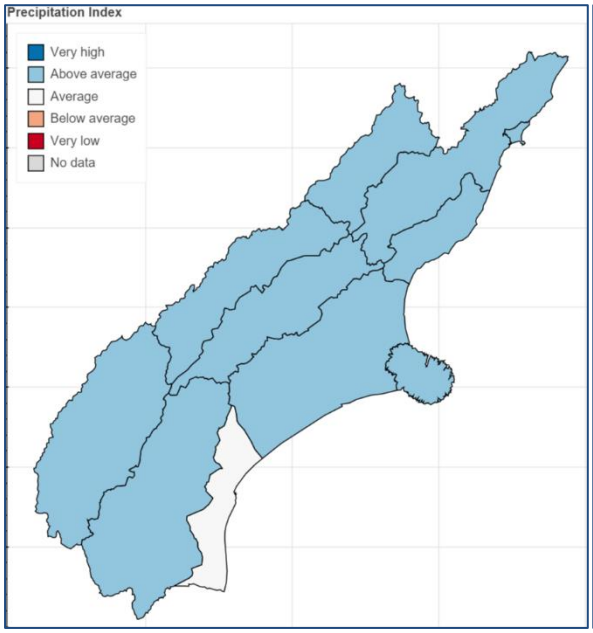
Canterbury Freshwater Quarterly Report

Winter-Spring 2017
A report for Environment Canterbury Councillors

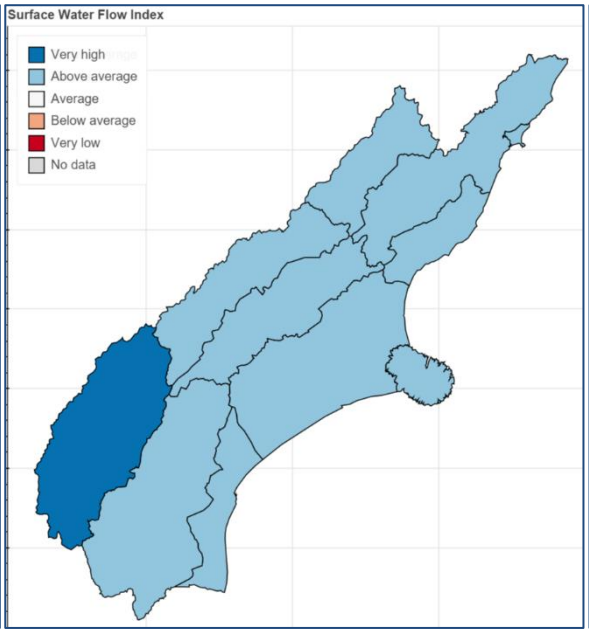
Monthly snapshots for August: rainfall / surface water / groundwater

The maps below summarise rainfall, surface water flow, and groundwater levels over the last calendar month. They are based on amalgamated data chosen by Environment Canterbury scientists and give a good approximation of conditions across the region, measured on a five-point scale based on standard deviations. The rainfall and surface water flow maps are based on geographic and topographic conditions. The groundwater map, however, reports by CWMS water management zone.

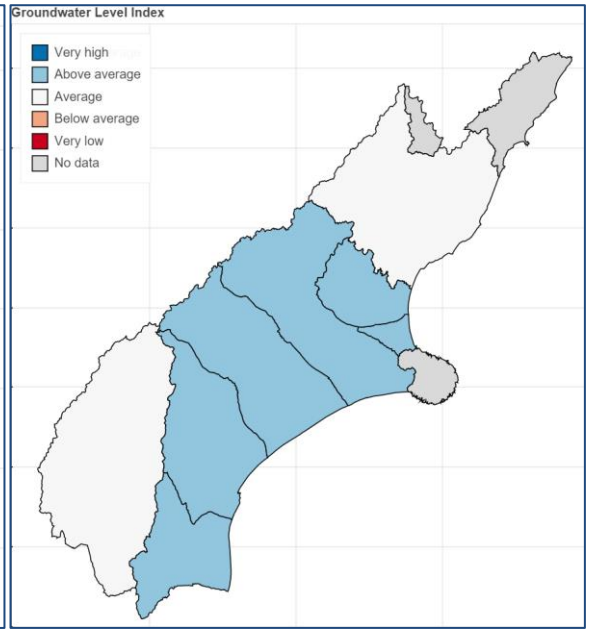
The maps show above average rainfall across the majority of the region in August; continuing on the wet winter. The middle map shows river flows averaged across geographic areas; the very high flows in the southern alpine region shows the effect of snow melt starting to come into flows. Groundwater in Central and Southern Canterbury has responded well to the wet winter and 87% are above average for this time of year.



Precipitation: August 2017



Surface water flow index: August 2017



Groundwater: 87% of wells were above average

NIWA forecast for Sept-Oct-Nov

A 45% chance of average rainfall. A 40% chance of average soil moisture. A 45% chance of average river flows.

State of groundwater

Canterbury had a wet winter – the first for several years. This winter rainfall recharged groundwater systems as shown by the average and above average groundwater levels across Canterbury. There are some areas where groundwater is still below average: in the Waipara basin and in deeper wells north of the Ashburton River.

Most groundwater recharge occurs from April to August, when evaporation rates are low, and excess water can percolate through the soil into groundwater. In the wet winter of 2013, the total rainfall (at Christchurch airport) from April to August was 415 mm. In comparison, we only had 200 mm for the same period in 2016. This year, the total was 400 mm.

Groundwater levels in August 2017 were above average in 87% of the shallow wells that we monitor across the region. This is a big recovery since the end of last winter, when only 15% of those wells had above-average water levels. Current levels are still slightly below the peak levels recorded during the previous wet years of 2013 and 2014.

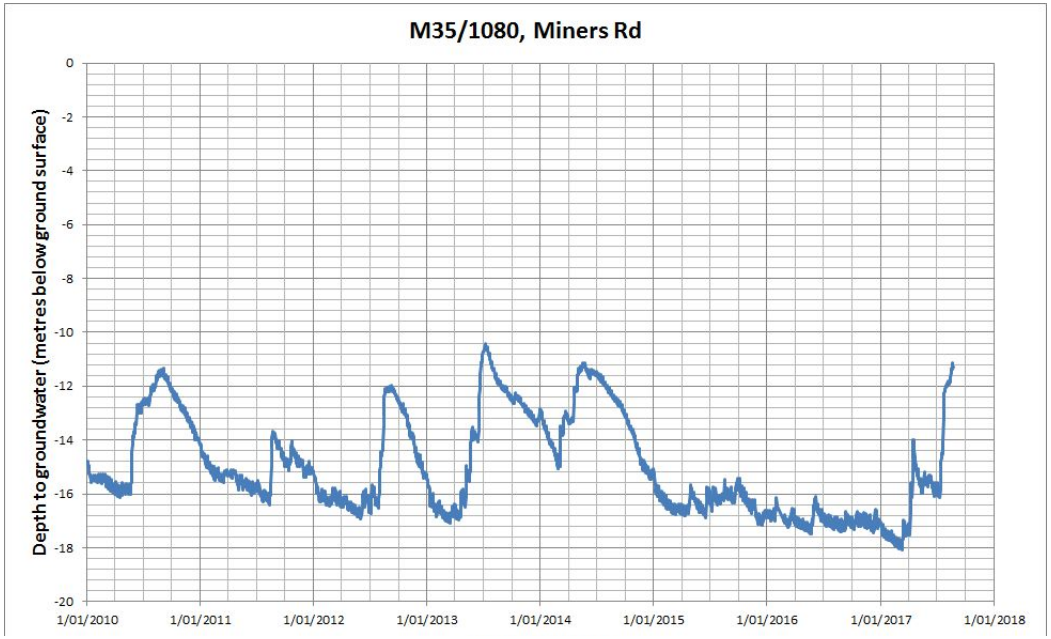


Figure 1 Our monitoring well on Miners Road, near West Melton, shows the typical winter peaks were absent in 2015 and 2016, but water levels have recovered this year.

Looking forward

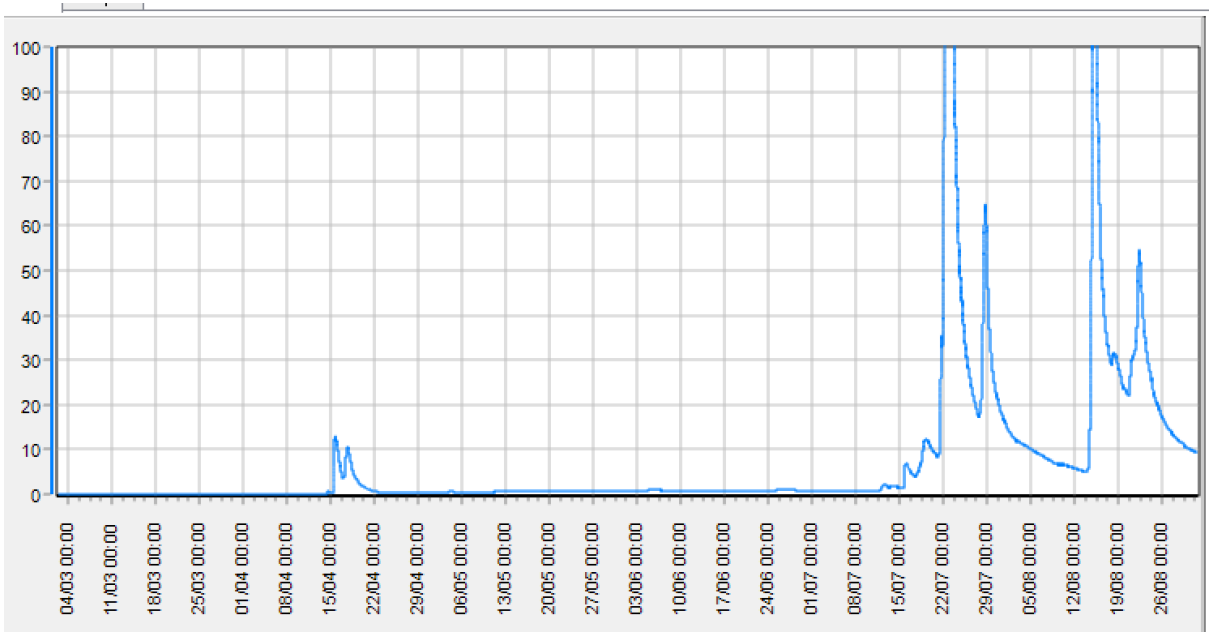
The variable weather in late winter, with more wet days than dry, has delayed the start of irrigation season in most areas. This observation is supported by the available daily water use data monitored. If the weather patterns continue, it's likely the start of the full irrigation season will be delayed until October.

Given the recovery in groundwater levels, it's likely there will be few restrictions on the adaptive management consents for the CPW and Valetta schemes.

Waikirikiri/Selwyn River

This year has been record breaking for the Waikirikiri/Selwyn River. In March and April Coes Ford fell to the lowest flow since records began in 1984. The flow was zero cumecs, but it is incorrect to say the river dried up; it stopped flowing but there was still water present.

In July the highest Coes Ford gauged flow on record was measured (400 cumecs; the previous highest gauging was 165 cumecs). N.B. during the flood the recorder suggested a flow of over 700 cumecs but this was estimated off the river height. The gauging means that the height vs flow relationship has been adjusted and it now estimated the July peak was 421 cumecs. This is the highest on record at Coes Ford but it is worth noting that it was not a particularly large flood at Whitecliffs (in the foothills). The extensive flooding in the lower Selwyn was mostly driven by rainfall on the Canterbury Plains; this is unusual. The river has been flowing at Coes Ford since mid-April and flowing all the way across the Canterbury Plains since the end of July.



Coes Ford measured flow from early March to *late August 2017.* On 31 August, the flow at Coes Ford was 9.6 cumecs.

Water measuring update

Of the 368 water takes with no record of a measuring device in April 2016, just 39 remain to be dealt with via an action plan. In April 2016, another 3007 meters were found to have no verification, now reduced to just 490, which are also being followed up. Eighty-three per cent of the 5508 metered takes are now providing daily data to ECan. Of those, 4525 water takes have systems that provide real–time telemetry monitoring. This goes well above the national requirements for water measuring.

LAWA update

The Land, Air, Water Aoteoroa (LAWA) website continues to develop. There are now six different modules: air quality; coastal water quality; river water quality and ecology (including macroinvertebrate scores); lake water quality and ecology; and "Can I swim here?" The analysis of trend information has been revised into a more automated form. The results of this are currently being checked by councils ready for a the formal LAWA refresh on World Rivers Day (September 24th).

For 2017 the NZ River Awards panel will be using *E. coli* as the indicator to determine the most improved rivers. The data used to judge this are taken directly from LAWA