



## Guidelines for Mine Rehabilitation in Westland

### Key points of this fact sheet

- With the right approaches, West Coast land can be successfully rehabilitated following mining.
- Mined land is usually rehabilitated to pasture or native shrubland/forests.
- A critical first step is to identify what materials at a mine sites can be used for rehabilitation. The volume and quality of these resources often controls what can be achieved.
- Successful outcomes need to be agreed for each site – each site and mine operation will have different rehabilitation options
- Topsoil is usually the most valuable rehabilitation resource; intact sods of plants with underlying roots and slash are key to successful native rehabilitation
- This information has been produced specifically for mine operators at smaller sites

**Active Rehabilitation** of mined areas is critical to minimise the environmental impacts of mining. Successful rehabilitation starts before mining with identification of salvageable rehabilitation resources as this determines what outcomes are possible. This is the first of four fact sheets (numbers 5-8) that provide concise, practical guides to help miners rehabilitate land. The flow charts are from ‘Guidelines for Mine Rehabilitation in Westland’, a report by Landcare Research for West Coast Regional Council. The 85-page report is free at <http://www.landcareresearch.co.nz> (keyword: mining factsheets).

These fact sheets and report have been written for mine operators at small to medium sites. These operators tend to lack the specialist resources of large mining companies.

### Pasture

Pasture has been successfully established on West Coast mined land since the late 1970s. Using best practice, fully productive pasture can be achieved within 2-5 years. Alluvial mining can be an opportunity to improve pasture production, farm efficiency, farm infrastructure (e.g. races and stand-off areas) and stream protection.

Success requires a post-mining landform with slopes that give adequate drainage (and height above water table) but minimal erosion. Separately salvaged topsoils and/or sands and fine gravels are then spread over the new landform to form a pasture growth medium. High fertiliser applications are needed to establish vigorous, dense pastures. Dense cover and early weed control is vital to suppress weed species. Condensed flow chart guides are in Fact Sheet 6 (Planning Rehabilitation to Pasture) and Fact Sheet 7 (Implementing Rehabilitation to Pasture).

### Native ecosystems

Like rehabilitated pasture, methods for restoring native shrubland and forest ecosystems have been trialled and developed on the West Coast since the late 1970s. Research has highlighted the value of salvaging and reusing topsoil, and creating stable slopes with rough surfaces (by including logs, rocks, and slash). The negative impact of weed competition, highly acidic (pH<4) surfaces, and compacted growth media are also clear.

It can take decades to centuries to re-establish native ecosystems similar to pre-mining conditions. West Coast miners developed the ‘direct transfer’ method or moving sods of intact plants and soil to speed recovery. Short-term aims are typically to establish plants on stable surfaces that support natural regeneration and succession with minimal ongoing animal and weed control. A guide to undertaking rehabilitation to native ecosystems is available from Fact Sheet 8.



This fact sheet is part of a series relating to a framework for predicting and managing the environment impacts of mining.

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# Identification and salvage of rehabilitation resources

This flowchart is an overview of typical steps to identify and salvage materials for rehabilitation. This process should be undertaken before mining starts. It should be repeated during mining as more detailed information on overburdens become available, machinery changes, and mine plans updated. Together the information helps refine practical and cost-effective rehabilitation options.

(Green text highlights the resources for rehabilitation, NAF = Not Acid Forming.)

