

## 9 Rehabilitating land following stream works

Complexity			Environmental value			Cost		
Low	Moderate	High	Low	Moderate	High	Low	Moderate	High

### Definition & purpose

To rehabilitate land impacted from stream channel works, such as drain excavation and stream bank protection. The aims are to protect sensitive sites, to prevent off-site damage, and to rehabilitate the stream banks and channel margins to a desirable condition.

### Location

Stream and river channels subject to channel excavation and bank protection works.

### Work window

- Identify habitats to be protected (e.g. native bush, wetlands, streams, nesting sites). Avoid disturbance of these sites.
- Avoid bird-nesting periods.
- Do not disturb the channel margins if there is whitebait (inanga) spawning. Spawning occurs above normal water level on spring tide flooded channel margins during late summer and autumn (mainly February to April).

### Treatment objectives

1. Erosion is controlled during works and rehabilitation.
2. Suitable sites are used for the storage of soils, access roads and interceptor drains.
3. Land productivity is rehabilitated (e.g. pasture; streamside planting).
4. Banks and land will be well vegetated (70% + ground cover density, with no visible exposed soil) with no signs of erosion (rills or gullies).
5. Banks will be stable with no signs of bank collapse.
6. Surface runoff should be slowed and intercepted by streamside vegetation.
7. Water quality and stream channel and stream bank habitat should improve.

### Before you start

- Consult with District/Regional Council staff – they will provide advice and there may be help to fence and plant. Resource consent may be required.
- Consider streamside planting as well as pasture rehabilitation.



Sediment control and re-vegetation of drainage management work sites is often required to prevent soil erosion contributing to waterways.

**Replacement of soil material:** Before spreading topsoil, the re-graded areas should be scarified or roughened to eliminate slippage surfaces and to promote root penetration.

**Site preparation:** Clear pest and undesirable vegetation, and rubbish from the site. This material can be burned, trucked from the site or used as fill (as determined by the local authority).

**Storage of soil material:**

If it is impractical to spread the material immediately after the land is re-graded, it must be stockpiled. Stockpiles should be protected from wind and water erosion, unnecessary compaction, and contamination. For longer-term storage (more than a month) grass the spoil heap to prevent erosion. If the stockpile is near a watercourse, build a bund around the stockpile.



Stockpiled soil

Bund

Roughened regraded area

Remove topsoil and store separately from overburden.

**Topsoil should be spread in a manner that:**

- Ensures that the position and thickness of each horizon is equivalent to those in the undisturbed soil.
- Prevents excess compaction.
- Protects the topsoil against wind and water erosion before it is seeded and planted.

Mark out areas to be protected, such as native vegetation and nesting sites (e.g. fenced, flagged, or sign posted).

Fenced off native vegetation areas

**Fertiliser and soil additives:** After the topsoil has been spread on the disturbed areas, fertiliser and soil additives should be applied according to the needs determined by soil tests.

**Surface preparation and seeding:** Final grading must be completed prior to seeding. Groove or furrow slopes steeper than 1 in 3 on the contour line before seeding.

The seed-bed should be well pulverised, loose and uniform. Use only high quality certified seed adapted to local climate, soil conditions and season. Seeding and fertiliser should be in accordance with good practice. Provide adequate water to aid in establishment of vegetation. Use appropriate mulching techniques where necessary.

**Pest management:** Pest plants and animals should be controlled.

## Additional reading

ARC. 1999. *Erosion and sediment control. Guidelines for land disturbing activities in the Auckland region.* Auckland Regional Council Technical Publication No. 90.

NRCS. 1984. *Land reconstruction, currently mined land.* Conservation Practice Standard 544. National Resource Conservation Service, United States Department of Agriculture.