



Report **04.430**
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Committee **Environment Committee**
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Update on Kapiti Groundwater Investigations

1. Purpose

To provide the Committee with an update on investigation work undertaken on Kapiti Coast groundwater over the last two years.

2. Background

In June 2002 I reported to the Committee on progress made on our Kapiti Coast shallow groundwater monitoring and investigation programme. Concerns about whether the extensive use of shallow groundwater for garden irrigation was sustainable in the long-term prompted the initiation of this programme in 1999. Since my last report we have continued our investigation work into the shallow groundwater system and have also worked on the deeper groundwater on the Coast.

3. Shallow groundwater investigations

Historically Greater Wellington and its predecessor organisations have collected very little information on the shallow groundwater resource in Kapiti. In 1999 we installed three shallow groundwater level recorders to address this information gap. Since then the following additional sites have been installed:

- automatic water level recorders in six different shallow wells along Te Moana Road, Waikanae;
- an automatic groundwater level recorder at Rangihiroa Street, Waikanae Beach;
- an automatic water level recorder on the spring fed Waimeha Stream;
- three soil moisture monitoring sites, two in Paraparaumu and one in Otaihanga.

These new sites have significantly increased our monitoring capability and mean that we can now better measure how the groundwater system responds

throughout the year. The sites have been installed in conjunction with Victoria University who have two students currently working on shallow groundwater related projects. In particular, the students are investigating recharge to shallow groundwater from the Waikanae River and from rainfall.

We have also been investigating the amount of groundwater used by garden irrigators. Because these users are taking water as a permitted activity we do not know how much water people actually use. To help answer this question we metered 15 garden irrigators from March to May 2004 with the assistance of Te Ati Awa ki Whakarongotai. Unfortunately it was a very wet period of the year so the results will not represent a dry summer, nevertheless the survey gave us some hard numbers on actual usage. The average daily water use by most users was less than 0.5m³/day. The peak daily average use was about 8m³/day by two users for a week long period in April. The survey confirmed our expectation that people are using much less than the 20m³/day allowed by Rule 7 of the Regional Freshwater Plan. We are considering whether to re-run the survey this upcoming summer when hopefully there will be less rain.

A key development since I reported to you last time has been the construction of a computer model of the shallow groundwater system from Raumati to Peka Peka. This model has been developed to assess the cumulative effect of multiple users and to predict the effect of an increase in groundwater use. To make this assessment we are currently running a number of abstraction scenarios through the model and comparing the different effects on groundwater level. This iterative process is still being done, however, the initial results suggest that the current rate of groundwater use is sustainable in the long-term. It also suggests that the resource could support twice the current use without any adverse environmental effects. Comparing multiple abstraction scenarios will help us to recommend a sustainable management regime for the shallow groundwater system. At this stage the protection of wetland systems is likely to be the primary management objective.

4. Regional scale investigations

To place the shallow groundwater system into a regional hydrogeological framework we have been reviewing our understanding of the wider Kapiti Coast groundwater resource. This work is ongoing and has been helped to a large extent by the drilling of Kapiti Coast District Council's new public supply wellfield. Drilling this wellfield has provided a number of new deep well logs in the Waikanae area that Kapiti Coast District Council's consultants have put to good use by refining the existing geological model for the area. This analysis will be available to us when it is completed.

To supplement the wellfield information we entered into another partnership with Victoria University, this time to undertake a seismic reflection survey along Peka Peka Road. The fieldwork for this survey was completed in July and the University is currently processing the survey data. Once the processing is complete a subsurface image will be compiled that we hope will show the attitude of water bearing strata, confining layers and the basement surface. This image will improve our understanding of groundwater flowpaths across the coastal plain.

5. Future directions

The first objective for this financial year is to complete the modelling exercise and identify appropriate management objectives for the shallow groundwater system. With those objectives in place we can then work out the most suitable way to manage the system.

The completion of Kapiti Coast District Council's wellfield will make available a large amount of subsurface information. This information in conjunction with the results of the seismic reflection survey will significantly improve our understanding of the deep groundwater system in the Waikanae area. We can then use Waikanae as a starting point to revisit our conceptual groundwater model for the coast further north.

A solid conceptual model will allow us to consider extending the existing computer model to include the deep groundwater under Waikanae or the whole groundwater system further north.

6. Communication

There are no formal investigation results to communicate with other parties, however, we have been in close contact with Kapiti Coast District Council and their consultants during the construction of the wellfield. We have also been in close contact with local Iwi and residents affected by our monitoring activities. Internal discussions are ongoing about the best way to manage the resource and to what extent we need to change the way we are doing things now. Horizons have expressed an interest in the results of our seismic survey and we will be comparing the results of the survey with their work in the Horowhenua area. The Kapiti Coast groundwater system is the southern extension of the Horowhenua groundwater system so there is scope to assist each other with our investigations.

7. Recommendations

It is recommended that the Committee:

1. *receive the report; and*
2. *note the contents.*

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