

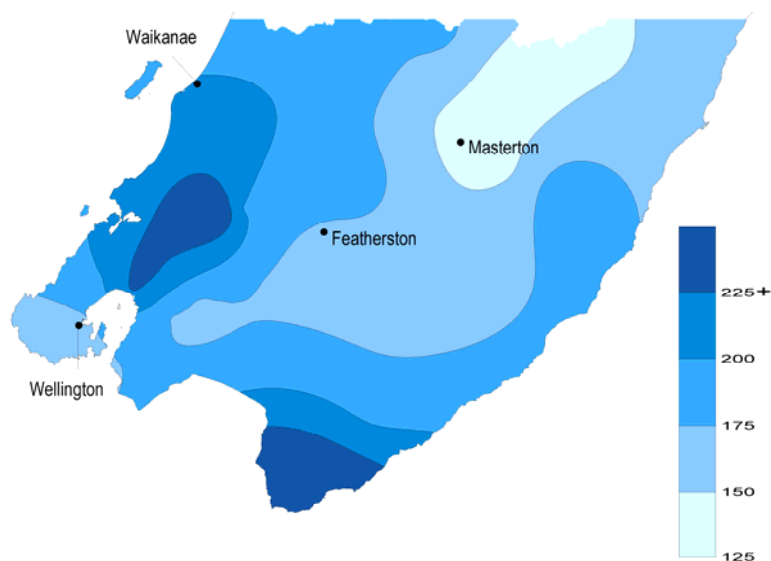


July 2008 hydrological summary

Environmental Monitoring and Investigations Department

Rainfall during July

July 2008 was a wet month throughout the Wellington region. Rainfall totals for the month were more than double the long-term average in the Hutt Valley, and well above average in the Tararua Range, Wellington City, Porirua and southern Wairarapa (see map). Of note, 1.1 metres of rainfall was recorded in the Tararua Range at the monitoring site ‘Angle Knob’, which is significantly higher than the average July total of 0.6 metres.



The month was characterised by frequent storms, with the most notable occurring on 11/12th, 23rd/24th, 30th and 31st of the month. The most significant floods of July resulted from a stormy period at the very end of the month. The weather system that brought heavy rainfall and gales to the upper North Island produced an easterly airflow over the Wellington region on 30 July, bringing sustained rainfall to the eastern Wairarapa hills, Wairarapa plains, eastern Tararua Range, Orongorongo Range, Wainuiomata and the north eastern Hutt Valley. At our monitoring site ‘Tanawa Hut’, in the north eastern Wairarapa hills, there was 120 mm of rain in 24 hours – the most significant rainfall there since the storm of August 2004. The following day (31 July) a north westerly airflow brought rainfall that mostly affected the Tararua Range, Kapiti Coast and Hutt Valley. The floods that resulted from these events are discussed later in this report.

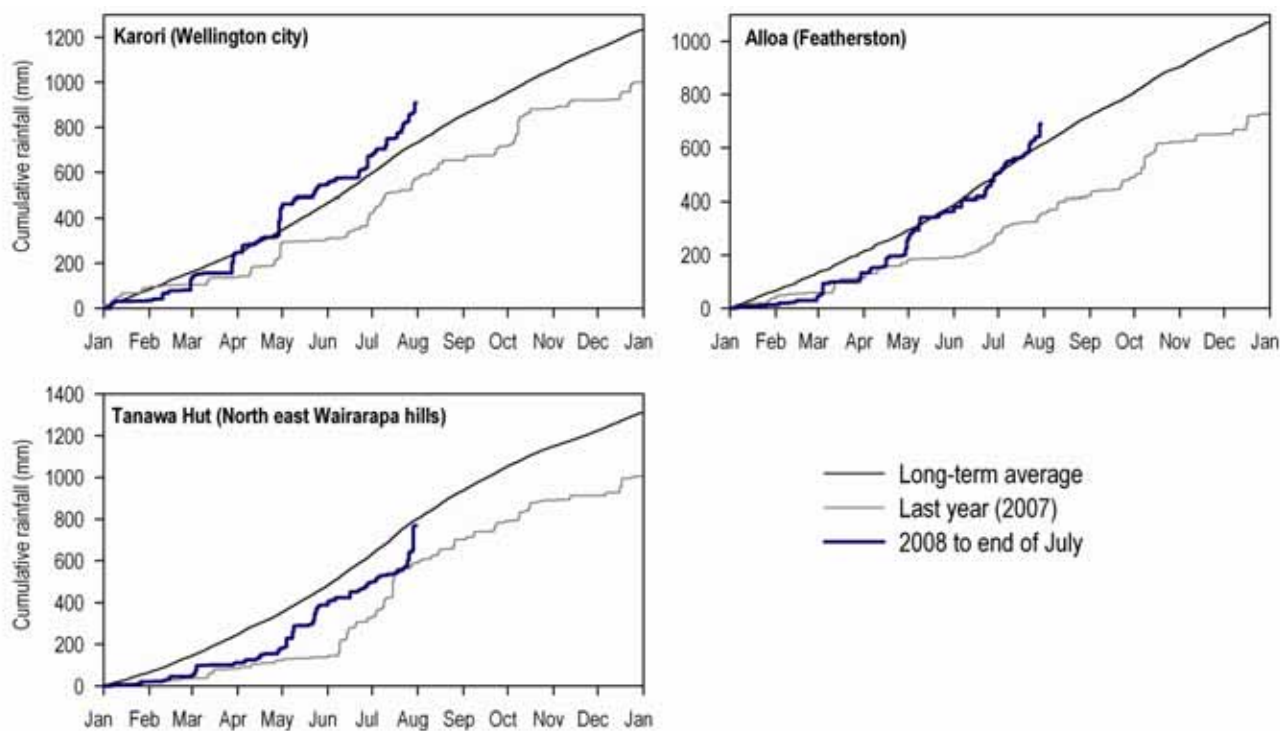
Rainfall during July 2008 as a percentage of the long-term average for the month

Snapshot of rainfall in the year to date

Rainfall received during July boosted totals for the year significantly. Throughout the region we have now received about, or more than, average rainfall for the time of the year. This is a stark contrast to the drought situation experienced in much of the region during summer and early autumn (see table and graphs below).

Year-to-date rainfall statistics for key monitoring sites in the Wellington region

	Rainfall for July at monitoring site (mm)	Rainfall for 2008 to end of July (mm)	Percentage of long-term average for year to date
Paekakariki	234	789	125%
Karori	237	908	125%
Kaitoke	468	1308	98%
Wainuiomata	404	1277	112%
Featherston ('Alloa')	197	699	114%
NE Wairarapa ('Tanawa Hut')	274	772	97%
Tararua Range ('Angle Knob')	1186	3389	93%



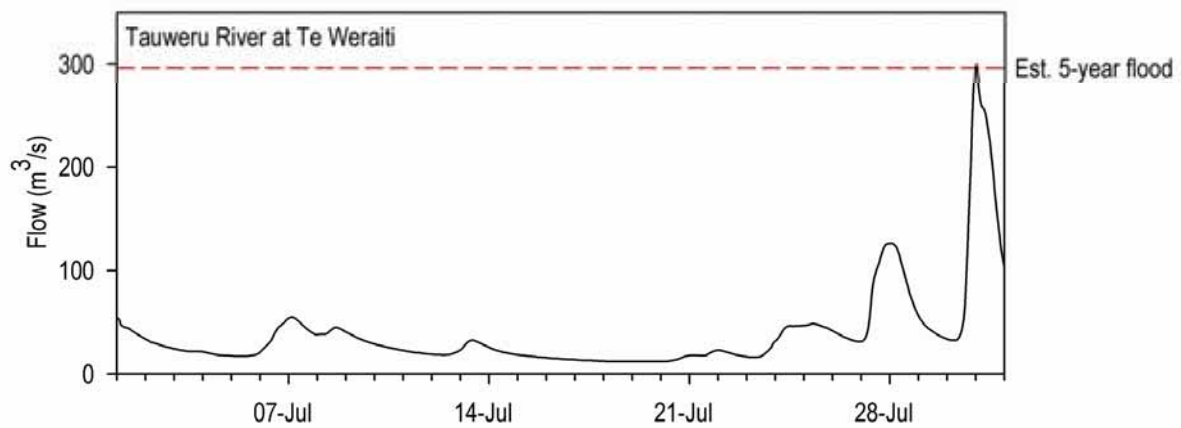
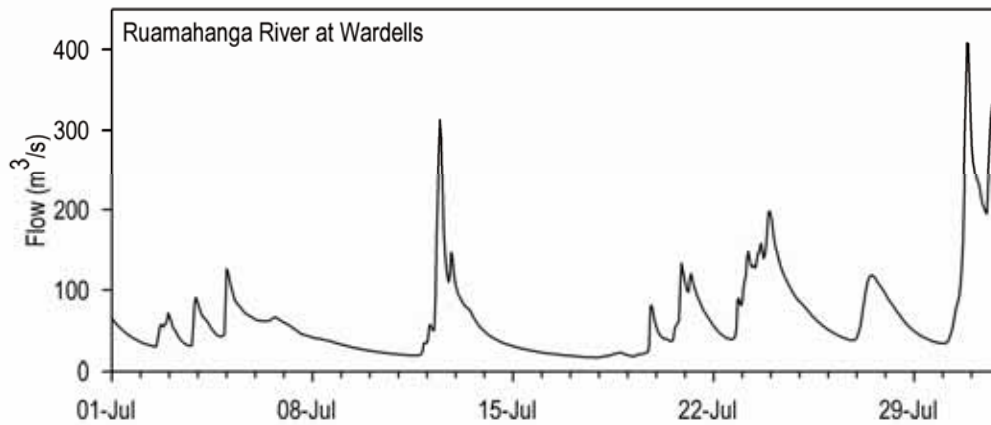
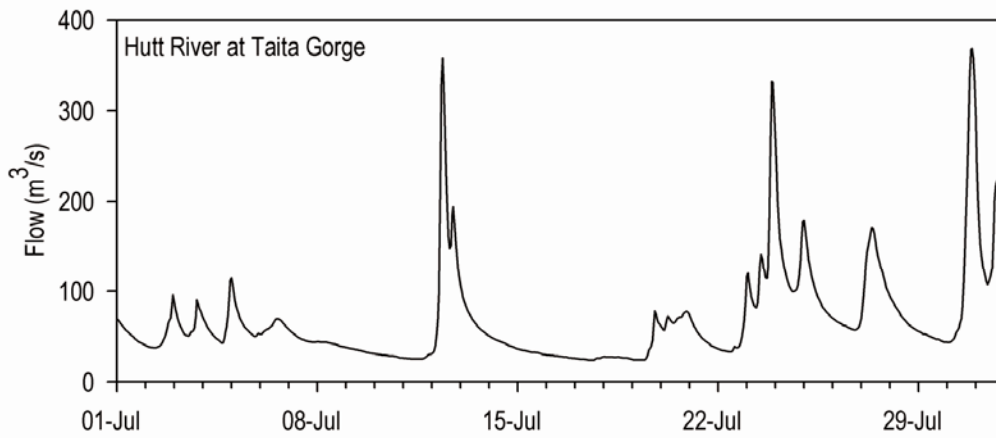
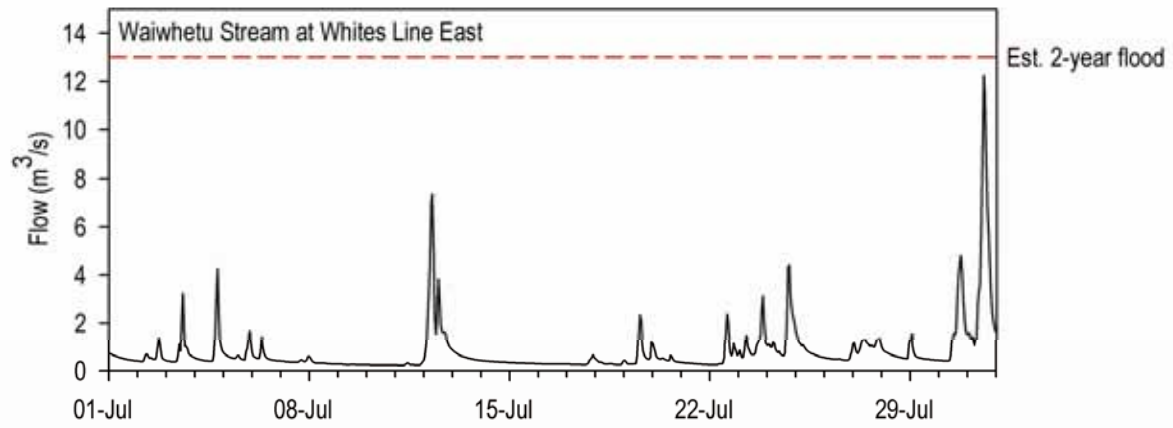
Cumulative annual rainfall at selected sites in the Wellington region

River flows during July

River flows during July were higher than average for the time of the year (see table below), and were significantly higher than the average flows in June 2008. Most rivers and streams of the region had the highest flows for the month during the northwesterly storm of 11/12 July or the easterly storm of 30 July. The event on 11/12 July resulted in initial floodwarning alert levels being exceeded in the Hutt and Ruamahanga rivers. The storm on 30 July, that brought significant rainfall to catchments exposed to easterly storms (see rainfall section above), resulted in particularly high flows in the Ruamahanga River and its eastern tributaries. The Tauweru River had a peak flow of nearly 300 m³/s, which has an estimated return period of 5 years. Flow in the Ruamahanga River was high enough for the floodway system to operate, and in both the Ruamahanga and Tauweru rivers it was the highest flow since the floods of July 2006. The rainfall the following day affected the western tributaries of the Ruamahanga River, therefore prolonging the high flow at Waihenga. High flows were also experienced on 31 July in the Waiwhetu Stream (Lower Hutt) – the peak flow of 12.3 m³/s is slightly less than a 2-year return period event and is the most significant flood in the stream since October 2006.

River flow statistics for July 2008 at some of Greater Wellington's flow monitoring locations

	Average river flow for July 2008	Percentage of long-term average	Lowest 1-day flow during July (raw data)	Highest flow during July (raw data)
Waikanae River at Water Treatment Plant	9.9 m ³ /s	157%	4.6 m ³ /s on 10/7	58 m ³ /s on 12/7
Akatarawa River at Cemetery	14.2 m ³ /s	204%	5.5 m ³ /s on 18/7	139 m ³ /s on 12/7
Mangaroa River at Te Marua	12.4 m ³ /s	210%	3.2 m ³ /s on 16/7	120 m ³ /s on 30/7
Hutt River at Taita Gorge	69.1 m ³ /s	199%	25.0 m ³ /s on 16/7	371 m ³ /s on 30/7
Wainuiomata River at Manuka Track	3.8 m ³ /s	255%	1.3 m ³ /s on 18/7	25 m ³ /s on 30/7
Waingawa River at Kaituna	21.9 m ³ /s	168%	5.2 m ³ /s on 10/7	163 m ³ /s on 12/7
Waiohine River at Gorge	57.4 m ³ /s	189%	12.3 m ³ /s on 17/7	442 m ³ /s on 30/7
Ruamahanga River at Wardells	65.5 m ³ /s	167%	16.7 m ³ /s on 17/7	419 m ³ /s on 30/7
Ruamahanga River at Waihenga	230 m ³ /s	162%	55.6 m ³ /s on 17/7	950 m ³ /s on 31/7



River flows recorded during July 2008 at selected Greater Wellington monitoring locations

Groundwater levels

The wetter than average July has boosted recharge to the region's aquifers. A number of the shallow unconfined aquifers monitored by Greater Wellington have shown groundwater level increases in response to recent rainfall and higher river flows. Groundwater levels in deeper confined aquifers, while still recovering, tend to show a more subdued response to short term wet periods. If above average rainfall and recharge to aquifers continues over the remainder of winter it is a promising sign for the upcoming summer for maintaining flows in groundwater fed streams and water levels in wetlands, while leaving adequate storage for groundwater abstraction.

Hutt

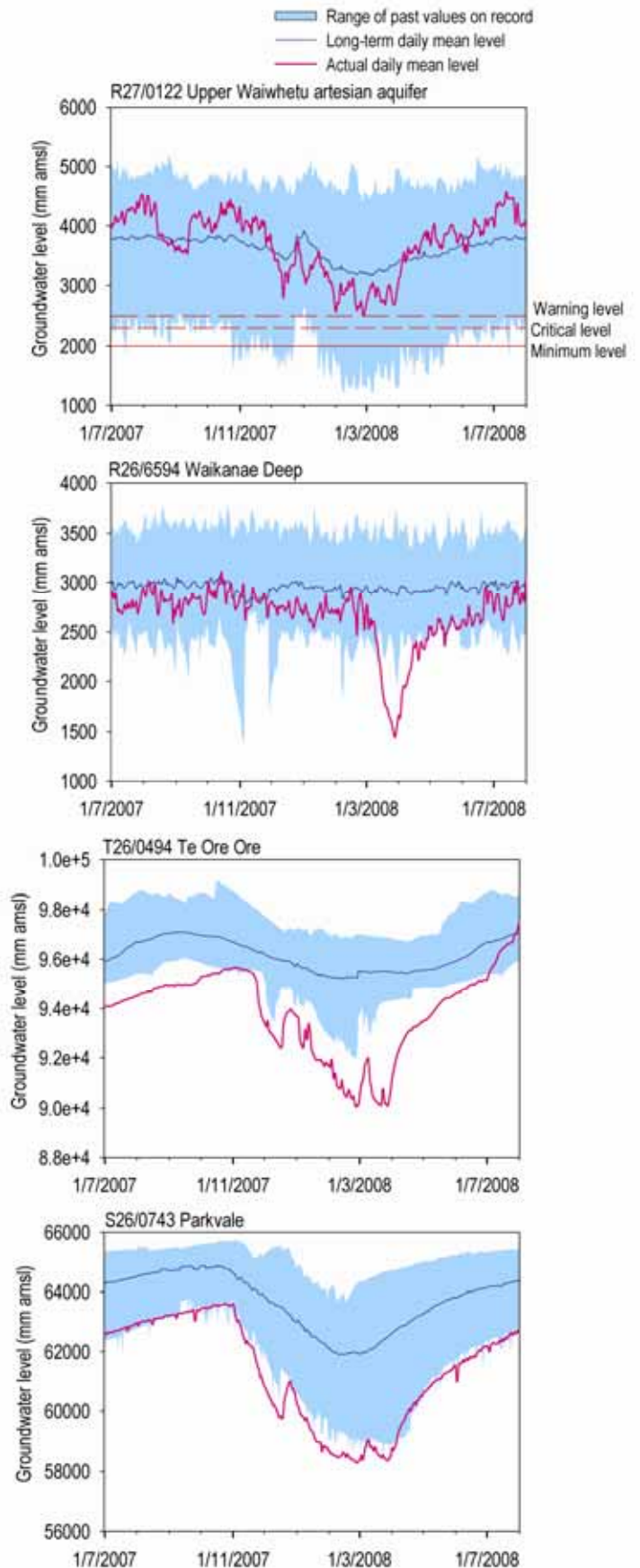
Groundwater levels in the artesian Waiwhetu aquifer have been above average since May. Some further recovery may be seen in the aquifer in the coming month in response to increased rainfall in the valley and flows in the Hutt River.

Waikanae

Groundwater levels recorded in the deep Waikanae aquifer recovered in late July in response to rainfall and increased flows in the Waikanae River. Levels are now above average and have fully recovered from use of the Waikanae borefield in March this year.

Wairarapa

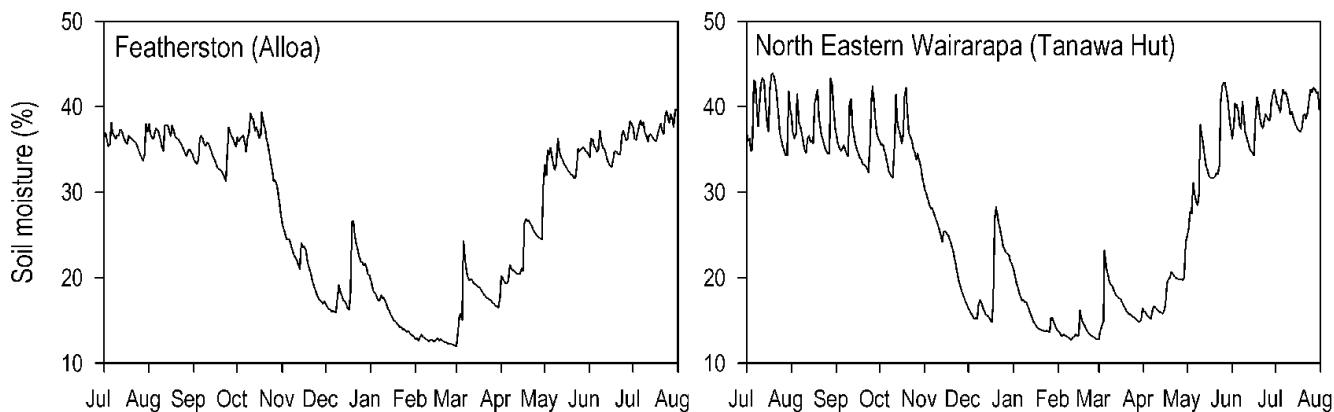
Shallow rainfall and river fed aquifers in the Wairarapa have recovered in response to the wetter than average July. This can be seen clearly in the water level data from monitoring bore T26/0494 in Te Ore Ore, which has recorded below average levels for over a year. Levels in this bore are now above average, although it is unclear at this time if this is a sustained recovery in the groundwater levels or merely a short term 'spike'. Groundwater levels in deeper confined aquifers are still to show a marked recovery, as can be seen in data from the Parkvale monitoring bore S26/0743.



Groundwater levels over the last year recorded at selected Greater Wellington monitoring locations

Soil moisture

During July, Wairarapa soil moisture levels remained high due to the regular rainfall. Despite being very low from November through until March, soil moisture has recovered to normal winter levels (as shown in the graphs below).



Soil moisture content at two Greater Wellington monitoring locations over the last year

Climate outlook

The La Nina weather pattern, which brought dry conditions to the Wairarapa and Wellington over summer, has now ended. NIWA's climate forecast for August to October 2008 favours normal rainfall in the Wairarapa and normal or below normal rainfall in the western Wellington region (Salinger & Mc Kerchar 2008 see http://www.niwa.co.nz/ncc/seasonal_climate_outlook).

More information

This summary is based on data from selected monitoring locations in the Wellington region. Greater Wellington monitors rainfall, river flows, groundwater levels and soil moisture at many locations that may not be mentioned in this summary report. Maps of site locations and up-to-date data can be found at www.gw.govt.nz/monitoring.

Disclaimer: This report is based on data that have not yet been quality checked. In particular, flow data may be subject to change following adjustment of rating curves. Greater Wellington accepts no responsibility for any interpretation or use of the provisional data in this report.