

### **Explanation of changes:**

- All recommended changes are shown in relation to the notified version of Chapter 5. Recommended additions are shown by underlining text, and recommended deletions are shown by ~~striking through~~ text.
- Text shown in grey is text that has not been reviewed.
- Changes that have been made in response to the Chairperson's Minute #3 are cited in italics at the end of each relevant provision, except for changes that affect a number of provisions (for example, removal of the terminology "Highly Erodible Land").
- Surviving changes that were made in accordance with the Planning Evidence and Recommendations Report prepared by Phillip Percy (June 2008) or the Introductory Statement also prepared by Phillip Percy (July 2008), and which were shown in the version of Chapter 5 dated 22 July 2008, are cited in italics at the end of each relevant provision.
- Changes that have been made in response to overall submissions on the Proposed One Plan, and subsequent discussions with territorial authorities, are not cited. These changes affect the whole of Chapter 5. The nature of these changes is described in the s42A report of Andrea Bell dated 4 November 2008.
- Changes that have been made in accordance with Clause 16(2) of Schedule 1 to the RMA are not cited.

## **5 Land**

### **5.1 Scope and Background**

Land management issues stem mainly from the effects of human activities on land. Potential for adverse environmental effects depends upon two factors: the capability of the land and soil to support particular uses and the effects of a given activity on different land and soil types. Mismanagement of the land resource has major implications for water quality and aquatic biodiversity in terms of sediment and nutrient inputs. These implications stem from the very strong links that exist between the land and water resources.

Agriculture, particularly pasture-based farming, is the foundation of the Region's economy and is one of the key elements that have defined our social and visual landscape. However, in some areas, past and present agricultural practices have damaged the very resource upon which the agricultural sector is based – the land and soil. Future agricultural practices have the potential to increase the rate of damage if they do not take the natural limitations of the land into account.

#### **5.1.1 Chapter Content**

This chapter covers accelerated erosion, including the management of vegetation clearance\*, land disturbance\* and agricultural practices. ~~on Highly Erodible Land\* (HEL).~~ Activities related to land management which are covered in other chapters include:

- (a) Discharges of agrichemicals\*, agricultural wastes and other contaminants onto or into land, addressed in Chapter 6;
- (b) Activities involving the beds of rivers and lakes, addressed in Chapter 6; and
- (c) Clearance of indigenous vegetation and drainage of significant wetlands, addressed in Chapter 7.



## 5.1.2

### Accelerated Erosion

Accelerated erosion is often caused by historical and current clearance of woody vegetation and earthworks such as tracking. ~~particularly on land-use capability classes VII and VIII land.~~ The Region has approximately 300,000 ha of hill country land at risk of moderate-severe erosion (Figure 5.1), 100,000 ha of which were affected by the storms of 2004. Approximately 200 million tonnes of soil was eroded during the February 2004 storm, causing approximately 30 million tonnes of sediment to enter the Region's rivers. The sediment discharged by rivers in the Region during this single storm event was likely to be several times the average annual sediment discharge for the Region.

The Region's ~~western~~ west coast, particularly ~~the foredune and associated inland foredunes and sandy soils,~~ is easily eroded when the protective vegetation cover is removed as part of coastal development, and as a consequence of activities such as land recontouring and vehicle movement. Vegetation clearance\* and land disturbance\* expose these fragile soils to wind erosion.

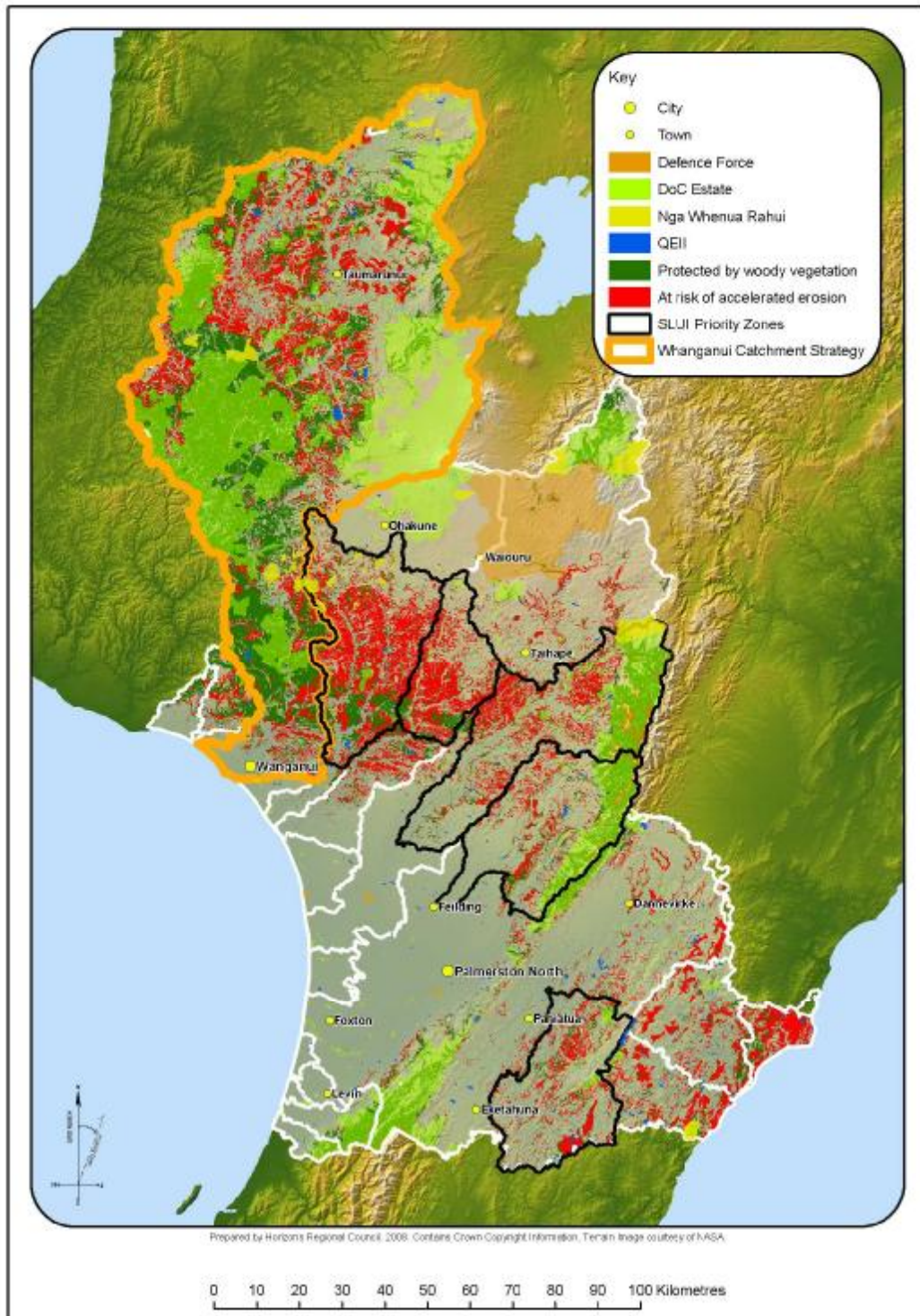
The present extent of erosion has occurred despite the work by catchment boards and other individuals and organisations to manage soil erosion since the 1940s. Where these activities brought about meaningful land-use change, the results have been successful in decreasing erosion rates. For instance, in steep hill-country, tree cover has reduced erosion rates by approximately 75% when compared with grass (Horizons Regional Council, 2005). However, the size and scale of the erosion issue is such that to date no agency has been able to deal with all erosion-prone land. Further, in some areas, large-scale land-use changes are likely to be required, to which there is understandable landowner resistance.

Accelerated erosion can cause a number of on-site and off-site impacts:

- (a) To the landowner – loss of soil and productive capability, reduced stock-carrying capacity, impacts on property and assets such as tracks and buildings, and the costs of carrying out repairs;
- (b) To the environment – reduced water quality in terms of nutrient loads (much of the phosphate load in waterways is the result of sediment run-off), reduced water ~~turbidity~~/clarity, and major impacts on instream life; and
- (c) To others in the Region – damage to infrastructure\* and loss of flood protection to lowland communities as riverbeds within river and drainage schemes fill up with silt.

Soils that are damaged by slipping take a very long time to recover. Studies have shown it can take in the order of 20 years to regain 80% of pre-erosion productivity levels, and more than 100 years to achieve near-full recovery (Blaschke *et al.*, 1992)\*. Some soil types may never fully recover. Efforts to maintain farm productivity on land that has been impacted by slipping generally increases pressure on less damaged parts of the property, thereby increasing the likelihood of further erosion and the loss of nutrients from increased fertiliser use.

Disturbed sandy soils can take many years to revegetate and stabilise naturally. In the interim, large quantities of sand can be eroded by the wind, threatening buildings and property and causing the inundation of productive land.



**Figure 5.1** Distribution of land with a high potential for accelerated erosion. (Highly Erodible Land)



In addition to the damage that can be caused to the Region's fragile land types and soils discussed above, erosion rates and sediment run-off from other parts of the Region can be increased through activities that involve significant vegetation and land disturbance. Such activities are typically involved with major infrastructure development (for example, road construction and upgrades or energy projects such as windfarm development), land development (such as new residential or industrial subdivisions on the edge of urban centres or recontouring of land associated with dairy conversions or intensification), or aggregate extraction (for example, gravel pits or quarries).

Insufficient attention to batter slopes, stormwater management, fill compaction, ~~soil/~~overburden containment and site ~~regressing/~~revegetation can significantly increase sediment loads in adjoining streams or sediment discharges onto neighbouring properties.

### 5.1.3 Land and Soil Management

This section focuses on ~~the~~ reducing accelerated erosion.

The Regional Council's focus continues to be largely non-regulatory, with ~~whole farm business plans\*~~ the Council's Sustainable Land Use Initiative and Whanganui Catchment Strategy programmes being critical components of this approach.

The regulatory focus for land centres on protecting the stability of the Region's soil and water quality by controlling elements of:

- ~~Vegetation clearance and land disturbance located on Highly Erodible Land (HEL)~~ in both coastal and hill country areas;
- ~~forestry~~ Production forestry;
- Large-scale land disturbance; and
- ~~Land or~~ Vegetation clearance and land disturbance near water bodies.

However, the Regional Council has ~~sought to permit~~ permitted activities that:

- Have only minor environmental impacts; or
- ~~are carried out in accordance with a recognised/Horizons' endorsed industry-developed code of practice or similar~~ Involve essential or beneficial activities.

## 5.2 Significant Resource Management Issues

### Issue 5-1: Accelerated erosion

#### (a) ~~Hill country~~ Farming and other lands uses on hill country

Some aspects of current farming and other land use practices in the Region's hill country and along streams are unsustainable. Where vegetation clearance\* (~~forestry or scrub~~), roading, tracking or other types of land disturbance\* (~~including filling~~) are carried out in hill country or adjacent to waterways, there is potential to destabilise slopes, causing accelerated erosion. Accelerated erosion is causing:

- (i) A significant reduction in the productive capability of land;
- (ii) High sediment loads in waterways which are reducing water quality, smothering aquatic ecosystems, infilling rivers, lakes and estuaries, and increasing flood risk to lowland communities; and
- (iii) Land stability hazards, particularly in steep hill country, which threaten people, property and infrastructure\*.



- (b) **Coastal activities**  
Vegetation and soil disturbance associated with vehicle movement, tracking, coastal protection works and land recontouring as part of agricultural development have great potential to destabilise fragile sand soils if not well managed.
- (c) **Large scale land disturbance from urban development**  
Most other land-use activities are not of a sufficient scale to have significant regional adverse effects. However, earthworks related to urban expansion and other large scale development can have significant local adverse effects on waterways if sediment from these earthworks is poorly managed.

[Chairperson's Minute #3 Point 56; Land Recommendation report page 62 LAND 6]

## 5.3

### Objectives

#### Objective 5-1: Accelerated erosion

Land is used in a manner that ensures:

- (a) ~~50% of farms with Highly Erodible Land\* (see Schedule A) are either being sustainably managed, or have a whole farm business plan\* in place by 2017~~ By the year 2017, 50% of farms within the Hill Country Erosion Management Area\* (as shown in Schedule A) have in place, or are in the process of putting in place, farm-wide sustainable land management practices;
- ~~(e)~~ (b) Accelerated erosion, and any associated adverse effects on roads, property or other structures, caused by vegetation clearance\* or land disturbance\*, is minimised is avoided as far as practicable or otherwise remedied or mitigated;
- ~~(d)~~ the damage to roads and other infrastructure\* caused by landslides and sediment run-off from hill country is minimised
- ~~(e)~~ (c) The damage to Accelerated wind erosion, and any associated adverse effects on roads, property, infrastructure\* or significant habitat areas other structures, caused by accelerated wind erosion, of coastal sand is minimised caused by vegetation clearance\* or land disturbance\* in Coastal Foredures\* or sandy soils is avoided as far as practicable or otherwise remedied or mitigated.
- ~~(b)~~ (d) Sediment loads entering waterways as a result of accelerated erosion are reduced to the extent required to be human activity are managed in a manner that is consistent with the water management objectives and policies set out in Chapter 6. of this Plan and the targets established in Schedule D for those water management zones with elevated sediment levels

This Objective relates to Issue 5-1.

[Chairperson's Minute #3 Points 21 and 56]

#### Whāinga 5-1: Te tere whakahoro whenua

*Ka whakamahia te whenua kia hua ai:*

- (a) *hei mua mai i te tau 2017 e 50% o ngā pāmu whenua horo nui (tirohia Schedule A) ka āta whakahaeretia i runga i te tikanga tauwhiro rānei, e whai ana rānei i tētahi mahere pāmu katoa*



- (b) *ka whakaitingia ngā kuhunga paru, nā te tere whakahoro whenua, ki roto i ngā rerenga wai kia hāngai tonu ki ngā whāinga whakahaere wai, pūrongo hoki kei roto i Chapter 6 – Water o tēnei mahere me ngā keonga i whakatauria i roto o Schedule D e pā ana ki aua rohe whakahaere wai nui kē ngā taunga paru*
- (c) *ka whakaitingia te tere whakahoro whenua nā te whakapara tipu me te rāweke whenua*
- (d) *ka whakaitingia te pakaru o ngā huarahi me kaupapa o raro kē nā te horowhenua me te rerenga parataiao i ngā puke, ā*
- (e) *ka whakaitingia te pakaru o ngā rawa, ngā kaupapa o raro, me ngā wāhi noho whakahirahira nā te tere whakahoro ā-hau o ngā oneone takutai moana.*

## 5.4 Policies

### 5.4.1 Accelerated Erosion

#### **Policy 5-1: Sustainable management of Highly Erodible Land – whole farm business plans Encouraging and supporting sustainable land management**

The Regional Council will shall encourage and support the adoption of sustainable land management practices in order to meet subsection (a) of Objective 5-1, by:

- (a) on all farms identified as Highly Erodible Land\* (as shown in Schedule A) by Working with relevant land owners and occupiers of farms within the Hill Country Erosion Management Area\* (as shown in Schedule A) to prepare a whole farm business plan\* identifying voluntary management plan under the Council's Sustainable Land Use Initiative or Whanganui Catchment Strategy which identifies sustainable land management practices for each farm and work programmes for implementing any required changes;
- (a) The Regional Council aims to have 50% of farms with Highly Erodible Land\* covered by a whole farm business plan\* by 2017.
- (b) The Regional Council will monitor Monitoring the implementation of sustainable land management practices on Highly Erodible Land\* within the Hill Country Erosion Management Area\* and report reporting this information on a two-yearly basis; and
- (c) A non-regulatory approach has been adopted to encourage the use and uptake of whole farm business plans\* to achieve sustainable land use on Highly Erodible Land\*. If, however, monitoring indicates that this approach is not achieving sustainable land use, other methods to achieve the outcome will need to be considered.

[Chairperson's Minute #3 Point 21]

#### **Policy 5-2: Sustainable management of other land – whole farm business plans**

- (c) The Regional Council will respond Responding to requests from owners or occupiers of land that is not Highly Erodible Land\* within the Hill Country Erosion Management Area\* to prepare a whole farm business plan\*



management plan, provided this does not impede the achievement of Policy 5-4 subsection (a).

This policy relates to Issue 5-1 and Objective 5-1.

[Chairperson's Minute #3 Point 21]

### **Policy 5-2: Regulation of land use activities**

- (a) The Regional Council shall regulate, through its regional plan and decisions on resource consents, vegetation clearance\* and land disturbance\* in order to meet subsections (b), (c) and (d) of Objective 5-1.
- (b) Territorial authorities may regulate, through district plans and decisions on resource consents, land use activities in order to meet subsections (b), (c) and (d) of Objective 5-1.
- (c) When regulating land use activities the Regional Council and territorial authorities shall:
  - (i) Recognise the importance of retaining woody vegetation\* on hill country for the purposes of maintaining or enhancing slope stability;
  - (ii) Recognise the importance of retaining vegetation on, and avoiding land disturbance\* of, sandy soils that are vulnerable to wind erosion.
  - (iii) Ensure that, as far as practicable, land use activities do not take place within the margins of rivers, lakes and wetlands;
  - (iv) Recognise and provide for the establishment of infrastructure\*;
  - (v) Allow the maintenance\* and upgrade\* of existing structures, including infrastructure\*;
  - (vi) Allow activities that are for the purposes of managing natural hazards, including flood risk;
  - (vii) Allow the planting and management of trees, including forestry, for soil conservation purposes; and
  - (viii) Allow other activities that result in an environmental benefit including improved land stability, enhanced water quality and the establishment of indigenous plant species.

This policy relates to Issue 5-1 and Objective 5-1.

[Chairperson's Minute #3 Points 52 and 56]

### **Policy 5-3: Regulation of vegetation clearance and land disturbance on Highly Erodible Land**

- (a) ~~Vegetation clearance\* and land disturbance\*, including excavation, filling, tracking and soil cultivation, shall generally not be allowed on Highly Erodible Land\* unless:~~
  - (i) ~~the activity will result in an environmental benefit, including improved land stability, enhanced water quality, or the establishment of indigenous plant species, or~~
  - (ii) ~~the activity is undertaken in accordance with a whole farm business plan\*, or~~
  - (iii) ~~the activity is for the purpose of establishing or maintaining a fenceline or other infrastructure\* and there is no reasonable alternative location, or~~
  - (iv) ~~the activity is for the purpose of harvesting trees that were planted for commercial purposes prior to this plan becoming operative and the area will be replanted in production forestry species, or left to revert to indigenous vegetation cover, or~~



- (v) ~~the activity is for the purpose of establishing a commercial forestry operation that will operate in accordance with accepted industry standards, or~~
- (vi) ~~other exceptional circumstances apply.~~
- (b) ~~Any vegetation clearance\* or land disturbance\* that is allowed on Highly Erodible Land\* shall not significantly increase the risk of erosion or land instability.~~

[Chairperson's Minute #3 Points 52 and 56]

**Policy 5-4: Regulation of significant land disturbance on land that is not Highly Erodible Land**

~~Land disturbance\* on land that is not Highly Erodible Land\* shall be regulated in order to avoid any significant increases in the risk of erosion, land instability, or sediment discharges to waterways.~~

[Chairperson's Minute #3 Points 52 and 56]

**5.4.2 Codes of Practice and Best Management Practices**

**Policy 5-5 5-3: Supporting codes of practice, standards and guidelines, and providing information on best management practices**

The Regional Council shall, and territorial authorities may:

- (a) Support the development of codes of practice, standards, guidelines and other sector-based initiatives targeted at achieving sustainable land use; ~~will be supported.~~
- (b) ~~Where possible,~~ Recognise appropriately developed and administered codes of practice, standards and guidelines targeted at achieving sustainable land use, ~~will be recognised and incorporated and incorporate them~~ within a regulatory framework where practicable; and
- (c) Make information describing best management practices for reducing erosion and maintaining water quality and soil health ~~will be made~~ available to all relevant land owners, occupiers, asset owners, consultants, developers and contractors.

This policy relates to Issue 5-1 and Objective 5-1.

**5.5 Methods**

Managing activities on land is a mix of regulatory and non-regulatory approaches. Part II of this Plan contains regional rules relating to the activities described in this Chapter.

Project Name <u>Method 5-1</u>	Sustainable Land Use Initiative – Hill Country Erosion
Project Description	The aim of this <del>project</del> <u>Method</u> is to reduce accelerated hill country erosion. While the emphasis will be on <del>Highly Erodible Land* hill country,</del> all land at risk of erosion will be eligible for assistance under this programme. <del>Staff Officers from Horizons</del> <u>the</u> Regional Council and other agencies will work with land owners <u>and occupiers</u> to develop <del>whole farm business plans*</del> <u>management plans</u> . These plans will provide the





	blueprint for long-term environmental, economic, and social sustainability. Research, publicity, education, information, incentives, joint ventures and land purchase will be used to encourage the land owner <u>or</u> occupier to change to more sustainable farming practices.
Who	<del>The Regional Council shall work with central government, departments and ministries, Horizons Regional Council and district councils, Federated Farmers, Crown Research Institutes, Farm Forestry Association</del> organisations representing farmers, and farm consultants <del>will work together</del> to develop, manage, <del>fund</del> and implement this programme.
Links to Policy	This <del>project links to</del> <u>Method implements</u> Policy 5-1.
Targets	50% of properties <del>with Highly Erodible Land*</del> <u>within the Hill Country Erosion Management Area*</u> will have <del>an operative whole farm business plan*</del> <u>a management plan</u> in place by 2017.

Project Name	Method 5-2	Whanganui Catchment Strategy
Project Description		The aim of this <del>project</del> <u>Method</u> is to reduce accelerated hill country erosion within the Whanganui catchment. While the emphasis will be on <del>Highly Erodible Land* hill country</del> <u>the Hill Country Erosion Management Area*</u> , all land at risk of erosion within the catchment will be eligible for assistance under this programme. <del>Staff Officers from Horizons the</del> Regional Council and consultants will work with land owners <u>and</u> occupiers to develop <del>whole farm business plans*</del> <u>management plans</u> . These plans will provide the blueprint for long-term environmental, economic, and social sustainability. Research, publicity, education, information, and incentives will be used to encourage the land owner <u>or</u> occupier to change to more sustainable farming practices.  The Whanganui Catchment project is a pilot for the much larger Sustainable Land Use Initiative – Hill Country Erosion project ( <u>Method 5-1</u> ). Eventually, the Whanganui Catchment Strategy project will be integrated with this project.
Who		<del>Horizons</del> <u>The Regional Council shall work with</u> Ruapehu and Wanganui District Councils, Whanganui iwi, <del>and</del> the Whanganui River Enhancement Trust, <u>and the Department of Conservation will work with landowners to fund and implement this programme.</u>
Links to Policy		This <del>project links to Policies</del> <u>Method implements</u> Policy 5-1. <del>and 5-2.</del>
Targets		50% of <del>hill country</del> properties within the Whanganui catchment <del>with Highly Erodible Land*</del> will have <del>operative whole farm business plans*</del> <u>a management plan</u> in place by 2015.

[Land Recommendation report page 13 LAND 15]

Project Name	Method 5-3	Sustainable Land Use Initiative – Soil Health
Project Description		The aim of this <del>project</del> <u>Method</u> is to reduce the impact of horticulture, cropping and intensive farming activities on soil health, and the consequent off-site environmental impacts. Education on best management practices will be made available to landowners through a variety of means to encourage the adoption of sustainable land use practices. Research and monitoring will be used to identify and fine-tune best practice. This project includes the provision of advice and information to owners of land in the fragile sand country along the Region's west coast.
Who		The Regional Council <del>wishes to</del> <u>shall</u> work with Landwise, <del>VegFed Horticulture New Zealand, Dexcel,</del> Federated Farmers, agricultural



Project Name <u>Method 5-3</u>	Sustainable Land Use Initiative – Soil Health
	contractors, fertiliser companies and research institutes to develop a programme of action.
Links to Policy	This <del>project links to</del> <u>Method implements</u> Policy 5-5 5-3.
Targets	<ul style="list-style-type: none"> <li>All major croppers/horticulturists in the Region <del>are operating</del> <u>will operate</u> under best management practice regimes by 2017.</li> <li>All major agricultural contractors <del>are operating</del> <u>will operate</u> under industry standards regimes by 2010.</li> <li>All pasture-based farms <del>are being</del> <u>will be</u> managed in accordance with the relevant sector-based best management practice, by the agreed target dates.</li> </ul>

[Land Recommendation report page 13 LAND 17]

[Aside from minor changes, Method 5-3 has not yet been reviewed. It will be reviewed when the matter of soil health is considered.]

Project Name <u>Method 5-4</u>	Sustainable Land Use Codes of Practice and Best Management Practices
Project Description	<p>This <del>project Method</del> <u>will</u> provide support for the development of codes of practice, best management practices and other sector-based initiatives for sustainable land use, construction, production and operating methods on all types of land within the Region – hill country, plains, sand country and along the coast.</p> <p>This project will also recognise, and where appropriate support, initiatives that raise awareness of sustainable land use. Examples include the monitor farm programme, sustainable farming and management funds, and Balance Farm Environment Awards.</p>
Who	Participation in this project <del>is very much dependent</del> <u>depends</u> upon approaches from industry and sector groups.
Links to Policy	This <del>project links to</del> <u>Method implements</u> Policy 5-5 5-3.
Targets	<ul style="list-style-type: none"> <li>All approaches for Regional Council assistance <del>are seriously</del> <u>will be</u> considered.</li> <li>Where proposals are aligned with <u>Regional</u> Council objectives, assistance will be provided where possible.</li> <li>Codes of practice <del>are</del> <u>will be</u> integrated into the regulatory framework, where <del>appropriate</del> <u>practicable</u>.</li> </ul>

Project Name <u>Method 5-5</u>	Land Research, Monitoring and Reporting Programme
Project Description	The aim of this <del>project Method</del> <u>is</u> to develop an integrated research, monitoring and reporting programme that supports delivery and refinement of existing policies and methods, guides implementation planning, and allows implementation effectiveness to be assessed. A <del>key area</del> <u>This will</u> include a five-yearly assessment of the effectiveness of the above <del>projects Methods</del> , particularly the Sustainable Land Use – Hill Country Erosion project.
Who	<del>Predominantly Horizons</del> <u>The</u> Regional Council <del>shall implement this Method, seeking with</del> assistance from research institutes, universities and non-government agencies and community groups as required.
Links to Policy	This <del>project links to</del> <u>Policies 5-1 to 5-5.</u> This Method implements Policies 5-1 to 5-3.



Target	A research, monitoring and reporting programme that supports delivery and refinement of existing policies and methods, and guides and assesses implementation.
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Project Name <u>Method 5-6</u>	Infrastructure* Protection
Project Description	The aim of this <del>project Method</del> is to reduce the erosion risk to, or caused by, <u>the provision, maintenance or upgrading of infrastructure*</u> . <del>construction and maintenance. Infrastructure*, such as roading, is a contributor to erosion, particularly through poor stormwater management, and is put at risk from erosion.</del>  Advice and information will be provided to infrastructure* owners in the planning stages of new works, the carrying out of maintenance* <u>or upgrading*</u> , and protection of existing networks from erosion risks. <del>This project applies to all land types. — hill country, plains, sand country and the coast.</del>
Who	<del>Horizons</del> <u>The Regional Council shall work with network owners (e.g., Transit) owners of major infrastructure* and district councils, forestry owners, land owners, power generators, and developers.</u>
Links to Policy	<del>This project links to Policies 5-4 and 5-5</del> <u>Method implements Policy 5-3.</u>
Target	The Regional Council will have formed working partnerships with all major infrastructure* owners for the purposes of assessing and identifying options to <del>avoid, reduce or mitigate</del> <u>manage</u> erosion risks.

Project Name <u>Method 5-7</u>	Education in Schools – Land
Project Description	The aim of this <del>project Method</del> is to <u>implement a range of initiatives to raise awareness amongst the youth of the Region of the significance of our land and soil resource, the threats to it, and what they can do to protect/restore it.</u> <del>This will be achieved through various environmental education programmes/initiatives eg., Green RIG, Trees for Survival etc.</del>
Who	<del>Horizons</del> <u>The Regional Council shall work with and various national and local environmental education providers, and youth organisations.</u>
Links to Policy	<del>This project links to Objective 5-1 and Policy 7-5</del> <u>Method implements Policies 5-1, 5-2 and 5-3.</u>
Targets	The Regional Council <del>develops and delivers</del> <u>will develop and implement</u> a land and soil related environmental education programme.

[Land Recommendation report page 13 LAND 16]

## 5.6 Anticipated Environmental Results

Anticipated Environmental Result	Links to Policy <u>Policies and Methods</u>	Indicator	Data Source
By 2017, there will be a net reduction in the <u>damage to</u> adverse effects on water quality, property and critical infrastructure caused by hill country and coastal wind	<del>Land Policies: 5-1, 5-2, 5-3, 5-4 and 5-5</del> <u>Policies 5-1 to 5-3, Methods 5-1 to 5-7.</u>	<ul style="list-style-type: none"> <li>Water management zone standards, especially indicators for "muddy waterways" in the Whanganui and Rangitikei Rivers;</li> </ul>	<ul style="list-style-type: none"> <li>Horizons' state of environment water quality monitoring programme;</li> <li>Horizons' and Territorial Authority incidents</li> </ul>



Anticipated Environmental Result	Links to Policy Policies and Methods	Indicator	Data Source
erosion in the Region.		<ul style="list-style-type: none"> <li>• Rate of deposition of sediment in coastal river reaches, focusing on the Whanganui, Rangitikei and Manawatu Rivers;</li> <li>• Costs of storm damage;</li> <li>• Costs of wind erosion in coastal environment;</li> <li>• % of Region's land being used in accordance with sustainable use guidelines; and</li> <li>• % of Highly Erodible Land identified in Schedule A being used in accordance with sustainable use guidelines.</li> </ul>	databases; <ul style="list-style-type: none"> <li>• Horizons' riverbed level survey results;</li> <li>• Horizons' and Territorial Authority storm damage reports;</li> <li>• Land use mapping; and</li> <li>• Horizons' Sustainable Land Use Initiative implementation reports.</li> </ul>

[Chairperson's Minute #3 Point 56]

## 5.7 Explanations and Principal Reasons

A single objective for land management is presented in this Plan to encourage sustainable land use and minimise erosion. This focuses on responding to the fact that 65% of the Manawatu-Wanganui Region consists of highly erodible hillsides and gullies (HRC, 2004b). A target has been introduced into the objective to ensure that the progress toward sustainable hill country land use can be measured. This is particularly important because the policy platform that underpins this objective is largely non-regulatory.

Policy 5-1 recognises that regulation is not the appropriate tool to encourage change toward sustainable land management practices. Instead it uses non-regulatory farm plans that contain a programme of works requiring the landowner's active participation. Policy 5-1 and associated methods acknowledge that the achievement of sustainable farming practices on highly erodible hill country is a complex task. There are three reasons for this.

1. Recognition that sustainable land use means changing from unsustainable farming practices. This may mean the introduction of new practices such as employing different stocking rates, introducing forestry or retirement of land and fencing waterways.
2. Commitment to implementing new land management practices will require capital outlay and most importantly require a willingness from the landowner to introduce change.
3. Sustainable land management practices need to be tailored to the specific land capability of an individual holding, which means a blanket approach introducing one solution for all hill country farming will probably fail.

Policy 5-3 recognises that vegetation clearance and soil disturbance are two of the main contributors to accelerating erosion. Accordingly, this policy seeks to address these matters for land holdings on highly erodible land without farm plans.

Policy 5-4 ensures that the effects of major earthworks on land outside of the highly erodible land area are managed through regulation.

