



# Vegetation, Clearing and Grubbing Protocols

## Wallgrove Redevelopment

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## 1 Introduction

This strategy details clearing and grubbing management processes to be implemented throughout the construction phase of the Hanson Wallgrove Redevelopment, Eastern Creek to minimise the threat to remnant vegetation, neighbouring properties and waterways within the local area.

## 2 Induction and Training

All site personnel (staff and subcontractors) involved in the construction activities will be informed of the Project's clearing and grubbing procedure during induction including identifying clearing limit boundaries. Where work is scheduled in an area where clearing and grubbing works are to be undertaken personnel will be advised of this in toolbox talks. The controls that are required to be implemented to minimise environmental disturbance from clearing and grubbing works will be completed according to the procedure detailed in this strategy.

## 3 Clearing Procedures

### 3.1 Clearing Limits

An Environmental Constraint Maps (ECM) that includes the clearing limits of the project has been compiled and included in the plan. All areas beyond these limits will be delineated as 'no-go' or exclusion zones to minimise impacts to areas of conservation significance such as the riparian corridor. If additional vegetation is to be removed, the proposed variation of scope would be referred to the Development Manager to determine if additional impact assessment is required. No additional vegetation will be cleared until approval is granted.

Clearing limits will be clearly delineated on site using highly visible barrier or tape such as bunting, parawebbing, nightline or other similarly robust and durable material as appropriate. The location of the delineation will be checked and verified as correct by the Development Manager that installed the delineation at least five (5) working days prior to the commencement of clearing.

Before clearing and grubbing commences, the Project Manager will undertake a joint inspection with the Development Manager to inspect the clearing limits and temporary exclusion fencing and to identify opportunities to preserve habitat trees that fall within or are likely to be affected by the clearing limits. During this inspection any trees outside the limits of clearing but inside the which are unsound and likely to fall upon the boundary or onto private property will be identified. These trees will be cleared or pruned in accordance with AS 4373.

### 3.2 Fencing

Before clearing and grubbing commences, the clearing limits will be delineated by installing temporary exclusion fencing along the full limits of clearing to minimise the chance of vegetation clearing outside this area. The fencing will consist of:

- durable and sturdy construction
- star pickets
- two wires
- highly visible barrier or tape

“Environmental Protection Area” signs will be erected in a clearly visible position at a minimum of 50 metre intervals along each section of exclusion fencing.

An environmental protection area will consist of the riparian corridor located at the South Western area of the development.

The location of markers and highly visible barrier or tape will be checked and verified as correct in accordance with the requirements before clearing and grubbing commences. Exclusion fencing will be maintained until the Date of Construction Completion.

### **3.3 Pre-clearing Flora Assessment**

Geoff Cunningham Natural Resource Consultants Pty Ltd [GCNRC] inspected the area of native vegetation in the southern part of the Wallgrove site. The aim of the inspection was to provide management recommendations to ensure that weed populations are kept under control during the period before implementation of the approved development at the site is completed..

The southern, and vegetated section, of the Hanson Wallgrove site was inspected on 6<sup>th</sup> July 2011 to ascertain the condition of the remnant native vegetation present. The site was previously subject of a flora assessment in 2008 [GCNRC, 2008] when the remnant vegetation was described and the likelihood of the occurrence of threatened flora species and endangered ecological communities was assessed.

The section of the Wallgrove site that was inspected comprises a drainage depression and a series of detention basins that hold water emanating from the activities in the northern part of the site.

The northern part of the site is taken up with the former Eastern Creek Quarry and buildings and other infrastructure associated with Hanson's current activities at the site.

Since the 2008 flora assessment, urban development on the eastern side of the Hanson side has resulted in the upper section of the drainage line being filled and levelled for building construction.

### **3.4 Vegetation Community on Site**

#### **3.4.1 The GCNRC 2008 Study**

GCNRC [2008] determined that there was only one remnant vegetation community present at the site. This was a Swamp Oak [*Casuarina glauca*] – Forest Red Gum [*Eucalyptus tereticornis*] community.

This community is associated with the drainage line that passes through the south-west corner of the Hanson property. Parts of the community support a dense growth of Swamp Oak spaced one to two metres apart on average with a scattered occurrence of Forest Red Gum [including possible hybrids] and an occasional Grey Box [*Eucalyptus moluccana*]..

Some small open areas exist and these are associated with the detention basins and an area that has been used as a soil borrow pit in the past. There have been some artificial channel works

constructed in the past to accommodate overflow from the Hanson detention basins to the north of the actual natural flow line.

The drainage channel itself contained free water and supported a dense growth of Sharp Rush [*Juncus acutus*\*] along with some plants of Cumbungi [*Typha* sp.] and Umbrella Sedge [*Cyperus eragrostis*\*]

Native shrub species were absent at the study area although a group of Native Blackthorns [*Bursaria spinosa*] were noted to the east.

The main shrub species are African Boxthorn\* [*Lycium ferocissimum*] that occurs as scattered plants and in dense clumps, Swan Plant\* [*Gomphocarpus fruticosus*] and Briar Rose\* [*Rosa rubiginosa*] [a form].

Two introduced vines were common. These were Moth Plant\* [*Araujia sericiflora*] and Baby Smilax\* [*Asparagus asparagoides*].

Ground cover species that were recorded were dominated by introduced plants, including a wide selection of weed species. There were few native ground cover species present.

The ground cover species recorded are listed in **Table 1**. An asterisk after the name denotes an introduced species.

**Table 1**

**Ground Cover Species Recorded**

<i>Anagallis arvensis</i> * [Scarlet Pimpernell]
<i>Aster novi-belgii</i> * [Michaelmas Daisy]
<i>Aster subulatus</i> * [Bushy Starwort]
<i>Atriplex</i> sp. [possibly <i>Atriplex semibaccata</i> or hybrid]
<i>Bidens pilosa</i> * [Cobblers Pegs]
<i>Bothriochloa macra</i> [Red Grass]
<i>Chloris gayana</i> * [Rhodes Grass]
<i>Chloris ventricosa</i> [Tall Chloris]
<i>Cirsium vulgare</i> * [Spear Thistle]
<i>Conyza</i> sp.* [Fleabane]
<i>Cortaderia selloana</i> * [Pampas Grass]
<i>Cynodon dactylon</i> * [Couch Grass]
<i>Cyperus eragrostis</i> * [Umbrella Sedge]
<i>Dichondra</i> sp. A [Kidney Weed]
<i>Ehrharta erecta</i> * [Panic Veldtgrass]
<i>Eragrostis trachycarpa</i> [Lovegrass]
<i>Eriochloa pseudoacrotricha</i> [Early Spring Grass]
<i>Glycine clandestina</i> [Silky Glycine]
<i>Gnaphalium americanum</i> * [Cudweed]
<i>Lotus suaveolens</i> * [Hairy Birdsfoot Trefoil]
<i>Melilotus indicus</i> * [Hexham Scent]
<i>Microlaena stipoides</i> [Weeping Grass]

<i>Paspalum dilatatum</i> * [Paspalum]
<i>Pennisetum clandestinum</i> * [Kikuyu Grass]
<i>Phalaris</i> sp.* [probably <i>Phalaris canariensis</i> * [Canary Grass]]
<i>Plantago lanceolata</i> * [Ribwort]
<i>Ranunculus</i> sp. [possibly <i>Ranunculus lappaceus</i> ]
<i>Reseda luteola</i> * [Wild Mignonette]
<i>Rumex crispus</i> * [Curled Dock]
<i>Senecio madagascariensis</i> * [Fireweed]
<i>Senecio pterophorus</i> *
<i>Senecio quadridentatus</i> [Cotton Fireweed]
<i>Setaria gracilis</i> * [Slender Pigeon Grass]
<i>Sida rhombifolia</i> * [Paddy's Lucerne]
<i>Solanum nigrum</i> * [Black Nightshade]
<i>Solanum pseudocapsicum</i> * [Madera Winter Cherry]
<i>Solanum</i> sp.
<i>Sonchus oleraceus</i> * [Common Sowthistle]
<i>Taraxicum officinale</i> * [Dandelion]
<i>Verbena bonariensis</i> * [Wild Stattice]
<i>Vicia sativa</i> * [Common Vetch]

### 3.4.2 The Present Site Vegetation Condition

The vegetation community described by GCNRC [2008] is present in much the same condition as it was three years ago. The dominant tree species are native [Swamp Oak and Forest Red Gum]. The former is present as a large number of individual plants, while the Forest Red Gums are very much in the minority and occur as scattered trees and saplings. Scattered Grey Box [*Eucalyptus moluccana*] trees and saplings occur near the south eastern corner of the site.

Apart from a couple of clumps of Native Blackthorn [*Bursaria spinosa*] in the southeast corner, no native shrub species were recorded within the major part of the community. The shrub layer was occupied by introduced relatively large numbers of plants of African Boxthorn\*, Pampas Grass\* [*Cortaderia selloana*] and Swan Plant\* [*Gomphocarpus fruticosus*] and two introduced vines - Moth Plant\* [*Araujia hortorum*] and Baby Smilax\* [*Myrsiphyllum asparagoides*]. One plant of Broad-leaf Privet\* [*Ligustrum lucidum*] was noted on the western embankment of the most northerly detention basin. A small number of plants of African Olive\* [*Olea europea* subsp. *africana*] were noted near the southeast corner.

The presence of these species is an indication of the poor health or condition of the community

There continues to be a dearth of native ground cover species present but some are present in very small numbers and are often difficult to locate. Some plants of Kangaroo Grass [*Themeda australis*] were recorded in the southeastern sector. These were not observed at the 2008 inspection.

The groundcover is very much dominated by introduced species with a very small component of natives.

### 3.5 Weed Control

Weed management is one of the key components of the clearing and grubbing process. A weed management strategy has been prepared for the project to identify the noxious species and control them on site. The strategy details procedures to undertake weed management prior to clearing and grubbing and throughout the construction period including ongoing weed identification and control procedures.

The program should focus on removing the following species from the community using suitable herbicides recommended by local herbicide suppliers.

- African Boxthorn\*
- Baby Smilax\*
- Black Thistle\*
- Broad-leaf Privet\*
- Moth Plant"
- Pampas Grass\*
- Swan Plant\*
- African Olive\*

Some species such as Black Thistle, and probably Baby Smilax\*, may be able to be controlled by spot spraying. The other vine [Moth Plant] and the shrubs may have to be removed by cutting off the stems and painting herbicide on the cut area because of their close proximity to the native trees in the stand.

It was also noted that African Boxthorn\* was present on the land next door to the west. It would be advantageous to make an agreement with the owner of the land to remove those plants at the same time as the control measures are implemented on the Wallgrove site.

This would remove a possible source of reinfestation.

### 3.6 Minimising Clearing and Tree Damage

Throughout construction measures will be implemented to minimise vegetation clearing and damage to vegetation that will be retained. These measures include but are not limited to:

- minimising vegetation clearing wherever possible;
- installing temporary clearing limit fencing;
- delineating environmental protection zones using fencing;
- fencing around trees clear of the canopy line;
- ensuring no materials are stockpiled and no vehicles are parked under the canopy of trees which will be avoided is sufficient fencing is installed;
- routing haul roads and access tracks clear of the canopy; and
- lopping of branches instead of whole trees where possible.

### 3.7 Clearing of Trees

Trees identified in the pre-clearing assessments will be cleared by a two-stage process:

- Stage 1- Trees will be cleared and agitated and allowed to remain in its position fallen position for 24 hours to give any fauna an opportunity to escape.
- Stage 2- Felling will commence following this period and stockpiled on site

## 4 Grubbing

All trees within the clearing limits will be cleared by felling and grubbing. Grubbing operations will be carried out to a depth of 0.5 m below the natural surface and 1.5 m below the top of the Selected Material Zone.

Any holes remaining after trees and stumps have been grubbed will be backfilled as promptly as possible with sound material to prevent the infiltration and ponding of water. The backfilling material will be compacted to at least the relative compaction of the material existing in the adjacent ground. If any areas outside the clearing limits (that have approval for clearing) are cleared the final 50 mm of backfilling will be local topsoil and the area will be stabilised within 7 days of removal of the stump.

## 5 Re-vegetation

As a general principle following soil disturbance and construction, disturbed areas will be revegetated as soon as possible. Revegetation will consist of two steps:

1. Temporary stabilisation of disturbed areas that are suitable following construction. This step will be complete in accordance with the soil and water management plan and will:
  - a. Stabilise slopes or disturbed soils;
  - b. Offer erosion protection;
  - c. Minimise topsoil losses.

Native grass mix (or similar appropriate grass cover species) will be sown over affected areas within 7 days of completion of construction activities.

2. Permanent planting of native plant species for rehabilitation and revegetation as per the Landscape plan following the completion of the construction works. This step aims:

## 6 Clearing Work Method Statement

A Clearing Work Method Statement (CWMS) will be prepared prior to commencing clearing in consultation.

The CWMS will include procedures for managing and monitoring the clearing and grubbing operations to ensure that trees, other vegetation and sensitive areas, are not unnecessarily cleared or otherwise disturbed. The CWMS will be based on advice from the project ecologist and:

- identify the species and location of any weeds growing anywhere within the area to be cleared and grubbed;
- include measures additional to this document to minimise clearing impacts;
- identify all locations of threatened flora species, Endangered Ecological Communities and trees which have been marked or otherwise identified for preservation, including for cultural heritage reasons;



- identify any trees outside the limits of clearing which are unsound and likely to fall
- identify specific barriers and marking systems, in addition to those specified in this document, to be used to denote the limits of clearing; and

## **7 Management of Materials**

### **7.1 Storage and Stockpile Areas**

All mulch stockpiles will be located within the Construction Site but will be located away from drainage lines and watercourses to prevent tannin leachate entering watercourses and will be arranged to minimise damage to natural vegetation and trees. Stockpiles will be located outside the drip line of trees and outside any environmental protection areas and away from combustible materials, including vegetation, to reduce fire hazard. The stockpile sites will also be positioned so that the stockpiled material may be transported away at any time.

Mulch stockpile locations will be monitored by the Project Manager and turned over as required to avoid spontaneous combustion. Mulch in excess of the quantity required for landscape planting will not be stockpiled on the Construction Site.

Temporary erosion and sediment control measures relevant to stockpiles will be constructed. Restoration of stockpile sites following completion of the work will be carried out in accordance with the site requirements.

### **7.2 Re-use and Disposal of Materials**

All trees with a diameter at breast height (DBH) greater than 200mm will be relocated as coarse woody debris (CWD) in the first instance. When trees are felled they will be cut into sections where the sections greater than 200mm are retained for CWD and sections below 200mm may be mulched and used on the site for erosion and sedimentation control and revegetation and landscape requirements.

Weeds and exotic vegetation will not be mulched and will be removed from the Construction Site. Weeds and exotic plant species will be disposed of at a licensed landfill facility.

## **8 Project Hold Points**

The following documents will be submitted to the Development Manager at least 10 working days before commencing clearing:

- A final Vegetation Clearing and Grubbing assessment
- Sensitive Area Plans (updated Environmental Constraints Maps)

The documents will also need to demonstrate the accuracy of the clearing limits, exclusion fencing, marked trees before a hold point for clearing and grubbing is released and this work can commence.

## 9 Environmental Constraints Map



## 10 Revision History

Rev	Revised By	Reviewed & Approved By	Date	Description/Summary of Changes
0	J. Lardis	D. Driver		