REPORT AND SPECIFICATION

FOR

RESTORATION WORKS

ON NELLIES GLEN ROAD and THE 6 - FOOT TRACK

NELLIES GLEN

Prepared for

Crown Lands, Parramatta

DEPARTMENT OF LANDS
SOIL CONSERVATION SERVICE
Greater Metropolitan Office
Level 12, 10 Valentine Ave
Parramatta NSW 2150

Phone: 8836 5353
Fax: 8836 5363
E-mail: andrew.scott@lands.nsw.gov.au

	Date: August 2005 Revision No	Author: A.Scott Reviewed by

INTRODUCTION

In response to a request from Crown Lands, the Soil Conservation Service was engaged to inspect and create a rehabilitation plan and specification for a section of Crown Road and Crown Reserve (Nellies Glen Road) where fire trail maintenance works were implemented by the Blue Mountains Rural Fire Service.

The works resulted in significant disturbance of the road verge in several sections along the road past the locked gate (GR245823 / 6264236).

The recommendations in regard to track construction and maintenance contained in this report are referenced to the Soil Conservation Service guideline “Earthmovers Training Course, Unit 17 Access Tracks. All other recommendations are intended to apply ‘best practice’ contemporary soil conservation techniques.

ISSUES ASSESSED

The issues identified can be located on Figure 1(attached). These issues are listed below:

Track Issues

Generally, the track surface is well compacted and stable with a good crown to disperse water to the table drains, however, many of the drainage measures will need to be modified / rectified, and they include:

- The majority of the mitre drains installed typically exceeds the recommended amount of fall. Many of the mitre drains have been extended into drainage lines and are already actively eroding.
- There are several sections of track where mitre drains have been installed and there is insufficient drainage / fall causing water to build up and potentially erode the table drains and / or mitre drains down slope.
- Several small culverts have been graded over limiting their capacity.
- There are several sections of track where water flow will be increased due to the slope and lack of drainage measures. To minimise the load on the table drain it is recommended that cross banks are installed at regular intervals.
- Several creek crossings have been graded over, potentially exposing the creek bed to scour. It is recommended that rock causeways are installed in these locations.

Clearing Issues

There was significant clearing and disturbance of the roadside during the maintenance works.

Although there is likely to be a reasonable seed / propagule bank in these disturbed areas, the soil types exposed are highly susceptible to erosion and will need to be protected until they can naturally revegetate.

It is recommended that the vegetation / soil removed (and pushed into windrows) is respread over the disturbed areas. Any areas where there is a shortfall of material will be supplemented by the installation of brush-matting and / or jute netting.

RECOMMENDATIONS

The following tables summarise some of the major issues identified and outline the suggested rehabilitation methods to be implemented for the site.

Drainage

The current drainage structures along the track are generally located appropriately; however, their extent or condition (particularly of the mitre drains and minor culverts) has exceeded the generally accepted specifications for functionality.

Several sections of the road have inadequate drainage. This will require the installation of a number of trafficable cross-banks (the majority are to be installed on the second section of the track within the Crown Reserve past Diamond Ck). These have been sited to minimise any further soil disturbance to adjacent bush (refer to Figure 1 for the location of the trafficable cross-banks).

Table 1: Mitre Drains Summary

Issue	Remediation	Image	EAST	NORTH
The mitre drain has been extended to far.	Where the mitre drain fall exceeds 5°, the soil will be reformed to create a bank and the disturbed vegetation will be pulled back to protect the soil. In addition, coir fibre logs will be installed where necessary to trap sediment and slow water flow. .		245899.321	6264227.326
The mitre drain has been extended to far. The fall is too great and erosion is already occurring.	Where the mitre drain fall exceeds 5°, the soil will be reformed to create a bank and the disturbed vegetation will be pulled back to protect the soil. A rock check dam may be required. In addition, coir fibre logs will be installed where necessary to trap sediment and slow water flow.		245994.833	6264319.837
The mitre drain has been extended to far.	Where the mitre drain fall exceeds 5°, the soil will be reformed to create a bank and the disturbed vegetation will be pulled back to protect the soil. In addition, coir fibre logs will be installed where necessary to trap sediment and slow water flow.		245923.480	6264231.562
As above	As above		246012.827	6264329.920
As above	As above		246037.810	6264346.433
As above	As above		246039.930	6264324.546
As above	As above		246060.327	6264336.276
As above	As above		246068.343	6264333.761
As above	As above		246157.659	6264353.134
	As above + Install extra brush-matting 20m²		247359.058	6264943.946

Culverts

There are several culverts located on the second section of the track that are not functional due to sediment build up around the inlets.

These culverts will be cleaned out and rock headwalls installed to facilitate water flow and future maintenance.

Disturbed Areas

A significant amount of vegetation has been cleared during the works and it is proposed that any available material that has been pushed aside (ie vegetation and topsoil) will be respread over the cleared areas and erosion and sediment control measures installed to protect the soil and receiving creek lines.

It is proposed that the works will be carried out by a small rubber tracked excavator and further soil disturbance will be minimised.

Brush-matting material will be sourced from the sections of Nellies Glen Road (sections gazetted as Crown Road) where the easement width is less than 6 metres.

The material will be lopped from track side vegetation to create a 6 metre wide easement (6 metres is the easement width required for a Category One Access Track for Fire Operations as per “Planning for Bushfire Protection” Planning NSW 2001).

Refer also to Table 2 (overleaf).

Creek Crossings

It is recommended that both of the main creek crossings (Coral Creek and the unnamed water course currently covered by the steel plates) be stabilised with the installation of a rock causeway, utilising durable, locally available material (either sandstone or quartzite).

The rock will be graded angular rock ranging in size from 50 – 150mm.

Table 2: Disturbed Areas Summary

ISSUE	REMEDIATION	IMAGE	EAST	NORTH
Extensive clearing around mitre drains. Fall of drain to great.	Rock checks will be installed to slow water and prevent erosion. Vegetation will be respread and / or brush-matting applied.		246008.731	6264331.022
Verge cleared	Brush-matting will be installed to protect soil surface.		246019.877	6264333.953
Extensive clearing of vegetation during installation of mitre drains	Vegetation and topsoil will be respread and erosion and sediment controls implemented (ie coir fibre logs installed across the slope to intercept water. Brush-matting will be used to cover any remaining bare soil.		246207.878	6264368.655
Extensive clearing of vegetation around drainage line.	As above		246563.548	6264355.0728
Verge cleared	Respread soil/veg & brush-mat.		246640.579	6264371.363

COST ESTIMATE

The activities and approximate quantities for the remediation are listed below:

ACTIVITY	QUANTITY / MATERIALS
Spreading of disturbed vegetation and topsoil (by small rubber tracked excavator to minimise disturbance).	4000m²
Installation of erosion and sediment control measures.	Rock checks x 6 Coir logs x 30
Collection and spreading of brush-matting, jute netting	1300m²
Excavation and repair to existing culverts.	Rock headwalls x 5
Construction of 21 trafficable cross-banks by extraction.	NA
Estimated cost for the remediation	$27,000

OUTCOMES and WORKS PROGRAM

The works described above have been prescribed to achieve stability of the trail surface and drainage in the longer term.

The works recommended for the cleared areas adjacent to the trail aims to achieve protection of the soil surface from erosion by raindrop impact and uncontrolled flow.

The Department of Lands has emphasised that the remedial works are to be undertaken as soon as possible

Soil Conservation Service staff will be conducting a secondary inspection of the site on Wednesday the 7th of September to initiate the preliminary stages of the works program.

It is anticipated that on ground works will commence in late September 2005 (pending investigations into Cultural Heritage).

CONTACT OFFICERS

Soil Conservation Service:

Andrew Scott 8836 5353
0428 600 041

Michael Scholz 8836 5352
0408 642 762

BIBLIOGRAPHY

Marshall, C. and Norvill, M. (1990). *Earthmovers Training Course, Unit 17 Access Tracks.* Soil Conservation Service of NSW.

NSW Rural Fire Service, Planning and Environmental Services (2001). *Planning for Bushfire Protection, A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.* NSW Rural Fire Service.