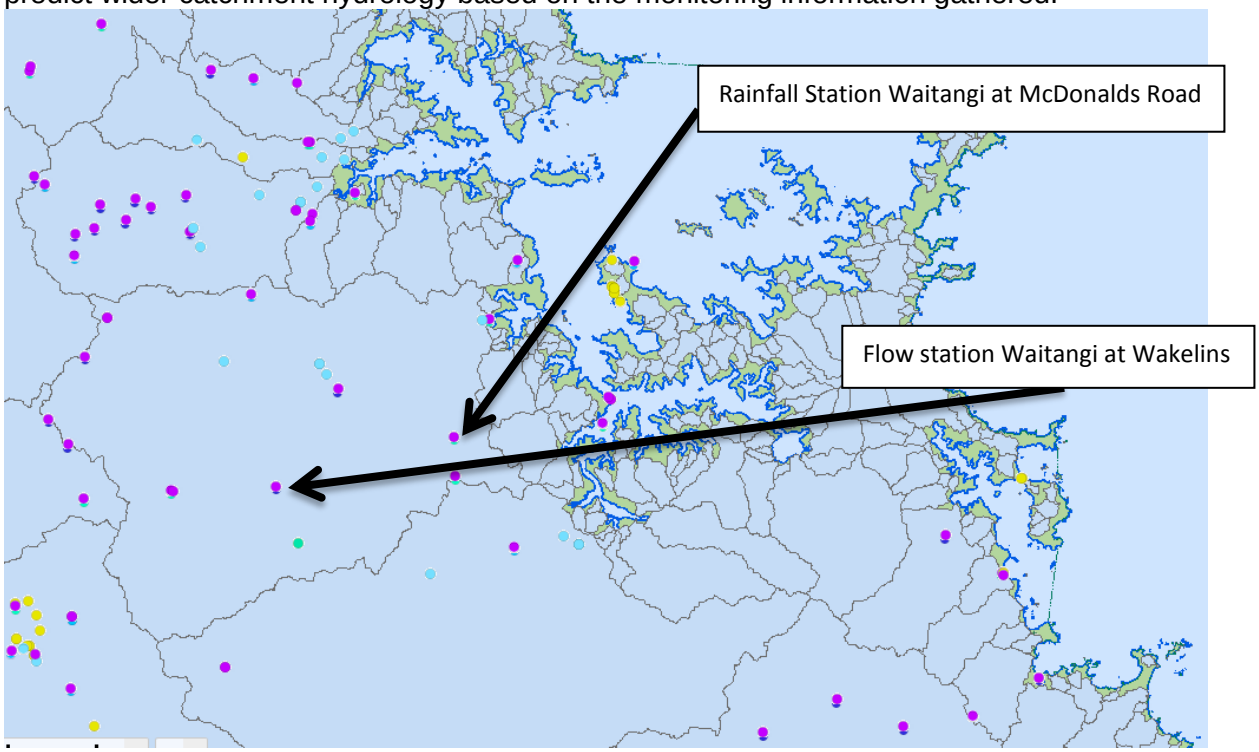
The Waitangi catchment water quantity update

This document is about rainfall, river flows and demand in the Waitangi Catchment.

The Waitangi River drains a catchment extending from Ngawha in the west, near Okaihau and Kerikeri in the north and near Moerewa in the south. Greywacke rock fault lines and lava flows from the many volcanoes in the Kaikohe volcanic field have shaped the flowpath of the Waitangi River and most of its tributary streams.

In Northland, rainfall is usually highest from autumn – spring and lowest from spring - autumn. Storm events also happen throughout the year. Rainfall affects river flows. Low river flows limit native fish habitat and recreational opportunities. High river flows are important for flushing out nuisance plant growth. High demand for river water may mean the water resource needs to be carefully managed.

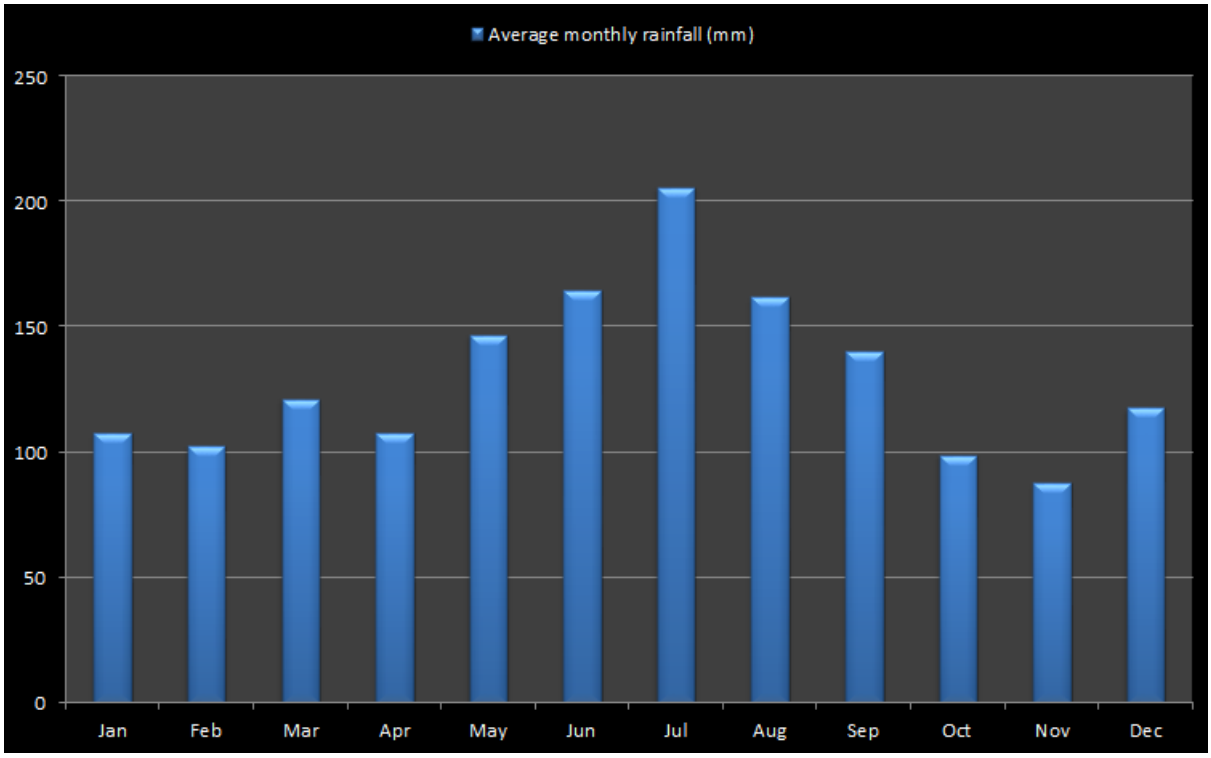
The Northland Regional Council (NRC) monitors rainfall, river flows and consented water permits at a number of locations throughout Northland. Computer modelling is also used to predict wider catchment hydrology based on the monitoring information gathered.



Monitoring data

Rainfall

NRC operates a number of rainfall stations within the Waitangi Catchment. The large difference in rainfall between stations is due to location and altitude. Rainfall is generally lowest in late-spring/summer, peaks in winter with medians occurring in autumn and spring. The catchment geology will have a significant impact on base flows.

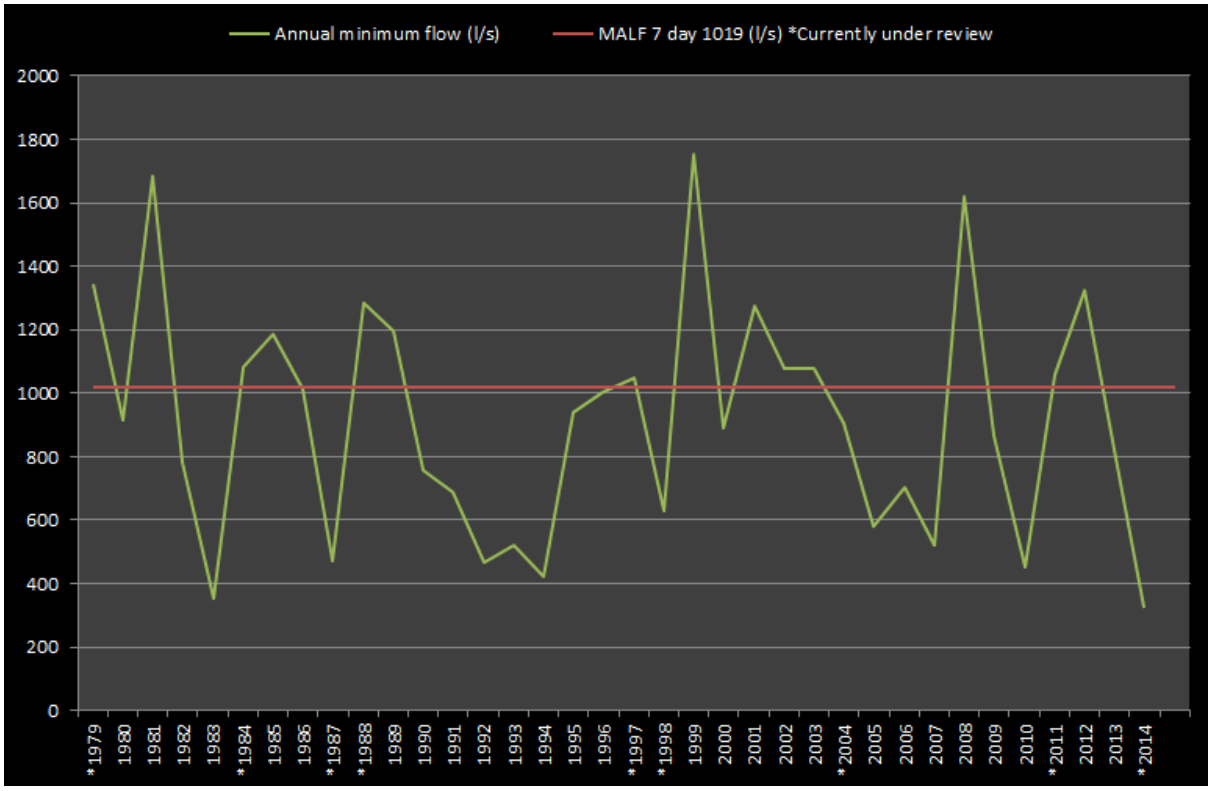


Statistics for the rainfall station Waitangi at McDonald Road (543010)

- Minimum monthly total 4.0 mm (Jan 2004)
- Minimum annual total 1048mm (1994)
- Maximum annual total 2049 mm (2011)
- Average annual total 1541mm

1.1.1 River flow – Low Flows

The graph below shows the variation in annual river low-flows at the Wakelins recording station since 1980. The 7-day mean annual low flow (MALF) is approximately 1019 l/s (litres per second). The lowest annual low-flow was 400 l/s in 1983.



Statistics for the flow station Waitangi At Wakelins (3722):

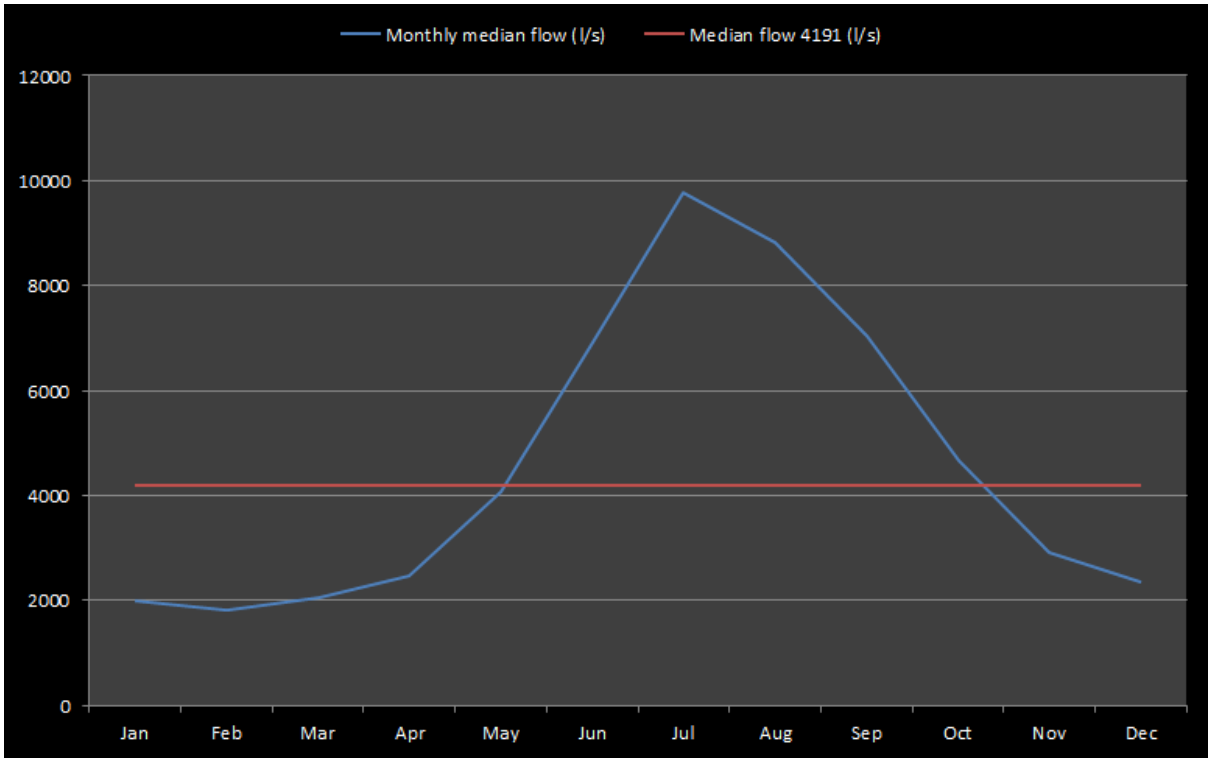
- Calculated minimum 400 l/s on 7 Feb 1983
- Measured minimum flow is 400 l/s on 8 Feb 1983
- Maximum 694300 l/s on 29 Mar 2007
- 7 Day Mean Annual Flow 1019 l/s

Demand for water from annual low-flows is moderate-high in the catchment:

- Consented takes have a variety of cease-to-pump conditions to protect in-stream aquatic species. The lowest cease-to-pump conditions, for the Far North District Council's municipal supply at the bottom of the catchment are set at 55% of MALF.
- Non-consented water takes do not have cease-to-pump conditions. However, a Water Shortage Direction can issue a cease-to-pump requirement if deemed necessary.
- Volumetric demand: currently there is a demand of up to 46l/s from annual low flows (or 10% of MALF)
  - Consented water takes account for 305.1 l/s.
  - Non-consented water takes (RMA or Regional Plan permitted takes) account for 25.9l/s

River flow – Median Flow

The graph below shows the variation in median flow throughout the year. The annual river median-flow in the catchment is approximately 4191 l/s. Flows above median flow generally occur in autumn-spring. However, they can also occur during spring-autumn storm events.



Median flow statistics for the Waitangi at Wakelins Flow Station (3722)

There is a low-moderate demand for the harvesting and storage of flows above the annual median flow:

- There are 6 in-stream dams which divert and store a proportion of water above median flows (winter or stormflows). The largest of these are the dams associated with the Kerikeri Irrigation Scheme. In-stream dams may have conditions imposed on them requiring them to bypass during low-flows to protect in-stream values.
- There are no out-of-stream dams to store water taken (pumped) during above annual median-flows. The Council is working on a policy for 'supplementary' water permits which would enable the taking and storage/use of water when flows are above median flows (to enable storage and reduce demand from rivers during low flows).