

CONSERVATION MANAGEMENT PLAN
EUCHAREENA ROAD RESOURCE RECOVERY CENTRE

PREPARED FOR:
ORANGE CITY COUNCIL

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Introduction

1.1 INTRODUCTION

Geolyse Pty Ltd (Geolyse) has been commissioned by Orange City Council to prepare a Conservation Management Plan (CMP) to provide for the protection of Aboriginal heritage values and the enhancement of biodiversity values on its Euchareena Road Resource Recovery Centre (ERRRC) Site.

1.2 BACKGROUND

1.2.1 ORANGE WASTE PROJECT

On 28 April 2010 the Minister for Planning granted development consent (09_0025) to the Orange Waste Project (OWP). The OWP consists of:

- the development of additional resource recovery plant at the existing waste facility at Ophir Road; and
- the development of composting and landfilling operations at a new waste facility off Euchareena Road near Molong.

This report relates to the Euchareena Road Site. The location of the site is illustrated on **Drawing 06H_EV01**. For the purposes of this plan, the site has been separated into various areas:

- Remnant woodland areas;
- Rehabilitation corridors;
- Operational area;
- Landscape bunds; and
- Landscape area.

Drawing 06H_EV02 illustrates the site layout.

1.2.2 CONSENT CONDITIONS

Approval was granted to the OWP subject to it being carried out in accordance with the Statement of Commitments and a number of conditions. The conditions relevant to the protection of Aboriginal heritage values and the enhancement of biodiversity values on the Euchareena Road Site are located in Schedule 5 of the consent, and state:

Aboriginal Heritage

30. *During the life of the project, the Proponent shall protect the scarred tree on site and the 2 artefacts found in the south-western corner of the site, in consultation with the Local Aboriginal Land Council, and to the satisfaction of the Director-General.*

Note: the scarred tree and artefacts are referred to in Appendix 4 of this approval

Biodiversity

31. The Proponent shall:

- (a) actively manage the areas outside the proposed disturbance areas (shown in broad terms on the map in Appendix 3) for conservation purposes;
- (b) only use native grasses and other native species from the White Box-Yellow Box-Blakely's Red Gum Woodland endangered ecological community in any revegetation or rehabilitation works;
- (c) improve the quality of the vegetation in these areas; and
- (d) increase the amount of White Box-Yellow Box-Blakely's Red Gum Woodland vegetation in the conservation area on the site, to the satisfaction of the Director-General.

Conservation Management Plan

32. The Proponent shall prepare and implement a Conservation Management Plan for the project to the satisfaction of the Director-General. This plan must be prepared in consultation with DECCW by suitably qualified and experienced expert/s whose appointment has been approved by the Director-General, and be submitted to the Director-General for approval prior to the commencement of construction on site. It must provide for both the protection of Aboriginal heritage values and the enhancement of biodiversity values on the site.

Visual Bunds & Landscaping

- 35. Prior to the construction of the proposed visual bunds on site, the Proponent shall submit detailed plans of the bunds and associated landscaping to the Director-General for approval. Following approval, these plans must be implemented and maintained to the satisfaction of the Director-General.
- 36. Prior to operations commencing for the project, the Proponent shall landscape the area shaded in blue on the map in Appendix 3 to the satisfaction of the Director-General. This landscaping must use species that are consistent with the existing species in the adjoining conservation area.

1.3 SCOPE OF THIS PLAN

This plan has been prepared to fulfil the requirements of condition 32, as outlined above. The plans to satisfy conditions 35 and 36 have also been incorporated into this plan, as they are integral to the rehabilitation and future management of the site.

In developing this CMP, a review of relevant legislation has been undertaken and is outlined in **Section 3**. As part of the Environmental Assessment (EA) process, the impacts of the development, in terms of Aboriginal heritage and ecology, were assessed in accordance with the relevant legislation in the reports prepared by OzArk and Geoff Cunningham Natural Resource Consultants Pty Ltd. Site specific mitigation measures and recommendations were provided by these reports. The relevant components of the Statement of Commitments were also developed from these assessments. The measures outlined in **Section 4** and **Appendices B-F** of this report is a collation of these measures and commitments.

This CMP, which reflects the recommendations of the Aboriginal heritage and ecological impact assessments and thus the Statement of Commitments, seeks to protect the items of Aboriginal heritage significance and enhance the biodiversity values on site, consistent with the abovementioned conditions of consent.

1.4 CONSULTATION

Following the project approval, OCC has been in consultation with the Office of Environment and Heritage (OEH) (formerly DECCW) in relation to establishing a Conservation Agreement (CA) for the areas of remnant woodland and rehabilitation corridors on site (refer to **Drawing 06H_EV03**). To ensure the CMP is consistent with the CA for the site OEH has advised that the grazing regime for the site needs to have a dual role; providing not only fire fuel management, but also to ensure it leads to an improvement over time of the understorey of the remnant woodland.

1.5 FORMAT OF THIS PLAN

The plan is provided in the following format:

- **Section 1** provides an introduction and background to the plan;
- **Section 2** provides a description of the site and significant items of heritage and ecological significance;
- **Section 3** outlines the legislative framework for the protection of Aboriginal heritage and ecological communities; and
- **Section 4** describes the management and rehabilitation measures for the site prior to and during the operation of the Euchareena Road Resource Recovery Centre.

The Site

2.1 OVERVIEW

The ERRRC site consists of Lot 10 DP 1034198, as illustrated in **Plate 1**.

Throughout the EA process for the DA, it was determined that the site contained:

- two sites of Aboriginal heritage significance; and
- two remnants of the Box Gum Woodland Ecological Community (EC). The EC is known as 'White Box Yellow Box Blakely's Red Gum Woodland Community' and listed as an Endangered EC under the NSW *Threatened Species Conservation Act 1995* and known as 'Grassy White Box Woodlands and Derived Native Grassland' listed as a Critically Endangered EC under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

These items and communities are discussed further in the following sections. **Plate 2** and **Plate 3** illustrate the location of these features.

2.2 ABORIGINAL HERITAGE

2.2.1 BACKGROUND

As part of the EA two assessments for Aboriginal heritage were undertaken. In 2005 an Aboriginal Heritage Assessment was undertaken by Archaeological Surveys and Reports Pty Ltd in consultation with the Orange Local Aboriginal Land Council (LALC). In 2009 OzArk Environmental Heritage and Management Pty Ltd (OzArk) provided an update of the initial report, specifically providing a review of the methods and results of the initial report and further consultation with Aboriginal stakeholders, consistent with the more recent *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*.

2.2.2 ITEMS OF HERITAGE SIGNIFICANCE

These assessments identified two sites of Aboriginal heritage significance, Molong ST1; being a scarred tree, and Molong OS1; being an open site/artefact scatter. **Plate 2** illustrates the location of these items.

GHD (2009:C.4-69-70) provides the following details on the two sites:

Site:	<i>Molong ST1</i>
Site Type:	<i>Scarred Tree</i>
Tree:	<i>Box (living)</i>
Shape of scar:	<i>Elliptical (shield-shaped)</i>
Length of scar:	<i>147cm</i>
Width of scar:	<i>16cm</i>
Girth mid scar:	<i>247cm</i>
Depth of bark:	<i>15cm</i>
Height of base of scar above ground:	<i>90cm</i>

Site: Molong OS1

Site Type: Open site/artefact scatter

Artefacts comprise *Grindstone or muller. A water-worn river cobble of layered (laminated) sandstone, exhibiting a worn surface. Regardless of the artefacts' history, either grinding stone or natural movement from water movement, the cobble is out of its natural geological context, being too large to have come from the sedimentary soils within the Euchareena Road Site, and must therefore have been manually brought onto the site. During the site meeting on 7 July 2009, it was considered the muller may indeed only be a natural stone without elements of Aboriginal use and that the hand axe is at best interpreted as a blank. Hence it was assessed these artefacts had minimal archaeological significance.*

A ground-edged axe manufactured from a river cobble of indurated sandstone. The sharpened end was damaged, half of the cutting edge having been broken off as a single flake, either during use or from a post-depositional event. The butt-end was battered and pitted indicating that it had also been used as a hammer stone.

2.3 ECOLOGICAL COMMUNITIES

2.3.1 BACKGROUND

A Flora Assessment of the subject site for the Euchareena Road RRC was undertaken by Geoff Cunningham Natural Resource Consultants Pty Ltd (GCNRC) in 2009. This assessment involved an initial field inspection in October 2003 and a subsequent inspection in April 2009. The field assessments were undertaken in accordance with the Department of Environment and Climate Change's *Threatened Species Survey and Assessment: Guidelines for Developments and Activities – Working Draft*.

2.3.2 COMMUNITIES OF SIGNIFICANCE

The assessment identified two major remnants of the Box-Gum Woodland on site. **Plate 3** illustrates the location and extent of the community on site.

GHD (2009:C4-36&38) provides the following description of the Box-Gum Woodland Community found on site:

*Trees are spaced from <2 m to more than 100 m apart but are generally recorded at approximately 5 m to 20 m spacings. The main species is White Box (*Eucalyptus albens*), with Yellow Box (*Eucalyptus melliodora*) in lower areas and a scattering of Blakely's Red Gum (*Eucalyptus blakelyi*). Apple Box (*Eucalyptus bridgesiana*) is found on the eastern side of the Euchareena Road Site near the drainage depression in that location. In 2003, some White Box trees were showing signs of dieback. This situation was more noticeable during the 2009 survey when many trees in ridgetop locations were observed to be dying back or dead.*

*Shrubs are uncommon with only two native species recorded - Riceflower (*Pimelea* sp. and Hickory Wattle (*Acacia implexa*).*

This community is widespread in the region surrounding the Euchareena Road Site. Although much of the area that the community originally occupied has been cleared there are still many remnants present in the Orange - Molong - Wellington area. The remnants on the Site have been affected by clearing and grazing by domestic livestock. Its health, or condition, is at low to moderate levels and there is little evidence of recent regeneration of native trees and shrubs.

The Box-Gum Woodland is listed as:

- *An Endangered Ecological Community, known as White Box Yellow Box Blakely's Red Gum Woodland, under the NSW Threatened Species Conservation Act 1995 (TSC Act); and*
- *A Critically Endangered Ecological Community, known as White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland, under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).*

Legislative Framework

3.1 NATIONAL PARKS & WILDLIFE ACT 1974

3.1.1 ABORIGINAL HERITAGE

The relevant legislation in NSW for the protection of Aboriginal heritage is the *National Parks and Wildlife Act 1974* (NPW Act). The objects of the Act in relation to cultural heritage are:

- (b) *the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to:*
 - (i) *places, objects and features of significance to Aboriginal people, and*
 - (ii) *places of social value to the people of New South Wales, and*
 - (iii) *places of historic, architectural or scientific significance,*
- (c) *fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation,*
- (d) *providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation.*

In relation to Aboriginal heritage, Part 6 of the Act exists to provide protection for Aboriginal objects by providing offences for harm. However for Project Approvals, a permit under section 87 or consent under section 90 of the NPW Act is not required.

Instead the OEH provides Environmental Assessment Requirements for such projects. In this instance the requirements provided by the former DECCW were:

1. *The EA should address and document the information requirements set out in the draft "Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation", involving surveys and consultation with the Aboriginal community.*
2. *Identify the nature and extent of Aboriginal cultural heritage values across the project area and assess the nature and extent of the likely impacts on this heritage of all proposed activities;*
This assessment should consider the cumulative impact of the proposal and do so in a regional context by assessing the cumulative impact to cultural heritage of proposed and approved developments throughout the region.
3. *Describe the actions that will be taken to avoid or mitigate impacts or compensate, in order to prevent unavoidable impacts of the project on Aboriginal cultural heritage values. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.*
4. *Where it is determined that impacts are unavoidable and excavation and/or salvage and/or destruction of Aboriginal objects is proposed detailed methodologies for the conduct of these activities should be provided. These methodologies should conform to archaeological best practice and include strategies for the effective reporting of all actions, results and required amendments to the AHIMS site Register to DECC. Where transfer of Aboriginal objects to local community members is proposed in any salvage methodology, the EA should demonstrate both a commitment to and a process for meeting the statutory obligation to seek a Care and Control Permit under s85A of the NPW Act 1974 for such transfer.*
5. *Where new sites are located during the assessment process and/or at any time during the life of the project in accordance with s91 of the National Parks and Wildlife Act 1974, DECC requires that it be notified. This notification is expected to be in the form of the completion of DECC Aboriginal Heritage Site Cards, available on the DECC website. The EA should include all details of any new sites recorded during the assessment process and include a procedure for the formal identification, recording and notification of any new sites located during any project related activities, and for the life of the project.*

6. *The EA needs to clearly demonstrate that comprehensive and effective consultation with Aboriginal communities has been undertaken. This consultation should allow Aboriginal community input into the survey, assessment and determination of the Aboriginal cultural heritage values of the project development areas. In addition, this consultation should enable Aboriginal input into the assessment of the impacts of the proposed works on identified Aboriginal cultural heritage values inclusive of the development of avoidance and mitigation options and in making final recommendations. This consultation should be conducted in accord with the "Interim Community Consultation Guidelines for Applicants" (Dec, 2004).*

3.1.2 NATURAL HERITAGE

The NPW Act also provides for conservation of natural heritage, with the relevant objects of the Act being *inter alia*:

- (a) *the conservation of nature, including, but not limited to, the conservation of:*
 - (i) *habitat, ecosystems and ecosystem processes, and*
 - (ii) *biological diversity at the community, species and genetic levels, and*
- (c) *fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation,*
- (d) *providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation.*

In achieving the above, the act makes it an offence to harm, pick a threatened species, population or ecological community, or damage any critical habitat.

Part 4 of the Act provides for the reservation of lands, including the establishment of and requirements for Conservation Agreements (CA) (Division 12 of Part 4). Section 69B of the Act states:

- (1) *A conservation agreement may be entered into:*
 - (a) *in relation to areas containing scenery, natural environments or natural phenomena worthy of preservation,*
 - (b) *in relation to areas of special scientific interest,*
 - (c) *in relation to areas that are the sites of buildings, objects, monuments or events of national significance,*
 - (d) *in relation to areas in which Aboriginal objects, or Aboriginal places, of special significance are situated,*
 - (e) *for the purpose of the study, preservation, protection, care or propagation of fauna or native plants or other flora,*
 - (e1) *for the purpose of the study, preservation, protection or care of karst environments,*
 - (e2) *for the purpose of the conservation of critical habitat or the conservation of threatened species, populations or ecological communities, or their habitats, or*
 - (e3) *for the purpose of the protection, conservation or management of waters in or in connection with an area or purpose referred to in paragraph (a), (b), (c), (d), (e), (e1) or (e2), or*
 - (f) *for any purpose connected with an area or purpose elsewhere referred to in this subsection.*

The CA would be established for the purpose outlined in (e2) above. The area covered by the CA is illustrated in **Drawing 06H_EV03**.

3.2 THREATENED SPECIES LEGISLATION

3.2.1 THREATENED SPECIES CONSERVATION ACT

The primary piece of NSW legislation protecting EECs is the *Threatened Species Conservation Act 1995* (TSC Act). The objects of the TSC Act are:

- (a) *to conserve biological diversity and promote ecologically sustainable development, and*
- (b) *to prevent the extinction and promote the recovery of threatened species, populations and ecological communities, and*
- (c) *to protect the critical habitat of those threatened species, populations and ecological communities that are endangered, and*
- (d) *to eliminate or manage certain processes that threaten the survival or evolutionary development of threatened species, populations and ecological communities, and*
- (e) *to ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed, and*
- (f) *to encourage the conservation of threatened species, populations and ecological communities by the adoption of measures involving co-operative management.*

As outlined in the previous section, the White Box Yellow Box Blakely's Red Gum Woodland is listed as an EEC under the TSC Act. Whilst the RRC would not impact upon the EEC, there is onus to protect and enhance the community consistent with the above objectives.

Recovery plans are to be prepared for EECs. The object of a recovery plan is to promote the recovery of the threatened species, population or ecological community to which it relates to a position of viability in nature. There is no recovery plan for the Box Woodland at a state level. There is however a draft National Recovery Plan which is discussed further in **Section 3.2.3**.

The Box-Gum Woodland species profile on OEH's website does however identify the following Threats and Management Actions for the community.

- **Threats**
 - *Clearing, degradation and fragmentation of remnants for agricultural, forestry, infrastructure and residential development.*
 - *Continuous heavy grazing and trampling of remnants by grazing stock, resulting in losses of plant species (simplification of the understorey and ground layer and suppression of over storey), erosion and other soil changes (including increased nutrient status).*
 - *Invasion of remnants by non-native plant species, including noxious weeds, pasture species and environmental weeds, including garden escapes, olives and pines.*
 - *Invasion of remnants by feral animals resulting in the loss or modification of habitat.*
 - *Disturbance and clearance of remnants during road, rail and infrastructure maintenance and upgrades.*
 - *Harvesting of firewood (either living or standing dead, including material on the ground).*
 - *Collection of on-ground woody debris in the guise of a 'clean-up'.*
- **Management Actions**
 - *Undertake control of rabbits, hares, foxes, pigs and goats (using methods that do not disturb the native plants and animals of the remnant).*
 - *Do not harvest firewood from remnants (this includes living or standing dead trees and fallen material).*
 - *Leave fallen timber on the ground.*
 - *Manage stock to reduce grazing pressure in high quality remnants (i.e. those with high flora diversity or fauna habitat).*
 - *Encourage regeneration by fencing remnants, controlling stock grazing and undertaking supplementary planting, if necessary.*
 - *Erect on-site markers to alert maintenance staff to the presence of a high quality remnant or population of a threatened species.*

- Undertake weed control (taking care to spray or dig out only target species).
- Protect all sites from further clearing and disturbance.
- Ensure remnants remain connected or linked to each other; in cases where remnants have lost connective links, re-establish them by revegetating sites to act as stepping stones for fauna, and flora (pollen and seed dispersal).
- Mark remnants onto maps (of the farm, shire, region, etc) and use to plan activities (e.g. remnant protection, rehabilitation or road, rail and infrastructure maintenance work). On-site markers can alert maintenance staff to the presence of a threatened species.

3.2.2 ENVIRONMENTAL PLANNING & ASSESSMENT ACT

Projects assessed under Part 3A of the EP&A Act are not required to conduct an Assessment of Significance (required by s.5A of the Act), however proponents must demonstrate that a proposal will improve or maintain biodiversity outcomes.

By virtue of granting approval for the project, the Minister for Planning has determined that the proposal, with its proposed management measures, will improve or maintain biodiversity outcomes.

3.2.3 ENVIRONMENT PROTECTION & BIODIVERSITY CONSERVATION ACT

3.2.3.1 Overview

The primary piece of Commonwealth legislation protecting EECs is the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As outlined in the previous section, the 'White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland' is listed as a CEEC under EPBC Act.

A draft *National Recovery Plan: White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland* has been prepared on behalf of the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA). The aim of the draft plan is:

... to promote the recovery and prevent the extinction of the critically endangered ecological community...
(DECCW 2010:3).

For the life of the recovery plan, the specific objective is to minimise the risk of extinction of the EEC, which is to be achieved through:

- *achieving no net loss in extent and condition of the ecological community throughout its geographic distribution;*
- *increasing protection of sites in good condition;*
- *increasing landscape functionality of the community through management and restoration of degraded sites;*
- *increasing transitional areas around remnants and linkages between remnants; and*
- *bringing about enduring changes in participating land manager attitudes and behaviours towards environmental protection and sustainable land management practices to increase extent, integrity and function of Box-Gum Grassy Woodland* (DECCW 2010:3).

The draft recovery plan identifies the following activities and processes that have and are leading to the decline of the Box Woodland:

- *Land Use and Management Change;*
 - Agricultural and horticultural development
 - Rural residential and urban development
 - Public infrastructure

- *Conflicting Management Practices;*
 - Grazing regimes and pasture management
 - Firewood collection and ‘tidying up’
 - Changed fire regimes
 - Increased soil nutrients and use of chemicals
 - Mowing or slashing regimes
 - Revegetation management
- *Degrading Landscape Processes;*
 - Weed invasion
 - Climate Change
 - Salinity
 - Declining tree health and regeneration
- *Other Potential Threats;*
 - *Animal pests*
 - *Disease*
 - *Collection/removal of native flora.*

Table 4 in the draft recovery plan provides a list of current best practices for management of the Box Woodland. It is replicated below in **Table 3.1**.

Table 3.1 – Site Management Practices for the Continued Existence of Box-Gum Grassy Woodland

Maintain or improve soil conditions	• Avoid physical disturbance (e.g. cultivation, ripping, excavation) • Avoid chemical changes (e.g. use of fertilisers or soil ameliorants) • Avoid soil compaction from vehicles/machinery or stock camps
Maintain or improve drainage conditions / existing hydrological regime	• Do not direct run-off (from roads, urban developments, contour banks) into remnant areas • Do not divert existing run-on from remnant areas (e.g. diversion drains)
Control exotic plant introductions	• Prevent the introduction of exotic pasture species (i.e. pasture improvement) • Prevent the introduction of non-indigenous native species • Ensure machinery hygiene protocols are implemented to prevent the spread of weeds • Prevent the stockpiling of topsoil or overburden within remnant areas • Implement a weed control program to control weed invasion, wildlings from adjacent tree plantings (e.g. Radiata Pine and European Olives) and garden escapees
Avoid inappropriate native tree planting	• Do not plant indigenous native trees/shrubs in high quality and/or small derived grassland sites • Where practicable and subject to the viability of available seed, only plant trees/shrubs from local provenance seed • Plant trees and shrubs at natural grassy woodland densities
Maintain or improve connectivity	• Ensure existing links are maintained between Box-Gum Grassy Woodland remnants and/or between Box-Gum Grassy Woodland and other native vegetation types, for example grassland, woodland, forest, riparian and/or wetlands
Maintain sunlight levels	• Prevent changes which will result in prolonged shading (e.g. buildings, dense tree plantings)
Maintain or improve structural diversity	• Prevent the removal of regenerating trees and shrubs within remnant patches • Prevent firewood collection or the “tidying up” of fallen dead timber • Prevent the removal of standing dead hollow trees

Table 3.1 – Site Management Practices for the Continued Existence of Box-Gum Grassy Woodland

Ensure adequate buffers are retained	Protect areas of Box-Gum Grassy Woodland from adjacent landuse (e.g. urban and agricultural development) that may potentially impact on its integrity
Minimise chemical use	- Weed control should use spot-spraying, basal spraying, stem injection or cut and paint application methods - Avoid overspray and minimise impacts on non-target species - Monitor treated areas to ensure weeds do not establish on any resultant bare patches
Implement strategic grazing	Ensure remnant areas are rested at appropriate times, for example when perennial native ground cover species are flowering and seeding
Implement appropriate burning regimes	- Burning regimes will depend on the floristic composition of a remnant and research is continuing to determine appropriate fire regimes for Box-Gum Grassy Woodland in all its various condition states. For remnants dominated by Snow Grass and Kangaroo Grass autumn burning cycles approximately every 4-8 years are considered adequate for maintaining floristic diversity - Any burning should be applied to remnants in mosaics (i.e. burning small areas at staggered intervals) to allow survival of soil and ground fauna (including invertebrates, amphibians and reptiles) and promote diversity in the states of the ecological community - Sites where burning is practiced should retain unburnt areas, to provide refuges for species of fauna and flora that may be intolerant of fire - Timing of burns must be considered in relation to the flowering and seeding of native and exotic species. Where possible burns should be carried out after natives have seeded but before weeds flower and seed - Be aware that some weed species (e.g. Coolatai Grass) increase with burning
Avoid inappropriate mowing / slashing	- If mowing/slashing is used to reduce biomass within remnants and increase species diversity, it should be carried out in a mosaic pattern to allow for the retention of refuges for tall tussock grasses, regenerating overstorey and groundlayer dependent fauna as well as habitat features (such as fallen logs, litter) - On-road sides, only mow areas essential for visibility and safety, in most cases this will be to the table drain. Mow from clean areas out - Ensure machinery hygiene protocols are implemented to avoid the spread of weeds
Control feral animals	- Protect native fauna and flora populations by controlling feral predators; foxes, dogs, cats, pigs within and or adjacent to remnant areas - Do not push fallen or felled timber into stacks or windrows within remnant areas as these form harbours for foxes, cats and rabbits - If ripping is used to control rabbits within remnants ensure machinery hygiene procedures are adhered to, and ripped areas are monitored to prevent weed infestations - Protect native flora by controlling feral grazers; rabbits, goats and deer within remnants
Control domestic pets	- Within remnants control domestic cats and dogs - Avoid increasing the numbers of domestic pets in, and or adjacent to, remnant areas

Source: DECCW 2010:51-52

3.2.3.2 Referral

A referral (2009/5020) was made to the Commonwealth Department of the Environment, Water, Heritage and the Arts (DEWHA) on 22 July 2009 for the Euchareena Road Site component of the proposed waste facility. A number of measures were identified, as part of the application, to avoid or reduce impacts of the development. These measures essentially encompassed those as outlined in **Section 4** of this report. However, the following measure was also included:

The Proponent would investigate the possibility of implementing an adaptive management plan of the woodland areas as a native wildlife sanctuary preferably under a covenant of a voluntary conservation agreement with the DECC (NPWS).

On 4 November 2009, DEWHA determined that the development did not constitute a controlled action, and thus does not require approval under the EPBC Act.

3.2.4 NATIONAL PARKS AND WILDLIFE ACT

As outlined above, Council proposes to implement an adaptive management plan for the woodland areas as a native wildlife sanctuary through a Conservation Agreement under the *National Parks and Wildlife Act 1974*.

Council has made an application to the OEH for the establishment of a conservation agreement/wildlife refuge. OEH has advised that they agree to place a Conservation Agreement over the remnant woodland areas and rehabilitation corridors to ensure their protection in perpetuity. **Drawing 06H_EV03** illustrates the proposed Conservation Agreement Area. The areas covered by the Conservation Agreement would be managed in accordance with the appendices attached to this report.

Management & Rehabilitation

4.1 ABORIGINAL HERITAGE

4.1.1 OVERVIEW

An Aboriginal Heritage Assessment (AHA) was undertaken as part of the Project Approval, consistent with the guidelines issued by the former DECCW as outlined in **Section 3.1**. It was determined that the two sites identified (refer **Section 2.2.2**) would be outside of the impact footprint of the waste facility and thus would not be destroyed or disturbed as a result of the project (Ozark 2009a:13).

To ensure the identified sites are conserved into the future and to enable their optimal environmental management, the AHA recommended an Aboriginal Heritage Management Plan (AHMP) be prepared.

A draft AHMP was prepared and has been circulated amongst registered stakeholders for discussion:

It was determined that the contents of the AHMP should provide for scarred tree Molong ST1 and open site Molong OS1 to be conserved and their location and legislative protection made known to the environmental manager of the proposed RRC and to any staff or contractors that may have reason to access the area (Ozark 2009a:17).

The AHMP has since been finalised (**Appendix A**) with relevant management measures are summarised below and outlined in **Appendix B**.

4.1.2 MANAGEMENT MEASURES

- Molong ST1:
 - *It was determined that the existing fencing of this area is sufficient to ensure this site is conserved and that the fencing of the individual tree is unwarranted and likely to draw undue attention. The location of this tree will then remain known to the Environmental Management team of Orange City Council and the Euchareena Road RRC staff and inductions as discussed below should be used to ensure staff and contractors using the RRC are aware of the location of this site and its legislative protection (Ozark 2009b:11).*
- Molong OS1
 - *The location of this site should remain known to the Environmental Management team of Orange City Council and the Euchareena Road RRC staff and inductions as discussed below should be used to ensure staff and contractors using the RRC are aware of the location of this site and its legislative protection (Ozark 2009b:12).*
- General
 - *The location of both sites will be recorded on a master plan in the Site Office, where the Site Manager has visual access to it. This plan will note that protected heritage items are present at these locations and that there will be no impacts in the vicinity of these locations (Ozark 2009b:13).*
 - *The OCC will appoint someone (e.g. Environmental Officer or Site Manager) to take responsibility for the continued protection of these sites from future impacts as they arise and to ensure that fencing, if it is to be permanent, is appropriately maintained (Ozark 2009b:13).*
 - *Part of the site induction for all staff and contractors will include a section on Aboriginal heritage. This induction will include brief reference to the legislative framework through which Indigenous heritage is protected, particular reference will be made to the location of the sites as well as providing a more general introduction to cultural heritage (Ozark 2009b:13).*

4.2 ECOLOGICAL COMMUNITIES

4.2.1 OVERVIEW

Consistent with the legislative framework outlined in **Section 3**, and as described in the EA (GHD 2009) as part of the Project Approval, the following rehabilitation and management measures are proposed.

4.2.2 REHABILITATION AND MANAGEMENT MEASURES

Replanting of Native Species

Many of the original native groundcover species have disappeared from within the woodland remnants at the Euchareena Road Site and many of the mature trees that exist within these remnants are debilitated. The Project includes the conservation and enhancement of these woodland remnants and the planting of a connecting area of vegetation between the two remnant stands. As such, the Proponent would supplement the existing woodland through planting seedlings of White Box, Yellow Box and Blakely's Red Gum within the existing remnants. The plantings would not be too dense as the original woodlands were relatively open and 'grassy' for the most part. These seedlings would be propagated from seed collected on site together with specific understorey species sourced locally. The seedlings would be protected from grazing by native and domestic animals by well-maintained perimeter fencing, and where appropriate, substantial tree guards.

Encouragement of Natural Regeneration

The likelihood of native groundcover species on the Euchareena Road Site out-competing the entrenched populations of introduced species is low. Tree and shrub regeneration is more likely to occur and as such, whenever natural regeneration of native trees and shrubs occurs, the individuals or clumps would be protected from damage by grazing animals by tree guards or temporary fencing of the regeneration areas.

Weed Management

The nature of the proposed Euchareena Road RRC could make the site susceptible to the possible infestation of weed species not already present in the area. To combat this, the following would be implemented:

- All seed stock in incoming green waste would be rendered infertile through the enclosed composting process;
- Regular inspections of the Euchareena Road Site;
- Education of staff with respect to weed identification and control;
- Continual monitoring and control of identified noxious weeds; and
- Investigation into the practicality of sowing crops or competitive improved pastures on sections of the Site not required for immediate disturbance as a means of weed control.

Prevention of Fire and Fire Management

The management of the entire Euchareena Road Site is an important part of the Project as the undisturbed areas, if left ungrazed, could present a fire hazard due to the growth of dense groundcover. Occasional slashing or controlled grazing would be undertaken as part of responsible land management in areas not included in the woodland enhancement efforts, to minimise fire risk on the property.

Groundcover management within the native vegetation remnants would be appropriately achieved by grazing with cattle using appropriate seasonal stocking rates to ensure that seasonal conditions are taken into account and that an adequate level of ground cover remains at all times. This would be undertaken through a contractual arrangement with a stock owner that allows grazing of the remnant woodland areas when herbage is available and provides for immediate adjustment of stocking rates or stock removal once critical ground cover levels are reached. In the remnant woodland areas, grazing is preferable to mowing/slashing due to the restricted machine access due to the presence of rocks, logs and other obstructions. Grazing would also achieve a more even management of herbage. Cattle would be used as they generally tend not to graze plants as low as sheep and thus the potential for natural tree and shrub establishment would be enhanced.

The Proponent would incorporate a fire management plan as part of the Site Environmental Management Plan. This plan would incorporate details of sources of water for firefighting, the need for fire extinguishers on all mobile equipment and suitable training for site-based personnel. It is also noted that all composting to be conducted on site would be undertaken in enclosed buildings. Specific controls would be adopted to ensure spontaneous combustion does not occur throughout the life of the Euchareena Road RRC.

4.3 REHABILITATION & MANAGEMENT MEASURES

The proposed rehabilitation and management measures to be undertaken for the site have been compiled for each of the components of the site and provided in the Appendices to this plan.

- **Appendix B** addresses Aboriginal Heritage;
- **Appendix C** addresses the Remnant Woodland Areas;
- **Appendix D** addresses the Rehabilitation Corridors;
- **Appendix E** addresses the Landscaped Bunds; and
- **Appendix F** addresses the Landscaped Area.

The rehabilitation and management measures have been provided in a table for each of the appendices based on the timing of the project approval, i.e. prior to works commencing, during works, during operation of the RRC, and post operation of the RRC.

4.4 TIMING

The tables titled *Rehabilitation and Management Measures* in each of the Appendices providing timing of the components of the project in relation to the construction and operation of the facility.

The landscape strip adjacent to Bund 1 would be established prior to any works commencing on site.

The Landscaped Area adjacent to Euchareena Road would be planted prior to operations commencing on site.

All landscape bunds would be constructed as part of the Stage 1 works.

4.5 ORANGE CITY COUNCIL RESPONSIBILITIES

OCC is responsible for implementation of all measures outlined in the Appendices, and ensuring all people engaged to undertake the above works (both internal and external) are suitably qualified.

References

Geoff Cunningham Natural Resource Consultants Pty Ltd (GCNRC). 2009, *Flora Assessment of the Euchareena Road Resource Recovery Centre*, GCNRC, Killara.

GHD. 2009, *Orange Resource Recovery and Waste Management Project Environmental Assessment*, GHD, Sydney.

NSW Department of Environment, Climate Change and Water (DECCW). 2010, *draft National Recovery Plan: White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland*, DECCW, Sydney.

Ozark Environmental & Heritage Management Pty Limited (Ozark). 2009a, *Aboriginal Heritage Assessment of the Euchareena Road Resource Recovery Centre*, Ozark, Dubbo.

Ozark Environmental & Heritage Management Pty Limited (Ozark). 2009b, *Aboriginal Heritage Management Plan for the Euchareena Road Resource Recovery Centre*, Ozark, Dubbo.

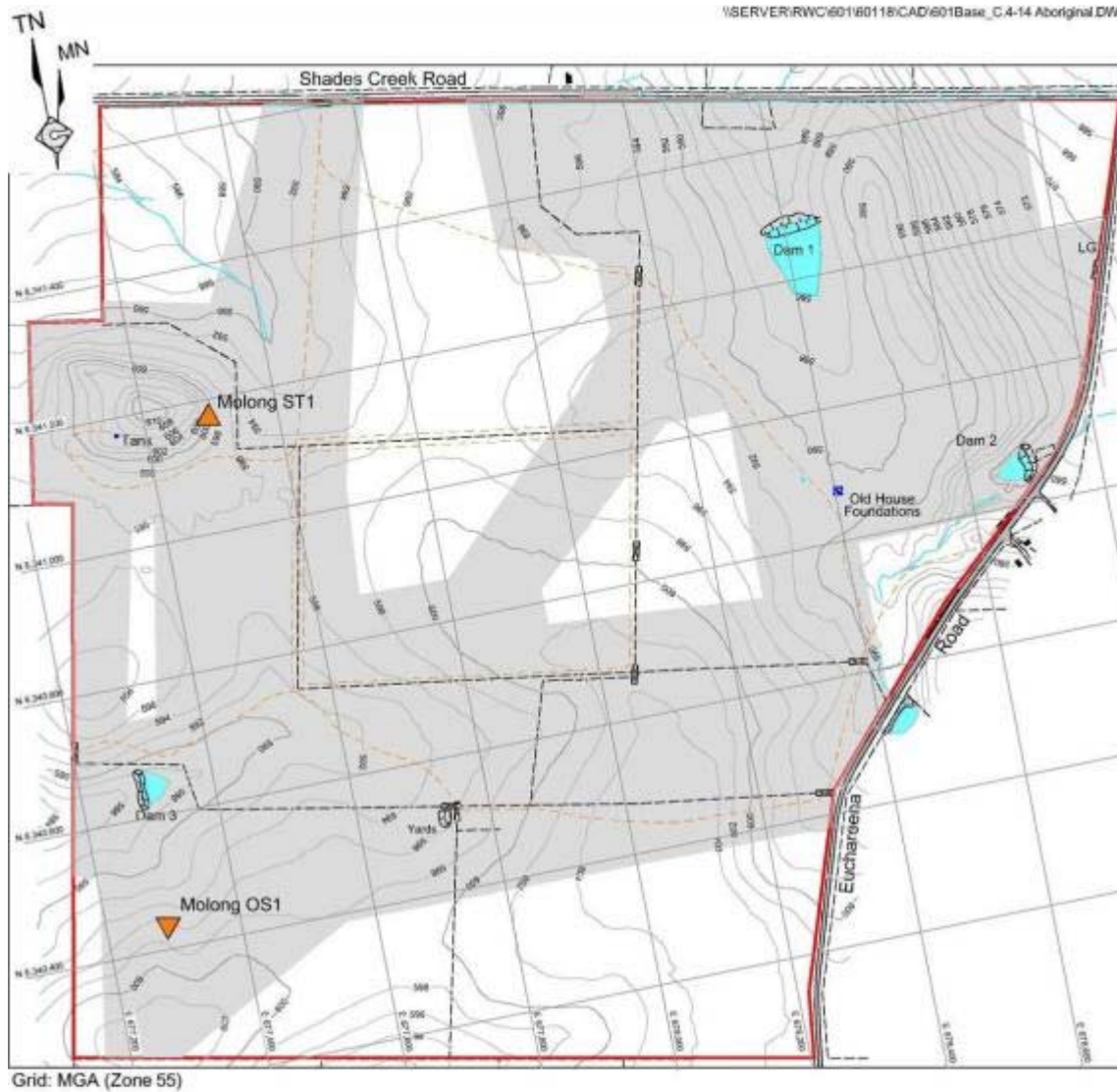
Drawings

Plates



Source: Department of Lands SIX Viewer

Plate 1: The Subject Site



- REFERENCE**
- Euchareena Road Site Boundary (Fenced)
 - - - Internal Fence
 - - - Contour (m AHD) (Interval = 2m)
 - Farm Dam
 - Creek
 - Sealed Road
 - Unsealed Road
 - Track
 - Gate
 - Survey Coverage
 - ▲ Aboriginal Scarred Tree
 - ▼ Aboriginal Artefact Scatter

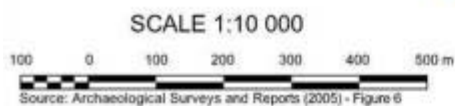
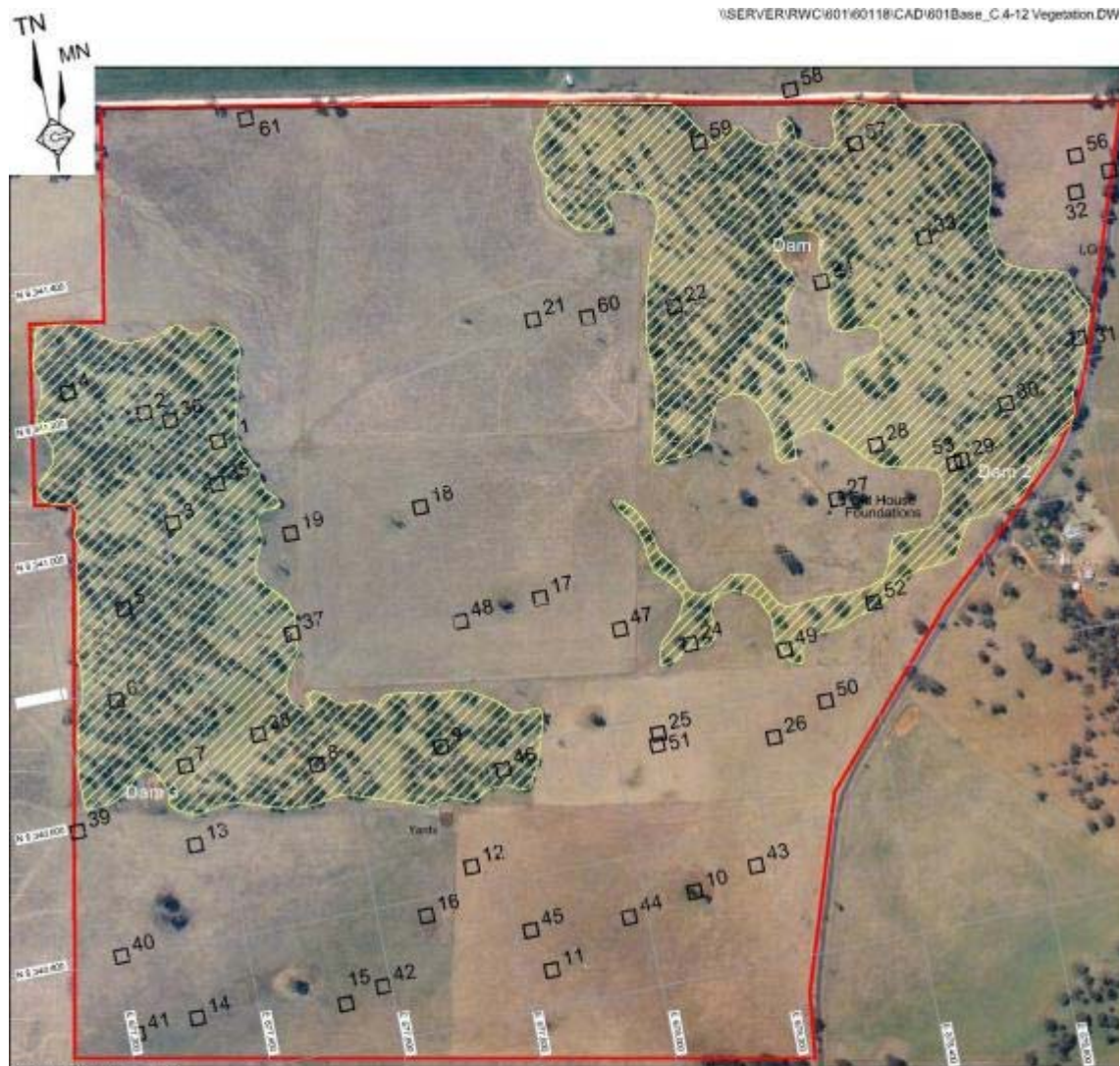


Figure C.4-1
ABORIGINAL HERITAGE SURVEY
COVERAGE AND RESULT

Source: GHD 2009:C.4-68

Plate 2: Aboriginal Heritage Survey Coverage and Results



Grid: MGA (Zone 55)

REFERENCE

- Euchareena Road Site Boundary
- 1 Quadrat (20m x 20m)
- Community 1 - White Box, Yellow Box & Blakely's Red Gum Community
- Community 2 - Cleared Grassland Community



Source: GHD 2009:C.4-37

Plate 3: Vegetation Communities and Quadrat Locations

Appendix A

ABORIGINAL HERITAGE MANAGEMENT PLAN

Appendix B

ABORIGINAL HERITAGE

Aboriginal Heritage

INTRODUCTION

This Appendix relates to the items of Aboriginal Heritage significance located on site, as illustrated in **Drawing 18B_EV02**. This appendix and associated drawings have been prepared to satisfy Conditions 30 and 32 in Schedule 5 of the Project Approval.

A permanent photo monitoring site has been established (refer to **Drawing 18B_EV02**). This site will be monitored annually, with the outcomes recorded in an Aboriginal Heritage Monitoring report.

METHODS

The following measures have been provided from the *Aboriginal Heritage Management Plan* (in **Appendix A**) for the management of the items of significance on site:

- Molong ST1:
 - *It was determined that the existing fencing of this area is sufficient to ensure this site is conserved and that the fencing of the individual tree is unwarranted and likely to draw undue attention. The location of this tree will then remain known to the Environmental Management team of Orange City Council and the Euchareena Road RRC staff and inductions as discussed below should be used to ensure staff and contractors using the RRC are aware of the location of this site and its legislative protection (Ozark 2009b:11).*
- Molong OS1
 - *The location of this site should remain known to the Environmental Management team of Orange City Council and the Euchareena Road RRC staff and inductions as discussed below should be used to ensure staff and contractors using the RRC are aware of the location of this site and its legislative protection (Ozark 2009b:12).*
- General
 - *The location of both sites will be recorded on a master plan in the Site Office, where the Site Manager has visual access to it. This plan will note that protected heritage items are present at these locations and that there will be no impacts in the vicinity of these locations (Ozark 2009b:13).*
 - *The OCC will appoint someone (e.g. Environmental Officer or Site Manager) to take responsibility for the continued protection of these sites from future impacts as they arise and to ensure that fencing, if it is to be permanent, is appropriately maintained (Ozark 2009b:13).*
 - *Part of the site induction for all staff and contractors will include a section on Aboriginal heritage. This induction will include brief reference to the legislative framework through which Indigenous heritage is protected, particular reference will be made to the location of the sites as well as providing a more general introduction to cultural heritage (Ozark 2009b:13).*

Table B1 – Aboriginal Rehabilitation and Management Measures

	Category		Task	Responsibility
1	DURING CONSTRUCTION			
a	Previously undiscovered Aboriginal objects	i	If during the course of clearing or ground surface disturbing works, a suspected Aboriginal object is discovered, the measures outlined in Section 6.2.2 of the Aboriginal Heritage Management Plan (Appendix A) shall be followed.	OCC
		ii	If during RRC activities, skeletal material is discovered, the Orange City Council will follow the procedures outlined in the flow chart in Appendix 3 of the Aboriginal Heritage Management Plan (Appendix A). The intention of this procedure is to avoid the unnecessary removal or disturbance of skeletal material and to provide for the involvement of Aboriginal registered stakeholders if the skeletal material should prove to be those of an Aboriginal person.	OCC
2	DURING OPERATION OF RRC			
a	Staff Inductions	i	All staff and contractors are to undertake an induction that includes a cultural heritage awareness component, consistent with Sections 6.1.1 and 6.2.1 of the Aboriginal Heritage Management Plan (Appendix A).	OCC
		i	A suitably sized copy of Drawing 18B_EV01 shall be displayed in the Site Office, where the Site Manager has visual access to it.	OCC
		ii	A person shall be appointed by Orange City Council to take responsibility for the continued protection of the identified heritage items, ensuring they are protected from future impacts.	OCC
b	Heritage & Biodiversity Awareness	iii	The items are to be monitored regularly. In particular monitoring shall consider: • The impacts of any grazing animals. If it looks like stock are rubbing against the items they should be fenced off to avoid such impacts. • Whether or not the scarred tree (ST1) is closing over. If such occurs consultation with OEH and the LALC shall be undertaken to determine what measures/if any shall be undertaken to rectify the situation. • Photo monitoring site to be monitored annually, with outcomes recorded in an <i>Aboriginal Heritage Monitoring</i> report.	OCC

Appendix C

REMNANT WOODLAND AREAS

Remnant Woodland Areas

INTRODUCTION

This Appendix relates to the two remnants of the 'White Box Yellow Box Blakely's Red Gum Woodland Community' Ecological Community located on site (refer **Drawing 19B_EV02**).

As these areas are already established, they will be managed differently to the rehabilitation and landscaped areas of the site. Essentially they would be monitored with plantings provided where deficiencies are found.

Two permanent monitoring sites throughout the remnant Box-gum woodland EEC have been established (refer to **Drawing 19B_EV02**), which includes two quadrants (C1 and C2) and one transect (F1). These sites will be monitored annually, and outcomes recorded in the *Flora Monitoring* report.

The existing access tracks within the woodland areas would be maintained to provide access to the piezometers for groundwater monitoring purposes. They would also provide for general access to these areas for rehabilitation monitoring and management purposes.

Table C1 outlines the rehabilitation and management measures to be followed for the two Remnant Woodland Areas.

Table C1 – Remnant Woodland Rehabilitation and Management Measures

	Category	Task	Responsibility
1	PRIOR TO CONSTRUCTION WORKS COMMENCING		
a	Fencing of regeneration areas	i The two remnant Box Woodland areas are to be fenced off from the remainder of the site, in accordance with the attached plans. The fencing is to be provided outside of the dripline of the trees on the outermost extent of indicated areas. The fencing shall be designed to minimise detrimental impacts on native fauna.	OCC
b	Baseline Information	i Permanent quadrats/transects shall be established, by a suitably qualified person, across the remnant woodland areas to enable periodic monitoring to record the extent of flora regrowth in these areas.	OCC
		ii An initial assessment of the woodland areas, by a suitably qualified person and based on the identified quadrats/transects, to identify deficiencies in species diversity.	OCC
		iii An initial planting program may be developed, by a suitably qualified person, subject to the above initial assessment.	OCC
		iv Establishment of a monitoring program, by a suitably qualified person, for the remnant woodland areas to monitor and record the extent of flora regrowth.	OCC
c	Stock control	i Those areas of the site that are not directly affected by the proposed activity shall be de-stocked and remain free of grazing by domestic stock.	OCC
2	DURING CONSTRUCTION		
a	Woodland Enhancement	i Implementation of the initial planting program in the remnant woodland areas.	OCC
3	PRIOR TO OPERATION OF THE RRC		
a	Weed & Pest Management	i A Weed Management Program shall be prepared, by a suitably qualified person, that incorporates: - Regular inspections of the site; - Education of staff with respect to weed identification and control; and - Continual monitoring and control of identified noxious weeds. This shall form part of the OEMP.	OCC
		ii A Pest Control Plan shall be formulated, that in particular includes the control of foxes and feral cats and any other invertebrate pest that may be considered a problem. This shall form part of the OEMP.	OCC

Table C1 – Remnant Woodland Rehabilitation and Management Measures

	Category		Task	Responsibility
4	DURING OPERATION OF RRC			
a	Heritage & Biodiversity Awareness	i	A suitably sized copy of Drawing 19B_EV02 shall be displayed in the Site Office, where the Site Manager has visual access to it.	OCC
b	Woodland Monitoring	i	Implementation of the woodland monitoring program.	OCC
		ii	Where, during monitoring, species diversity is found to be insufficient, supplementary planting programs may be undertaken in accordance with advice from a suitably qualified person.	OCC
		iii	Any supplementary plantings are to be suitably protected through fencing or suitable tree guards.	OCC
c	Weed & Pest Management	i	Implementation of the Weed Management Program.	OCC
		ii	Implementation of the Pest Control Plan.	OCC
d	Groundcover Management	i	Groundcover management within the woodland areas is to be undertaken through grazing with cattle, using appropriate stocking rates that reflect seasonal conditions and to ensure an adequate level of groundcover remains at all times.	OCC
		ii	- Controlled grazing by livestock to maintain or improve native vegetation values at a low to moderate stocking rate or 'crash grazing'. Grazing is an ecological tool and the aim of crash grazing is to manage the groundcover to ensure that a diverse groundlayer of native species is encouraged. - Grazing regimes will be guided by: - Appropriate location of grazing - Triggers to change grazing regime e.g. changes to abundance of selected key species. - Triggers for grazing to be excluded e.g. during flowering and seeding of particular species. - Seasons where grazing may be desirable e.g. reduction in seeding of particular weed species. - Exclusion of grazing for a required number of years or until certain outcomes have been achieved. - Management of stock in the remnant woodland should aim to minimise damage to native vegetation and minimise introduction of weeds and disease as follows: - Ensure stock camps are not established - Ensure stock are confined to formed tracks and are under supervision when moving livestock through the conservation area. - Mustering of livestock with the use of working dogs and horses is permitted. - Fodder or any stock feed may not be brought into the remnant woodland areas. - Before introduction of stock into the remnant woodland areas ensure they are held in a relatively weed free area for at least a week immediately prior to their introduction. - Pasture improvement or fertilisation is not permitted. - Exclude stock from any burnt area of the remnant woodland until native vegetation has re-established. Stock should be excluded for at least three years and groundcover should be >70% before grazing recommences.	OCC
		iii	Any grazing and implementation of grazing regime requires prior written agreement from OEH, subject to monitoring reports.	OCC

Table C1 – Remnant Woodland Rehabilitation and Management Measures

Category		Task		Responsibility
		iv	Reducing the population of native grazing animals where grazing pressure is resulting in the degradation of the quality and structure of native vegetation and inhibiting natural regeneration and the owner is granted a licence to cull under Section 121 of the <i>NPW Act 1974</i> .	OCC

Appendix D

REHABILITATION CORRIDORS

Rehabilitation Corridors

INTRODUCTION

This Appendix relates to the two areas to the north and south of operational area of the site which will provide for connectivity between the two remnant areas of Box Gum Woodland. These areas are hereon referred to as the northern and southern rehabilitation corridors. **Drawing 15C_EV02** illustrates the location of these areas.

The rehabilitation corridors are proposed on open grassland located to the northern and southern ends of the development site. Adjacent woodlands are comprised of an open Grassy Box-eucalypt community with a tree spacing averaging between 5 and 20 metres. Openings in the existing woodlands span up to 100 metres. Existing trees are predominantly mature with age structure of the community tending to be skewed towards old-mature trees. Recruitment is present but uncommon.

PURPOSE

The purpose of the proposed rehabilitation Corridors is to establish continuity with existing remnants of woodland, to create a greater area of woodland habitat and to form a visual barrier to the Resource Recovery Centre (RRC).

METHODS

GENERAL

Table D1 provides a list of tree, shrub, and groundcover species suitable for planting for the re-establishment of a Box Woodland concurrent with the existing community, including shrub species suitable for establishing visual barrier or bund stabilisation vegetation.

The listed species in **Table D1** have been recorded within the Molong area on similar landscapes to that of the subject site. Upper storey trees include White Box, Yellow Box and Blakey's Red Gum. These trees are already present on the site and Orange City Council already possesses seed that has been sourced from the Molong area, this seed should be used in deference to other seed to ensure provenance is maintained. Only tube stock and seed stock of local provenance can be used within the rehabilitation corridors.

Preparation for revegetation on natural surfaces needs to be started as soon as possible through weed removal however maintenance of the existing native grass-cover is important to minimise erosion and maintain soil moisture. Slashing of tall grass could occur periodically to reduce fire risk, but existing native grasses on site should be allowed to mature to seed where possible to encourage colonisation.

Weed control should occur regularly before and after planting to minimise competition with young seedlings for water, and light. Spot spraying should be carried out by a qualified professional to an agreed performance contract, with a minimum of:

- 1) Initial assessment with spot spraying as soon as possible.
- 2) Treatment to an agreed schedule based on the initial assessment (Weed Management program as per **Table D2**).
- 3) Treatment two weeks prior to planting, as agreed.

- 4) Maintenance treatment as part of the Operational Environmental Management Plan for the life of the project, adjusted according to weather conditions.

Control and management of pest grazing animals (ie rabbits and hares) will be required to minimise impact upon young plants. The landscape management contract should require active and ongoing assessment of the problem and measures for control, should they be required, this will be detailed in the Pest Control Plan as per **Table D2**.

Short 'crash grazing' events should occur as per the management plan for the Remnant Woodland.

Table D1 – Recommended Planting Species List

Botanical Name	Common Name	Contractor Seed Available	OCC Seed Available	Provenance
<i>Acacia buxifolia</i>	Box-leaf Wattle		X	Molong/Fern Hill
<i>Acacia decora</i>	Western Golden Wattle	X		Molong/Fern Hill
<i>Acacia leucoclada</i>	Northern Silver Wattle	X		Molong/Fern Hill
<i>Acacia melanoxylon</i>	Blackwood		X	Orange
<i>Acacia vestita</i>	Weeping Boree Wattle		X	Molong/Fern Hill
<i>Allocasuarina verticillata</i>	Drooping She-oak		X	Molong/Fern Hill
<i>Brachychiton populneus</i>	Kurrajong		X	Molong/Fern Hill
<i>Eucalyptus albens</i>	White Box		X	Molong/Belgravia
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum		X	Molong/Orange
<i>Eucalyptus melliodora</i>	Yellow Box		X	Molong/Fernhill
<i>Hardenbergia violacea</i>	False Sarsaparilla	X		Molong/Fernhill
<i>Indigofera australis</i>	Australian Indigo	X		Molong/Fernhill

NOTE: seeding of native grasses may also be required within the rehabilitation corridors, to be determined through annual flora monitoring.

NORTHERN REHABILITATION CORRIDOR

The aim of the northern rehabilitation corridor is provide connectivity between existing open woodland located to the east and south. It covers a 'L' shaped area measuring approximately 550 metres long.

Revegetation of the rehabilitation corridor needs to retain the structure and species composition of existing woodland areas on the site. The existing woodland structure varies between a closed woodland formation (less than 10 metres between trees) to very open (up to 50 metres between trees).

The planting strategy of this area is to direct drill a mix of seed (to be submitted and approved) from the seed list provided in **Table D1** at a rate of 400gm per km over the entire area in meandering rows a maximum of 6m apart to achieve a dominance of grass and ground cover species with an average of 3 eucalypts and 6 other trees/shrubs per 10x10 metre square. Planting should occur either just prior to a rain event or not long after a rain event, ensuring practicality with equipment, in March/April of 2013.

Success of the planting should be assessed a month after drilling and infill planting occur if deemed necessary. This could be either planting of tube-stock or re-drilling as agreed. Long term maintenance of the area should include further in-fill planting should it be deemed necessary.

SOUTHERN REHABILITATION CORRIDOR

The aim of the rehabilitation corridor is provide connectivity between existing open woodland located immediately to the north and west. This site is a triangular shaped area measuring approximately 320 metres long and 300 metres wide at the broadest part. A 70 metre strip (known as the Landscaped Area, refer **Appendix F**) fronting the Euchareena Road and directly connective to the rest of the rehabilitation corridor would act as a visual barrier for the Operational Area of the RRC.

Revegetation of the broader area of rehabilitation corridor needs to retain the structure and species composition of existing woodland areas on the site. The existing woodland structure varies between a closed woodland formation (less than 10 metres between trees) to very open (up to 50 metres between trees).

The planting strategy of this area is equal to that used across the Northern Rehabilitation Area except for the 70m Landscaped Area which is described in **Appendix F**.

REHABILITATION AND MANAGEMENT MEASURES

Table D2 outlines the rehabilitation and management measures to be followed for the two Rehabilitation Corridor Areas.

Two permanent monitoring sites within the rehabilitation corridor have been established (refer to **Drawing 15C_EV02**), which includes two quadrants (R1 and R2) and one transect (F2). These sites will be monitored annually, and outcomes recorded in the *Flora Monitoring* report.

Table D2 – Rehabilitation Corridors Rehabilitation and Management Measures

	Category		Task	Responsibility
1	PRIOR TO CONSTRUCTION WORKS COMMENCING			
a	Baseline Information	i	An initial planting program is to be developed, by a suitably qualified person, based on this methodology.	OCC
		ii	Establishment of a Rehabilitation Area monitoring program, by a suitably qualified person, for the rehabilitation areas to monitor and record the extent of flora growth. This program shall incorporate the principles outlined in this appendix.	OCC
b	Stock control	i	Those areas of the site that are not directly affected by the proposed activity shall be de-stocked and remain free of grazing by domestic stock (except in accordance with any management plan).	OCC
2	DURING CONSTRUCTION			
a	Woodland Enhancement	ii	Implementation of the initial planting program in the rehabilitation corridor.	OCC
3	PRIOR TO OPERATION OF THE RRC			
a	Weed & Pest Management	i	Creation of a Weed Management Program, by a suitably qualified person, that includes: - Regular inspections of the site; - Education of staff with respect to weed identification and control; and - Continual monitoring and control of identified noxious weeds. This shall form part of the Operational Environmental Management Plan (OEMP).	OCC
		ii	A Pest Control Plan shall be formulated, that in particular includes the control of foxes and feral cats and any other invertebrate pest that may be considered a problem. This shall form part of the OEMP.	OCC

Table D2 – Rehabilitation Corridors Rehabilitation and Management Measures

	Category		Task	Responsibility
4	DURING OPERATION OF RRC			
b	Woodland Monitoring	i	Implementation of the rehabilitation corridor monitoring program.	OCC
		ii	Where, during monitoring, species diversity is found to be insufficient, supplementary planting programs are to be undertaken in accordance with advice from a suitably qualified person.	OCC
		iii	Any supplementary plantings are to be suitably protected through fencing or suitable tree guard, as outlined in this Appendix.	OCC
c	Weed & Pest Management	i	Implementation of the Weed Management Program.	OCC
		ii	Implementation of the Pest Control Plan.	OCC
d	Groundcover Management	i	Groundcover management within the rehabilitation areas is to be undertaken through grazing with cattle, using appropriate stocking rates that reflect seasonal conditions and to ensure an adequate level of groundcover remains at all times. Trees and shrubs are to be protected from cattle in accordance with the principles outlined in this Appendix.	OCC
		ii	Once established, grazing shall be undertaken in accordance with the measures outlined in the Remnant Woodland Areas (Appendix C).	OCC

Appendix E

LANDSCAPE BUNDS

Landscaped Bunds

INTRODUCTION

This Appendix relates to the three landscaped bunds, as illustrated in **Drawing 16B_EV02**. This appendix and associated drawings have been prepared to satisfy Condition 35 in Schedule 5 of the Project Approval.

The purpose of the bunds is to provide visual screening of the site operations. As outlined in **Section 4.5** of the main report to which this section appends, the bunds would be constructed in a staged and evolving manner based on the availability of overburden.

As the bunds will not be able to be constructed until after excavations on site have commenced, a landscape strip is to be established between Bund 1 and the northern property boundary. **Drawing 16B_EV03** illustrates the cross section of this landscape strip. An access track would be provided adjacent to the property boundary/fence, with a 15m wide landscaped strip provided between the access track and the toe of Bund 1.

Again, Bunds 2 and 3 would be constructed when enough overburden is available from the construction stages of the project. These two bunds would be constructed in accordance with **Drawings 16B_EV04** and **16B_EV05**. During operation of the Resource Recovery Centre (RRC), the rear (inside) of these bunds would operate with a 'working face', enabling overburden from the landfill cells to be stockpiled as needed.

PURPOSE

The purpose of these bunds is to provide for visual screening of the RRC.

METHODS

GENERAL

Table E1 provides a list of tree, shrub, and groundcover species suitable for planting for the re-establishment of a Box Woodland concurrent with the existing community, including shrub species suitable for establishing visual barrier or bund stabilisation vegetation.

The listed species in **Table E1** have been recorded within the Molong area on similar landscapes to that of the subject site. Upper storey trees include White Box, Yellow Box, and Blakely's Red Gum. These trees are already present on the site and Orange City Council already possesses seed that has been sourced from the Molong area, this seed should be used in deference to other seed to ensure provenance is maintained. Only tube stock and seed stock of local provenance can be used within the landscape bunds.

Preparation for revegetation on natural surfaces needs to be started as soon as possible through weed removal, however maintenance of the existing native grass-cover is important to minimise erosion and retain soil moisture. Slashing of tall grass could occur periodically to reduce fire risk, but existing native grasses on site should be allowed to mature to seed where possible to encourage colonisation.

Weed control should occur regularly before and after planting to minimise competition with young seedlings for water and light. Spot spraying should be carried out by a qualified professional to an agreed performance contract, with a minimum of:

1. Initial assessment with spot spraying as soon as possible

2. Treatment to an agreed schedule based on the initial assessment (Weed Management Program as per **Table E2**).
3. Treatment two weeks prior to planting as agreed.
4. Maintenance treatment as part of the OEMP for the life of the project, adjusted according to weather conditions.

Control and management of pest grazing animals (i.e rabbits and hares) will be required to minimise impact upon young plants. The landscape management contract should require active and ongoing assessment of the problem and measures for control, should they be required, this will be detailed in the Pest Control Plan per **Table E2**.

Short 'crash grazing' events should occur as per the management plan for the Remnant Woodland.

Table E1 – Recommended Planting Species List

Botanical Name	Common Name	Contractor Seed Available	OCC Seed Available	Provenance
<i>Acacia buxifolia</i>	Box-leaf Wattle		X	Molong/Fern Hill
<i>Acacia decora</i>	Western Golden Wattle	X		Molong/Fern Hill
<i>Acacia leucoclada</i>	Northern Silver Wattle	X		Molong/Fern Hill
<i>Acacia melanoxylon</i>	Blackwood		X	Orange
<i>Acacia vestita</i>	Weeping Boree Wattle		X	Molong/Fern Hill
<i>Allocasuarina verticillata</i>	Drooping She-oak		X	Molong/Fern Hill
<i>Brachychiton populneus</i>	Kurrajong		X	Molong/Fern Hill
<i>Eucalyptus albens</i>	White Box		X	Molong/Belgravia
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum		X	Molong/Orange
<i>Eucalyptus melliodora</i>	Yellow Box		X	Molong/Fernhill
<i>Hardenbergia violacea</i>	False Sarsaparilla	X		Molong/Fernhill
<i>Indigofera australis</i>	Australian Indigo	X		Molong/Fernhill

NOTE: seeding of native grasses may also be required within the Landscaped Bunds, to be determined through annual flora monitoring.

BUND 1 & LANDSCAPE STRIP

This area is located at the northern extent of the site towards the western corner. It consists of a 5 metre wide access road, a 15 metre wide landscape strip, and a low, wide-topped vegetated bund. The 15 metre landscape strip is designed to act as a primary visual barrier before the establishment of Bund 1.

The 15 metre landscape strip shall be planted out with the road side 5m planted as per the Edge Planting Strip in **Appendix F** and the remaining 10m planted per the Rehabilitation Corridors in **Appendix D**.

The bund shall be hydromulched as soon as is practical after it has been formed. Seed shall be applied at a mix and rate as submitted and approved, being predominantly grasses and groundcovers. Watering will only be required if it is deemed necessary to either hold the mulch in place or to assist with germination in a particularly dry period. It is expected that this will occur during the peak of summer but it is understood that the native species of seeds will remain viable and dormant within the mulch until favourable growing conditions occur. The mulching process will assist in reducing weed germination, minimise erosion and maintain soil moisture.

A direct drill of seed including eucalypts, acacias and other shrubs shall occur in March or April depending on weather conditions. Application rates shall be equal to that detailed in **Appendix D** however application over the hydromulch should occur without use of the disc of the machine.

Weed monitoring and maintenance shall occur as per the Weed Management Program.

BUND 2

Bund 2 is a vegetated bund located on the north eastern corner of the proposed operation area. It is designed to act as a visual barrier and vegetated buffer area between the operational area and remnant woodland located immediately to the east.

The 4 metre tall bund would be hydromulched and direct drilled on the top and eastern side as per Bund 1, allowing the western face to remain 'active' during the operations for the deposition of soil. Post-works, this 'active' face will be vegetated with trees and shrubs with a method submitted and approved.

BUND 3

This structure is vegetated bund located on the south eastern corner of the proposed operation area. It is to be designed to act as a visual barrier and vegetated buffer area between the operation area and remnant woodland located immediately to the east.

This bund will be hydromulched as per Bund 1 and all but the 'active' face direct drilled also per bund 1. This face will remain with groundcover only and should be monitored for sufficient coverage.

Ongoing weed and pest management will be conducted per the Weed Management Program. Mowing or slashing may also be required to avoid the ground cover becoming rank or overly dense. Post-working life, the grassed stabilised batter of the bund will be planted out with an open planting of trees and shrubs in a method to be submitted and approved.

REHABILITATION AND MANAGEMENT MEASURES

Table E2 outlines the rehabilitation and management measures to be followed for the landscaped bunds.

A permanent monitoring site within Landscape Bund 1 has been established (refer to **Drawing 16B_EV02**), which includes one transect (B1). The site will be monitored annually, and outcomes recorded in the *Flora Monitoring* report.

Table E2 – Landscaped Bunds Rehabilitation and Management Measures

	Category		Task	Responsibility
1	PRIOR TO CONSTRUCTION WORKS COMMENCING			
a	Landscape screening	i	The landscape strip to the north of Bund 1 shall be established in accordance with this Appendix.	OCC
		ii	The perimeter tree screening areas are to provide an appropriate alternative nectar source away from the landfilling operation. These species shall be selected in consultation with OEH.	OCC
b	Baseline information	i	Establishment of a Landscaped Bund/Strip monitoring program, by a suitably qualified person, consistent with this Appendix, for the landscaped bund areas to monitor and record the extent of flora growth.	OCC
2	DURING CONSTRUCTION			
a	Landscaped Bunds	i	During the construction of the Stage 1 landfill Cell, Bund 1 is to be constructed and landscaped in accordance with this Appendix.	OCC
3	PRIOR TO OPERATION OF THE RCC			
a	Weed & Pest Management	i	Creation of a Weed Management Program, by a suitably qualified person, that includes: - Regular inspections of the site; - Education of staff with respect to weed identification and control; and - Continual monitoring and control of identified noxious weeds. This shall form part of the OEMP.	OCC
		ii	A Pest Control Plan shall be formulated, that in particular includes the control of foxes and feral cats and any other invertebrate pest that may be considered a problem. This shall form part of the OEMP.	OCC
4	DURING OPERATION OF RCC			
a	Landscaped Bunds	i	The landscaped bunds shall be constructed and landscaped in accordance with this Appendix.	OCC
b	Heritage & Biodiversity Awareness	i	A suitably sized copy of Drawing 16B_EV02 shall be displayed in the Site Office, where the Site Manager has visual access to it.	OCC

Table E2 – Landscaped Bunds Rehabilitation and Management Measures

	Category	Task		Responsibility
c	Monitoring	i	Implementation of the Landscaped Bund/Strip monitoring program.	OCC
		ii	Where, during monitoring, species diversity is found to be insufficient, supplementary planting programs are to be undertaken in accordance with advice from a suitably qualified person.	OCC
		iii	Any supplementary plantings are to be suitably protected through fencing or suitable tree guard.	OCC
d	Weed & Pest Management	i	Implementation of the Weed Management Program.	OCC
		ii	Implementation of the Pest Control Plan.	OCC
e	Groundcover Management	i	Once established, grazing shall be undertaken in accordance with the measures outlined in the Remnant Woodland Areas (Appendix C).	OCC

Appendix F

LANDSCAPED AREA

Landscaped Area

INTRODUCTION

As illustrated in **Drawing 17C_EV02**, this Appendix relates to the landscaped Area along the property boundary in the south eastern corner of the subject site. This Appendix and associated plans have been prepared to satisfy Condition 36 in Schedule 5 of the Project Approval.

PURPOSE

The purpose of the landscaped area is to provide visual screening of the site operations. As outlined in **Section 4.5** of the main report to which this appends, the area would be planted prior to operations commencing on site.

METHODS

GENERAL

The strip of land designated as 'Landscaped Area' is to act as a visual barrier (fronting Euchareena Road). The first 5 metres of the 70 metre wide strip will be planted at a greater density than the rest of the strip and adjacent Southern Rehabilitation Corridor. This 5 metre strip fronting Euchareena Road and the entrance road will be planted with tube stock of primarily Eucalypts and Acacias per the list in **Table F1** to ensure fast growth prior to the opening of the Centre. The list of species have been selected for being endemic to the site, their growth habit and their availability in tube stock. The remaining 65 metres of the Landscaped Area will be planted as per the Rehabilitation Corridors, detailed in **Appendix D**.

Preparation for revegetation on natural surfaces needs to be started as soon as possible through weed removal, however, maintenance of the existing native grass-cover is important to minimise erosion and retain soil moisture. Slashing of tall grass could occur periodically to reduce fire risk, but existing native grasses on site should be allowed to mature to seed where possible to encourage colonisation.

Weed control should occur regularly before and after planting to minimise competition with young seedlings for water, and light. Spot spraying should be carried out by a qualified professional to an agreed performance contract, with minimum of:

1. Initial assessment with spot spraying as soon as possible
2. Treatment to an agreed schedule based on the initial assessment (Weed Management Program as per **Table F2**).
3. Treatment two weeks prior to planting as agreed.
4. Maintenance treatment as part of the OEMP for the life of the project, adjusted according to weather conditions.

This 70 metre strip would be planted at a greater density than the adjacent Southern Rehabilitation Corridor. The leading rows fronting Euchareena Road would be planted with a higher proportion of shrubs than in the rows further into the rehabilitation corridor. Planting lower shrubs as well as small trees such as *Acacia difformis*, *Acacia buxifolia*, *Hakea sericea*, *Acacia melanoxylon* and *Allocasuarina diminuta* amongst upper-storey eucalypt species would provide lower and midstorey diversity and add the screening effect of the landscaped area. Species selection of lower and midstorey species would need to consider impact of any future grazing management of the site.

Table F1 provides a list of mid and upper storey tree and shrub species suitable for base planting for the re-establishment of a box woodland concurrent with the existing community. The table also lists lower shrub species likely to be suitable for establishing the visual barrier.

The listed species in **Table F1** have been recorded within the Molong area on similar landscapes to that of the subject site. Upper storey trees include White Box, Yellow Box and Blakely's Red Gum. These trees are already present on the site and steps should be taken to collect seed from local seed banks to ensure that seed of the right provenance is obtained. Local advice should be sought on the suitability of seasonal conditions for planting. Care must also be taken in the selection of acacia species as certain acacias can dominate as a woody weed on revegetation sites. (eg. *Acacia dealbata*). Again, final selection of species should refer to local horticultural expertise. Only tube stock and seed stock of local provenance can be used within the landscape bunds.

Native mid and understorey species are poorly represented on the existing site and planting stock may need to be obtained from local sources of homogenous origin. Selected species may also be dependent upon availability of seedling stock.

Reference to publications specific to the rehabilitation and regeneration of Box woodlands should be made before and during the development stage of the revegetation project (e.g. Rawlings, K. 2010, *A Guide to Managing Box Gum Grassy Woodlands*, Department of the Environment, Water, Heritage and the Arts). Personnel skilled in local native revegetation and regeneration works should be employed to undertake this component of the project.

Preparation for revegetation on natural surfaces needs to be started at least one year in advance of planting. Removal of groundcover on areas to be replanted can be achieved by a combination of crash grazing, slashing and spraying. Topsoil removal (scalping) to create weed-free planting strips is unlikely to be suitable for the site, however if this method is used erosion, compaction and weed ingress should be considered. Deep ripping planting strips along rows cleared of groundcover is the best form of ground preparation for trees and shrubs. A single tined ripper should be used to create fissures to a depth of 40 to 60 cm. If areas of the site have compacted soil which may impede ground cover species becoming established, shallow scarifying between rows can assist water ingress.

Weed control before planting is imperative and measures to control weeds for at least two years after planting will be required. Left unchecked, weeds strongly compete with young seedlings for water, and light. Up to 3 to 4 applications of herbicide may be required to prepare a site for planting:

1. One year to 10 months before planting;
2. Follow-up application in late summer or autumn (depending upon rainfall);
3. Third spray applied 6 to 10 weeks after the second spray for control of opportunistic weeds if required; and
4. The final spray just before planting (taking into account time periods to allow any residual effect to subside before planting).

Control and management of pest grazing animals (i.e rabbits and hares) will be required to minimise impact upon young plants. The landscape management contract should require active and ongoing assessment of the problem and measures for control, should they be required, this will be detailed in the Pest Control Plan per **Table F2**.

Short 'crash grazing' events should occur as per the management plan for the Remnant Woodland.

Table F1 – Recommended Planting Species List

Botanical Name	Common Name	Contractor Seed Available	OCC Seed Available	Provenance
<i>Acacia buxifolia</i>	Box-leaf Wattle		X	Molong/Fern Hill
<i>Acacia decora</i>	Western Golden Wattle	X		Molong/Fern Hill
<i>Acacia leucoclada</i>	Northern Silver Wattle	X		Molong/Fern Hill
<i>Acacia melanoxylon</i>	Blackwood		X	Orange
<i>Acacia vestita</i>	Weeping Boree Wattle		X	Molong/Fern Hill
<i>Allocasuarina verticillata</i>	Drooping She-oak		X	Molong/Fern Hill
<i>Brachychiton populneus</i>	Kurrajong		X	Molong/Fern Hill
<i>Eucalyptus albens</i>	White Box		X	Molong/Belgravia
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum		X	Molong/Orange
<i>Eucalyptus melliodora</i>	Yellow Box		X	Molong/Fernhill
<i>Hardenbergia violacea</i>	False Sarsaparilla	X		Molong/Fernhill
<i>Indigofera australis</i>	Australian Indigo	X		Molong/Fernhill

NOTE: seeding of native grasses may also be required within the Landscaped Area, to be determined through annual flora monitoring.

EDGE PLANTING STRIP

Planting of the roadside 5m edge of the Landscaped Area shall occur as soon as practical (November) so as to ensure maximum growth prior to opening in July 2013.

A weed management team should be engaged to perform a day of inspection and spraying over the Landscaped Area a minimum of two weeks prior to the planting of the edge strip. After planting, regular inspections should occur as per the Weed Management Program.

Planting should be a mix of the species listed in **Table F1** under Tube Stock, with 1 eucalypt per 5m² and three shrubs per 5m².

It is preferable to plant after a rain event so that the soil is soft and moist; however should no rain event occur the entire area should be thoroughly watered by water truck a maximum of three days prior to planting. All tube stock should be protected with a cardboard milk carton staked according to manufacturer's recommendations.

REMAINING LANDSCAPED AREA

A permanent monitoring site within the Landscaped Area has been established (refer to **Drawing 17C_EV02**), which includes one transect (L1). The site will be monitored annually, and outcomes recorded in the *Flora Monitoring* report.

REHABILITATION AND MANAGEMENT MEASURES

Table F2 outlines the rehabilitation and management measures to be followed for the landscaped bunds.

Table F2 – Landscaped Area Rehabilitation and Management Measures

	Category		Task	Responsibility
	PRIOR TO OPERATION OF THE RRC			
a	Landscape Screening Plantings	i	Prior to operation of the RRC, the landscaped area shall be planted as outlined in this appendix.	OCC
		ii	The perimeter tree screening areas are to provide an appropriate alternative nectar source away from the landfilling operation. These species shall be selected in consultation with OEH.	OCC
b	Baseline information	i	Establishment of a monitoring program, by a suitably qualified person, for the landscaped area to monitor and record the extent of flora growth.	OCC
c	Weed & Pest Management	i	Creation of a Weed Management Program, by a suitably qualified person, that includes: - Regular inspections of the site; - Education of staff with respect to weed identification and control; and - Continual monitoring and control of identified noxious weeds. This shall form part of the OEMP.	OCC
		ii	A Pest Control Plan shall be formulated, that in particular includes the control of foxes and feral cats and any other invertebrate pest that may be considered a problem. This shall form part of the OEMP.	OCC
3	DURING OPERATION OF RRC			
a	Heritage & Biodiversity Awareness	i	A suitably sized copy of Drawing 17C_EV02 shall be displayed in the Site Office, where the Site Manager has visual access to it.	OCC
b	Monitoring	i	Implementation of the landscaped area monitoring program.	OCC
		ii	Where, during monitoring, species diversity is found to be insufficient, supplementary planting programs are to be undertaken in accordance with advice from a suitably qualified person.	OCC
		iii	Any supplementary plantings are to be suitably protected through fencing or suitable tree guard.	OCC
c	Weed & Pest Management	i	Implementation of the Weed Management Program.	OCC
		ii	Implementation of the Pest Control Plan.	OCC
d	Groundcover Management	i	Groundcover management within the woodland areas is to be undertaken through grazing with cattle, using appropriate stocking rates that reflect seasonal conditions and to ensure an adequate level of groundcover remains at all times.	OCC
		ii	Once established, grazing shall be undertaken in accordance with the measures outlined in the Remnant Woodland Areas (Appendix C).	OCC