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**Report 02.495**

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Report to the Rural Services and Wairarapa Committee  
from Graham Sevicke-Jones, Section Leader, Resource Investigations

## **Wairarapa Groundwater Quality Monitoring Programme Review**

### **1. Purpose**

To seek the Committee's approval of the recommendations outlined in the review of the Wairarapa Groundwater Quality Monitoring Programme.

### **2. Background**

A review has been carried out of the Wairarapa Groundwater Quality Monitoring Programme. The Programme was implemented in 1997, and the data analysed in this report was collected between 1997 and 2001.

The monitoring programme was designed to cover all identified aquifers, but the frequency of sampling of each aquifer was based upon degree of use and susceptibility to contamination. A range of quarterly, biannual and supplementary (one-off) sampling was included in the programme.

The review has consisted of two stages:

- Analysis of results for water quality trends, and quantification of groundwater issues;
- Assessment of the programme and recommendations for change.

### **3. Analysis of Results**

#### **3.1 Temporal trends in water quality**

Analysis of water quality trends found that the main changes of significance are:

- Water quality is degrading in the Te Ore Ore aquifers;
- Carbon dioxide is increasing in several Wairarapa aquifers.

### **3.2 Spatial trends in groundwater quality**

The programme shows large variations in water quality over the Wairarapa. This is due to a combination of natural factors and human-induced change. Water quality is reduced naturally (due to rock-water interactions) where aquifers are deep and slow-moving, where recharge is not high, or where the aquicludes have been influenced by marine conditions.

Water quality in shallow aquifers is considerably different to the deeper aquifers, with relatively low ion concentrations. However, land use activities could be affecting water quality in certain shallow aquifers.

### **3.3 Groundwater quality issues**

The Groundwater Quality Monitoring Programme has allowed potential groundwater quality issues to be investigated including:

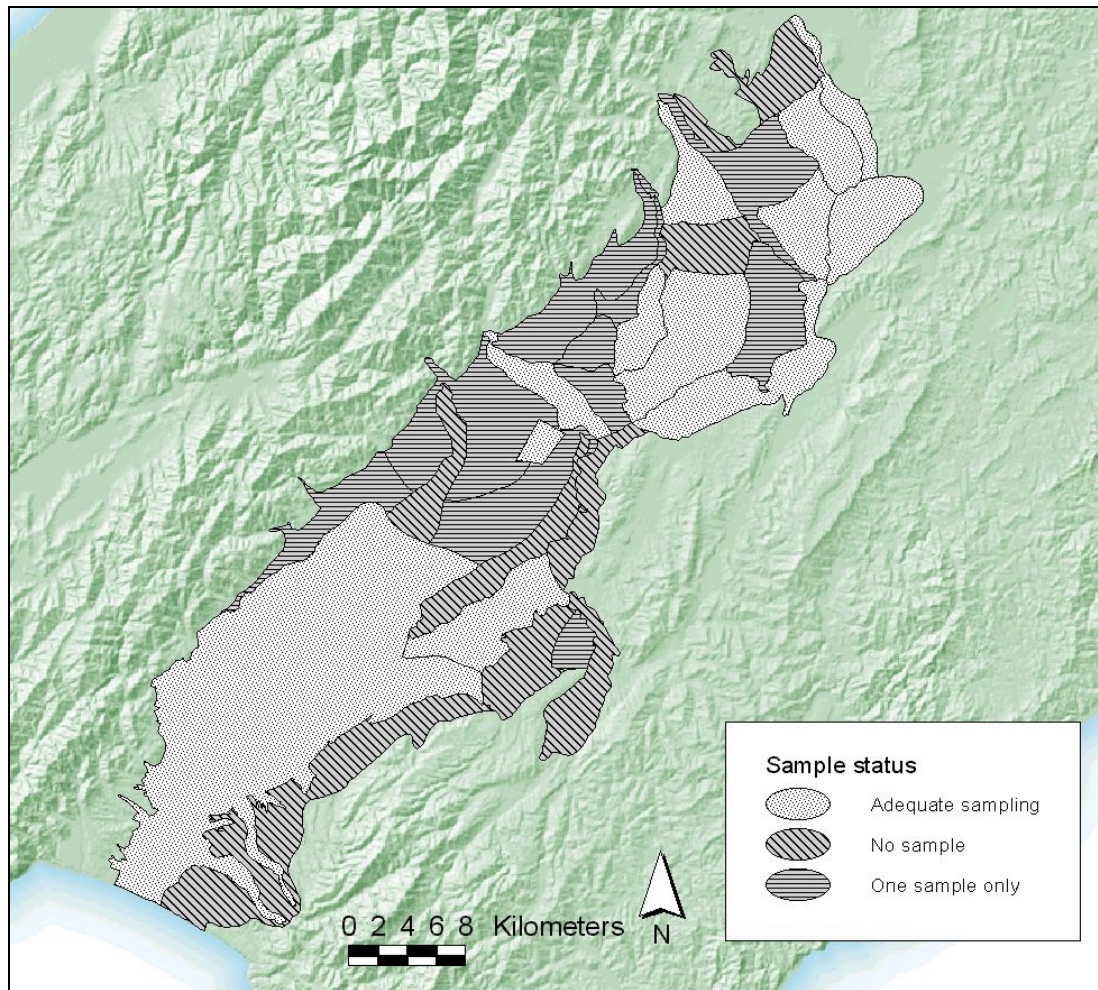
- nitrate contamination;
- phosphate contamination;
- pesticide contamination;
- bacteriological contamination;
- arsenic contamination.

### **3.4 Programme Assessment**

The programme was assessed with the focus on four aspects: data quality, water quality determinants, sampling frequency, and spatial coverage.

It was found that several aquifers have not been included in the programme, and inadequate information is available for many of the Wairarapa groundwater zones. Figure 1 shows the water quality information status of Wairarapa groundwater zones.

**Figure 1 Wairarapa groundwater zones and their groundwater quality information status**



#### **4. What does the review propose?**

A number of changes to the existing programme are recommended, in particular to:

- expand spatial coverage of the programme to ensure all identified aquifers are sampled;
- make several changes to the water quality analysis suite, to improve data quality;
- give consideration to the construction of purpose-built monitoring bores in areas where no suitable bores exist for sampling;
- carry out a targeted investigation into nitrate contamination of Wairarapa aquifers, and more widespread testing for bacteriological contamination.

The implementation of the recommendations should ensure the objectives of the programme are met and that data quality is improved.

**5. Communication**

Copies of the report are available to Councillors on request.

The report will be sent to landowners who participated in the programme.

**6. Recommendation**

*That the recommendations of the Wairarapa Groundwater Quality Monitoring Programme Review be accepted.*

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