Case Study 1: Barrabool Hills tunnel erosion

Landscape zone:	Bellarine
Shire:	City of Greater Geelong
Investors:	CMIS (CCMA)
Works dates:	Begun August 2005, signed off 9 November 2005
Site inspected by:	Shari Wallis, Greg Peters (CCMA), Joel Tyndal (CCMA), Paul Whinney

Topographical Map:
Map showing catchment area for unnamed tributary leading into the Barwon River.

Catchment area approx. 130.5 ha

Catchment area above tunnel erosion site (yellow line) approx. 63ha

Tunnel erosion site approx. 0.8 ha

Type and extent of threat: (erosion type, area covered, land holders involved, risk to assets)

- Tunnel erosion is the main threat along with associated sheet and rill erosion. The main tunnelling occurs around a dam on the landholders property. Two landholders are involved as the tunnels have caused a small landslip which cuts under the boundary fence into the neighbours
- Extensive tunnel, sheet and rill erosion around dam covers approx. 0.8ha
- The run off from the site impacts directly on the Barwon River as sediment and weed seeds can be washed into the River
- A small landslip has occurred under the boundary fence going into the Richards property.
- The site has been visited by DPI & CMA several times over past years but no previous action has been taken
- The tunnel erosion site has been growing for approx. last 5 years?

Site description: (soils, climate, landscape/topography, catchment area, dominant veg/land use)

- Highly sodic/dispersive soils, no soil test taken
- Steep hills in catchment area (approx. 130.5ha), feeds directly into the Barwon River and deposits sediment
- The site is approx. 1.2km from the Barwon River on an unnamed tributary
- Grazing is the main landuse of the property while the affected neighbouring property is cropping and grazing

Severity of threat and impact on assets: (risk to farm assets, production, vegetation, describe impact)

- The dam is threatened by developing tunnels
- Land production is threatened by further potential landslips and increased tunnelling into paddocks
- Water quality of the Barwon River is likely to decline if the deposition of sediments continues

Worksplan:

- Deep rip and compact tunnel erosion area
- Fill in and compact slump site on Richards property
- Fence out the dam and whole ground works site
- Tree belt planted along Richards boundary to intercept any watering entering soil profile up slope of site
- Trees and grasses planted throughout works site to help in stabilisation

Comments on completed works:

- Site was successfully deep ripped and compacted down, a small area (approx. 10x20m) was not deep ripped or compacted due to slope.
- Landslide site was filled however a new tunnel (approx. 40cm diameter) has reappeared in filled in site. The landholder filled in a compacted the hole and will monitor the tunnel.
- Grass seed had not been applied as of Nov. 2006, small rills were beginning to show after significant rainfall event but no major damage, seed to be applied early autumn.

6 month site re-visit: (comments, photos)

Due March 2006

Before and after photos:

Photo set 1: Photo of tunnel erosion site before and after works, looking south east

Photo set 2: Before and after photos of the landslide creeping under the boundary fence of the neighbours. After photo also one row of the tree belt planted along the new boundary fence to reduce sub-surface water entering the sensitive works area below. Photo taken looking south, south east.