

# Hydrology information for the situation report – 07 February 2020

## Current weather situation

Indicative data show rivers across Northland are beginning to hit the lowest flows recorded in 50 years. The significant rain deficits the catchments carried leading into this event are now starting to take effect, some rivers are at low flows 8x weeks earlier than observed in the 2009/10 drought. This has substantial implications if the drought persists through the coming months. The river flow and drought maps show the entire region is now being impacted by the dry weather.

This has been compounded by a three-day heat wave hitting Northland early February 2020, with temperatures exceeding 30 degrees across the region:

- Kaikohe MetService station reordering 32 degrees on 03 February 2020
- Whangarei MetService station reordering 33.5 degrees on 04 February 2020, warmest day on record MetService Outlook

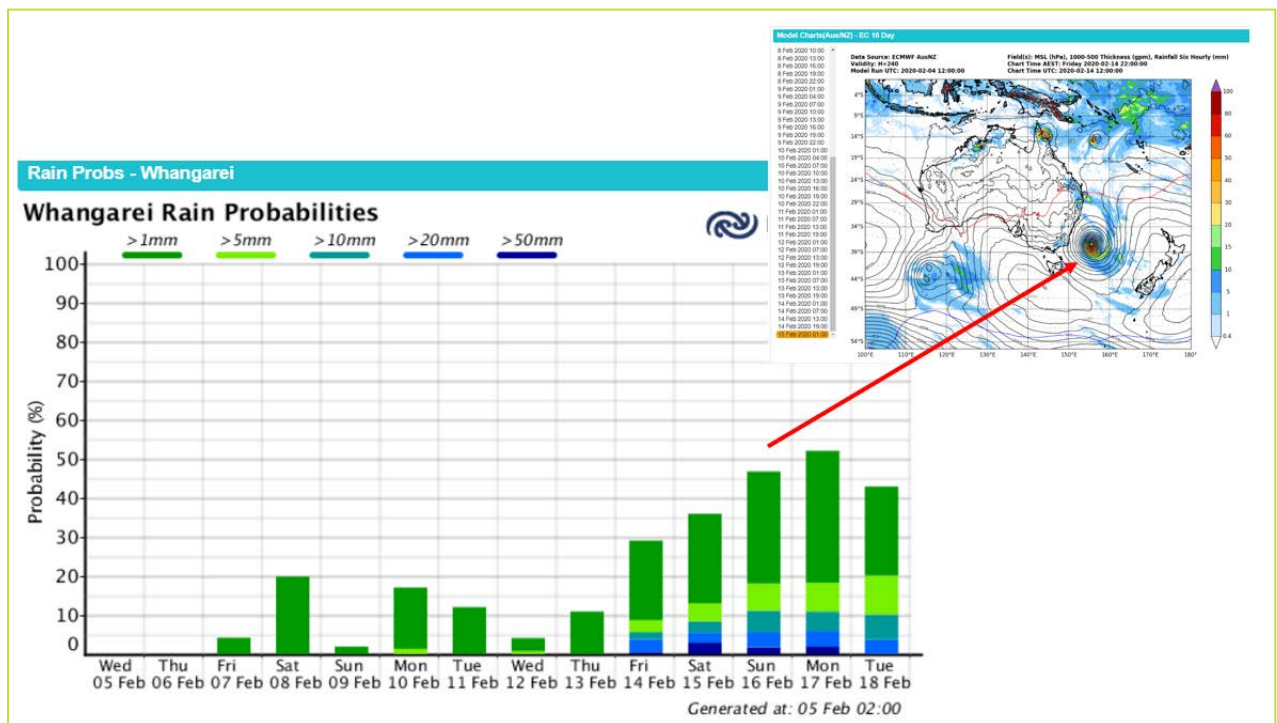
## Outlook

The latest MetService weather models indicate minimal rain for the next 5-7 days from 05 February 2020.

Although the models currently show a low-pressure system bearing down from the coral sea off to the west of New Zealand around 14 February 2020. In recent discussions with MetService's chief forecaster, key points were:

- *there is uncertainty regarding how close the system will pass to Northland and how much rain the region will receive. The models will be re-run on 11 February 2020, giving more certainty to where the system will be tracking. MetService has advised to make contact next Tuesday (11 February 2020) to review the model output.*
- *The door has opened over the coral sea, we will start to see Tropical cyclones forming, as to whether they head south towards New Zealand is uncertain at this stage.*

## Whangārei rain probabilities



## River flows

About 60 % of NRC river stations are currently running below drought flows (DDF: designed drought flow).

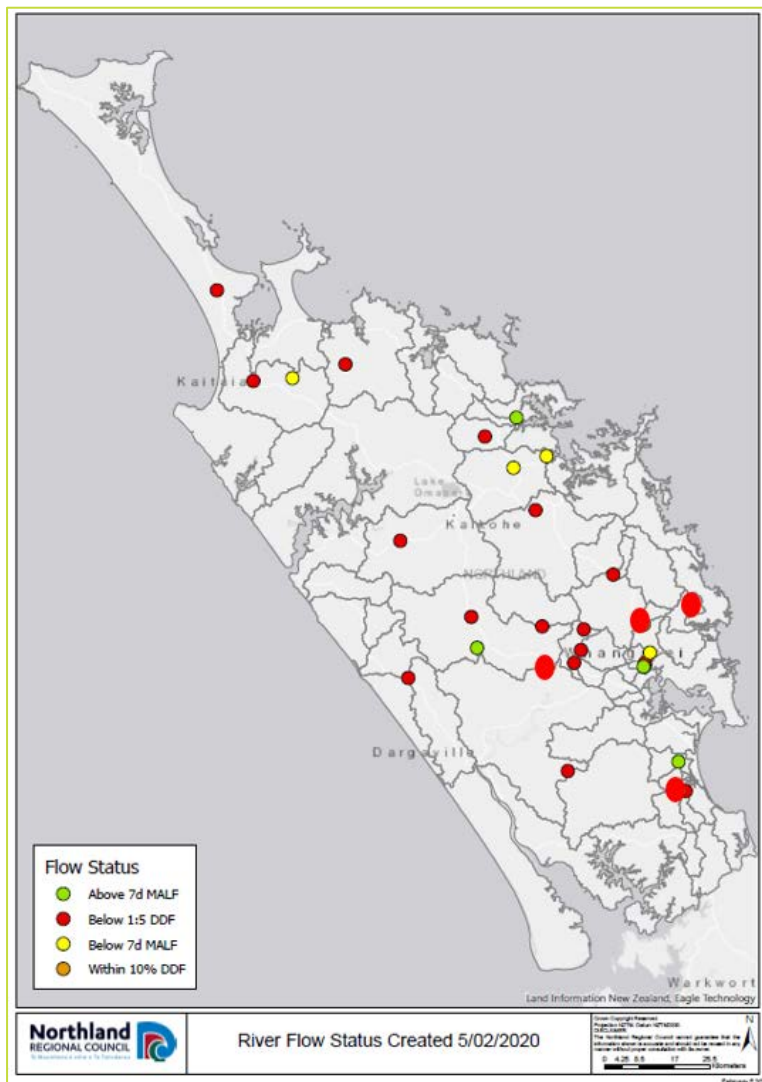
Current data which will need to be verified indicates the rivers at critical flows, that is flows that have dropped below 80% of drought flows are:

- Awanui river
- Maungaparerua river
- Mangahahuru river
- Lower Mangakahia river
- North river
- Ahuroa river

Table of current river flows (07/02/2020) vs 2009/10 drought river flows (note, current flows need to be verified)

River & Start date	1:5 year DDF (l/s)	Minimum flow recorded in 2010	Current flow as of 07/02/2020	Predicted days to reach 2010 flows
Kaitiāia (1958)	460	285	278	0
Maungaparerua (1967)	23	11	09	0
Waitangi	552	381	526	NA
Ngunguru (1969)	61	39	53	18
Mangahahuru (1968)	82	50	55	NA
Kaihu (1970)	609	611	590	0

The map below details the river running below design drought flows (1:5 year DDF):



## Rainfall

From 31 January – 05 February 2020:

- 0.5mm recorded at the Waima & Waimamuku rain gauges
- 0mm recorded for the remainder of the region

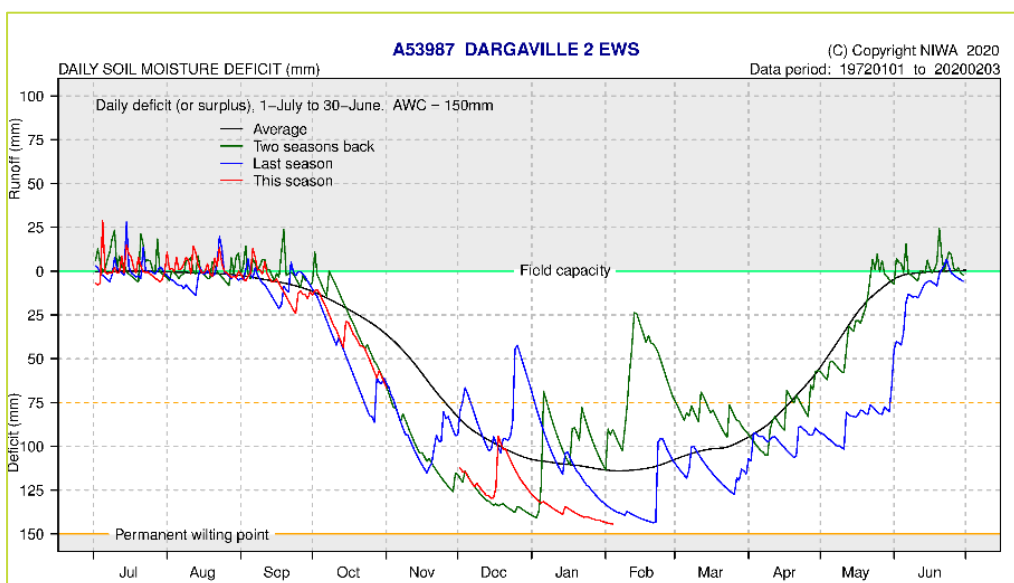
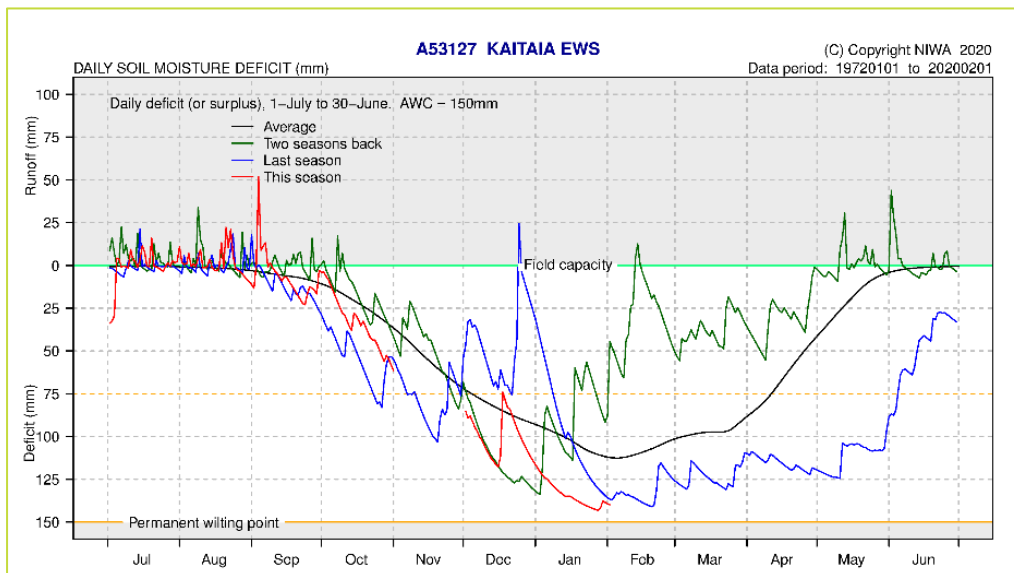
## Soil moisture deficits

Soil moisture deficits have significantly increased at all six NIWA climate stations. With no significant rain forecasted, most stations will be reaching deficits of 150mm (permanent wilting point) by mid-February 2020

Soil temperatures are ranging 3-5 degrees above the average or expected temperature for February. From 06 February on-wards, winds for Northland are predicted to remain predominately from the east at 10-20 kph, but the effects on soil moisture deficits will be minimal given the daily maximum daily temperatures are predicted to hover around 25 degrees for the next 7 days from 07 February 2020

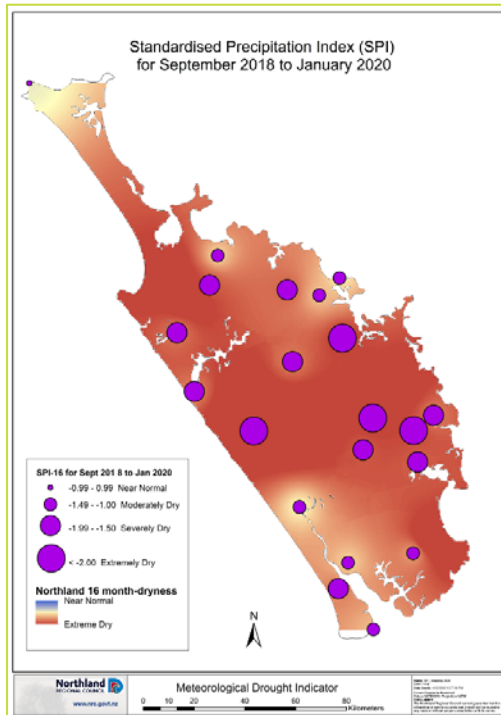
**NIWA Climate Stations:**

NIWA CLIMATE STATION	Soil moisture deficit (mm) as of 05/02/2020
Kaitiāia	-137
Kaikohe	-137
Kerikeri	-130
Dargaville	-140
Whangārei	-140
Warkworth	-140

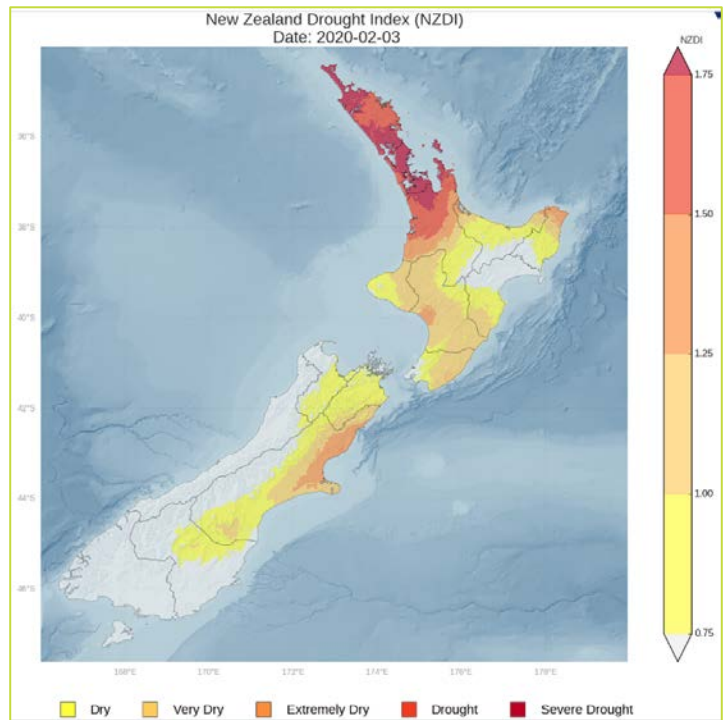


# Drought maps

## NRC drought map (SPI)



## NIWA drought map



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