New Zealand

Capital city: Wellington
Inhabitants: 4.9 Million

INSTITUTIONAL SETTING AND PURPOSE

The Ministry for the Environment is responsible for setting national level legislation and regulation on water quality and activities that can impact it. Operational management of groundwater resources is undertaken by local government. Regional councils, of which there are 11 in New Zealand, are responsible for managing water quality and quantity, including activities which can affect aquifers. City councils are responsible for providing clean drinking water, and there are 6 unitary authorities which provide both functions of the regional and city councils.

The Ministry for the Environment periodically reports on the national state of different aspects of the environment, including freshwater and groundwater quality. Nationally, groundwater quality is assessed using the indicators ammoniacal nitrogen, chloride, dissolved reactive phosphorus, chloride, conductivity and Escherichia coli. The latest national report on freshwater was published in 2020.

Central government also provides funding for regional or national scale research to get a better understanding of groundwater resources in New Zealand. For example, a study published in 2019 was undertaken to classify different geological units at a national level in terms of their importance for groundwater flow and storage, as shown in Figure 1. Other national level research includes funding for the National Groundwater Monitoring Programme, a long-term research and monitoring programme run in collaboration with all of New Zealand’s regional authorities. The “Our Land and Water” National Science Challenge, is another funding avenue. This is a contestably funded research initiative, which funds research on New Zealand’s freshwater resources with a particular focus on enhancing the productivity of New Zealand’s primary sector.

CHARACTERISTICS OF THE NETWORK

National institutional arrangements require that each Regional Council or Unitary Authority have their own groundwater monitoring programme. The extent of the different monitoring networks varies across regional councils, depending on their size and available resources, as well as the requirements set forth in their Regional plans. However, all regions will have some monitoring of water quality, groundwater resource allocation and groundwater levels. The example of the Tasman District Council is described below.

The district council of Tasman monitors groundwater levels in all major aquifers in the district. The levels are registered at each site every fifteen minutes with data loggers. Currently, Tasman District has 50 automated groundwater level monitoring sites, and the data of these sites are available in real time via telemetry network, Figure 2.

Figure 1 – National map of hydrogeological systems (from Moreau et al, 2019, and provided by the Ministry for the Environment)
The Council publishes two groundwater level graphs: for 7 and 30 days, Figure 3. The groundwater levels are analysed as minimum, maximum and average levels and presented in a table format on the website of the Tasman District Council, Figure 4.

**Figure 3 – Groundwater Level for last 7 and 30 days at Arthur Marble Aquifer at Sowmans**

**Figure 4 – Groundwater level analysis of the Tasman District Council**

**Sources**

- Feedback from the Ministry for the Environment - received on 01-10-2020;