

Key points

- Most of Marlborough's groundwater resources underlie the Wairau Plain
- Marlborough's aquifers and their related springs are at medium to high levels or flows going into the 2011/12 summer with the exception of the Wairau Aquifer which is low. This reflects low Wairau River flows
- The Benmorven Aquifer also remains depleted
- The deep Southern Valleys Aquifers are relatively full going into summer
- Rates of measured groundwater abstraction during the 2010/11 summer remain low compared to consented allocation
- A similar pattern of underutilisation is known to exist to varying degrees for aquifers where grape plants are the main irrigated crop

Why we monitor

Having sufficient groundwater available in the right place at the right time is essential for both water users and the natural environment. Groundwater is used for irrigating and processing our agricultural crops, stock water and also provides the drinking water for all of our towns. There are 11 main aquifer systems underlying the Wairau Plain and these are made up of subsectors.



The Wairau Plain springs such as Spring Creek are also fed by groundwater and need to be managed to preserve acceptable flows e.g. groundwater provides the baseflow for the Taylor River as it flows through Blenheim.

If aquifers and springs dried up, it would affect economic prosperity, together with the health of fauna or flora and the well-being of the community.

Because of the precious nature of these key resources they are closely monitored on a day to day basis by MDC. Unfortunately we do not have a complete picture of how much groundwater is used by water permit holders, however processes are in place to remedy this.

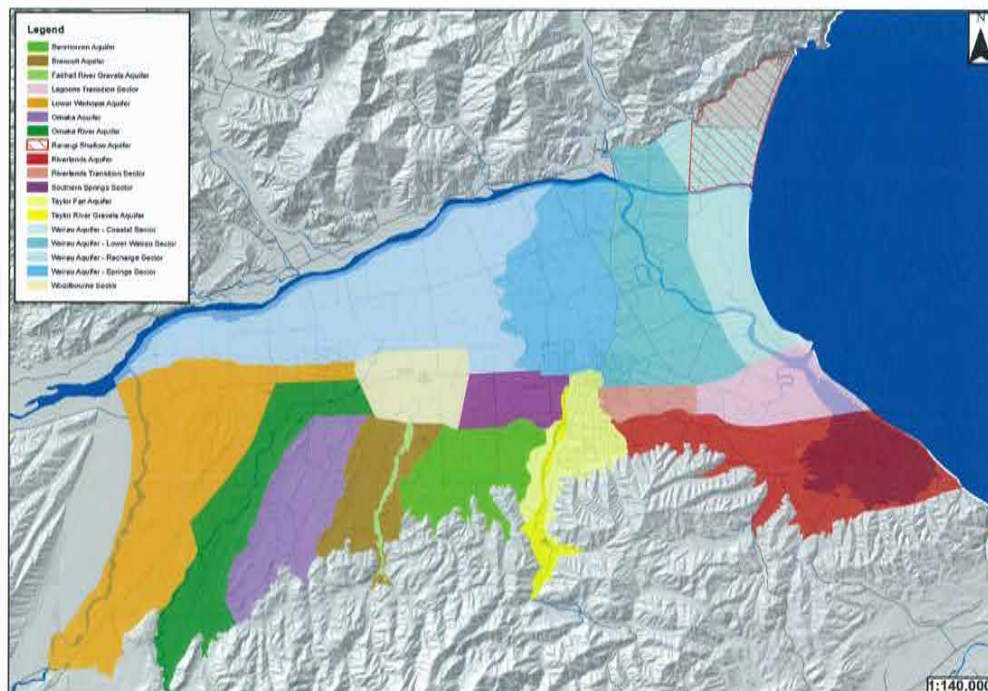
Where and how we monitor groundwater quantity

To monitor the effect of water abstraction and climate variability on groundwater, MDC operates a network of 33 wells across the district. Most sites are located on the Wairau Plain where demand is highest and most of the aquifers are located. Instruments at each monitoring well

automatically record aquifer level at 15 minute intervals and transmit this data back to MDC.

Because groundwater is connected to springs, MDC also gauges key spring flows at 5 sites each week.

MDC uses this information to improve understanding of the link



Main Wairau Plain Aquifers

between abstraction and changes in aquifer level or spring flow.

Reporting and results

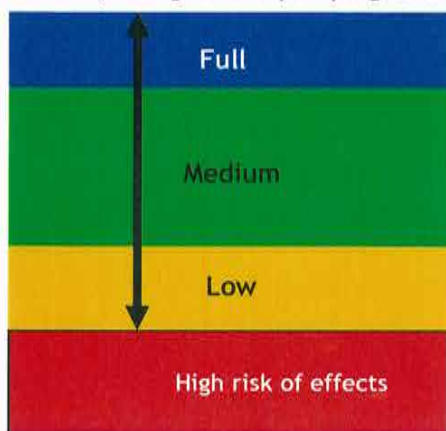
Aquifer levels and spring flows are posted on the MDC website on a daily or weekly basis. In spring each year MDC formally report on the state and trends of the region's underground water resources and their associated springs.

This review is scheduled for spring when aquifer levels peak, and decisions can be made by MDC and water users on potential issues with summer water use. Groundwater use over the previous summer and its effect is also reported on. (The photo to the right shows MDC staff taking measurements in a groundwater fed spring).



How is aquifer fullness gauged?

The status of an aquifer is measured in a number of ways. The most common method is to relate the level to the seasonal average or a benchmark drought. However this approach relies on having sufficient historical record including floods, droughts and pumping to characterise aquifer behaviour.



Twenty years of record is the preferred minimum required and currently is only available at a few MDC sites, but most wells will achieve this within a decade.

Average aquifer level is a relative measure and does not quantify how much groundwater can be safely allocated. To do this the minimum level below which there is an increased risk of seawater intrusion, spring recession or subsidence needs to be known.

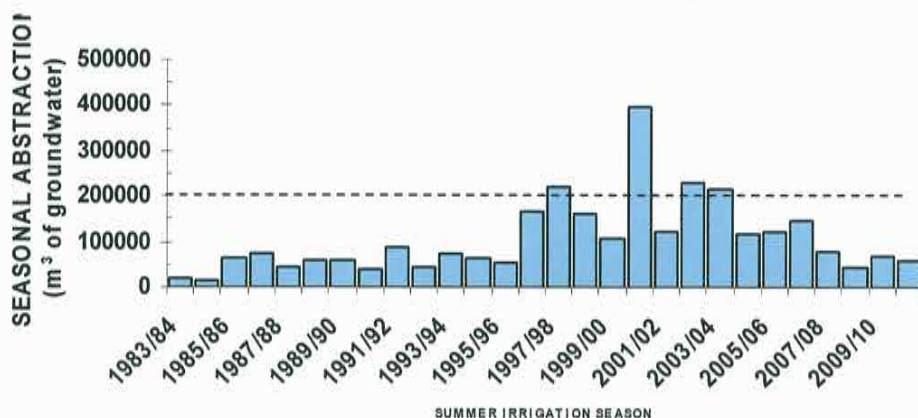
So far minimum levels have only been defined for the Southern Valleys aquifers where sufficient pumping and aquifer level information exists for the community to set limits. MDC intends setting limits for all the major aquifers to provide certainty for water users and the environment in the future.

Summer water use planning

It makes sense for MDC and water users to use the spring aquifer status to plan summer groundwater allocation, especially for isolated aquifers like the Southern Valleys systems which are only recharged in spring.

On the other hand, aquifers which rely on river recharge such as the unconfined Wairau Aquifer are more dynamic and spring levels are not always indicative of what will happen in late summer.

Brancott Aquifer Seasonal Use



Aquifer status plots

The following series of plots show the spring level for each aquifer in relation to historical records, along with the long-term trend, the minimum level, and if available metered water use for last summer.

They are standardised so the reader can compare the performance of different aquifers. The same format will be used in the future to inform MDC and water users. Complete pumping records only exist for the Southern Valleys to date (as the plots show).

Groundwater levels across Marlborough are in the medium to high range compared to historical records with the exception of the Wairau Aquifer. Low Wairau River flows from July to September reduced Wairau Aquifer recharge rates and caused well levels to reach a 20 year low for winter. Wairau Aquifer fed springs are also relatively low.

Current aquifer status

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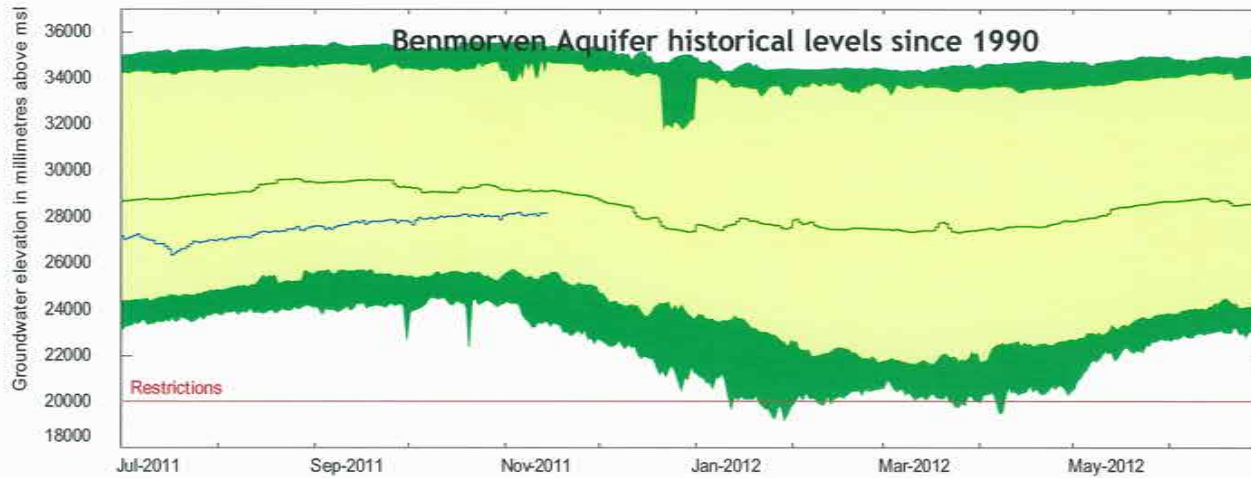
For more information on groundwater quantity go to

www.marlborough.govt.nz

Marlborough District Council

Seymour Square, Blenheim. Telephone 03 520 7400 Fax 03 520 7496

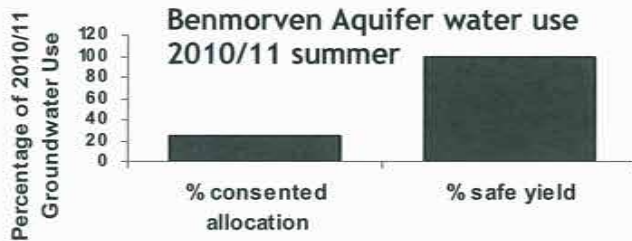
Benmorven Aquifer



Groundwater levels are moderately low going into the 2011/12 summer irrigation season compared to those experienced since 1990. The current level is indicated by the blue line with the average shaded green. Yellow shading is normal, and the green shaded areas are high or low



Relative spring aquifer status



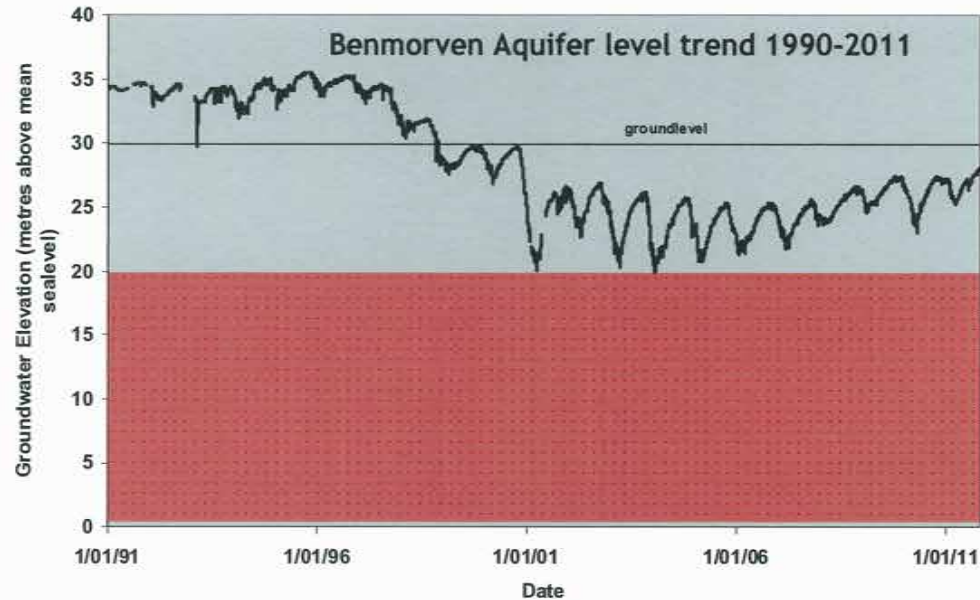
Groundwater use last summer was high at 100% of the safe yield and as a result groundwater levels fell by 2.5 metres due to pumping and natural drainage. This level of usage means that well levels may not stabilise longterm depending on seasonal demand and recharge

Abstraction

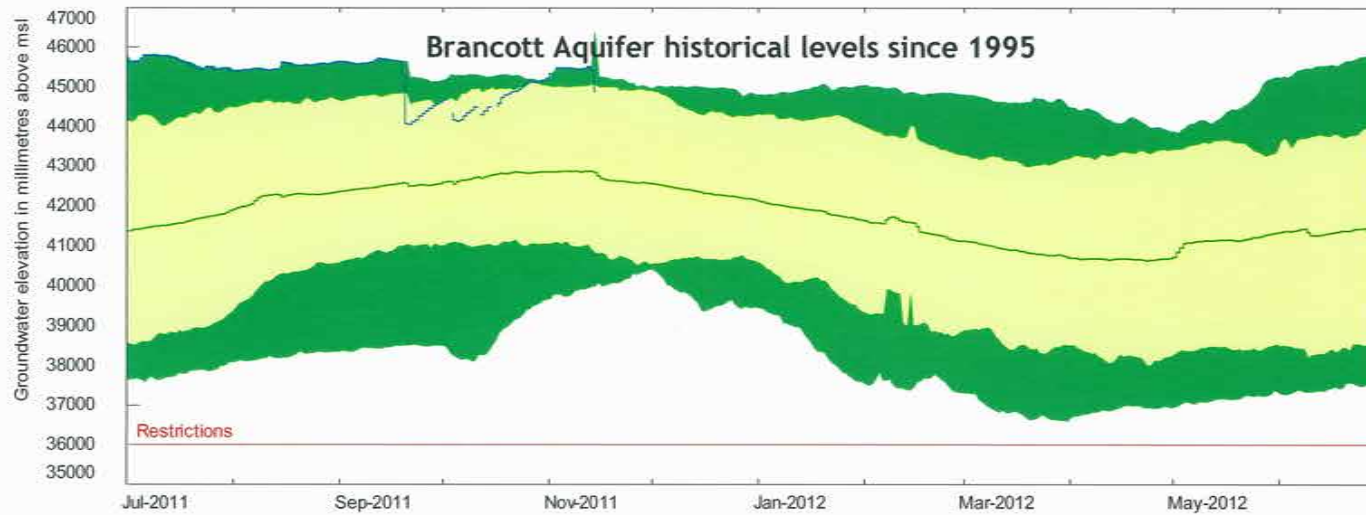


Long-term aquifer trend

In terms of long-term trends, groundwater levels have not fully recovered from the 2000/01 drought although they have stabilised

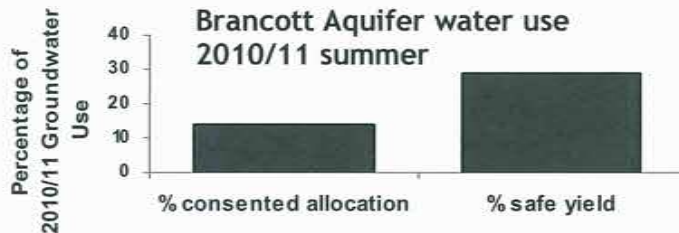


Brancott Aquifer



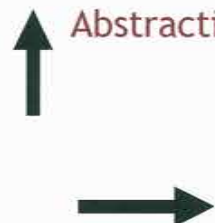
Groundwater levels are high going into the 2011/12 summer irrigation season compared to those experienced since 1995. The current level is indicated by the blue line with the average shaded green. Yellow shading is normal, and the green shaded areas are high or low levels historically

Relative spring aquifer status



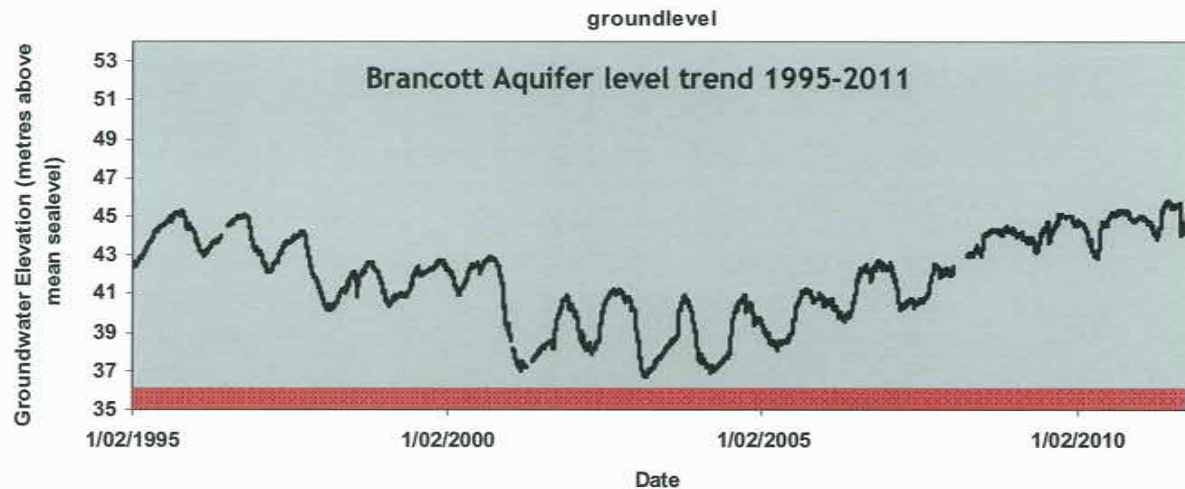
Groundwater use last summer was low at about 30% of the safe yield and as a result groundwater levels fell by only 1.3 metres due to pumping and natural drainage. Aquifer levels are well above the minimum and there are unlikely to be any issues this summer

Abstraction

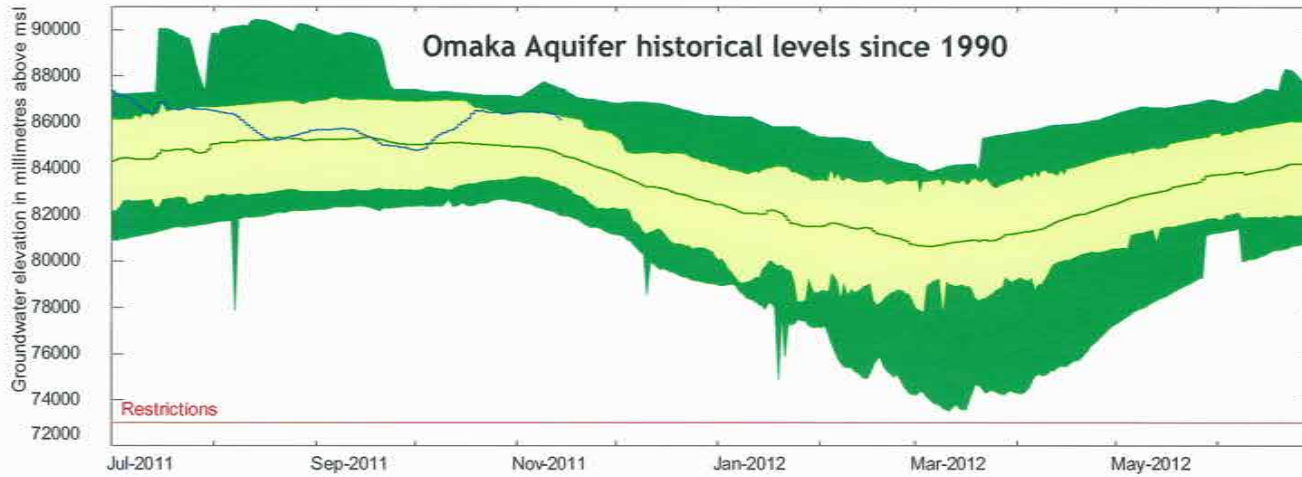


Long-term aquifer trend

In terms of long-term trends, groundwater levels are currently higher than prior to the 2000/01 drought

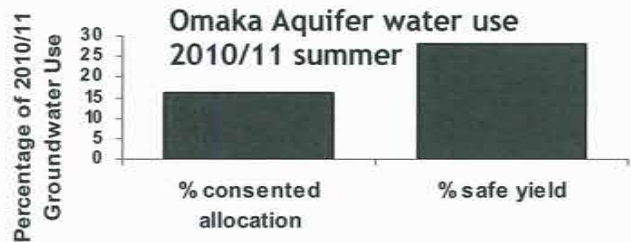


Omaka Aquifer



Groundwater levels are high going into the 2011/12 summer irrigation season compared to those experienced since 1990. The current level is indicated by the blue line with the average shaded in green. Yellow shading is normal, and the green shaded areas are high or low levels historically.

← Relative spring aquifer status



Groundwater use last summer was low at 28% of the safe yield and as a result groundwater levels fell by only 6 metres due to pumping and natural drainage. No issues are expected this summer with levels well above the minimum.

↑ Abstraction

In terms of long-term trends, groundwater levels have recovered from the 2000/01 drought due to wetter seasons with less abstraction and higher recharge rates than forecasted.

Long-term aquifer trend

