

Mangere catchment water quantity update

This document is about rainfall, river flows and demand for water in the Mangere Catchment.

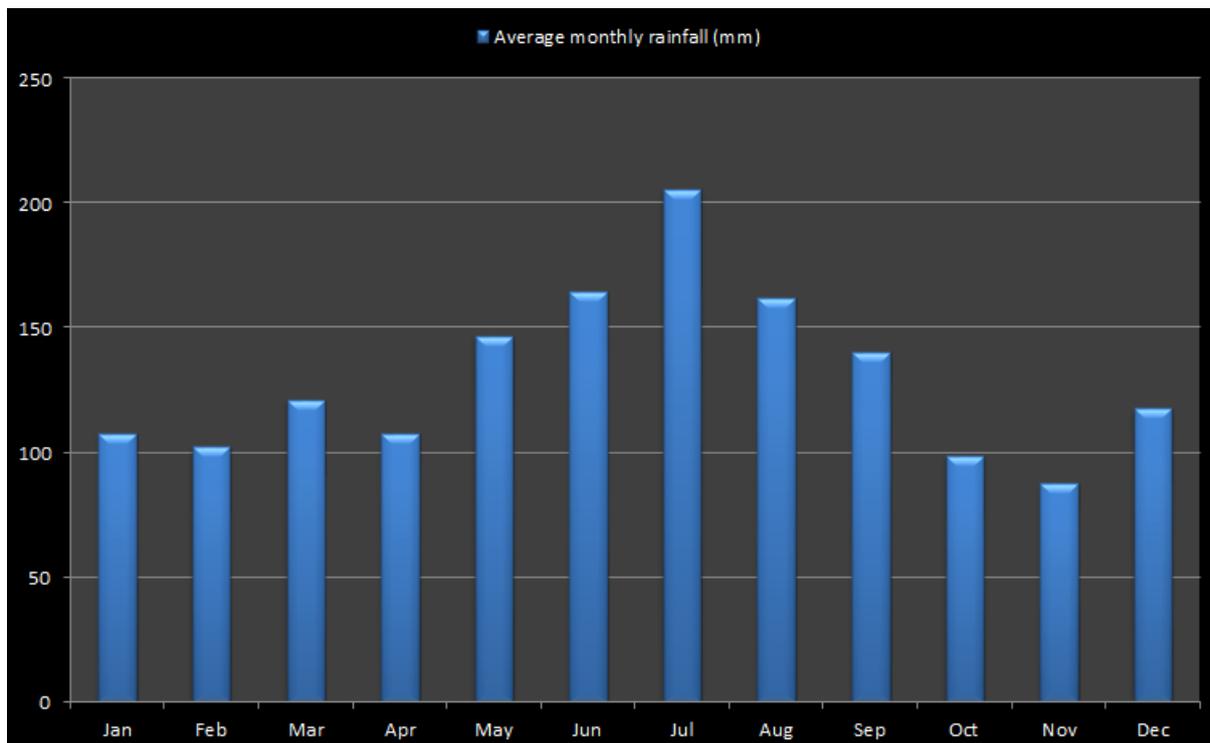
In Northland, rainfall is usually highest from autumn – spring and lowest from spring - autumn. Storm events also happen throughout the year. Rainfall affects river flows. Low river flows limit native fish habitat and recreational opportunities. High river flows are important for flushing out nuisance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

The Northland Regional Council monitors rainfall, river flows and consented water permits at many Northland locations. Computer modelling is also used to predict water quantity, based on the monitoring information gathered.

Monitoring data

Rainfall

Rainfall is not monitored in the Mangere catchment, however, the rainfall monitoring station located near Mangere catchment at Redwood Orchard, Maungatapere, provides a good indicator of catchment rainfall. The average monthly rainfall graph for Redwood Orchard, Maungatapere (below) shows that rainfall is lowest in late-spring/summer and highest in winter.

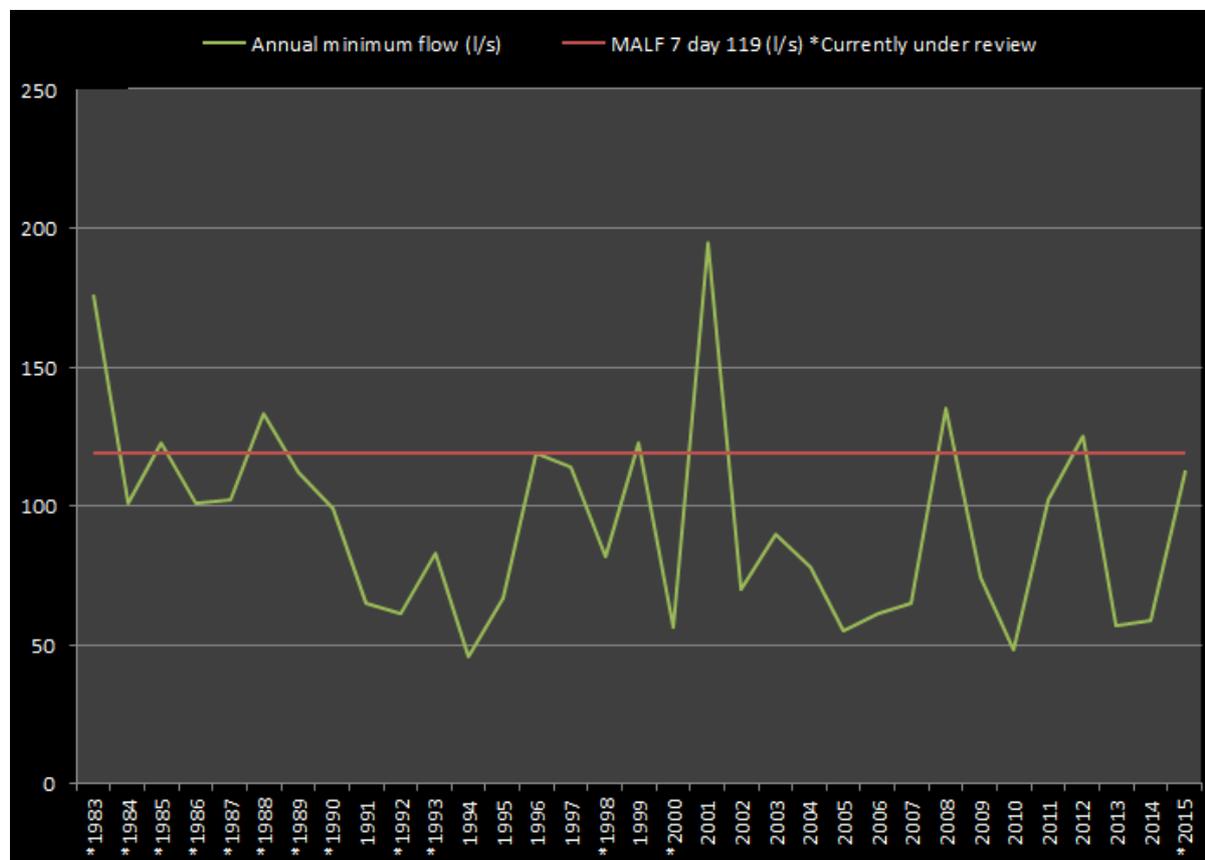


Statistics for the rainfall station Redwood Orchard at Maungatapere (547223):

- Minimum monthly total 8.0 mm (Jan 2013)
- Minimum annual total 1038mm (1991)
- Maximum annual total 2098.8 mm (2014)
- Average monthly total 1563 mm

River flow – Low Flows

The graph below shows the variation in annual river low-flows since 1983. The 7-day mean annual low flow (MALF) at the Knights Road monitoring station is approximately 119 l/s. The lowest annual low-flow calculated was 46 l/s in 2000.



Statistics for the flow station Mangere at Knights Road (46646):

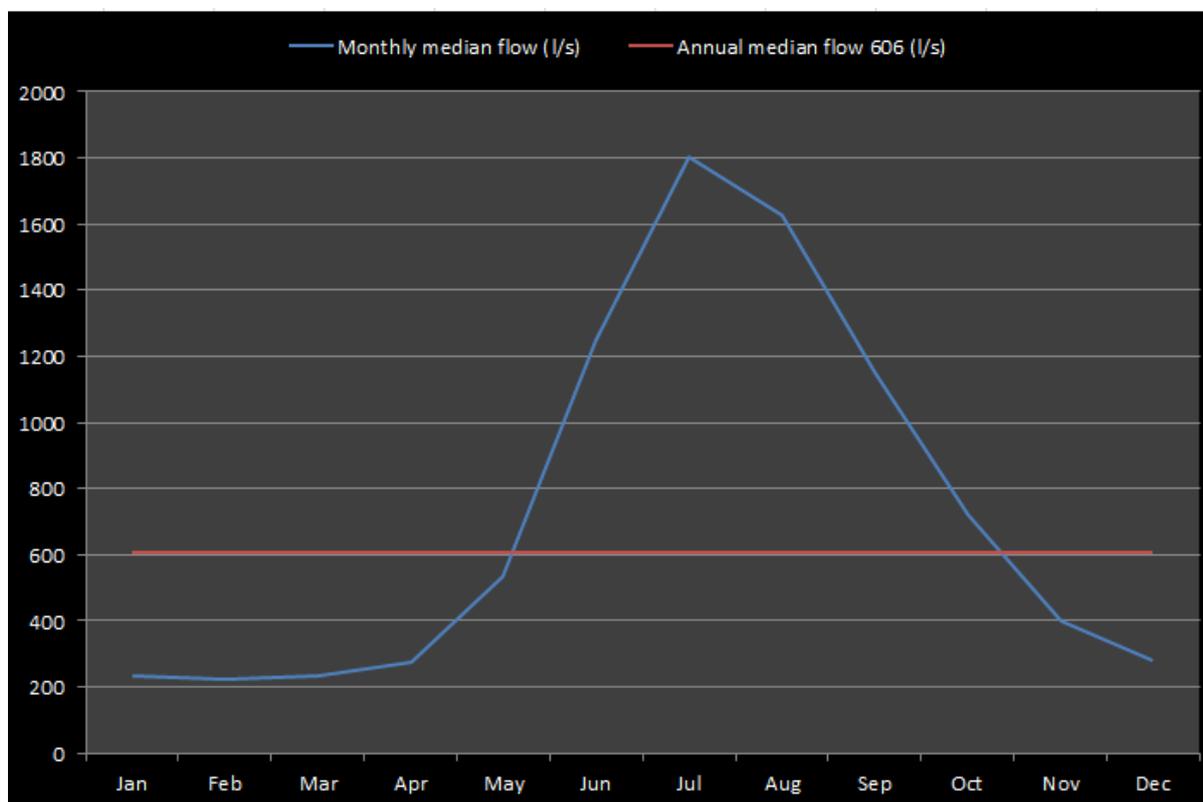
- Calculated minimum flow is 46 l/s 18-April-2000
- Measured minimum flow is 59 l/s 7-Apr-2005
- 7 Day Mean Annual Flow 119 l/s
- Calculated maximum flow is 28257 l/s 29-Jan-2011

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

- Low flow demand:
 - Consented takes have a variety of cease-to-pump conditions to protect in-stream aquatic species. The lowest cease-to-pump conditions on consents are set at 72% of MALF or 90l/s.
 - 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 65l/s from annual low flows (or 52% of MALF)
 - Consented water takes account for 49.7 l/s.
 - Non-consented water takes (RMA or Regional Plan permitted takes) account for an estimated 15.3l/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 606 l/s. Flows above median flow generally happen in autumn-spring, however, they can also happen during spring-autumn storm events.



Median flow statistics for the flow station Mangere at Knights Road (46646):

- There is a low-moderate demand for the harvesting and storage of flows above the annual median flow:
- There are 4 in-stream dams which divert and store a proportion of water above median flows (winter or stormflows). 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 pumped from 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).