

## Other erosion problems due to slumps

Re-activation of slump complexes has led to the formation of extensive systems of soil cracks in various areas in the region, tunnel erosion in the South Elliott area and severe gully erosion at both Mt Hicks and on Baulds Hill at Oldina.



Slump soil stabilisation project on Kevin Frankcombe's property, Nunns Road, Mt Hicks.

## Management of slump soils

Utilising a mixture of revegetation and engineering.

### (i) Revegetation

Planting deep-rooted eucalypts and shrubs in belts across the slope where slump soil complexes exist. The tree roots will help to stabilise the soil, resisting the slump pressures and will use up some of the excess soil moisture by evapotranspiration (note: Blackwoods are relatively shallow-rooted trees and are therefore not suitable for slump stabilisation).

### (ii) Engineering

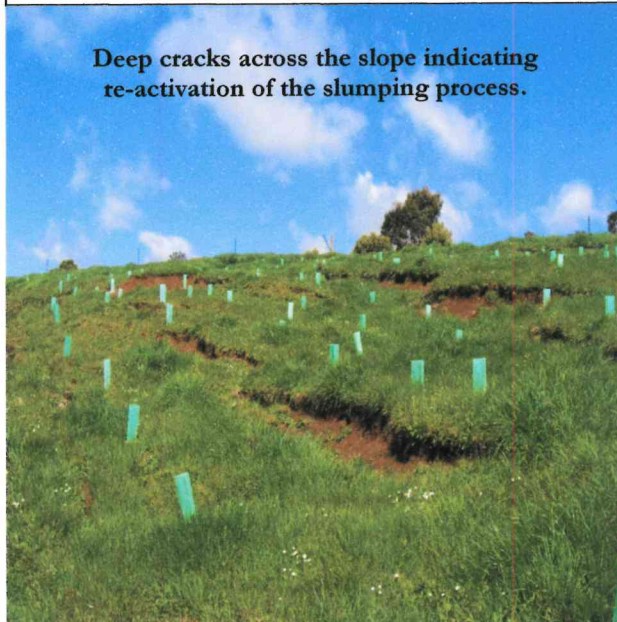
This is aimed at reducing the volume of water that enters the soil. Possibilities include interceptor surface drains across the slope, both within and above the slump area, and sub-surface drainage.

## Occurrence

Within Tasmania, these landforms are only seen on the North West Coast. Slump complexes are also quite common in New Zealand.

This brochure was prepared for the Wynyard Landcare Group as part of its celebration of 20 years of environmental work within the Wynyard/Elliott region.

Deep cracks across the slope indicating re-activation of the slumping process.



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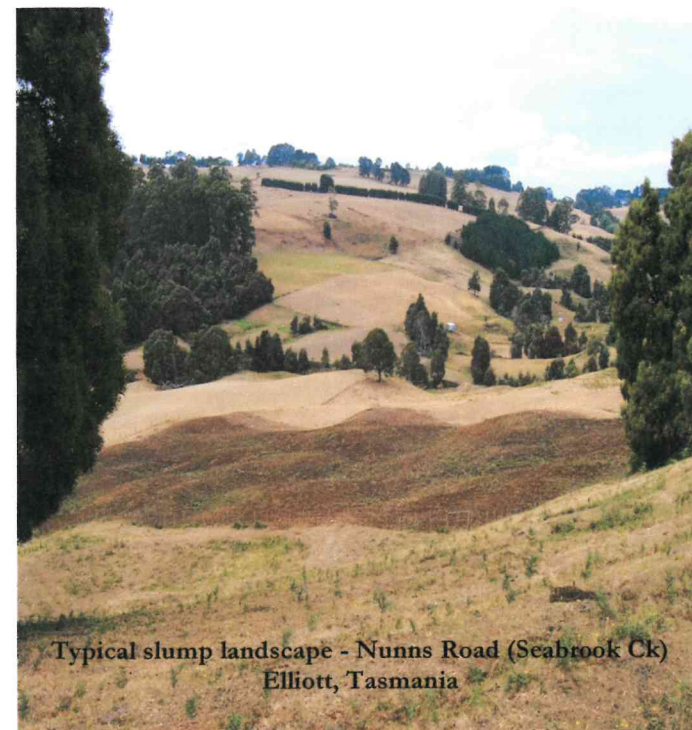
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Landholders should refer to the 'Land Stability Hazard' maps produced by Mineral Resources of Tasmania to identify the location of slump complexes in their area..

*[Text and Photos by Graeme Stevenson]*



## Slump Soil Complex (‘BMX Country’) Information Brochure



Typical slump landscape - Nunns Road (Seabrook Ck)  
Elliott, Tasmania

*Slump soil complexes are a landform  
rather than a soil type.*



Australian Government



**Mass Movement**

Soil mass movements can involve either landslips or slumps. Landslips generally occur on steeper slopes whereas slumping can occur on quite moderate slopes (eg. 15%).

**The red basalt soils**

Slumping occurs on our red basalts (often called 'Krasnozems' after the Ukrainian word for "beautiful soils") which have an excellent soil structure that enables them to hold a lot of water.

**When did the slumping occur?**

It is possible that the original slumping happened during the last Tasmanian ice age (around 10,000 years ago). The cold weather would have caused the death of most of the tree cover, increasing the amount of water in the soil profile and reducing the stability of the landscape (due to the loss of the tree roots).

**How did the slumping happen?**

Below is a diagrammatic representation of the most likely explanation.

**Why do some soils slump and others don't?**

It all depends on the topsoil/subsoil interface (which is 3 to 4 meters deep). Slumping generally occurs where basaltic topsoil lies over sandstone/mudstone subsoils. This prevents the movement of water down through the soil profile, forcing the water to move laterally.

Of all the red basaltic soil in the Elliott, Mt Hicks, Yolla and Takone districts, it is estimated that around 60% is slumped. Slump complexes can be moderate or severe. In severe cases the humps can be as steep as 30%.

**'Upside-down erosion'**

It appears that this slumping is being re-activated in some areas of the North West, particularly following heavy rains, on slopes with little tree cover. The topsoil becomes saturated with water. Because the subsoil prevents water from moving through it, and there is an excess of water in the soil, the interface between the subsoil and the topsoil is 'lubricated', leading to the slumping of the topsoil in a rotational (backwards) movement.

**The consequences of slump soils**

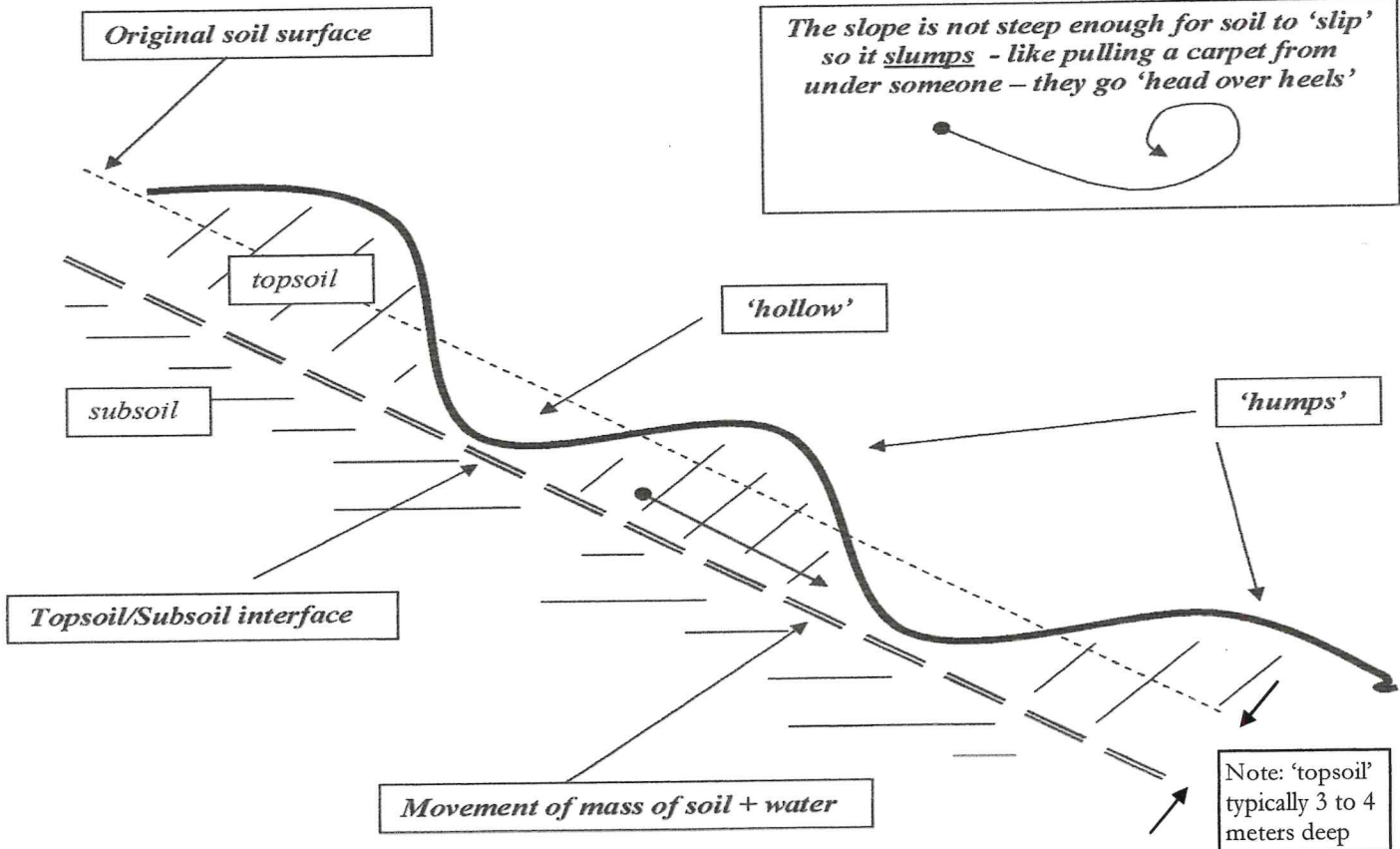
While severely slumped soils are not suitable for cropping, slump complexes generally don't cause any problems for graziers until they become re-activated.

Re-activation is probably due to the wide-scale clearing of the forest cover since colonisation.

**Dam failures**

The failure of dams on the North West Coast (even ones that have been in place for years) is often due to slump soil complexes. This is especially so if dam excavation weakens the 'toe' of a hill on a slump complex.

**"There was movement at the station ..."**  
*Carl Terrey (Baulds Hill, Oldina) explained that, on one slumped hillside on his property, over the past 20 years he has had to restrain the fenceline many times and estimates that the strainer post has moved over 1ft.*



**Water-logged 'hollows'**

One of the consequences of irrigating slump soils is the 'appearance' of small ponds. The 'hollows' of a slumped landscape are normally mildly waterlogged and irrigation over long periods (in this case around 20 years) can lead to severe water-logging (due to pugging?), reducing the available grazing area.

