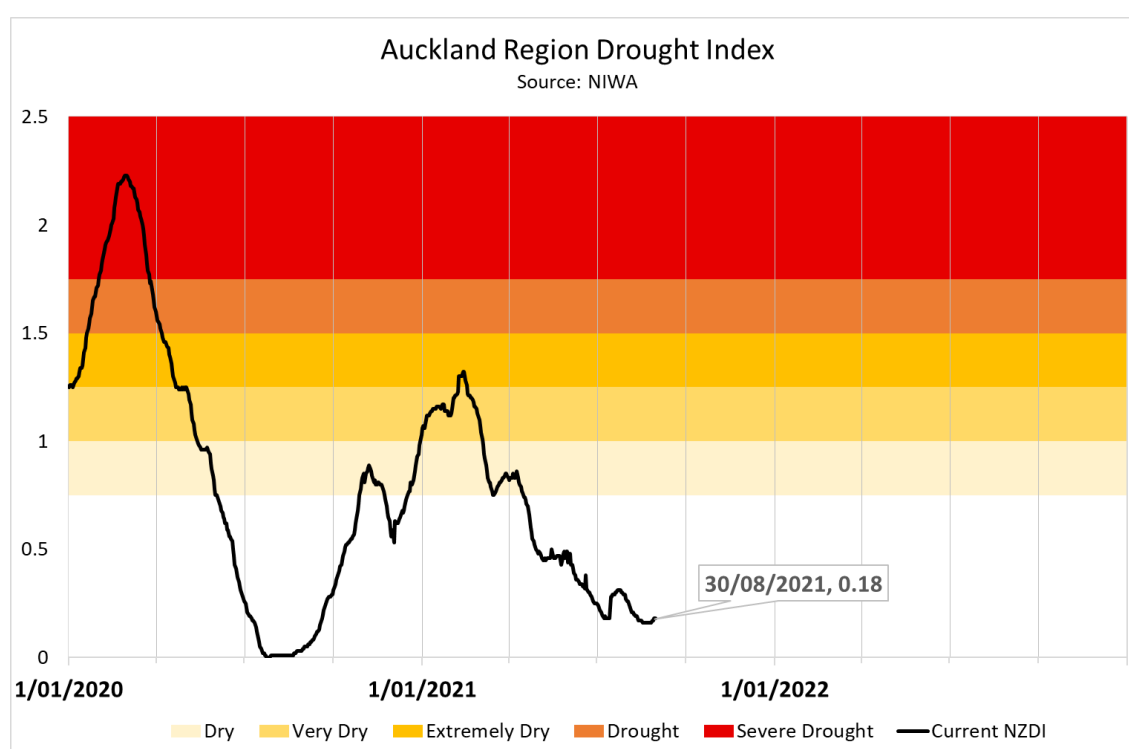


Figure 1: Auckland Region Drought Index 2020-2022 (data source: NIWA).

Rainfall

Rainfall for August ranged from 64 to 344mm with a regional average of 160mm, approximately 24% above the long-term average (Figure 2). Rainfall totals as of 29 August were less than the long-term average for most sites. However, a significant portion the monthly total came during the storm event of 30-31 August, where sites in the area between Piha, Henderson Valley, and Kumeu received nearly 200mm in this one event. Rainfall intensities reached 93mm/hr (10-min duration) at the Forest Hill site, southwest of Henderson Valley.

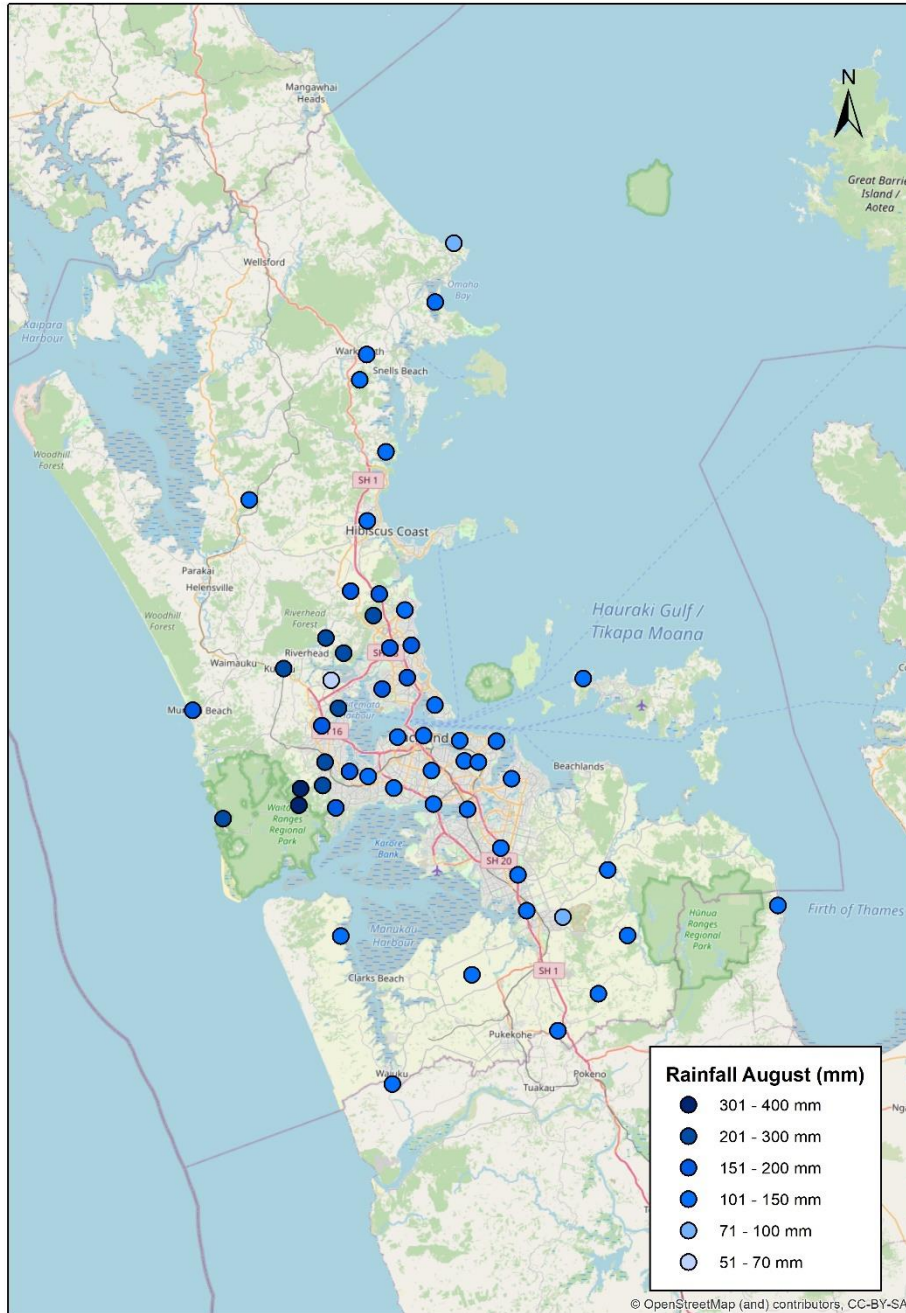


Figure 2: Total rainfall (mm) for August 2021.

Soil moisture

Soil moisture was highly variable, ranging from very low for this time of year in the south to very high for this time of year in some northern sites. All sites are shown in Figure 3.

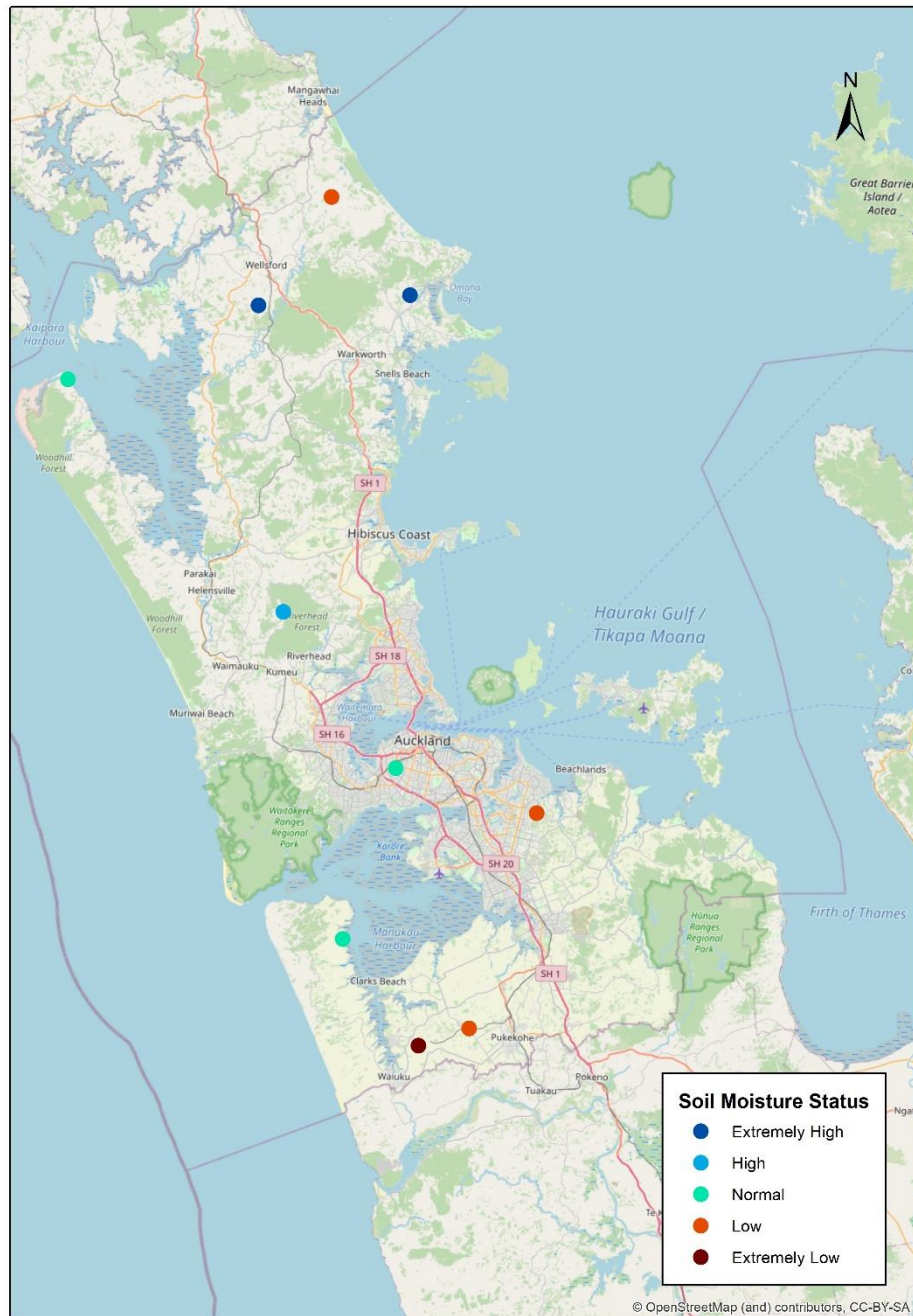


Figure 3: Soil moisture category relative to long-term statistics on 1 September 2021.

River flows

All sites are above the mean annual low flow (MALF). Flooding occurred on several rivers and streams in the central-west area following the storm event on 30-31 August, including the largest flood ever recorded on the Kaipara River since records began in 1978. The locations of sites and the flow relative to MALF are shown in Figure 4.

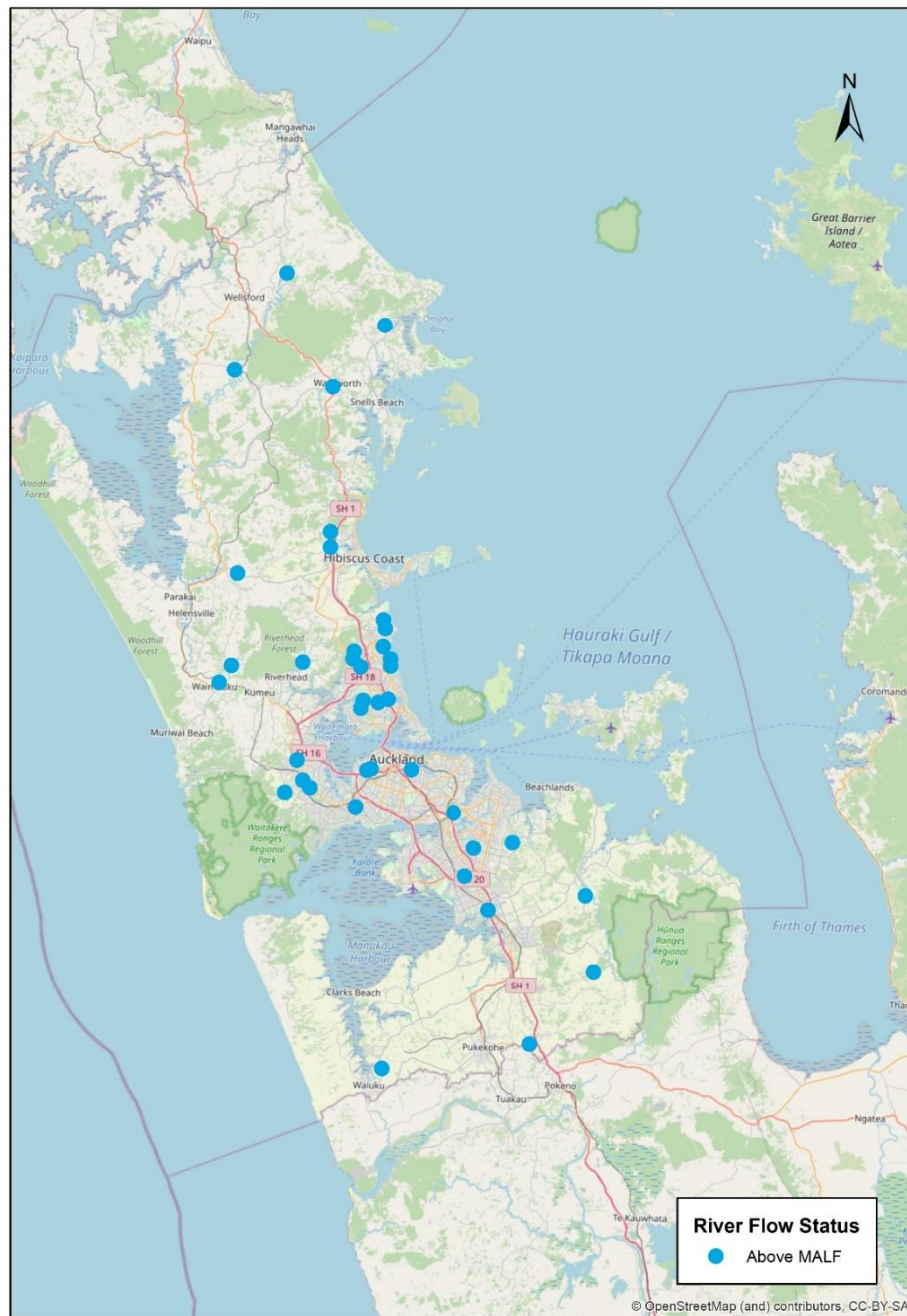


Figure 4: River flow on 1 September 2021 relative to the mean annual low flow (MALF).

Aquifer water levels

Volcanic aquifers in the Auckland isthmus have increased to the normal or high range following recent rains. Some aquifer water levels in north-central Auckland have increased due to reduced pressure on the resource and winter rainfall. Deep aquifers in the Waitematā Group, Waiheke greywacke, and Kaawa Formation rocks are generally at low to very low levels. Waiheke Island greywacke aquifers have increased in water level throughout the winter but are at very low levels relative to the long-term average for this time of year. This is to be expected following severe drought conditions in 2020 and continued below-average rainfall for much of 2021. Groundwater monitoring sites and groundwater level category are shown in Figure 5.

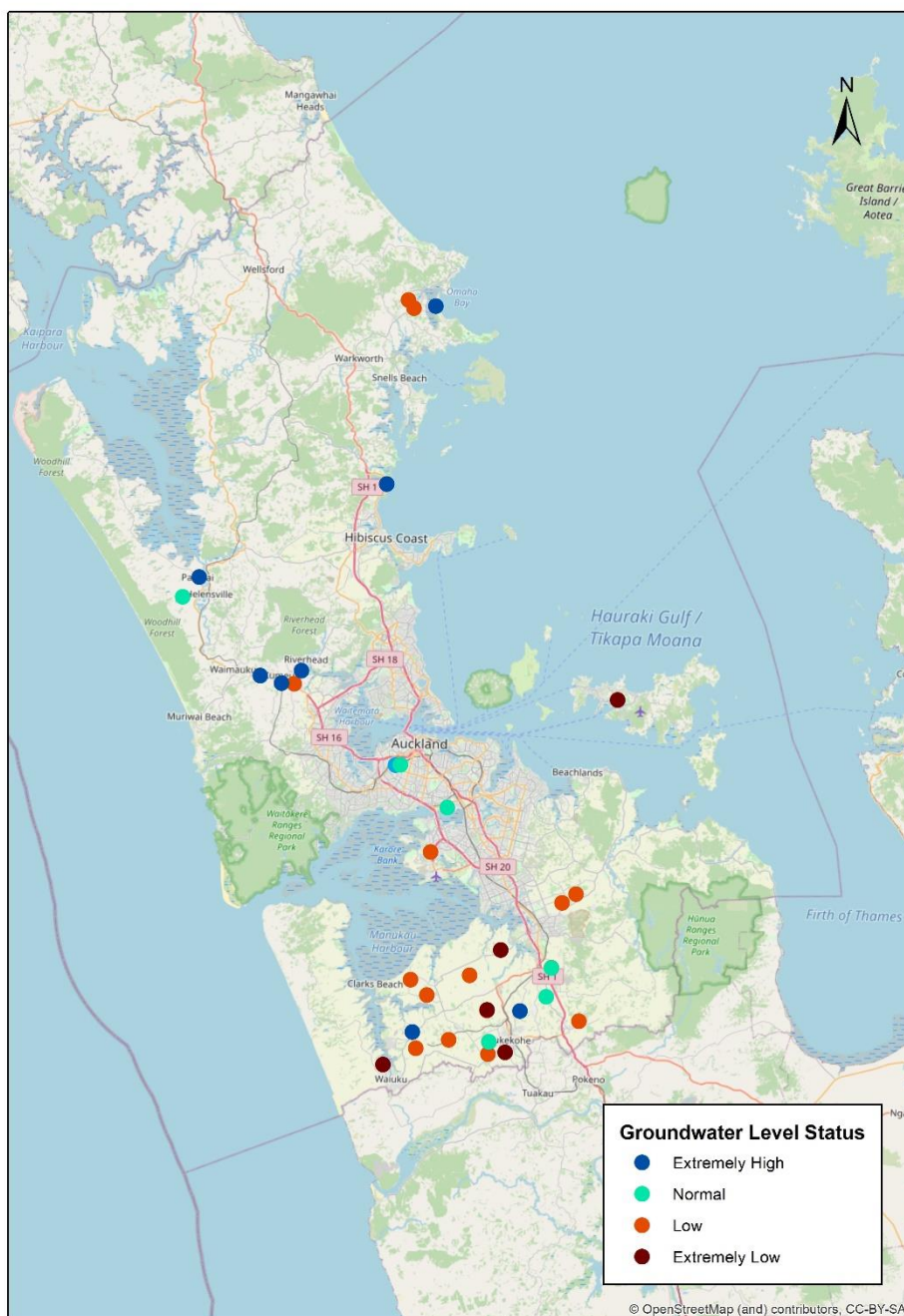


Figure 5: Groundwater levels relative to long-term statistics for 1 September 2021.

Disclaimer

This report contains provisional data and is intended for informational purposes only. For detailed questions concerning hydrometric data, please email EnvironmentalData@aucklandcouncil.govt.nz.

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