

## 5.4 Soils

### 5.4.1 Introduction

It's easy to underestimate the importance of soils in supporting life on earth. Most of the time, soils and their billions of inhabitants are hidden from us – we occasionally see the top of another world when we dig the garden. Different soils have different structure, biology and chemistry and it is easy to degrade soils by modifying or destroying structure, reducing the biological and organic content, or changing soil chemistry.



Soils develop slowly, sometimes taking hundreds of years to form topsoil. But once formed, topsoil has enormous productive value in supporting a vast and diverse complex of plants – from indigenous forest through to economically important crops. In brief, soils are the foundation of all terrestrial food chains and central to economic wealth and ecosystem health.

Reducing the life-supporting capacity of soils, either by reducing their quality or allowing them to erode, means we are undermining our own well-being and depriving future generations of a most significant resource. Thinking about future needs is important when contemplating soil management because, in human life terms, soil is effectively finite as it takes so long to develop.

To pass life-supporting, healthy soils on to future generations, while using them ourselves, requires everyone to manage them in a sustainable way. This means keeping soil in place (i.e. prevent or limit erosion) and sustaining those characteristics of different soils that create and maintain their quality.

The management of soil erosion and maintenance of soil quality are two key objectives of the soils and minerals chapter in the *Regional Policy Statement for the Wellington Region 1995*.

### 5.4.2 How successful has the Regional Policy Statement been?

The Regional Policy Statement chapter on soils and minerals covers a range of soil issues, aspects of land management, and minerals topics. This wide coverage means that the chapter has a multiple focus

on soil quality, soil conservation, flooding, catchment management, quarries, gravel extraction and contaminated sites.

For these different areas, some objectives and policies have been successful and some have not been implemented. On the positive side, over 100 soil sites are now monitored for soil quality but this programme needs to continue for an extended period to build a series of results and a longer term picture.

Greater Wellington also works with farmers and landowners on soil conservation and gives advice through farm plans. There are now over 500 such plans, but we are unsure as to how effective these plans have been in managing erosion-prone land. Greater Wellington has databases that can show where erosion-prone land is, and this helps with planning for soil conservation work with landowners.

In summary, there have been quite a lot of positive initiatives and activity around some of the problems addressed by the objectives and policies of the Regional Policy Statement. It is not necessarily the Regional Policy Statement that has triggered, or directed, all of these useful actions. For example, the Ministry for the Environment, Landcare Research, and Crop and Food Research began support for soil quality monitoring by way of the "500 Soils Project".

Several of the contentious or topical issues addressed by the current Regional Policy Statement have declined in importance, so the relevance of certain parts of the chapter has also diminished. For example, topsoil mining and turf farming were difficult management issues in the early 1990s but have been largely resolved through rules in plans.

Similarly, management of land for quarries and associated reverse sensitivity issues have been addressed in district plans.

### 5.4.3 What's changed and what are the soil issues now and for the future?

There has been no change to legislation relating to soil conservation and management, but responsibilities for contaminated land have been more clearly spelled out in changes made to the *Resource Management Act 1991* (RMA) in 2005. City and district councils have primary responsibility for managing contaminated land through their land use planning function. This allows them to control land uses in order to prevent or mitigate any adverse effects of the development, subdivision, or use of contaminated land. Regional councils can now investigate land so that they can identify and monitor contaminated land.

Greater Wellington has a database of sites where past land uses suggest that the land may be contaminated. Being on the database can trigger the need for investigation if there is a proposal to change the land use. City and district councils have direct access to the database so they can assess applications for subdivision and changes in land use.

There are some broader societal and economic trends that do have some influence on soils. Among these have been shifts in land use and farming practice, and a raised awareness among the rural community of how sustainable land and soil management might be more effectively achieved and, perhaps more importantly, the costs of failure.

Although there has been modest success, Greater Wellington's state of the environment report for the region, *Measuring up 2005*, identified the following issues for sustainable soil management:

- On cropping land, there is evidence of over-cultivation and excessively high rates of fertiliser application (especially in areas of "good" soil quality to maintain fertility, whereas steeper, poorer areas are not being treated with enough).
- Some erosion-prone pasture land on hill country farms, particularly in the eastern Wairarapa, have little or no protective woody vegetation. This can increase rates of soil erosion. Moreover, soil loss from farms is an unwanted gain to the rivers, so it's really a lose-lose result.

- Plantation forestry is an extensive land use in the region and poses potential soil quality degradation issues. With increased logging anticipated in the next few years, problems with sedimentation of small streams off-site is also likely to be an issue.
- High quality soils are often in locations that are also suitable for subdivision and development (particularly on river floodplains). Such development means that these soils are effectively lost to production and the capacity to produce food locally (and therefore avoid wider "costs" associated with the international production and supply of food) is also reduced.
- Soils are the scene for a complex range of ecological processes and cycles that contribute to soil health. Poor soil management can inhibit these processes and cycles (damaging or destroying soil structure, biology and chemistry), and restrict soil renewal and potentially destroying life-supporting capacity.
- The consequences of climate change on patterns of rainfall and rainfall intensity could be significant for farming on erosion-prone land.

### 5.4.4 Comments and questions for you to consider

Soils are a fundamentally important resource, and can be damaged, lost or effectively made unavailable through soil erosion, land use change, fragmentation of land holdings and development (by being permanently covered over). Whilst Environment Court case law suggests that it may not be appropriate to try to legally "protect the best", it needs to be acknowledged that there are not many high quality soils in our region and that, for sustainability in the long-term, scarce resources should be looked after in some way. Soils need to be carefully managed so that their economic productivity is not permanently destroyed. Are Greater Wellington and the community being active enough in these areas of soil management?

In the current Regional Policy Statement, one major policy area concerns the supply of rock and aggregate from rivers and quarries for the development of roads, homes and businesses in the region. Transporting aggregate is an expensive exercise, so the Regional Policy Statement looks to safeguard local sources of rock and aggregate.

Quarries have historically been located at what originally was some distance from urban areas, but with growth and development creeping towards previously rural locations, there are concerns that the key resource for development itself may become subject to issues of “reverse sensitivity” from the new

neighbours. It is unclear whether this issue should be addressed by the Regional Policy Statement this time around, or left to city and district councils to deal with in their district plans. There is also the bigger question as to whether ensuring a supply of aggregate is a regionally significant issue.

### Question 1:

Do you think we have identified the right soils issues? Are there other issues and aspects of soil management that we should recognise for the region?

### Question 2:

How effective do you feel soil conservation initiatives and actions have been during the last decade? What have been the main factors that have influenced good performance? How might we further encourage the positive factors and reduce the bad ones?

### Question 3:

Do you think that the Regional Policy Statement should address mining and aggregates? Is it sufficient to leave the land use and river extraction issues associated with managing these activities and their effects to regional and district plans?

### Question 4:

What role do you see for the Regional Policy Statement in providing direction for sustainable management of soils for the region in the future? Would it be helpful if priority areas for soil conservation, such as particular river catchments, were identified? How might the Regional Policy Statement assist preparation for and adaptation to potential effects of climate change, including farming on erosion-prone land and large soil losses from high intensity rainfall?

### Question 5:

To achieve its objectives for soil quality, should the Regional Policy Statement be more directive in its policies? Would it be helpful if there was a greater focus on integrated management of land and water?

### Question 6:

Should the Regional Policy Statement be more directive about controlling land use on contaminated land? How could the Regional Policy Statement guide the integrated management of contaminated land? Does Greater Wellington’s work in identifying and monitoring contaminated land need to be guided by the Regional Policy Statement in some way? If so, how? (See also, **waste management and hazardous substances**).