

Rehabilitation Management Plan



 | HANCOCK GALILEE PTY LTD

HANCOCK GALILEE PTY LTD

KEVIN'S CORNER PROJECT

Rehabilitation Management Plan

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ABBREVIATIONS

Abbreviations used in this document are defined as follows.

Abbreviation	Definition
DEHP	Department of Environment and Heritage Protection
EIS	Environmental Impact Statement
ESCP	Erosion and Sediment Control Plan
ESP	Exchange Sodium Percentage
GQAL	Good Quality Agricultural Land
HGPL	Hancock Galilee Pty Ltd
MLA	Mining lease application
Mtpa	Million tonnes per annum
PMLUP	Post Mine Land Use Plan
SEIS	Supplementary Environmental Impact Statement
TMP	Topsoil Management Plan
TSF	Tailings storage facility
VMS	Void Management Strategy

1. INTRODUCTION

1.1. PROJECT OVERVIEW

Hancock Galilee Pty Ltd (HGPL) aims to develop an integrated open-cut and underground longwall coal mine with nominal production of up to 30 million tonnes per annum (Mtpa) of product coal over a 30 year period within the Galilee Basin, Queensland. The mining lease is located 65 km north of the town of Alpha, 110 km south-west of the town of Clermont and approximately 340 km south-west of Mackay in Central Queensland (Figure 1-1).

Project development is planned to commence in early 2014 with first production in early 2016, with construction to continue beyond the initial 24 month period for up to five years. It is anticipated that the Project will employ up to 1800 personnel during peak construction and a permanent workforce of approximately 1600 personnel to operate the mine.

The Project is adjacent to Hancock Coal Pty Ltd's (HCPL) Alpha Coal Project. The mining lease application (MLA 70425) covers an area of 37,499 ha.

The proposed mine consists of three underground longwall operations, supplemented initially, with two open-cut pits.

The associated operations involved with the open-cut mine include:

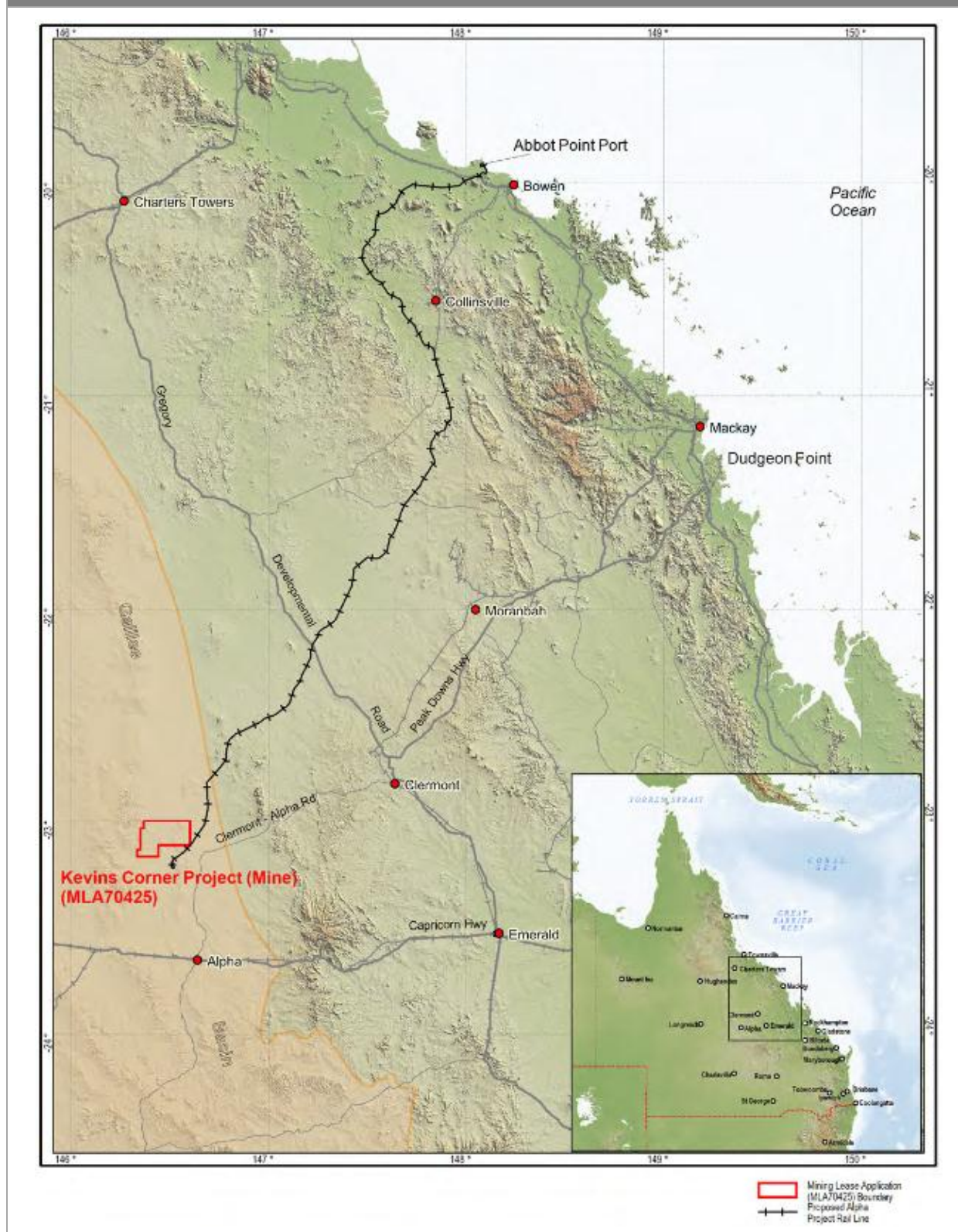
- Mining by conventional drill and blast and haul back and terrace mining methods
- Placement of overburden and inter-burden materials from the open-cut area to a combination of out-of-pit and in-pit overburden emplacements
- On-site crushing and temporary stockpiling of the mined coal within a defined coal processing area
- Acceptance and placement of back-loaded reject material from the Project for placement in the mined out areas of the mine
- Progressive shaping and rehabilitation of the mine area and other areas of disturbance.

Key relevant infrastructure to be developed as part of the Project includes:

- Coal Handling and Preparation Plant (CHPP)
- Three Underground Mine Areas
- Two Open-Cut Mine Areas
- Supporting Infrastructure (including on-site accommodation village for 100% of the workforce (contract and permanent), on-site airstrip, and on-site light industrial area).

The Project has a scheduled mine life of approximately 30 plus years.

Figure 1-1 Regional Location of the Kevin's Corner Project



1.2. PURPOSE AND SCOPE

The purpose of this Rehabilitation Management Plan is to provide an overview of progressive rehabilitation and revegetation to be implemented following the completion of mining activities to minimise and mitigate impacts caused by the Project. It provides a framework for site rehabilitation works in association with other management plans and monitoring programs for the management of environmental issues associated with the Project.

This Rehabilitation Management Plan is an active document and will continue to be developed as the Project planning progresses. The Rehabilitation Management Plan will be reviewed and updated at least every five years or as required to remain consistent with the Plan of Operations. The rehabilitation schedule and requirements are integrated with the Plan of Operations to ensure that progressive rehabilitation is undertaken in a timely manner (e.g. 1 – 5 years).

This Plan covers rehabilitation of disturbance areas associated with activities within the MLA. Whilst the management of subsidence and the minimisation of subsidence impacts are covered under the Interim Subsidence Management Plan, Appendix N of the Supplementary Environmental Impact Statement (SEIS), the rehabilitation of areas impacted by subsidence is covered in this plan.

1.3. PLAN STRUCTURE

This Rehabilitation Management Plan incorporates rehabilitation objectives, an overall management strategy and general rehabilitation methods for the Project structured around six domains within the MLA. The following details have been developed for each domain:

- Design criteria
- Success factors and completion criteria
- Reference sites to be used to develop rehabilitation completion criteria
- A description of the monitoring of reference sites inclusive of statistical design
- Rehabilitation methods applied to each domain
- Landform design criteria including end of mine design
- Detail on how landform design will be consistent with the surrounding topography
- Provision of schematic representation of the final landform inclusive of:
 - Drainage design and features
 - Slope designs
 - Cover design
 - Erosion controls proposed on reformed land.
- Explanation of planned native vegetation rehabilitation areas and corridors
- A description of rehabilitation monitoring and maintenance requirements to be applied to all areas of disturbance
- A contingency plan for rehabilitation maintenance or redesign.

A framework for rehabilitation monitoring relevant to each domain is presented at the end of this Rehabilitation Management Plan.

2. REHABILITATION OVERVIEW

2.1. REHABILITATION HIERARCHY

HGPL intend to use the rehabilitation hierarchy from the Department of Environment and Heritage Protection (DEHP) Rehabilitation Requirements for Mining Projects (DEHP 2012) to guide rehabilitation choices where possible. The rehabilitation hierarchy, in order of decreasing capacity to prevent or minimise environmental harm, is:

1. Avoid disturbance that will require rehabilitation to prevent or minimise future environmental harm
2. Reinstatement the original "natural" ecosystem
3. Develop an alternative outcome with a higher economic value than the previous land use
4. Reinstatement previous land use (e.g. grazing or crops)
5. Develop lower value land use (if this is acceptable to relevant stakeholders)
6. Leave the site in an unusable condition or with a potential to generate future pollution or adversely affect environmental values (unacceptable).

2.2. REHABILITATION OBJECTIVES

HGPL intends to return the MLA to a stable landform capable of supporting similar land uses to pre-disturbance in a manner which is consistent with the rehabilitation hierarchy in DEHP's Guideline; Rehabilitation requirements for mining projects. Detailed performance criteria or rehabilitation methodologies are to be developed prior to rehabilitation commencing. As per current industry practice, success criteria and rehabilitation methods will be regularly assessed and updated based on a "continuous loop of improvement" with respect to future rehabilitation strategies and relinquishment. During operations rehabilitation works will be designed specifically to optimise the potential for rapid ecosystem re-establishment.

The nominated post-mine land use is a mix of native bushland and low density cattle grazing land (Section 3). For areas disturbed by the Project the following objectives will be used in accordance with the DEHP Guideline; Rehabilitation requirements for mining projects (DEHP 2012):

- The mine site will be safe to humans and fauna
- Mining and rehabilitation will aim to create a landform that is stable and with similar land use capabilities and/or suitability that existed prior to the disturbance, unless other beneficial end uses are pre-determined and agreed
- Mine wastes and disturbed land will be rehabilitated so that they are non-polluting and self-sustaining or to a condition where the maintenance requirements are consistent with an agreed post-mining land use
- Surface and ground waters leaving the Project area will not be degraded compared to their condition prior to the commencement of mining operations. Current and future water quality will be maintained at levels that are acceptable for users downstream of the site and meet environmental needs

- Potential acid mine drainage will be determined and management measure implemented (e.g. encapsulation of sulphides or treatment systems), if required
- Vegetation cover will be established to reduce rates of erosion and sediment loss to that in surrounding, comparable undisturbed landscapes
- Soil suitability for use in rehabilitation will be assessed and soils will be enhanced as required
- Following final rehabilitation, there will be limited need for ongoing maintenance of rehabilitated areas.

2.2.1. Additional Decommissioning Works Prior to Rehabilitation

At the cessation of operations, decommissioning activities (including remediation of contamination) are required in the following areas prior to rehabilitation works and revegetation:

- Infrastructure areas (including hardstands, parking areas, and airstrips)
- Roads and tracks including diversions
- Stock route diversions
- Dams and creek diversions
- The control and management of mine waste (i.e. overburden, coarse and fine reject (tailings))
- Shafts, portals/adits, and boreholes
- Underground mining and subsidence areas.

A decommissioning plan will be developed for these areas.

2.2.2. Achieving Rehabilitation Objectives

These rehabilitation objectives will be achieved through:

- Control and management of mine waste
- Void management
- Management of subsidence affected areas
- Diversions (road/track, creek, and stock route)
- Sustainable rehabilitation methods for the disturbed areas
- Management of topsoil resources for use in rehabilitation of the site
- Progressive revegetation of areas across the mine site
- Re-fill and re-contour subsided areas to create a stable, adequately drained landscape that complies with rehabilitation and erosion control guidelines and post-mining land use objectives
- Integration with ongoing and future rehabilitation activities across the wider mining area
- Rehabilitation monitoring and maintenance management.

3. REHABILITATION MANAGEMENT STRATEGY

3.1. DOMAINS

Within the context of this plan, rehabilitation actions only apply to the six Domains detailed below and illustrated in Figure 3.1:

- Domain 1 – Infrastructure, Roads and Tracks
- Domain 2 – Pits, Voids and Overburden Emplacements
- Domain 3 – Tailings Storage Facility
- Domain 4 – Dams and Surface Water Features
- Domain 5 – Subsidence Affected Areas
- Domain 6 – Other Lands.

A Conceptual Rehabilitation and Final Land Use Plan for each domain are shown in Figure 3-2.

Sections 5, 6, 7, 8, 9, and 10 provide a high-level assessment of rehabilitation strategies and requirements for each of the Domains. Additional detail which can be implemented at an operational level will be developed when the first Plan of Operations is prepared to finalise rehabilitation methods and strategies within these Domains.

All areas significantly disturbed by mining activities will be rehabilitated in accordance with Table 3-1.

Non-remnant areas will be rehabilitated using native pasture species and areas of remnant vegetation mapped as Regional Ecosystems (REs) will be rehabilitated back to the same RE, apart from voids, dams, etc. and roads not decommissioned at the end of the mine life as agreed with the relevant landholder in accordance with the Environmental Authority conditions. The aim of rehabilitation in the subsidence areas is to restore the original RE to the pre-disturbance condition, but it is acknowledged that this may not be possible and offsets are proposed where monitoring indicates rehabilitation is not successful. For areas with highly modified substrates (e.g. overburden emplacements and the tailing storage facility) suitable native species will be planted following assessment of the media and site constraints to support the rehabilitation objectives.

The post mine land uses are supported by commitments to rehabilitate non-remnant areas back to grazing pastures and REs back to the same RE, apart from highly modified landscapes such as the overburden areas and tailings dam where native bushland will be re-established. Species and planting densities for the native bushland areas will be confirmed following overburden characterisation studies and vegetation trials.

The rehabilitation completion criteria for all domains are presented in Appendix 1.

Figure 3-1 Overall Site Layout Domain Plan

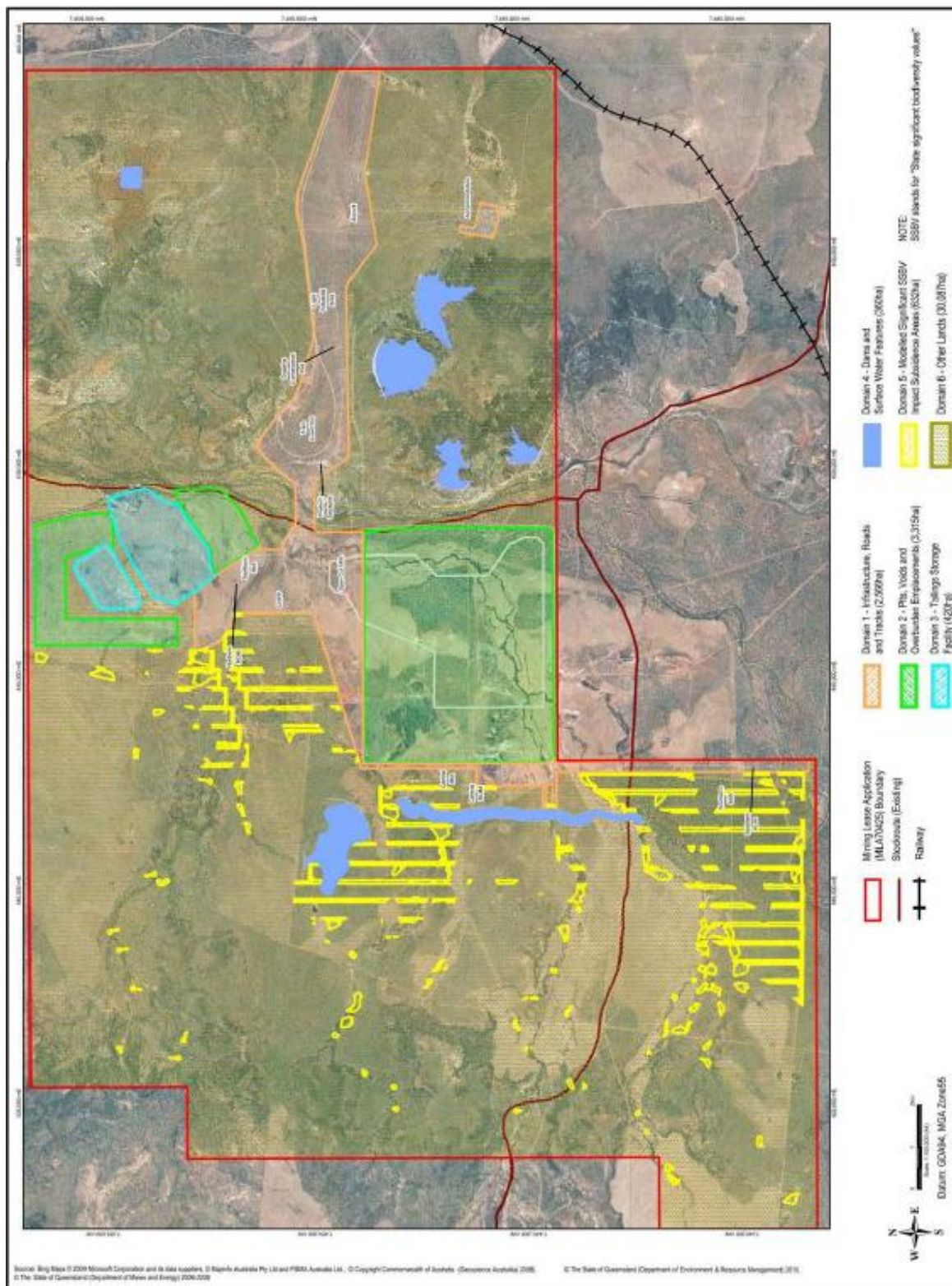


Figure 3-2 Conceptual Rehabilitation and Final Land Use

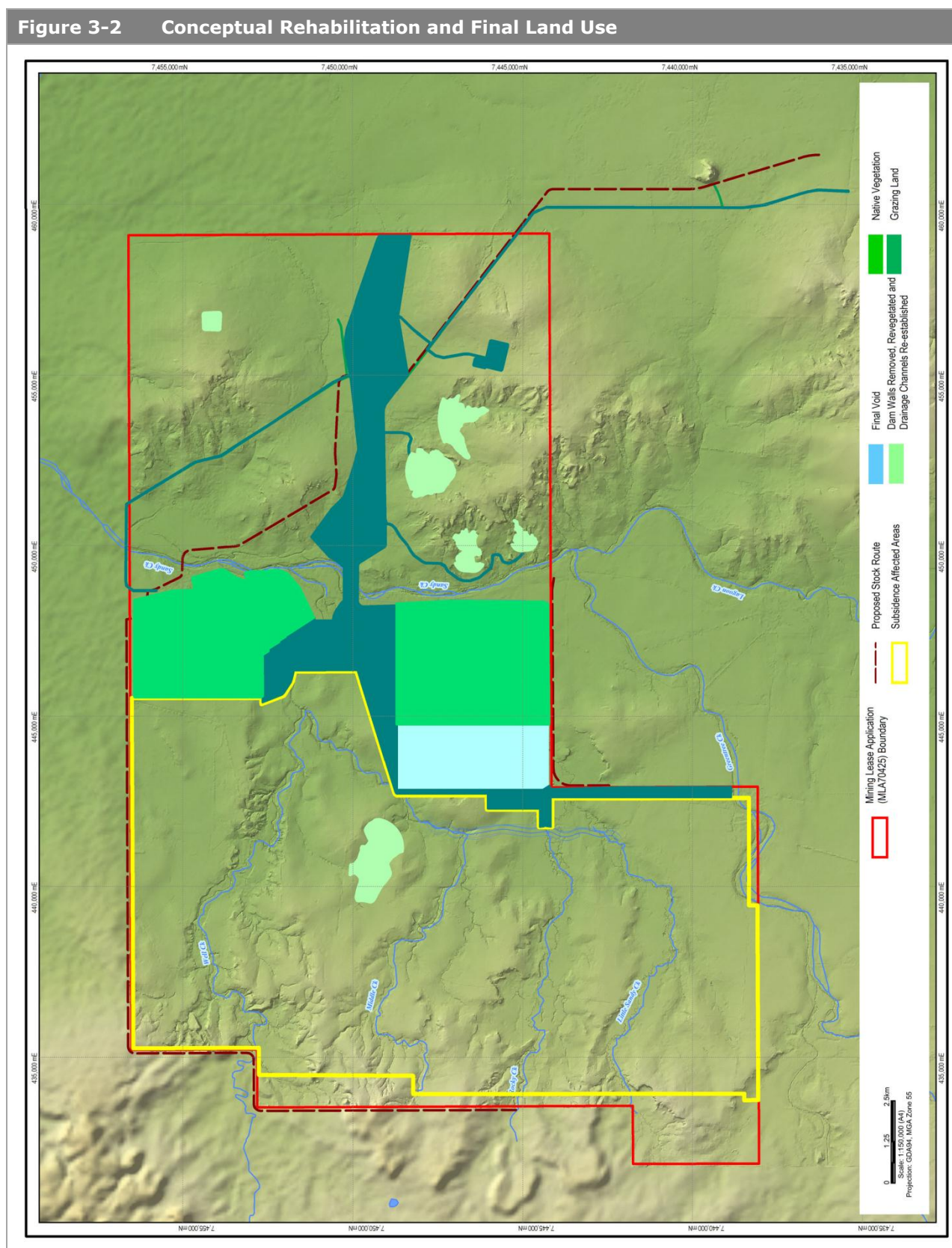


Table 3-1 Final Land Use and Rehabilitation Approval Schedule

Land Use Element	Domain 1	Domain 2		Domain 3	Domain 4	Domain 5	Domain 6
	Infrastructure	Pits and Mine Waste		Tailings Storage Facility	Dams and Surface Water Features	Subsidence Affected Areas	Other Lands
		Pits	Mine Waste				
Approximate surface area (ha)	2,566	897	2,418	420	360	632	30,087
Pre-mine land use	Combination of low intensity cattle grazing and bushland						
Post-mine land use	Low intensity cattle grazing.	Voids to reach a stable water level over time for storage and stock watering.	Combination of low intensity cattle grazing and bushland.	Low intensity cattle grazing.		Combination of low intensity cattle grazing and bushland.	
Post-mine land capability classification	Land Suitability (Low Intensity Grazing). All other areas – Class III1 or IV1.	Voids – Class V1	Land Suitability (Low Intensity Grazing). All other areas – Class III1 or IV1.				
Projective cover range (%)	>70% groundcover is present (or 50% if rocks, logs or other features of cover are present).	Not applicable	>70% groundcover is present (or 50% if rocks, logs or other features of cover are present).			Consistent with existing vegetation as these areas are going to have minimal disturbance.	
Target slope range (degrees)	No less than 75% of the rehabilitated area has slopes of less than 5 degrees and up to	Void – pits 1 and 2: Final void batter slopes would be designed	Borrow Pit and Overburden: No less than 75% of the rehabilitated	Tailings Dam: no less than 75% of the rehabilitated area has slopes	As required.		

Land Use	Domain 1	Domain 2		Domain 3	Domain 4	Domain 5	Domain 6
	25% of the rehabilitated area has slopes greater than 5 degrees.	and excavated to exhibit permanent geotechnical stability. Prior to closure, further investigations would be undertaken to specify design criteria and appropriate action would be taken to ensure effective long term safety, stability and management of the void.	area has slopes of less than 10 degrees and up to 25% of the rehabilitated area has slopes greater than 10 degrees.	of less than 5 degrees and up to 25% of the rehabilitated area has slopes greater than 5 degrees.			

3.2. POST MINE LAND USE PLAN

A Post Mine Land Use Plan (PMLUP) consistent with the Plan of Operations will be developed, when the first Plan of Operations is prepared, for each Domain describing how the rehabilitation objectives for each Domain will be achieved. The PMLUPs will be included in the relevant Domain sections of this Rehabilitation Management Plan and include, where relevant:

- Schematic representation of final land form inclusive of drainage features
- Drainage design
- Erosion controls proposed on reformed land
- Geotechnical, geochemical and hydrological studies
- Chemical, physical and biological properties of soil and water
- Proposed revegetation methods inclusive of plant species selection, re-profiling, respreading soil, soil ameliorants/amendments, surface preparation and method of propagation
- A rehabilitation monitoring program (Section 11).

3.3. LANDFORM DESIGN SUMMARY

The objective of landform design is to create a stable post-disturbance landform with that is self-sustaining or a landform where maintenance requirements are consistent with the final land use. All areas significantly disturbed by mining activities will be rehabilitated in accordance with Table 3.2.

Table 3-2 Landform Design Criteria Summary

Domains			Target Slope Range (Degrees)	Approximate Surface Area (ha)
Domain 1	Infrastructure	Workshops, accommodation, administration area, Light industrial area, CHPP and ROM stockpiles, roads, rail, and conveyers	No less than 75% of the rehabilitated area has slopes of less than 5° and up to 25% of the rehabilitated area has slopes greater than 5°.	2,566
Domain 2	Pits	Void – Pit 1	Final void batter slopes will be designed and excavated to exhibit permanent geotechnical stability. Prior to closure, further investigations will be undertaken to specify design criteria and appropriate action will be taken to ensure effective long term safety, stability and management of the void	897
		Void – Pit 2		

Domains			Target Slope Range (Degrees)	Approximate Surface Area (ha)
	Mine Waste	Borrow Pit	No less than 75% of the rehabilitated area has slopes of less than 10° and up to 25% of the rehabilitated area has slopes greater than 10°.	2,418
		Overburden	No less than 75% of the rehabilitated area has slopes of less than 10° and up to 25% of the rehabilitated area has slopes greater than 10°.	
Domain 3	Tailings Storage Facility	Tailings Dam	No less than 75% of the rehabilitated area has slopes of less than 5° and up to 25% of the rehabilitated area has slopes greater than 5°.	420
Domain 4	Dams and Surface Water Features		As required	360
Domain 5	Subsidence Affected Areas		As required	632
Domain 6	Other Lands	Other lands including exploration and groundwater monitoring bores	As required	30,087
			As required	

4. GENERAL REHABILITATION METHODS

The general rehabilitation methods and principles detailed in this section are common across all Domains. Specific rehabilitation methods for each Domain are presented in Sections 5, 6, 7, 8, 9, and 10.

4.1. SOIL MANAGEMENT

The handling of soil during the construction and operation of the mine will include activities such as vegetation clearing, topsoil stripping, subsoil removal, stockpiling, re-profiling, ripping and scarification, and soil amelioration.

Appropriate soil handling during construction and rehabilitation is critical to the successful rehabilitation of disturbed areas, particularly for soils with significant subsoil constraints such as sodicity and salinity.

During construction a range of general actions will be implemented to minimise impacts to land, with the main objective being to return disturbed areas as near as practical to pre-existing environmental conditions by:

- Removing topsoil and stockpiling it separately to the subsoil layer
- Maintaining topsoil quantity and quality through the use of sediment fencing, windrowing the topsoil and respreading as soon as practicable after backfilling of the trench
- Returning the land as far as practicable to the pre-disturbance land use and capability as early as possible
- Returning the land to a stable landform (i.e. no subsidence, land slips, or major erosion), with no greater management inputs than those required prior to land disturbance.

A Topsoil Management Plan (TMP; SEIS, Volume 2, Appendix T4.13) will be developed to maximise the recovery and reuse of topsoil. This TMP will include:

- All relevant aspects for topsoil retrieval such as stripping, stockpiling, erosion prevention and re-spreading procedures, stockpile locations, and inventory
- Topsoil stripping quantities formulated from pre-mining soil survey information
- Stripping and stockpile management.

Specific requirements for different post-mining landform elements will be specified in the TMP and in the Erosion and Sediment Control Plan (ESCP).

4.2. EROSION AND SEDIMENT CONTROL

A site-based ESCP (SEIS, Volume 2, Appendix T4.04) will be prepared for all disturbance activities. ESCPs will be prepared with reference to the International Erosion Control Association Best Practice Erosion and Sediment Control Guidelines 2008.

All ESCP measures will be fully implemented to provide effective erosion control prior to land disturbance activities. All measures will be installed and kept in place and maintained in a fully functional state until the area has been effectively rehabilitated.

Additional erosion control measures such as the application of 'hydromulch' will be considered, particularly in drainage lines and steeper batter slopes (e.g. infrastructure "cut and fill" batters). Opportunities for the use of potential soil ameliorants (biosolids) to accelerate the rehabilitation process will also be investigated as appropriate.

4.3. FLORA SPECIES SELECTION FOR REHABILITATION

Native flora species are to be used and only if unsuccessful will discussions be held with DEHP regarding the use of introduced species prior to revegetation. For areas returning to a specific regional ecosystem (RE) flora species selection will focus on those native species present prior to disturbance and those contained in reference sites of the same RE.

For highly modified landscapes such as the tailings dam and overburden emplacement areas (i.e domains 2 and 3) flora species selection will focus on local native species that will successfully establish on the available growth medium, will bind the soil, and will result in a variety of structure and habitat resources.

Revegetation trials and other site based investigations will be undertaken to understand and determine the most appropriate species and conditions required for successful rehabilitation. Trials may include the assessment of species, topsoil depth, the use of structured soils, soil amelioration, and use of organic mulch. Revegetation techniques will be continually developed and refined over the life of mine through an ongoing process of monitoring at the site and recognition of other industry experiences.

Native species will be established through direct seeding or planting of tube stock/nursery-raised stock from local propagules. Seed will be collected locally where possible to ensure it is adapted to local environmental conditions. The Florabank Guidelines 6, Native Seed Collection will be used for seed collection activities.

Revegetation will be achieved using species from the local plant communities that were identified during the flora assessment undertaken in 2010 (see EIS Volume 1, Section 9). A summary of species likely to be used for revegetation of the disturbance areas within the MLA is presented in Table 4.1.

Table 4-1 Species to be Used for Rehabilitation throughout the Life of the Project

Scientific Name	Common Name
Woodlands	
<i>Acacia cambagei</i>	gidgee
<i>Acacia coriacea subsp sericophylla</i>	desert oak
<i>Acacia excelsa</i>	ironwood
<i>Acacia harpophylla</i>	brigalow
<i>Acacia holosericea</i>	soap bush
<i>Acacia lazaridis</i>	Lazarides wattle
<i>Acacia oswaldii</i>	milijee
<i>Acacia salicina</i>	sally wattle
<i>Acacia shirleyi</i>	lancewood
<i>Alphitonia excelsa</i>	red ash

Scientific Name	Common Name
<i>Aristida biglandulosa</i>	dark wiregrass
<i>Aristida sp.</i>	wiregrass
<i>Atalaya hemiglauca</i>	whitewood
<i>Bothriochloa ewartiana</i>	desert bluegrass
<i>Brachychiton populneus</i>	kurrajong
<i>Chloris divaricata</i>	slender chloris
<i>Chrysopogon fallax</i>	golden beard grass
<i>Corymbia dallachiana</i>	Dallachy's gum
<i>Corymbia setosa</i>	rough-leaved bloodwood
<i>Dichanthium sericeum subsp sericeum</i>	bluegrass
<i>Digitaria brownii</i>	cotton panic grass
<i>Dodonaea lanceolata var. lanceolata</i>	hopbush
<i>Enchylaena tomentosa</i>	ruby saltbush
<i>Eragrostis sp.</i>	lovegrass
<i>Eremophila latrobei</i>	crimson turkey bush
<i>Eremophila mitchellii</i>	false sandalwood
<i>Erythrina vespertilio</i>	bat's wing coral tree
<i>Eucalyptus brownii</i>	Reid river box
<i>Eucalyptus camaldulensis</i>	river red gum
<i>Eucalyptus cambageana</i>	Dawson gum
<i>Eucalyptus coolabah</i>	coolabah
<i>Eucalyptus melanophloia</i>	silver-leaved ironbark
<i>Eucalyptus populnea</i>	poplar box
<i>Eucalyptus tessellaris</i>	Moreton Bay ash
<i>Eucalyptus thozetiana</i>	Thozet's box
<i>Melaleuca tamariscina</i>	weeping bottlebrush
<i>Heteropogon contortus</i>	black speargrass
<i>Paspalidium caespitosum</i>	brigalow grass
<i>Themeda triandra</i>	kangaroo grass
Grasslands	
<i>Astrebla elymoides</i>	hoop mitchell grass
<i>Astrebla pectinata</i>	barley mitchell grass
<i>Astrebla squarrosa</i>	bull mitchell grass

Scientific Name	Common Name
<i>Dichanthium sericeum subsp sericeum</i>	bluegrass
<i>Panicum decompositum</i>	native millet
<i>Sporobolus caroli</i>	fairy grass
<i>Themeda triandra</i>	kangaroo grass

Riparian Zones

<i>Aristida inaequiglumis</i>	feathertop three-awn
<i>Aristida latifolia</i>	feather top wiregrass
<i>Atalaya hemiglauc</i>	whitewood
<i>Brachychiton populneus</i>	kurrajong
<i>Chloris divaricata</i>	slender chloris
<i>Corymbia dallachiana</i>	Dallachy's gum
<i>Enchylaena tomentosa</i>	ruby saltbush
<i>Eragrostis elongata</i>	clustered lovegrass
<i>Eragrostis lacunaria</i>	purple lovegrass
<i>Eragrostis parviflora</i>	weeping lovegrass
<i>Eucalyptus camaldulensis</i>	river red gum
<i>Eucalyptus cambageana</i>	Dawson gum
<i>Eucalyptus coolabah</i>	coolabah
<i>Eucalyptus melanophloia</i>	silver-leaved ironbark
<i>Eucalyptus tessellaris</i>	Moreton Bay ash
<i>Heteropogon contortus</i>	black speargrass
<i>Lysiphyllum carronii</i>	red bauhinia
<i>Paspalidium caespitosum</i>	brigalow grass
<i>Sporobolus caroli</i>	fairy grass
<i>Themeda triandra</i>	kangaroo grass

Steep Slopes / High Erosion

<i>Brachyachne convergens</i>	native couch/spider grass
<i>Chloris pectinata</i>	comb chloris
<i>Iseilema vaginiflorum</i>	red Flinders grass

A combination of native pasture species and non-invasive sterile cover crop (e.g. millet, oats or barley) may be used on the disturbance areas to ensure the quick establishment of a continuous groundcover, thereby reducing the risk of erosion. Legumes may also be selected to assist in the supply of bio-available nitrogen to the soil. If the use of native grasses and/or legumes is deemed

necessary for erosion control in the bushland areas, native pasture seed and fertiliser will be applied at a lower rate than for pasture outcomes to reduce competition with tree seed and/or seedlings.

Native pasture species (warm season perennial, cool season perennial, yearlong green perennial and annual) will be sown on pasture areas requiring rehabilitation. If steep slopes are present and it is not practicable to re-shape the area and/or there is a high risk of erosion, native stoloniferous grass species (e.g. *Brachyachne convergens* (native couch/spider grass), *Chloris pectinata* (comb chloris), and *Iseilema vaginiflorum* (red Flinders grass)) will be sown as their growth provides more extensive coverage in a shorter time.

If native species are unsuccessful, discussions will be held with DEHP regarding implementation of conditions for the use of introduced species, including buffer zones, as outlined in Volume 1, Section 26 of the EIS and in Appendix T1, Section T.3.8.6 of the SEIS.

Aerial sowing, or direct seeding with a seeder attached to a tractor and ground broadcasting will be conducted for both tree and pasture seed as the preferred sowing methods and stock will be excluded whilst the vegetation is establishing.

All revegetated areas will be monitored for the initial establishment of groundcover and in the longer term against completion criteria to ensure completion criteria are met. The irrigation of revegetated areas during the establishment stage (typically 12 weeks/3 months) will be used, where practicable, for long term revegetation success. Additional vegetation will be seeded or planted where regeneration of dominant species does not occur within one year.

4.4. PEST AND WEED MANAGEMENT

A detailed Pest and Weed Management Plan (SEIS, Volume 2, Appendix T4.02) is contained in the SEIS. Weeds will be managed across the site through a series of control measures, including:

- Washing down of 'at risk' equipment in an approved wash down area before entry to site
- Scalping weeds off or herbicide treatment of weeds on topsoil stockpiles prior to resspreading
- Regular inspections of rehabilitation to identify potential weed infestations
- Identifying and treating existing weed populations on-site for the duration of the mine-life
- Restricting soil and machinery movements from infested areas to areas free from weed infestations
- Wash down of at risk equipment before movement from infested areas to weed free areas within the mine site
- Using agricultural herbicides in the areas to be stripped and on stripped topsoils.

Introduced plants will be excluded from rehabilitation of native areas using buffer areas and control measures presented above. The completion criteria for introduced species in rehabilitation are that the abundance of these species at completion is no greater than that found prior to disturbance.

4.5. BUFFEL GRASS MANAGEMENT

4.5.1. Objective and Outcomes

Buffel grass (*Pennisetum ciliare*) is an invasive species already found throughout the mining lease. Because this pasture species is highly competitive which can potentially degrade habitat values and increase fuel loads it will be managed to prevent heavy infestations.

Habitat mapping for MNES species has been developed for the project area and buffel in these areas native vegetation will be managed to maintain or enhance MNES habitat values. Proposed management actions are designed to suppress and remove buffel grass through herbicide application, increases in litter cover, and re-establishment of mid and upper story species in areas of native vegetation.

In areas of MNES habitat baseline information on the density and distribution of buffel grass will be collected prior to project commencement. MNES habitat exists on the project site for birds, reptiles and King blue grass (*Dichanthium queenslandicum*). Buffel grass impacts on different habitat elements and the preferred buffel grass management methods will vary between these habitat types.

The buffel grass management objectives and success factors will depend on the level of buffel grass infestation and are presented in Table 4-2.

Table 4-2 Management Objectives

Baseline Situation	Management Objectives
Where there is no buffel	<ul style="list-style-type: none"> No outbreaks more than 5m² with greater than 50% cover
Where buffel occurs in small areas (<25m ²) and is not dominant	<ul style="list-style-type: none"> Prevent the spread of buffel grass Eradicate buffel grass
Buffel grass is dominant	<ul style="list-style-type: none"> Reduce buffel grass dominance Reduce biomass Maintain or increase inter-tussock spacing

4.5.2. Management Actions

Buffel grass is best controlled via a combination of herbicide (glyphosate) and slashing/manually pulling. Grazing can also be a useful tool to reduce infestations of buffel grass and reduce fuel loads. King blue grass populations will be clearly identified to ensure the proposed management actions do not inadvertently impact this species.

Buffel grass spread will be minimised by:

- The use of proper hygiene to prevent the spread of buffel grass seed by people, animals, machinery and equipment;
- The establishment of buffer zones around MNES habitat through suppression or removal of existing tussocks and prevention of seedling establishment within buffer zones by chemical, mechanical or physical means may assist in reducing spread into buffel-free areas; and
- Buffel seed production to be suppressed using chemical control, slashing and grazing where appropriate; and

- Eradication of isolated occurrences of buffel grass (areas <25m² more than 50m from other areas of buffel grass).

Buffel grass management actions:

- Chemical control
 - Buffel grass should be sprayed when the growth rate is high (leaves are bright green and glossy) but before seed is produced, and the herbicide should be applied to as much of the green foliage as possible.
- Mechanical control
 - Slashing followed by herbicide spraying is also effective. Follow up spraying and pulling of surviving plants should also take place.
- Grazing
 - Grazing where operationally consistent will be permitted seasonally, generally outside of summer to reduce infestations of buffel grass, minimise erosion potential, and minimise fuel loads; and
 - Grazing to reduce the standing bulk to below 1200kg/ha, reducing the risk of fire and spread of seed.
- Fire
 - The use of fire should be considered for reducing old buffel grass biomass and to promote new growth that is receptive to chemical treatment; and
 - Fire management, if practical should commence as soon as possible after curing.

4.5.3. Monitoring

Monitoring will be undertaken to map buffel grass extent, density and biomass levels. Based on the monitoring results compared to the management objectives the management measures will be assessed and corrective actions applied if required as presented in Table 4-3.

Buffel grass control will be conducted as required, with new infestations targeted in native vegetation, at a minimum of once per year.

Monitoring of the success of treatment will occur through the set-up of representative photo monitoring points with twice annual monitoring. The photo monitoring will be set up to identify visual changes in both buffel grass cover and the re-establishment of native vegetation.

Monitoring for new outbreaks will include checks of areas:

- Disturbed by fire, flood, heavy grazing or earthworks
- Previously supporting buffel grass, and
- Near existing populations.

Where monitoring finds that the management measures are unsuccessful in achieving the performance indicators (Table 4-3) over two consecutive years, the buffel grass management plan will be revised in consultation with Department of Sustainability, Environment, Water, Population and Communities (SEWPaC).

Table 4-3 Performance Indicators

Management Measure	Success	Unsuccessful	Corrective Actions
Eradicating buffel grass (small populations <25m ²)	No buffel grass present Native vegetation re-establishing	Buffel grass still present Germination or reshooting of buffel grass	Review effectiveness of control methods (e.g. herbicide being used) and revise where appropriate
Preventing the spread of buffel grass	Areas of buffel grass same size or smaller than baseline	Area of buffel grass increasing New populations of buffel grass	Review hygiene procedures and revise where appropriate Review and inspect buffer areas to ensure they are maintained Review effectiveness of control methods (e.g. herbicide being used) and revise where appropriate
Reducing bulk and fuel loads as potential threats to habitat values	Fuel loads have been reduced	Fuel loads are high Buffel grass seeding has not been reduced	Review use of grazing, slashing or fire to ensure seed production and biomass is reduced
Maintenance of inter-tussock spacing for native plant establishment	Buffel grass density is not increasing Native species are establishing	Buffel grass density is increasing	Review effectiveness of control methods (e.g. herbicide being used) and revise where appropriate

5. DOMAIN 1 – INFRASTRUCTURE, ROADS, AND TRACKS

Rehabilitation will be consistent with the rehabilitation objectives in Section 2.1 and the final land use objectives for Domain 1.

5.1. FINAL LAND USE OBJECTIVES

The post-mine land use proposed for Domain 1 is low density cattle grazing land. Post-disturbance grazing land will be rehabilitated to land suitability Class 3, which has moderate limitations, and Good Quality Agricultural Land (GQAL) Class C2 and C3 Pasture Lands (to allow land to remain as sustainable low density cattle grazing).

5.2. REHABILITATION ACTIONS

Rehabilitation actions required within Domain 1 include landform stability, water quality, topsoil management, and revegetation and fauna habitat replacement. Completion criteria will address these rehabilitation actions and the rehabilitation objectives outlined in Section 2.

At the cessation of operations, decommissioning activities are required in this domain prior to final rehabilitation works and revegetation. Revegetation will include the rehabilitation of REs for areas which were remnant prior to disturbance and native pasture systems for non-remnant areas.

5.2.1. Post Mine Land Use Plan

A PMLUP (Section 3.2) will be included in this section for the rehabilitation of disturbance areas consistent with the Plan of Operations to meet the final land use objectives. The PMLUP will be supported by other rehabilitation actions for this domain.

5.2.2. Landform Design

The objective is to create a stable post-disturbance landform that is self-sustaining, or a landform where maintenance requirements are consistent with grazing land. All areas significantly disturbed by mining activities will be rehabilitated in accordance with Table 5.1.

Table 5-1 Domain 1: Landform Design Criteria

Domain 1		Target Slope Range (Degrees)	Approximate Surface Area (ha)
Infrastructure	Workshops, accommodation, administration area, Light industrial area, CHPP and ROM stockpiles, roads, rail, and conveyers.	No less than 75% of the rehabilitated area has slopes of less than 5° and up to 25% of the rehabilitated area has slopes greater than 5°.	2,566

5.2.3. Water Quality Management

A detailed Erosion and Sediment Control Plan (ESCP; SEIS, Volume 2, Appendix T4.04) will be developed prior to the commencement of construction works. The ESCP can be used to manage water quality, and monitoring downstream will be used to assess and minimise the Project impacts on downstream water quality. A Water Management System will also be implemented to manage flows into, on, and from the site.

5.2.4. Topsoil Management

To achieve the desired post-mine land use of low density cattle grazing land, topsoil will require management to allow revegetation. A Topsoil Management Plan (TMP) (SEIS, Volume 2, Appendix T4.13) will be developed to maximise the recovery, management and reuse of topsoil. Specific requirements for different post-mining landform elements will be specified in the TMP and in the ESCP.

5.2.5. Revegetation and Fauna Habitat Replacement

To re-establish low density cattle grazing land, native species will be sown. Native pasture species (warm season perennial, cool season perennial, yearlong green perennial and annual) will be sown on pasture areas requiring rehabilitation. If steep slopes are present and it is not practicable to re-shape the area and/or there is a high risk of erosion, native stoloniferous grass species (e.g. *Brachyachne convergens* (native couch/spider grass), *Chloris pectinata* (comb chloris) and *Iseilema vaginiflorum* (red Flinders grass)) will be sown as their growth provides more extensive coverage in a shorter time. If native species are unsuccessful, discussions will be held with DEHP regarding implementation of conditions for the use of introduced species (typically a sterile cover crop), including buffer zones, as outlined in Volume 1, Section 26 of the EIS and in the Appendix T1, Section T.3.8.6 of the SEIS.

Cleared vegetation will be used in the revegetation process in two ways. This includes use as organic mulch and, where possible, re-use of logs and tree stumps to provide shelter for fauna within the rehabilitated areas.

5.3. COMPLETION CRITERIA

The rehabilitation completion criteria for Domain 1 are presented in Appendix 1. Completion criteria relate to the long-term rehabilitation objectives for the mine identified in Section 2.2 and to the rehabilitation actions identified in Section 5.2.

6. DOMAIN 2 – PITS, VOIDS, AND OVERBURDEN EMPLACEMENTS

These areas will undergo major earthworks and will not be returned to their original landform. Rehabilitation will be consistent with the rehabilitation objectives in Section 2.1 and the final land use objectives for Domain 2.

6.1. FINAL LAND USE OBJECTIVES

The post-mine land use proposed for Domain 2 is native vegetation and a final void. Section 4.3 contains a list of potential rehabilitation species; however vegetation community composition and species selection will be undertaken at a later date. Native vegetation planted to achieve a stable community will depend on the final landform design and the characteristics of the substrate media.

6.2. REHABILITATION ACTIONS

At the cessation of operations, decommissioning activities are required in this domain prior to rehabilitation works and revegetation.

Rehabilitation actions that will need to be addressed within Domain 2 include landform and drainage design, overburden emplacement, topsoil management, revegetation and replacement of fauna habitat, and void management. Completion criteria will address these rehabilitation actions and the rehabilitation objectives outlined in Section 2.

6.2.1. Post Mine Land Use Plan

A PMLUP (Section 3.2) will be included in this section for the rehabilitation of disturbance areas consistent with the Plan of Operations to meet the final land use objectives. The PMLUP will be supported by other rehabilitation actions for this domain.

6.2.2. Landform and Drainage Design

Further studies are required for the development of the final landform design with an appropriate drainage network. Detailed plans will be prepared to show the final landform. Landform design criteria will include visual impact/consistency, geotechnical stability, drainage and erosion, and sediment control.

All areas significantly disturbed by mining activities will be rehabilitated in accordance with Table 6.1.

Table 6-1 Domain 2: Landform Design Criteria

Domain 2		Target Slope Range (Degrees)	Approximate Surface Area (ha)
Pits and Mine	Void – Pit 1	Final void batter slopes will be designed and excavated to exhibit permanent geotechnical stability. Prior to closure, further investigations will be undertaken to specify design criteria and	897
	Void – Pit 2		

Domain 2		Target Slope Range (Degrees)	Approximate Surface Area (ha)
Waste		appropriate action will be taken to ensure effective long term safety, stability and management of the void.	
	Borrow Pit	No less than 75% of the rehabilitated area has slopes of less than 10°, and up to 25% of the rehabilitated area has slopes greater than 10°.	
	Overburden	No less than 75% of the rehabilitated area has slopes of less than 10°, and up to 25% of the rehabilitated area has slopes greater than 10°.	2,418

6.2.3. Water Quality Management

A detailed ESCP (SEIS, Volume 2, Appendix T4.04) will be developed prior to the commencement of construction works. The ESCP can be used to manage water quality, and monitoring downstream will be used to assess and minimise the Project impacts on downstream water quality. A Water Management System will also be implemented to manage flows into, on, and from the site.

6.2.4. Overburden Emplacement

The overburden emplacement areas will undergo reshaping where required to ensure they meet the final landform criteria prior to final revegetation works commencing. The areas will be rehabilitated to create the final landforms as prepared in the final plans.

The final landform will incorporate structural soil conservation works to ensure that water is directed into the site water management system. Such works may include the construction of contour banks, waterways, drains, graded banks, and check dams, as is current rehabilitation practice on the site.

6.2.5. Topsoil Management

A TMP (SEIS, Volume 2, Appendix T4.13) will be prepared prior to commencement of any disturbance activities and will be based on the results of a detailed soil survey. The TMP will include an inventory which identifies the topsoil requirements for the Kevin's Corner Coal Mine Project and availability of suitable topsoil.

The TMP will be developed to maximise the recovery and reuse of topsoil and will include:

- All relevant aspects for topsoil retrieval such as stripping, stockpiling and re-spreading procedures, stockpile locations, and inventory
- Topsoil stripping quantities formulated from pre-mining soil survey information
- Stripping and stockpile methodology.

Topsoil must be strategically stripped ahead of mining in accordance with the TMP. Topsoils are to be tracked to ensure they are used optimally. Topsoil and subsoils must be managed to ensure stability and minimise the release of contaminants. Measures include:

- Vegetating stockpiles

- Separation of topsoil from subsoil, including separating stockpile areas
- Minimising height and ongoing management (regular turning or revegetation) of stockpiles
- Reusing stockpiles as soon as possible.

6.2.6. Revegetation and Fauna Habitat

A detailed revegetation plan will developed and included in this Rehabilitation Management Plan following the characterisation of overburden material and the development of the topsoil management plan and final landform plans (**Section 6.2.1**). The aim of the revegetation is to re-establish native bushland, with the use of local native species. Plant selection for areas to be rehabilitated as bushland will use species that will successfully establish on available growth medium, bind the soil, and result in a variety of food and habitat resources for fauna as presented in Section 4.3. The species likely to be used have been provided for each of the predominant pre-mining land uses (woodlands, grasslands, and riparian zones).

Cleared vegetation will be used in the revegetation process in two ways. This includes use as organic mulch and, where possible, re-use of logs and tree stumps to provide shelter for fauna within the rehabilitated areas.

The progressive rehabilitation of areas disturbed through mining operations will be undertaken within 2 years of becoming available in order to create this desired low maintenance, geo-technically stable landform. A staged rehabilitation approach for the Project area is outlined in Table 6.2.

Table 6-2 Progressive Rehabilitation

Year from Commencement of Operations	Total Area of Rehabilitation in Progress* or Completed (ha)
Year 6	319.5
Year 11	464.2
Year 16	147.3
Year 21	198.9
End of Open cut mine life	714.0

* In Progress with revegetation commenced but not yet at final completion criteria.

6.2.7. Void Management

The final voids will remain at the end of mining to ensure the zone of influence, both groundwater level changes and hydrochemistry will be managed and maintained after the mining ceases. The voids will remain as permanent features incapable of supporting grazing activity, resulting in a land suitability Class 5 with an agricultural land class of D.

The residual void will be designed and managed to avoid environmental harm to land, surface waters, or any recognised ground water aquifer, other than the environmental harm constituted by the existence of the residual void itself.

Prior to closure, further investigations will be undertaken to specify landform design criteria and appropriate action will be taken to ensure effective long term safety, stability, and management of the void.

Upon closure of the mine, a Void Management Strategy (VMS) will be implemented targeting several key environmental issues for the long term management of the void. The primary objectives of the VMS are to:

- Propose mitigation measures to minimise potential impacts associated with the final void
- Propose measures for the management and monitoring the potential impacts of the void over time
- Present options for the final land use of the void following cessation of mining.

The residual void will be designed and managed to minimise environmental issues in the future.

6.3. COMPLETION CRITERIA

The rehabilitation completion criteria for Domain 2 are presented in Appendix 1. Completion criteria relate to the long-term rehabilitation objectives for the mine identified in Section 2.2 and to the rehabilitation actions identified in Section 6.2.

7. DOMAIN 3 – TAILINGS STORAGE FACILITY

These areas will not be returned to their original condition. Rehabilitation will be consistent with the rehabilitation objectives in Section 2.1 and the final land use objectives for Domain 3.

7.1. FINAL LAND USE OBJECTIVES

The tailings dam will be used for the disposal of tailings. Given the sensitive nature of the capping and rehabilitation endeavours, and the consequences of impacting on the integrity and stability of the capping layer, the post-mining land use will be limited to vegetative cover for erosion protection. No grazing is recommended for this area and therefore will have a land suitability Class 5 for cropping and grazing with Land Suitability class 3 or better. .

7.2. REHABILITATION ACTIONS

Rehabilitation actions that will need to be addressed within Domain 3 include tailings dam decommissioning, landform stability, topsoil management, and revegetation and fauna habitat. Completion criteria will address these rehabilitation actions and the rehabilitation objectives outlined in Section 2.

7.2.1. Post Mine Land Use Plan

A PMLUP (Section 3.2) will be included in this section for the rehabilitation of disturbance areas consistent with the Plan of Operations to meet the final land use objectives. The PMLUP will be supported by other rehabilitation actions for this domain.

7.2.2. Tailings Storage Facility Decommissioning

Prior to rehabilitation the structural integrity of the tailings storage facility (TSF) and the potential presence of hazardous material in the TSF will be determined and then decommissioned accordingly to limit the potential for their release. Decommissioning will include capping.

Capping trials will be undertaken with the aim of optimising rehabilitation design (capping thickness, type of materials and drainage measures). Vegetation species and growing methods will also be investigated.

Given the arid climate of the region, the tailings surface in the TSF is expected to dry out relatively quickly and form a dense compact solid material which will facilitate a cover placement and rehabilitation at the end of the mine life. A cover system will be utilised for TSF closure and topsoil will be placed onto the re-profiled final landform slopes.

7.2.3. Landform Design

The objective is to create a stable post-disturbance landform that is self-sustaining or a landform where maintenance requirements are consistent with vegetative cover to minimise erosion and protection of the capping. Landform stability will protect the integrity and stability of the sensitive capping layer. All areas significantly disturbed by mining activities will be rehabilitated in accordance with Table 7.1.

Table 7-1 Domain 3: Landform Design Criteria

Domain 3		Target Slope Range (Degrees)	Approximate Surface Area (ha)
Tailings Storage Facility	Tailings Dam	No less than 75% of the rehabilitated area has slopes of less than 5°, and up to 25% of the rehabilitated area has slopes greater than 5°.	420 ha

7.2.4. Revegetation

A detailed revegetation plan will be developed prior to rehabilitation and amended through the use of capping trials. The aim of the revegetation is to provide a vegetative cover for erosion protection of the capped TSF in a manner which will not compromise the integrity of the TSF. Native species will be used (Section 4.3), with species selection driven by a selection for species that will successfully establish on available growth medium and bind the soil without comprising the integrity of the TSF.

7.3. COMPLETION CRITERIA

The rehabilitation completion criteria for Domain 3 are presented in Appendix 1. Completion criteria relate to the long-term rehabilitation objectives for the mine identified in Section 2.2 and to the rehabilitation actions identified in Section 7.2.

8. DOMAIN 4 – DAMS AND SURFACE WATER FEATURES

Rehabilitation will be consistent with the rehabilitation objectives in Section 2.1 and the final land use objectives for Domain 4.

8.1. FINAL LAND USE OBJECTIVES

Consultation with landholders will determine if clean water dams, will be stabilised and remain on site for stock watering purposes. Water in mine affected water dams will be removed, the dam re-profiled and re-vegetated and drainage channels will be re-established. Dams will likely remain as depressions in the landscape with ponding capacity, and may have possible uses associated with the post mining land use of grazing. The post-mining land use suitability for dams is expected to be Class D.

A PMLUP will be included in this plan for the rehabilitation of disturbance areas consistent with the Plan of Operations.

8.2. REHABILITATION ACTIONS

Rehabilitation actions that will need to be addressed within Domain 4 include decommissioning of dams, landform stability, water quality management, and revegetation and fauna habitat. Completion criteria will address these rehabilitation actions and the rehabilitation objectives outlined in Section 2.

8.2.1. Post Mine Land Use Plan

A PMLUP (Section 3.2) will be included in this section for the rehabilitation of disturbance areas consistent with the Plan of Operations to meet the final land use objectives. The PMLUP will be supported by other rehabilitation actions for this domain.

8.2.2. Decommissioning of Dams

Any excess water retained within the dam at completion of operations will be removed prior to reshaping works. A Mine Water Management Plan (SEIS, Volume 2, Appendix T4.12) will be prepared to prevent release of contaminants to any waters. The plan will consider potential irrigation water sources and water quality objectives required for rehabilitation works. An ESCP will also assist to ensure water leaving the disturbed area is adequately treated.

8.2.3. Landform Stability

The objective is to create stable post-disturbance landforms that are self-sustaining or landforms where maintenance requirements are consistent with final land use objectives.

Creek diversions must allow for replication of substrate conditions similar to the existing stream substrates of significance for geomorphic processes, water quality, vegetation, and aquatic habitat features as required. Subsidence will be monitored so that the stability of diversions is not reduced.

Once dams have been decommissioned the slope angles, lengths, and shapes should be compatible with proposed land use and not prone to an unacceptable rate of erosion. This should be integrated

with a drainage pattern that is capable of conveying runoff from the newly created catchments whilst minimising the risk of erosion and sedimentation. Final slope gradient should not exceed 17%.

8.2.4. Water Quality Management

A detailed ESCP (SEIS, Volume 2, Appendix T4.04) will be developed prior to the commencement of construction works. The ESCP can be used to manage water quality. Monitoring downstream will be used to assess and minimise the Project impacts on downstream water quality. A Water Management System will also be implemented to manage flows into, on and from the site.

Table 8-1 Domain4: Landform Design Criteria

Domain 4		Target Slope Range (Degrees)	Approximate Surface Area (ha)
Dams and Surface Water Features	MW Dams 1, 2, 3 and 4.	As required	360 ha

8.2.5. Revegetation and Fauna Habitat

A revegetation plan of disturbed diversion areas will be included in this plan in line with the diversion channel construction staging. The rehabilitated vegetation must be stable and self-sustaining.

Establishment of vegetation on disturbed areas of diversions will be undertaken as soon as practicable before commissioning. Diversions will be re-vegetated using baseline information from the reaches which are being diverted. Clearing of riparian vegetation for the proposed creek diversion will be conducted in a staged manner to allow fauna to migrate to adjacent habitat areas. Stock will be excluded for a distance of at least 30 m from the top of the bank.

Dams will be re-vegetated to re-establish low density cattle grazing land. Native pasture species (warm season perennial, cool season perennial, yearlong green perennial and annual) will be sown on pasture areas requiring rehabilitation. If steep slopes are present and it is not practicable to re-shape the area and/or there is a high risk of erosion, native stoloniferous grass species (e.g. *Brachyachne convergens* (native couch/spider grass), *Chloris pectinata* (comb chloris), and *Iseilema vaginiflorum* (red Flinders grass)) will be sown as their growth provides more extensive coverage in a shorter time. If native species are unsuccessful, discussions will be held with DEHP regarding implementation of conditions for the use of introduced species (typically a sterile cover crop), including buffer zones, as outlined in Volume 1, Section 26 of the EIS and in Appendix T1, Section T.3.8.6 of the SEIS.

Cleared vegetation will be used in the revegetation process in two ways. This includes use as organic mulch and re-use where possible of logs and tree stumps to provide shelter for fauna within the rehabilitated areas.

8.3. COMPLETION CRITERIA

The rehabilitation completion criteria for Domain 4 are presented in Appendix 1. Completion criteria relate to the long-term rehabilitation objectives for the mine identified in Section 2.2 and to the rehabilitation actions identified in Section 8.2.

9. DOMAIN 5 – SUBSIDENCE AFFECTED AREAS

Rehabilitation and monitoring activities within Domain 5 will be guided by the Interim Subsidence Management Plan, Appendix N of the SEIS. This section provides a summary of these requirements. Domain 5 areas will not be subject to any major earthworks, but will be prone to surface subsidence effects resulting from underground mining operations.

9.1. FINAL LAND USE OBJECTIVES

Most subsidence will not alter land suitability and the area can continue to be used for low intensity grazing. Conservation works will be implemented to ensure a free draining landscape is maintained. Rehabilitation objectives are to return subsidence impacted areas back to the condition of the original RE depending on final site constraints. Mitigation measures including native vegetation planting will be dependent on monitoring results. Revegetation will be designed to replace vegetation affected by subsidence and will be undertaken to assist in soil stabilisation and restoration of native vegetation communities and fauna habitats.

9.2. REHABILITATION ACTIONS

Rehabilitation actions that will need to be addressed within Domain 5 include re-profiling of slumping, channel and bed works, remediation of cracked areas, revegetation and replacement of fauna habitat. Completion criteria will address these rehabilitation actions and the rehabilitation objectives outlined in Section 2. The findings of the subsidence monitoring program will determine the rehabilitation actions required in combination with the completion criteria.

Offsets will be provided upfront of all high value MNES and EVNT habitat impacted by subsidence over the life of the project. All remnant vegetation which has been modelled as high value habitat for MNES or EVNT species and which will potentially be impacted by subsidence will be offset. This includes areas affected by ponding greater than 1.2 m, cracks wider than 100mm and mitigation works such as pillar excavation, crack infilling and installation of erosion control devices. A map clearly identifying the areas to be offset up-front will be provided in the Biodiversity Offsets Plan (March 2013).

This initial offset proposed is greater than the area identified in the ISMP as being affected by subsidence. The ISMP outlines the monitoring requirements to determine impacts as a result of subsidence as well as the requirements for the establishment of baseline data for areas potentially affected. This includes the establishment of analogue sites for each affected RE which should provide benchmarks to assess against. Subsidence monitoring will include periodic survey of all subsidence impacted areas for the life of the mine.

9.2.1. Post Mine Land Use Plan

A PMLUP (Section 3.2) will be included in this section for the rehabilitation of disturbance areas consistent with the Plan of Operations to meet the final land use objectives. The PMLUP will be supported by other rehabilitation actions for this domain.

9.2.2. Post Subsidence Mitigation Works

In the event that post-subsidence surveys indicate that additional works are required, the following measures will be considered:

- Replace sand across the channel bed, including higher sand deposits suitable for re-creation of in channel benches
- In areas where less active bank erosion develops, large woody debris will be placed in-stream to encourage the deposition of sediment and revegetation over time
- Targeted revegetation will be undertaken in areas where surface water patterns have been affected
- Ripping and seeding of cracks. This will be supplemented with grouting where required
- Re-grading and backfilling with mine spoil to minimise erosion and sedimentation.

Any additional mechanisms, as identified by the post-subsidence monitoring, will also be considered.

Surface rehabilitation will include a cover of topsoil in a weathered rock matrix to create a stable substrate for revegetation of channel banks. Weathered rock provides temporary erosion protection by covering erodible soils and minimising topsoil loss. Amelioration of cracks and transport of rock and soil will be undertaken with small machinery to avoid further impacts to remnant vegetation where possible.

Erosion controls will be put in place to prevent topsoil leaving the site. Local drainage works will be designed to prevent the uncontrolled flow of runoff from the subsided floodplain area over the channel banks. Small diversion bunds directing floodplain runoff to properly engineered rock chute structures will be installed to minimise bank erosion. In areas of high flow timber groynes/pile field retards will be installed at the base of the channel banks (extending into the channel) to mitigate erosion undercutting the channel banks. In areas where less active bank erosion develops, large woody debris will be placed in-stream to encourage the deposition of sediment and revegetation over time.

Table 9-1 Domain 5: Landform Design Criteria

Domain 5		Target Slope Range (Degrees)	Approximate Surface Area (ha)
Subsidence affected areas	Subsidence areas impacted by cracking ponding and mitigation works.	As required	632 ha

9.2.3. Revegetation

A program of revegetation using native species found in the effected REs will be undertaken in areas experiencing the level of impacts outlined in Section 11.1.3 of Appendix N of the SEIS. Areas affected by ponding should be rehabilitated with species from the closest riparian communities within same relevant broad vegetation group.

If some trees have to be cleared to allow amelioration these should be counted as among the dead trees. Cleared trees should be immediately replaced 3:1 with the same species (unless that species is showing susceptibility to subsidence impacts, in which case another common species for the impacted RE can be used). All dead tree material should be left on site and used in rehabilitation as habitat. Stock will be excluded to a width of at least 30 m from the top of bank and subsided floodplain areas in order to minimise further impacts on vegetation cover and land condition.

9.3. COMPLETION CRITERIA

The rehabilitation completion criteria for Domain 5 are presented in Appendix 1. Completion criteria relate to the long-term rehabilitation objectives for the mine identified in Section 2.2 and to the rehabilitation actions identified in Section 9.2.

10. DOMAIN 6 – OTHER LANDS

This Domain consists of the areas within the Mining Lease that are indirectly affected by mining works. Rehabilitation will be consistent with the rehabilitation objectives in Section 2.1 and the final land use objectives for Domain 6.

10.1. FINAL LAND USE OBJECTIVES

These areas will not be subject to any major earthworks and the final land use objective is a combination of low intensity cattle grazing and bushland. The post-mining land suitability continues to be dominated by Class C1 land. A PMLUP will be included in this plan for the rehabilitation of areas not required for operational use following disturbance in conjunction with the Plan of Operations.

10.2. REHABILITATION ACTIONS

Rehabilitation actions that will need to be addressed within Domain 6 include decommissioning of remaining infrastructure, landform stability, topsoil management, and revegetation of fauna habitat. Completion criteria will address these rehabilitation actions and the rehabilitation objectives outlined in Section 2.

10.2.1. Post Mine Land Use Plan

A PMLUP (Section 3.2) will be included in this section for the rehabilitation of disturbance areas consistent with the Plan of Operations to meet the final land use objectives. The PMLUP will be supported by other rehabilitation actions for this domain.

10.2.2. Decommissioning of Remaining Infrastructure

Roads (except those used by the public) and other infrastructure have been removed unless stakeholders have entered into formal written agreements for their retention. Areas are readily accessible and conducive to safe cattle management activities. Predicted economics and/or benefits have been defined and agreed by the stakeholders.

Minor dozer reshaping work will be undertaken to ensure surface level consistency with the surrounding areas. Any creek crossings (i.e. culverts, etc.) will be removed and the pre-existing drainage line re-instated where applicable. If required the area will be deep ripped to loosen compacted material. A light vehicle access road is to be maintained to enable inspections of the site following closure of the mine. Fertiliser and pasture/tree seed will be applied to assist establish pasture post-mine land use.

All exploration boreholes within the lease will be grouted, capped, and sealed. Bores into underground workings will also be appropriately capped and sealed. Creek crossings will be removed and natural conditions restored.

10.2.3. Landform Design

The objective is to create stable post-disturbance landforms that are self-sustaining, or landforms where maintenance requirements are consistent with final land use objectives. Once any remaining infrastructure has been decommissioned minor re-shaping and grading will take place to ensure

surface level consistency with the surrounding areas. Any areas significantly disturbed by mining activities will be rehabilitated in accordance with Table 10.1.

Table 10-1 Landform Design Criteria

Domain		Target Slope Range (Degrees)	Approximate Surface Area (ha)
Other areas	Other lands including exploration and groundwater monitoring bores	As required	30,087 ha

10.2.4. Topsoil Management

To achieve the desired post-mine land use of low intensity cattle grazing and bushland, topsoil will require management to allow natural regeneration and revegetation. A TMP (SEIS, Volume 2, Appendix T4.13) will be developed to maximise the recovery and re-use of topsoil.

10.2.5. Revegetation and Fauna Habitat

The revegetation of any disturbed areas will be consistent with surrounding vegetation as these areas are going to have minimal disturbance. Section 4.3 contains a list of potential rehabilitation species, which will be dependent on the vegetation community being rehabilitated.

Cleared vegetation will be used in the revegetation process in two ways. This includes use as organic mulch and re-use where possible of logs and tree stumps to provide shelter for fauna within the rehabilitated areas.

10.3. COMPLETION CRITERIA

The rehabilitation completion criteria for Domain 6 are presented in Appendix 1.

11. REHABILITATION MONITORING PROGRAM

A Rehabilitation Monitoring Program for each domain will be developed and implemented by a person possessing appropriate qualifications and experience in the field of rehabilitation management.

An Impact Management Schedule will be maintained to assess actual impacts to vegetation and this will be used to guide rehabilitation where native ecosystems are being rehabilitated.

Monitoring will be undertaken at least annually (once rehabilitation has commenced), and include sufficient spatial and temporal replication to enable statistically valid conclusions as established under the rehabilitation program. Rehabilitation monitoring will finish once it has been demonstrated that relevant rehabilitation completion criteria have been met.

The Program will measure success factors and completion criteria for each domain as outlined in the relevant section and will involve:

- The use of reference (or “analogue”) sites where available (e.g. Table 11.1), or baseline monitoring results as applicable as benchmarks against which the relevant completion criteria will be measured
- Monitoring the key indicators over time so as to track their trajectory towards the benchmarks defined by the reference sites or baseline data.

Initial revegetation monitoring will focus on expected germination rates, seedling survival rates and tubestock survival, which will have failure thresholds and appropriate corrective actions. Corrective actions may also be identified through monitoring where the rehabilitated area does have continuous and progressive movement towards the completion criteria. Corrective actions can range from control of weeds, earthworks through to reseedling and planting of tubestock.

Table 11-1 Proposed Reference Sites

Reference Site	Latitude (Decimal Degree, GDA94)	Longitude (Decimal Degree, GDA94)	Description	Domain
1	146.3232	-23.0081	10.3.27a	1,5
2	146.4148	-22.9769	10.3.27a	1,5
3	146.406	-22.9466	10.3.27a	1,5
4	146.33	-22.9421	10.5.12	1,5,6
5	146.4172	-22.953	10.5.12	1,5,6
6	146.3452	-22.9631	10.5.12	1,5,6
7	146.3982	-22.9514	10.3.13a	1,5
8	146.2879	-22.9378	10.3.13a	1,5
9	146.3277	-22.9353	10.3.13a	1,5
10	146.4069	-22.9647	10.3.28a	1,5
11	146.2882	-23.0274	10.3.28a	1,5
12	146.2999	-22.8676	10.3.28a	1,5
13	146.3277	-23.0109	10.3.3a	1,5,6

Reference Site	Latitude (Decimal Degree, GDA94)	Longitude (Decimal Degree, GDA94)	Description	Domain
14	146.34	-23.0032	10.3.3a	1,5,6
15	146.295	-23.027	10.3.3a	1,5,6
16	146.5266	-23.0922	10.7.7	1,5
17	146.562	-23.103	10.7.7	1,5
18	146.5198	-23.0728	10.7.7	1,5
19	146.3657	-22.9483	10.7.3b	1,5,6
20	146.3469	-22.9332	10.7.3b	1,5,6
21	146.3329	-22.9482	10.7.3b	1,5,6
22	146.3273	-22.8714	10.5.5a	1,5,6
23	146.3003	-22.8507	10.5.5a	1,5,6
24	146.3278	-22.9467	10.5.5a	1,5,6
25	146.595	-23.1039	10.5.1c	1
26	146.536	-23.0957	10.5.1c	1
27	146.576	-23.0208	10.5.1c	1
28	146.3426	-22.9472	10.7.5	1,6
29	146.2866	-22.8468	10.7.5	1,6
30	146.3086	-23.0194	10.7.5	1,6
31	146.371	-22.9422	10.3.12a	1
32	146.3972	-22.9459	10.3.12a	1
33	146.4149	-22.9457	10.3.12a	1
34	146.3457	-22.8877	10.10.1b	5
35	146.3421	-22.9285	10.10.1b	5
36	146.2953	-23.0869	10.10.1b	5

To allow for benchmarking and monitoring rehabilitation of remnant regional ecosystems analogue / reference sites will be established prior to the commencement of vegetation clearing for each regional ecosystem to be disturbed. Details and locations of these sites will be developed in this Rehabilitation Monitoring Program. Success criteria will be developed for the rehabilitation of remnant regional ecosystems and other pre-disturbance land use types and approved for mine rehabilitation prior to mining activities commencing. The *BioCondition, a Condition Assessment Framework for Terrestrial Biodiversity in Queensland, Assessment Manual* (Eyre et al 2011) and accompanying document, *Methodology for the Establishment and Survey of Reference Sites for BioCondition* (Eyre et al 2006) will be used as the guiding documents. The abundance of invasive exotic grasses and introduced plants will be assessed prior to disturbance.

Key parameters to be measured and monitored in the analogue sites and rehabilitation areas for determining rehabilitation success will include:

1. Flora species richness and diversity
2. A description of the structural strata present
3. Dominant species within each strata
4. Associated stem count densities
5. Per cent foliage cover.

Photo monitoring points will also be established at each analogue site and representative rehabilitation area for each regional ecosystem type (SEIS Volume 2, Appendix T1, Section M.3.8.7; SEIS Volume 2, Appendix C, Section C.26). A photo monitoring procedure will be prepared to ensure consistency for the installation and monitoring of permanent photo points. Regard will be made to; DEHP's 'Land Manager's Monitoring Guide: Photo Point Monitoring Guide' and the Government of South Australia-Monitoring Photo points (South Australian Arid Lands Natural Resources Management Board). The procedure will include guidance on photo numbers and locations and site descriptions for each type of photo monitoring site. The establishment of the permanent photo monitoring sites will involve taking baseline photos and a description which adequately characterises the site.

Three reference sites will to be used to develop rehabilitation success criteria for relevant revegetation activities, where appropriate. These reference sites could coincide with subsidence monitoring sites required by Appendix N of the SEIS to gauge vegetation conditions subsidence impacts are predicted and which will include photo monitoring and observations of other criteria such as foliar discolouration, increased pathogenic attack, tree death, climatic factors, etc. The monitoring of reference sites will use an appropriate statistical design to enable statistically valid conclusions as established.

The program will contain details of:

- The minimum sampling intensity specified for the monitoring of progressive rehabilitation
- Justification of the suitability of the minimum sampling intensity
- How monitoring provides sufficient replication to enable statistical analysis of results at an acceptable power.

Subsidence affected areas will be monitored and following assessment, and restoration works and mitigation measures may be undertaken if required to address any mine-related adverse effects on the geomorphic environment. The REs likely to require monitoring and the establishment of analogue sites are presented in Table 11-2. Regular field inspections will be undertaken of all rehabilitated areas, particularly waterways, banks, sediment control dams and diversions. The monitoring program will assess signs of failure, sedimentation, erosion and any other areas that may require repair. The inspection will also include the presence of noxious weeds and invasion of exotic species with a weed control program to be implemented as required. The frequency of the field inspections could be reduced once it can be demonstrated that the vegetation is established and the final landform is stable.

Table 11-2 Likely Regional Ecosystems requiring reference site establishment

Regional Ecosystem	Description
10.3.27a	<i>Eucalyptus populnea</i> open-woodland on alluvial plains
10.5.12	<i>Eucalyptus populnea</i> open-woodland on sandplains
10.3.13a	<i>Melaleuca fluviatilis</i> and/or <i>Eucalyptus camaldulensis</i> woodland along watercourses
10.3.14	<i>Eucalyptus camaldulensis</i> and/or <i>E. coolabah</i> open-woodland along channels and on

Regional Ecosystem	Description
	floodplains
10.3.28a	<i>Eucalyptus coolabah</i> +/- <i>Casuarina cristata</i> open-woodland on alluvial plains
10.3.3a	Riverine wetland or fringing riverine wetland. <i>Melaleuca bracteata</i> woodland. On alluvial plains
10.7.7	<i>Melaleuca spp.</i> and/or <i>Acacia leptostachya</i> shrubland on ferricrete (eastern)
10.7.3b	<i>Acacia shirleyi</i> woodland or <i>A. catenulata</i> low woodland at margins of plateaus
10.5.5a	<i>Eucalyptus melanophloia</i> open-woodland on sandplains
10.10.1b	<i>Acacia shirleyi</i> woodland or <i>A. catenulata</i> low open-woodland on sandstone ranges
10.5.1c	<i>Eucalyptus similis</i> and/or <i>Corymbia brachycarpa</i> and/or <i>Corymbia setosa</i> low open woodland to open woodland on sand plains
10.10.4	<i>Eucalyptus exilipes</i> and/or <i>Corymbia leichhardtii</i> open woodland on sandstone ranges
10.7.5	<i>Eucalyptus thozetiana</i> open woodland on scarps and on pediments below scarps
11.5.5b	<i>Eucalyptus melanophloia</i> , <i>Callitris glaucophylla</i> woodland on Cainozoic sand plains/remnant surfaces. Deep red sands
10.9.3	<i>Acacia harpophylla</i> and/or <i>Eucalyptus cambageana</i> open woodland to woodland on Mesozoic sediments

11.1. ASSESSING COMPLETION CRITERIA

The completion criteria are performance objectives or standards against which rehabilitation success in achieving a sustainable system for the proposed post-mine land use is demonstrated. The criteria will be reviewed every 3 to 5 years with stakeholder participation to ensure the criteria remain realistic and achievable.

Adoption of mine completion criteria based on creek and landform design, erosion control, drainage, soil processes, flora, fauna, and ecosystem function as set out in the Domain Sections of this plan.

Completion criteria will reference the rehabilitation objectives (Section 2) and rehabilitation actions. Completion criteria will require DEHP satisfaction that HGPL has met rehabilitation undertakings provided in the Rehabilitation Plan and rehabilitation has achieved a standard whereby rehabilitation bonds can be released.

12. REFERENCES

The following references are quoted in the rehabilitation plan or relevant guidelines.

Australian Tree Seed Centre and Mortlock, W. (1999). *Florabank Guidelines 6, Native Seed Collection*.

Department of Main Roads (2004) *Road Landscape Manual*. Department of Main Roads, Brisbane.

Department of Minerals and Energy (1995). *Technical Guidelines for Environmental Management of Exploration and Mining in Queensland*.

Department of Environment and Heritage Protection (DEHP) (2012). *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams – Version 3*.

Department of Environment and Heritage Protection (DEHP) (2011). *Guideline Rehabilitation Requirements for Mining Projects*. The Queensland Department of Environment and Heritage Protection.

Engineers Australia (1996). *Soil Erosion and Sediment Control, Engineering Guidelines for Queensland Construction Sites*. The Institution of Engineers, Australia (Queensland Division), Brisbane.

Eyre, T.J., Kelly, A. L. and Neldner, V.J. (2006). Methodology for the Establishment and Survey of Reference Sites for BioCondition. Version 1.4. Environmental Protection Agency, Biodiversity Sciences Unit, Brisbane.

Eyre, T.J., Kelly, A.L, Neldner, V.J., Wilson, B.A., Ferguson, D.J., Laidlaw, M.J. and Franks, A.J. (2011). BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland. Assessment Manual. Version 2.1. Department of Environment and Resource Management (DERM), Biodiversity and Ecosystem Sciences, Brisbane.

Lovett, S. & Price, P. (eds). 2002. *Riparian Land Management Technical Guidelines Volume 1: Principles of Sound Management and Volume 2: On-ground Management Tools and Techniques*. Land & Water Australia, Canberra. <http://www.rivers.gov.au/publicat/guidelines.htm>

Lovett, S. & Price, P. (eds) (2007) *Principles for riparian lands management*. Land & Water Australia, Canberra.

Model Code of Practice, *Florabank Guideline 6: Native Seed Collection Methods*, [Online] Accessed 2012. Available at <http://www.florabank.org.au/> 5 Feb 2012'

Minerals Council of Australia (1998). *Mine Rehabilitation Handbook*.

Queensland Mining Council (2001). *Guidelines for Mine Closure Planning in Queensland*.

Rutherford I. D., Jerie K. & Marsh N. (2000). *A Rehabilitation Manual for Australian Streams*. Cooperative Research Centre for Catchment Hydrology and Land & Water Resources Research & Development Corporation. Canberra. Vols. 1 & 2.

DEHP Rehabilitation guidelines (2012) available on their website:

- Rehabilitation of Areas Containing Shafts, Boreholes or Adits
- Open Pit Rehabilitation
- Rehabilitation of Spontaneous Combustion Areas
- Rehabilitation of Land Subsidence Areas
- Geotechnical Slope Stability
- Erosion Control

- Growth Media Management
- Revegetation Methods
- Assessment of Revegetation
- Housekeeping on Rehabilitated Areas
- Mine site Decommissioning
- Estimation of Mine Rehabilitation Costs.

13. APPENDIX A: REHABILITATION REQUIREMENTS

Table A1 Rehabilitation Completion Criteria

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Domain 1 Infrastructure	Long term safety	Rehabilitation or conversion of exploration drill holes and groundwater monitoring bores.	All non-artesian exploration drill holes undertaken on the Mining Lease (MLA 70425) have been rehabilitated or converted to water bores.	Certification by an appropriately qualified person that all non-artesian exploration drill holes not converted to either a water bore or a groundwater monitoring bore have been rehabilitated.
				Certification by an appropriately qualified person, that all sub-artesian aquifers have been isolated where non-artesian exploration drill holes have intersected more than one sub- artesian water bearing strata, in accordance with the 'Minimum Construction Requirements for Water Bores in Australia' (Australian Government, February 2012) or latest edition.
		Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to a water bore have been converted in accordance with the 'Minimum Construction Requirements for Water Bores in Australia' (Australian Government. February 2012) or latest edition.		
		All monitoring bores undertaken on the Mining Lease (MLA 70425) have been rehabilitated.	Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to water bores are compliant with the requirements of the Water Act 2000. Certification by an appropriately qualified person that all monitoring bores have been rehabilitated in accordance with the 'Minimum Construction Requirements for Water Bores in Australia' (Australian Government, February 2012) or latest edition.	
	Structurally safe with no hazardous materials.	Safety assessment of landform stability (geotechnical studies).	Certification by an appropriately qualified person, in the Rehabilitation Report that site slopes are now safe and will remain so.	
			Risks assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.	
Landform design meets the design requirements of Table A4: Landform Design Criteria (refer draft EA).				

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
	Non-polluting	Site is safe for humans and animals now and in the foreseeable future. Mine affected water contained on site.	Appropriate decommissioning of infrastructure.	Certification by an appropriately qualified person in the site Rehabilitation Report that the infrastructure has been decommissioned and rehabilitated. Buildings, water storage(s), roads (except those used by the public), and other infrastructure have been removed unless stakeholders have entered into formal written agreements for their retention. Areas are readily accessible and conducive to safe cattle management activities.
			Downstream surface water quality.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Groundwater quality.	Certification by an appropriately qualified person that groundwater monitoring indicates that the groundwater quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Final landform water storages are contained on site, with no overflows into external surface water systems.	Certification by an appropriately qualified person that surface water monitoring indicates that surface water quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
				Receiving waters affected by surface water runoff have contaminant limits in accordance with the EA.
			All permanent diversion channels will meet approved design criteria.	Certification by a suitably qualified and experienced person that the permanent diversion channels have been constructed and are operating in accordance with approved design criteria.
			All permanent regulated structures will meet approved design criteria.	The regulated structures are certified by an suitably qualified and experienced person.
			All non-permanent regulated structures decommissioned appropriately.	Regulated structures are decommissioned in accordance with the administering authority requirements.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
		Hazardous materials adequately managed.	Exposure to and availability of heavy metals and other toxic materials.	Certification by an suitably qualified and experienced person, that the Rehabilitation Report includes predictions about future changes and that specified cover thickness is in place.
				Evidence in Rehabilitation Report that dust monitoring results at sensitive receptors have complied, with limits.
		Removal of potential sources of contamination.	Results of site contaminated land investigation report.	Evidence in Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.
	Stable landform	Landform design achieves appropriate erosion rates.	Slope angle and length.	Evidence in the Rehabilitation Report that the rehabilitated slopes have been designed to the specifications outlined in Table A4 Landform Design Criteria (refer draft EA).
			Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures, etc. are in place and functioning.
			Rates of soil loss.	Certification by a suitably qualified person that all land disturbed by the mining activities does not exhibit any signs of continued erosion greater than that exhibited at the reference site. The applicable reference site must have the same chemical and physical characteristics including slope, slope length and fire regime as that of the rehabilitated landform.
		Vegetation cover for self-sustaining community and to minimise erosion.	Vegetation type and density.	Evidence that the vegetation type and density are of species suited to the spoil composition, slope, aspect, climate and other factors, and that the soil erosion meet the goals set it the site Rehabilitation Management Plan.
				Vegetation types and densities are comparable with the relevant reference site.
			Foliage cover.	Minimum of 70% groundcover is present (or 50% if rocks, logs or other features of cover are present). No bare surfaces >20m ² in area or >10m in length down slope.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
	Sustainable land use	The diversions and run off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Documentation in the Rehabilitation Report how drainage diversions have changed over the course of the Project and that they are stable at closure and are likely to remain that way into the foreseeable future.
				To be designed and constructed in accordance with the <i>Queensland Government Natural Resources and Mines, Central West Water Management and Use Regional Guideline: Watercourse Diversions-Central Queensland Mining Industry, (2008)</i> and the <i>ACARP report Maintenance of Geomorphic Processes in Bowen Basin River diversions (Project number C8030-C9068)</i> .
				Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following: <ul style="list-style-type: none"> • Soil salinity content is <0.6 dS/m. • Soil pH is between 5.5 and 8.5. • Soil Exchange Sodium Percentage (ESP) is <15%. • Adequate macro and micro-nutrients are present.
				Certification in the Rehabilitation Report that the subsoil chemical properties to a depth of 1m do not limit the suitability of the land for the intended land use and are consistent with the following: <ul style="list-style-type: none"> • Soil salinity content is <1.5 dS/m. • Soil pH is between 5.5 and 9.0. • Soil Exchange Sodium Percentage (ESP) is <30%.
				Certification in the Rehabilitation Report that the soil physical properties (e.g. rockiness, depth of soil (including topsoil), wetness, plant available water capacity (PAWC), surface condition) are such that conditions are adequate for plant growth. Suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995. <i>Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining</i> .
			Top soil thickness.	Evidence in the Rehabilitation Report that topsoil has been respread according to the depths required in the Topsoil Management Plan.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Soil site characteristics.	Certification in the Rehabilitation Report that the soil site characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition.
		Establish self-sustaining natural vegetation or habitat (remnant vegetation areas).	Presence of key plant species.	Certification by an appropriately qualified person that key species identified for each reference site, as identified in Table A5 – Reference Sites (refer draft EA) are present.
			Density of key plant species.	Certification by an appropriately qualified person that the density of the key species is consistent with that identified for each reference site identified in Table A5 – Reference sites (refer to draft EA).
			Composition of key plant species.	Certification by an appropriately qualified person that groundcover, shrub and canopy structure is similar or trending towards that of each reference site identified in Table A5 – Reference Sites (refer draft EA).
		Establish self-sustaining natural vegetation or habitat (non-remnant vegetation areas).	Presence of key plant species.	Native grass species identified in the Post Mine Land Use Plan comprise at least 70% of total ground cover (or 50% if rocks, logs, or other features of cover are present).
			Density of key plant species.	Certification by an appropriately qualified person that tree density and height of >25 stems per 5 ha each being >2 m in height.
		Self-sustaining natural vegetation or habitat.	Native fauna species.	Certification by an appropriately qualified person that native fauna species identified within the Project Environmental Impact Statement and Supplementary Environmental Impact Statement are present or indicators of the of these species or key microhabitat elements are developing within the rehabilitated areas.
			Plant regeneration.	Species in rehabilitated areas show evidence of flowering, viable seed setting, germination and emergence.
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that plants declared under local or State legislation are identified and eradicated within rehabilitation areas.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Abundance of exotic grasses.	Certification by an appropriately qualified person that the abundance of exotic grass invasion is no greater than baseline condition as assessed against reference sites.
			Actions taken to eradicate plants declared under local or State legislation.	Evidence that actions have been undertaken to eradicate plants declared under local or State legislation.
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person in the site Rehabilitation Report that the abundance of declared animals has not increased significantly since baseline surveys and/or that a vertebrate pest control program is being implemented to reduce pest numbers.
			Management actions taken to control animals declared under local or State legislation.	Records indicating that the holder has actively been managing animals declared under local or State legislation on the site.
			Weed hygiene procedures.	Records indicating that all machinery, plant and equipment used for rehabilitation was free of declared plant seed and reproductive material prior to entering the site.
		Agricultural cattle grazing.	Cattle stocking rates.	Certification by an appropriately qualified person in the site Rehabilitation Report that areas nominated for cattle grazing are meeting and maintaining an equal to or better stocking rate than that calculated for each reference site. Reference sites will be identified following baseline survey of invasive exotic grasses.
			Landform stability when grazed.	Land maintenance requirements are comparable to designated reference sites. Safety of landform for stock and for undertaking management activities associated with stock.
			Stock access to water sources.	Stock only allowed access to water sources that meet stock water requirements as detailed in the EA.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Domain 2 Pits, Voids and Overburden Emplacements	Long term safety	Structurally safe with no hazardous materials.	Safety assessment of landform stability (geotechnical studies).	Certification by an suitably qualified person, in the Rehabilitation Report that site slopes are now safe and will remain so.
				Risks assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected generally in accordance with relevant guidelines and Australian Standards.
				Landform design meets the design requirements of Table A2 Void Design Criteria (refer to draft EA) and A4 – Landform Design Criteria (refer to draft EA).
			Exposure to and availability of heavy metals and other toxic materials.	Certification by a suitably qualified person, in Rehabilitation Report that specified cover thickness is in place and predictions about future changes.
				Evidence in Rehabilitation Report that dust monitoring results at sensitive receptors have complied, with limits.
			Results of site contaminated land investigation report.	Evidence in Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.
			Stream bank erosion.	Evidence in the Rehabilitation Report that all creek diversions are stable at closure and are likely to remain that way into the foreseeable future.
		Site is safe for humans and animals now and in the foreseeable future.	Safety assessment of landform stability (geotechnical studies).	The void is certified by a suitably qualified and experienced person as being decommissioned appropriately.
				Geotechnical stability of the highwall, low wall and end walls has been achieved and geotechnical investigations demonstrating this have been undertaken and reported.
				Highwall faces exhibit long-term geotechnical stability and a geotechnical report has been completed.
				Ramp walls not backfilled exhibit long-term geotechnical stability and a geotechnical report has been completed.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Adequacy and predicted long-term performance of safety barriers.	Evidence in the Rehabilitation Report that an adequate Safety Plan has been implemented.
			Installation of safety barriers and human/wildlife exclusion fencing of final void.	Fencing or other suitable barrier installed around the perimeter of the final void to restrict access, if required following safety assessment.
	Non-polluting	Mine affected water contained on site.	Downstream surface water quality.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Groundwater quality.	Certification by an appropriately qualified person that groundwater monitoring indicates that the groundwater quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Final landform water storages are contained on site, with no overflows into external surface water systems.	Certification by an appropriately qualified person that surface water monitoring indicates that surface water quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
				Receiving waters affected by surface water runoff have contaminant limits in accordance with the EA.
			All permanent diversion channels will meet approved design criteria.	Certification by a suitably qualified and experienced person that the permanent diversion channels have been constructed and are operating in accordance with approved design criteria.
			All permanent regulated structures will meet approved design criteria.	The regulated structures are certified by a suitably qualified and experienced person.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			All non-permanent regulated structures decommissioned appropriately.	Regulated structures are decommissioned in accordance with the administering authority requirements.
			Voids protected from flooding.	Certification by a suitably qualified and experienced person in the site Rehabilitation Report that the final voids have an adequate protection system to prevent inundation from a 1:1000 AEP event.
		Diversion design and maintenance.	The administering authority of the Water Licence under the <i>Water Act 2000</i> has determined that the Water Licence is no longer required.	Confirmation in writing from the administering authority of the Water Licence under the <i>Water Act 2000</i> that the Water Licence is no longer required.
		Acid mine drainage will not cause serious environmental harm.	Technical design of coarse reject cells.	Certification by a suitably qualified and experienced person in the Rehabilitation Report that the coarse reject placement was in accordance with the Mine Waste Management Plan.
			Pit water quality.	Certification by an appropriately qualified person in the Rehabilitation Report that the water quality within the open cut voids is in compliance with the EA.
	Stable landform	Very low probability of slope slippage or failure with serious environmental consequences	Past record of slope failure.	Evidence in the Rehabilitation Report that the slope failure has been rectified and appropriate control measures are in place to prevent recurrence.
		Landform design achieves appropriate erosion rates	Slope angle and length.	Evidence in the Rehabilitation Report that the rehabilitated slopes have been designed to the specifications outlined in Table A5: Landform Design Criteria (refer draft EA).
			Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures, etc. are in place and functioning.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Rates of soil loss.	Certification by a suitably qualified person that all land disturbed by the mining activities does not exhibit any signs of continued erosion greater than that exhibited in the reference site. The applicable reference site must have the same chemical and physical characteristics including slope, slope length and fire regime as that of the rehabilitated landform.
			Dimensions and frequency of occurrence of erosion rills and gullies.	Evidence that dimensions and frequency of occurrence of erosion rills and gullies are no greater than that in the corresponding reference sites.
		Vegetation cover to minimise erosion.	Vegetation type and density.	Evidence that the vegetation species type and density are suited to the spoil composition, slope, aspect, climate and other factors, and that the soil erosion meet the goals set in the site Rehabilitation Management Plan. Priority will be given to native species.
			Foliage cover.	Minimum of 70% groundcover is present (or 50% if rocks, logs or other features of cover are present). No bare surfaces >20m ² in area or >10m in length down slope.
		The diversions and run off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Documentation in the Rehabilitation Report how drainage diversions have changed over the course of the Project and that they are stable at closure and are likely to remain that way into the foreseeable future. To be designed and constructed in accordance with the <i>Queensland Government Natural Resources and Mines, Central West Water Management and Use Regional Guideline: Watercourse Diversions-Central Queensland Mining Industry, (2008)</i> and the <i>ACARP report Maintenance of Geomorphic Processes in Bowen Basin River diversions (Project number C8030-C9068)</i> .
		Very low probability of rock falls with serious environmental consequences.	Geotechnical studies	Evidence in the Rehabilitation Report that appropriate risk assessment has been undertaken and control measures put in place
			Past record of rock falls.	Evidence in the Rehabilitation Report that appropriate control measures are in place to prevent recurrence.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
	Sustainable land use	Soil properties support the desired land use.	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of topsoil and subsoil to support the proposed vegetation and land use.	<p>Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following:</p> <ul style="list-style-type: none"> • Soil salinity content is <0.6 dS/m. • Soil pH is between 5.5 and 8.5. • Soil Exchange Sodium Percentage (ESP) is <15%. • Adequate macro and micro-nutrients are present.
				<p>Certification in the Rehabilitation Report that the subsoil chemical properties to a depth of 1m do not limit the suitability of the land for the intended land use and are consistent with the following:</p> <ul style="list-style-type: none"> • Soil salinity content is <1.5 dS/m. • Soil pH is between 5.5 and 9.0. • Soil Exchange Sodium Percentage (ESP) is <30%.
			Physical properties of topsoil and subsoil to support the proposed vegetation and land use.	Certification in the Rehabilitation Report that the soil physical properties (e.g. rockiness, depth of soil (including topsoil), wetness, plant available water capacity (PAWC), surface condition) are such that conditions are adequate for plant growth. Suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995. <i>Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining</i> .
			Top soil thickness.	Evidence in the Rehabilitation Report that topsoil has been respread according to the depths required in the Topsoil Management Plan.
			Soil site characteristics.	Certification in the Rehabilitation Report that the soil site characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition.
			Media characterisation studies.	Certification by an appropriately qualified person that planting media characteristics do not pose significant constraints to plant growth following amelioration.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
		Establish self-sustaining natural vegetation or habitat (natural system on highly modified environments).	Presence of key plant species.	Certification by an appropriately qualified person that key species identified in the Landscape Planting Plan (to be prepared following the completion of vegetation trials on highly modified environments) occur on site.
			Density of key plant species.	Certification by an appropriately qualified person that the density of the key species is equivalent to the density specified in the Landscape Planting Plan.
			Composition of key plant species.	Certification by an appropriately qualified person that groundcover, shrub and canopy structure exist in accordance with those specified in the Landscape Planting Plan.
			Vegetation trials.	Certification by an appropriately qualified person that vegetation trials have identified groundcover, shrub and canopy species which will survive and are likely to reproduce on the relevant media.
		Self-sustaining natural vegetation or habitat.	Native fauna species.	Certification by an appropriately qualified person that native fauna species identified within the Project Environmental Impact Statement and Supplementary Environmental Impact Statement are present or indicators of the of these species or key microhabitat elements are developing within the rehabilitated areas.
			Plant regeneration.	Species in rehabilitated areas show evidence of flowering, viable seed setting, germination and emergence.
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that plants declared under local or State legislation are identified and eradicated within rehabilitation areas.
			Abundance of exotic grasses.	Certification by an appropriately qualified person that the abundance of exotic grass invasion is no greater than baseline condition as assessed against reference sites.
			Actions taken to eradicate plants declared under local or State legislation.	Evidence that actions have been undertaken to eradicate plants declared under local or State legislation.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person that the abundance of declared animals has not increased significantly since baseline surveys and/or that a vertebrate pest control program is being implemented to reduce pest numbers.
			Management actions taken to control animals declared under local or State legislation.	Records indicating that the holder has actively been managing animals declared under local or State legislation on the site.
			Weed hygiene procedures.	Records indicating that all machinery, plant and equipment used for rehabilitation was free of declared plant seed and reproductive material prior to entering the site.
		Agricultural Cattle Grazing.	Cattle stocking rates.	Certification by an appropriately qualified person in the site Rehabilitation Report that areas nominated for cattle grazing are meeting and maintaining an equal to or better stocking rate than that calculated for each reference site. Reference sites will be identified following baseline survey of invasive exotic grasses.
			Landform stability when grazed.	Land maintenance requirements are comparable to designated reference sites. Safety of landform for stock and for undertaking management activities associated with stock.
			Stock access to water sources.	Stock only allowed access to water sources that meet stock water requirements as detailed in the EA.
Domain 3 Tailings Storage Facility	Long term safety	Structurally safe with no hazardous materials.	Safety assessment of landform stability (geotechnical studies).	Certification by a suitably qualified and experienced person, in the Rehabilitation Report that site slopes are now safe and will remain so.
				Risks assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
				Landform design meets the design requirements of Table A4 Landform Design Criteria (refer draft EA).
			Exposure to and availability of heavy metals and other toxic materials.	Certification by an appropriately qualified person, in Rehabilitation Report that specified cover thickness is in place and predictions about future changes.
				Evidence in Rehabilitation Report that dust monitoring results at sensitive receptors have complied, with limits.
			Results of site contaminated land investigation report.	Evidence in Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.
			Appropriate decommissioning of regulated structures and other dams.	The Tailings Storage Facility is certified by a suitably qualified and experienced person.
			Safety assessment of landform stability.	Certification in the Rehabilitation Report that site slopes are now safe and are likely to remain that way into the foreseeable future.
	Non-polluting	Mine affected water contained on site.	Downstream surface water quality.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Groundwater quality.	Certification by an appropriately qualified person that groundwater monitoring indicates that the groundwater quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Final landform water storages are contained on site, with no overflows into external surface water systems.	Certification by an appropriately qualified person that surface water monitoring indicates that surface water quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
				Receiving waters affected by surface water runoff have contaminant limits in accordance with the EA.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			All permanent diversion channels will meet approved design criteria.	Certification by a suitably qualified and experienced person that the permanent diversion channels have been constructed and are operating in accordance with approved design criteria.
			All permanent regulated structures will meet approved design criteria.	The regulated structures are certified by a suitably qualified and experienced person.
			All non-permanent regulated structures decommissioned appropriately.	Regulated structures are decommissioned in accordance with the administering authority requirements.
		Diversion design and maintenance.	The administering authority of the Water Licence under the <i>Water Act 2000</i> has determined that the Water Licence is no longer required.	Confirmation in writing from the administering authority of the Water Licence under the <i>Water Act 2000</i> that the Water Licence is no longer required.
		Acid mine drainage will not cause serious environmental harm.	Technical design of Tailings Storage Facility.	Certification by a suitably qualified and experienced person in the Rehabilitation Report that the Tailings placement was in accordance with the Mine Waste Management Plan.
				Certification by an appropriately qualified person in the Rehabilitation Report that the surface and groundwater quality is in accordance with the EA.
		Hazardous materials adequately managed.	Exposure to and availability of heavy metals and other toxic materials.	Evidence that monitoring surface water quality for 5 years post closure has complied with specified guideline values.
				Leaching tests of selected exposed mine waste material meet specified guideline values.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
	Stable landform	Landform design achieves appropriate erosion rates.	Slope angle and length.	Evidence in the Rehabilitation Report that the rehabilitated slopes have been designed to the specifications outlined in Table A4 Landform Design Criteria (refer draft EA).
			Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures, etc. are in place and functioning.
			Rates of soil loss.	Certification by a suitably qualified person that all land disturbed by the mining activities does not exhibit any signs of continued erosion greater than that exhibited in the reference site. The applicable reference site must have the same chemical and physical characteristics including slope, slope length and fire regime as that of the rehabilitated landform.
			Dimensions and frequency of occurrence of erosion rills and gullies.	Evidence that dimensions and frequency of occurrence of erosion rills and gullies are no greater than that in the corresponding reference sites.
		Vegetation cover for self-sustaining community and to minimise erosion.	Vegetation type and density.	Evidence that the vegetation species type and density are suited to the spoil composition, slope, aspect, climate and other factors, and that the visual erosion meet the goals set in the site Rehabilitation Management Plan.
				Vegetation types and densities are comparable with the relevant reference site.
			Foliage cover.	Minimum of 70% groundcover is present (or 50% if rocks, logs or other features of cover are present). No bare surfaces >20m ² in area or >10m in length down slope.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
	Sustainable land use	The diversions and run off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	<p>Documentation in the Rehabilitation Report of how drainage diversions have changed over the course of the Project and that they are stable at closure and are likely to remain that way into the foreseeable future.</p> <p>Diversions and drainage lines to be designed and constructed in accordance with the <i>Queensland Government Natural Resources and Mines, Central West Water Management and Use Regional Guideline: Watercourse Diversions-Central Queensland Mining Industry, (2008)</i> and the <i>ACARP report Maintenance of Geomorphic Processes in Bowen Basin River diversions (Project number C8030-C9068)</i>.</p>
		Soil properties support the desired land use.	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of topsoil and subsoil to support the proposed vegetation and land use.	<p>Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following:</p> <ul style="list-style-type: none"> • Soil salinity content is <0.6 dS/m. • Soil pH is between 5.5 and 8.5. • Soil Exchange Sodium Percentage (ESP) is <15%. • Adequate macro and micro-nutrients are present.
				<p>Certification in the Rehabilitation Report that the subsoil chemical properties to a depth of 1m do not limit the suitability of the land for the intended land use and are consistent with the following:</p> <ul style="list-style-type: none"> • Soil salinity content is <1.5 dS/m. • Soil pH is between 5.5 and 9.0. • Soil Exchange Sodium Percentage (ESP) is <30%.
			Physical properties of topsoil and subsoil to support the proposed vegetation and land use.	<p>Certification in the Rehabilitation Report that the soil physical properties (e.g. rockiness, depth of soil (including topsoil), wetness, plant available water capacity (PAWC), surface condition) are such that conditions are adequate for plant growth. Suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995. <i>Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining</i>.</p>

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Top soil thickness.	Evidence in the Rehabilitation Report that topsoil has been respread according to the depths required in the Topsoil Management Plan.
			Soil site characteristics.	Certification in the Rehabilitation Report that the soil site characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition.
			Media characterisation studies.	Certification by an appropriately qualified person that planting media characteristics do not pose significant constraints to plant growth following amelioration.
		Establish self-sustaining natural vegetation or habitat (natural system on highly modified environments).	Presence of key plant species.	Certification by an appropriately qualified person that key species identified in the Landscape Planting Plan occur on site.
			Density of key plant species.	Certification by an appropriately qualified person that the density of the key species is equivalent to the density specified in the Landscape Planting Plan.
			Composition of key plant species.	Certification by an appropriately qualified person that groundcover, shrub and canopy structure exist in accordance with those specified in the Landscape Planting Plan.
			Vegetation trials.	Certification by an appropriately qualified person that vegetation trials have identified groundcover, shrub and canopy species which will survive and are likely to reproduce on the relevant media.
		Self-sustaining natural vegetation or habitat.	Plant regeneration.	Species in rehabilitated areas show evidence of flowering, viable seed setting, germination and emergence.
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that plants declared under local or State legislation are identified and eradicated within rehabilitation areas.
			Abundance of exotic grasses.	Certification by an appropriately qualified person that the abundance of exotic grass invasion is no greater than baseline condition as assessed against reference sites.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Actions taken to eradicate plants declared under local or State legislation.	Evidence that actions have been undertaken to eradicate plants declared under local or State legislation.
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person that the abundance of declared animals has not increased significantly since baseline surveys and/or that a vertebrate pest control program is being implemented to reduce pest numbers.
			Management actions taken to control animals declared under local or State legislation.	Records indicating that the holder has actively been managing animals declared under local or State legislation on the site.
			Weed hygiene procedures	Records indicating that all machinery, plant and equipment used for rehabilitation was free of declared plant seed and reproductive material prior to entering the site.
		Agricultural cattle grazing.	Cattle stocking rates.	Certification by an appropriately qualified person in the site Rehabilitation Report that areas nominated for cattle grazing are meeting and maintaining an equal to or better stocking rate than that calculated for each reference site. Reference sites will be identified following baseline survey of invasive exotic grasses.
			Landform stability when grazed.	Land maintenance requirements are comparable to designated reference sites. Safety of landform for stock and for undertaking management activities associated with stock.
			Stock access to water sources.	Stock only allowed access to water sources that meet stock water requirements as detailed in the EA.
Domain 4 Dams and	Long term safety	Structurally safe with no hazardous	Safety assessment of landform stability	Certification by a suitably qualified and experienced person, in the Rehabilitation Report that site slopes are now safe and will remain so.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Surface Water Features		materials.	(geotechnical studies).	Risks assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.
				Landform design meets the design requirements of Table A4 Landform Design Criteria (refer draft EA).
			Exposure to and availability of heavy metals and other toxic materials.	Certification by a suitably qualified person, in Rehabilitation Report that includes predictions about future changes and that specified cover thickness is in place.
				Evidence in Rehabilitation Report that dust monitoring results at sensitive receptors have complied, with limits.
			Results of site contaminated land investigation report.	Evidence in Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.
	Non-polluting	Mine affected water contained on site.	Downstream surface water quality.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Groundwater quality.	Certification by an appropriately qualified person that groundwater monitoring indicates that the groundwater quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Final landform water storages are contained on site, with no overflows into external surface water systems.	Certification by an appropriately qualified person that surface water monitoring indicates that surface water quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
				Receiving waters affected by surface water runoff have contaminant limits in accordance with the EA.
			All permanent diversion channels will meet approved design criteria.	Certification by an suitably qualified and experienced person that the permanent diversion channels have been constructed and are operating in accordance with approved design criteria.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			All permanent regulated structures will meet approved design criteria.	The regulated structures are certified by a suitably qualified and experienced person.
			All non-permanent regulated structures decommissioned appropriately.	Regulated structures are decommissioned in accordance with the administering authority requirements.
			Voids protected from flooding.	Certification by a suitably qualified and experienced person in the site Rehabilitation Report that the final voids have an adequate protection system to prevent inundation from a 1:1000 AEP event.
		Diversion design and maintenance.	The administering authority of the Water Licence under the <i>Water Act 2000</i> has determined that the Water Licence is no longer required.	Confirmation in writing from the administering authority of the Water Licence under the <i>Water Act 2000</i> that the Water Licence is no longer required.
		Site is safe for humans and animals now and in the foreseeable future.	Appropriate decommissioning of regulated structures and other dams.	Certification by a suitably qualified and experienced person, in the site Rehabilitation Report that the all regulated structures (dams and levees) have been decommissioned and rehabilitated.
	Stable landform	Landform design achieves appropriate erosion rates.	Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures, etc. are in place and functioning.
			Rates of soil loss.	Certification by a suitably qualified person that all land disturbed by the mining activities does not exhibit any signs of continued erosion greater than that exhibited at the reference site. The applicable reference site must have the same chemical and physical characteristics including slope, slope length and fire regime as that of the rehabilitated landform.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Dimensions and frequency of occurrence of erosion rills and gullies.	Evidence that dimensions and frequency of occurrence of erosion rills and gullies are no greater than that in the corresponding reference sites.
		Vegetation cover for self-sustaining community and to minimise erosion.	Vegetation type and density.	Evidence that the vegetation species type and density are suited to the spoil composition, slope, aspect, climate and other factors, and that the visual erosion meet the goals set it the site Rehabilitation Management Plan.
			Foliage cover.	Vegetation types and density are comparable with the relevant reference site.
		The diversions and run off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Minimum of 70% groundcover is present (or 50% if rocks, logs or other features of cover are present). No bare surfaces >20m ² in area or >10m in length down slope.
	Sustainable land use	Soil properties support the desired land use.	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of topsoil and subsoil to support the proposed vegetation and land use.	Documentation in the Rehabilitation Report how drainage diversions have changed over the course of the Project and that they are stable at closure and are likely to remain that way into the foreseeable future. To be designed and constructed in accordance with the <i>Queensland Government Natural Resources and Mines, Central West Water Management and Use Regional Guideline: Watercourse Diversions-Central Queensland Mining Industry, (2008)</i> and the ACARP report Maintenance of Geomorphic Processes in Bowen Basin River diversions (Project number C8030-C9068).
				Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following: <ul style="list-style-type: none"> • Soil salinity content is <0.6 dS/m. • Soil pH is between 5.5 and 8.5. • Soil Exchange Sodium Percentage (ESP) is <15%. • Adequate macro and micro-nutrients are present.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
				<p>Certification in the Rehabilitation Report that the subsoil chemical properties to a depth of 1m do not limit the suitability of the land for the intended land use and are consistent with the following:</p> <ul style="list-style-type: none"> • Soil salinity content is <1.5 dS/m. • Soil pH is between 5.5 and 9.0. • Soil Exchange Sodium Percentage (ESP) is <30%.
			Physical properties of topsoil and subsoil to support the proposed vegetation and land use.	Certification in the Rehabilitation Report that the soil physical properties (e.g. rockiness, depth of soil (including topsoil), wetness, plant available water capacity (PAWC), surface condition) are such that conditions are adequate for plant growth. Suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995. <i>Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining</i> .
			Top soil thickness.	Evidence in the Rehabilitation Report that topsoil has been respread according to the depths required in the Topsoil Management Plan.
			Soil site characteristics.	Certification in the Rehabilitation Report that the soil site characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition.
		Establish self-sustaining natural vegetation or habitat (non-remnant vegetation areas).	Presence of key plant species.	Native grass species identified in the Post Mine Land Use Plan comprise at least 70% of total ground cover (or 50% if rocks, logs, or other features of cover are present).
			Density of key plant species.	Certification by an appropriately qualified person that tree density and height of >25 stems per 5 ha each being >2 m in height.
		Establish self-sustaining natural vegetation or habitat (natural	Presence of key plant species.	Certification by an appropriately qualified person that key species identified in the Landscape Planting Plan occur on site.
			Density of key plant species.	Certification by an appropriately qualified person that the density of the key species is equivalent to the density specified in the Landscape Planting Plan.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
		system on highly modified environments).	Composition of key plant species.	Certification by an appropriately qualified person that groundcover, shrub and canopy structure exist in accordance with those specified in the Landscape Planting Plan.
			Vegetation trials.	Certification by an appropriately qualified person that vegetation trials have identified groundcover, shrub and canopy species which will survive and are likely to reproduce on the relevant media.
		Self-sustaining natural vegetation or habitat.	Native fauna species.	Certification by an appropriately qualified person that native fauna species identified within the Project Environmental Impact Statement and Supplementary Environmental Impact Statement are present or indicators of the of these species or key microhabitat elements are developing within the rehabilitated areas.
			Plant regeneration.	Species in rehabilitated areas show evidence of flowering, viable seed setting, germination and emergence.
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that plants declared under local or State legislation are identified and eradicated within rehabilitation areas.
			Abundance of exotic grasses.	Certification by an appropriately qualified person that the abundance of exotic grass invasion is no greater than baseline condition as assessed against reference sites.
			Actions taken to eradicate plants declared under local or State legislation.	Evidence that actions have been undertaken to eradicate plants declared under local or State legislation.
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person that the abundance of declared animals has not increased significantly since baseline surveys and/or that a vertebrate pest control program is being implemented to reduce pest numbers.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Management actions taken to control animals declared under local or State legislation.	Records indicating that the holder has actively been managing animals declared under local or State legislation on the site.
			Weed hygiene procedures.	Records indicating that all machinery, plant and equipment used for rehabilitation was free of declared plant seed and reproductive material prior to entering the site.
		Agricultural cattle grazing.	Cattle stocking rates.	Certification by an appropriately qualified person in the site Rehabilitation Report that areas nominated for cattle grazing are meeting and maintaining an equal to or better stocking rate than that calculated for each reference site. Reference sites will be identified following baseline survey of invasive exotic grasses.
			Landform stability when grazed.	Land maintenance requirements are comparable to designated reference sites. Safety of landform for stock and for undertaking management activities associated with stock.
			Stock access to water sources.	Stock only allowed access to water sources that meet stock water requirements as detailed in the EA.
Domain 5 Modelled Significant SSBV Impact Subsidence Areas	Long term safety	Rehabilitation or conversion of exploration drill holes and groundwater monitoring bores.	All non-artesian exploration drill holes undertaken on the Mining Lease (MLA 70425) have been rehabilitated or converted to water bores.	Certification by an appropriately qualified person that all non-artesian exploration drill holes not converted to either a water bore or a groundwater monitoring bore have been rehabilitated.
				Certification by an appropriately qualified person, that all sub-artesian aquifers have been isolated where non-artesian exploration drill holes have intersected more than one sub- artesian water bearing strata, in accordance with the <i>'Minimum Construction Requirements for Water Bores in Australia'</i> (Australian Government, February 2012) or latest edition.
				Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to a water bore have been converted in accordance with the <i>'Minimum Construction Requirements for Water Bores in Australia'</i> (Australian Government. February 2012) or latest edition.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
		Structurally safe with no hazardous materials.	All monitoring bores undertaken on the Mining Lease (MLA 70425) have been rehabilitated.	Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to water bores are compliant with the requirements of the <i>Water Act 2000</i> . Certification by an appropriately qualified person that all monitoring bores have been rehabilitated in accordance with the ' <i>Minimum Construction Requirements for Water Bores in Australia</i> ' (<i>Australian Government, February 2012</i>) or latest edition.
			Safety assessment of landform stability (geotechnical studies)	Certification by a suitably qualified and experienced person, in the Rehabilitation Report that site slopes are now safe and will remain so.
				Risks assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected generally in accordance with relevant guidelines and Australian Standards.
				Landform design meets the design requirements of Table A4 Landform Design Criteria (refer draft EA).
	Non-polluting	Mine affected water contained on site.	Stream bank erosion.	Evidence in the Rehabilitation Report that all creek diversions are stable at closure and are likely to remain that way into the foreseeable future.
			Downstream surface water quality.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Groundwater quality.	Certification by an appropriately qualified person that groundwater monitoring indicates that the groundwater quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Final landform water storages are contained on site, with no overflows into external surface water systems.	Certification by an appropriately qualified person that surface water monitoring indicates that surface water quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
				Receiving waters affected by surface water runoff have contaminant limits in accordance with the EA.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			All permanent diversion channels will meet approved design criteria.	Certification by a suitably qualified and experienced person that the permanent diversion channels have been constructed and are operating in accordance with approved design criteria.
			All permanent regulated structures will meet approved design criteria.	The regulated structures are certified by a suitably qualified and experienced person.
			All non-permanent regulated structures decommissioned appropriately.	Regulated structures are decommissioned in accordance with the administering authority requirements.
			Voids protected from flooding.	Certification by a suitably qualified and experienced person in the site Rehabilitation Report that the final voids have an adequate protection system to prevent inundation from a 1:1000 AEP event.
		Diversion design and maintenance.	The administering authority of the Water Licence under the <i>Water Act 2000</i> has determined that the Water Licence is no longer required.	Confirmation in writing from the administering authority of the Water Licence under the <i>Water Act 2000</i> that the Water Licence is no longer required.
		Hazardous materials adequately managed.	Exposure to and availability of heavy metals and other toxic materials.	Certification by a suitably qualified person, in Rehabilitation Report that includes predictions about future changes and that specified cover thickness is in place.
				Evidence in Rehabilitation Report that dust monitoring results at sensitive receptors have complied, with limits.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
	Stable landform	Removal of potential sources of contamination.	Results of site contaminated land investigation report.	Evidence in Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.
		Landform design achieves appropriate erosion rates.	Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures, etc. are in place and functioning.
			Rates of soil loss.	Certification by a suitably qualified person that all land disturbed by the mining activities does not exhibit any signs of continued erosion greater than that exhibited in the reference site. The applicable reference site must have the same chemical and physical characteristics including slope, slope length and fire regime as that of the rehabilitated landform.
		Vegetation cover for self-sustaining community and to minimise erosion.	Vegetation type and density.	Evidence that the vegetation species type and densities are suited to the spoil composition, slope, aspect, climate and other factors, and that the soil erosion meets the goals set in the site Rehabilitation Management Plan.
				Vegetation types and density are comparable with the relevant reference site.
			Foliage cover.	Minimum of 70% groundcover is present (or 50% if rocks, logs or other features of cover are present). No bare surfaces >20 m ² in area or >10 m in length down slope.
		The diversions and run off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Documentation in the Rehabilitation Report of how drainage diversions have changed over the course of the Project and that they are stable at closure and are likely to remain that way into the foreseeable future. To be designed and constructed in accordance with the Queensland Government Natural Resources and Mines, Central West Water Management and Use Regional Guideline: <i>Watercourse Diversions-Central Queensland Mining Industry, (2008)</i> and the ACARP report <i>Maintenance of Geomorphic Processes in Bowen Basin River diversions (Project number C8030-C9068)</i> .
		Surface water drainage.	Stable drainage works.	Certification by a suitably qualified and experienced person that local drainage works (e.g. small diversion bunds, engineered rock chute structures, etc.) have been properly designed and constructed.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
		No significant changes to hydrological conditions.	Ponding.	Evidence in the Rehabilitation Report that no ponding occurs and that excavation of pillar zones from creek channels to facilitate natural drainage of ponded areas has been undertaken.
			Cracking.	Evidence in the Rehabilitation Report that no subsidence cracks greater than 25 mm occur (that are attributable to subsidence) and that ripping and seeding of all subsidence cracks greater than this threshold have been undertaken.
		Stable geomorphic system.	Geomorphic environment survey.	A geomorphic environment survey report (at the end of the mine life) stating that a stable geomorphic system is able to continue to evolve into the future.
	Sustainable land use	Soil properties support the desired land use.	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of topsoil and subsoil to support the proposed vegetation and land use.	<p>Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following:</p> <ul style="list-style-type: none"> • Soil salinity content is <0.6 dS/m. • Soil pH is between 5.5 and 8.5. • Soil Exchange Sodium Percentage (ESP) is <15%. • Adequate macro and micro-nutrients are present.
				<p>Certification in the Rehabilitation Report that the subsoil chemical properties to a depth of 1m do not limit the suitability of the land for the intended land use and are consistent with the following:</p> <ul style="list-style-type: none"> • Soil salinity content is <1.5 dS/m. • Soil pH is between 5.5 and 9.0. • Soil Exchange Sodium Percentage (ESP) is <30%.
			Physical properties of topsoil and subsoil to support the proposed vegetation and land use.	Certification in the Rehabilitation Report that the soil physical properties (e.g. rockiness, depth of soil (including topsoil), wetness, plant available water capacity (PAWC), surface condition) are such that conditions are adequate for plant growth. Suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995. <i>Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining.</i>

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Top soil thickness.	Evidence in the Rehabilitation Report that topsoil has been respread according to the depths present prior to disturbance.
			Soil site characteristics.	Certification in the Rehabilitation Report that the soil site characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition.
		Establish self-sustaining natural vegetation or habitat (remnant vegetation areas).	Presence of key plant species.	Certification by an appropriately qualified person that key species identified for each reference site are present, as identified in Table A5 – Reference Sites (refer draft EA).
			Density of key plant species.	Certification by an appropriately qualified person that the density of the key species is consistent with that identified for each reference site identified in Table A5 – Reference Sites (refer draft EA).
			Composition of key plant species.	Certification by an appropriately qualified person that groundcover, shrub and canopy structure is similar or trending towards that of each reference site identified in Table A5 – Reference Sites (refer draft EA).
		Establish self-sustaining natural vegetation or habitat (non-remnant vegetation areas).	Presence of key plant species.	Native grass species identified in the Post Mine Land Use Plan comprise at least 70% of total ground cover (or 50% if rocks, logs, or other features of cover are present).
			Density of key plant species.	Certification by an appropriately qualified person that tree density and height of >25 stems per 5 ha each being >2 m in height.
		Self-sustaining natural vegetation or habitat.	Native fauna species.	Certification by an appropriately qualified person that native fauna species identified within the Project Environmental Impact Statement and Supplementary Environmental Impact Statement are present or indicators of the of these species or key microhabitat elements are developing within the rehabilitated areas.
			Plant regeneration.	Species in rehabilitated areas show evidence of flowering, viable seed setting, germination and emergence.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that plants declared under local or State legislation are identified and eradicated within rehabilitation areas.
			Abundance of exotic grasses.	Certification by an appropriately qualified person that the abundance of exotic grass invasion is no greater than baseline condition as assessed against reference sites.
			Actions taken to eradicate plants declared under local or State legislation.	Evidence that actions have been undertaken to eradicate plants declared under local or State legislation.
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person that the abundance of declared animals has not increased significantly since baseline surveys and/or that a vertebrate pest control program is being implemented to reduce pest numbers.
			Management actions taken to control animals declared under local or State legislation.	Records indicating that the holder has actively been managing animals declared under local or State legislation on the site.
			Weed hygiene procedures.	Records indicating that all machinery, plant and equipment used for rehabilitation was free of declared plant seed and reproductive material prior to entering the site.
		Agricultural Cattle Grazing.	Cattle stocking rates.	Certification by an appropriately qualified person in the site Rehabilitation Report that areas nominated for cattle grazing are meeting and maintaining an equal to or better stocking rate than that calculated for each reference site. Reference sites will be identified following baseline survey of invasive exotic grasses.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Domain 6 Other Lands	Long term safety		Landform stability when grazed.	Land maintenance requirements are comparable to designated reference sites. Safety of landform for stock and for undertaking management activities associated with stock.
			Stock access to water sources.	Stock only allowed access to water sources that meet stock water requirements as detailed in the EA.
		Rehabilitation or conversion of exploration drill holes and groundwater monitoring bores.	All non-artesian exploration drill holes undertaken on the Mining Lease (MLA 70425) have been rehabilitated or converted to water bores.	Certification by an appropriately qualified person that all non-artesian exploration drill holes not converted to either a water bore or a groundwater monitoring bore have been rehabilitated.
				Certification by an appropriately qualified person, that all sub-artesian aquifers have been isolated where non-artesian exploration drill holes have intersected more than one sub-artesian water bearing strata, in accordance with the <i>'Minimum Construction Requirements for Water Bores in Australia'</i> (Australian Government, February 2012) or latest edition.
				Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to a water bore have been converted in accordance with the <i>'Minimum Construction Requirements for Water Bores in Australia'</i> (Australian Government, February 2012) or latest edition.
		Structurally safe with no hazardous materials.	All monitoring bores undertaken on the Mining Lease (MLA 70425) have been rehabilitated.	Certification by an appropriately qualified person that all non-artesian exploration drill holes converted to water bores are compliant with the requirements of the <i>Water Act 2000</i> . Certification by an appropriately qualified person that all monitoring bores have been rehabilitated in accordance with the <i>'Minimum Construction Requirements for Water Bores in Australia'</i> (Australian Government, February 2012) or latest edition.
			Safety assessment of landform stability (geotechnical studies).	Certification by a suitably qualified and experienced person, in the Rehabilitation Report that site slopes are now safe and will remain so. Risks assessment has been completed and risk mitigation measures have been implemented. Where risk mitigation measures include bunds, safety fences and warning signs, these have been erected in accordance with relevant guidelines and Australian Standards.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
	Non-polluting	Mine affected water contained on site.	Downstream surface water quality.	Certification by an appropriately qualified person that surface water quality at monitoring locations is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Groundwater quality.	Certification by an appropriately qualified person that groundwater monitoring indicates that the groundwater quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
			Final landform water storages are contained on site, with no overflows into external surface water systems.	Certification by an appropriately qualified person that surface water monitoring indicates that surface water quality is not negatively impacted compared to the baseline monitoring results by the rehabilitated landform.
				Receiving waters affected by surface water runoff have contaminant limits in accordance with the EA.
			All permanent diversion channels will meet approved design criteria.	Certification by a suitably qualified and experienced person that the permanent diversion channels have been constructed and are operating in accordance with approved design criteria.
			All permanent regulated structures will meet approved design criteria.	The regulated structures are certified by a suitably qualified and experienced person.
			All non-permanent regulated structures decommissioned appropriately.	Regulated structures are decommissioned in accordance with the administering authority requirements.
		Removal of potential pollution sources.	Results of site contaminated land investigation report.	Evidence in Rehabilitation Report that measures required in site contaminated land investigation report have been implemented.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
	Stable landform	Diversion design and maintenance.	The administering authority of the Water Licence under the <i>Water Act 2000</i> has determined that the Water Licence is no longer required.	Confirmation in writing from the administering authority of the Water Licence under the <i>Water Act 2000</i> that the Water Licence is no longer required.
		Landform design achieves appropriate erosion rates.	Engineered structures to control water flow.	Evidence in the Rehabilitation Report that required contour banks, channel linings, surface armour, engineered drop structures, etc. are in place and functioning.
			Rates of soil loss.	Certification by a suitably qualified person that all land disturbed by the mining activities does not exhibit any signs of continued erosion greater than that exhibited in the reference site. The applicable reference site must have the same chemical and physical characteristics including slope, slope length and fire regime as that of the rehabilitated landform.
		Vegetation cover for self-sustaining community and to minimise erosion.	Vegetation type and density.	Evidence that the vegetation type and density are of species suited to the spoil composition, slope, aspect, climate and other factors, and that the soil erosion meets the goals set in the site Rehabilitation Management Plan.
				Vegetation types and density are comparable with the relevant reference site.
			Foliage cover.	Minimum of 70% groundcover is present (or 50% if rocks, logs or other features of cover are present). No bare surfaces >20m ² in area or >10m in length down slope.
		The diversions and run off drainage lines mirror natural stream functions.	Design and stability of drainage diversions.	Documentation in the Rehabilitation Report how drainage diversions have changed over the course of the Project and that they are stable at closure and are likely to remain that way into the foreseeable future. To be designed and constructed in accordance with the <i>Queensland Government Natural Resources and Mines, Central West Water Management and Use Regional Guideline: Watercourse Diversions-Central Queensland Mining Industry, (2008)</i> and the ACARP report Maintenance of Geomorphic Processes in Bowen Basin River diversions (Project number C8030-C9068).

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
	Sustainable land use	Soil properties support the desired land use.	Chemical properties (e.g. pH, salinity, nutrient content, sodium content) of topsoil and subsoil to support the proposed vegetation and land use.	Certification in the Rehabilitation Report that the topsoil chemical properties do not limit the suitability of the land for the intended land use and are consistent with the following: <ul style="list-style-type: none"> • Soil salinity content is <0.6 dS/m. • Soil pH is between 5.5 and 8.5. • Soil Exchange Sodium Percentage (ESP) is <15%. • Adequate macro and micro-nutrients are present.
				Certification in the Rehabilitation Report that the subsoil chemical properties to a depth of 1m do not limit the suitability of the land for the intended land use and are consistent with the following: <ul style="list-style-type: none"> • Soil salinity content is <1.5 dS/m. • Soil pH is between 5.5 and 9.0. • Soil Exchange Sodium Percentage (ESP) is <30%.
			Physical properties of topsoil and subsoil to support the proposed vegetation and land use.	Certification in the Rehabilitation Report that the soil physical properties (e.g. rockiness, depth of soil (including topsoil), wetness, plant available water capacity (PAWC), surface condition) are such that conditions are adequate for plant growth. Suitability for beef cattle grazing land use in accordance with Department of Minerals and Energy (DME) 1995. <i>Land Suitability Assessment Techniques in Technical Guidelines for the Environmental Management of Exploration and Mining</i> .
			Top soil thickness.	Evidence in the Rehabilitation Report that topsoil has been respread according to the depths required in the Topsoil Management Plan.
			Soil site characteristics.	Certification in the Rehabilitation Report that the soil site characteristics have acceptable levels of surface roughness, infiltration capacity, aggregate stability and surface condition.
		Establish self-sustaining natural vegetation or	Presence of key plant species.	Certification by an appropriately qualified person that key species identified for each reference site are present, as identified in Table A5 – Reference Sites (refer draft EA).

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
		habitat (remnant vegetation areas).	Density of key plant species.	Certification by an appropriately qualified person that the density of the key species is consistent with that identified for each reference site identified in Table A5 – Reference Sites (refer draft EA).
			Composition of key plant species.	Certification by an appropriately qualified person that groundcover, shrub and canopy structure is similar or trending towards that of each reference site identified in Table A5 – Reference Sites (refer draft EA).
		Establish self-sustaining natural vegetation or habitat (non-remnant vegetation areas).	Presence of key plant species.	Native grass species identified in the Post Mine Land Use Plan comprise at least 70% of total ground cover (or 50% if rocks, logs, or other features of cover are present).
			Density of key plant species.	Certification by an appropriately qualified person that tree density and height of >25 stems per 5 ha each being >2 m in height.
		Self-sustaining natural vegetation or habitat.	Native fauna species.	Certification by an appropriately qualified person that native fauna species identified within the Project Environmental Impact Statement and Supplementary Environmental Impact Statement are present or indicators of the of these species or key microhabitat elements are developing within the rehabilitated areas.
			Plant regeneration.	Species in rehabilitated areas show evidence of flowering, viable seed setting, germination and emergence.
			Abundance of declared plants (weeds) identified through surveys.	Certification by an appropriately qualified person that plants declared under local or State legislation are identified and eradicated within rehabilitation areas.
			Abundance of exotic grasses.	Certification by an appropriately qualified person that the abundance of exotic grass invasion is no greater than baseline condition as assessed against reference sites.
			Actions taken to eradicate plants declared under local or State legislation.	Evidence that actions have been undertaken to eradicate plants declared under local or State legislation.

Domain	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
			Abundance of declared animals identified through surveys.	Certification by an appropriately qualified person that the abundance of declared animals has not increased significantly since baseline surveys and/or that a vertebrate pest control program is being implemented to reduce pest numbers.
			Management actions taken to control animals declared under local or State legislation.	Records indicating that the holder has actively been managing animals declared under local or State legislation on the site.
			Weed hygiene procedures	Records indicating that all machinery, plant and equipment used for rehabilitation was free of declared plant seed and reproductive material prior to entering the site.
		Agricultural cattle grazing.	Cattle stocking rates.	Certification by an appropriately qualified person in the site Rehabilitation Report that areas nominated for cattle grazing are meeting and maintaining an equal to or better stocking rate than that calculated for each reference site. Reference sites will be identified following baseline survey of invasive exotic grasses.
			Landform stability when grazed.	Land maintenance requirements are comparable to designated reference sites. Safety of landform for stock and for undertaking management activities associated with stock.
			Stock access to water sources.	Stock only allowed access to water sources that meet stock water requirements as detailed in the EA.

NOTE: It is an offence under the *Land Protection (Pest and Stock Route Management Act) 2002* to fail to control Class 1 or Class 2 pests on a Mining Lease or to move or transport a vehicle containing the reproductive material of a declared pest plant.