

9. CHRISTCHURCH GROUNDWATER

1. GROUNDWATER LEVELS CHRISTCHURCH 1998/99

In West Melton two of five wells reached their first trigger level last summer. Restrictions of groundwater usage by 33% for these two zones were put in place. Groundwater envelope plots for the West Melton and Christchurch area wells and a location map are attached in Appendix 1.

In line with this, south west of the city experienced also very low levels.

In the rest of Christchurch, levels were however around average. The last three years we see a decline in winter level of the "Museum Well", caused by lack of winter recharge. If this winter has low recharge it is expected that levels will go below the current average level, but still within the normal range. The March 1999 level is just above the 1998, recovery is stronger than expected. This pattern features also in many other wells around Christchurch.

The 3 volume technical reports on groundwater recharge will be available for City Council reference.

2. CHRISTCHURCH ARTESIAN AQUIFERS GROUNDWATER USAGE

The Regional Council's assessment of groundwater usage and interim safe yield is summarised below:

	Annual (Million Cubic Metres)
Estimated Actual Abstraction in 1986	111 MCM
Interim Safe Yield in 1986	143 MCM
Estimated Actual Abstraction in 1998	83 MCM
Resource Consents Allocation 1999	185 MCM

3. WOOLSTON SALT WATER CONTAMINATION UPDATE

In Woolston groundwater levels stayed well above mean sea level, as shown in the 4 year water level comparison and the frequency of groundwater graphs for the Scruttons Road monitoring well in Appendix 2.

The safe levels for preventing saltwater intrusion were maintained throughout the summer, as a consequence of the installation of a booster pump by the CCC and water efficiency measures taken by the local industry. This booster pump brings water in from outside the Woolston area, reducing demand on the first aquifer locally.

The lines in the frequency plot shows that from June 1998 till the present the level stayed 31% of the time below mean sea level. (250mm above Lyttelton 1937 Mean Sea Level Datum). It also shows that only 2% of the time the level went below Low Tide level, which is regarded as the main cause of salt water contamination.

This is a major improvement on the statistics of the 4 previous years and because the last three months of the hydrological year have not passed yet, these statistics will improve even further. The percentage of time spent below mean seal level has halved so far and the very low levels below -1m -MSD did not occur at all. The Regional Council's aim was to have the level more than 50% of the time above mean sea level and avoid the lower than low tide levels altogether. Since the very low levels occurred this year before the booster pump was operational, it is likely that next year the level will be maintained above low tide level and that the percentage of time water levels stay above mean sea level will again be significantly greater than 50%. The Chloride level history of the Scruttons Road well is shown on a graph in Appendix 2.

The latest water quality figure for the Scruttons Road well is not yet reflecting the improved situation as regards the water levels, although no immediate effect was expected for the water quality. The deterioration indicates, as expected, that we are dealing with a long term process and that time and continued effort is required, before an improvement may be identified.

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**Chairman's
Recommendation:** For discussion.