



Autumn 2014 – Hydrological summary

Environmental Science Department

Greater Wellington Regional Council (GWRC) presents this summary of hydrological data that have been collected at selected monitoring locations in the Wellington region. GWRC monitors and collects environmental data such as rainfall, river levels and flow, groundwater level and quality, freshwater quality, coastal water quality, aquatic ecosystems and recreational water quality at many more locations than have been presented in this document. This report is a brief data summary with limited interpretation of the results.

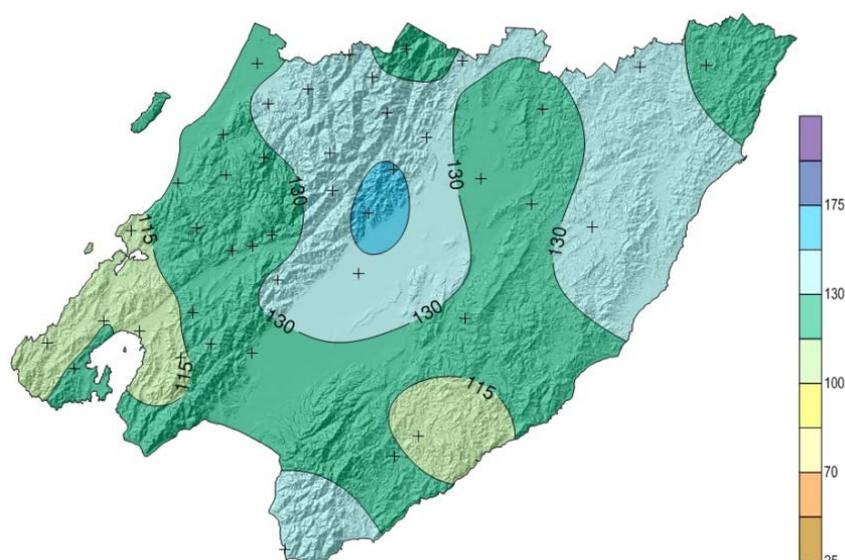
Readers are referred to the GWRC website where maps of all monitoring locations and up to date data can be found - <http://www.gw.govt.nz/environmental-science/>.

Autumn rainfall

The figure to the right shows the percentage of average rainfall that occurred during the 2014 autumn season (March to May inclusive) across the Greater Wellington region. The entire region recorded above average rainfall with the exception of the rain gauge at Wainuiomata Reservoir. Areas particularly wetter than normal were the Tararua Ranges and north-eastern Wairarapa.

GWRC rain gauges located in the Tararua foothills of the Waiohine and Mangatarere River catchments recorded over 150% of their average autumn rainfall.

Autumn 2014 rainfall as a percentage of long term average (crosses are monitoring stations used to build map)



Rainfall statistics for autumn (Mar–May 2014) for selected monitoring sites in the Wellington region

Rain gauge location	Total rainfall (mm)	Percentage of normal	Number of wet days (>1mm rain)	Percentage of normal
Otaki	271	126%	28	98%
Waikanae	343	123%	33	130%
Kaitoke	585	109%	43	93%
Karori Reservoir	381	122%	29	85%
Wainuiomata (Reservoir)	447	95%	33	83%
Tararua Range (Angle Knob)	2227	145%	58	109%
Waiohine River Gorge	818	167%	35	120%
Masterton	242	112%	29	122%
Featherston (Racecourse)	367	148%	35	142%
NE Wairarapa (Tanawa Hut)	411	122%	35	120%
SE Wairarapa (Longbush)	303	136%	27	87%

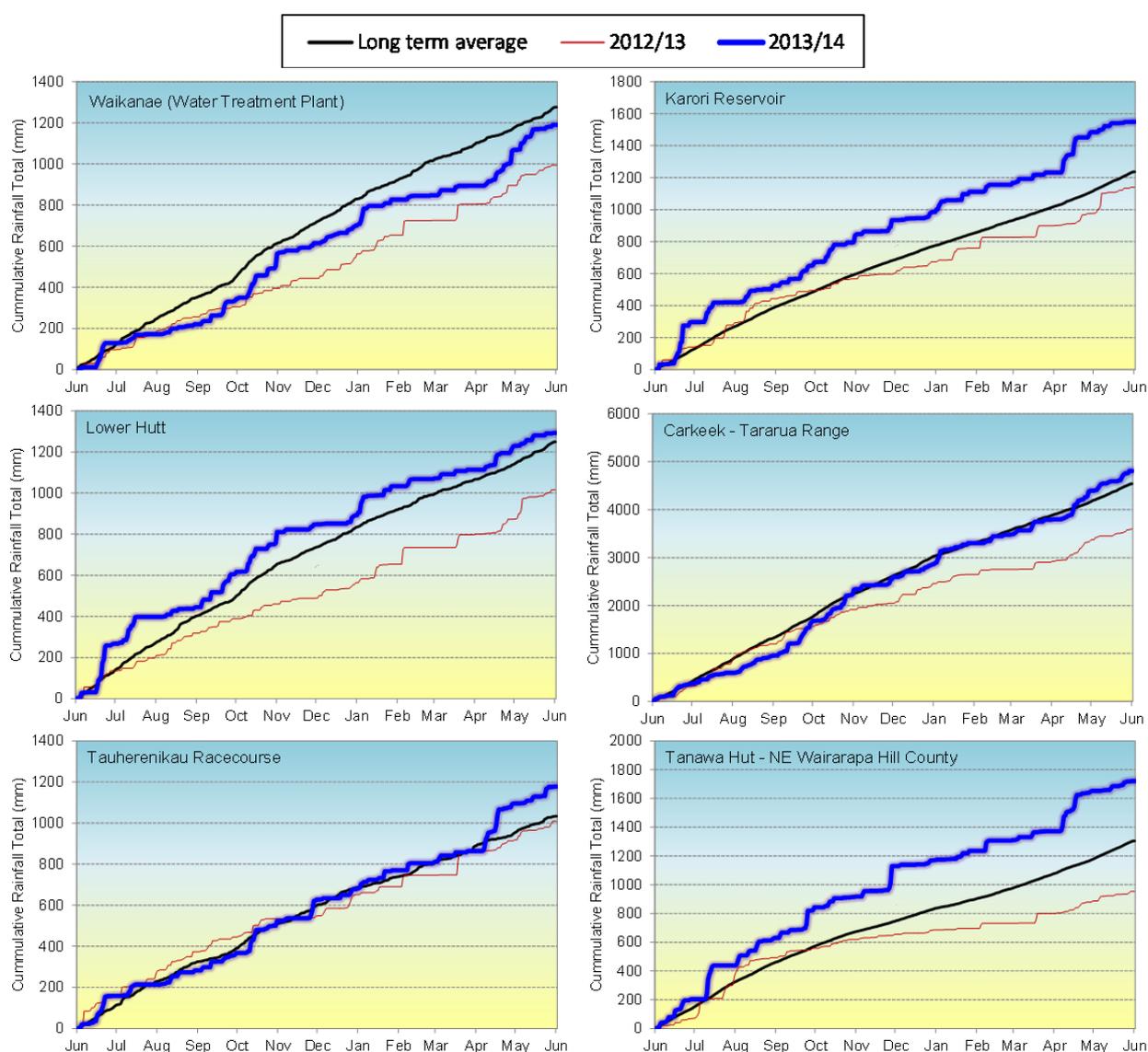
Rainfall accumulation for the year

Cumulative rainfall graphs for the year beginning in June are shown in the plots below for a range of rainfall monitoring sites across the region. The current 2013/14 year is compared to the long-term average and the 2012/13 year.

At each of the six sites the autumn rainfall accumulation (from March to May) starts out continuing the trend experienced during the summer months but from early April as a period of wet weather begins indicated by the steep upward slope. The change is particularly noticeable at the Waikanae, Karori, Tauherenikau and Tanawa Hut sites.

By the end of autumn and the 2013/14 year all sites except Waikanae were showing rainfall accumulations above average.

In comparison to the previous 2012/13 year, rainfall at Tanawa Hut was over 750mm (or 80%) higher. The rain gauge at Carkeek in the Tararua Ranges collected 4800mm (4.8m) of rain throughout the entire 2013/14 year.



Cumulative rainfall for the year to 2013/14 compared to the previous year and the long term average

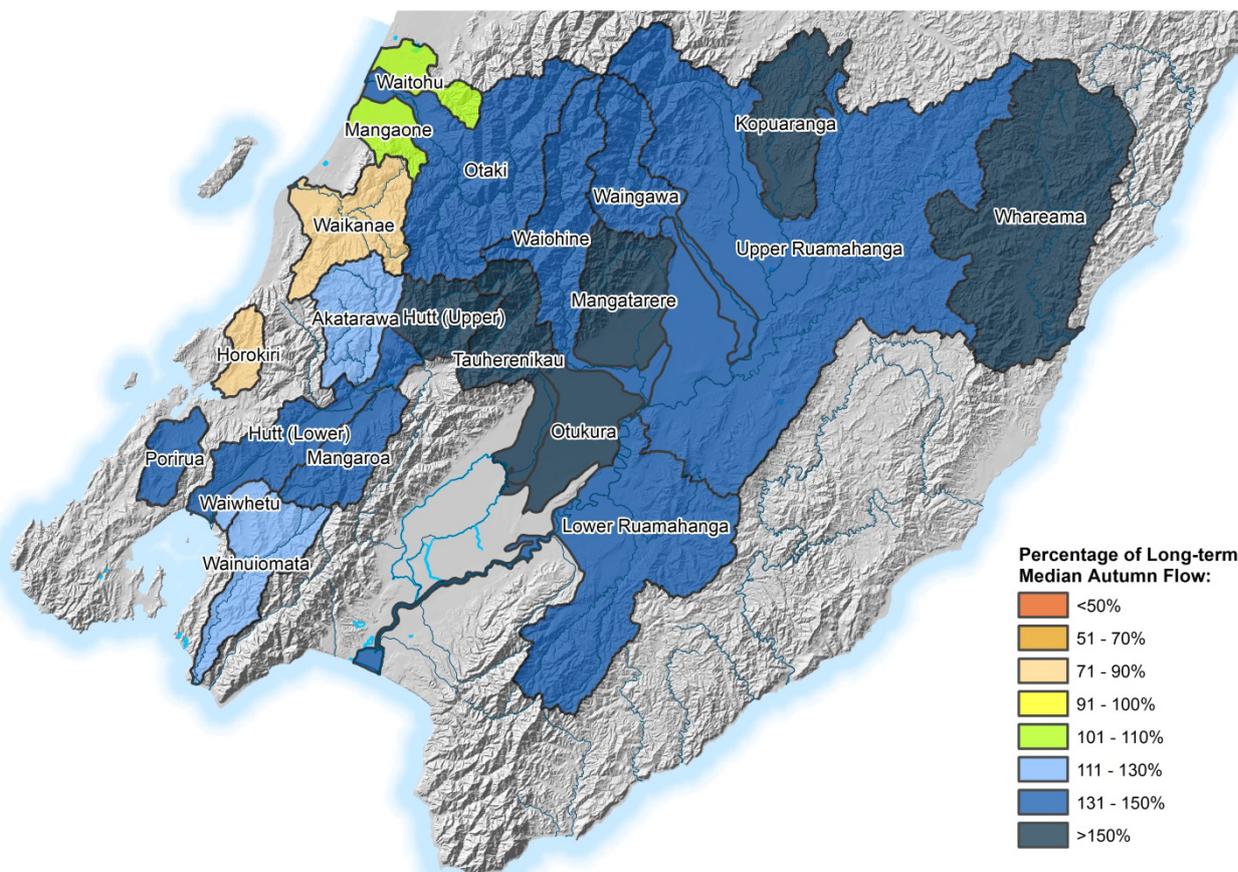
River flows during autumn

The table below shows the highest recorded river flows during autumn in a selection of catchments across the region. The recorded peak flows at these sites were all lower than their respective mean annual flood event.

Peak flows (cubic metres per second) during autumn 2014 compared with mean annual flood peak

River gauge location	Peak recorded flow during autumn (raw data)	Mean annual flood
Waikanae River at Water Treatment Plant	94 m ³ /s on 29 April	157 m ³ /s
Otaki River at Pukehinau	339 m ³ /s on 29 May	950 m ³ /s
Hutt River at Taita Gorge	397 m ³ /s on 24 May	835 m ³ /s
Wainuiomata River at Manuka Track	14 m ³ /s on 17 April	30 m ³ /s
Porirua Stream at Town Centre	25 m ³ /s on 16 April	35 m ³ /s
Waingawa River at Kaituna	202 m ³ /s on 17 April	289 m ³ /s
Waiohine River at Gorge	463 m ³ /s on 18 April	885 m ³ /s
Tauherenikau at Gorge	195 m ³ /s on 24 May	297 m ³ /s
Ruamahanga River at Wardells (mid)	342 m ³ /s on 25 May	487 m ³ /s
Ruamahanga River at Waihenga (lower)	850 m ³ /s on 18 April	1062 m ³ /s

The median recorded autumn river flow at some of our monitored catchments is compared to long-term median flows in the map below. It is evident that median flows during autumn were largely higher than normal across the region. Only the Waikanae River and Horokiri Stream registered median autumn flows lower than normal.



Median river flows during autumn 2014 (Mar–May inclusive) for primary catchments in the Wellington region as a percentage of the long term seasonal median

Minimum recorded river and stream flows for autumn 2014 are tabled below for a number of monitoring sites across the region.

The lowest recorded flows during autumn 2014 were not notable low flow events, although a number sites did register minimum flows that were lower than their mean annual low flow – these being; Waitohu Stream, Otaki River, Waikanae River, Akatarawa River, Mangaroa River, Wainuiomata River, Porirua Stream and the Ruamahanga River in its upper reaches as measured near Masterton (Wardells).

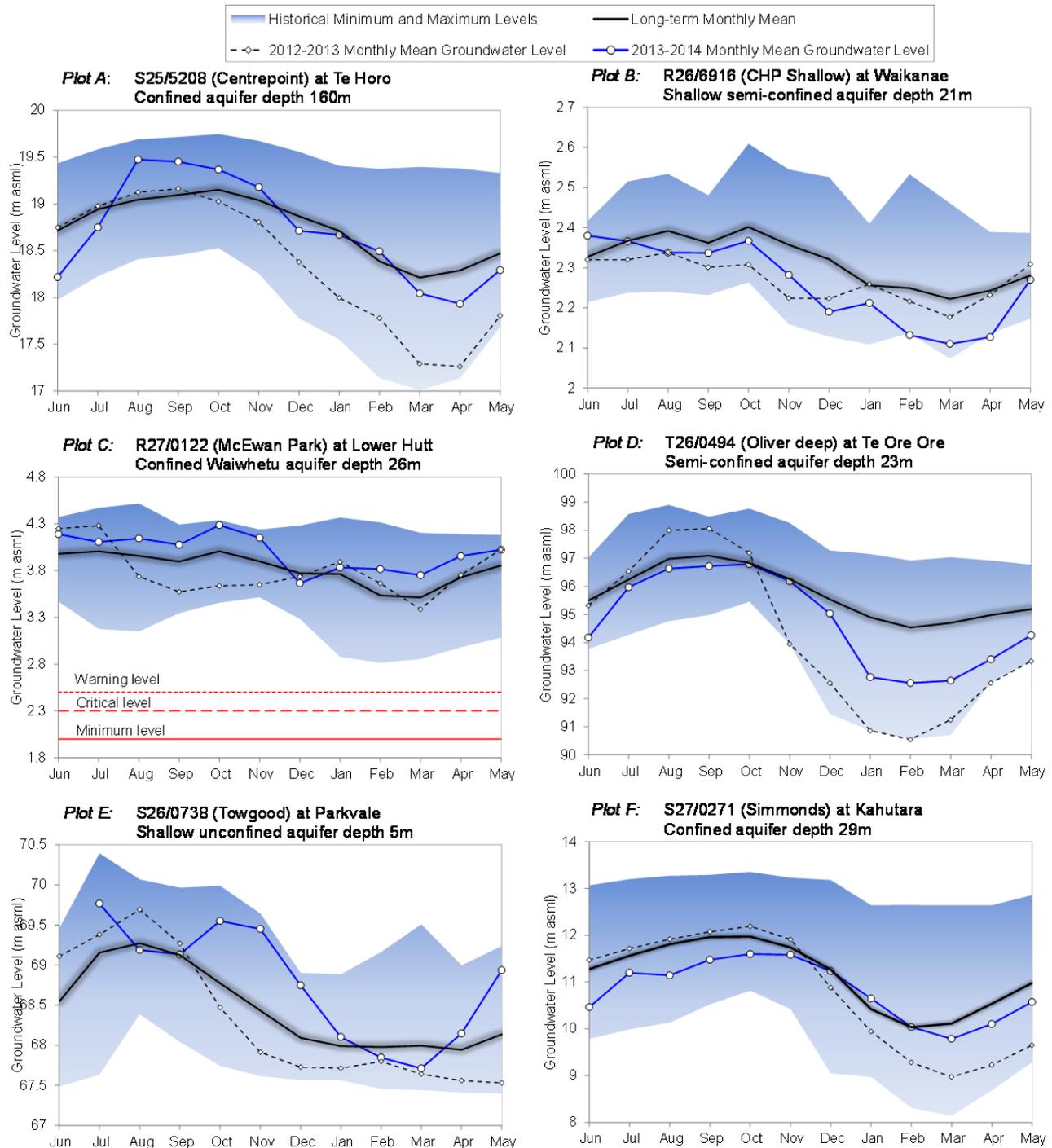
Minimum recorded flows (7-day average) during autumn 2014 compared with mean annual low flows.

River gauge location	Minimum 7-day duration flow during summer (raw data)	7-day mean annual low flow
Waitohu at water Supply Intake	0.122 m ³ /s beginning 4 Apr	0.151 m ³ /s
Otaki River at Pukehinau	4.782 m ³ /s beginning 1 Apr	5.183 m ³ /s
Waikanae River at WTP	0.794 m ³ /s beginning 1 Apr	1.048 m ³ /s
Akatarawa River at Cemetery	0.930 m ³ /s beginning 1 Apr	1.069 m ³ /s
Mangaroa at Te Marua	0.384 m ³ /s beginning 1 Apr	0.398 m ³ /s
Hutt River at Kaitoke	1.465 m ³ /s beginning 31 Mar	1.410 m ³ /s
Hutt River at Taita Gorge	3.931 m ³ /s beginning 31 Mar	3.788 m ³ /s
Wainuiomata River at Leonard Wood Park	0.242 m ³ /s beginning 31 Mar	0.291 m ³ /s
Porirua at Town Centre	0.155 m ³ /s beginning 31 Mar	0.163 m ³ /s
Waingawa River at Kaituna	1.755 m ³ /s beginning 31 Mar	1.427 m ³ /s
Waiohine River at Gorge	4.324 m ³ /s beginning 31 Mar	3.612 m ³ /s
Mangatarere at Gorge	0.298 m ³ /s beginning 31 Mar	0.176 m ³ /s
Tauherenikau River at Gorge	1.455 m ³ /s beginning 31 Mar	1.321 m ³ /s
Otukura Stream at Weir	0.096 m ³ /s beginning 30 Mar	0.080 m ³ /s
Kopuaranga River at Palmers	0.347 m ³ /s beginning 30 Mar	0.314 m ³ /s
Ruamahanga River at Wardells	3.019 m ³ /s beginning 31 Mar	3.111 m ³ /s
Ruamahanga River at Waihenga	10.444 m ³ /s beginning 1 Apr	10.433 m ³ /s

Groundwater levels in autumn

Groundwater levels at six bores across the region are shown below. The recorded levels for the 2013/14 year are compared to the previous year, the long-term average and the range of recorded levels.

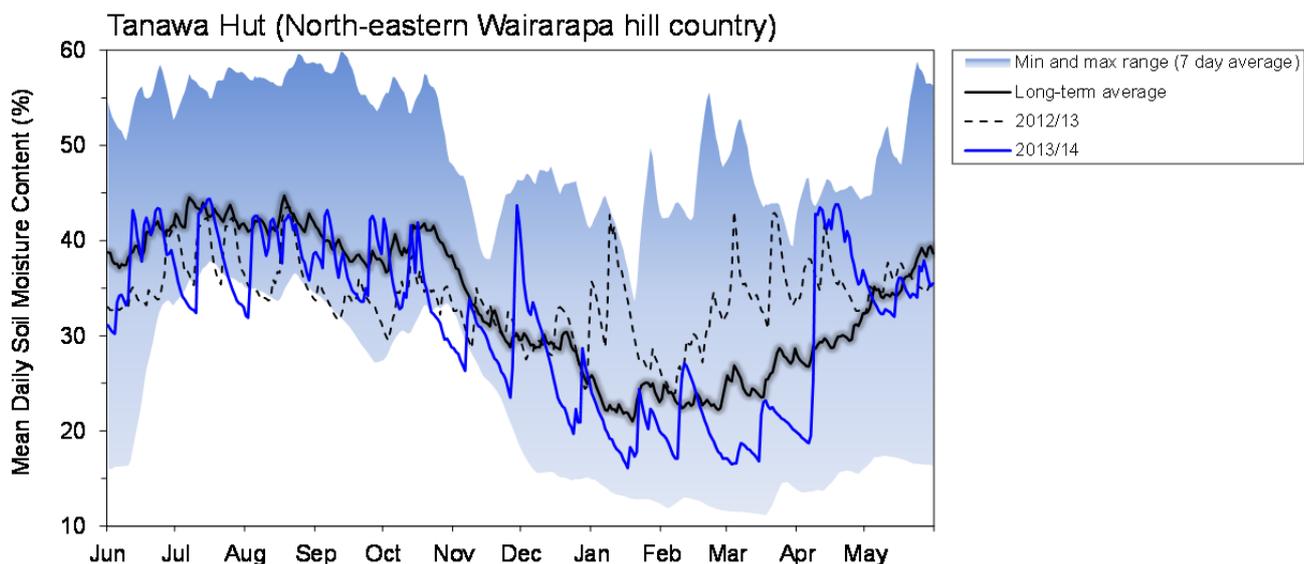
The year was largely unexceptional in terms of extreme low or high recorded groundwater levels. A notable exception, however, was in the Waikanae shallow semi-confined aquifer (Plot B) where levels dropped to almost record lows during February to April.



Mean monthly groundwater levels at selected sites in the Wellington region for the 2013/14 year compared with the previous full year and the historical average and range

Soil moisture in autumn

Soil moisture content continued slightly below average as autumn 2014 started, but two weeks of good rainfall from 7 April raised the soil moisture levels for the remainder of the year.



Mean monthly soil moisture levels in the north-eastern Wairarapa hill country for the 2013/14 year compared with the previous year and the historical average and range

More information

This summary is based on data from selected monitoring locations in the Wellington region. GWRC 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 <http://www.gw.govt.nz/environmental-science/>.

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. The data presented is the best currently available but due to quality assurance procedures this data may be amended, without notice, at any time.

GWRC accepts no responsibility for any interpretation or use of the provisional data in this report.