

Greencoast Environmental Rehabilitation

**CRESCENT HEAD ILMENITE STOCKPILE
REMEDICATION**

PROJECT EXECUTION PLAN (PEP)

**Prepared for:
The Directors of Greencoast Environmental Rehabilitation Pty Ltd**

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COMMERCIAL IN CONFIDENCE

CHANGE CONTROL SHEET

This sheet is to be completed by the document author.

Revision No.	Revision Date	Brief Outline of Change/s (Page, section, figure, table)	Approval Reference
A	30/10/18	First Issue	

REFERENCE DOCUMENTATION

External and Internal non-managed Documentation

	Number	Document Title
	1	An Assessment of Potential Radioactivity Associated with the Crescent Head Ilmenite Stockpile. Calytrix Consulting Pty Ltd. March 2018.
	2	Community Consultation Plan - Crescent Head Ilmenite Dump Rehabilitation. Greencoast Environmental Rehabilitation September 2017.
	3	Crescent Head Low Grade Ilmenite Stockpile - Greencoast Environmental Rehabilitation. JORC Reserve Statement.
	4	Crescent Head Ilmenite Stockpile Rehabilitation - Stockpile Geology. Bravo Resource Solutions 2018.
	5	Crescent Head Water and Sediment Management Plan. Bravo Resource Solutions. March 2018.
	6	Crescent Head Ilmenite Stockpile Rehabilitation - Noise Assessment. Bravo Resource Solutions.
	7	Crescent Head Ilmenite Stockpile Rehabilitation - Assessment of Likely Air Quality Impacts. Bravo Resource Solutions.
	8	Crescent Head Ilmenite Stockpile Rehabilitation - Haulage Route Traffic Impact Assessment. Streetwise Road Safety & Traffic Services Pty Ltd. February 2018
	9	Greencoast Environmental Rehabilitation - Crescent Head Stockpile Site Survey Report. Pandanus Solutions. February 2018.
	10	Greencoast Environmental Rehabilitation - Crescent Head Stockpile Rehabilitation Strategy. Pandanus Solutions. April 2018.

	11	Point Plomer Road Ilmenite Stockpile: Aboriginal Cultural Heritage Assessment. Everick Heritage Consultants. February 2018.
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Related managed Policies and Plans

	Number	Document Title	Previous Number(s)
[1	AS/NZS ISO 31000:2009	Risk Management - Principles and Guidelines	
2	AS 4970-2009	Protection of Trees on Development Sites	
3		Leading Practice Sustainable Development Program for the Mining Industry - Mine Rehabilitation, Commonwealth of Australia publications, DFAT (2016).	

Related managed Procedures and Instructions

	Number	Document Title	Previous Number(s)
[]			

Related managed Forms

	Number	Document Title	Previous Number(s)
[]	Nil		

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1. INTRODUCTION

1.1. Document Overview

The purpose of the Project Execution Plan (PEP) is to provide an overview of the activities and accountabilities required to meet the project objectives. The PEP is based on technical reports addressing the tonnage and ilmenite content of the stockpile as well as management of noise, dust, radiation, water/sediment, traffic, community consultation and aboriginal heritage.

1.2. Background

The project involves the relocation of an existing ilmenite stockpile near the township of Crescent Head to the Port of Newcastle via a depot in South Kempsey by Greencoast Environmental Rehabilitation (GER). The stockpile site is located on Crown Land on the eastern side of Point Plomer Road, on Lot 2281 Deposited Plan 1153793.

The stockpile covers an area of approximately two hectares on the site of a former mineral separation plant or ‘dry mill’ that ceased operation in 1985. Ilmenite is an iron-titanium mineral that was a common by-product of former mineral sand mining and processing operations along much of coastal NSW and Queensland.

The project is a short-term one-off project to remove former sand mining waste and does not involve the quarrying of any new material.

The ilmenite stockpile is devoid of topsoil and is almost entirely covered by weed species including Lantana (*Lantana camara*) and Bitou Bush (*Chrysanthemoides monilifera rotundata*). Following weed eradication and removal of the ilmenite stockpile to natural ground level, GER will reinstate native vegetation over the stockpile footprint.

2. SCOPE

Greencoast Environmental Rehabilitation (GER) is seeking approval under the NSW Mining Act 1992 to remove an existing low-grade ilmenite stockpile/dump located within GER’s Exploration License 8085 and remediate the dump footprint. The dump occupies an area of approximately two hectares.

The stockpile is located at the site of a former mineral separation plant or 'dry mill', located approximately one kilometre south of the township of Crescent Head, New South Wales, on the eastern side of Point Plomer Road, on Lot 2281 Deposited Plan 1153793.

As part of the planning approval process the proposed activity has been the subject of a Secretary's Environmental Assessment Requirements (SEARs) report (EAR Number 1180).

This activity is to be conducted through a phased approach as described in this PEP.

The project will be managed by a GER Project Manager. Reporting to the Project Manager are a Site Operations Manager, Community and Environmental Manager and a Logistics and Marketing Manager.

The key activities for this project are:

Phase 1: Approvals

Phase 2: Prepare stockpile for removal by grubbing and stripping to remove weeds and roots

Phase 3: Remove the stockpile to as close to natural ground level as practical

Phase 4: Reinstatement native vegetation and habitat over the former stockpile footprint

The proposed schedule is developed with the Effective Date (ED) starting once the Approval Phase (Phase 1) has been completed. It is accepted that the schedule may change once the Phase 1 has been completed.

The core management team will be established, at the earliest occasion, to develop and implement optimised business policies and procedures. This team will also oversee the key activities related to their functions.

It is estimated that the project will take twelve (12) months to complete.

3. PROJECT OBJECTIVES

General Objectives

- In a safe and environmentally sensitive manner, profitably complete the removal of the Ilmenite and other contaminants along with the remediation of the entire site within 12 months of entering into a contract.
- To exceed the expectations of all non-GER stakeholders during all phases of the project.

Specific Objectives

1. External Reporting

- Quarterly and Annual reports as required by the NSW Mining Act and its regulations.
- Submission of a Final Site Remediation Report to the NSW Mines Department.

2. Internal Reporting

- a) For each 7-day period provide a written Weekly Management Report detailing the progress made in the previous 7 days. As a minimum the Weekly Management Report will include the following sections:
 - i. Safety Performance
 - ii. Community and Environmental Performance
 - iii. Physical Production
 - iv. Schedule Performance (Using Earned Value Management System)
 - v. Cost Performance (Using Earned Value Management System)
 - vi. Quality Performance (Including any non-compliance reports)
 - vii. Human Resources

- b) For each Monthly period, provide a written Monthly Management Report detailing progress made in the previous month. As a minimum the Monthly Management Report will include the following sections:
 - i. Safety Performance
 - ii. Community and Environmental Performance
 - iii. Physical Production
 - iv. Schedule Performance (Including Schedule Status)
 - v. Cost Performance (Including an estimate at completion)
 - vi. Quality Performance (Including any non-compliance reports)
 - vii. Human Resources
 - viii. Financial Performance
 - ix. Sub-Contractor Administration

4. PROJECT STRUCTURE

The project will be managed by a GER Project Manager (PM). Reporting to the PM will be experienced contractors and consultants who will fill the operational management roles (Site Operations, Community and Environment, Logistics and Marketing). Figure 1 shows the main accountabilities of each of these three functions.

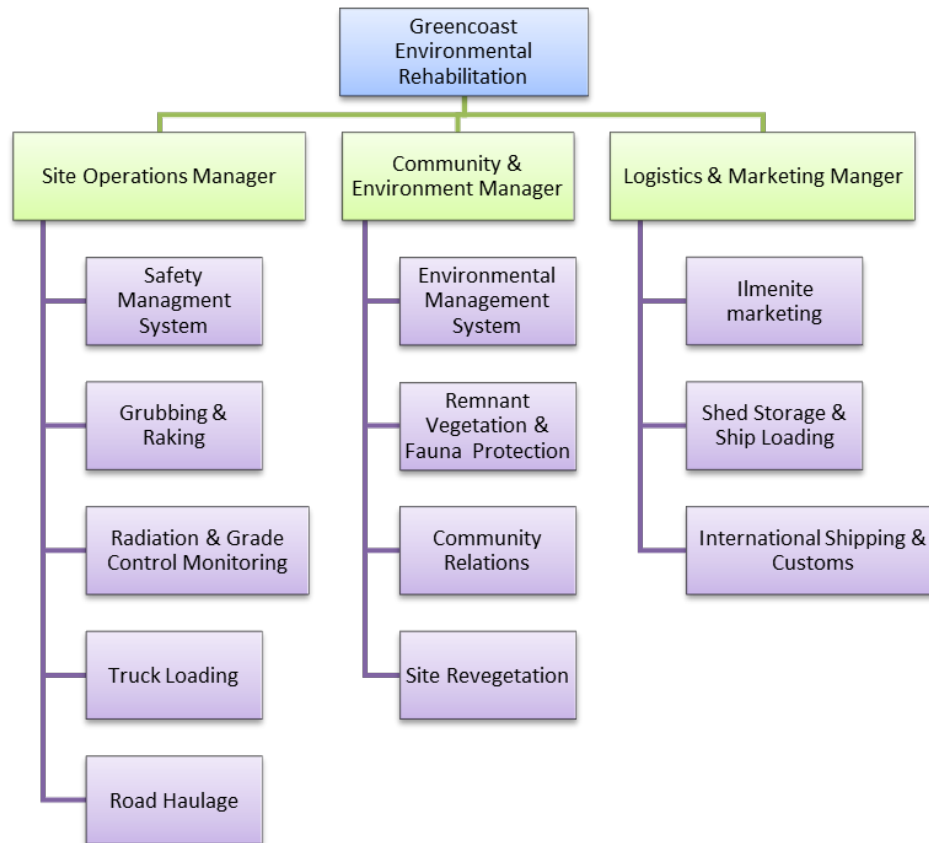


Figure 1 Project Organisational

Structure & Key Accountabilities

4.1. Site Operations Management

The Site Operations Manager is responsible for removal of the ilmenite stockpile and relocation via road to the port of Newcastle. The Site Operations Manager will provide weekly (summary) reports and submit monthly project reports to GER management. Weekly reports will cover at least the following topics:

- Safety, environment and community
- Production progress against schedule (tonnes and grade)
- Costs and Budget
- Risks and Opportunities

4.1.1. Grubbing and Raking

Prior to removal of the ilmenite stockpile the surface of the pile will be mechanically grubbed and raked to remove all weeds and roots. Weeds will be mulched and air-dried, followed by burial or transport to the Kempsey green waste facility. The entire stockpile surface will be thoroughly grubbed and raked over a period of three or four days. Working slowly and systematically from the northern end of the stockpile to the south plus the use of a dedicated faun spotter catcher will limit the risk to fauna.

4.1.2. Radiation Monitoring

During the stockpile removal phase the Site Operations Manager will ensure regular gamma radiation readings are taken so that overall gamma radiation levels in each loaded truck are no higher than 0.3 $\mu\text{Sv}/\text{hour}$. Any areas of the stockpile with radiation readings greater than 0.3 $\mu\text{Sv}/\text{hour}$ will be sign posted and blended with low-radiation material to produce a composite with a gamma count of less than 0.3 $\mu\text{Sv}/\text{hour}$.

4.1.3. Grade Control Monitoring

During the stockpile removal phase of the project the Site Operations Manager will ensure regular grade control measurements are taken using a hand held XRF. The XRF will be used to estimate the titanium and chromium content on the surface of the stockpile and in hand-auger holes drilled ahead of the excavator/loader. XRF readings will be used to produce a saleable ilmenite blend that meets customer specifications.

4.1.4. Truck Loading

Based on the results of radiation and grade control sampling the stockpile will be divided into grade blocks approximately 10m wide and 2m deep. Use of survey markers graduated at 0.2m intervals and installed in hand auger holes will allow the excavator or loader operator to know the depth to natural ground surface and allow the operator to control bench heights and batter the working face back to a safe angle (See Figure 2 and 3). This method reduces the potential for unstable faces and over digging. Reclaiming the stockpile from the North to South will also provide an ongoing noise barrier.

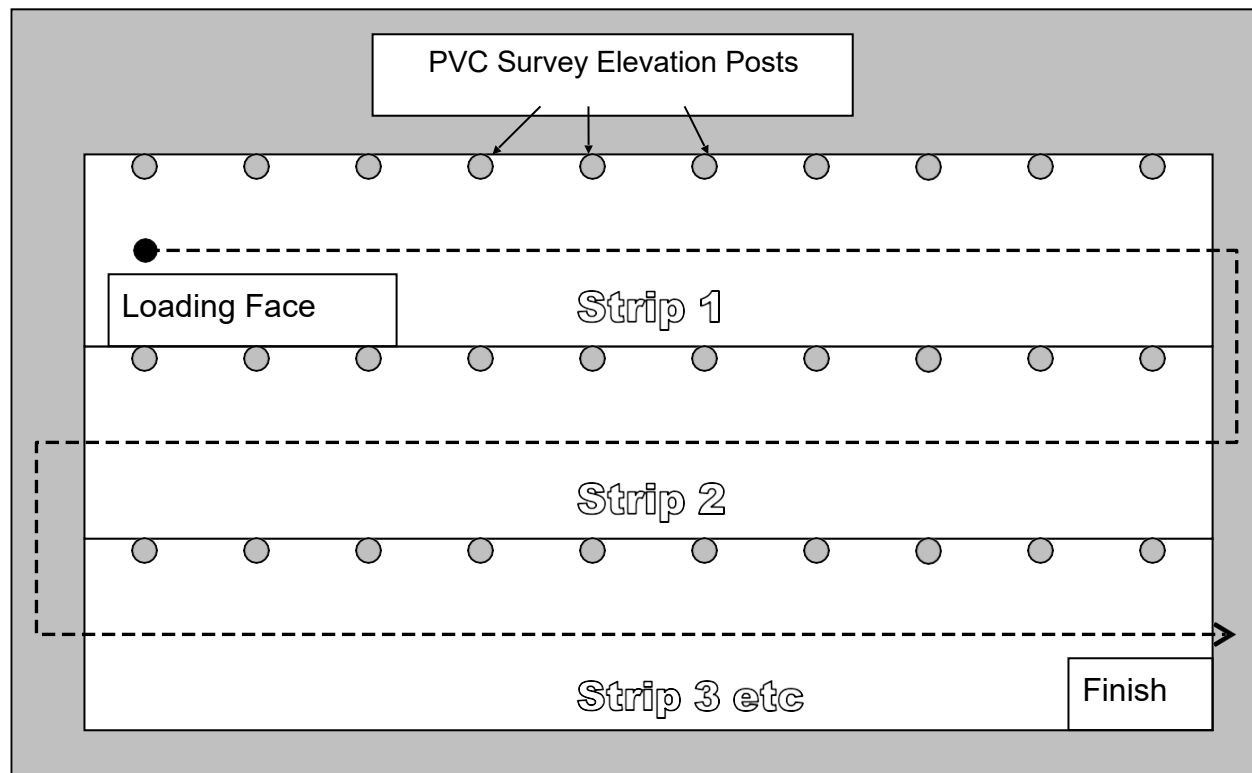


Figure 2. Schematic plan of GER proposed excavation and load sequence designed to minimise over-digging leading to potentially unstable face angles and unnecessary environmental disturbance.

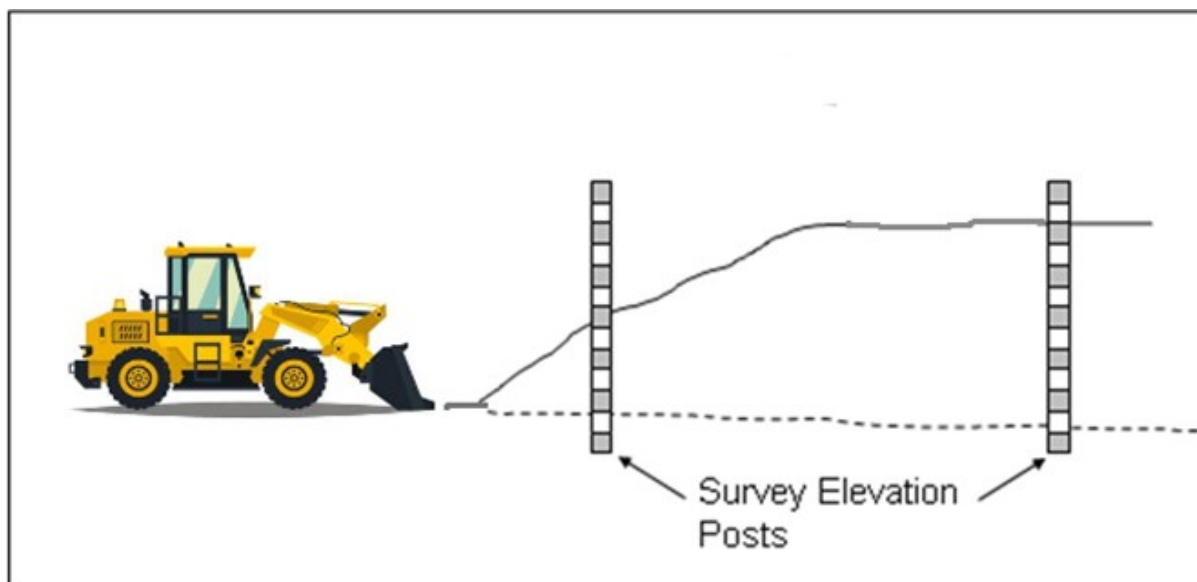


Figure 3. Schematic cross section of ilmenite stockpile showing GER proposed excavation and load arrangement with survey elevation posts used to control dig depth to natural ground surface.

4.1.5. Solid Waste

Solid waste encountered during the stockpile remediation works will be placed in a designated area and taken periodically to the Waste Management Centre for

recycling and disposal. Solid waste may include timber, steel, concrete and plastic dumped during former mineral processing operations. Kempsey Shire Council operates a Waste Management Centre on Crescent Head Road, which is set up to take household, commercial, industrial, building and demolition waste.

4.1.6. Road Haulage

47,500 m³ of ilmenite will be relocated from the current site at Plomer Road, Crescent via South Kempsey and onto the Pacific Highway to port facilities at either Newcastle or Brisbane. The haulage will be undertaken via truck & dog trailers with an average load of 30m³ per trip - a total of 3,650 laden trips. The haulage contractor will provide three truck and dogs per day resulting in 20 laden trips a day on weekdays only - or a maximum of 100 laden trips per week. This equates to an average of two laden trips per hour. At an average of 20 laden trips per day for five days a week, the relocation of the 47,500m³ of ilmenite from Crescent Head will take approximately 36 weeks.

4.1.7. Site Security

The existing single entrance to the site off Point Plomer Road will be fitted with a lockable gate that will remain locked at all times, except to allow authorised access. High visibility Restricted Area Access signage will be placed at the gate and at 50m intervals along the site boundary with Point Plomer Road. Access to the work site will be restricted to personnel who have completed a site induction and hold a SafeWork NSW White Card (CIC). A temporary barrier will be installed to limit access to site operations. Depending on the identified risk, this barrier may take the form of temporary fencing, portable traffic barriers or in already inaccessible heavily vegetated areas, barrier tape and signage. A trailer mounted mobile toilet and hand disinfectant gel will be available on site. Rubbish will not be left on site.

4.1.8. Refuelling

Refuelling of contractor vehicles and equipment is to be conducted off-site as much as possible, including all refuelling of road-registered vehicles such as trucks and light vehicles. The loader/excavator will be refuelled on the existing concrete hard stand (former MDL plant foundations) using a small light vehicle refuelling trailer. A hydrocarbon spill kit will be located at the hard stand during refuelling of the loader/excavator.

4.1.9. Aboriginal Cultural Heritage

In the unlikely event any artefacts of other items of potential Aboriginal significance are uncovered during the stockpile removal, the Site Operations Manager is responsible for immediately halting work in the area, taping the area off with danger tape, and contacting GER management. GER management will liaise with the Kempsey Aboriginal Land Council to arrange an assessment.

4.2. Environmental Management

The Community and Environment Manager is responsible for protecting remnant vegetation and fauna, community relations and final site revegetation and rehabilitation. The Community and Environment Manager will provide weekly (summary) reports and submit monthly project reports to GER management. Weekly reports will cover at least the following topics:

- Safety
- Community issues
- Revegetation & rehabilitation progress against schedule
- Costs and Budget
- Risks and Opportunities

4.2.1. Remnant Native Vegetation

Remnant native vegetation in and around the stockpile edge will not be disturbed during stockpile removal. The Community & Environment Manager is responsible for clearly flagging exclusion zones around remnant native vegetation in accordance with AS 4970-2009 (Protection of trees on development sites), and ensuring the loader/excavator operator understands the exclusion zones and which trees are to be retained. Key habitat trees are described in the Crescent Head Stockpile Site Survey Report (Pandanus Solutions. February 2018).



Figure 4 Approximate ilmenite stockpile boundary shown in yellow. Area to be grubbed and raked shown in blue. Remnant native vegetation outside the blue area shall be marked with flagging tape and remain undisturbed during relocation of the stockpile

4.2.2. Fauna

The Environment & Community Manager will ensure a qualified spotter-catcher is in attendance during the grubbing and raking of the stockpile surface to remove weeds and roots. Any native fauna encountered during this phase of the operation will be caught and released outside the stockpile boundary. In event that native fauna is injured the NSW Information, Rescue and Education Service (WIRES) will be contacted for assistance.

4.2.3. Final Landform

Once the stockpile is removed down to natural ground level the Environment & Community Manager will ensure that the final landform is gently undulating and that contouring/reshaping is undertaken, if required, to reduce any slopes within the removed stockpile footprint to below 5%.

4.2.4. Revegetation

Once the stockpile is removed the site will be rehabilitated. The Environment & Community Manager is responsible for implementing the site rehabilitation program in accordance with the Crescent Head Stockpile Rehabilitation Strategy (Pandanus Solutions. April 2018).

4.3. Logistics and Marketing

The Logistics and Marketing Manager will find a customer(s) for the ilmenite, and will be responsible for the ilmenite product from when it arrives at the port of Newcastle to the customer's port.

4.3.1. Ilmenite Marketing

The Logistics and Marketing Manager is responsible for obtaining the most competitive sale price for the ilmenite stockpile as a whole from potential customers.

4.3.2. Shed Storage and Ship Loading

Ilmenite will be trucked to the Port of Newcastle (or Brisbane) and stored in a port loading shed facilities. The ilmenite will be loaded with a concentrate ship loader with design throughput equivalent of 1,200 tph (eg Dyke 2 Berth, Newcastle Port) and shipped to the customer port.

4.3.3. International Shipping and Customs

The Logistics and Marketing Manager will obtain the most competitive international shipping rates for GER to the customer port, and liaise with the shipping agent to obtain all necessary documents to commence loading/unloading operations customs clearances, Import/export permits etc.

5. PROJECT MILESTONES

The project scope includes four phases:

- Phase 1: Approvals
- Phase 2: Prepare stockpile for removal by grubbing and stripping to remove weeds and roots
- Phase 3: Remove the stockpile to as close to natural ground level as practical
- Phase 4: Reinststate native vegetation and habitat over the former stockpile footprint

Phase 1 will include Development consent from Kempsey Council through the Environmental Impact Statement (EIS), and a Mining Lease granted under NSW Mining Act (1992). The Project has three distinct stages. These are outlined below.

6. PROJECT COMMUNICATION / PUBLIC RELATIONS

To ensure the Project's success a Project Communication Plan has been developed (Community Consultation Plan - Crescent Head Ilmenite Dump Rehabilitation. Greencoast Environmental Rehabilitation September 2017).

The purpose of the project communication plan is to provide consistent and timely information to all project stakeholders. This plan will assist the project team in building an effective communication strategy to enhance communication throughout the project's delivery, both internally and externally.

The plan has been developed using the following process.

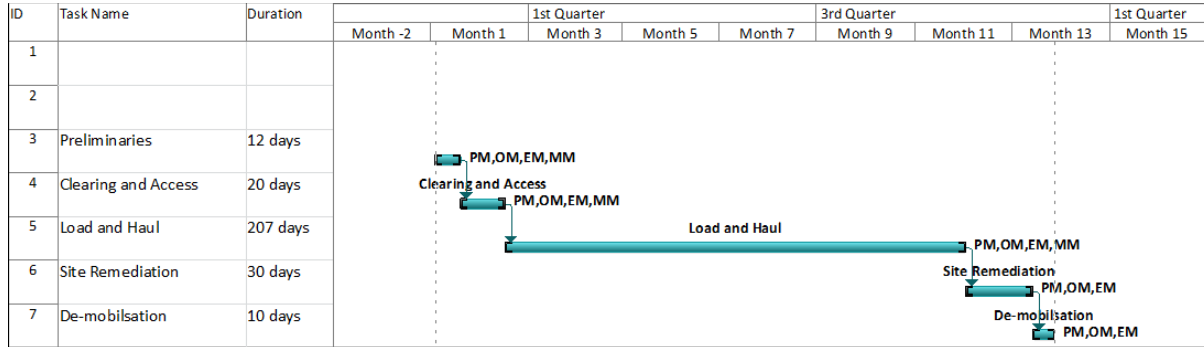
1. Identify relevant stakeholders
2. Identify the project team members
3. Identify stakeholder information requirements
4. Determine report frequency
5. Establish method of information distribution
6. Document the Communication Plan
7. Implement and monitor the Communication Plan

External (Public Relations) outputs from the Communication plan are:

- Site Open day. A site open day will be held to allow neighbours and relevant stakeholders to visit the site and learn more about the Project and the final planned remediation.
- Information Notices. Regular information notices will be published in the local media informing the public about the Project and its progress.
- Signage. Suitable signs will be erected on the perimeter of the Project site informing the public of The Project and its details.

7. PROJECT SCHEDULE

7.1. Schedule



8. RESOURCE ALLOCATION

<u>Resource</u>	<u>Abbreviation</u>
Project Manager	PM
Site Operations Manager	OM
Environmental Manager	EM
Logistics and Marketing Manager	MM

Resources	Task	Effort (Man Days)	Start Date	Finish Date
PM,OM,EM,MM	Preliminaries	12	ED - 30	ED
PM,OM,EM,MM	Clearing and Access	20	ED+30	ED+54
PM,OM,EM,MM	Load and Haul	207	ED+54	ED+350
PM,OM,EM,	Site Remediation	30	ED+330	ED+365
PM,OM,EM,	De-mobilisation	10	ED+330	ED+365

Note: ED refers to Effective Date. In this case the effective date is the granting of the Mining Lease and all approvals.

9. CONTROL SYSTEMS

9.1. Management Control System

9.1.1. Project Execution Plan

The PEP will be used as the base control document for the Project. The Project Budget and Master Schedule form part of the PEP.

9.1.2. Monthly Plan

Monthly production data contained within the Project Budget and Master Schedule will be utilised to develop a rolling monthly plan. This plan will be presented at a Monthly Planning meeting to be held on the last Thursday of each month.

This Monthly Planning meeting will also be used to review the previous month's production against the Project Budget and Master Schedule. The PM, OM, EM and MM are all expected to attend this meeting.

9.1.3. Weekly Plan

Weekly data contained within the Monthly Plan will be utilised to develop a Weekly Plan. This plan will be presented at a Weekly Planning meeting to be held every Wednesday morning onsite.

This Weekly Planning meeting will also be used to review the previous week's production against the Monthly plan. The PM and OM expected to attend this meeting.

9.1.4. Daily Plan

Daily data contained within the Weekly Plan will be utilised to develop a Daily Plan. This plan will be presented at a Daily Planning meeting to be held every morning onsite.

This Daily Planning meeting will also be used to review the previous day's production against the Weekly plan. OM is expected to manage this meeting.

9.1.5. Short Interval Control

The measure of daily production against plan will be used as the key Short Interval Control.

10. ASSUMPTIONS, RISKS AND EXCLUSIONS

10.1. ASSUMPTIONS

The following assumptions have been made for the development of this project execution plan:

- i. Project is a serial phased project. That is - phases will not commence unless the previous phase has been authorised.
- ii. Funding is approved for the project.
- iii. Site contamination due to previous mining activity only.
- iv. Site restoration to a level that would allow the site to be returned to its natural state.

10.2. RISKS

- i. Agreed hours and days of work may be reduced due to external party requirements (Community wishes etc). This risk can be significantly minimised by regular consultation with community leaders.
- ii. Increase in value of the \$A. An option available for controlling this risk is to sign contracts in Australian Dollars. This will be a possible subject of future sales negotiations.

11. GLOSSARY

The following terms are referenced in this proposal.

Table 1 - Glossary

Term	Definition
GER	Greencoast Environmental Rehabilitation Pty Ltd
PEP	Project Execution Plan