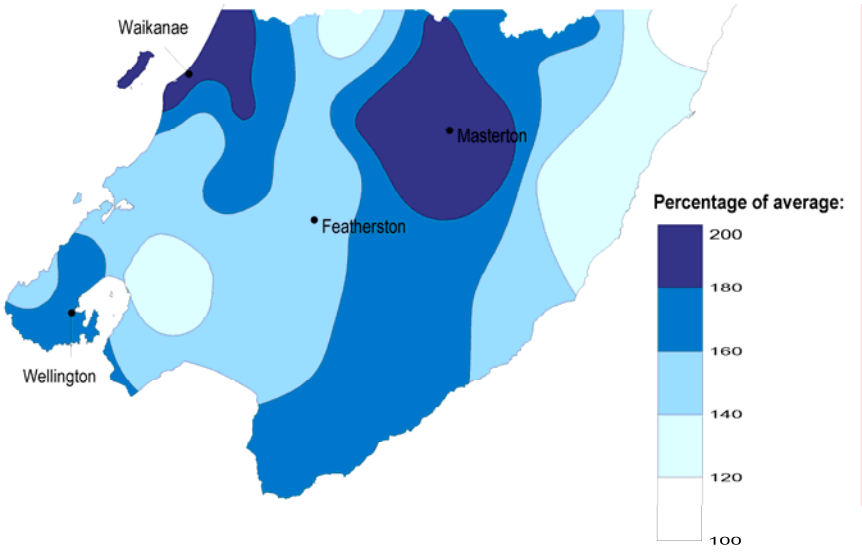
August 2008 hydrological summary

Environmental Monitoring and Investigations Department

Rainfall during August

August 2008 was another wet month throughout the Wellington region – following a particularly wet July. Rainfall totals for the month were about 180-200% of the long-term average for August in northern Kapiti and northern Wairarapa (around Masterton), and were also well above average in Wellington City, the northern Hutt Valley, and south east Wairarapa.



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

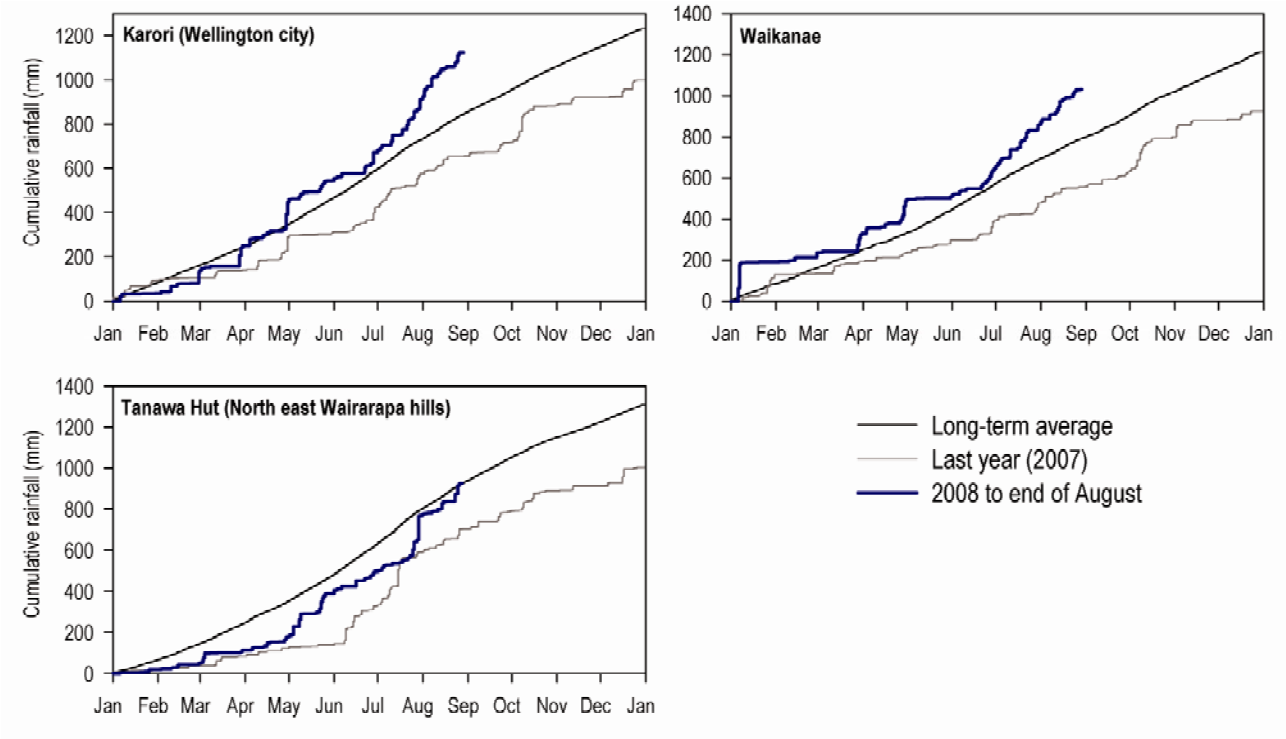
Like July, August was characterised by frequent storms. At the start of the month, rainfall continued from a stormy period that began on 30 July, with the most significant rainfall in the Tararua Range. On 3 August, thunderstorms brought heavy rainfall to Wellington City and Porirua. Overnight on 14/15 August, a north-westerly storm brought rainfall to the Tararua Range, mainly affecting the Waikanae and Hutt catchments. Another stormy period occurred toward the end of August, with steady rainfall occurring on 24/25 August (mainly affecting the Ruamahanga catchment) when a depression crossed the North Island and stalled in the Cook Strait area. On 26 August, further southeasterly rainfall fell over most of the region, but once again mainly affected the Wairarapa. Masterton received 80 mm of rainfall in two days – the most rainfall in a two day period since the storms of July 2006.

Snapshot of rainfall in the year to date

Throughout the region we have now received about, or more than, average rainfall for the time of the year. This is in stark contrast to the drought situation experienced in much of the region during summer and early autumn (see table and graphs below). Of note, Wellington City and the Kapiti Coast have received approximately one-third more rainfall than normal for the time of the year.

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

	Rainfall for August at monitoring site (mm)	Rainfall for 2008 to end of August (mm)	Percentage of long-term average for year to date
Waikanae	175	1032	129%
Karori	215	1123	132%
Kaitoke	373	1677	110%
Wainuiomata	262	1536	114%
Featherston ('Alloa')	162	864	119%
NE Wairarapa ('Tanawa Hut')	154	924	100%
Tararua Range ('Angle Knob')	748	4139	95%



Cumulative annual rainfall at selected sites in the Wellington region

River flows during August

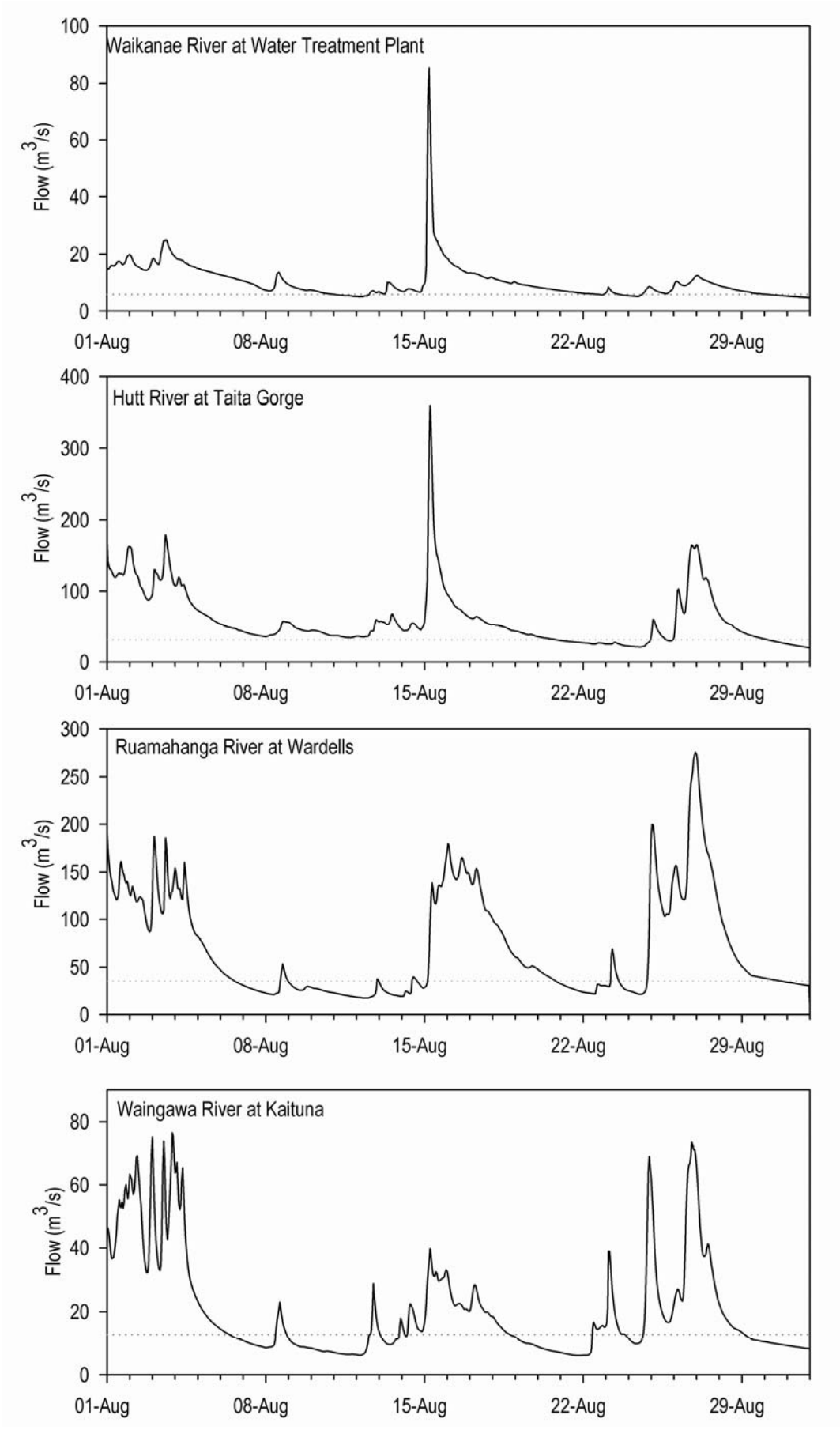
River flows during August were well above average for the time of the year (see table below). In fact with the exception of the Waingawa River at Gorge, for the sites listed in the table, the mean flows (provisional only) for August were the highest on record going back to the late 1970s early '80s.

Thunderstorms on 3 August resulted in the flood warning alarm for the Porirua Stream being triggered, and rainfall in the western Tararua Range overnight on 14/15 August led to flood warning alerts for the Waikanae and Hutt rivers. However, the flood peaks experienced were not significantly high.

A period of high river flows occurred following the stormy period over 24-26 August. The two storm events in quick succession led to particularly high flows in the Ruamahanga River. Although the flow at Waihenga Bridge was less than a 'mean annual flood', it was high enough to activate the Lower Wairarapa Valley Scheme floodways for the second time in a month, causing SH53 at Waihenga Bridge to be closed for nearly a day. This peak flow at Waihenga (970 m^3/s) was almost identical in magnitude to that at the end of July.

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

	Average river flow for August 2008	Percentage of long-term average	Lowest 1-day flow during August (raw data)	Highest flow during August (raw data)
Waikanae River at Water Treatment Plant	10.7 m^3/s	190%	5.1 m^3/s on 11/8	92 m^3/s on 15/8
Akatarawa River at Cemetery	13.7 m^3/s	201%	5.0 m^3/s on 23/8	160 m^3/s on 15/8
Mangaroa River at Te Marua	9.0 m^3/s	187%	2.6 m^3/s on 23/8	36 m^3/s on 15/8
Hutt River at Taita Gorge	63 m^3/s	199%	22 m^3/s on 23/8	366 m^3/s on 15/8
Wainuiomata River at Manuka Track	3.0 m^3/s	250%	1.1 m^3/s on 23/8	9.4 m^3/s on 27/8
Waingawa River at Kaituna	20.5 m^3/s	161%	6.2 m^3/s on 21/8	78 m^3/s on 2/8
Waiohine River at Gorge	54 m^3/s	186%	15 m^3/s on 21/8	259 m^3/s on 26/8
Ruamahanga River at Wardells	70.0 m^3/s	205%	18.1 m^3/s on 11/8	277 m^3/s on 26/8
Ruamahanga River at Waihenga	253 m^3/s	193%	96.5 m^3/s on 21/8	970 m^3/s on 27/8



River flows recorded during August 2008 at selected Greater Wellington monitoring locations. The dotted lines indicate the long-term average flow for August.

Groundwater levels

A wet month has boosted recharge volumes 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.

Hutt

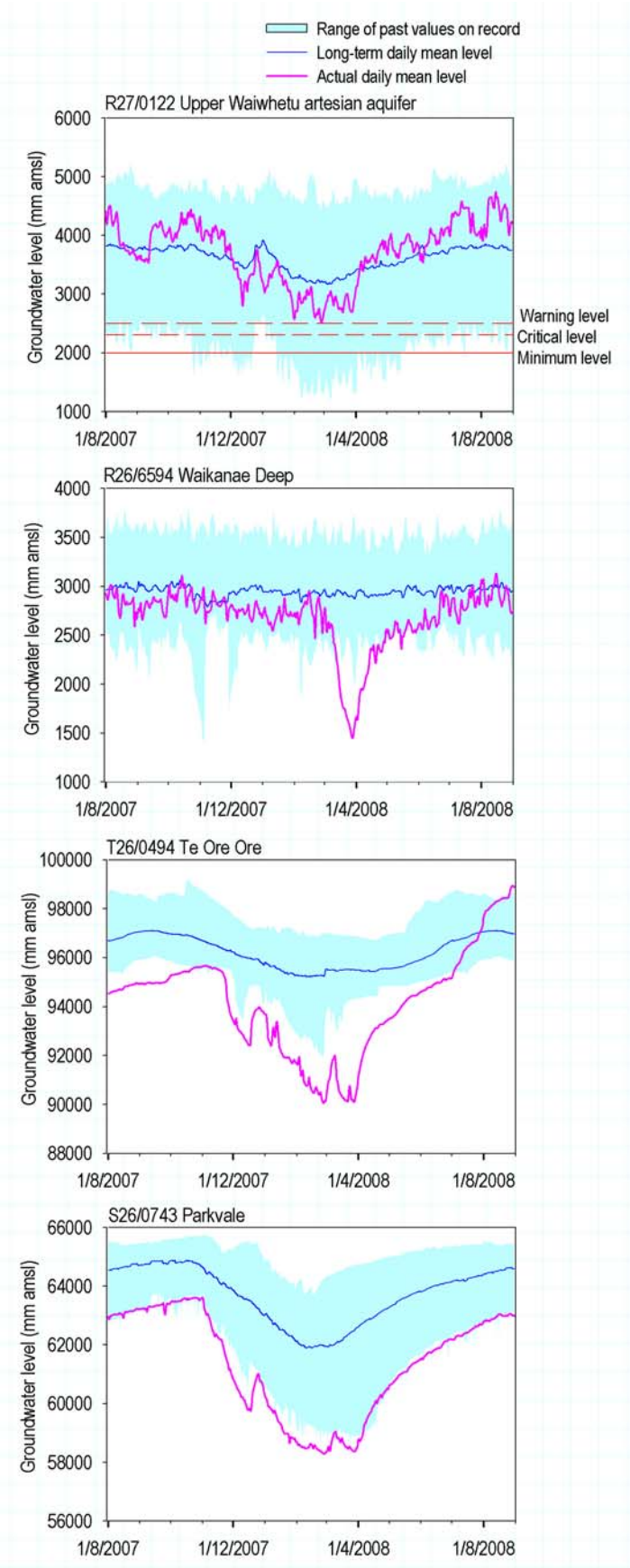
Groundwater levels in the artesian Waiwhetu aquifer have been above average since May.

Waikanae

Groundwater levels recorded in the deep Waikanae aquifer remained at or below average throughout most of August. This deeper aquifer system may still be yet to show signs of recovery with increased recharge from the wet winter. Shallow monitoring wells on the Kapiti Coast are recovering in response to the wet period.

Wairarapa

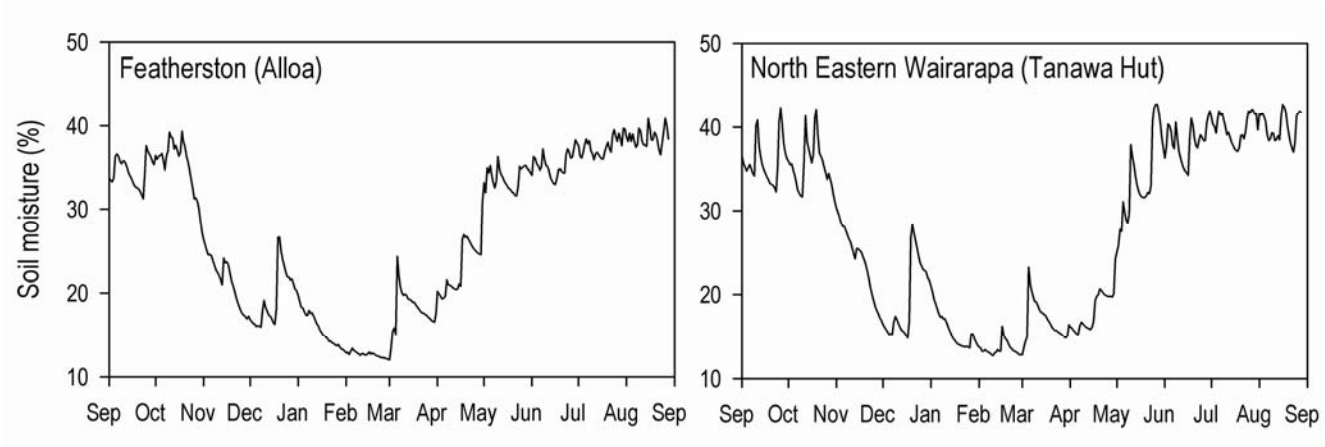
Shallow rainfall and river-fed aquifers in the Wairarapa have recovered in response to the wetter than average August. This can be seen clearly in the water level data from monitoring bore T26/0494 in Te Ore Ore, which has recorded below average levels for over a year. Levels in this bore are now above long-term daily maximums since records started at this site in the early 1980s. Groundwater levels in deeper confined aquifers are still to show a marked recovery, as can be seen from the Parkvale monitoring bore S26/0743.



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

Soil moisture

During August, soil moisture levels remained high due to the regular rainfall. In general, soil moisture content is higher than at the same time last year. The effect of the saturated soils has been evident, with rainfall leading to ponding of water in places, and numerous landslips around the region.



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 through to October 2008 favours normal rainfall in the Wairarapa and normal or below normal rainfall in the western Wellington region (Salinger & McKerchar 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.