greater WELLINGTON
REGIONAL COUNCIL

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Committee	Environmental Wellbeing Committee
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Soil Stability Monitoring Update

1. Purpose

To provide an update on the changes in soil stability across the region from 2002 to 2010.

2. Significance of the decision

The matters for decision in this report do not trigger the significance policy of the Council or otherwise trigger section 76(3)(b) of the Local Government Act 2002.

3. Background

The first regional Soil Stability Report was prepared in 2004. Soil stability reflects the intactness and disturbance of the region's soils as exhibited on digital orthophotos. Digital orthophotos were taken for Greater Wellington in 2001-03 and 2010.

Specific design features are:

- Photo-interpretation of ortho-rectified photos by on-screen point analysis.
- Point analysis density of one point per 4 km^2 (a 2km by 2km grid).
- Total points are approximately 2,000, providing statistically robust regional information.
- Details to include land use, secondary vegetation, soil stability, erosion type and landform.
- Field validation of photo-interpretation for quality assurance.

This report compares surveys and notes changes in land use, associated vegetation, soil stability, and soil disturbance.

4. Summary of key findings

Key outcomes from the recently completed point sample analysis were:

Land Use Category	*% of Region 2001-03*	*% of Region 2010*
Drystock farming	46.4	43.8
Native forest & scrub	33.7	33.1
Exotic forest & scrub	10.2	11.7
Lakes, rivers, roads, urban areas	5.6	6.2
Dairy	1.7	2.4
Sub-alpine & coastal scrub	1.4	1.5
Intensive cropping	1.0	1.3

Notes:

- Drystock farming has reduced by 2.6% or 21,000 hectares.
- Exotic forest has increased by 1.7% or 13,700 hectares.
- Dairying has increased by 0.7% or 5,600 hectares.
- Horticulture and cropping has increased by 0.3% or 2,400 hectares.

Soil Stability	*% of Region 2001-03*	*% of Region 2010*
Stable intact soil, well vegetated	65.5	65.1
Stable soil, disturbed by land use	10.6	13.3
Unstable soil, recently disturbed by natural processes	9.2	9.0
Unstable soil, freshly disturbed by natural processes	9.1	6.4
Lakes, rivers, roads, urban areas	5.6	6.2

- 15.4% of the regions soils are either recently, or freshly disturbed by natural processes. This figure has reduced from 18.3% and is equivalent to 23,400 hectares.
- Stable soil disturbed by land use has increased by 2.7%. 1.7% (63%) is a result of tracking and 0.8% (30%) as a result of increased cultivation.

- *Disturbed by land use* includes drains, earthworks, tracking, cultivation and livestock grazing pressure.

- *Recently disturbed by natural processes*, generally mass movement erosion that is revegetating.

- *Freshly disturbed by natural processes*, mass movement erosion that is bare, and generally occurred within the last two years.

5. Extent of Soil Conservation Measures

The point sample methodology records secondary vegetation. For each land use this can indicate the presence of other vegetation over and above the dominant vegetation. For example, on drystock pasture the existence of secondary exotic trees or native vegetation is recorded. Exotic trees on pasture are an indication of the establishment of plantings for soil erosion control.

Drystock Pasture on unstable soils	***Area (hectares)***		***% of Drystock pasture***	
	2002	***2010***	***2002***	***2010***
Open pasture	98,200	89,300	45.3	41.7
Pasture with soil conservation cover	118,500	125,000	54.7	58.3

Notes:

- 214,300 hectares of drystock pasture is erosion prone i.e. 26.4% of the Wellington region. (c.f 216,700 hectares or 26.7% in 2002)

- 58.3% is protected with secondary vegetation. (c.f 54.7% in 2002)

- 41.7% or 89,300 hectares requires some form of treatment. (c.f 45.3% or 98,200 hectares in 2002)

- In the last eight years a total of 8,900 hectares of pasture land has been converted to a long term sustainable use either by way of planting or reversion.

The Wellington Erosion Control Initiative (WRECI) has a particular focus on drystock properties where unstable soils are prevalent. The five priority catchments and isolated hotspots in WRECI contain some of the most unstable farmed land in the region. Soil management techniques are used provide stability to eroding soils and those with a potential to erode, thereby reducing soil loss, enhancing soil intactness, water quality, and mitigating threats to rural infrastructure.

6. Communication

The information gained from the Soil Intactness Report 2010 will be used in the upcoming state of the environment report. Findings from the report will also be communicated to staff in other departments engaged in land based activities.

Regional data and subsets of qualifying size will provide a snapshot of soil intactness suitable for external publicity through Rural Focus and Our Region.

7. Recommendations

That the Committee:

1. ***Receives*** *the report.*

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

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