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Report to Environment Committee
from Andrew Jones, Groundwater Scientist

Paraparaumu Shallow Groundwater Investigation Update

1. Purpose

To inform the Committee of investigation work undertaken on the shallow groundwater under the Paraparaumu area over the last nine months.

2. Background

In July 2000 I reported to the Committee the results of a preliminary investigation into the Paraparaumu shallow groundwater resource. This report outlines further investigation work undertaken since that time.

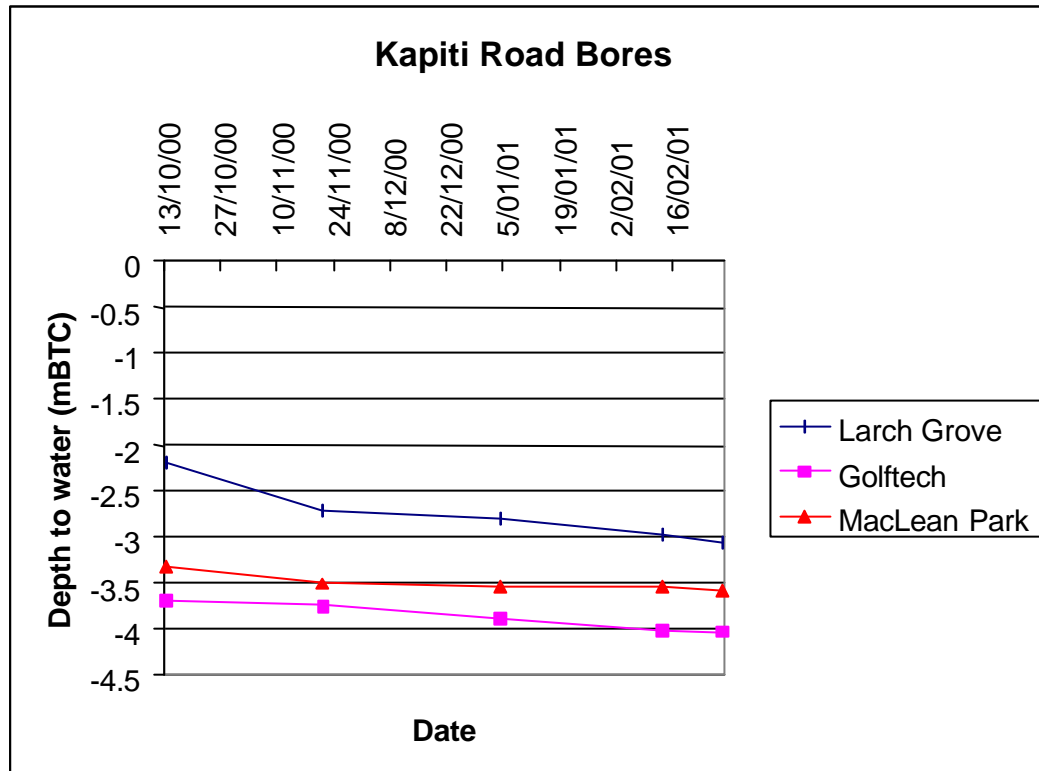
This update is timely, given the recent application by the Kapiti Coast District Council (KCDC) to take water from a wellfield adjacent to the Otaki River and the current drought conditions that have highlighted the issue of water supply on the Kapiti Coast.

The investigation work undertaken since July has been aimed at improving our knowledge on the shallow groundwater resource and has involved:

- Construction of three dedicated monitoring bores and measurement of water level in those bores.
- Ongoing liaison with KCDC and promotion of their bore register.
- A small-scale survey to estimate the completeness of KCDC's bore register.
- Further contact with local drilling companies to reinforce the requirements of the Regional Freshwater Plan.

3. Water Level Monitoring

Three dedicated monitoring bores were drilled along Kapiti Road in July 2000. Manual measurements of the water level in these bores since October 2000 has shown reductions in groundwater level of up to 0.9 metres over the summer period. These reductions can be seen in the following plot:



A decline in water level is consistent with the recent drought conditions because the shallow groundwater is largely recharged by rainfall. However, it is not clear to what extent the decline in water level is due to pumping from bores. To assess the potential influence of pumping on water levels, automatic water level recorders have been placed in two of the three bores. New water level recording instruments will soon be installed on all three monitoring bores. The automatic recorders will record a water level measurement every 15 minutes thereby providing a more detailed record of groundwater level fluctuations. The recorders will be left in place for at least 12 months to provide sufficient data to identify seasonal and higher frequency water level variations.

4. Kapiti Coast District Council's Bore Register

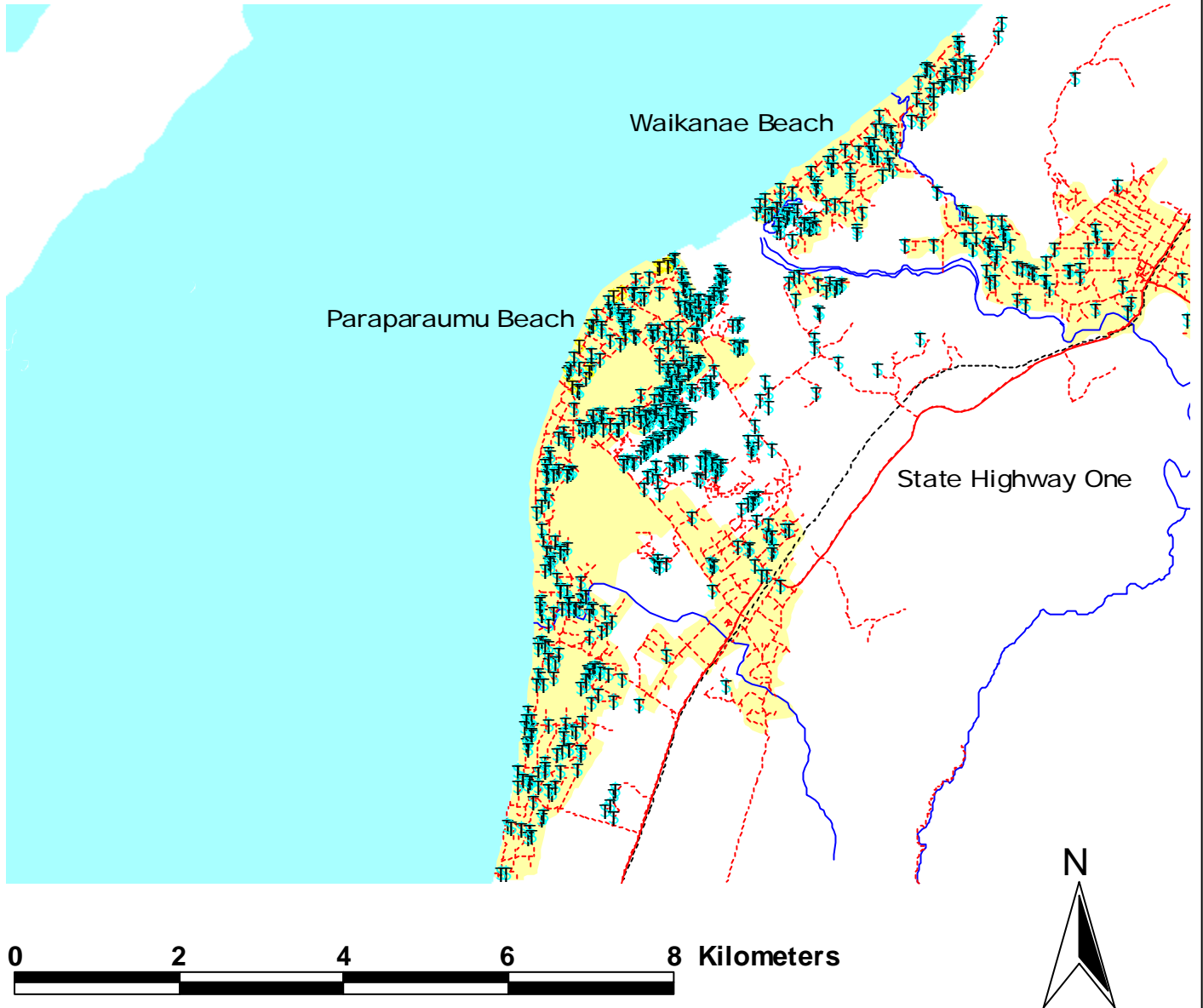
The District Council maintains a register of properties with groundwater bores. This register is used to assist KCDC staff when they are enforcing public water supply restrictions. This register is an invaluable source of information on the location of shallow bores. We have recently promoted the register in conjunction with KCDC, encouraging all bore owners who have not registered their bore to do so. Advertisements have been placed in local newspapers offering all registrations

received by 13 April a chance to win a \$100 voucher at a local restaurant. Furthermore, we have been hosted by a local radio station to discuss our investigation programme. During the interview we took the opportunity to promote the register and to encourage the sensible use of bore water for garden irrigation.

A flier requesting people to register their bores has also been distributed to households in the Paraparaumu/Waikanae area. This flier also asked for people to volunteer to have their bore water use monitored so that we can build up an understanding of how much water is actually being used in this area.

Plotting the locations contained in the register shows the widespread distribution of bore users. Particularly heavy concentrations of bores can be seen immediately east of Paraparaumu Golf Course and on the southeast margin of the Waikanae River estuary. The locations of bores in the register are shown in the following figure:

KCDC Bore Register Records Paraparaumu/Waikanae



To assess the completeness of the KCDC register we undertook a small-scale letter drop survey in October 2000 to confirm the number of bores on Manly Street and Golf Road in Paraparaumu. This survey involved 288 properties of which 39 confirmed they had a bore. The KCDC register records 27 bores for those 288 properties however, only 12 of those records coincide with bores reported by our survey. If we assume that both registers combined represent the total number of bores in the survey area then the KCDC register can be considered to be 50% complete. This relatively low value is alarming as the current KCDC register records 921 bores.

5. **Contact with Drilling Contractors**

In response to a public complaint about an alleged unlawful bore, council staff have been in contact with a drilling contractor to reinforce the requirements of the Regional Freshwater Plan. The apparent low compliance rate with the requirements of the plan may necessitate changes to the rules relating to drilling, in particular Rule 10 that allows bores shallower than five metres to be drilled as a permitted activity.

6. **Future Directions**

The following steps are proposed:

- Continue monitoring water levels in the three monitoring bores to provide a long-term detailed record of water level fluctuations. This step is underway. The installation of automatic water level recorders will provide a more detailed picture of water level fluctuations.
- Analysis of drillers' logs to provide a greater understanding of the local stratigraphy, especially the potential for interconnection between the shallow aquifer and deeper water-bearing layers. This step is scheduled commence in earnest in July 2001 upon commissioning of new bore log archive and analysis software.
- Measurement of actual water use at individual properties to assess the potential cumulative abstraction rate from the shallow aquifer. This step will be undertaken intermittently over the next 12 months to assess the seasonal variation in water use.
- Undertaking several short duration pump tests to assess the hydraulic characteristics of the aquifer. These tests are scheduled for September to November this year.
- Reviewing the rules of the Regional Freshwater Plan and assessing the need for changes to those rules. This review will be undertaken upon completion of the resource analysis work and should be completed by June 2002.

7. **Communications**

The results of the bore survey will be passed to the Kapiti Coast District Council to assist them with the maintenance of their bore register. Close contact will be

maintained with the District Council to ensure that we continue to receive their support to improve the management of the shallow groundwater resource.

The results of ongoing investigation steps will be passed to the Resource Policy Department to allow an assessment of the relevant policies and rules contained within the Regional Freshwater Plan.

8. **Recommendation**

That the report be received and its contents noted.

Report prepared by:

Approved for submission:

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