

# Port Hills fire recovery options for erosion and sediment control

This guidance is drawn from Environment Canterbury's Erosion and Sediment Control Toolbox for Canterbury: [www.esccanterbury.co.nz](http://www.esccanterbury.co.nz)

Preventing erosion of fire affected land and retaining sediment will help protect water quality in the Cashmere Stream, the Heathcote River/Ōpāwaho, the Halswell River and Te Waihora/Lake Ellesmere.

## Ways of preventing erosion:

If you have a fire break excavated across your property, then this area will be at high risk of severe erosion, especially where channels could develop across it or along it.

- Signs of erosion in a fire break are: Rilling on the batters, banks or sides
- Channels forming along the base of batters as water runs downhill
- Channels forming across the firebreak, these form from rills that have expanded through erosion.



Rilling on exposed Port Hills soil



Channel erosion starting to form on a track

Protect the soil of a firebreak by revegetating it. In the interim, you may need measures like soil binders (see below) to prevent immediate erosion and help grass (or other vegetation) establish.

## What to plant in general for fire affected areas or fire breaks:

- Re-establish vegetation over the affected area. Talk to suitably experienced advisors about your local area and to find ecologically suitable and fire resistant species. Indigenous vegetation (forest/shrubs) will work best and are best planted as seedlings.
- Low-flammability non indigenous woody species can be suitable, if that suits how you will use your land
- Establish grass cover, if this suits your land use. Grass is not as effective as indigenous vegetation over the long term, but will give quick protection to exposed soil

## Other methods to stabilise exposed soils or areas with no or limited vegetation:

- Soil binders – these reduce erosion potential by more than 90%
  - Small areas of high risk can be applied by hand
  - Can be applied to large areas from a truck where there is a suitable track
  - Can be applied by helicopter on hard-to-access places of high risk
  - Grass seed can be applied with the soil binder – it protects the soil immediately and helps to establish permanent protection



Soil binders being applied to erodible soils and slopes

- Covering soil with organic material to prevent erosion
  - Compost, can be applied pneumatically, or by an excavator
  - Mulch, shredded wood waste, or other biomass straw, can be applied mechanically for large areas, but usually needs to be attached to the soil with a 'tackifier' to stop it blowing around



Compost being applied to cover exposed soil and prevent erosion on the Port Hills



Straw mulch or wood mulch being applied to protect erodible soils on the Port Hills

- Trees that need to be felled (for safety reasons) can help control erosion:
  - If they are to remain on site, then lie them across the slope, so they act like a sediment dam. Organic matter will build up behind them, further enhancing erosion control.



Felled tree laid across the slope to help prevent erosion

### Sediment retention

Install sediment retention tools to protect water quality in local waterways.

For very small areas with limited slope, consider using sediment socks or silt fences.

- Silt fences need to be dug into ground, so consider whether this will damage the soil more than using another method
- Silt socks can't cope with very steep terrain, or large catchments, so consider other tools



Compost silt socks with returns installed, to catch sediment eroding from the surfaces above



A silt fence installed across a slope to control dirty water runoff.

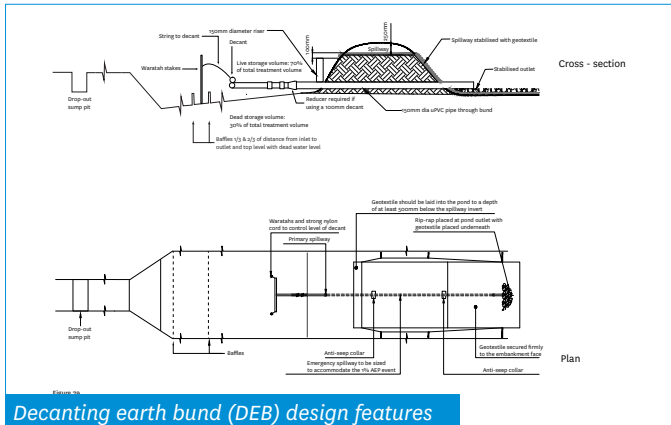


A silt fence installed across a slope to control dirty water runoff.

For small areas (3000 square metres max) consider use decanting earth bunds (DEBs)

- DEBs impound water so sediment can settle out
- DEBs need to be the right shape to be effective. Rectangular is best

- Chemical treatment is needed to effectively settle out fine soils on the port hills
  - For DEBs, do this with a 'floc sock'. Stormwater consultants will be able to advise on the best approach
- Check the DEB for maintenance needed before and after rain storms



Decanting earth bund (DEB) design features



Floc sock to improve the retention of sediment in a decanting earth bund

For large areas, consider the use of **Sediment Retention Ponds (SRPs)**

- These are suitable for catchments from 3000 square metres to a maximum of 5 hectares.
- They need to be specifically engineered, so get advice from suitably qualified people about this before construction.
- Chemical treatment of dirty water going into SRPs is needed to get good water quality results. Consult a suitably qualified person before using.



Sediment retention pond and flocculation system installed to catch sediment on a large catchment.

Please contact Environment Canterbury for information and advice on how to go about using these tools.

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