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East Wolgan Swamp Narrow Swamp Remediation Proposal



The Bush Doctor (NSW) Pty Ltd

Bushland Regeneration and Bushland Management

ABN: 80 104 769 191

PO Box 694 Springwood. NSW. 2777

Telephone: (02) 4751 3180 Facsimile: (02) 4751 3185

E-mail: shane@bushdoctor.com Website: www.bushdoctor.com.au



1.0 Introduction

East Wolgan and Narrow Swamp is part of the Newnes Plateau Shrub Swamp Endangered Ecological Community listed under the NSW Threatened Species Conservation Act 1995 and is federally listed under the EPBC act 1999 under the Temperate Peat Swamps on Sandstone classification.

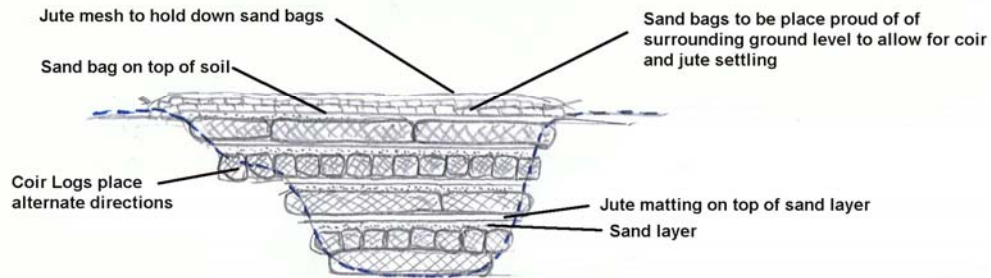
Issues identified at East Wolgan Swamp include slumping and channelisation along with minor weed invasion.

The aim of the East Wolgan Swamp project is to reinstate the natural hydrological processes of the swamp through the replacement of lost soil and organic material. Narrow Swamp will have a rock ramp constructed to prevent the head cutting that is active in the area at present.

2.0 Slump remediation strategy.

1. Prior to any work commencing the area surrounding the slumps will have geotextile placed on the clear ground for storage of sand bags and as a work area to reduce to impact on soils and vegetation.
2. Materials will be air lifted in and stored as close as possible to the work area; this will reduce the foot damage of carrying heavy materials across the swamp. These materials will be stored on geotextile as well. These materials will be stored for a short time (1 week) so minimal damage will occur and the vegetation will recover.
 - a. Sand to be used will be coarse washed river sand delivered on site in large bales, dependent on lifting suitability.
 - b. Coir logs will be 300 X 300mm square logs of an assortment of sizes, 1.5, 2 and 3 metre long logs.
 - c. Sand bags mad of hessian
 - d. Jute mesh
 - e. Jut matting
3. Removal of the upper soil profile that has slumped into the depressions. This will be hand dug and placed in sand bags to be used in the final remediation process. This will ensure that the upper profile containing the native seed bank and vegetative propagules is retained and placed back in there correct profile. Once these bags are placed and left in place the bags provide good condition for the germination of native seed in the soil, we have found this on manner jobs and prevent the loss of any topsoil. The bags will break down over a twelve months period.
4. Coir logs will be square to reduce the volume of voids where the logs meet. This will be achieved with the use of varied log lengths. The logs will be laid in the excavated areas level, the sand will then be use to pack in the ends and joins and then to a covering depth of 100mm. The sand will be used in conjunction with the coir to reintroduce a medium of organic and sand material representative of the natural soil composition, it should be noted that we are trying to remediate to replicate natural hydrological processes of the swamp using material considered suitable for the project. Once the sand has been laid and packed jute mat will be placed over the top before the next level is laid in an alternative direction. By laying the sand and jute over the logs we are trying to create anaerobic conditions that with allow for the slow deterioration of materials illustrated below.

Cross section view of slump and remediation strategy



Note drawing is not to scale or indicative of material quantities

5. Once the coir and sand has been installed the final layer will be covered with jute matting again, the sand bags will then be laid on top reintroducing the top soil back into the area, the area will then be covered with jute mesh.
6. Upon completion the area will be brush matted. This will prevent some of the animal grazing on regenerating plants, this is apparent throughout the area is a factor impeding the natural regeneration of the swamp.
7. Minor channelisation is present in the swamp, this is not considered as major problem, we will put level spreader structure in sin the deeper areas to spread some of the surface flows out over the swamp rather than concentrated flows.
8. The areas surrounding the slumping will also be brush matted. Direct seeding of the area will also take place. This seed will be collected from the adjoin swamp vegetation. Only species from the swamp vegetation composition will be used.
9. On the completion of these works a regular weed control and regeneration program will occur. This will monitor the establishment of both annual and perennial weed establishment and control these if they are hindering the regeneration processes. Monitoring of the natural regeneration should asses the need if any for supplementary planting of indigenous species.

Narrow Swamp

1. This section of swamp will be addressed with a rock lined channel creating a stable rock ramp between the swamp and the creek bed.
2. The rock ramp will be constructed using sandstone rip rap a suitable size to with stand high flows in the system.

3. Prior to installing the ramp the area will be sculptured using a small excavator to (3-5 tonne) to create a ramp.
4. Once the ramp is constructed the area will then be covered in geo textile fabric.
5. Rock will then be transported down to the area with the excavator and placed into position.
6. Access to the work are will be through the woodland, the work area is at the end of the swamp and access with the machine would be through an area of approximately 10 metres.
7. On the completion of work all soil disturbance will be jute meshed and brush matted with material found on site.

Cost Schedule

East Wolgan Swamp	
Helicopter and material transport	\$19680.00
material costs	\$35700.00
Preliminaries and set up	\$4250.00
labour	\$22000.00
Total GST inc	\$81630.00

Narrow Swamp	
Machine hire and material transport	\$9000.00
material costs	\$7000.00
Preliminaries and set up	\$1500.00
labour	\$7000.00
Total GST inc	\$24500.00