

# **KEYSBROOK MINERAL SANDS PROJECT**

## **REHABILITATION MANAGEMENT PLAN**

PREPARED FOR:

**MZI RESOURCES LIMITED**



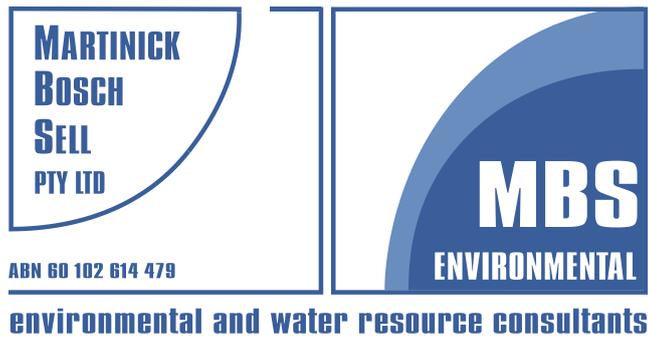
MARCH 2013

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## KEYSBROOK MINERAL SANDS PROJECT

PREPARED FOR

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# TABLE OF CONTENTS

<b>1.</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	PURPOSE, OBJECTIVES AND TARGETS .....	2
1.1	RELEVANCE TO OTHER PLANS.....	4
<b>2.</b>	<b>EXISTING ENVIRONMENT .....</b>	<b>5</b>
2.1	REGIONAL SETTING .....	5
2.2	SOILS .....	5
2.2.1	Bassendean Dunes .....	5
2.2.2	Pinjarra Plain.....	5
2.2.3	Soil Nutrient Levels in the Project Area .....	6
2.3	VEGETATION IN THE PROJECT AREA .....	6
<b>3.</b>	<b>MINE PLANNING AND LAND CLEARING.....</b>	<b>7</b>
3.1	ANNUAL MINE PLAN.....	7
3.2	LAND CLEARING .....	7
3.3	IDENTIFICATION AND CONSERVATION OF REHABILITATION RESOURCES.....	7
<b>4.</b>	<b>REHABILITATION PROCESS .....</b>	<b>9</b>
4.1	LANDFORM RESTORATION.....	9
4.2	TOPSOIL MANAGEMENT .....	10
4.3	REVEGETATION.....	10
4.3.1	General Provisions .....	10
4.3.2	Establishment of Pasture and Stubble Crops .....	11
4.3.3	Establishment of Shelter Belts .....	11
4.3.4	Native Vegetation Re-establishment and Habitat Improvement Areas .....	12
4.3.5	Potential Cockatoo Nest Relocation .....	14
4.4	GRAZING PROTECTION FOR REHABILITATED AREAS .....	15
4.5	FERTILISER.....	15
4.6	WEED CONTROL.....	15
4.7	MAINTENANCE.....	15
4.8	SUMMARY OF REHABILITATION ACTIVITIES .....	16
<b>5.</b>	<b>CONCEPTUAL REHABILITATION PLAN .....</b>	<b>17</b>
<b>6.</b>	<b>MONITORING .....</b>	<b>20</b>
<b>7.</b>	<b>COMPLETION CRITERIA.....</b>	<b>22</b>
<b>8.</b>	<b>MANAGEMENT PLAN REVIEW .....</b>	<b>25</b>
<b>9.</b>	<b>RECORDS AND REPORTING .....</b>	<b>26</b>
9.1	RECORD KEEPING .....	26
9.2	ANNUAL ENVIRONMENT REPORT (AER).....	26
<b>10.</b>	<b>RESPONSIBILITIES .....</b>	<b>27</b>
10.1	GENERAL MANAGER.....	27
10.2	SITE MANAGER .....	27
10.3	ENVIRONMENTAL OFFICER .....	28
<b>11.</b>	<b>REFERENCES.....</b>	<b>31</b>

## TABLES

Table 1:	Rehabilitation Objectives and Targets .....	2
Table 2:	List of Potential Species to be used in Native Vegetation Rehabilitation .....	13
Table 3:	Schedule of Rehabilitation Activities.....	16
Table 4:	Proposed Composition of Rehabilitation .....	18
Table 5:	Rehabilitation Monitoring Schedule .....	21
Table 6:	Completion Criteria and Interim Targets .....	23
Table 7:	Rehabilitation Records to be Maintained at Keysbrook.....	26

## FIGURES

Figure 1:	Location Plan .....	3
Figure 2:	Conceptual Rehabilitation Plan.....	19

## APPENDICES

Appendix 1:	Clearing Register
Appendix 2:	Machinery and Vehicle Inspection Checklist
Appendix 3:	Rehabilitation Record
Appendix 4:	Weed Inspection Checklist and Management Register

# 1. INTRODUCTION

MZI Resources Limited (MZI) are planning to develop an open cut mineral sand mine and primary processing plant within an area of rural land near the small townships of Keysbrook and North Dandalup (Figure 1). The project, known as the Keysbrook Mineral Sands Project was approved by the Western Australian Minister for Environment through the issue of Ministerial Statement 810 on 19 October 2009 and by the Federal Minister for Environment with *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)* Approval 2005/2163 on 16 February 2011. Minor project amendments relating to the process plant location and change in location of the offset area were approved by the EPA on 4 February 2013 and SEWPAC on 13 August 2012.

The project area is located within the Peel Harvey catchment portion of the Swan Coastal Plain. The approved mining area of 1,354 hectares is located on privately owned land, actively used for grazing. Of this, 1,174 hectares (87.0%) is open pasture with scattered trees and 180 hectares (13.0%) are remnant vegetation in good to completely degraded condition. A total of 75 hectares of remnant vegetation is to be retained and protected in perpetuity in compliance with EPBC Approval 2005/2163 and Ministerial Statement 810. Twenty five hectares are to be retained within the mining area; the remaining 155 hectares of native vegetation within the mining area will be cleared. The additional 50 hectares to be retained are located outside of the approved mining area.

The project is to extract minerals from a series of locations across the Keysbrook mine area. This will require development of shallow pits to access the ore body and construction of a primary processing plant. Ore will be excavated from the advancing edge of the pit with excavators into dump trucks and screened before being processed. The heavy mineral concentrate (HMC) will be separated from the quartz sand and clay fractions. The quartz sand and clay waste will be returned to the mined areas and the landform will be reinstated to approximately pre-mining contours.

The ore is hosted totally within the superficial (Bassendean sand) profile. The depth of the open pit will range from one to two metres in the flat sandplain locations and up to six metres in the undulating dunal rises.

The local landscape has already been heavily cleared for agricultural uses. However, mining of the Keysbrook mineral sand deposit involves clearing of some remnant, mostly parkland cleared native vegetation.

As a result of extensive grazing, there is little regrowth or vegetation recruitment outside of fenced areas. Outside these protected areas, gradual decline of vegetation continues to occur by cattle bark-stripping and other factors. While dead trees provide habitat for fauna, the ongoing degradation of remnant vegetation has a corresponding reduction in vegetation structure, density and species diversity that has resulted in a commensurate decline in the diversity of resident fauna. This coupled with the lack of understorey shrubs and groundcover species across most of the mine area has reduced the habitat value of the site.

MZI proposes to implement a progressive rehabilitation program to ensure no net loss of vegetation in the longer term. The post-mining land use will be a combination of pasture and native vegetation.

The rehabilitation program aims to achieve a net environmental gain compared to the present situation by consolidating native vegetation areas and establishing corridor linkages in contrast to the fragmentation that currently exists.

## 1.1 PURPOSE, OBJECTIVES AND TARGETS

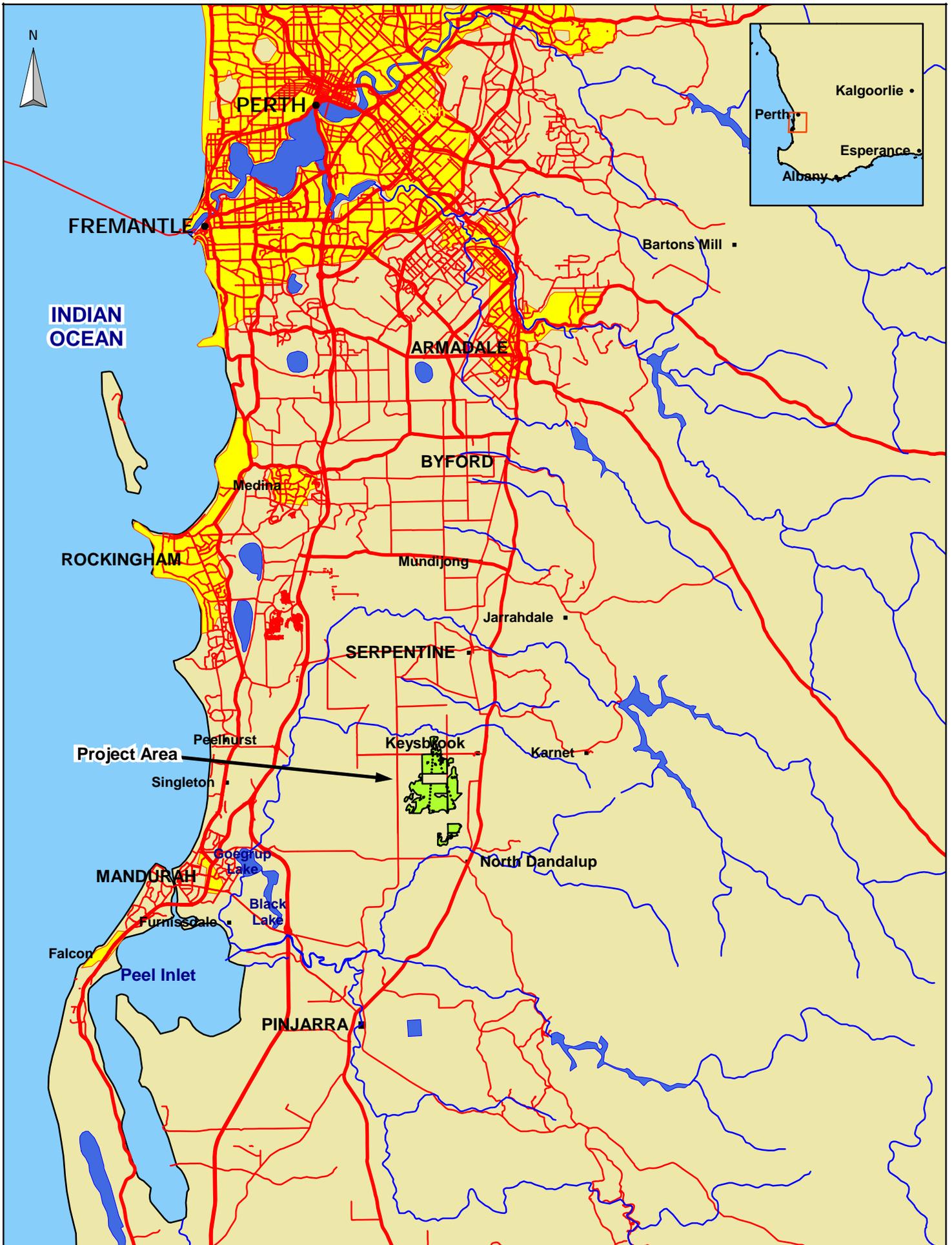
This Rehabilitation Management Plan (RMP) has been developed to comply with Ministerial Statement 810, specifically Condition 8. The purpose of this RMP is to outline the management strategies, actions and procedures that will be used to manage rehabilitation activities and achieve the rehabilitation objectives for the Keysbrook Mineral Sand Project.

The rehabilitation objectives and targets of this RMP are outlined in Table 1.

**Table 1: Rehabilitation Objectives and Targets**

Objective	Target
Re-establish self-sustaining local provenance native vegetation cleared in the implementation of the proposal, at a ratio of not less than 1.4 to 1 (1.4 hectares of revegetation per 1 hectare of vegetation cleared).	Self-sustaining local provenance native vegetation re-established at a ratio of greater than 1.4 to 1 (1.4 hectares of revegetation per 1 hectare of vegetation cleared) within five years of mining each area.
Re-establish functioning pasture.	Pasture established after two years of mining each area and land handed back to landowner.

Upon approval from the CEO of the Department of Environment and Conservation (DEC), MZI shall implement this RMP and make it publicly available (including any revisions). This RMP shall be reviewed and revised as directed by the CEO of the DEC and annually or as required by MZI.



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Scale 1:400000  
Original Size: A4

0 10 km

MZI Resources Limited  
Keysbrook  
Mineral Sands Project

Location Plan

**Figure 1**

## 1.1 RELEVANCE TO OTHER PLANS

As a condition of approval of the project, Ministerial Statement 810 also required the development of several other management plans.

The Weed and Dieback Management Plan (WDMP) (MBS 2011) discusses mitigation measures to prevent the spread of weeds and dieback during the active phases of mining and management to ensure successful revegetation occurs after mining. Revegetation strategies include topsoil management and the use of dieback resistant native plant species for rehabilitation areas.

The Nutrient Management Plan (NMP) (MBS 2012a) outlines a program to monitor the nutrient levels within the mining area and identifies management actions should a trigger level be reached. The aim of the NMP is to minimise the export of nutrients from the mining area during operational and decommissioning phases of the project.

The Air Quality and Dust Management Plan (AQDMP) (MBS 2012b) addresses issues related to dust creation and management. It discusses the potential for dust list-off and generation from rehabilitation areas.

The Acid Sulfate Soils (ASS) Management Plan (ASSMP) (MBS 2010) discusses management of ASS in relation to mining and processing activities. The presence of ASS can have implications for rehabilitation of those soils.

Conditions of approval for the planning process also required development of other management plans.

The Visual Management Plan (EPCAD 2010) discusses establishment of vegetative corridors to assist with screening of mining related activities. Establishment and maintenance of these plantings is directly relevant to measures discussed within the Rehabilitation Management Plan.

The Conservation, Offset and Rehabilitation Management Plan (CORP) (MBS 2013) discusses revegetation and habitat improvement to be undertaken within the offset and project areas to ensure there is a net gain in the extent and quality of breeding and foraging habitat for Carnaby's Black-Cockatoo and Baudin's Black-Cockatoo (Black Cockatoos).

## 2. EXISTING ENVIRONMENT

### 2.1 REGIONAL SETTING

The project area is situated along the eastern edge of the Swan Coastal Plain approximately 70 kilometres south of Perth, near the small townships of Keysbrook and North Dandalup (Figure 1). It is located two to seven kilometres west of the Darling Scarp and the landform in the area varies between 22 and 48 metres Australian Height Datum. The topography of the project area is flat to very gently undulating.

The project area of 1,354 hectares is located on privately owned, rural zoned land. A large portion of the area has been cleared for agricultural activities. Patches of remnant native vegetation also remain, ranging from stands of trees over pasture grass with little to no understorey to areas of remnant vegetation in good condition.

### 2.2 SOILS

The heavy mineral resource is hosted within the dunes of the Bassendean Sand, which partly covers mottled clayey sand or a pisolitic ironstone-clay unit of the Guildford Formation, also referred to as the Pinjarra Plain.

#### 2.2.1 Bassendean Dunes

The dominant soil parent materials within the Bassendean system are highly leached quartzose sands. The Bassendean Dunes form a series of subdued low relief dunes, sandplains and intervening swamps adjacent to and partly overlying the finer textured soils of the Pinjarra Plain (Guildford Formation). The majority of the soils are podzols. Soils in the eastern part of the unit are more severely leached than those to the west. The project area is within the eastern part of the unit.

#### 2.2.2 Pinjarra Plain

The soils of the Pinjarra Plain have largely formed from unconsolidated alluvial material of Tertiary and Quaternary Age. The depositional systems can be grouped into following three main types based on soil parent material:

- The older alluvium occurring in extensive flat plains and forming imperfect to poorly drained soils – mottled yellow duplex soils and mottled yellow or greyish brown gradational earths.
- Fine textured alluvium of generally intermediate age, in areas of lowest relief and forming very poorly drained soils – uniform cracking black grey or yellow-grey clays.
- The youngest alluvium occurring along the major present river systems and forming well to moderately well-drained soils – red duplex or gradational soils and uniform reddish brown loams or earthy sands.

### 2.2.3 Soil Nutrient Levels in the Project Area

During soil sampling for ASS determination, composite samples of the sand profile (generally the top two metres) were collected and analysed for the major nutrients nitrogen (N), phosphorous (P) and potassium (K). The results indicated a very low nutrient bank available in the sand profile of the site. The results of the soil sampling were not unexpected.

The composite sample of the two metre sand profile was tested in order to mimic the homogenisation of the soil profile as a result of mining. The result was intended to provide an 'average' of the soil profile, as would exist post mining.

To provide more detailed information related to the potential of a currently immobile nutrient bank within the Bassendean sand profile that could be mobilised during mining and processing operations, additional soil sampling was undertaken in September 2006. The results of this are discussed in the NMP.

## 2.3 VEGETATION IN THE PROJECT AREA

Some 1,174 hectares (87.0%) of the mine area is open pasture with scattered trees while 180 hectares (13 %) are remnant vegetation in varying condition from good to completely degraded. Of this, 75 hectares will be set aside and protected for conservation in perpetuity in line with Condition 6 of Ministerial Statement 810. A total of 155 hectares of native vegetation will be cleared.

Three vegetation surveys of the mining area and one vegetation survey of the northern offset area have been undertaken in accordance with Environmental Protection Authority Guideline 51 (Bennett Environmental Consulting Pty Ltd 2004, 2006; MBS Environmental 2004; MBS Environmental 2012c). No Declared Rare or Priority flora was located during the surveys. A total of 40 vascular plant families, 119 genera and 169 taxa were recorded in the surveys.

A total of nine vegetation units were mapped in the mining area. One vegetation unit within the revised mining area was inferred to be a potential Threatened Ecological Community (TEC), correlating to Swan Coastal Plain Floristic Community Types (FCT) 3a (Gibson *et al*, 1994). The area FCT3a is less than 0.25 hectares in size and although there were several *Corymbia calophylla*, there were very few *Kingia australis*. Most of the adjoining paddock would possibly have previously been representative of this Floristic Community Type. The survey recorded the vegetation condition of FCT3a as completely degraded and concluded that it was not considered worthy of conservation (Bennett Environmental Consulting Pty Ltd 2006).

### **3. MINE PLANNING AND LAND CLEARING**

#### **3.1 ANNUAL MINE PLAN**

A detailed annual mine plan will be prepared by the Site Manager in conjunction with the annual review of this RMP in September/October each year. This annual plan is required in order to:

- Detail the location of orebodies, anticipated tonnes and grade and to establish production targets for the year.
- Plan and schedule the rate of movement of the mine cell and relocation of infrastructure required to support the mine extensions.
- Liaise with relevant landowners on the location of activity on individual properties.
- Co-ordinate and schedule other supporting rehabilitation activities and contractors that will include items discussed in Section 4.8.

#### **3.2 LAND CLEARING**

Land clearing shall be undertaken as outlined in the Land Clearing Procedure.

The Environmental Officer is responsible for informing the Site Manager of areas where dieback, weed or acid sulphate soil management measures need to be incorporated.

The Site Manager shall be responsible for ensuring the mine area to be cleared is clearly marked in the field and earthworks operators informed such that only the area proposed for clearing is disturbed.

The area cleared shall be recorded by the Site Manager in the Clearing Register (Appendix 1). The register shall record the location of land clearing, surface area, volume and Dieback status of topsoil removed and where it was stockpiled. The Environmental Officer shall report the total area of land cleared in the Annual Environmental Report (AER) submitted to DEC.

#### **3.3 IDENTIFICATION AND CONSERVATION OF REHABILITATION RESOURCES**

During the land clearing and mining processes, potential exists for loss or degradation of a number of rehabilitation resources. These resources are primarily topsoil, cleared vegetation and flora of special significance such as cockatoo hollows and grass trees. Preservation of these resources will increase the probability of success of the rehabilitation process.

In the interest of resource conservation, the Site Manager shall be responsible for ensuring:

- The earthworks operators are informed in person of any clearing conditions (including topsoil and vegetation removal requirements) prior to commencement of work.
- Native vegetation is removed from the clearing area and stockpiled adjacent to the clearing area.

- Topsoil is recovered and stockpiled separately from vegetation areas, or where possible replaced immediately on backfilled areas ready for rehabilitation.
- Topsoil stockpiles are no greater than two metres high and located away from water inundation or vehicle traffic.

The Environmental Officer is responsible for ensuring:

- Millable and firewood timber is salvaged from areas planned to be cleared in advance of clearing.
- That native species such as *Xanthorrhoea* and *Kingia* are salvaged in advance of clearing operations and transplanted into areas identified for rehabilitation.
- Areas infested with weeds are pre-treated with a knockdown herbicide prior to clearing as specified in the WDMP.
- Quantities of mulched or chipped material required for use in rehabilitation are sourced from cleared vegetation in dieback free areas only.
- Potential Black Cockatoo nest hollows in trees removed for mining are relocated to remnant vegetation areas that will not be mined and are mounted in suitable sized trees.
- Constructed nest boxes are used to replace potential nest hollows that are not able to be relocated.

## 4. REHABILITATION PROCESS

### 4.1 LANDFORM RESTORATION

Ore to be mined consists of the heavy minerals (2.7%), clay (7-8%) plus sand and other coarse materials (90%). Of these, all of the materials except the heavy minerals will be returned to the pit after ore processing.

The mineral separation process involves firstly separating the clay from the other materials to allow the heavy minerals to be more readily separated from the sand particles. In this separation process, about 20% of the clay will remain with the sand; the remainder is thickened prior to replacement in the mined out area.

The sand material will be pumped back into the mined out voids. This will form the bulk of the material used to fill the mine voids. The thickened clay material from the initial separation process will be pumped over the sand material and allowed to drain and dry by evaporation. Once sufficiently dried, the clay will be mixed into the upper sand surface by mechanical means e.g. ploughing. The resultant soil profile will have a more homogeneous mix of sand and clay through its full depth than what existed pre mining where the clay materials tended to be located more at depth.

Final shaping and grading of filled cells will be undertaken by bulldozer or grader.

The Site Manager will ensure that the rehabilitated landform is similar to pre-mining levels. In most locations, post-mining landforms will match the existing contour levels pre-mining. In some locations variations in surface levels between mining areas and backfill locations will result in lower post-mining elevation. In all cases, the Site Manager will ensure the post-mining ground level re-establishes pre-mining regional surface drainage and the restored mine landform does not create drainage barriers resulting in localised flooding in areas not previously subjected to water inundation.

Where necessary, the Site Manager will ensure temporary erosion control measures are implemented to minimise water erosion of restored landforms prior to establishment of a stabilising vegetative cover. This may include:

- Construction of shallow contour banks, sumps and drains to prevent scouring and release of suspended sediments to natural waterways.
- Stabilisation of soils by application of vegetative mulch or hydromulch or clay fines from processing operations.
- Use of quick growing stubble crops to stabilise soils until permanent vegetation or pasture can be established.

Once stabilisation of the landform by pasture species or native vegetation has been achieved, these temporary measures will be removed.

The risk of wind erosion will be reduced by scheduling earthmoving for landform restoration to periods when winds are below 20 kilometres per hour and the soil is moist. If soil

conditions are too dry, the Mining Manger will ensure additional water is added to reduce potential dust creation.

## 4.2 TOPSOIL MANAGEMENT

Topsoil will be stripped ahead of mining and respread over rehabilitated areas. The Manager shall ensure that topsoil from dieback infected areas is not spread on dieback free areas. The Site Manager will ensure the requirements of the WDMP are complied with in so far as they relate to rehabilitation activities.

Once topsoil has been spread, the Environmental Officer will ensure that all sites are ploughed prior to seeding or planting.

The Site Manager will ensure topsoil is directly returned when possible, however, outside the vegetation rehabilitation season (from April to August), topsoil will be stockpiled. The Environmental Officer shall ensure the following management actions are undertaken when topsoil is stockpiled:

- Separate management procedures for topsoil from Dieback Infected Areas and Dieback Free Areas are followed as outlined in the WDMP.
- Management of topsoil to limit weed spread and reduce weed seed bank loads in stored topsoil stockpiles as outlined in the WDMP.
- Limit as far as possible the time that topsoil is stored to optimise on use of soil biota present in the topsoil.
- Restrict height of topsoil stockpiles to less than two metres to limit impacts of stockpiling on soil biota.

## 4.3 REVEGETATION

### 4.3.1 General Provisions

Seeding/planting will generally be undertaken in May for pasture, Shelter Belts and Native Vegetation and August for stubble crops. The Environmental Officer will ensure climatic conditions are considered on an annual basis when planning the revegetation process.

The Site Manager shall ensure that the following process is completed for all areas to be rehabilitated:

- Topsoil is replaced.
- Deep ripping/ploughing is undertaken. Recombining clay into the top of the soil profile during seeding will improve the water and nutrient retention ability of the soil (see NMP for more detail).

The Environmental Officer will ensure the following activities are undertaken once earthworks have been completed:

- Seeding with an appropriate seed mix or direct planting of native vegetation and shelter belt vegetation.

- Rehabilitated areas are fertilised as required by the NMP.
- Areas of Native Vegetation and Shelter Belts are fenced. Stock is to be excluded from all areas of rehabilitation for a minimum of five years.

During spring, the Environmental Officer shall liaise with the Site Manager to determine the likely area available for rehabilitation in the coming rehabilitation cycle. The Environmental Officer is responsible for ensuring that sufficient quantities of seed and tubestock are available for forecast rehabilitation requirements.

If mining cells are completed outside of the rehabilitation/planting window, the Site Manager shall ensure the completed landform is stabilised as per Section 4.1.

### **4.3.2 Establishment of Pasture and Stubble Crops**

The Environmental Officer will ensure that consultation has occurred with the landowner and the Department of Agriculture and Food (DAFWA) on the appropriate pasture species in particular areas, seeding rates, fertiliser types and application rates.

Pasture will be sown mechanically into the restored landforms using standard agricultural machinery. The annual rainfall and temperature of the mine area limits the growth season of annual species from approximately May to October. Within this time window, two seeding measures will be undertaken:

- ‘Full’ pasture species mix, to be planted in mid to late May. This allows the maximum time for germination, establishment and seed set, to re-establish a self-sustaining pasture.
- Where landforms are completed outside of May, a temporary ‘stubble crop’ may be planted in August. An August planting allows sufficient time to establish a stubble crop with sufficient root growth for soil stabilisation and plant height to provide wind break cover at ground level. Other forms of stabilisation, such as hydromulch, may be used as an alternative to stubble crops.

Reseeding will also occur in the second year to ensure full establishment of pasture to sustain grazing and enable self-sustaining pasture through natural re-seeding.

Completed mine areas will not be handed back to the landowner until a self-sustaining pasture has been established. This is expected to take two years. During this period, stock will be excluded from rehabilitation areas via fencing.

### **4.3.3 Establishment of Shelter Belts**

Shelter belts will be designed and planted in three to four rows with two metres between plants within rows and three metres between rows. This provides an overall planting density of 1,600 plants per hectare, comprising trees and tall shrubs. Where possible, the width of shelter belts and any adjacent remnant vegetation or pre mining plantings will be configured so that a minimum width of 100 metres is achieved.

Shelter belts will be established during and after mining using a selection of fast growing species recommended by local landholders, the Serpentine Jarrahdale Shire and Shire of Murray. The Environmental Officer will be responsible for ensuring that consideration is

given to local reference materials such as the “Keeping it Local” publication produced by the Serpentine Jarrahdale Shire.

Shelterbelts will potentially be accessible to stock in the longer term. For this reason, understorey and herbaceous layer plants will not be used. Fencing of these areas will be undertaken to exclude stock while plants become established. Once plants are established and will not be damaged or killed by grazing, fences may be removed in consultation with landowners.

Shelter planting will occur in two discrete areas:

- Areas outside the mining envelope. These are to be planted as a matter of priority (within three years of the project commencing) to provide screening for mining operations.
- Areas within the mining envelope. Planting of these areas will be scheduled for the first growing season following the completion of mining.

### **4.3.4 Native Vegetation Re-establishment and Habitat Improvement Areas**

#### **4.3.4.1 Native Vegetation Re-establishment Areas**

The Environmental Officer shall ensure that the return of native vegetation is undertaken in the following areas:

- Pasture areas outside the mine boundary. These areas will be planted and/or seeded with native species, including understorey and herbaceous layer species in an “early rehabilitation” process. These will be planted within three years of the project commencing. Relocation of *Xanthorrhoea* and *Kingia* from Dieback Free Areas will also occur.
- Cleared areas within the mine boundary as specified in the Conceptual Rehabilitation Plan (Section 5). These areas will be planted and seeded with native species which are not susceptible to dieback. Planting of these areas will be scheduled for the first growing season following completion of mining.

The Environmental Officer is responsible for ensuring that a density of one stem per square metre (10,000 stems per hectare) for native vegetation areas is achieved within five years of mining. This shall be achieved through use of direct topsoil return, transplanting of appropriate species, broadcast seeding and planting of tubestock.

The Environmental Officer shall ensure weed control is undertaken during spring (August to September) in native vegetation areas if required.

The Environmental Officer is responsible for ensuring infill planting is undertaken on an annual basis to replace dead plants. Infill planting will typically be undertaken in May to ensure native vegetation areas have at least 75% survival each year.

The Environmental Officer shall ensure that all native vegetation rehabilitation areas are fenced to exclude stock.

#### 4.3.4.2 Habitat Improvement Areas

Habitat improvement areas have been identified as part of the Conceptual Rehabilitation Plan (Section 5) as being:

- Undisturbed remnant vegetation areas outside the mine boundary.
- The 75 hectare offset within the project area.
- Defined watercourse and wetland buffer areas.

The aim of rehabilitation in these areas is to improve the quality of native vegetation. Target density will be as for native vegetation re-establishment areas (i.e. 10,000 stems per hectare).

Habitat improvement areas will be planted within three years of the project commencing. Planting will also include transplanting of *Xanthorrhoea*, *Kingia* and other transplantable species from Dieback Free areas that will be disturbed by mining. Relocation or installation of nest hollows will also occur on suitably sized trees in these locations.

#### 4.3.4.3 Revegetation Species

The Environmental Officer shall ensure that local provenance seed is used for rehabilitation of native vegetation to ensure self-sustaining vegetation.

The Environmental Officer shall ensure that seed is collected from remaining native vegetation on site as well as collecting seed from species within a radius of 10 kilometres from the site. Bush Forever sites within 10 kilometres of the project area include Kingsbury Drive Bushland (Site 76, Forrestfield/Guildford Vegetation Complex), Myara Brook Bushland (Site 426, Guildford Vegetation Complex) and Yangedi Swamp (Site 77, Bassendean –Central and South Vegetation Complex).

The Environmental Officer shall ensure that seed is sourced from an appropriate soil type and vegetation complex to match existing values. Table 2 lists the species proposed to be used for the native vegetation rehabilitation program.

**Table 2: List of Potential Species to be used in Native Vegetation Rehabilitation**

Upland Species *	Lowland Species *
<b>Trees</b>	
<i>Allocasuarina fraseriana</i> <sup>%</sup>	<i>Eucalyptus patens</i> <sup>^</sup>
<i>Banksia attenuata</i> <sup>%</sup>	<i>Eucalyptus rudis</i> <sup>^</sup>
<i>Banksia grandis</i> <sup>%</sup>	<i>Melaleuca lateritia</i>
<i>Banksia ilicifolia</i> <sup>%</sup>	<i>Melaleuca preissiana</i> <sup>^</sup>
<i>Banksia menziesii</i> <sup>%</sup>	<i>Melaleuca raphiophylla</i>
<i>Corymbia calophylla</i> <sup>^</sup>	<i>Melaleuca viminea</i>
<i>Eucalyptus marginata</i> <sup>%</sup>	
<i>Xylomelum occidentale</i> <sup>%</sup>	
<b>Shrubs</b>	
<i>Acacia extensa</i> <sup>^</sup>	<i>Adenanthos cygnorum</i> <sup>##</sup>
<i>Acacia pulchella</i> <sup>^</sup>	<i>Beaufortia squarrosa</i>

Upland Species *	Lowland Species *
<i>Acacia saligna</i> <sup>^</sup>	<i>Jacksonia furcellata</i> <sup>%</sup>
<i>Allocasuarina humilis</i> <sup>%</sup>	<i>Kingia australis</i> (transplant)
<i>Calothamnus quadrifidus</i> <sup>^</sup>	<i>Kunzea glabrescens</i>
<i>Hypocalymma angustifolium</i> <sup>^</sup>	<i>Kunzea micrantha subsp. micrantha</i>
<i>Styphelia tenuiflora</i> <sup>%</sup>	<i>Pericalymma ellipticum</i> <sup>%</sup>
<i>Xanthorrhoea brunonis</i> (transplant)	<i>Regelia ciliate</i>
<i>Xanthorrhoea preissii</i> <sup>%</sup> (transplant)	
<b>Herbs</b>	
<i>Conostylis juncea</i>	
<i>Hardenbergia comptoniana</i> <sup>^</sup>	
<i>Hibbertia hypericoides</i> <sup>%</sup> (possible transplant)	
<i>Hypocalymma robustum</i> <sup>%</sup>	
<i>Kennedia coccinea</i> <sup>^</sup>	
<i>Petrophile linearis</i> <sup>#</sup>	
<i>Patersonia occidentalis</i> <sup>§%</sup> (possible transplant)	
<b>Sedges and Rushes</b>	
<i>Desmocladius fasciculatus</i> <sup>^</sup>	<i>Cyathochaeta avenacea</i> <sup>^</sup>
<i>Hypolaena exsulca</i>	<i>Juncus pallidus</i>
<i>Loxocarya cinerea</i> <sup>%</sup>	<i>Lepidosperma longitudinale</i>
<i>Meeboldina cana</i>	
<i>Mesomelaena tetragona</i> <sup>^</sup>	
<i>Tetraria octandra</i> <sup>^</sup>	

\* Seed mix subject to change based on seed availability.

<sup>^</sup> Dieback resistant species.

<sup>§</sup> Extremely problematic to grow from seed.

<sup>#</sup> Sufficient seed in topsoil.

<sup>%</sup> Dieback susceptible species

#### 4.3.4.4 Transplanting Species

The Environmental Officer shall ensure that grasstrees (*Xanthorrhoea priessii* and *Xanthorrhoea brunonis*) and Kingia (*Kingia australis*) are transplanted between Autumn and Spring (April to October) to rehabilitation or habitat improvement areas ahead of mining.

The Environmental Officer shall also ensure that populations of *Hibbertia hypericoides* and *Patersonia occidentalis* are transplanted to rehabilitation or habitat improvement areas ahead of mining.

#### 4.3.5 Potential Cockatoo Nest Relocation

The Environmental Officer shall ensure that potential nest hollows are relocated to remnant vegetation areas that will not be mined, and are mounted in suitably sized trees. The Environmental Officer shall ensure that constructed nest boxes will be used to replace potential nest hollows that are not able to be relocated. This is discussed further within the CORP (MBS 2013).

## 4.4 GRAZING PROTECTION FOR REHABILITATED AREAS

The Site Manager shall ensure that areas where native vegetation rehabilitation works (including habitat improvement areas) have been undertaken are fenced for a minimum of five years after planting to exclude livestock. Fencing of these areas will be maintained by MZI until agreed completion criteria have been obtained and the land handed back to the landowner. Fencing will not be removed by MZI.

The Environmental Officer shall ensure that stock is excluded from pasture rehabilitation areas to allow pasture establishment. When monitoring against closure criteria indicates the rehabilitation no longer has management requirements in areas rehabilitated to pasture or shelter belts, the removal of fences will be carried out by Site Manager if so requested by the land owner.

## 4.5 FERTILISER

Fertiliser will be added to pasture rehabilitation areas as specified in the NMP. The Environmental Officer will ensure the landowner and DAFWA are consulted on the appropriate fertiliser types which will also be verified through soil testing.

Nutrient requirements of native vegetation are significantly lower than those of pasture. However, revegetation by native plants may be accelerated by application of low rates of fertilisers or liming materials. The procedure for the use of fertiliser for rehabilitation of native vegetation areas is documented in the NMP.

## 4.6 WEED CONTROL

No Declared Plants have been located within the project area.

In areas to be returned to pasture, weed management will be restricted to control of Declared Plant species.

In native vegetation rehabilitation areas, weed infestation can inhibit establishment and survival of planted trees and seedlings, decreasing the effectiveness of the rehabilitation program. Weed management in these areas will be undertaken in accordance with the WDMP.

It is the responsibility of the Site Manager to inform all earthworks contractors that equipment must be free of weeds prior to it arriving on site. All equipment entering the mine area shall be inspected by the Environmental Officer to ensure it is free of soil or vegetative matter. The Vehicle Inspection Checklist (Appendix 2) shall be completed each time a vehicle enters the project area and a copy shall be filed in the Environmental Monitoring file on site.

## 4.7 MAINTENANCE

Vegetation re-establishment will require ongoing maintenance to ensure successful re-establishment. Maintenance procedures will be carried out as determined by the Environmental Officer and may include:

- Replanting areas that may not have regenerated.
- Weed control.

- Repair of significant erosion.
- Fire management.
- Fence repair.
- Nest box repair.

Maintenance will continue to be undertaken as required until monitoring shows the completion criteria listed in Section 7 (and as updated) have been met.

## 4.8 SUMMARY OF REHABILITATION ACTIVITIES

Table 3 outlines the rehabilitation activities discussed above and provides timelines for completion of these activities.

**Table 3: Schedule of Rehabilitation Activities**

Action	Tasks	Timing	Outcome
Plant relocation	Relocation of Kingia, Xanthorrhoea and other plants that can be successfully transplanted	April to October.	Transplant to areas that will be fenced to exclude stock.
Rehabilitation activities	Seed collection	Main periods October and January, some species year round and others require fire.	Local seed collected for use in rehabilitation.
	Plant propagation	September to November.	Seedlings planted in May.
	Landform Restoration	Immediately on completion of backfill operations.	Final Landforms are as close as possible to pre-mining contours.
	Landform Stabilisation	Directly following landform restoration.	Avoid erosion of surfaces.
	Topsoil spreading	April/May.	Topsoil re-used as soon as practical.
	Seeding/Direct Planting	May (August for stubble crops).	Rehabilitation to pasture/native vegetation/shelter belt.
	Fencing	As required.	Fences constructed following completion of rehabilitation activities.
Maintenance	Follow-up seeding/planting	May – August.	Achieve 75% survival rate.
	Weed Control	As required.	Limit weed presence in rehabilitated areas.
Seasonal dependent activities	Selectively remove any large mature trees within the annual mine plan that contain potential cockatoo nesting hollows.	January to June.	Avoid harm to cockatoo hatchlings during the nesting period.

## 5. CONCEPTUAL REHABILITATION PLAN

A Conceptual Rehabilitation Plan (CRP) has been developed according to Ministerial Statement 810 with the primary objective of re-establishing self-sustaining local provenance native vegetation at a ratio of not less than 1.4 to 1 (that is 1.4 hectares of revegetation per hectare of vegetation cleared) (Figure 2). Re-establishment of pasture is a key component of the CRP as the project area will predominantly be returned to a grazing land-use on completion of mining.

The CRP is based on the following principles:

- Conserve existing remnant native vegetation areas inside and outside the mine boundary and augment these locations with additional planting and fencing to exclude stock.
- Plant as a priority, areas outside the mine boundary with both native vegetation and stock shelter planting.
- Plant as a priority, areas outside the mine boundary with native vegetation to provide visual screening of mining operations.
- Fence rehabilitated areas planted with native vegetation to exclude stock.
- Provide a combination of block planting and corridor linkages through the project area. Where possible corridor linkages will be formed with a minimum width of 100 metres to minimise potential edge effects and maximise biodiversity outcomes.
- Replace native vegetation at a ratio of not less than 1.4 to 1.0 (that is 1.4 hectares of revegetation per hectare of vegetation cleared).
- Enhance species diversity within the mine site after rehabilitation by returning native species currently poorly represented or absent.

The CRP is subject to change and will be reviewed on an annual basis in conjunction with this RMP.

Table 4 outlines the proposed composition of rehabilitation in the CRP. Given 155 hectares of native vegetation will be cleared within the project area, a total of 217 hectares is required to be re-established to comply with Ministerial Statement 810.

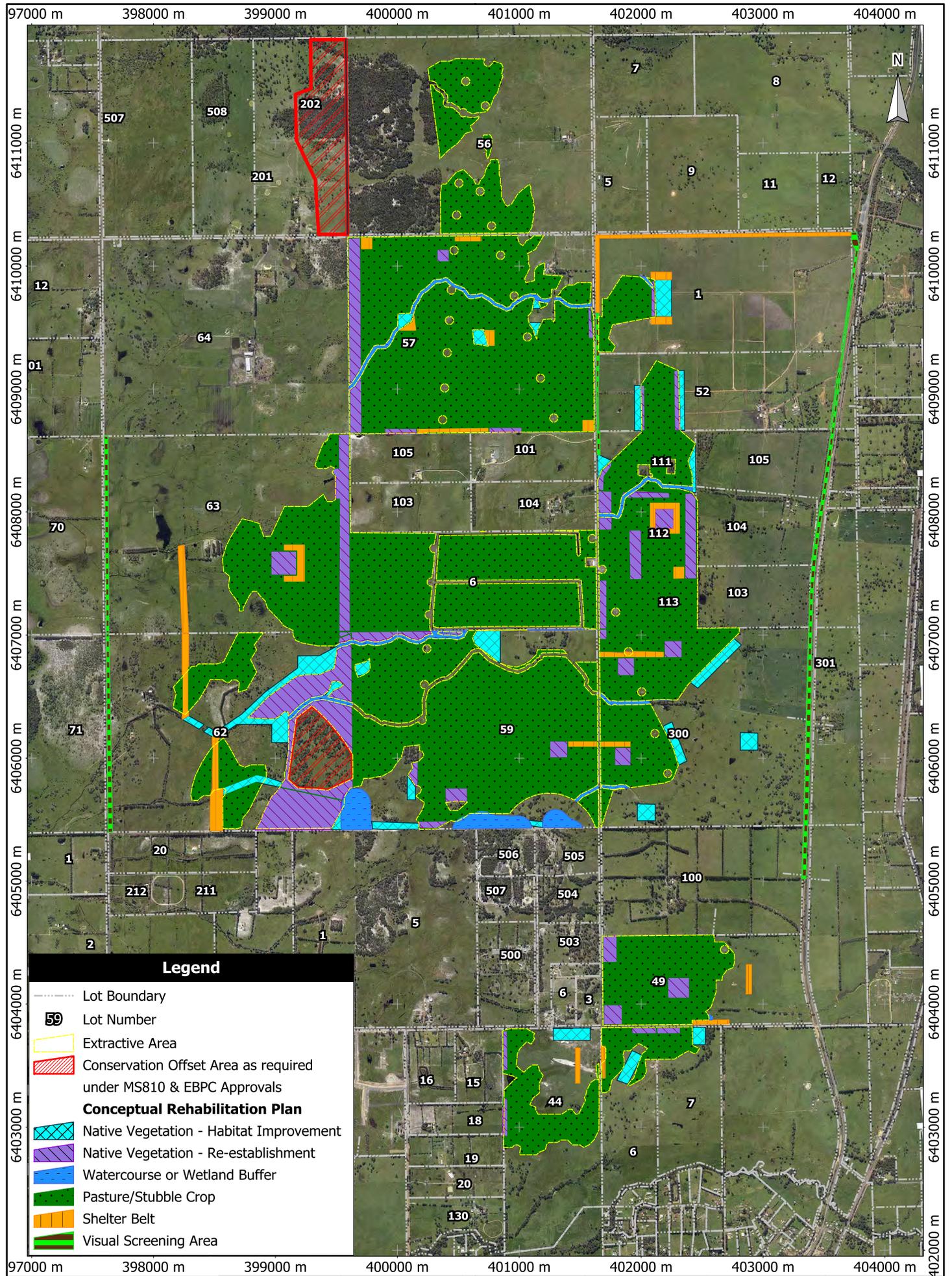
Revegetation areas outside the mine boundary are proposed to be implemented within the first three years of the project, which will allow for at least five years of monitoring and maintenance to ensure successful vegetation establishment.

The CRP proposes to establish a total of 233.5 hectares of self-sustaining, local provenance native vegetation on completion of the project (Table 4). This is a ratio of 1.5 to 1. This excludes:

- Vegetation to be established for shelterbelts.
- Vegetation to be established for visual screening purposes.
- Vegetation to be protected as part of a conservation offset package required by State and Federal environmental approvals.

**Table 4: Proposed Composition of Rehabilitation**

<b>Vegetation Type</b>	<b>Area (Ha)</b>
Native Vegetation – Habitat Improvement	60
Native Vegetation – Re-establishment	131
Watercourse Buffers – Habitat Improvement	25
Wetland Buffers – Habitat Improvement	17.5
<i>Sub Total</i>	<b>233.5</b>
Pasture Areas	1,110.5
Shelter Belts	46.5
Visual Screens	56
Conservation Offset	75
<b>Grand Total</b>	<b>1,521.5</b>



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MZI Resources Limited  
Keysbrook  
Mineral Sands Project

Conceptual  
Rehabilitation Plan

**Figure 2**

## 6. MONITORING

Rehabilitation monitoring is critical to assess the effectiveness of the rehabilitation program and to enable adaptive management of rehabilitation. Table 5 outlines the proposed schedule of monitoring. The Environmental Officer is responsible for ensuring that monitoring is carried out in accordance with the Rehabilitation Monitoring Procedure to assess:

- The physical stability of the landform of rehabilitated areas.
- The success of vegetation establishment in rehabilitated areas.

Monitoring programs will be tailored to the desired end land use i.e. pasture, native vegetation or shelter belts.

The frequency of monitoring is expected to decrease over time in individual areas and will cease in consultation with regulators when rehabilitation objectives and completion criteria have been achieved.

The Environmental Officer will be responsible for notifying the General Manager when monitoring demonstrates that completion criteria for individual areas have been met.

The results of monitoring will be reported to regulatory authorities through the Annual Environmental Report (AER). The AER will also be made available to the Serpentine Jarrahdale Shire and the Shire of Murray. Landowners will be advised the AER is available on the MZI website.

**Table 5: Rehabilitation Monitoring Schedule**

Pasture	Native Vegetation	Shelter Belts
<b>First Year After Rehabilitation</b>		
Establishment of permanent monitoring transects and or quadrats in each area of rehabilitation.		
Determine germination success rate.	Determine seedling survival/germination success rate.	Determine seedling survival rate.
Determine percentage cover of pasture species.	Determine percentage cover and density of each species.	Assess overall plant density of windbreak.
Identify weed species and determine percentage cover.		
Assess plant health and monitor for pests and/or pathogens.		
Soil testing – texture, organic carbon, pH, conductivity and nutrients.		
Soil and landform stability.		
<b>Annually until Area is Handed Back to Landowner</b>		
Determine percentage cover of pasture species.	Determine percentage cover and density of each species.	Assess overall plant density of Shelter Belt.
Identify weed species and determine percentage cover.		
Assess plant health and monitor for pests and/or pathogens.		
Determine sustainable carrying capacity	Assess species richness, diversity and density against analogue sites.	
Soil Testing – nutrients and compaction levels.		
Soil and landform stability.		

## 7. COMPLETION CRITERIA

EPA (2006) requires that completion criteria must be sufficiently stringent to ensure that the overall objectives of rehabilitation have been met. These criteria must also be designed to allow effective reporting and auditing to define an endpoint for rehabilitation activities. Guidelines published by ANZMEC/MCA (2000) for completion criteria state they should be:

1. Specific enough to reflect unique set of environmental, social and economic circumstances.
2. Flexible enough to adapt to changing circumstances without compromising objectives.
3. Include environmental indicators suitable for demonstrating that rehabilitation trends are heading in the right direction.
4. Undergo periodic review resulting in modification if required due to changed circumstances or improved knowledge.
5. Based on targeted research which results in more informed decisions.

Completion criteria, objectives and interim targets specific to the project including consideration of soil stability, vegetation cover, diversity, species richness and hydrology criteria are presented in Table 6.

The General Manager shall be responsible for ensuring land access agreements entered into between MZI and individual landowners reflect continued management of land by MZI until the relevant completion criteria have been demonstrated to be met.

The Environmental Officer is responsible for notifying the General Manager that completion criteria for a specific area have been met so that hand back of management responsibility for that area to the landowner can be initiated. Rehabilitation, closure planning and completion criteria are adaptive processes that change during the project life, in the light of results of rehabilitation monitoring, research and evolving industry best practice. MZI will continue to update these aspects in operational documents, such as the RMP, during the life of the project.

**Table 6: Completion Criteria and Interim Targets**

Criteria	Objective	Interim Targets
<b>Social Surrounds</b>		
Safety and stability of landforms	The overall stability of soils, landforms and hydrology and long-term sustainability without additional management inputs and suitability for agreed land uses.	Monitoring showing soils and landforms stable and capable of sustaining agricultural use.
Visual amenity and heritage	Recovering visual amenity is a key objective. Visual amenity is defined by community expectations.	Visual amenity comparable to pre-mining condition.
<b>Pollution Management</b>		
Pollution	Pollutants due to chemical spillage, excavation of substrates or changes to hydrology (e.g. acid drainage) prevented or managed within rehabilitated areas as required.	Monitoring showing that pollution levels are within parameters set by regulatory agencies.
Off-site impacts	Significant adverse off-site impacts prevented.	No off site impacts recorded.
<b>Hydrology</b>		
Water quality and quantity	Quality and flows of surface and groundwater are to be consistent with pre-mining values.	Monitoring showing surface water quality consistent with pre-mining levels or licensed values. Monitoring showing groundwater levels consistent with modelled or forecast levels. Temporary creek diversions rehabilitated and original pathway restored.
<b>Landform</b>		
Soil stability	Soil structures reconstructed to ensure vegetation establishment and landform stability.	Rehabilitated areas should have no active erosion rills greater than 10 metres long by 0.1 metres deep.

Criteria	Objective	Interim Targets
<b>Vegetation – Pasture and Shelter Belts</b>		
Pasture and tree establishment	Pasture re-established to enable return to agricultural use.  Shelter belts established to reduce wind erosion.	Fully established pasture returned to landholder by the end of the second growing season.  Plant survival rate greater than 75% in shelter belts within two years of planting.
<b>Vegetation – Native Vegetation</b>		
Diversity	Total number of plant species in rehabilitated areas 75 to 80% of analogue sites.	Rehabilitated native vegetation areas achieving progressive targets with an interim target of 50% species diversity to analogue sites after two years.
Density	Total number of plant species at least one stem per square metre.	Target of plant species at least one stem per square metre within five years of planting.
Plant cover	Plant cover similar to those in reference plots in surrounding remnant vegetation.	Rehabilitated native vegetation areas achieving a 25% foliage cover of native species after two years and a 50% foliage cover after five years. Photographic monitoring points installed within six months of rehabilitation establishment.
Weeds	Effective weed management to ensure the relative cover of weeds is low.	Monitoring and photographic records showing weed species in native vegetation rehabilitation areas limited to less than 10% cover.
Pests and diseases	Limited dieback deaths due to mining.	Deaths of dieback susceptible species attributable to mining or rehabilitation activities limited to 10% after the first two years and 25% after the first five years.
Stock	Restrict stock access to native vegetation rehabilitated areas for a minimum of five years post mining.	Installation of fencing around native vegetation rehabilitation and preservation areas once works are completed for a minimum of five years.

## **8. MANAGEMENT PLAN REVIEW**

It is the responsibility of the Environmental Officer to ensure that the RMP is reviewed annually. This will enable the continual review and adjustment where necessary of annual plans, including inputs of the results of monitoring assessments and feedback from relevant stakeholders.

The review will occur in September to October of each year, to enable review of the rehabilitation efforts of the past year and to include planning for the next years' rehabilitation in May to June.

## 9. RECORDS AND REPORTING

### 9.1 RECORD KEEPING

The Site Manager in conjunction with the Environmental Officer is responsible for recording rehabilitation activities conducted on site. Appendix 2 shows the proposed record check list of the rehabilitation works for each mine area. This includes:

- Information on the pre-mining vegetation, topsoil removal, handling and storage techniques utilised.
- The extent and timing of each activity.
- Details on the rehabilitation treatments, including:
  - Rehabilitation earthworks.
  - Seed bed preparation.
  - Species used in the rehabilitation program.
  - Any fertiliser or soil ameliorant applied.
- Results of the rehabilitation monitoring program.
- Scope of any remedial work.

Records relevant to the RMP that shall be maintained include items listed in Table 7.

**Table 7: Rehabilitation Records to be Maintained at Keysbrook**

Record	Location	Responsibility
Area Cleared	Appendix 1	Site Manager
Vehicle inspection checklist	Appendix 2	Site Manager
Record of Rehabilitation	Appendix 3	Environmental Officer
Weed control activities	Appendix 4	Environmental Officer

### 9.2 ANNUAL ENVIRONMENT REPORT (AER)

The following land management information shall be reported in the AER:

- Total land cleared in the reporting year including information regarding the vegetation type removed (pasture or native vegetation).
- Area rehabilitated within and adjacent to mining areas.
- Rehabilitation monitoring results.
- Weed control activities.
- Any non-compliance and corrective actions with respect to land management.

## 10. RESPONSIBILITIES

### 10.1 GENERAL MANAGER

The General Manager is responsible for the following:

- Ensuring relevant training and awareness is provided to all site employees and contractors to ensure they comply with the requirements of this Management Plan.
- Ensuring the project has adequate resources to meet the requirements of this Management Plan.
- Ensuring land access agreements include provision for management of land by MZI until completion criteria have been met.
- Reviewing and approving rehabilitation management information presented in the AER.
- Reviewing and approving this Management Plan on an annual basis.
- Ensuring investigations into non-compliance with this plan are conducted.
- Ensuring non-compliance with this Management Plan are rectified and reported to the relevant authorities.

### 10.2 SITE MANAGER

The Site Manager is responsible for the following:

- Preparing the annual mining plan and ensuring activities are planned such that any required survey can be conducted in advance of mining.
- Defining the area to be cleared on maps, ensuring they are clearly marked in the field and supervising clearing activities.
- Confining temporary work areas to previously disturbed areas or cleared pasture areas.
- Ensuring vehicles and machinery are parked in designated areas.
- Ensuring that effective dust control measures are implemented as per the AQDMP.
- Ensuring topsoil and cleared vegetation are retained in designated areas for use in rehabilitation.
- Ensuring earthworks operators are appropriately trained and competent to operate the machinery.
- Informing all earthworks contractors that equipment must be free of weeds prior to it arriving on site.
- Informing earthworks operators in person of any clearing conditions (including topsoil and vegetation removal requirements) prior to commencement of work.
- Ensure cleared areas are recorded in the Clearing Register (Appendix 1).
- Restricting height of topsoil stockpiles to less than two metres to limit impacts of stockpiling on soil biota.
- Ensuring that the rehabilitated landform is similar to pre-mining levels.

- Ensure post-mining ground level re-establishes the pre-mining regional surface drainage and the restored mine landform does not create drainage barriers resulting in localised flooding in areas not previously subjected to water inundation.
- Ensure temporary erosion control measures are implemented to minimise water erosion of restored landforms prior to establishment of a stabilising vegetative cover.
- Ensure the requirements of the WDMP are complied with in so far as they relate to rehabilitation activities.
- Ensure that the following process is completed for all areas to be rehabilitated:
  - Replacement of topsoil.
  - Fencing.
  - Deep-ripped (ploughed).
  - Recombining clay into the top of the soil profile during seeding will improve the water and nutrient retention ability of the soil (see NMP for more detail).
- If mining cells are completed outside of the planting window, ensure the following processes are implemented:
  - Ploughing in clay capping from the HMC plant or temporary cover crop into the underlying sand.
  - Replacement of topsoil.
  - Fencing.
- In conjunction with the Environmental Officer, ensure rehabilitation activities are managed in accordance with this Management Plan and recorded in the rehabilitation register (Appendix 3).

### **10.3 ENVIRONMENTAL OFFICER**

The Environmental Officer is responsible for:

- Reviewing and approving this Management Plan on an annual basis.
- Informing the Site Manager of areas where dieback, weed or acid sulphate soil management measures need to be incorporated.
- Ensuring separate management procedures for topsoil from Dieback Infected Areas and Dieback Free Areas are followed as outlined in the WDMP.
- Management of topsoil to limit weed spread and reduce weed seed bank loads in stored topsoil stockpiles as outlined in the WDMP.
- Limiting as far as possible the time that topsoil is stored to optimise on use of soil biota present in the topsoil.
- During spring, liaise with the Site Manager to determine the likely area available for rehabilitation in the coming rehabilitation cycle.
- Ensuring soil compaction measurements are taken annually for areas rehabilitated to pasture.

- Once topsoil has been spread, ensuring that all sites which are direct seeded are ploughed prior to seeding and then raked following seeding.
- Ensure that local provenance seed is used for rehabilitation of native vegetation to ensure self-sustaining vegetation.
- Ensure that seed is collected from remaining species on site as well as collecting seed from species within a radius of 10 kilometres from the site.
- Ensure that seed is sourced from an appropriate soil type and vegetation complex to match existing values.
- Ensure that sufficient quantities of seed and tubestock are available for forecast rehabilitation requirements.
- Ensure weed control is undertaken during spring (August to September) if required and recorded in the weed control register (Appendix 4).
- Ensure that the following process is completed for all areas to be rehabilitated:
  - Seeding with a full pasture species mix or planting native vegetation or shelter belt vegetation.
  - Fertilised.
- Ensure that grasstrees (*Xanthorrhoea priessii* and *Xanthorrhoea brunonis*) and Kingia (*Kingia australis*) are transplanted between April to October to rehabilitation areas ahead of mining.
- Ensure that populations of *Hibbertia hypericoides* and *Patersonia occidentalis* are transplanted to rehabilitation areas ahead of mining.
- Ensure that consultation has occurred with the landowner and DAFWA on the appropriate pasture species in particular areas, seeding rates, fertiliser types and application rates.
- Ensure that consideration is given to local reference materials such as the “Keeping it Local” publication produced by the Serpentine Jarrahdale Shire when determining the species composition for shelterbelts.
- Ensure that potential nest hollows from clearing areas are relocated to remnant vegetation areas which will not be mined and mounted in suitable sized trees.
- Ensuring employees and contractors participate in the site environmental induction.
- Ensuring employees and contractors comply with their responsibilities within this Management Plan.
- Ensuring that all vehicles entering the site are inspected to ensure they are free of soil or vegetative matter. The Vehicle Inspection Checklist (Appendix 2) shall be completed each time a vehicle enters the project area and a copy shall be filed in the Environmental Monitoring file on site.
- Ensure maintenance procedures are carried out as required and may include:
  - Replanting areas that may not have regenerated.
  - Weed control.
  - Repair significant erosion.

- Fire management.
- Ensure that the return of native vegetation will be undertaken in the following areas:
  - Undisturbed remnant vegetation areas outside the mine boundary.
  - Pasture areas outside the mine boundary.
  - Cleared native vegetation areas within the mine boundary.
- Ensure interim targets specified in Table 6 are achieved. Notifying the General Manager of achievement of completion criteria for specific areas of land to enable initiation of hand back of land to the relevant land owner.
- Ensure that constructed nest boxes will be used to replace potential nest hollows that are not able to be relocated.
- When monitoring against closure criteria indicates the rehabilitation no longer has management requirements, remove fences if so requested by the pastoralist.
- In conjunction with the Site Manager, ensure rehabilitation activities are managed in accordance with this Management Plan and recorded in the rehabilitation register (Appendix 3).
- Preparation of the AER submitted to the Serpentine Jarrahdale Shire, Shire of Murray and DEC.

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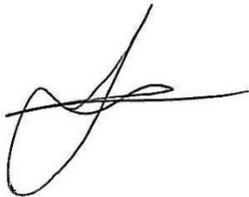
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# APPENDICES

**APPENDIX 1:  
CLEARING REGISTER**



**APPENDIX 2:  
MACHINERY AND VEHICLE INSPECTION CHECKLIST**

# MZI MACHINERY AND VEHICLE HYGIENE CERTIFICATE CHECKLIST

It is important that all earthmoving machinery, vehicles and equipment are in an acceptable condition before entering the Keysbrook Mineral Sands Project area in relation to weeds and Dieback.

**This inspection must be completed upon entry to the site and submitted to the Environmental Officer.** A sticker confirming this inspection has been passed will be issued.

Date of inspection:

Company requesting equipment import to Keysbrook:

Name of person conducting inspection:

What kind of vehicle / machine /equipment is it?

Serial or registration No of equipment/machine:


Was the vehicle / machine cleaned before it left the last site? Yes  No

Are buckets, tracks, blades, grills, utility tray-back free of soil and vegetation? Yes  No

Are the tyres free of vegetation and soil? Yes  No

Work required/comments:

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If you have answered **NO** to any of these questions, please carry out the required cleaning and/or maintenance before the machine is transported onto Keysbrook Mineral Sands Project. Entry of the machinery will not be permitted until evidence of cleaning can be provided. No machines may enter site until authorised by the Environmental Officer.

Based on inspection of the specified equipment/machinery, I confirm the item is free of vegetative and soil material and is suitable for entry into the Keysbrook Project area.

**Signed:**

**Name:**

**Position:**

**Date:**

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**KEYSBROOK MINERAL SANDS PROJECT USE ONLY**

Evidence of cleaning provided is satisfactory and the equipment is suitable for entry to Keysbrook Mineral Sands Project.

**Signed:** \_\_\_\_\_

**Position:** \_\_\_\_\_

**Date:** \_\_\_\_\_



**APPENDIX 3:  
REHABILITATION RECORD**

## RECORD OF REHABILITATION

No	Rehabilitation Documentation	Factor
Location: _____		
1	Clearing (Date)	
<b>Topsoil Management</b>		
2	Topsoil removal (Date)	
3	Topsoil deposition (Location)	
4	Topsoil storage (Location)	
5	Topsoil dieback status. (Free = Green), (Positive or indeterminate = Yellow)	
<b>Landform Design</b>		
6	Land forming earthworks (Date)	
7	Clay capping or other soil stabilization (e.g. hydromulch) utilised	
8	Planting /seeding soil preparation technique	
<b>Erosion Control</b>		
9	Surface drainage controls constructed	
<b>Soil Nutrition</b>		
10	Fertiliser / soil ameliorants used	
<b>Rehabilitation and Completion Criteria</b>		
11	Planting /seeding species used	
12	Rehabilitation monitoring	See Section 6.
13	Remediation and maintenance	See Section 6.
14	Completion criteria assessment	

**APPENDIX 4:  
WEED INSPECTION CHECKLIST AND MANAGEMENT  
REGISTER**

## KEYSBROOK MINERAL SANDS PROJECT WEED MANAGEMENT SITE ASSESSMENT

Name of Inspector (Print): \_\_\_\_\_

Date: \_\_\_\_\_

Weather Conditions Prior to Inspection: \_\_\_\_\_

Weed Inspection Areas	Date Completed	Weeds Present (Yes/No)	Weed Cover (%)	Actions to be Taken
Primary Processing Area				
Wash down bay				
Office and Car Park area				
Access Roads				
Monitoring/Production Bores				
CoE Points				
Other				