

## 7. CURRENT DROUGHT AND WATER DEMAND UPDATE

<b>Officer responsible</b> City Water and Waste Manager	<b>Author</b> Eric van Toor, DDI (03) 371 1980/Mike Stockwell, DDI 371 1332
--	--

The purpose of this report is to outline water supply and demand issues that may affect the Christchurch City Council over the next one or two summers, and advise an appropriate response regarding promotion activities, demand management and any need for restrictions. All of this is against the current drought background.

### BACKGROUND

Issues that will affect Christchurch's water supply in the long-term were presented in Environment Canterbury's issues and options document "Our Water in the Balance", and responded to by the City Council in March this year. During the process of preparing the Council's submission, the following points emerged as a likely strategy for meeting the City's water needs in the long term:

1. There should be efficient water use by all groundwater users (both public and private wells)
2. There is some scope to manage infrastructure to minimise effects on springs feeding the Avon River by resting particular pump stations at times
3. An alternative source outside the City boundary to supply the Halswell /Wigram growth area is likely to be necessary in about 10 years, with the most attractive option being secure groundwater near lake Ellesmere tapped by a new well-field.
4. Long term augmentation options, particularly groundwater recharge to boost spring-flows, should be investigated as a contingency measure using source water from, for example, the Waimakariri or Rakaia Rivers.

The timetable Environment Canterbury has set for the Water Chapter of their Natural Resources Regional Plan (NRRP) is to have a draft prepared by June 2001 and a proposed version by June 2002. While preliminary work to develop a Water Strategy for Christchurch has commenced, it is important to have the framework of a draft plan in place before proceeding further with long term water supply planning. In the meantime, it is prudent to re-examine our preparedness should the dry conditions of the first part of this year continue.

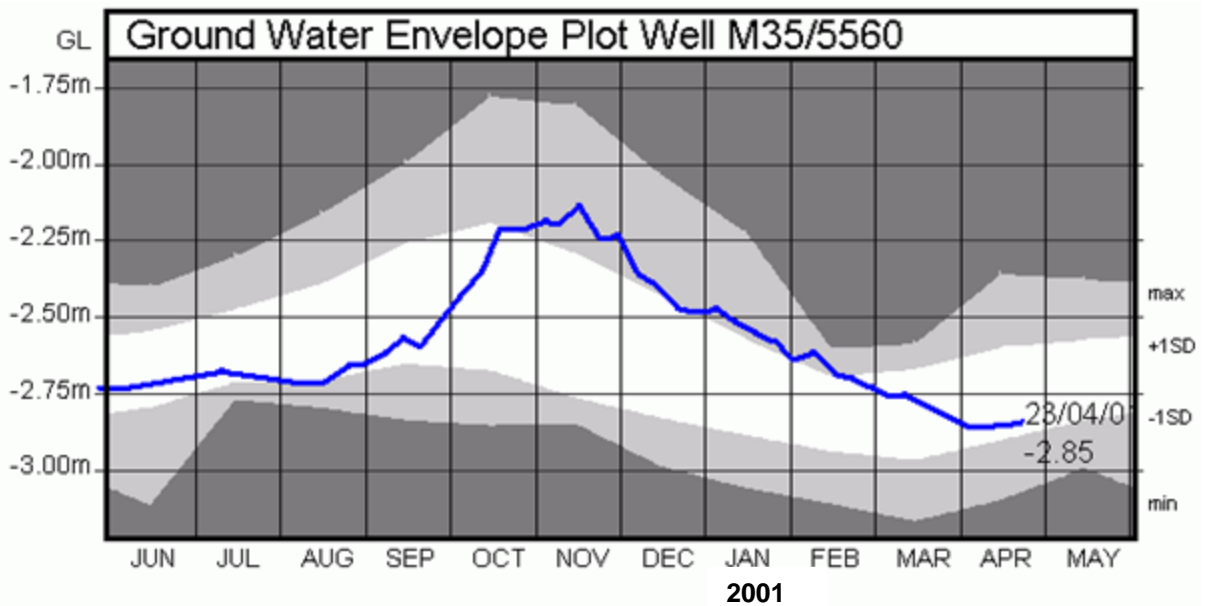
### PRESENT DEMAND AND GROUNDWATER LEVELS

In spite of widespread drought conditions in Canterbury during the 2000/01 summer and autumn, water demand and groundwater levels in Christchurch have been about average overall and there has been no significant stress on the water supply system. Demand per person has remained fairly constant over the past four years.

### WELLS DIRECTLY UNDER CHRISTCHURCH CITY THAT EFFECT IMMEDIATE SUPPLY

Groundwater levels during the summer can be readily obtained from Environment Canterbury's website. The plot below is of an Environment Canterbury monitoring well for a (first aquifer) well at Ilam University, which is typical of current water levels in Christchurch wells. The plot shows the current years groundwater levels against a white band within which two thirds of water level records for any particular month lie, with maximum and minimum recorded levels represented by the light grey/dark grey boundary. Records have been taken from this well for the last 14 years. This plot shows that the groundwater level at this site was above the average (e.g. above the centre of the white band) for the summer months and, dropping below average for April but still within the normal range (one standard deviation from the mean).

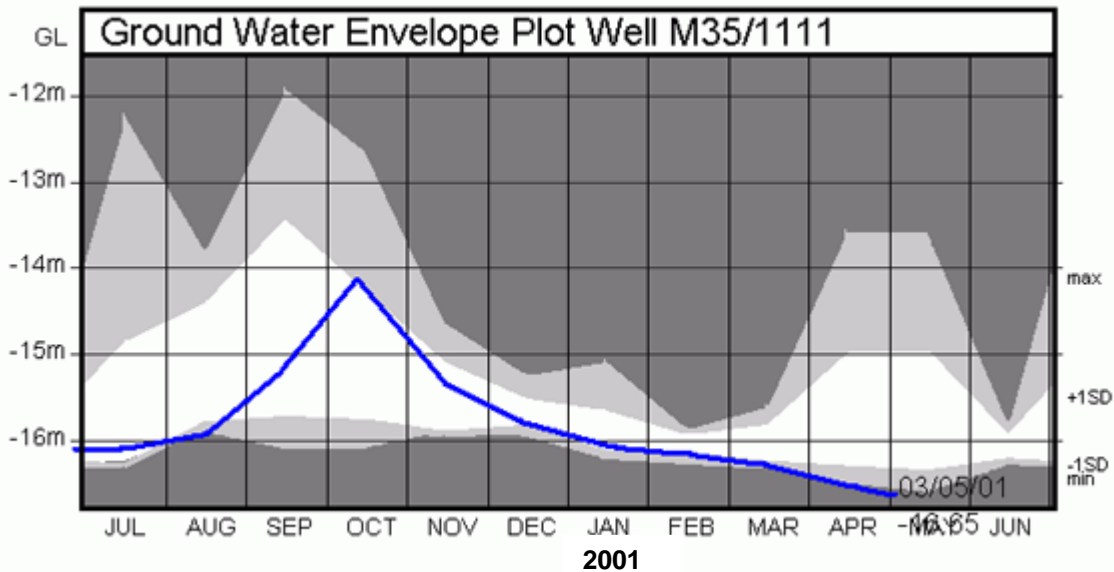
**Ilam University Well**



**WELLS WEST OF CHRISTCHURCH CITY**

In contrast many wells in unconfined groundwater aquifers west of the City are at the lowest recorded for many years, as shown in the example below near the intersection of Ryans and Pound Roads, for which records have been taken for 26 years. These wells west of the City are typically low. This is not of immediate concern but if the drought continues it will lower groundwater levels and stream flows in Christchurch. See below for outlook.

**Ryans/Pound Road Well (West of the City)**



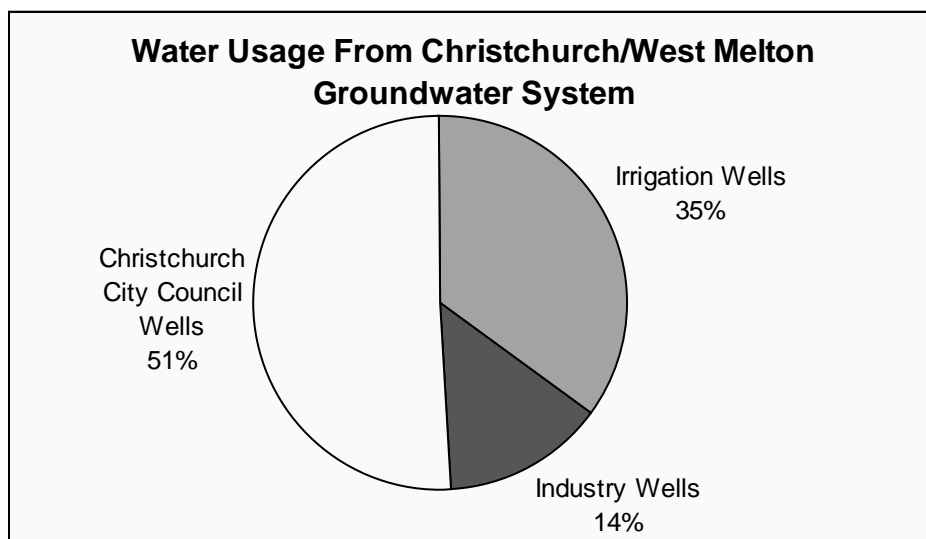
**OUTLOOK FOR NEXT SUMMER (2001/02)**

**Infrastructure Issues:**

Any need to restrain demand over the next few years is unlikely to be caused by shortcomings in the pumping and reticulation system. A number of isolated risks of reduced supply were highlighted early in 1999 during a period of high demand and low groundwater levels. These risks have since been removed or reduced by adding new wells and pumping capacity at strategic locations. The City is in a good position to cope with a dry summer without restrictions, even if groundwater levels dropped to record low levels.

## Resource Issues:

Water usage from Christchurch/West Melton groundwater system is shown on the following pie chart.



All of these users have resource consents for water extraction issued by Environment Canterbury. Under the Resource Management Act, Environment Canterbury (Ecan) has the authority to impose water restrictions for environmental reasons such as critical drought conditions. Currently Ecan are developing a water resource management plan (refer background above) and are unlikely to issue such restrictions until this plan is finalised. Nevertheless the Christchurch City Council could still impose restrictions on its own consumers if there was a good reason to do so (e.g. critical drought conditions), but would have no control over other users (i.e. industry and irrigation wells).

In spite of a lack of rainfall recharge immediately west of Christchurch so far this winter, Ecan's groundwater monitoring section have advised that extreme low groundwater levels in Christchurch aquifers are not likely next 2001/02 summer, but would be a distinct possibility the following 2002/03 summer if drought conditions continue. Similarly the risk that water levels in the Avon, Heathcote, Halswell and Styx Rivers will reach extremely low levels next 2001/02 summer is considered low.

## PROMOTION ACTIVITIES

"Our Water in the Balance" clearly indicated that there are sound environmental reasons for encouraging the efficient use of water. The Christchurch City Council has adopted the view that encouraging the more efficient use of water is the preferred first course of action and this will underpin the Council's Water strategy once Environment Canterbury have produced their plan.

In the meantime, the city's normal water conservation promotional activities should continue. Television advertising was not used last summer and it is proposed that for the next 2001/02 summer, television advertising will only be used if it becomes necessary to highlight unexpected immediate issues (e.g. low groundwater levels or stream flows) rather than a general water conservation message. Resources will instead be used to:

- develop information sheets on specific topics, (e.g. water saving tips).
- using metered demand to assist domestic high users to reduce their water use, (e.g. leak detection services).
- develop a better presentation of water consumption through the rate demand, (e.g. quantity actually used compared to average used by others).
- develop a joint Christchurch City Council/Ecan approach to water conservation public education and the like.

Once we have a clear indication of the rules in Ecan's Water Chapter Plan that will be used to manage Christchurch groundwater, it will then be appropriate to completely review our own Council's water conservation promotion and management practices. This should be carried out in conjunction with Ecan to ensure a consistent message is sent to both private well users and municipal supply consumers.

## **SUMMARY**

Due to the existing large amount of water stored in aquifers under the Christchurch City/West Melton areas it is unlikely that water restrictions will be necessary next summer 2001/02. If, however, the drought continues through next spring, summer and winter, then it is possible that some restrictions could be necessary in the summer of 2002/03. The situation is being continuously monitored.

- Recommendation:**
1. That the information be received.
  2. That the Council supports the education and conservation activities outlined in this report, pending a complete review of water supply promotional activities, once Environment Canterbury have produced the draft Water Chapter of the Natural Resources Regional Plan.