



Report 10.372  
Date 14 July 2010  
File ENV/31/01/09

Committee Te Upoko Taiao – Natural Resource Plan Committee  
Author Paul Sorensen, Environmental Scientist (land and water contamination)

## Contaminated land and soil health

### 1. Purpose

To provide the Committee with an overview of Greater Wellington's environmental monitoring programmes in relation to contaminated land and soil health.

### 2. Background

Section 35 of the Resource Management Act (RMA) (1991) requires regional councils to monitor and report on the state of the environment. In the areas of contaminated land and soil health, Greater Wellington fulfils its RMA obligations through maintaining a Selected Land Use Register of potentially contaminated sites and conducting a soil quality monitoring programme across different land uses.

### 3. Contaminated land and the Selected Land Use Register

The Selected Land Use Register (SLUR) is Greater Wellington's register of sites which have had or have a history of hazardous activities occurring on them. The criteria for listing a site on the register is whether its present or past land use matches an activity or industry on the Hazardous Activities and Industries List (HAIL). This list, which contains 53 activities and industries, was compiled by the Ministry for the Environment.

The purpose of HAIL is to identify sites where land may be contaminated as a result of the land use – there is no assumption that contamination is actually present. Contamination is only confirmed when an investigation has been carried out. Sites are categorised on SLUR in a number of ways to reflect the contamination status of the site. Currently there are over 1,900 sites on SLUR.

#### 3.1 National Environmental Standard

In February 2010 the Ministry for the Environment released a proposed National Environmental Standard (NES) for assessing and managing contaminants in soil. The objective of the proposed NES is to ensure that land

affected by contaminated soil is appropriately identified and assessed at the time of being developed – and if necessary remediated, or the contaminants contained, to make the land safe for human use.

The proposed NES is aimed essentially at the 73 territorial authorities across the country to ensure that contaminated land is dealt with consistently through a range of rules and appropriate soil guideline values that have been developed for the protection of human health. Regional councils still have a role to play with contaminated land in terms of identifying and monitoring contaminated land (i.e., we will continue to have SLUR), with a focus on wider environmental effects (e.g., effects on groundwater quality).

#### 4. Soil health

Greater Wellington became involved in a national soil quality programme known as “The 500 Soils Project” in 2000. After completion of the 500 soils project in 2001 we implemented our own programme to continue monitoring the quality of soils in the Wellington region.

The current monitoring programme consists of 118 sites on the high quality soils across the region under different land uses (Figure 1). The frequency of sampling is dependent on the intensity of the land use; dairying, cropping and market garden sites are sampled every 3-4 years, drystock, horticulture and exotic forestry sites are sampled every 5-7 years, while native forest sites are sampled every 10 years. Soil samples collected from each site are tested for physical soil structure, organic resources, nutrients, fertility and trace elements.

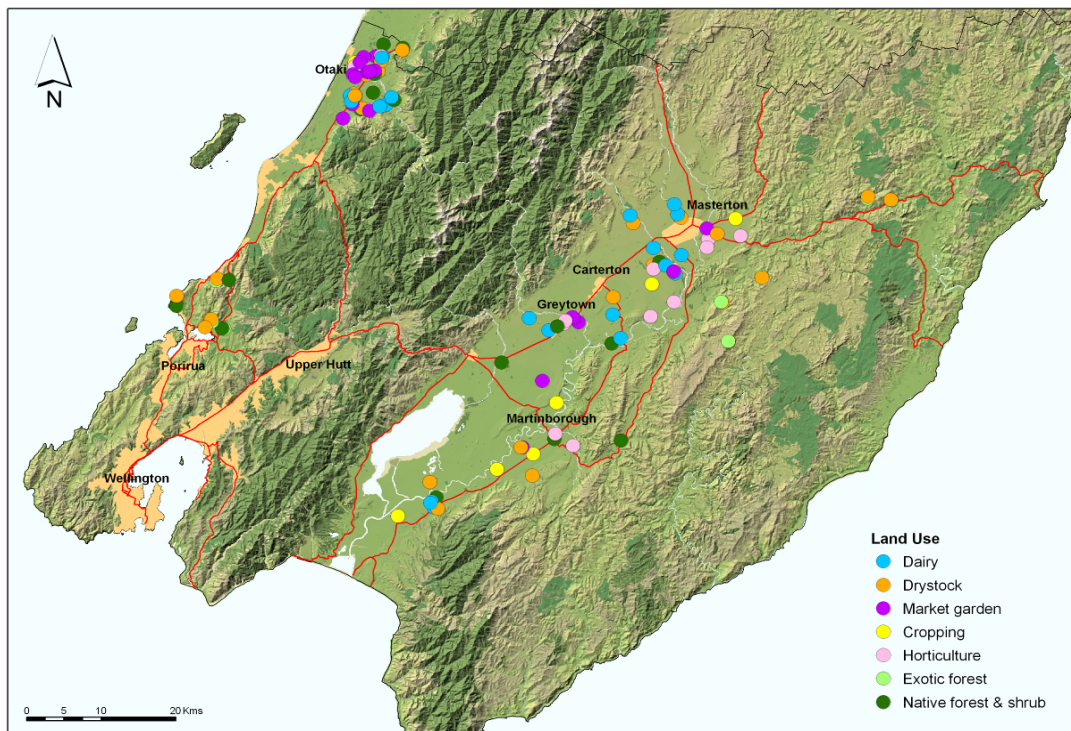


Figure 1: Greater Wellington’s soil quality monitoring sites.

Soil quality monitoring results to date have generally shown that the majority of soils are in good condition. However, two reoccurring issues, particularly on drystock and dairying sites, are low macroporosity (indicating soil compaction) and elevated nutrient levels, (predominantly nitrogen – especially at dairy sites). Compacted soils are not desirable because they increase the risk of potential flow-on effects for water quality in drains and streams as a result of reduced infiltration and greater sediment and nutrient run-off from the land.

As well as monitoring soil quality annually at the established monitoring sites, in 2009 as part of the Mangatarere Stream catchment water quality investigation, soil quality sampling was undertaken at 16 new sites within the Mangatarere catchment. This was the first time Greater Wellington has investigated soil quality as part of a wider environmental investigation, with the results used to help understand surface water and groundwater quality issues in the catchment.

#### **4.1 Informing the plan review – S-Map**

Currently there is a lack of robust information available on the region's soil types and properties. Some soil information exists but, as is the case across most of New Zealand, this is dated and mapped at a scale too coarse to be helpful in many applications we need it for. Therefore, along with several other regional councils, we are currently working with Landcare Research on their S-Map programme. S-Map is a national soil database that provides seamless digital soil map coverage at a reasonable scale and valuable information on soil properties.

Figure 2 shows the progress of S-Map for our region. The Otaki area and a small area north of Masterton have already been completed and the field work has been undertaken for the area between Masterton and Carterton. The rest of the Wairarapa Valley is scheduled to be mapped during spring 2010 and autumn 2011.

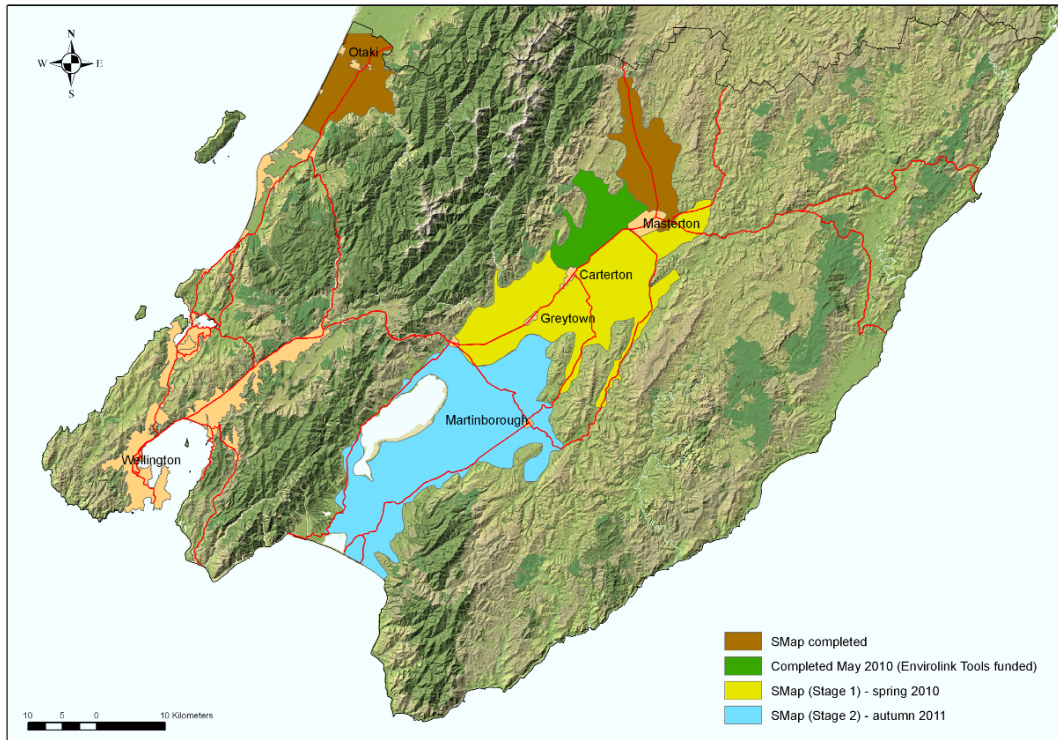


Figure 2: S-Map progress in the Greater Wellington region.

Soil information presented in S-Map is a very important resource that can be used in a range of different applications, including:

- Evaluation of resource consent applications (e.g. determination of appropriate application rates for effluent and wastewater discharges to land)
- Input information into various models (e.g. assessing groundwater recharge in the Wairarapa groundwater modelling investigation)
- Inform environmental investigations such as the recent Mangatarere catchment investigation, particularly in terms of better understanding land use effects on surface water and groundwater quality; and
- Assessment of irrigation requirements and efficiency.

In relation to the last application above, Plant & Food Research are currently developing a **Soil Plant Atmospheric Model (SPASMO-IR)** for Greater Wellington. The SPASMO-IR is an irrigation allocation tool, which will determine how much water is actually required for a resource consent application. As well as using soil information, SPASMO-IR also uses information on crop types and climatic conditions to calculate how much water is needed for efficient irrigation use.

## 5. Recommendations

*That the Committee:*

1. ***Receives the report.***
2. ***Notes the content of the report.***

Report prepared by:

Report approved by:

Report approved by:

**Paul Sorensen**  
Environmental Scientist (Land  
and water contamination)

**Ted Taylor**  
Manager, Environmental  
Monitoring and Investigations

**Nigel Corry**  
Group Manager, Environment  
Management