EcOz Environmental Services

WesternDesert RESOURCES

Draft EIS - Appendix P Rehabilitation and Closure Plan

Western Desert Resources Limited
Roper Bar Iron Ore Project



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1 Introduction

Western Desert Resources Ltd (WDRL) is seeking approval to mine the Direct Shipping Ore (DSO) portion of the Roper Bar Iron Ore Project. The DSO resource is a proportionally small iron ore resource but allows for several years of production and income, so as to determine and seek approvals for the potentially larger scale project. As the DSO portion has an expected life of less than 10 years, it is to be expected that planning for rehabilitation will be undertaken in the early stages of project development and developed in the context of the overall site closure objectives. WDRL also commits to development of a comprehensive Mine Closure Plan with updated rehabilitation commitments two years before expected mine closure to enable capture of the latest thinking and the best mine management practice at that time.

Although this plan is a preliminary approach and compiled prior to the approval and development of the project, it is focussed on:

- Ensuring that the rehabilitation and closure program is integrated into the mine plan and considered as part of the mining operation, rather than as a separate phase at the end of mine life;
- Identifying the company's and stakeholders closure desires;
- Understanding the issues that will require management to ensure effective closure planning;
- Ensuring that the currently available information be prepared and presented, so that it can be utilised in the planning phases; and
- Identifying the types of information that will need to be gathered during the early stages of the project that will feed into the rehabilitation and closure plans.

The terms decommissioning, rehabilitation and closure are often used in combination, which may lead to confusion. For the purposes of this plan, ***decommissioning*** is defined as the removal of plant, equipment, structures, hardstand and concrete footings, buildings, water storages and any other infrastructure associated with the project. WDRL plan to decommission the site by removing all infrastructure, unless it is specifically requested to remain on site by relevant stakeholders. Removal of infrastructure implies the physical removal of equipment and materials not requested to remain in place, and processes to achieve this outcome will be identified as needed. However, the rehabilitation and security deposit will need to have an adequate provision for this in the case of an unplanned cessation of the project.

This document outlines the proposed rehabilitation and closure for the site. For the purposes of this plan, ***rehabilitation*** is defined as the process of returning the land disturbed by any aspect of the project to its pre-disturbance condition, or as close as is reasonably possible, and suitable for use by Traditional Owners and as habitat for flora and fauna. ***Closure*** encompasses rehabilitation and includes the management and monitoring of rehabilitation and provides a pathway towards the eventual relinquishment of the site.

It is intended that as much rehabilitation as possible will be undertaken progressively during the life of the mine. This will allow rehabilitation methods to be tested, refined and adapted to suit a successful method for final rehabilitation.

1.1 Project Overview

The proposed layout of the mining lease areas of the project are presented in Figure 1. This initial Rehabilitation and Closure Plan (RCP) is submitted as an appendix to the project EIS, and the information summarised in this project overview is analysed in detail elsewhere. Once the RCP becomes a stand-alone document for use throughout the life of the project, it will include an increased level of information, so that new employees and stakeholders gain a full understanding of the project history, components and environmental and social policies and compliances.

WDRL hold Exploration Leases (ELs) and currently have five Mineral Lease Applications (MLAs) lodged with the Northern Territory Government. The leases are in the Roper Bar Region of the Northern Territory, south of the township of Ngukurr. The project falls with vacant crown land NT portion 0819.

WDRL has identified a number of deposits within the MLAs and hopes to commence mining these resources once approvals are granted.

The Project infrastructure and development comprises:

- Open pit mining of Iron Ore reserves with a return to pit of most wastes;
- Some Waste and/or Overburden rock stockpiles;
- A low grade ore stockpile;
- Haul roads and Light Vehicle (LV) access roads;
- Run Of Mine (ROM) pad;
- Crushing;
- Ancillary Infrastructure (workshop , administration office);
- Water management and water storage infrastructure;
- Camp Facility;
- Airstrip; and
- Infrastructure and transport for the shipping of iron ore from the Gulf of Carpentaria.

There are various ore bodies within the site. Initial mining is proposed to be from MLA 28264, which contains a number of deposits including the high grade areas F and E East. Area E South features an estimated 65 Mt of mineable resource, resulting in an expected mine life for this ML of approximately 9 years.

The ore body is shallow, mostly surface outcropping and often linear, resulting in a mining pit design that will evolve as the mining activities progress along the deposit.

The deposit is expected to be mined in sections so that as much as practicable the top soils and rock wastes can be returned to the depleted pits and progressive rehabilitation can occur. Generally disturbed areas will be rehabilitated as follows:

- **Top soils** – will be carefully removed and stored as these materials will provide optimum revegetation conditions by being natural seed and nutrient banks minimising the need for direct revegetation.
- **Open Pits** - where pit design is amenable, conventional truck and shovel open cut mining methods and surface mining machines are expected to be used allowing open pits to be progressively backfilled with waste rock during mining. These areas will be contoured to be blended with the surrounding environment and covered with stored top soil allowing direct seed revegetation with native species. Some pits will not be backfilled post mining; therefore rehabilitation of these areas will focus on geotechnical and geochemical stabilisation of the remaining landform and the ability of the area to become self-sustaining and ensure public safety.
- **Waste Rock Dumps** – waste rock dumps (WRD) will remain at the completion of mining and these will be contoured and covered with stored topsoils allowing direct seed revegetation with native species. However, as outlined in Appendix K, where potential acid forming (PAF) materials are encapsulated onerous engineered WRD will be structured and this will include cover, drainage systems for surface water containment, and seepage collection. To significantly reduce disturbance areas, the WRD are designed to a maximum average height of 30m above the natural ground level. This is an appropriate compromise between disturbance area and visual/landscape impact. Thus, where possible, the landform of these storages will be blended to the natural regional landscape.
- **Infrastructure Areas** – it is the intention that mine infrastructure will preferentially be provided to Traditional Landowners and interested stakeholders. However, infrastructure not required or not wanted to remain on site will be removed. Any affected and/or contaminated areas will be

remediated, revegetated with native species and where possible blended to the surrounding natural landscape.

- **Stream realignment** - naturally the area proposed for mining is periodically flooded. Proposed Pit F West footprint is expected to affect natural surface upstream flow patterns of the Towns River. To address this issue, WDRL is proposing the implementation of a realignment of the concerned river. This will initially include flooding of Pit F West once resources are recovered. Inflow and outflow areas to/from the pit will be fully engineered to prevent erosion of the original pit structural features. It is also expected that during mining the proposed fluvial characteristic will maintain the overall integrity of the River System upstream and downstream. The investigated measures and geotechnical designs are also instigated to perform at closure and rehabilitation stages. Moreover, during mining WDRL is committing to:
  - Implement embankments and fencing around the flooded West Pit to ensure public safety;
  - Implement monitoring systems to prevent extreme erosion processes of the pit and realignment channels;
  - Implement investigations to evaluate whether there are effects on the sustainability and quality of surface and ground waters as a result of the River realignment. These will be coupled to well thought-out remediation measures;
  - Implement monitoring and remediation systems to prevent any degradation of water quality resulting from the Towns River realignment; and
  - Implement modelling approaches to:
    - Investigate short term quantity and quality effects of the River system resulting from the realignment; and
    - Investigations to include a review, assessment and remediation of the hydrological, hydrogeological, hydrogeochemical and ecological behaviour of the Towns River and surrounding environment.

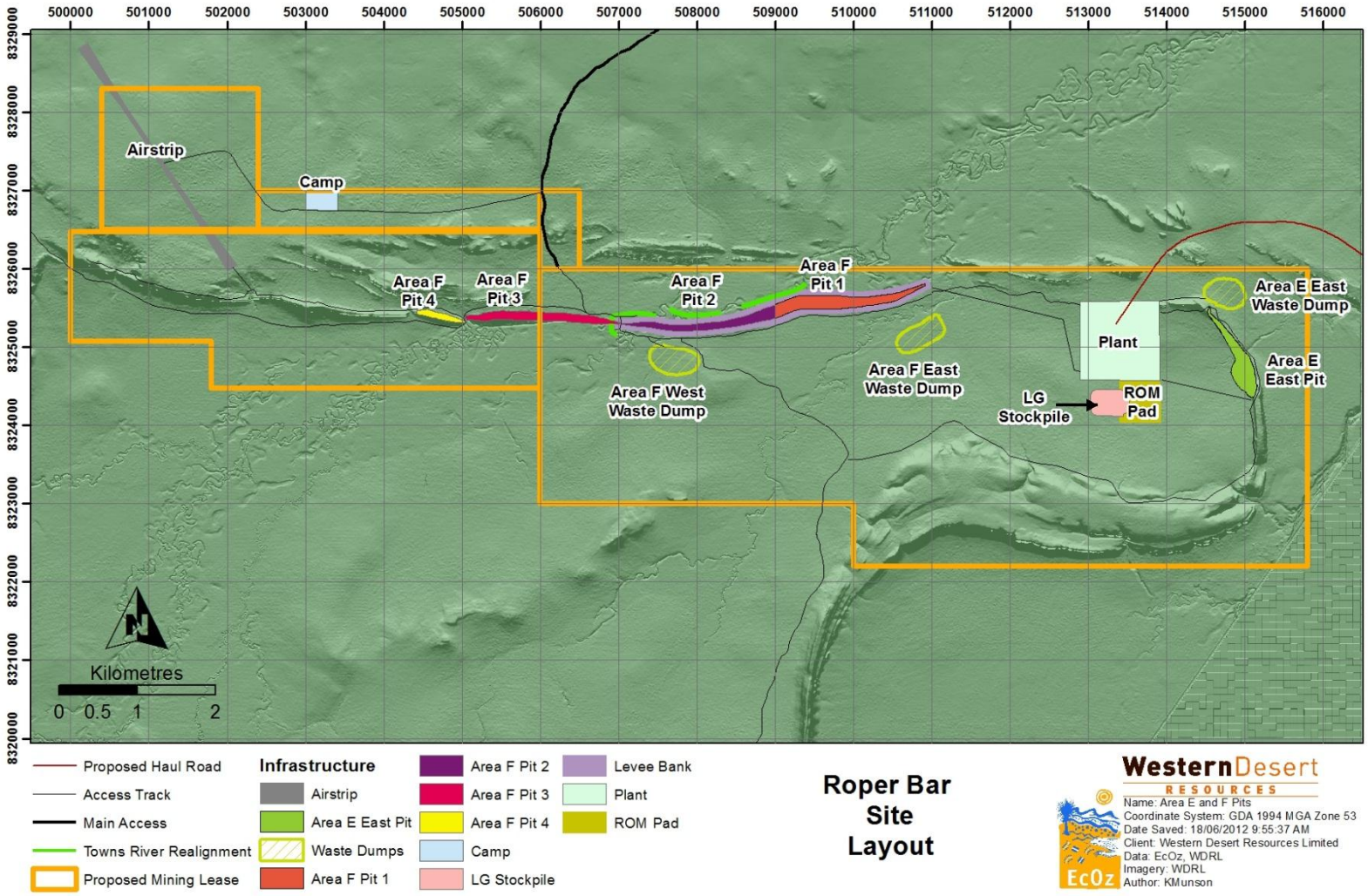


Figure 1: Layout of the Mining Area Disturbance areas.

1.2 Regulatory Requirements

A Draft RCP is a requirement of the project EIS as identified in the EIS Guidelines, to inform the regulatory bodies that rehabilitation and closure are being considered and accounted for during the project development stage.

The *Mining Management Act 2001,* administered by the NT Department of Resources (DoR), is the main statute under which mining operations are regulated in the Northern Territory. Under the *Mining Management Act,* a Mining Management Plan (MMP) is to be submitted with an application for an authorisation and must include details on all aspects of the projects operations, including a plan and costing of closure activities.

The *Mining Management Act* also requires that operators of Mining interests submit 100% of the security calculated for rehabilitation and closure. This prerequisite is the highest level of security required by any jurisdiction in Australia and provides the regulators and stakeholders with confidence that the site can be successfully closed, irrespective of the financial or other condition of the operator.

1.3 Company Obligations and Commitments

Best-practice management of the environment and minimisation of environmental impacts are embedded within the corporate philosophy of WDRL. This is required to be demonstrated and therefore WDRL have identified that physical and financial resources will be provided to assist rehabilitation and closure, and the planning and studying of these activities from the beginning of operations.

Rehabilitation and closure is identified as a key risk for the sustainability of the project and therefore a key component of closure planning is the assessment of closure-related risks. This needs to occur throughout the life of the operation, along with the development of a system to deliver the Project to closure with minimal risk.

Along with the project MMP, the RCP will be subject to adaptive management through annual review and updating, including a review of assumptions and cost estimates, to address any changes in circumstances such as changes in mining schedules, legal requirements, new technologies, the local environmental and the community expectations. These reviews will be performed by appropriately experienced and competent persons, including external experts.

WDRL intend to develop, monitor and react to a life-of-project Social Impact Assessment, which will allow for the ongoing engagement of stakeholders with respect to their rehabilitation and closure expectations. This will also allow for potentially greater or more relevant community outcomes under the 'quadruple bottom line' principle, whereby environmental, economic, social and cultural aspects are accounted for in planning and implementation. This might include the use of local people and suppliers, as well as the installation of landforms that are socially and culturally appropriate for the intended future land uses.

1.3.1 Goals of this Plan

In accordance with the document *Leading Practice Sustainable Development in Mining – Mine Rehabilitation* (DITR 2006), the key message and goals associated with this Rehabilitation and Closure Planning document include:

- The development of a rehabilitation plan during the planning phase which will evolve as results from research and on-site trials become available;
- Ensuring early characterisation of the materials to be rehabilitated to identify potential issues in time for them to be resolved;
- The understanding of the environmental factors which have the potential to constrain rehabilitation success; and
- The setting of realistic rehabilitation objectives.

2 Rehabilitation Plan

2.1 Rehabilitation Strategy

WDRL maintains a strategy to ensure that rehabilitation will be sustainable. Where operationally practicable, rehabilitation will be performed as soon as possible after disturbance, and this progressive rehabilitation will help inform and refine ongoing selected rehabilitation processes and closure plans. To ensure this strategy can be achieved, financial provision for rehabilitation and closure will be reviewed annually, as will ongoing consultation with stakeholders about post-mining land use objectives. Additionally, WDRL is investigating the implementation of an analogue area to which implemented rehabilitation processes will be compared and measured to.

Early investigations and observations will improve short to long-term planning to reflect knowledge as it currently stands, with the understanding that further research and investigation is essential in order to develop an appropriate rehabilitation strategy for this project. Through these innovative and adaptive management processes the RCP will be continually updated (provisionally on an annual basis) according to new information and results of research.

2.2 Rehabilitation Objectives

The main objectives of the WDRL rehabilitation program are to:

- Plan the placement of soil and waste materials in a strategic manner to facilitate progressive rehabilitation and to minimise material handling costs.
- Conduct studies that will enable effective techniques to be implemented when carrying out rehabilitation.
- Develop a clear set of indicators that will demonstrate successful rehabilitation.
- Carry out rehabilitation works that will, at the completion of the mining project, result in a stable, self-sustaining vegetated landscape having minimal impact on the surrounding environment. The analogue area will provide key natural parameters to achieve these objectives.
- Create a landform with a land use capability as similar to that prior to disturbance, unless other appropriate land uses are pre-determined and agreed; and
- Carry out construction and rehabilitation works that will, at the completion of the mining project, result in stable landforms with drainage systems having minimal impact on the surrounding environment.

The overall objective of WDRL, in line with views expressed during stakeholder consultation, is to create a stable final landform, returning as much of the Project area as practicable to a similar landscape and ecosystem to what was the pre-mining land use. The rehabilitation strategy will remain flexible and will be amended as new rehabilitation techniques and environmental investigations progress.

2.3 Rehabilitation Planning

Conventional truck and shovel open cut mining methods is referred to be appropriate and expected to be used during the first phase of the proposed mining operations. Accordingly, the initial stages of the project will require there to be some soil, overburden and waste material storages.

Initial planning will focus on the prevention of any contamination leaving the mine footprint to the wider environment and rehabilitation of waste dumps to minimise any effects on the surrounding environment. Principally, these will encompass;

- Contamination identification, containment and remediation to prevent mining development effects on the surface and ground waters;
- Adequate design and construction of mine waste landforms that are geotechnically, physically and geochemically stable; and
- Altered landforms are contoured and where feasible immediately remediated.

Suitable key processes are;

- Implementation of environmental monitoring and reporting programs focusing in preventing wider site disturbances so as to achieve closure outcomes in short periods of time;
- Implementation of risk management processes to identify and develop processes to deal with potential problems in a timely, cost-effective and efficient manner;
- Implementation of long term monitoring and maintenance to reduce residual risks through design, remodelling, landform reshaping and remediation; and
- Implement processes for stakeholders involvement so rehabilitation and closure practice and commitments:
    - Meet their perceptions of a suitable end land use of the project area;
    - Incorporate their requirements; and
    - Keep informed of the achievements of ongoing mine rehabilitation processes towards closure.

2.3.1 Scheduling

Aside of the commitments made elsewhere, early in the mine life and once resource extraction has commenced, WDRL plans:

- To stockpile and segregate topsoil and subsoil;
- To flood Pit F West so this forms part of the Towns River realignment program;
- To return wastes into the mined, and other future mined, out pits, so as to reduce the overall impact area and minimise potential short and long-term management issues associated with the creation of pit voids and above ground waste dumps; and
- To construct above ground waste rock dumps with approximate average heights of 30m.

Although these are processes that will arise together to the development of pits, continual research will be conducted to better understand the specific site requirements that will lead to successful rehabilitation. Further activities that WDRL is proposing as part of the overall rehabilitation program, includes:

- Within two years of commencement of mining, WDRL will submit a more detailed RCP for review and approval by the consent authority;
- Within four years of completion of mining and intended mine closure further updates will be incorporated based on the previous year's rehabilitation and outcomes and will again be submitted to the consent authority for review and approval; and
- The RCP will be subjected to continual adaptive management to ensure the latest thinking and best rehabilitation and mine management practice is being considered and incorporated.

2.3.2 Rehabilitation Zones

As indicated in Section 3.2.1 and elsewhere, WDRL is proposing to progressively rehabilitate any occurring disturbances. For this purpose, the site can be separated into identifiable zones for rehabilitation:

- Flooding of the Pit F West as component of the Towns River realignment;
- Infill of the first available mined out pit;
- Initial overburden and waste rock dumps;
- Other mining and waste areas as required and available including exploration drill holes, pads, provisional sumps;
- Project infrastructure including ROM and plant area, and heavy vehicle internal roads;
- Project infrastructure including haul road to Bing Bong; and
- Project infrastructure such as water management and storage areas, sensitive management areas, internal light vehicle roads, accommodation facility and airstrip.

This RCP will continually be reviewed and updated. Thus the current focuses are on areas which will require immediate rehabilitation. Practices employed in these activities will help inform and improve future rehabilitation plans and methodologies. General principles applied to rehabilitation of other areas are provided, with the understanding that this may change due to the increased knowledge from initial rehabilitation undertaken.

2.3.3 Rehabilitation Methods

Site-specific issues are here identified to enable adoption of the most appropriate rehabilitation methods to ensure they are both achievable and current best-practice (DITR 2006):

Flooding of Pit F West

- Banding and fencing of Pit perimeter to restrict inadvertent access to the pit void and promote public safety;
- Geotechnical measures to prevent erosion within and at both inflow and outflow pit areas;
- Monitoring of water quality at pit outflow and pit downstream areas;
- Continuous water balance to monitor pit water quantity exceedances;
- Hydrogeochemical modelling to monitor and, where needed, remediate any water quality deterioration; and
- Revegetation of pit and diversion channel surrounds will be promoted, particularly in areas with greater erosion possibility.

Backfilled Pits

- Assure that pits are properly contoured and blended with the surrounding environment;
- Assure that any reactive materials returned to the pits are properly encapsulated by methodologies as proposed for the PAF materials;
- Assure that pits are implemented with soil covers that promote self-seeded revegetation; and
- Assure that surface outlines are implemented with proper drainage systems so as to prevent erosion of cover soils.

Waste Rock Dumps

Where appropriate, waste rock dump rehabilitation designs will include:

- Approximate average heights of the waste rock dumps are designed to be 30m and outer slopes will be relatively flatter with a 2:1 ratio;

- Bunding to retain run-off on the top of the dumps;
- Cross-bunding and ripping on the top of the dump to minimise the potential for significant concentration of run-off at any point;
- Concave outer batter slopes with no berms to concentrate flow or trigger gullies;
- Placement of soil covers to promote self-seeded revegetation growth;
- Strategic placement of native plants, tree and rock debris to provide additional erosion protection at points of highest erosion potential; and
- Ongoing material characterisation of soil covers to achieve optimum fertiliser requirements for self-seeded vegetation growth and amendment recommendations.

Other considerations include:

- Although the waste materials are not expected to be susceptible to tunnel erosion, there is always potential for tunnels or sink-holes to develop in waste dumps. By minimising concentration of run-off on the top of the dumps and by keeping any potential ponding well away from the crests of the batters, potential for a sink-hole to pipe through to the outer batter slopes is minimal.
- Concave slope profiles more closely resemble natural landforms and tend to reduce erosion by a factor of two to three, relative to linear slopes of the same average gradient. They will be designed on the basis of site climate and rainfall characteristics and the properties of the materials present on site (DITR 2006).
- In addition to the detailed vegetation mapping that has taken place on the mine site, areas of vegetation surrounding the mining areas will be used as control sites for comparison with rehabilitation areas. Information obtained from this monitoring will be used to guide and continuously improve rehabilitation efforts. Further to this, as stated above, WDRL intends to investigate implementing an analogue area at which necessary research will be undertaken to better understand the soils present on site and the appropriate species selection for rehabilitation.
- Where PAF material is of concern, remediation and rehabilitation measures will include those stated in Appendix K. Where adequate, these measures will be implemented together with rehabilitation steps as listed above.

Further rehabilitation approaches

General rehabilitation of mine disturbed sites will be based on the following general principles:

- All areas significantly disturbed by mining activities will be rehabilitated to a stable landform with a self-sustaining vegetation cover, using local species;
- Constructed landforms will be sited so they do not interfere with any potential future pit areas or access to new ore bodies;
- The constructed landform will not divert or obstruct any major streams;
- Vegetation established on rehabilitated land will be similar to the vegetation type and community present before mining;
- Local seeds and propagules contained within topsoil will be retained for later revegetation programs;
- Rehabilitation works will commence within one year and/or when developed areas become available for rehabilitation purposes;
- Land will generally be regarded as successfully rehabilitated when nominated targets (to be established within two years of commencement of mining) for land suitability, land use (including vegetation cover and composition), landform stability, and land contamination have been met.

- All topsoil and soil forming materials will be stockpiled in a manner that enables retention of soil chemical and physical properties; and
- Rehabilitation trials will be performed during the early operational period to refine the rehabilitation design.

Haul Road Rehabilitation

The Haul Road will provide access and transport pathways for the 8 -10 year mine life, during which time WDRL would be looking to increase the longevity of the operations by finding additional resources. At the cessation of the project WDRL will consult with the NT Government on their preferences for decommissioning. The standard road rehabilitation techniques outlined below will be applied if the relevant stakeholders do not wish to take ownership of the road.

Should the haul road no longer be required, WDRL will rehabilitate the haul road area as follows;

- Removal of all infrastructure including culverts, bridges, signage and any other civil construction, ensuring that the remaining land surface is safe and stable;
- To aid in success of rehabilitation, access to the road will be blocked to ensure no unofficial ongoing use of the road by the general public;
- Establishment of a land surface which is able to support vegetation growth and not prone to erosion or sedimentation issues in perpetuity, particularly near waterways and in areas subject to flood risk;
- Ensure re-instatement of vegetation native to the area and consistent with the surrounding environment, through deep ripping to the contour and natural seeding;
- Identification of areas with potential for weed introduction or spread and appropriate mitigation strategies undertaken, e.g. ongoing monitoring and control programs; and
- Ensure that drainage is not interrupted to minimise downstream impacts on vegetation, this may include leaving some culverts in place beyond the life of the haul road, to ensure that flow is not impeded.

2.3.4 Revegetation

The vegetation present appears typical of vegetation in the region and is widespread in the area. Plans to mine in the area will not result in the loss of vegetation unique to the region, nor will it threaten any significant ecological communities. Due to the widespread distribution of the vegetation/ecological communities in the region, it is considered that the vegetation is not likely to become threatened by clearing.

It is expected that the majority of revegetation will occur during the wet season, although for erosion control and sediment stability, it is advantageous to stabilise slopes with vegetation prior to the onset of the wet season. Ideally, an availability of suitable water may allow for irrigated revegetation during the dry season, so as to achieve ground cover and stabilisation prior to the onset of the wet season.

Revegetation will begin with the spreading of topsoil on the revegetation area, to provide an endemic seed bank and soil microbes. Where possible and appropriate, topsoil will be located from a new mining or disturbance area to a revegetation area as soon as possible, to promote and retain the biological value of the soil.

It is expected that the amount of topsoil available is dependent upon the pit area to rehabilitation area ratio and therefore strategies such as spreading it to a thinner depth or placing it in strips will be investigated. Another strategy is to scarify the rehabilitation area across slope so as to ‘key in’ the topsoil and reduce the likelihood of it being lost through erosion.

The initial goal of rehabilitation and revegetation is to provide stability to the created landform. The design of the landform, along with the addition of topsoil, is expected to achieve this short term goal. It is expected that follow up actions such as direct seeding or the planting of seedlings will be required, so as to achieve a

suitable species mix. The sponsoring of a local Indigenous business supplying native plants for rehabilitation is planned.

A site relevant and established methodology to study the success of rehabilitation will be utilised.

Progress, success and the endpoint of rehabilitation will be assessed through comparison of rehabilitated sites with similar, surrounding undisturbed vegetation communities. The rehabilitated and intact vegetation will be tracked and compared using a range of vegetation attributes (or rehabilitation completion criteria) which, in combination, will indicate landscape functionality and resilience. (e.g Ecosystem or Landscape Function Analysis).

It is expected that the initial rehabilitation trials will take place during Year 2, allowing for several years of study and refinement of these sites during the project operations, prior to larger scale rehabilitation being required.

The mine site and much of the surrounding area is currently weed-free and policies and management plans to prevent the introduction of weeds to the site are in place. Monitoring for weeds is a high priority and will remain so throughout the project, so that prompt action can be taken if weeds are discovered.

The occurrence of feral animals in and around the site is low and active management during operations and rehabilitation will prevent any potential impacts to rehabilitated areas from feral animals.

Fire will be excluded from rehabilitation areas for several years, until it is determined that the vegetation is capable of supporting a fire. The mine site will have fire fighting capacity to assist this and it is expected that the management of the areas surrounding the lease will include traditional-style burning practices, to reduce the potential for wild fires to impact the site and its rehabilitated areas.

2.3.5 Waterways

A re-alignment of the Towns River is required, as the stream traverses Pit F West. This stream re-alignment will be planned and designed to be a permanent feature in the landscape. The design is detailed in the Surface water chapter and associated Appendix (Appendix N) of the EIS and a permanent re-alignment will have many benefits over a temporary diversion.

A permanent stream re-alignment will be designed and constructed to a greater level of detail than would be required for a temporary re-alignment. It will be established very early in the project development and be operational for the life of the project. This will allow for at least 8 years of monitoring and management, to ensure its stability and functionality.

Any attempts to revert the stream to its former channel location would require crossing the former pit, which will be filled with material that is less well consolidated than the undisturbed or unmined areas. This will result in greater management risks in regard to stability and the potential for water loss into the unconsolidated sediments exists. The timing of this would most likely occur during closure, rather than during the operational phase, meaning that there would be fewer resources available to monitor and manage the channel post operations.

It is expected that the Haul Road to Bing Bong, that crosses numerous waterways will be a valuable piece of infrastructure that the relevant stakeholders would wish to have remain. If this were the case, which will be determined by the end of year 2 of the operation, the closure plan will reflect this. If the road requires rehabilitation, a plan will be developed then.

2.3.6 Materials Characterisation

Further soils and materials characterisation will be required.

Although a preliminary soil assessment has been recently completed (Golders 2012), a site wide soil assessment was commissioned to start on Later June 2012. Objectives of this study are:

- Undertake soil mapping within the project area;
- Define the pedological, chemical and hydrological descriptions at 50 test pits sites; and

- Characterise the soils in order to facilitate rehabilitation strategies.
- Investigate whether there is clay available in the site to facilitate potential encapsulation of PAF materials.

Processes and management methodologies for the ongoing overburden, waste rock and ore geochemical characterisation is included in the AMD study (Appendix K of the EIS).

Preliminary and generalised soil evaluation indicate:

Unit	Top Depth (mbgs*)	Description
1	0	Silty SAND and Clayey SAND, fine to medium grained, grey brown, low liquid limit fines
2	0 - 2.2	CLAY, high plasticity, mottled grey, red brown, orange brown with fine to coarse grained sand
3	0.5 - 1.6	Gravelly CLAY, high plasticity, mottled grey, orange brown and red brown, fine to medium gravel, with fine to coarse grained sand.
4	1.7 - 3.3	Mixture of SOIL (80%) and ROCK (20%) SOIL generally comprised Gravelly CLAY, low plasticity, mottled pale brown and orange brown, fine to medium gravel, with fine to coarse

Relevant information of this investigation is that thickness of clays are significant with an average of 2.0m and it seems to extend within the flat landforms.

Processes and management methodologies for the ongoing overburden, waste rock and ore geochemical characterisation is included in the AMD study (Appendix K of the EIS).

2.3.7 Erosion and Sedimentation

The prevention of erosion and sedimentation is critical to the success of the long term stability of any disturbed or rehabilitated area. Several erosion and sediment control plans (ESCP) have been developed for the project. The principles and guidance presented within these documents will be adopted in an updated RCP. The ESCPs will focus on the prevention of sediment leaving the site via the implementation of sediment ponds and other geotechnical measures adopted in the construction of the pit bands, waste rock dumps, and other mine infrastructures.

In the wet-dry tropical climate in which the project exists, the development of sufficient vegetative cover to limit erosion during the dry season is difficult. This results in the need for additional erosion protection. It is likely that as an immediate measure, surface cover of coarse-grained benign waste rock will be required, with the addition of some fines to enhance water retention and improve growing conditions for revegetation. The site water balance and availability of suitable water may allow for irrigated revegetation during the dry season to achieve ground cover and stabilisation prior to the onset of the wet season.

Bold gullies with generous rock covers will be constructed to handle any rainfall runoff, and contour drains that concentrate flow and generally exacerbate erosion will be avoided. Concave slope profiles, which mimic natural slopes, limit the loss of sediment off the slope. Monitored trials are generally required to develop the most appropriate slope treatments for each mine site and these will be implemented as part of the proposed rehabilitation program.

Sedimentation basins or dams will be constructed where required to collect sediment. Sediment control dams and water management dams and structures will be required to be in place beyond the rehabilitation and revegetation of most of the site. This infrastructure should be in a stable and functional state at the time of closure and may be best left as is, to continue providing water and sediment management outcomes, without the need for ongoing monitoring or management.

2.3.8 Physical Constraints

The nature of Iron Ore mining involves the rock being physically removed from its place of origin. This creates physical constraints on rehabilitation options. The simple lack of rock and the creation of pit voids require the development of a rehabilitation strategy that results in the best outcomes with the available situation and materials. Topsoil is also scarce in some of the areas, especially where the ore outcrops on the surface.

These constraints have been identified through the risk assessment as being manageable as they are constraints presented to many other projects and responses to these constraints are well established, i.e. where topsoil is not available it will be sourced from previously disturbed areas (close to the mine) or substituted with suitable material.

Other potential physical constraints will be identified and researched during the early stages of the project.

2.4 Progressive Rehabilitation

Progressive rehabilitation will be implemented throughout the mine life. Progressive rehabilitation provides an opportunity for testing rehabilitation practices and for the ongoing development and improvement of rehabilitation methods. In addition, the visual amenity of the site will also be improved.

The vegetation established on rehabilitated land will be, as far possible, similar to the vegetation type/s and structure that was present before mining commenced. Species selection has a significant impact on the success of a rehabilitation program. Key species that play a dominant role in the function of the ecosystem may be under-represented, resulting in a successional path that differs from the original community. Establishment of vegetation communities consistent with those present prior to mining should ensure that most fauna species will recolonise disturbed areas in time.

Establishing a diverse vegetation community often requires a combination of methods. These can include the use of direct topsoil return, seeding, planting of seedlings and natural recolonisation. Some refinement of the techniques used may be necessary through adaptive management during rehabilitation operations.

Progressive rehabilitation during the life of the mine helps to reduce the overall liability for rehabilitation works particularly after decommissioning of the site when there is no direct income to offset costs. It also provides an opportunity for testing rehabilitation practices, and for the gradual development and improvement of rehabilitation methods (DITR 2006). Visual amenity will also be improved.

WDRL see the successful implementation of rehabilitation as an essential part of their social licence to operate and as part of their duty to the DoR and Territorians in general.

Mine planning and design layouts have been developed to:

- Minimise the amount of disturbance for the area of operations; and
- Where possible, return the land to as close to original condition as soon as practicable.

This is achieved primarily by adopting where practicable a mining method that is a variant of the strip mining methods used in surface coal mining. The initial waste material from the first mine pit will be utilised for construction of a pad for a crushing and screening plant, ROM pad and road haulage truck loading facility. Topsoil will be stored around the perimeter of this pad for use in rehabilitating sites of a similar soil type.

Planned clearing of vegetation has been kept to a minimum and has assumed the vegetation will be cleared and stockpiled for rehabilitation. The top 50mm of seed bearing soil will be scraped and stockpiled no more than 3 meters high, to protect the available seed bank and soil micro-organisms and prevent available nutrient leaching. Clearing control measures will be implemented during construction and operation, to ensure that no unnecessary clearing is undertaken. Conservation of topsoil and progressive rehabilitation of waste landforms, backfilled pits, and all other disturbed areas will be done as soon as practicable to the appropriate standard and recommended guidelines. Topsoil management will be included in the Roper Bar Project Environmental Management Plan (EMP) that has been developed and will be regularly revised to

ensure all environmental responsibilities are complied with, the latest knowledge is included and best-practice environmental management is adopted.

The majority of the pits have a long strike length. For example the Area F pits combined will ultimately exceed 5 kilometres in length. The majority of this pit is shallow; around 40 metres deep or less. One portion in Area F is up to 100 metres deep and may extend deeper with favourable economic conditions. A substantive portion of waste in the shallow pits is considered free digging material that requires minimal or no blasting. It is proposed to commence a starter pit in Area F West. The waste material from this initial pit will be used for construction of floodway and stream realignments, pit protection bunding, haul road construction, Run Of Mine (ROM) pad construction, PAF encapsulation pads and other miscellaneous civil works. Once the starter pit has been fully depleted of mineable reserves it will be flooded to be part of the Towns River realignment program.

During mining, research and site trials via an investigated analogue area will enable the rehabilitation program to be modified to reflect site-specific parameters. At closure, the final landforms will be created and the progressive rehabilitation program extended to include the remaining areas of disturbance.

2.4.1 Topsoil management

Depending on its constituents, topsoil can serve a number of important functions, such as (DITR 2006);

- The supply of seed and other propagules;
- Contribution of beneficial micro-organisms;
- Supply of natural nutrients;
- Rapid development of groundcover; and
- Amelioration of adverse constituents in the underlying mine waste.

Topsoil and its seed bank viability are difficult to manage in the wet dry tropics. For this reason the use of topsoil from one location to rehabilitate another location is the best way to ensure nutrient viability of the soil, its organisms and seed bank. Therefore, where possible, the timing of topsoil removal would be coordinated with rehabilitation operations to ensure minimal handling and storage.

In general, this method helps ensure that the reserve of indigenous plant seeds and soil microflora are maintained and assist with the preservation of local genetic material and the reestablishment of a similar range and mix of species to that of the original vegetation in rehabilitation areas.

It is expected that the amount of topsoil available will be limited and therefore strategies such as spreading it to a thinner depth or placing it in strips will be investigated. Another strategy would be to scarify the rehabilitation area across slope so as to ‘key in’ the topsoil and reduce the likelihood of it being lost through erosion.

2.4.2 Developing a Functional Ecosystem

In general terms, a ‘functional’ ecosystem is considered to be one that is:

- Stable (not subject to high rates of erosion);
- Effective in retaining water and nutrients;
- Self-sustaining;
- Revegetated with endemic plant species; and
- Free of weeds.

At the time of writing, there have been no other specific requirements identified that need to be accounted for in the provision of a functional ecosystem. Establishment of vegetation communities consistent with those present prior to mining should ensure that most fauna species will recolonise disturbed areas in time and this recolonisation will assist with the development and determination of a functional ecosystem.

These goals are achievable and an appropriate monitoring regime (such as LFA) will be installed to ensure that these goals can be and are being met.

Specific ecological indices which may be used to determine success of rehabilitation include:

- Development of completion criteria, through the MMP process;
- Establishment of plant species similar to surrounding areas;
- Density and growth habit of plant species that is similar to surrounding areas; and
- The absence of erosion.

2.4.3 Monitoring and Maintenance

Monitoring is essential to determine whether the rehabilitation program is achieving its goals. During rehabilitation establishment, relevant information will be documented in detail. This serves the dual purposes of enabling analysis of rehabilitation success and the information can also be used as an auditable checklist to confirm to regulators and stakeholders that agreed commitments have been met.

At the completion of rehabilitation establishment operations, monitoring can assess early rehabilitation success, reveal the need for any remedial actions (i.e. maintenance) and determine whether rehabilitation is likely to meet long-term objectives and mine closure criteria.

An annual monitoring and assessment report will enable:

a) Classification and quantification of rehabilitation status;

b) Comment on progress with rehabilitation, forecast trajectories and succession trends and highlight any alterations which need to feedback into management interventions;

c) Enhanced appreciation of the complexity, requirements and criteria delimiting successful rehabilitation for the local context; and

d) Determination of an endpoint to intervention post-mining (i.e. completion criteria).

WDRL's appreciates that a successful rehabilitation monitoring program needs to incorporate a strong overarching management cycle. Scientific assessment, evaluation of ecosystem development and continuous improvement are important components of this cycle. In particular, WDRL sees a need to strengthen how monitoring may inform management practices.

2.5 Contingency Management

In the event that monitoring shows that rehabilitation is not meeting the success or completion criteria, WDRL will modify the rehabilitation program. Specifically, where monitoring has identified development of acid effluents, erosion, weed invasion, or failure of revegetation (to any material degree) maintenance activities will be implemented to ensure rehabilitation progresses efficaciously and swiftly. This might include the propagation of different plant species, modification of erosion and sedimentation control structures, and/or the implementation of supportive management such as irrigation.

In any case, in the worst case scenario the Northern Territory Government will have received a 100% security bond to ensure rehabilitation can continue, as discussed below.

2.6 Unexpected Closure or Temporary Closure

The requirement for provision in the event of unexpected closure will be addressed annually as part of the submission of the Mining Management Plan (MMP)

The MMP will contain a summary of the current disturbed areas and the progressive rehabilitation status. Closure costs are re-calculated annually and are included in the MMP, providing a detailed allocation for

decommissioning and rehabilitation costs, including a contingency. Closure costs provide the basis for the security bond. The Northern Territory requires a 100% security bond.

In the event of unexpected closure, any contaminated material will be relocated from hardstand areas to a suitable holding facility, and any PAF material will be placed within an open pit or suitably encapsulated with a landform for appropriate management.

The security bond will fund activities so that the site can be rehabilitated in accordance with the closure plan.

3 Mine Closure Plan

3.1 Scope

The RCP identifies project design components that assist with the closure planning of the site, rehabilitation measures, monitoring and reporting of rehabilitation activities and the need for closure activities.

3.2 Closure Objectives

As a general guide, Government's broad closure objectives require that a mine site is physically safe to humans and animals, geotechnically and geochemically stable and non-polluting, and capable of sustaining an agreed post-mining land use. Any residual liabilities relating to the agreed land use must be identified and agreed to by the key stakeholders. At the project approval stage, it is acceptable for the closure objectives to be more broadly identified and further refined in the stakeholder consultation process (WAEPA/DMP 2011), provided that they are based on the best available data at the time and specific enough to guide closure development strategies.

The area to be disturbed is a relatively small proportion of a large and intact landscape. The current uses for the area are minimal and limited to occasional recreation or subsistence-type enjoyment and hunting/ gathering activities. The actual areas of impact have not previously been accessible by vehicle and are distant from readily available locations that better serve those uses.

It is not expected that the current level of use for the area will change significantly, with potential future use of the area expected to be focussed on conservation and remote tourism experiences. The closure objectives are based on returning a landscape to a condition suitable for such uses.

The key closure objectives are to:

- Achieve compliance with regulatory requirements;
- Ensure the health and well-being of people and fauna;
- Remove of all infrastructure and any removable non mining wastes from the site;
- Create safe, stable, non-polluting and sustainable landforms;
- Achieve successful rehabilitation and demonstrate a return of ecosystem functions;
- Ensure establishment of vegetation that is self-sustaining, including the local predicted fire regime;
- Undertake progressive rehabilitation of available disturbed areas;
- Maintain water quality and flows in waterways;
- Minimise long-term visual impact by creating acceptable landforms, compatible with the adjacent landscape; and
- Achieve mining lease relinquishment without a requirement for ongoing active intervention.

3.3 Identification of Closure Obligations and Commitments

This section will include the relevant components of the EIS Assessment Report and Mining Management Plan pertaining to rehabilitation and closure.

It will provide the operator with a register of legal obligations and associated timing of delivery of such obligations required to be performed during the life of the project.

At closure, this tool can be used as a checklist to demonstrate that all conditions, commitments and obligations have been met.

3.4 Collection and Analysis of Closure Data

Where applicable, collection and analysis of closure data will be designed and implemented to meet the following minimum requirements:

- Use of recognised or acceptable methodologies and standards;
- Incorporate appropriate quality management systems and procedures (e.g. ISO 9000);
- Consideration of the wider receiving environment, receptors and exposure pathways; and
- Provide a basis to develop specific criteria or indicators for closure monitoring and performance

3.4.1 Environmental Data

Detailed baseline information on the ecology, surface and groundwater conditions of the site exists and is presented in the project EIS. General soil studies have been started and aspects of soils more relevant to rehabilitation will be part of ongoing studies. Geochemical and waste material characterisation studies have been performed and will continue throughout the life of the project.

3.4.2 Analysis of Data

Analysis of the collected data is a critical element in understanding the issues impacting mine closure and identifying knowledge gaps (ICMM 2008) which may affect the rehabilitation and closure outcomes. The risk associated with not having this information should also be investigated and documented. Where appropriate, the data analysis should take into account the natural background levels of particular elements and possible environmental impacts from other sources, which may affect the closure strategy or management of the site.

3.5 Stakeholder Consultation

It is evident from initial consultation with the Native Title holders, their representative body and the relevant Government agencies that the expectations for rehabilitation and closure are to return the site to a natural native bush state. There have been no land use objectives identified beyond the current land uses, which are focussed on the use of the natural environment for social, cultural and subsistence style activities. The site will obviously be altered but good planning, implementation and monitoring of the rehabilitation and closure should result in no loss of these values once the site is relinquished.

Further consultation regarding closure criteria will be undertaken as part of the ongoing Social Impact Assessment review, consultation and communication process.

3.6 Post-Mining Land Use

The post rehabilitation landforms of the WRD's, in-filled pits, ROM pads and infrastructure areas will generally be broad, vegetated mounds with an earthen cover and a revegetated surface. Some reinstatement of rocky ridges will also be likely in certain locations.

As far as possible, the landforms will be designed to be compliant with the post-mining land use agreed to by the relevant stakeholders. As the post-mining land use is likely to include conservation, it is important that the reinstated landforms are capable of supporting a sustainable ecosystem that is as similar as possible to the original ecosystems.

There will be ongoing opportunity through the life of project via the social impact assessment and consultation process to establish more specific details about rehabilitation and site-specific requirements.

3.7 Identification and Management of Closure Issues

At this pre-approvals stage of the project, the major identified closure issues that have been identified include the potential for:

- Acid and/or metalliferous drainage (AMD);
- Adverse impacts on surface and/or groundwater quality;
- Dust emissions;
- Impacts on flora and/or fauna species diversity;
- Closure requirements for surface water management structures; and
- Contaminated sites.

The pre and during project management for these and other potential issues are identified in the Project EIS and EMP. It is expected that where needed advanced plans for the management of these issues for closure will be developed early stages of the projects operation.

3.8 Development of Completion Criteria

Completion criteria are necessary to provide the basis on which successful rehabilitation and mine closure, and achievements of closure objectives are determined. The criteria need to be reviewed and refined throughout the development and operation of the project to respond to monitoring, research, trials and information and any other information or change, as appropriate.

Once developed, the completion criteria will include performance indicators to demonstrate that rehabilitation trends are following the predicted performance. This will enable tracking of the progressive rehabilitation of the site.

Indicative completion criteria can be determined from the key closure objectives, as outlined in Section 3.2 above. However, the completion criteria and associated performance indicators will be site-specific, scientifically supported and capable of objective measurement or verification of performance or success, in order to provide certainty for reporting and auditing to define rehabilitation endpoints (ANZMEC/MCA 2000).

3.9 Financial Provision for Closure

The objective of financial provisioning for closure is to ensure that adequate funds are available at the time of closure and that the community is not left with an unacceptable liability. It is therefore essential that the cost of closure be estimated as accurately and early as possible. The financial provisioning must be based on the life of mine closure costs, and the cost estimates must take into account all aspects of rehabilitation and closure.

The financial security associated with rehabilitating the site is required to be developed as part of the initial Mining Management Plan (MMP) and must be developed according to standard NT Government costing rates and must be accepted by the Security Assessment Board. Payment (in the form of cash or a bank guarantee) is required prior to authorisation being granted.

The default requirement for operators of mining interests regulated under the NT *Mining Management Act,* is to submit 100% of the security calculated for rehabilitation. This provides stakeholders with some comfort that rehabilitation can occur irrespective of the financial state of the operator. The calculation of securities is based on the actual cost of rehabilitation commensurate with the size, environmental risk and expected project life. Securities will be regularly reviewed and adjusted as required, taking into consideration progress in rehabilitation, as well as new or expanded activities.

3.10 Closure Implementation

Closure work programs developed at the project approval stage are rarely able to contain more than broadly identified tasks and indicative timeframes, which will be refined or expanded in subsequent reviews and updates of the RCP.

Key closure issues and criteria have been identified above and a Closure Task Register (CTR) will be immediately developed, to incorporate the criteria into the design of the closure and the management of key issues.

The rehabilitation and closure objectives and actions identified in this draft RCP are within the current standard and acceptable practices of mining companies. The most value in the identification of closure implementation activities will result from the need to regularly update the plan to reflect operational changes and/or new information. This new information may come from general research, industry information, and on-site research, investigation and trials associated with progressive rehabilitation. Progressive rehabilitation will provide information for ongoing refinement of:

- The design of final landforms and drainage structures;
- Estimating, reconciling and scheduling rehabilitation material inventories;
- Landform surface treatments (ripping, selective application of topsoil, placement of materials);
- Revegetation activities; and
- Rehabilitation performance monitoring.

Although practical planning for unexpected closure or temporary closure (e.g. care and maintenance) is generally not done in the early stages of the project, consideration will be given in the Rehabilitation and Closure Plan for how to deal with such a closure scenario which may arise from economic, environmental, safety or other external pressures. There are contingencies for this planning within the security rehabilitation bond, although site-specific experience and knowledge will dramatically assist this process. The most important factor to consider for unexpected closure is the confirmation that appropriate materials are available on site and contingencies provided to make landforms such as waste dumps secure and non-polluting.

Since the decommissioning phase takes place at the end of mine life and the details regarding final landform and environmental aspects are detailed elsewhere in the RCP, a decommissioning plan is not proposed to be included in the RCP until the project is advanced and the actual infrastructure is in place and the potential future of the project has been further defined.

3.11 Closure Monitoring and Maintenance

A closure monitoring and maintenance program will be designed and implemented to meet the following minimum requirements:

- Use of recognised and acceptable methodologies and standards;
- Recognising the wider receiving environments, receptors and exposure pathways;
- Incorporating appropriate quality control systems and procedures in the sampling, analysis and reporting of results, such as the ISO 9000 quality management system;
- Showing trends against expected or predicted performance based on statistically robust data; and
- Providing intervention and contingency strategies if key environmental indicators move outside agreed parameters.

Relevant baseline data collection has commenced and will continue throughout the project development phase. This includes terrestrial flora and fauna, aquatic fauna, surface and ground water and rock and soil characterisation.

3.11.1 Revegetation Monitoring Plan

The broad closure objective is to return disturbed areas, post-mining, to a similar state which existed prior to mining and to the satisfaction of the regulatory bodies and stakeholders. WDRL will be responsible for rehabilitating and maintaining areas up to an agreed and quantifiable end point. Land which is deemed to have reached the endpoint for rehabilitation may be able to be relinquished.

Progress, success and the endpoint of rehabilitation is gauged through comparison of rehabilitated sites with similar, surrounding undisturbed habitat (reference sites). The rehabilitated and reference sites will be tracked and compared using a range of vegetation attributes (i.e. Rehabilitation Completion Criteria) which, in combination, are known to indicate landscape functionality and resilience.

Rehabilitation completion criteria will be established through a series of studies of natural pre-disturbed country, similar undisturbed country and actual rehabilitation areas.

The process of monitoring and reporting on core attributes will be refined through ongoing work and lead to the production of a Rehabilitation Monitoring Procedure. Comprehensive monitoring has commenced and is planned to continue for the life of mine.

WDRL's Rehabilitation Monitoring Program will include the development of procedures in accordance with the following guiding principles:

Scientific assessment: to provide data on specific indicators from rehabilitated sites throughout WDRL lease areas and a comparison against undisturbed reference sites.

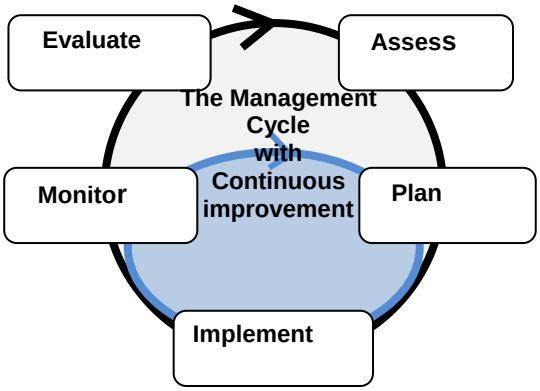
Continuous improvement: to provide results which allow refinement of rehabilitation techniques and practices and assessment of specific management options.

Evaluation of ecosystem development: to quantify the condition of sites to enable assessment of status or position of different aged rehabilitation sites on a trajectory of rehabilitation states directed toward completion criteria.

Based on WDRL's understanding of current monitoring programs and priorities, the monitoring and assessment activities should enable:

- Classification and quantification of rehabilitation status;
- Comment on progress of rehabilitation, forecast trajectories and succession trends and highlight any alterations which need to feed back into management interventions;
- Enhance an appreciation of the complexity, requirements and criteria delimiting successful rehabilitation for the local context; and
- Determine an endpoint to intervention post mining (i.e. satisfaction of completion criteria).

WDRL are aware of the need for all aspects of the project, including the rehabilitation planning and monitoring, need to fit within the whole of project management cycle. Scientific assessment, evaluation of ecosystem development and continuous improvement are important components of this cycle. In particular we see a need to strengthen how monitoring may inform management practices.



Rehabilitation end-point criteria will be developed to assess the status of rehabilitated sites toward a state resembling the pre-mined ecosystem using key ecosystem indicators. The nature of the majority of vegetation to be disturbed within the mining lease is classified as a Eucalyptus/Corymbia Woodland (mainly *E. tetrodonta, C. polycarpa, C. ferruginea*) over hummock grass, and Melaleuca Woodlands (mainly *M. viridiflora, M. nervosum, M. citrolens*). Therefore, the desired ecosystem endpoint will be represented by a functioning ecological system that is as close as possible to this ecotype.

Rehabilitation criteria will consider both the components of the developing ecosystem and the functional processes linking the components of that ecosystem. The trajectory towards a functioning woodland ecosystem includes the following key indicators:

- Density of *Eucalyptus/Corymbia* species;
- Vegetation biodiversity;
- Ground cover characteristics;
- Fauna; and
- Resilience

Indicators utilised to measure the end point criteria will evolve over time as additional information is compiled. The Rehabilitation Monitoring Procedure will ensure that there is a comprehensive linkage between management and monitoring. Data from the monitoring program will be more meaningful and readily interpreted if there is a contextual understanding and record keeping of core information associated with the key management interventions for successful rehabilitation, such as:

- Rehabilitation techniques applied (including the methods and redistribution of top soil, contouring and any seeding or tubestock used);
- Weed management actions and results– aligned with a weed management plan; and
- Fire management actions and results - aligned with a fire management plan.

3.11.2 Monitoring Site Establishment

Permanent monitoring sites will be established using a standardised protocol. A proposed monitoring plot design is illustrated in Figure 2. The number, spacing and other relevant factors will be determined prior to rehabilitation being required.

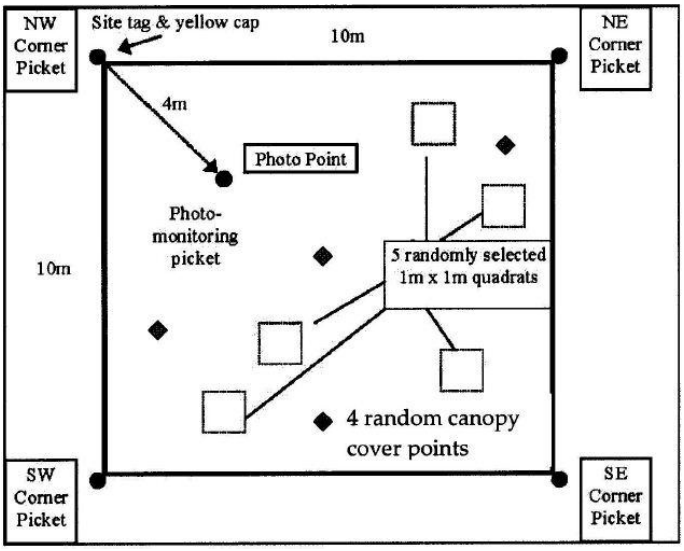


Figure 2: Example of Design of Permanent Rehabilitation Monitoring Plot

3.12 Management of Information and Data

A key intention is to standardise data collection and maintain continuity and reliable comparisons and assessment through minimising variability associated with different observers.

This can occur through developing a cyber-tracker program and recording photo points using GPS camera. This will reduce the data handling time and allow for simple report preparation and mapping and storage of information on a GIS system.

The data collection is likely to include stand structure, species composition, canopy cover, regeneration, ground cover, fauna, disturbance (weeds and fire impacts), and photo-monitoring.

WDRL emphasise the need to build contextual documentation and understanding of operational practices (namely: rehabilitation techniques and practices and ongoing weed and fire management). This is necessary to strengthen interpretation of the rehabilitation outcomes as well as the connection between monitoring and management to complete the cycle of continuous improvement.

WDRL's goal is to develop the operational approach to management and record keeping (e.g. a 5 year plan with triggers for improved intervention) in collaboration with the operational team.

Data will be stored in an ISO9001 QMS compliant document management system

The value of site knowledge will not be underestimated and it is essential to have a system in place to capture all relevant closure knowledge in the event of key personnel leaving the site. Electronic mine closure systems that can store large amounts of data are suitable for this purpose.

3.13 References and Acronyms

AMD	Acid and/or Metalliferous Drainage
DoR	the NT Department of Resources
DSO	Direct Shipping Ore
EIS	Environmental Impact Statement
EL	Exploration Lease
EMP	Environmental Management Plan
MLA	Exploration Lease Application
MMP	Mining Management Plan
RCP	Rehabilitation and Closure Plan
WRD	Waste Rock Dump

Australian and New Zealand Minerals and Energy Council (ANZMEC) and Minerals Council of Australia (MCA) 2000, *Strategic Framework for Mine Closure*, Australian and New Zealand Minerals and Energy Council, Canberra.

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