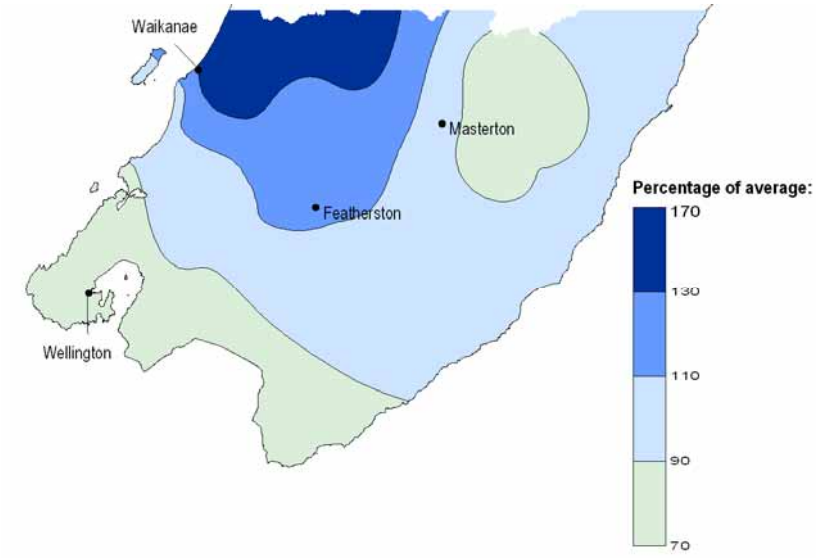
October 2008 hydrological summary

Environmental Monitoring and Investigations Department

Rainfall during October

October 2008 was notable for stronger than normal northwesterly and southwesterly winds over New Zealand (see NIWA's national climate summary for the month at http://www.niwa.co.nz/ncc/cs/monthly/mclimsum_08_10). Rainfall was well above average in the northwest of the Wellington region, particularly in the northern Tararua Range and Kapiti Coast. More than one metre of rainfall was recorded at our site 'Bannister Basin' in the Tararua Range; the long-term October average at that location is 0.6 m. However, Wellington City and the southern part of the region remained relatively dry for the time of the year.



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

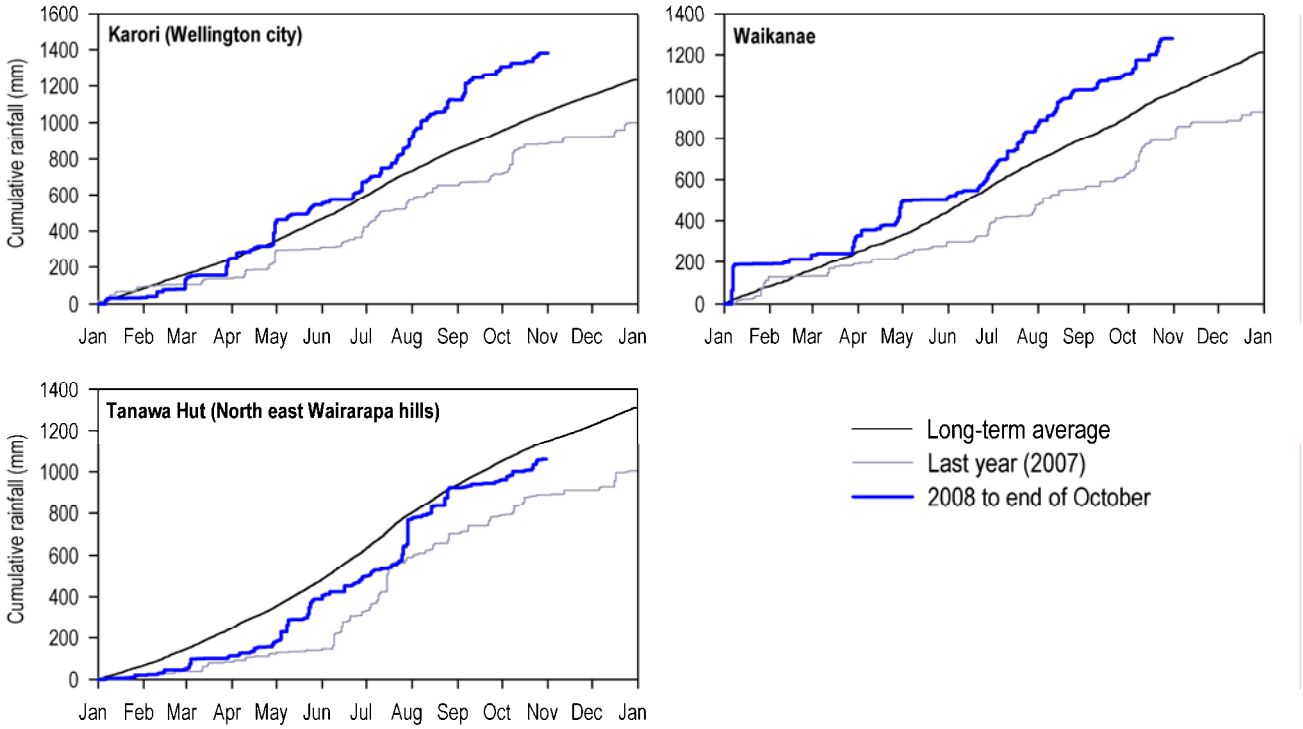
A significant storm on 7th October caused high winds and heavy rain, particularly in the Tararua Range. In some places up to 30% of the month's rainfall was received during this storm. Of note, there was 422 mm in 12 hours at our site 'Angle Knob' in the Tararua Range – the heaviest rainfall at that location since monitoring began there in 1982. The event was also notable for 'spill over' rain that fell in the western Wairarapa foothills, and relatively significant floods resulted in the Ruamahanga River and its western tributaries (see 'River Flows' section of this summary).

Snapshot of rainfall in the year to date

Throughout the region we have generally received about, or more than, average rainfall for the time of the year (see table and graphs below). This is in stark contrast to the drought situation experienced in much of the region during summer and early autumn. On the Kapiti Coast and in Wellington City rainfall has been 25-30% higher than average for the year to the end of October. We have also had significantly more rainfall than at this time last year.

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

	Rainfall for October at monitoring site (mm)	Rainfall for 2008 to end of October (mm)	Percentage of long-term average for year to date
Waikanae	172	1278	125%
Karori	76	1379	131%
Kaitoke	265	2102	110%
Wainuiomata	137	1817	109%
Featherston ('Alloa')	112	1028	114%
NE Wairarapa ('Tanawa Hut')	103	1062	93%
Tararua Range ('Angle Knob')	1060	5658	100%



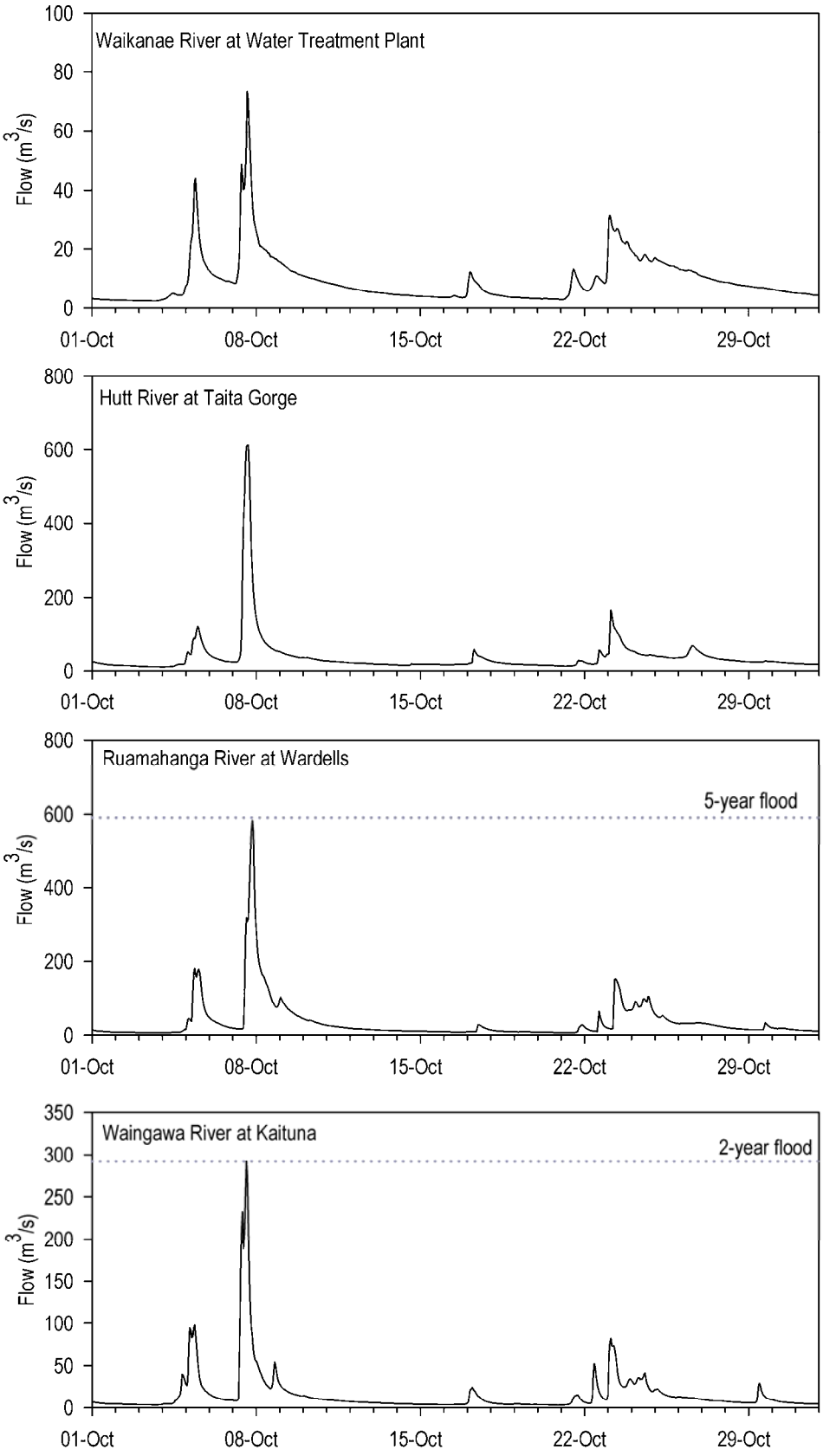
Cumulative annual rainfall at selected sites in the Wellington region

River flows during October

Flows in the major rivers of the Wellington region were generally above average for October, due to the high rainfall in the Tararua Range. The highest flows of the month occurred on 7th October, following very heavy rainfall in the range. The resulting floods were most significant in the Wairarapa, with estimated return periods of 3-5 years in the Ruamahanga River, 6 years in Waipoua River, and 3 years in the Waiohine and Tauherenikau rivers. This was the largest flood in the Ruamahanga River since July 2006, and the largest in the Waiohine and Waingawa rivers since February 2004. Although high flows were also experienced in the Hutt and Kapiti Coast rivers on 7th October, the estimated flood return periods were less than 2 years. Nonetheless, it was the largest flood in the Hutt River during 2008 to date.

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

	Average river flow for October 2008	Percentage of long-term average	Lowest 1-day flow during October (raw data)	Highest flow during October (raw data)
Waikanae River at Water Treatment Plant	9.3 m³/s	148%	2.4 m³/s on 2 Oct	77 m³/s on 7 Oct
Akatarawa River at Cemetery	9.0 m³/s	104%	3.0 m³/s on 20 Oct	107 m³/s on 7 Oct
Mangaroa River at Te Marua	4.3 m³/s	88%	1.5 m³/s on 3 Oct	79 m³/s on 7 Oct
Hutt River at Taita Gorge	37.8 m³/s	105%	11.3 m³/s on 3 Oct	618 m³/s on 7 Oct
Wainuiomata River at Manuka Track	1.5 m³/s	122%	0.7 m³/s on 20 Oct	13.4 m³/s on 7 Oct
Waingawa River at Kaituna	16.0 m³/s	121%	3.4 m³/s on 20 Oct	298 m³/s on 7 Oct
Waiohine River at Gorge	40.3 m³/s	145%	6.2 m³/s on 20 Oct	934 m³/s on 7 Oct
Ruamahanga River at Wardells	45.5 m³/s	142%	6.3 m³/s on 3 Oct	592 m³/s on 7 Oct
Ruamahanga River at Waihenga	131 m³/s	169%	50.7 m³/s on 20 Oct	1256 m³/s on 7 Oct



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

Groundwater levels

Groundwater levels started to decline in October from the annual 'highs' reached in many aquifers during later winter or early spring. In many shallow unconfined aquifers we recorded above average groundwater levels for this time of year. The high levels in these shallow aquifers are a result of above average rainfall during winter. Many deeper aquifers, which react more slowly to specific recharge events, are still tracking at or below the minimum levels on record.

Hutt

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

Waikanae

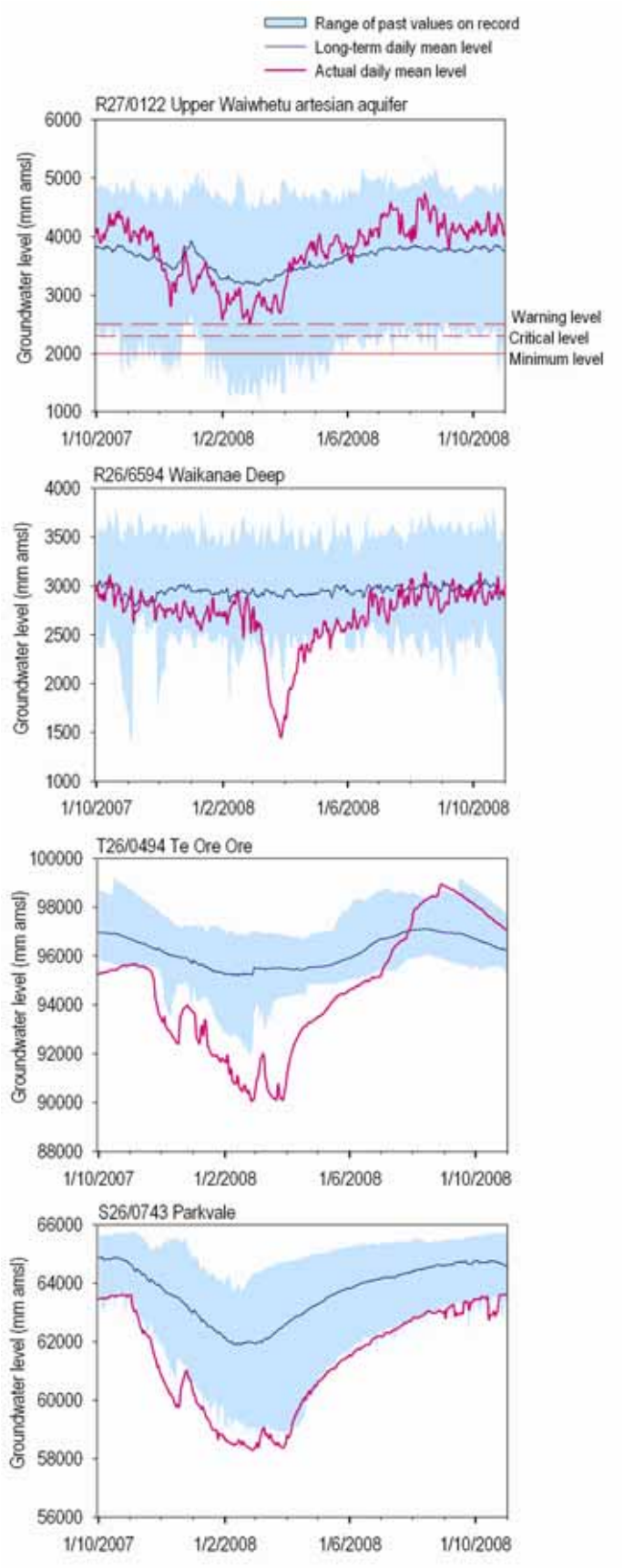
Groundwater levels recorded in the deep Waikanae aquifer remained around average throughout most of October. Water levels in shallow monitoring wells on the Kapiti Coast recovered in response to the wet winter.

Wairarapa

In the shallow rainfall and river fed aquifers of the Wairarapa groundwater levels have recovered from the low levels experienced over the summer. This can be seen in the groundwater level graph for the Te Ore Ore monitoring site. During October, water levels started to decline from the peak in September. However, in general water levels are still above average for the time of the year in the shallow aquifers.

Water levels have also recovered in the rainfall-recharged 'Martinborough Terraces' aquifer. This is the first significant recovery in groundwater level in this aquifer since the wet winter of 2006.

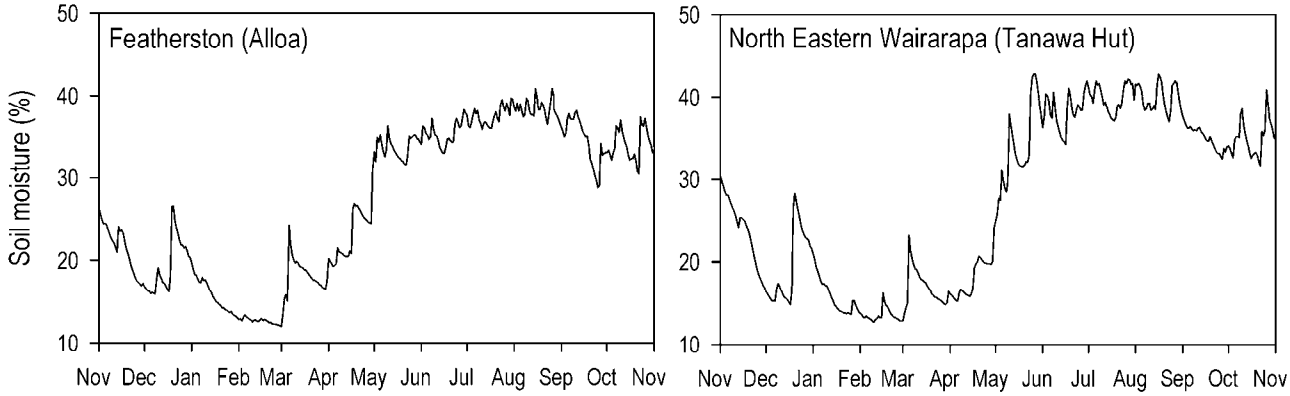
Groundwater levels in deeper confined Wairarapa aquifers are still to show a marked recovery, as can be seen in the Parkvale monitoring bore S26/0743.



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

Soil moisture

During October, soil moisture levels in the Wairarapa increased slightly from the decline in September. By the end of the month, soil moisture was significantly higher than at the same time last year, as shown in the graphs below.



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

Climate outlook

NIWA's climate outlook for November 2008 to January 2009 favours above average temperatures throughout the Wellington region, normal or below normal rainfall in Wellington and normal rainfall in the Wairarapa (see http://www.niwa.co.nz/ncc/seasonal_climate_outlook). Currently the El Nino Southern Oscillation is neutral, indicating that neither El Nino nor La Nina conditions exist. Neutral conditions are likely to remain throughout summer 2008/09.

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.