

Chapter 7

SOILS AND RIVERS

PREAMBLE

Soil conservation is the process of maintaining life supporting capacity of the land. In the high rainfall and steep terrain of the West Coast, soil erosion is an ongoing process.

The scope of this chapter includes rivers, particularly focusing on their beds and banks. Aggradation of riverbeds is a related matter, which is also covered in Chapter 11 because it contributes to natural hazards.

Section 5(2)(b) of the Act identifies as part of its purpose the application of sustainable management while:

safeguarding the life supporting capacity of air, water, soil and ecosystems.

Clause 1(e)(i) of Part I of the Second Schedule of the Act states that a RPS may provide for any matter relating to the use, development or protection of natural and physical resources, including control of the use of the land for soil conservation.

ISSUE 7.1 Losses of the life supporting capacity of soils as a result of erosion and land use.

Any activity which leaves large areas of soil stripped of vegetative cover, has the potential to lead to substantial topsoil loss. This reduces soil fertility and productive value. Uncontrolled removal of vegetation may result in the formation of erosion gullies. In addition, removal of vegetation reduces the water holding capacity of the land, which may contribute to an increase in flood severity.

Land use can include vegetation clearance, burning, cultivation, spraying, road construction, land contouring, land excavation and filling, diversion of water bodies, and waste disposal. While these activities are important to the region's social and economic well being, they must be conducted in a manner that results in sustainable management of natural and physical resources. Some of these activities, as well as (or instead of) causing soil erosion, may also result in loss of the soil mantle through burial.

Unless properly managed most land uses have the potential to cause adverse effects on ecosystems, landscapes and habitats, such as decreased slope stability, accelerated erosion, undermining of structures, increased runoff, damage to riverbanks, reduced water quality, sedimentation and a long term decline in soil productivity. Disposal of liquid and solid wastes can also result in contamination of land if hazardous substances are involved.

An increase in flooding or erosion may cause or be caused by aggradation of river channels and channel instability. This is commonly caused by

natural processes such as earthquakes and intense rainfall. Similar problems are associated with an increase in runoff caused by land use activities or channelling of stormwater. Appropriate location, design, and construction of structures such as bridges, culverts and stop banks is important to minimise the damage to the structures themselves. In addition, the building of structures in water bodies has the potential to increase erosion and/or flooding. In all of the above examples there can be associated adverse effects on stream ecology due to high turbidity, enrichment, depressed oxygen levels and an increase in bed load. In addition, some of the above activities can initiate changes in vegetation, impact on ground water levels and reduce the availability of water for stock.

ISSUE 7.2 Adverse effects of activities and natural processes on river beds and banks including undermining of structures, increased erosion and damage to aquatic ecosystems.

Fluvial and glacial erosion has resulted in the deposition of silts, sands and gravel in the region within valleys and has formed substantial terrace deposits west of the Alpine Fault. Gravel is an essential resource for maintaining and improving the region's infrastructure and economy. Quantities of deposited gravel and the rate of supply vary from place to place. In some catchments controls on the rate of extraction are necessary due to the low rate of natural replenishment. At the other extreme, substantial volumes of gravel are accumulating - resulting in a build up of river beds. In such cases extraction is desirable. However, uncontrolled gravel extraction and other activities related to water bodies have the potential to cause or aggravate erosion, as well as damage aquatic habitats.

The Regional Council has a responsibility to regulate river channel management and flood mitigation. Significant funds and time have been invested in achieving the considerable degree of protection that existing works provide to communities and landowners (See Chapter 11 on Natural Hazards).

OBJECTIVE 7.1 The sustainable management of soil to meet a range of uses, including the reasonably foreseeable needs of future generations and the prevention of further long-term degradation of the soil resource; and to maintain or restore the soil quality factors that contribute to its life supporting capacity including:

- a) Soil depth, structure and fertility;**
 - b) Soil fauna;**
 - c) Organic matter;**
- and to retain soils of ecological, scientific or cultural value.**

OBJECTIVE 7.2 To avoid, remedy or mitigate degradation of water resources and aquatic ecosystems resulting from the instability, or use or development, of the beds and banks of rivers.

SOILS AND RIVERS POLICY

POLICY 7. *To sustain the potential of the soil and water to meet the reasonably foreseeable needs of future generations, activities will be managed so that adverse effects are avoided, remedied or mitigated, including those effects caused by:*

- (a) Erosion, soil loss or the potential for soil loss;*
- (b) Instability of river channels, land and structures;*
- (c) Contamination of soil, groundwater and surface water;*
- (d) Long term decline in life supporting capacity of soil and land;*
- (e) Decline in the quality of aquatic ecosystems and other instream values;*
- (e) Damage to the relationship of Poutini Ngai Tahu and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga;*
- (f) Damage to ecosystems, including the quality of aquatic ecosystems and other instream values, landscapes and habitats;*
- (g) Increased flooding and runoff.*

Cross reference policy 7
Water policies 8.2.1 and 8.2.2, Habitats and Landscapes policies 9.1-9.6. Coastal Environment policies 10.1.1-10.1.4, 10.2.1, 10.3.1, 10.4.1-4.2, 10.5.6 and Natural Hazards policies 11.1-11.4.

METHODS

- 7.1 Promote appropriate practices during contact with land users and through publications, newsletters, field days and displays.
- 7.2 Apply regional rules, principally those in the *Soil Conservation and Erosion Control Plan*. Such rules may require management of the effects of activities by way of performance standards on resource consents. Other mechanisms may include bonds and prosecutions for breaches of conditions.
- 7.3 Consider the application of selected codes of practice as a means of ensuring compliance with regional rules.
- 7.4 In the event of consent holders being unable or unwilling to ensure that damaged areas are rehabilitated, the Regional Council may use funds secured through bonds to undertake the work.
- 7.5 Encourage the inclusion of relevant provisions for land use in district plans for example particular land use locations and performance standards, which protect the life supporting capacity of soil.
- 7.6 Where applicable, conditions providing for sustainable management of the region's gravel resource will be promoted during consultation on the development of *minerals programmes*, as provided for in the Crown Minerals Act 1991.
- 7.7 The Regional Council will monitor the cost efficiency and effectiveness of catchment flood and channel management in consultation with all parties before intervening with existing levels of works maintenance as either part of Council's river management responsibilities or if requested by a river rating district.
- 7.8 The *Land and Riverbed Management Plan* will establish where in

the beds of water bodies gravel may be extracted from and the monitoring that will be undertaken.

7.9 Use economic instruments where appropriate.

EXPLANATION

The policy includes a list of adverse effects that should be taken into account when considering resource consent applications. It also meets the requirements of section 5 of the Act. It includes a description of the resources that are to be sustainably managed when activities are carried out in the beds and banks of water bodies.

Objective 7.2 and point (b) in the policy refer to ‘instability’. Stability of river beds and banks relate to maintenance of an overall equilibrium, which may well change in a dynamic environment due to natural processes. Use of the word “instability” is not intended to preclude activities related to structures where adverse effects are restricted to a small area and occur for only a limited time.

The methods of implementing the policies represent a range of options open to the Regional Council. Those methods relating to maintenance of channel and floodway protection, the economic effectiveness of flood and channel management and rating districts reflect the Regional Council’s operational responsibilities in management of river resources. These matters are also related to Chapter 11 (Natural Hazards).

The Regional Council has, through the development of policies and methods, the statutory responsibility to control the use of the land for the purpose of soil conservation. The above considerations reflect this.

Promotion of practices which prevent loss or erosion of soil is the preferred method of achieving the objective. This can be a cost effective alternative to regulation by way of performance standards placed on a resource consent. Regulation through rules in regional plans and consent conditions may also be used to control activities that contribute to erosion, loss of life supporting capacity or soil contamination. Such regulation may be by way of performance standards, including incorporation of those aspects of an industry code of practice that the Regional Council wishes to apply. Adherence to codes of practice are not considered a substitute for regulation, even though the application of such codes may reduce the extent of its need.

“Life supporting capacity” has a broad meaning. In the context of this chapter it means that the Regional Council may impose controls on the use of land but only in respect of the matters related to its functions under section 30 of the Act.

The Soil Conservation and Erosion Control Plan (Part 1) has an important role in implementing the policies in this chapter. It covers disturbance of the land surface and earthworks. The Land and Riverbed Management Plan will replace this Plan and will also cover activities in the beds and banks of rivers, including management of effects of gravel extraction and the construction/maintenance of structures.

A service delivery role in terms of technical advice to land users is not considered desirable. Such a role would be in conflict with the Regional Council's regulatory role. In any event, expertise is available in the private sector.

In some circumstances the application of bonds are considered to be a useful vehicle to ensure any necessary rehabilitation of land occurs. Instances where this might be appropriate include the need to avoid environmental damage in the event that a consent holder ceases operations before completion of the work, or is unable to finance the rehabilitation. The absence of bonds in the past resulted in some land being left in a derelict state or the regional community having to pay for rehabilitation through rates. Neither of those adverse effects are acceptable.

From a soil conservation and erosion perspective, management of any adverse effects arising from the use of land is a Regional Council function. The Regional Council will decide whether revegetation or any remedial action for soil conservation purposes is required. Territorial authorities, through rules contained in their district plans, control whether a particular land use can be permitted.

In addition to controls exercised by the Regional Council or a territorial authority, extraction of minerals is subject to the granting of a permit under the Crown Minerals Act 1991.

The Regional Council is responsible for approval of the siting of structures in water bodies under section 30(1)(c) of the Act, including for the purpose of soil conservation. The relevant territorial authority has overlapping responsibility for their safety under section 31(b).

ANTICIPATED ENVIRONMENTAL RESULTS

- 7.1 Land use operations carried out without long term loss of life supporting capacity of the soil.
- 7.2 Maintenance or enhancement of water quality to a level which safeguards the life supporting capacity of water bodies, which may be affected by erosion arising from land uses.
- 7.3 Reduced adverse effects as a result of activities in the beds of water bodies.