



# **EAST ARM ROAD QUARRY**

## **REHABILITATION MANAGEMENT PLAN**

DRAFT FOR PUBLIC CONSULTATION

**Version 2.0**

**November 2024**

**DOCUMENT CONTROL**

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**TABLE OF CONTENTS**

**Section 1 - Introduction.....6**

1.1 East Arm Road Quarry..... 6

1.2 Scope and Objectives ..... 6

1.3 Document Structure..... 7

1.4 Plan Management Team ..... 8

1.5 Awareness Training..... 9

**Section 2 – Legislative and relevant Management Plan context..... 10**

2.1 Context of Rehabilitation Management ..... 10

2.2 Rehabilitation Guidelines and Documents..... 10

2.3 Permit Requirements ..... 10

2.4 Other Relevant Plans..... 10

2.5 Other Reports..... 11

**Section 3 – Progressive Rehabilitation Strategy ..... 12**

3.1 Introduction ..... 12

3.2 Implementation – Rehabilitation Management Units..... 12

3.3 Rehabilitation Methods and Techniques ..... 13

**Section 4 – Monitoring..... 17**

4.1 Inspections ..... 17

4.2 Monitoring ..... 17

4.3 Meteorological Conditions..... 18

**Section 5 – Incident Responses ..... 19**

5.1 Poor Performance or Incident..... 19

5.2 Remedial Works ..... 19

5.3 Complaints ..... 20

**Section 6 – Records, Reporting and Review ..... 21**

6.1 Records..... 21

6.2 Reporting..... 21

6.3 Review..... 21

**Section 7 - Attachments ..... 23**

Attachment 1 - Monitoring Information Guide ..... 23

Attachment 2 - Monitoring Record Sheet..... 24

**TABLES**

Table 2. Structure of the Management Plan ..... 7

Table 3. Details for East Arm Resources Pty Ltd and the Quarry..... 8

Table 3. Plant species name and lifeform for use in revegetation works..... 15

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| ACRONYMS   |                                               |
|------------|-----------------------------------------------|
| <b>EAR</b> | East Arm Resources Pty Ltd                    |
| <b>EPA</b> | Environment Protection Authority              |
| <b>ML</b>  | Mining Lease                                  |
| <b>MRT</b> | Mineral Resources Tasmania                    |
| <b>QCP</b> | Tasmanian <i>Quarry Code of Practice 2017</i> |
| <b>SMP</b> | Stormwater Management Plan                    |

| TERMS                    |                                                                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Blue Book</b>         | means the document 'Landcom (2004). Managing Urban Stormwater, Volume 1 - Soils and Construction, 4th Edition. Published by the New South Wales Government.'                 |
| <b>Quarry</b>            | means East Arm Road Quarry                                                                                                                                                   |
| <b>Record</b>            | means the written form of an observation, process, or act. All records will be handed to the Quarry Manager and will be kept on file. All records are to be clearly legible. |
| <b>Stormwater Report</b> | means the report 'East Arm Road Quarry. Stormwater Management Report March 2024'. Prepared by Van Diemen Consulting Pty Ltd                                                  |

## SECTION 1 - INTRODUCTION

### 1.1 EAST ARM ROAD QUARRY

The East Arm Road Quarry is located at East Arm Road, north of Hillwood in the George Town municipality.

The resource being extracted occurs in low-relief terrain southwards of Fourteen Mile Creek. The activity is located within Consolidated Mining Lease 2135P/M.

Up to 2,500,000 cubic metres per annum (approximately 4,000,000 tonnes of product at a conversion factor of 1.6) is extracted per annum.

The Quarry includes the following activities:

- surface site preparation by tree-felling and stockpiling/mulching;
- soil and overburden removal and stockpiling;
- excavation and ripping of material;
- drilling and blasting by a licensed contractor;
- crushing and/or screening of material;
- stockpiling of material (processed and unprocessed);
- the loading of trucks with processed material from the stockpile area;
- rehabilitation of worked out areas;
- management of stormwater in and external to the Quarry; and
- installation and maintenance of drainage systems.

Drilling and blasting are carried out by qualified contractors in consultation with EAR to ensure the following:

- drilling is carried out to the specified design pattern;
- noise and vibration standards are met (both drilling and blasting activities);
- blasting activities are safe and meet workplace health and safety requirements; and
- blasting is adequate to achieve rock fracturing/fragmentation for both extraction by excavator and crushing.

### 1.2 SCOPE AND OBJECTIVES

The RMP is a practical tool for the management of progressive rehabilitation Quarry to ensure the Disturbed Area is no greater than approved by the Quarry permit(s) and Mining Lease.

It has been prepared for a mixed audience of authorities, environmental regulators, and site personnel; the latter of which are responsible for implementing this plan as part of day-to-day operations.

This plan will be implemented once approved by the EPA.

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#### 1.2.1 SCOPE

The Scope of the RMP is to broadly provide information and guidance on the following:

1. Rehabilitation management objectives, roles, and responsibilities;
2. Competence training and awareness;
3. The rehabilitation management context including the existing conditions for the operation;
4. The legal and other requirements associated with rehabilitation management;
5. Rehabilitation management measures that would be implemented during the life of the Quarry;
6. Incident reporting and compliance management; and
7. Reporting and document review.

The final decommissioning and rehabilitation process of the Quarry is not covered by this RMP. The process of decommissioning buildings and other infrastructure and the final rehabilitation stages of the Quarry would be addressed in a *Decommissioning and Rehabilitation Plan (DRP)* if the Quarry were to permanently cease prior to full extraction or following the complete extraction of the available resource.

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### 1.2.2 OBJECTIVE

Land disturbance will be minimised by clearing the smallest practical area possible and stabilising non-active operational areas as quickly as possible (e.g. outer bund walls and overburden dumps), where possible.

All logs, mulch, and cleared vegetative debris will be stored in the Disturbed Area.

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### 1.2.3 MONITORING EXTENT OF DISTURBED AND REHABILITATED AREAS

The extent of Disturbed and Rehabilitated Areas will be tracked over time using land survey equipment and spatial analysis methods. Aerial imagery captured with a drone is likely to be the method used with corrections made from permanent ground control locations.

Regular surveys (monthly to quarterly subject to the rate of extraction) will be conducted to gather the data needed to document the change in the Disturbed Area as worked out areas are rehabilitated (Rehabilitated Areas) and/or new areas opened for extraction. This process provides the basis for demonstrating compliance with the maximum unrehabilitated area of 20 hectares imposed by the Mining Lease.

## 1.3 DOCUMENT STRUCTURE

The structure of the Management Plan is outlined in **Table 1**.

**Table 1. Structure of the Management Plan**

| Section | Content                                                                                              |
|---------|------------------------------------------------------------------------------------------------------|
| 1       | Provides an overview of the Quarry, and objectives of the plan including roles, and responsibilities |
| 2       | Details the statutory requirements and permit conditions                                             |

|   |                                                                     |
|---|---------------------------------------------------------------------|
| 3 | Describes rehabilitation strategies to be implemented at the quarry |
| 4 | Describes the rehabilitation monitoring process                     |
| 5 | Incident and poor rehabilitation performance triggers and review    |
| 6 | Outlines the reporting and review requirements                      |
| 7 | Lists references and attachments                                    |

## 1.4 PLAN MANAGEMENT TEAM

The RMP is to be implemented by a team comprised of Quarry management and personnel, and consultant(s).

### 1.4.1 EAST ARM RESOURCES PTY LTD

The East Arm Road Quarry is owned and operated by East Arm Resources Pty Ltd which is a company in the VSA Roads Group which includes Inroads, Centre State Asphalt, Western Quarries, Topcoat Asphalt and Primal Surfacing – see **Table 2**.

The Quarry employs a team of machinery/equipment operators, HSEQ officers, laboratory personnel, and administration staff.

**Table 2. Details for East Arm Resources Pty Ltd and the Quarry**

| Item                      | Details                                                                                                                                                                    |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Legal entity Name</b>  | East Arm Resources Pty Ltd                                                                                                                                                 |
| <b>Trading Name</b>       | East Arm Resources Pty Ltd                                                                                                                                                 |
| <b>ACN</b>                | 636 993 783                                                                                                                                                                |
| <b>ABN</b>                | 41 636 993 783                                                                                                                                                             |
| <b>Registered Address</b> | Unit 2, 3-5 Gibbon Road, Winston Hills NSW 2153                                                                                                                            |
| <b>Postal Address</b>     | 9 Weddel Court, Laverton North VIC 3026                                                                                                                                    |
| <b>Contact Persons</b>    | Name – John Bell Andrews, General Manager, East Arm Road Quarry<br>Email – <a href="mailto:jba@eastarmresources.com">jba@eastarmresources.com</a><br>Mobile – 0427 709 762 |
|                           | Name – Rachel Andrews, Quarry Manager, East Arm Road Quarry<br>Email – <a href="mailto:andrewsr@eastarmresources.com">andrewsr@eastarmresources.com</a>                    |

|  |                       |
|--|-----------------------|
|  | Mobile – 0460 309 720 |
|--|-----------------------|

The following roles in East Arm Resources Pty Ltd are to perform their required described tasks.

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General Manager</b> | Must ensure adequate resources are available to enable implementation of the RMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Quarry Manager</b>  | Accountable for the overall environmental performance of the Quarry operations, including the implementation of (or the overseeing of others implementing) the following components of the RMP: <ul style="list-style-type: none"> <li>• Implementation of the stormwater and erosion and sediment control measure awareness part of the induction outlined in Section 1.5.</li> <li>• Complaints handling and response as outlined in Section 5.</li> <li>• Incident reporting as outlined in Section 5.</li> <li>• Review of this Plan as outlined in Section 6.</li> </ul> Reports to General Manager. |
| <b>All personnel</b>   | Ensure training and awareness induction has been undertaken. Compliance with this Plan. Report to Quarry Manager.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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#### 1.4.2 ENVIRONMENTAL ASSISTANCE AND ADVICE

Van Diemen Consulting Pty Ltd has been engaged to provide on-site assistance and advice with the preparation of the RMP. Other specific services may be accessed from other consultants such as a civil engineer from time to time.

### 1.5 AWARENESS TRAINING

All personnel and contractors and their employees will undergo Quarry specific inductions, incorporating basic rehabilitation and erosion/sediment control mitigation awareness training as part of the site induction program. The Quarry Manager is responsible for ensuring the appropriate training for Quarry staff is included in the induction.

In addition, monthly toolbox meetings are held to discuss whole-of-site production, management, safety, and environmental issues. Matters relating to stormwater management and sediment and erosion control measures are raised during these meetings, when necessary.

**SECTION 2 – LEGISLATIVE AND RELEVANT MANAGEMENT PLAN CONTEXT**

**2.1 CONTEXT OF REHABILITATION MANAGEMENT**

The Disturbed Area in the Mining Lease, at any time, is currently restricted by the Mining Lease terms to a maximum of 20 hectares. It includes the stockpile and office area (currently about 4 hectares) and those areas for the extraction, processing and storage of rock/aggregates which includes roads, tracks, laydown areas, stockpiles, blasted rock piles, etc. The Disturbed Areas does not include areas under rehabilitation.

**2.2 REHABILITATION GUIDELINES AND DOCUMENTS**

Rehabilitation management requirements were considered and addressed with primary reference to the following guidelines and documents: -

- The Quarry Code of Practice 3<sup>rd</sup> Edition 2017 (the Code);
- Managing Urban Stormwater, Volume 1 - Soils and Construction, 4<sup>th</sup> Edition, Landcom, March 2004 (Blue Book) and Managing Urban Stormwater, Volume 2E – Mines and Quarries; and
- *Best Practice Erosion & Sediment Control* (IECA, 2008<sup>1</sup>) by the International Erosion Control Association (Australasia) - Best Practice Erosion and Sediment Control by IECA – Book 01,02 and 03.

**2.3 PERMIT REQUIREMENTS**

The permit requirements are below.

| Permit Conditions |  |
|-------------------|--|
| TBC               |  |
|                   |  |

**2.4 OTHER RELEVANT PLANS**

The following relevant plans need to be considered in the implementation of the RMP.

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<sup>1</sup> IECA, 2008. Best Practice Erosion and Sediment Control. Picton, NSW: International Erosion and Sediment Control (Australasia).

| Plans                          |
|--------------------------------|
| Stormwater Management Plan TBC |
| Dust Management Plan TBC       |
| TBC                            |

## 2.5 OTHER REPORTS

The following relevant documents have been considered in the development of the RMP.

| Other Reports                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>East Arm Road Quarry. Stormwater Management and Sediment Control Report. October 2024.</b></p> <p>Prepared by Van Diemen Consulting Pty Ltd.</p>                                   |
| <p><b>East Arm Road Quarry. Air Quality Assessment. February 2025.</b></p> <p>Prepared by Tarkarri Engineering Pty Ltd.</p>                                                              |
| <p><b>EAST ARM ROAD QUARRY, GREEN AND GOLD FROG (<i>Litoria raniformis</i>) HABITAT RESTORATION AND MANAGEMENT PLAN. MAY 2023.</b></p> <p>Prepared by Van Diemen Consulting Pty Ltd.</p> |
| <p><b>EAST ARM ROAD QUARRY, HILLWOOD. WEED AND PATHOGEN MANAGEMENT PLAN. MARCH 2023.</b></p> <p>Prepared by Van Diemen Consulting Pty Ltd.</p>                                           |
| <p><b>Acid Sulfate Soil (ASS) Site Investigation, Mining Lease 2077P/M. East Tamar Hwy, Long Reach TAS.</b></p> <p>Prepared by JKBartlett Pty Ltd.</p>                                   |

## SECTION 3 – PROGRESSIVE REHABILITATION STRATEGY

### 3.1 INTRODUCTION

The primary objective of the Rehabilitation is to re-instate (even temporarily) as far as reasonably practicable a growing medium that reduces the risk of erosion and sediment loss (from the erosive forces of wind and water), provides a cover that assists with weed exclusion, and provides water infiltration rather than runoff.

The main aims are to:

- achieve stabilisation of worked out areas to minimise the risk of ongoing erosion;
- revegetate worked out areas with suitable plant species;
- minimise visual impact of disturbed areas; and
- ensure that worked out areas are appropriate for future uses.

There are three broadly defined stages of Progressive Rehabilitation:

1. topsoil reinstatement;
2. revegetation; and
3. monitoring/maintenance.

The rehabilitation methods involve surface preparation by the placement of topsoil ready to receive the hydro mulched material containing seed, fertiliser and tackifier.

Each stage prepares the land/site for the next and success or the need for remedial works is identified by monitoring.

### 3.2 IMPLEMENTATION – REHABILITATION MANAGEMENT UNITS

Rehabilitation will be applied at a local scale using Rehabilitation Management Units (RMU's).

RMU's will enable specific, small, and practical areas to be prepared for hydromulching and then that area hydromulched with seed, fertiliser and tackifier. There is no specific mapping to show RMU's, nor is there a size limit or required shape. Rather RMU's will be decided as topsoil is spread and manageable areas to hydromulch become evident.

Each RMU will be identified with GPS and ground marks when the area is hydromulched or just prior to it being hydromulched. The RMU will form the basis of monitoring for revegetation, erosion etc.

See the Rehabilitation Monitoring Guide (**Attachment 1**) for information on the monitoring method to be applied.

The RMU Monitoring Sheet in **Attachment 2** will be used to record the location of the RMU, pictures of it, and other activities related to it including when the hydromulch was applied, weather conditions when applied and ongoing monitoring for vegetation establishment and growth, erosion etc.

### 3.3 REHABILITATION METHODS AND TECHNIQUES

#### 3.3.1 SURFACE PREPARATION

The surface of the worked material may be ripped/graded prior to subsoils (if necessary) and topsoil being spread over the prepared area. The reinstated topsoil will be scarified along the contour to reduce compaction prior to being spread with hydromulch containing fertiliser, soil wetter, tackifier and grass (may also include exotic herbs) seed. Scarification should be undertaken when the soil is moist but not wet, and no more than 3 days prior to hydromulching.

#### 3.3.2 AMELIORATION OF GROWING MEDIA

Sufficient topsoil and subsoils should be available to provide a minimum depth of 1m, which must include a minimum depth of 300mm of topsoil.

A soil testing program and results obtained from rehabilitation monitoring activities will be used to determine whether further soil amelioration is warranted to achieve a satisfactory vegetative cover. Some soils can have physical and chemical characteristics that may limit plant establishment and have a high potential for erosion.

Soils can be ameliorated with one or more of the following if required, and on the advice of a suitably qualified person:

- agricultural gypsum (i.e., to treat dispersion, calcium to magnesium ratio, and improve structure and water holding capacity); and
- fertiliser (e.g., fertiliser application is to be via the hydromulch product used).

#### 3.3.4 EROSION AND SEDIMENT CONTROL

Erosion control measures will be used to manage dispersive soils (if present), provide soil surface cover/stabilisation, and to minimise the risk of concentrating surface water flows.

##### EROSION CONTROL MEASURES

The establishment of a vegetative cover is the primary measure to mitigate the risk of soil erosion. The stabilisation and consolidation of soil by plant roots and the protection of the soil surface from wind and water erosion by standing vegetation are standard methods to prevent soil loss.

The use of a hydromulch machine (see **Plate 1**) and associated mix of seed, fertiliser and tackifier is a cost effective. In some cases, the use of an earth-based (clay) hydromulch-machine mix may be used without a seed present to stabilise the soil if seeding cannot occur within a few days of the topsoil being spread. There are several commercially available products for various situations depending on the weather/climatic conditions, soil type and objectives of the erosion control works.

**Plate 1. Hydromulch application unit and example application area**



Hydromulch unit on purpose-built trailer



Hydromulched area 2 weeks after the application of product (including seed, fertiliser and tackifier)

Erosion control works will also include but are not necessarily limited to the following measures:

- Amelioration of dispersive soils, if present, to minimise the risk of rill, gully, and tunnel erosion and to allow the infiltration of surface water (reduce the amount and velocity of surface water). Observations of the soil used to prepare the final surface, soil testing and observations of soil performance during the revegetation process will enable dispersive soils, if present, to be identified and managed;
- Contour scarification of compacted soil surfaces to encourage water infiltration and surface roughness prior to hydromulch application;
- general erosion mitigation and sediment capture measures applied in localised areas including swales and contour drains; and
- vehicle access will be restricted to designated tracks to minimise ground disturbance (e.g., erosion and/or compaction), excluding the hydromulch unit and vehicle towing it and a weed contractor who may need vehicular access to the area for weed spraying works.

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**SELECTION OF ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURE**

Additional erosion measures and sediment control structures that may be are outlined in **Attachment 7** of the *Stormwater Management Plan*.

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**3.3.5 SPECIES SELECTION AND PLANTING TIMES**

Species selection for the revegetation of the topsoil surface are described in **Table 3**.

**Table 3. Plant species name and lifeform for use in revegetation works**

| Common name | Species name | Life Form |
|-------------|--------------|-----------|
| TBC         |              | Grass     |
| TBC         |              | Grass     |

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**3.5.6 IRRIGATION**

Hydromulching should occur at a suitable time of the year (e.g., autumn to winter, and possibly early to mid-spring depending upon medium to long term rainfall forecasts) to enhance the likelihood of plant germination and survival without the need for watering. Notwithstanding this, some brief irrigation may be required to assist the germination of seed and supplementary plant growth during unforeseen dry periods. Even brief periods of irrigation may enable revegetation to survive long enough to become established, or the next rainfall event occur.

The use of RMU's to revegetate the site means that areas that require water may be small. Water can be sourced from the dam or other in-pit water source which can be distributed, for example through irrigation pipework and water spreaders.

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#### 3.5.7 LIVESTOCK MANAGEMENT

Livestock will be excluded from areas unless they are required for the management of established pastures.

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#### 3.5.8 VERMIN MANAGEMENT

To protect the revegetation while it becomes established there may need to be vermin control. Observations of grazing pressure and damage done to the revegetation over time will determine if a culling program is initiated, and its scale and longevity.

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#### 3.5.9 WEED AND PEST CONTROL

Weed management is to be conducted in accordance with the *Weed and Pathogen Management Plan* and include the following actions:

- areas will be inspected regularly for the presence of weed species;
- relevant personnel will be provided with pictures and descriptions of known weed species and asked to report incidental sightings;
- treatment of entire infestations where possible;
- re-treatment of recurring infestations at regular intervals;
- mapping of key weed infestations following monitoring to track progress and focus control activities where necessary; and
- prompt rehabilitation of land post disturbance.

Pest control actions will be undertaken with reference to the appropriate Code of Practice.

## SECTION 4 – MONITORING

The success or otherwise of the rehabilitation program will be tracked via monitoring of on-site outcomes, with a focus on the establishment of a non-erosive vegetated surfaces.

The monitoring will involve site inspections and surveys within each RMU. Photo monitoring points will also be established within each RMU to enable a visual assessment of changes over time.

Monitoring will be undertaken once the RMU has been hydromulched and then at weekly to monthly intervals subject to growth rates and growing conditions.

### 4.1 INSPECTIONS

Inspections of RMU's that don't include detailed quadrat-based monitoring will be undertaken weekly to monthly depending on the state of the revegetation noting the following:

- soil conditions and erosion (i.e., stability);
- drainage and sediment control structures;
- runoff water quality;
- plant germination levels;
- vegetation cover and health; and
- weed infestations.

The inspections will include observations, the taking of field notes and photographing of rehabilitation areas.

Outcomes of the rehabilitation inspections will be recorded and any required management actions that are identified as part of the inspection, are to be implemented within 2 months (subject to weather conditions and season, in which case they will be implemented as soon as practicable). Where necessary, rehabilitation and revegetation procedures will be amended accordingly. The results of the rehabilitation inspections will be compared with the rehabilitation objectives and performance indicators.

### 4.2 MONITORING

#### 4.2.1 VEGETATION CONDITION AND COVERAGE

Quadrat based surveys will typically assess and systematically record the following vegetation characteristics:

- species composition, plant coverage, and general health of the vegetation;
- occurrence and abundance of weed species;
- signs of disturbance, either by stock, feral or native animals or humans; and
- any observable impacts of the Quarry, such as the effectiveness of fencing and weed control actions.

A virtual quadrat is to be used because permanent plots are not necessary – the same location need not be specifically tracked through time, rather it is the trend across the RMU that is important.

Information on the data collected and how it should be collected is described in **Attachment 2**.

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#### 4.2.2 PHOTOPOINTS

Photopoint locations will be established to ensure an accurate photographic record of site works is made. Photos will be taken at photopoints during the life of the rehabilitation works to identify and assess changes observed.

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### 4.3 METEOROLOGICAL CONDITIONS

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#### 4.3.1 INTRODUCTION

Real-time measurements of meteorological conditions are taken to support environmental monitoring activities and to identify weather conditions which may trigger the need to modify operations.

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#### 4.3.2 MONITORING EQUIPMENT

A solar-powered weather station is to be installed and maintained at a yet to be determined location in the Quarry. This station will consist of solar panels, a weatherproof enclosure which contains a data logger (which reads the sensors) and power supply, and sensors which continuously measure:

- rainfall;
- wind speed and direction (measured at three metres above ground level);
- relative humidity;
- temperature; and
- solar radiation.

The station will be equipped with a digital cell phone kit which retrieves data from the logger and transmits it directly to a computer at the site office. Software is to be used for automatically downloading the data and to create monitoring programs e.g. for calculations of evaporation and temperature inversion. The equipment facilitates real-time monitoring of weather conditions.

## SECTION 5 – INCIDENT RESPONSES

The objective of this section is to describe procedures for responding to impacts identified by the monitoring program. Responding to identified incidents and associated impacts is the responsibility of the Quarry Manager.

### 5.1 POOR PERFORMANCE OR INCIDENT

Following the detection of the poor performance of rehabilitation or an incident (e.g. major erosion event) the following actions will be completed:

- a) The Quarry Manager will be notified.
- b) An investigation into the potential poor performance of rehabilitation/incident would be instigated, with the objective of identifying the following, where appropriate:
  - i. the date and time of the issue;
  - ii. the likely or known duration of the issue;
  - iii. whether the issue was directly related to operations within the Quarry or if any other factors contributed to the issue;
  - iv. the primary cause and any contributing factors;
  - v. whether appropriate controls were implemented to prevent the issue; and
  - vi. corrective and preventative measures that may be implemented to prevent a recurrence of the issue.

Following completion of the investigation, EAR will:

1. Provide a copy of the completed investigation report to the EPA.
2. Implement the corrective and preventative actions identified in the investigation report.

### 5.2 REMEDIAL WORKS

Active management will occur as required to address performance issues identified during monitoring. Specifically, remedial works and maintenance activities will be developed on a case-by-case basis in response to rehabilitation that is not performing.

Maintenance works may include for example the following activities:

- supplementary seeding of vegetated areas;
- application of soil ameliorants;
- more intensive weed and pest control;
- de-silting or repair of drainage structures;
- additional surface treatments to manage surface flows; and

- infilling, regrading, and revegetation of eroded areas.

### 5.3 COMPLAINTS

A complaints register is used at the Quarry to record complaints received from the public, or communicated to the Quarry Manager via the EPA, MRT, Council or other source.

Complainants will be contacted within 24 hours of notification to assess the nature of the complaint, take details and the complainant will be notified at that time of further action to be taken.

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## SECTION 6 – RECORDS, REPORTING AND REVIEW

### 6.1 RECORDS

Compliance and corrective actions taken to address any non-compliances with rehabilitation works and the outcomes will be managed, which includes the collection and keeping of records.

#### 6.1.1 SOIL TESTING

Details of any soil testing will be recorded, and those records retained for at least 5 years.

#### 6.1.2 REHABILITATION MONITORING

The results generated by rehabilitation monitoring activities will be stored at the office or other safe location at the Quarry and retained for at least 5 years.

### 6.2 REPORTING

#### 6.2.1 ANNUAL ENVIRONMENTAL REVIEW

Within 60 days of June 30 each year an Annual Environmental Review (AER) will be compiled reviewing the environmental performance of the development and will be made available to the EPA or member of the public on request.

Rehabilitation related matters that will be reported in the AER include the following as relevant for the year of reporting: -

- A summary of the outcomes of rehabilitation management for the period and that proposed for the following year.
- Any changes to rehabilitation methods and/or techniques that occurred as part of operations during the year or that are proposed for the following year.
- The outcomes of all monitoring described in Section 5; and
- A review of any incidents or complaints that relate to stormwater management and erosion/sediment control.

### 6.3 REVIEW

#### 6.3.1 CONTINUAL IMPROVEMENT

Opportunities for improvement of rehabilitation methods and outcomes will be discussed internally at toolbox meetings, in conjunction with all Quarry personnel. These opportunities would be presented to the Quarry Manager for consideration and any changes to operations as a result reported on as part of the Annual Environmental Review (AER) or, where relevant, reflected in an updated Plan.

In addition, general permit condition compliance, rehabilitation monitoring outcomes and the number of complaints would be used as an indication of the effectiveness of rehabilitation. This includes issues identified through the AER preparation.

Incidents (as defined in Section 6) would trigger a review of the rehabilitation management, where necessary.

---

### 6.3.2 PLAN REVIEW

The RMP is to be reviewed within 3 months of:

- the submission of an incident report;
- the submission of an Annual Environmental Review;
- the approval of any modification of the conditions of this approval (unless the conditions require otherwise); or
- the issue of a direction from the EPA which requires a review.

A review may be of short duration and not result in any change to the RMP, especially if there are no non-compliances, or incidents to report.

If necessary, to either improve the environmental performance of the project, cater for a modification, or comply with a direction, this RMP must be revised, to the satisfaction of the EPA and submitted to the Director for approval within six weeks of the review.

EAR will continue to apply existing management plans, strategies, or monitoring programs prior to the determination of a modification until the approval of a similar plan, strategy, or program.

SECTION 7 - ATTACHMENTS

ATTACHMENT 1 - MONITORING INFORMATION GUIDE

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## REHABILITATION MONITORING GUIDE

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### PURPOSE

This document contains images and descriptions of vegetation cover (also serves to show bare ground equivalent) and also how to establish and use a photopoint.

It is to be used in conjunction with the Rehabilitation Management Plan.

Data can be recorded on the **Rehabilitation Monitoring** datasheet.

### PHOTOPOINTS

A simple and consistent way to take photographs of your bush is to establish a 'photopoint site'. A 'photo point site' is a site from where a series of photographs are regularly taken.

### WHAT YOU WILL NEED

For each photo point site, you will need:

- two star droppers or other marker posts, at least 1.6 m tall.
- one labeling tag and numbering tool (or number the droppers before you go to the site).
- fine metal wire or a metal tie.
- a pair of pliers.
- a camera – a mobile phone camera could be sufficient if it is of high quality, such as an iPhone 11 or higher.
- a sledge hammer.
- a 10 m tape measure.
- a supply of 'Photo point information cards'.
- a pen or pencil, sticky tape and a white board marker pen.

### SETTING UP THE PHOTO POINT SITE

At the point from which you will take your photographs, hammer a dropper post into the ground so the top is close to eye level (1.4–1.6 m). This is the 'camera post'. The camera will be placed on top of this post when taking the photographs to ensure they are all taken from the same height.

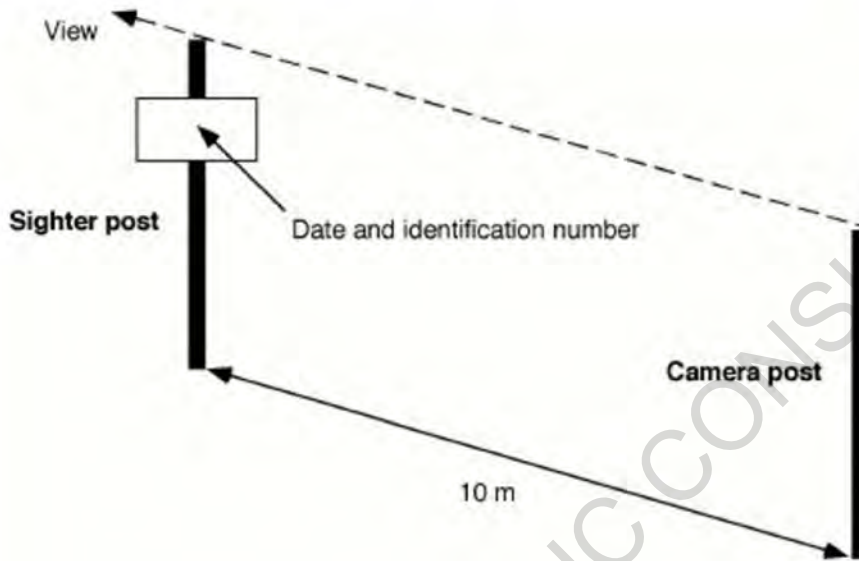
Record the height of the post on a 'Photo point information card' when you first take your photo in case it falls over and you need to hammer it back into the ground on your next visit.

Hammer in another dropper post 10 m from the camera post along the direct line of sight to the vegetation, landscape or feature being monitored. This is the 'sighter post'.

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Both posts should be secure and difficult to remove. If vandalism could be a problem at your site hammer small marker pegs or decking nails into the ground at the base of each post to make relocation possible should the post be removed. Recording the grid co-ordinates of each post with a geographic positioning system (GPS) and drawing a site map that accurately marks the location of both posts will also make relocation of the posts easier.

The layout of posts for each photo point site is shown below.



Wire a metal labelling tag with the relevant photo point site identification code (see below) to the camera post above where it may be grazed by stock or native animals.

### TAKING THE PHOTOGRAPH

Attach an A4-sized data board (eg small whiteboard or an A4 piece of paper) to the 'sighter post' about half way up its height. Write the date and photo point identification code on the data board.

The writing should be large enough to be readable on the developed photograph. When taking your photograph:

- Always use the same camera type
- Hold the camera on the 'camera post' and face the 'sighter post'. Focus the camera on the top of the 'sighter post'.
- Avoid getting any bright glare in the lens.
- Always take more than one shot to make sure you get at least one good photograph.

**VEGETATIVE COVER**

90% total cover



70% total cover



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LICENSING  
VEGETATION

40% total cover

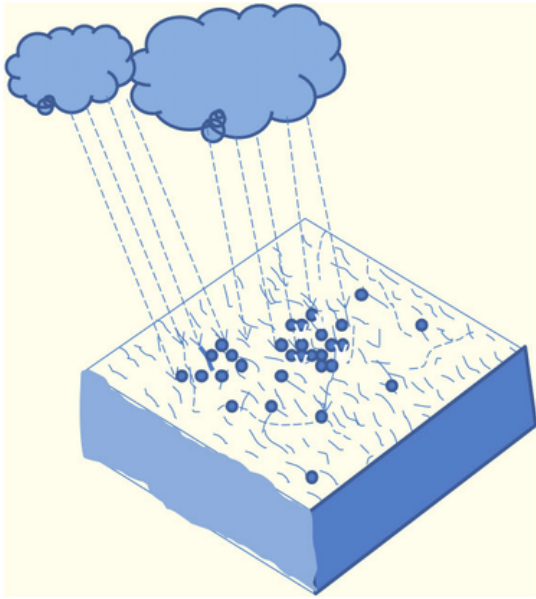


20% total cover

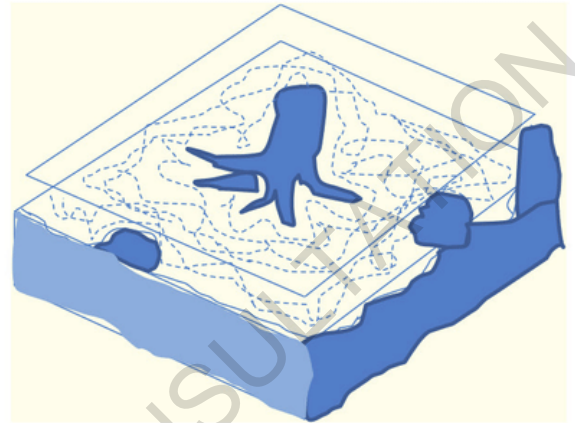


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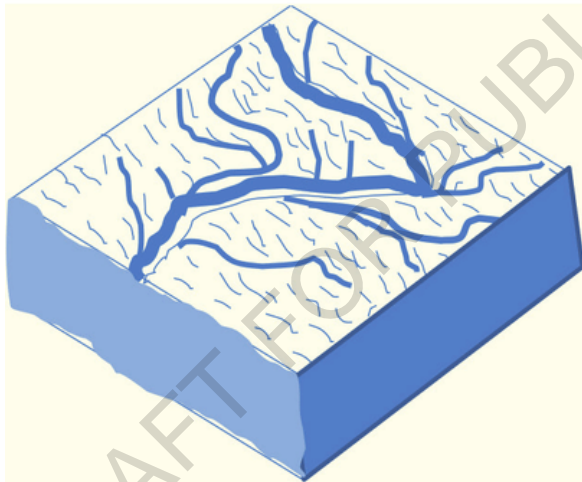
### EROSION CATEGORIES



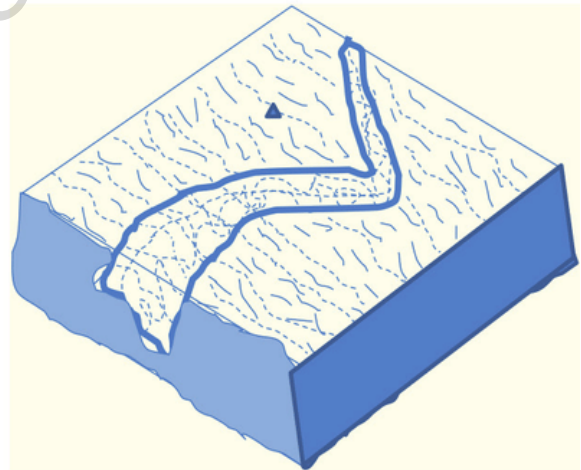
1. Splash Erosion



2. Sheet Erosion



3. Rill Erosion



4. Gully Erosion

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ATTACHMENT 2 - MONITORING RECORD SHEET

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## REHABILITATION MONITORING

|                                              |  |                                         |  |
|----------------------------------------------|--|-----------------------------------------|--|
| <b>Rehabilitation Management Unit Number</b> |  | <b>GPS coordinate for RMU</b>           |  |
| <b>Date assessed</b>                         |  | <b>Approximate area (square metres)</b> |  |
| <b>Assessor name(s)</b>                      |  | <b>Figure Number</b>                    |  |
| <b>Date topsoil completed</b>                |  | <b>Photopoints</b>                      |  |
| <b>Date hydromulched</b>                     |  | <b>Photo numbers</b>                    |  |

### VEGETATION COVER

| QUAD    | % DESIRABLE VEGETATION COVER | % WEED VEGETATION COVER | % BARE GROUND | % ROCK COVER | % OTHER |
|---------|------------------------------|-------------------------|---------------|--------------|---------|
| QUAD 1  |                              |                         |               |              |         |
| QUAD 2  |                              |                         |               |              |         |
| QUAD 3  |                              |                         |               |              |         |
| QUAD 4  |                              |                         |               |              |         |
| QUAD 5  |                              |                         |               |              |         |
| QUAD 6  |                              |                         |               |              |         |
| QUAD 7  |                              |                         |               |              |         |
| QUAD 8  |                              |                         |               |              |         |
| QUAD 9  |                              |                         |               |              |         |
| QUAD 10 |                              |                         |               |              |         |

|                        | QUAD 1 | QUAD 2 | QUAD 3 | QUAD 4 | QUAD 5 |
|------------------------|--------|--------|--------|--------|--------|
| Soil Compaction        |        |        |        |        |        |
| Erosion                |        |        |        |        |        |
| Animal Tracks - Exotic |        |        |        |        |        |
| Scats - Exotic         |        |        |        |        |        |
| Animal Tracks - Native |        |        |        |        |        |
| Scats – Native         |        |        |        |        |        |

|                        | QUAD 6 | QUAD 7 | QUAD 8 | QUAD 9 | QUAD 10 |
|------------------------|--------|--------|--------|--------|---------|
| Soil Compaction        |        |        |        |        |         |
| Erosion                |        |        |        |        |         |
| Animal Tracks - Exotic |        |        |        |        |         |
| Scats - Exotic         |        |        |        |        |         |
| Animal Tracks - Native |        |        |        |        |         |
| Scats – Native         |        |        |        |        |         |

| Score | Soil compaction                   |
|-------|-----------------------------------|
| 1     | None, very friable                |
| 2     | Slight compaction                 |
| 3     | Moderate compaction               |
| 4     | Severe compaction                 |
| 5     | Very severe compaction, like rock |

| Score | Erosion                                                                      |
|-------|------------------------------------------------------------------------------|
| 1     | None, very stable                                                            |
| 2     | Early signs of soil movement                                                 |
| 3     | Plant pedestalling starting to occur                                         |
| 4     | Evidence of plants/rock pedestalling and sheet/gully erosion up to 15cm deep |
| 5     | Sheet/gully erosion >15cm deep                                               |

| Score | Animal Tracks       | Animal Scats       |
|-------|---------------------|--------------------|
| 1     | No tracks evident   | No scats evident   |
| 2     | Some tracks evident | Some scats evident |
| 3     | Deep tracks evident | Many scats evident |