For Yancoal's Middlemount Coal Pty Ltd

Middlemount Coal Mine – Progressive Rehabilitation and Closure Plan Risk Assessment Report June 2022

Risk Mentor Pty Ltd
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1 EXECUTIVE SUMMARY

Middlemount Coal Pty Ltd (MCPL) operates the Middlemount Coal Mine (MCM) located approximately 7 kilometres (km) to the south-west of the Middlemount Township within the Isaac Regional Local Government Area, Queensland. MCPL operates the MCM in accordance with Environmental Authority (EA) EPML00716913.

On 27 May 2021, the Queensland Department of Environment and Science (DES), pursuant to section 754 of the *Environmental Protection Act 1994* (the EP Act), issued Ribfield Pty Ltd and MCPL a Progressive Rehabilitation and Closure Plan Transition Notice (PRCP Transition Notice). The PRCP Transition Notice requires the preparation of a Progressive Rehabilitation and Closure (PRC) Plan for the MCM that satisfies the requirements of sections 126C and 126D of the EP Act by 30 June 2022.As a component of the PRC Plan, MCPL is required to consider risks related to rehabilitation. This report has been prepared to describe the rehabilitation risk assessment process undertaken and to report the outcomes from the risk assessment.

The risk assessment team identified the following risk scenarios as having the potential to affect successful rehabilitation of the MCM:

- Market or other conditions leading to a move to care and maintenance or premature closure of the operation – which could compromise the ability to effect rehabilitation in line with community expectations.
- Problems with achieving a stable final landform arising from poor physical performance of rehabilitated dumps, dams, or slopes.
- Impacts on water off the site due to excursions of contaminated or sediment laden water flows.
- Decommissioning challenges leaving either contaminated or dangerous materials on the site after the conclusion of rehabilitation works.
- Impacts on ecology (flora or fauna) arising from failing to achieve the target landform and species mix on the site.
- Control related issues in Rehabilitation Management – related to insufficient resourcing or experience or inadequate execution of the works.

Control strategies are described in detail in Section 12.

A Risk Treatment Plan has been developed which describes the risk treatment measures or controls that are, or will be, implemented to reduce the level of risk for the identified potential risks/issues to levels that are As Low As Reasonably Practicable (ALARP) or tolerable to MCM.

The team understood that MCPL personnel will track and review the performance of the identified controls and, as required, update this Rehabilitation Risk Assessment Report with information on any modified controls. These processes should support an ongoing move to continuously conducting and improving rehabilitation works and rehabilitated areas on the site.

Mostly the controls noted in the Risk Treatment Plan are in place – although a number of follow up actions were identified and are presented in Table 1 below.

Table 1 – Improvement Opportunities

Issue	Action (s)	Responsible	Status
MCPL.03.A Landform aspect not suitable for intended target plant species - not meeting required habitats for woodland fauna. With causes including the establishment of overly steep slopes (18.5 degrees may be too steep for ongoing leading practice works on site).	Review the inclusion of more realistic approaches. Apply ecological engineering principles to stabilise the landform - particularly angles of spoil dumps and void position/size.	A Heap	Underway MCPL is reducing rehab grades as much as practically allowable. For existing spoil dumps that had been dumped for 18.5% rebab grades, MCPL is achieving approx. 12.5% average grades for rehabilitation. This requires either significantly longer dozer push and or additional spoil dumping to assist with a reduced rehab grade. Also MCPL is using ecological engineering techniques of spoil chemical amelioration and topsoil chemical amelioration improvements with organic matter (compost), soil bacterial (compost/biosolids) and erosion and moisture retention with hay/straw mulching in an attempt to improve vegetation establishment, reduce raindrop erosion and improve stability.
	Identify suitable vegetation based on a digital landscape model - which will address both erosion as well as vegetation establishment (transition away from steeper slopes with rock mulch). Detailed geochemistry/soil chemistry to better characterise the terrain to support plant growth.	A Heap	Addressed in Revegetation Plan.
	Review topsoil management, covering landform design, creation and appropriate topsoil management to optimise outcomes from the topsoil stores.	A Heap	Ongoing through FY23.
	Seek approval for ongoing development of dumps at 10% batters (with rescheduled backfilling of final voids and use of 10% ramps as a natural guide for slope construction).	A Heap	This process is underway and ongoing.

Issue	Action (s)	Responsible	Status
MCPL.03.C Tree species established along creek diversions are not suited to riparian environment.	Document the priority of diversion design in planning documentation - that is stress the diversion design and construction QA/QC for long term stability.	A Heap	To be completed during detailed design of diversion.
	Confirm and document the availability of clean water for irrigation of the diversions to promote long term establishment of advantageous species mix.	A Heap	To be completed during detailed design of diversion.
MCPL.03.D Inappropriate revegetation species mix for targeted final land use.	Confirm there is a documented transition plan for the post relinquishment land user - for management and maintenance requirements (stock movements and loadings to minimise erosion and loss of revegetated species).	A Heap	To be prepared in consultation with potential land user.
	Confirm the targeting of species that will suit a grazing PMLU.	A Heap	Addressed in Revegetation Plan.
MCPL.03.E Poor quality Topsoil available and spread in areas for revegetation (with contributing factors from relatively young site and limited understanding of requirements by operational teams).	Review the topsoil execution practices on site (better QA and understanding for avoiding stockpiling of poor quality sub-soil materials).	A Heap	Ongoing through FY23.
MCPL.04.J Lack of infrastructure to support intended final land use (e.g. dams, fences, watering facilities, etc.). Note: Intended final land use is mixed use ecosystem services and low density beef cattle grazing, with a mixture of grasses and native woodland – minimal infrastructure required.	Develop a transition plan for the post relinquishment land user – for management and maintenance requirements (stock movements and loadings to minimise erosion and loss of revegetated species). Consider soil carbon and conditioning elements of the transition plan (which is a market mechanism that will provide a revenue incentive as part of the transition to the post mining land holder).	A Heap	To be prepared in consultation with potential land user.

Issue	Action (s)	Responsible	Status
	Confirm revegetation planning includes targeting of species that will suit a grazing PMLU.	A Heap	
MCPL.05.B Lack of availability and quality of seed resources.	Confirm species selection based on local species and a database of available items that could flourish on the site. The selection should consider Brigalow seed – as a key target for selection and establishment.	A Heap	Addressed in Revegetation Plan.
MCPL.05.I Adverse/less well understood geotechnical/geochemical issues associated with dumps and process waste storage facilities (e.g. tailings, reject emplacements, presence of sodic sub-soils) overburden and waste rock dumps etc.	Review the available soil data to confirm if the holdings are sufficient.	A Heap	Ongoing through FY23.
	Confirm/develop/document the site environmental processes and procedures provide an ongoing legacy for the site to maintain a knowledge base through to the completion of mining.	A Heap	Ongoing through FY23.
MCPL.05.P Adoption of inappropriate or inadequate rehabilitation techniques, timing and scheduling including allocation of the equipment fleet.	Reforecast rehabilitation execution program to produce a quality product in a wetter season and match schedules to what is achievable. Include the PRCP as part of critical decision making for MCPL (and potential for bringing in external providers to increase the pace of earthmoving activities).	A Heap	Ongoing through FY23.
	Document (and seek approval for) trials of leading practice revegetation techniques – flag the benefits of specialist contractors with appropriate equipment for spreading ameliorants, etc. Obtain ERM input on rehabilitation monitoring programs (with intended peer review from Verterra).	A Heap	Ongoing through FY22.
MCPL.06.B	Confirm that species selection and timing to minimise run off and growing period potential to provide cover for the cyclone season.	A Heap	Addressed in Revegetation Plan.

Issue	Action (s)	Responsible	Status
Diversion of surface water runoff away from catchment areas.	Confirm that site erosion and sedimentation controls are documented and include soil amelioration and additional organic matter incorporation and placement of hay over the rehabilitated areas.	A Heap	Addressed in PRCP.

2 DEFINITIONS

Table 2 provides guidance on terms used throughout this report.

Table 2 – Definition of Terms

Term	Explanation
ALARP	"As Low As Reasonably Practicable". The level of risk between tolerable and intolerable levels that can be achieved without disproportionate expenditure in relation to the benefit gained.
Aspect	A classification of risk normally applied to environmental matters. "Aspects" are best thought of as mechanisms of harm – or causes of loss. Typical aspects are: surface water contamination or loss; land changes; or fauna/flora changes. Each of these aspects produces a subsequent environmental "impact".
Causal Pathway	A term used to describe the "flow" of events beginning from a root cause and leading to an unwanted outcome. The flow is typically causes prevented from becoming incidents by preventative controls and incidents reduced in severity by mitigating controls which lead to different severity outcomes. A causal pathway is a cause *to* failed preventative controls *to* incident *to* successful mitigating controls *to* outcome.
Guideline	Abbreviation – Guideline – Progressive rehabilitation and closure plans, QLD Department of Environment and Science, March 2021.
Hazard	A thing or a situation with potential to cause loss.
HAZOP	Method of analysing mining operations, plant or processes to identify potential causes of incidents and prompt for required controls. Guidance on the method is available in AS/IEC 61882-2003 Hazard and operability studies (HAZOP).
Impact	A result of risk normally used when considering environmental matters. Impacts are the end result of the realisation of an "aspect". For example – surface water changes have an impact that includes loss of habitat for water dwelling fauna and flora.
Incident	A step in the causal pathway which describes the point at which control of pathway is lost. System required preventative controls have failed or been circumvented when an incident occurs. An incident is NOT a risk as it should not be described as a consequence.
Inspection	A regular check of workplace equipment, working environment and practices, to identify hazards and deficiencies.
Instrument	Term used to describe either statute, standards, policies or other legal or corporate document which imposes obligations on the site and the personnel filling roles in the organisation.
Issue	Is used in the document to describe any point raised by the team or in the risk review process generally. An issue can be any of cause, hazard, incident, control, outcome (risk), requirement, background information or general point related to the subject area.
MCM	Middlemount Coal Mine
MCPL	Abbreviation – Middlemount Coal Pty Ltd
NUMA	Acronym – Non-Use Management Area. An area of land the subject of a PRC Plan that can't be rehabilitated to a stable condition after all relevant activities for the PRC Plan carried out on the land have ended.
Personnel	Includes all people working in and around the site (e.g. all contractors, sub-contractors, visitors, consultants, project managers, etc.).
Practicable	The extent to which actions are technically feasible, in view of cost, current knowledge and best practices in existence and under operating circumstances of the time.
PRC Plan/PRCP	Abbreviation – Progressive Rehabilitation and Closure Plan.
Residual Risk	The risk associated with an unwanted event *after* consideration of the existing control measures is considered.
Review	An examination of the effectiveness, suitability and efficiency of a system and its components.

Term	Explanation
Risk	The combination of the potential consequences arising from a specified hazard together with the likelihood of the hazard resulting in an unwanted event.
Risk Management	The systematic application of management policies, procedures and practices to the tasks of identifying, analysing, assessing, treating and monitoring risk.
Risk Mentor	Risk Mentor Pty Ltd.
TSF	Abbreviation – Tailings Storage Facility. The location where fines from the coal handling and preparation plant will be/are deposited.

3 INTRODUCTION

3.1 *Purpose and Scope*

On 27 May 2021, the Queensland Department of Environment and Science (DES), pursuant to section 754 of the *Environmental Protection Act 1994* (the EP Act), issued Ribfield Pty Ltd and Middlemount Coal Pty Ltd (MCPL) a Progressive Rehabilitation and Closure Plan Transition Notice (PRCP Transition Notice). The PRCP Transition Notice requires the preparation of a Progressive Rehabilitation and Closure (PRC) Plan for the MCM that satisfies the requirements of sections 126C and 126D of the EP Act by 30 June 2022.As part of preparing this plan, MCPL commissioned and completed a rehabilitation risk assessment workshop on 4 March 2021 involving a team of MCPL operational, technical and environmental staff and specialist consultants with knowledge of, and experience in, MCPL rehabilitation planning and implementation.

This report has been prepared to describe the rehabilitation risk assessment process undertaken during the risk assessment workshop and to report the outcomes from the risk assessment. The process is also intended to address the key requirements for a Risk Assessment in the PRCP Guideline.

The scope of the rehabilitation risk assessment workshop was to meet the guideline requirements to identify:

- the risks of a stable condition for land described as a post-mining land use not being achieved, and how the applicant intends to manage or minimise the risks; and
- the risks of the NUMA causing environmental harm and not being safe and structurally stable and detail how the applicant intends to manage and minimise the identified risks.

Consistent with the *AS NZS ISO 31000:2018 Risk Management – Guidelines* the risk assessment workshop included:

- establishing the context including review of supporting information and objectives;
- identifying risks via several risk management techniques, including:
  - brain writing;
  - modified hazard and operability analysis; and
  - gap analysis against the issues contained in the Guideline;
- analysis of identified risks and nomination of key potential environmental issues; and
- ranking of the risks, including consideration of prevention and mitigation measures.

3.2 *Objectives and Deliverables*

The primary objectives of this report are to:

- use the risk assessment to identify items to be addressed in the MCPL PRC Plan (and other related environmental management plans, procedures and site processes);
- involve a cross section of MCPL personnel, key contractor representatives, subject matter experts, decision makers and key stakeholders in the issue (hazard) identification process;
- prioritise identified issues;
- identify recommended actions for follow up; and
- document the risk assessment process and the results.

3.3 *External Facilitation*

The risk assessment workshop team session was facilitated by Dr Peter Standish of Risk Mentor Pty Ltd – a company specialising in risk assessment and risk management processes.

3.4 *The Team*

The rehabilitation risk assessment team met on 4 March 2021 via a Microsoft Teams conference call. A team-based approach was utilised to incorporate an appropriate mix of skills and experience to identify the potential issues/risks relating to successful rehabilitation of MCPL. Details of the team members and their relevant qualifications and experience are shown in Table 3. The team's goals were also captured at the start of the team session and the status of these is presented in the fifth column (Status) of the table below.

Table 3 – Team Members

Name	Role and Affiliation	Skills and Experience	Goals	Status
Joseph Flanagan	Environmental Project Manager - Resource Strategies	5 years' experience in environmental management	Gain a better technical understanding of the rehab at Middlemount	Achieved - good input from Adam and this will benefit the ongoing PRCP development
Tom MacKillop	Principal, Resource Strategies	12 years' experience in environmental management, Bachelor of Environmental Engineering and Science	Identify the opportunities to develop the strategic approach to improving rehabilitation conditioning at the site. Build up some good arguments to improve conditioning outcomes.	Issues identified - write up will help achieve. Putting forward the threats of current conditioned/approved approach identified and will be stressed in write ups.
Adam Heap	Environment and Community, Health, Safety and Training Manager - Middlemount Coal Ltd	12 years experience in mining industry. Bachelor of Environment and Urban Planning	Meet the requirements of the PRCP and identify any risks and gaps and additional controls required. Make it happen	Highlighted the limited current verification evidence - but the process has highlighted opportunities to address this and identified engagement opportunities to achieve with stakeholders
Laura McCallum	Senior Environmental Scientist - Verterra	11 years' experience in environmental science; bio-condition monitoring; ecology; environmental approvals; planning and permits; water use and salinity modelling for beneficial re-use CSG water; water modelling for irrigated cropping; soils modelling and monitoring. Bachelor of Science (Honours) Ecology, Environment and Conservation.	Understand more of the site context and where the PRCP will fit in and where Verterra will integrate with the whole	Covered off - site understanding has improved

Name	Role and Affiliation	Skills and Experience	Goals	Status
Dave Waterson	Senior Environmental Scientist and Land Rehabilitation Specialist - Verterra	Over 17 years land management an erosion sediment control experience in the civil, mining and natural resources industry. Project Experience related to soil conservation, degraded land rehabilitation, erosion and sediment control, mine rehabilitation, water monitoring, environmental monitoring, environmental management planning and revegetation strategies. Masters Environmental Management (NRM); Bachelor of Applied Science (Protected Area Management); Associate Diploma of Applied Science (Marine Resources)	As for Laura and what we will be contributing to the Reveg strategy and identify any issues we're not currently aware of	Achieved goals - will be good to have data gathered which will highlight improvements going forwards
Michael Moore	Environment and Community Manager (Acting) - Yancoal	25 years' experience, BSc Honours Geophysics, MSc Environmental Management, MSc Groundwater Management Hydrogeology.	As for others - with key goals around sharing strategy and get the outcomes in line with what was achieved for Cameby	Enjoyed the session - but will have more time to focus on the next one
Megan Dawson	Coordinator, Environmental Standards (Corp E&C)	14 years' experience in mining industry (environmental approvals, consulting, geology). BA Environmental Geology.	As for Adam - plus validating the understanding of the existing risks and pick up on any new issues identified. Provide some corporate oversight and input knowledge from other projects	Covered off ok.
Toby Roscoe	Environmental Manager - Verterra	Experienced Environmental Manager with demonstrated history of innovating solutions to achieve environmental compliance in hard rock, coal mining and coal seam gas industries. Skills in environmental risk management, effective mine site rehabilitation, gas infrastructure rehabilitation, contaminated land rehabilitation, environmental monitoring systems, environmental compliance, project management, change management and environmental management systems. Bachelor of Science in Resource and Environmental Management.	Understand what Dave indicates we have available and identify inputs to the planning process and what risks we might be facing. Contribute from the knowledge base we already have to achieve a practical plan	Largely covered - some additional controls will need checking around landform design and geochem implications

Name	Role and Affiliation	Skills and Experience	Goals	Status
Josh Peters	Initial meet and greet	18 years experience in environmental approvals and strategy for the mining industry. Formal environmental management qualifications and professional affiliations. Certified Impact Assessment Specialist by the Environment Institute of Australia and New Zealand.	As for Meg - support Yancoal's broader strategy and make sure learnings are transferred	Covered off ok.
Peter Standish	Facilitator	Over 35 years mining industry experience and facilitating risk assessments for over 15 years. Formal engineering qualifications and professional affiliations	Capture all the information from the team, confirm the level of rigour and that a valid process has been applied.	Steps along the way

4 ESTABLISH THE CONTEXT

4.1 *Project Context*

The MCM is an approved and operating open cut coal mine located approximately 90 kilometres (km) north-east of Emerald and some 7 kilometres from the township of Middlemount in Queensland's Bowen Basin in the Isaac Regional Council (IRC) local government area (Figure 1).

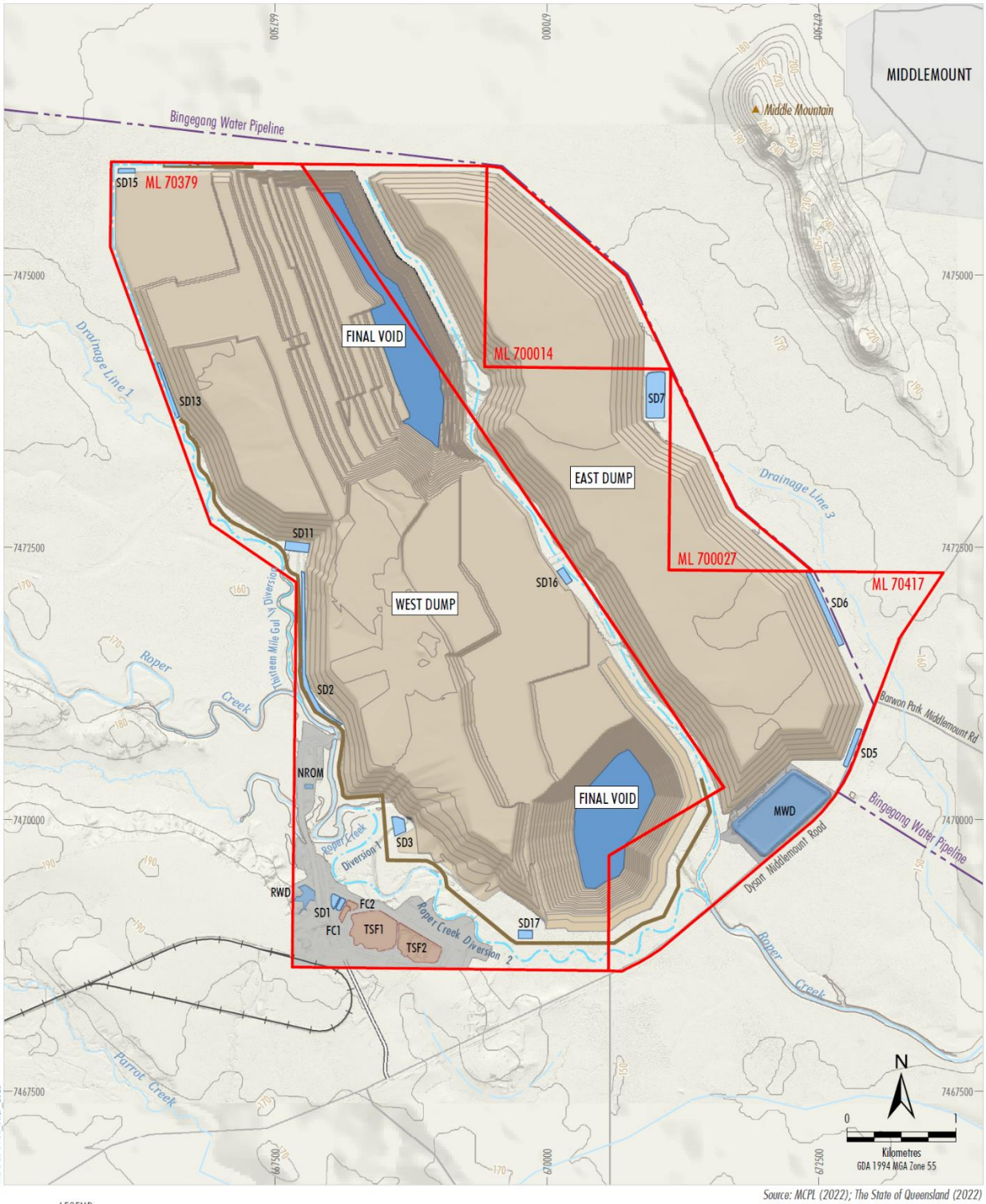
The MCM is owned by Peabody Energy and Yancoal Australia and is operated and managed by Yancoal Australia Limited in accordance with Environmental Authority EPML00716913.

The MCM has been operating for approximately 10 years, with mining of overburden commencing in 2011. The coal handling and preparation plant (CHPP) was commissioned in November 2012, with first product coal railed in December 2012. Figure 1 provides an overview of the approved layout of the MCM.

The primary activities associated with the MCM include:

- open cut truck and shovel mining operations at a mining rate of 5.7 million tonnes per annum run of mine (ROM) coal;
- processing of ROM coal at the Coal Handling and Processing Plant (CHPP);
- disposal of waste rock, comprising of overburden and interburden, in-pit or in out-of-pit waste rock emplacements as mining progresses;
- disposal of coarse coal reject material within in-pit waste emplacements;
- temporary storage of fine coal reject material in existing tailings storage facility (TSF) cells for drying and reclaim for in-pit co-disposal;
- loading of product coal using rail loading infrastructure;
- transport of product coal via the existing rail system from the Middlemount Coal Mine to the Dalrymple Bay Coal Terminal, Abbot Point Port or Wiggins Island Coal Export Terminal for export;
- construction and operation of ancillary infrastructure in support of mining operations, including:
  - haul and access roads;
  - electricity supply and communications infrastructure; and
  - water management infrastructure;
- diversion of Roper Creek;
- development of soil stockpiles, laydown areas and borrow areas;
- 24-hour seven-days per week operations until 2044;
- peak operational workforce of over 500 personnel;
- ongoing exploration activities within mining tenements;
- other associated minor infrastructure, plant and activities, where required; and
- progressive rehabilitation, as well as ultimate rehabilitation of the entire Middlemount Coal Mine area once the site has been decommissioned.

Figure 1: Approved General Arrangement



Source: MCPL (2022); The State of Queensland (2022)

LEGEND
- Mining Lease Boundary (ML)
- Mine Pit and Spoil
- Mine Infrastructure Area
- Tailings Storage Facility
- Sediment Dam
- Water Storage
- Middlemount Rail Spur and Loop
- Mine Access Road
- Diversion Structure
- Levee

middlemount coal PTY LTD

MIDDLEMOUNT COAL MINE
Project General Arrangement

4.1 *Risk Assessment Context*

MCPL are required to prepare and submit a PRCP.

Rehabilitation risks are currently documented in a broad-brush risk analysis but an improvement opportunity to provide additional detail was identified by MCPL and is actioned in this study and report.

4.2 *Risk Management and Organisational Context*

The approved general arrangement shown in Figure 1 presents the intended location of each of the material streams generated and infrastructure items related to operation of the MCM.

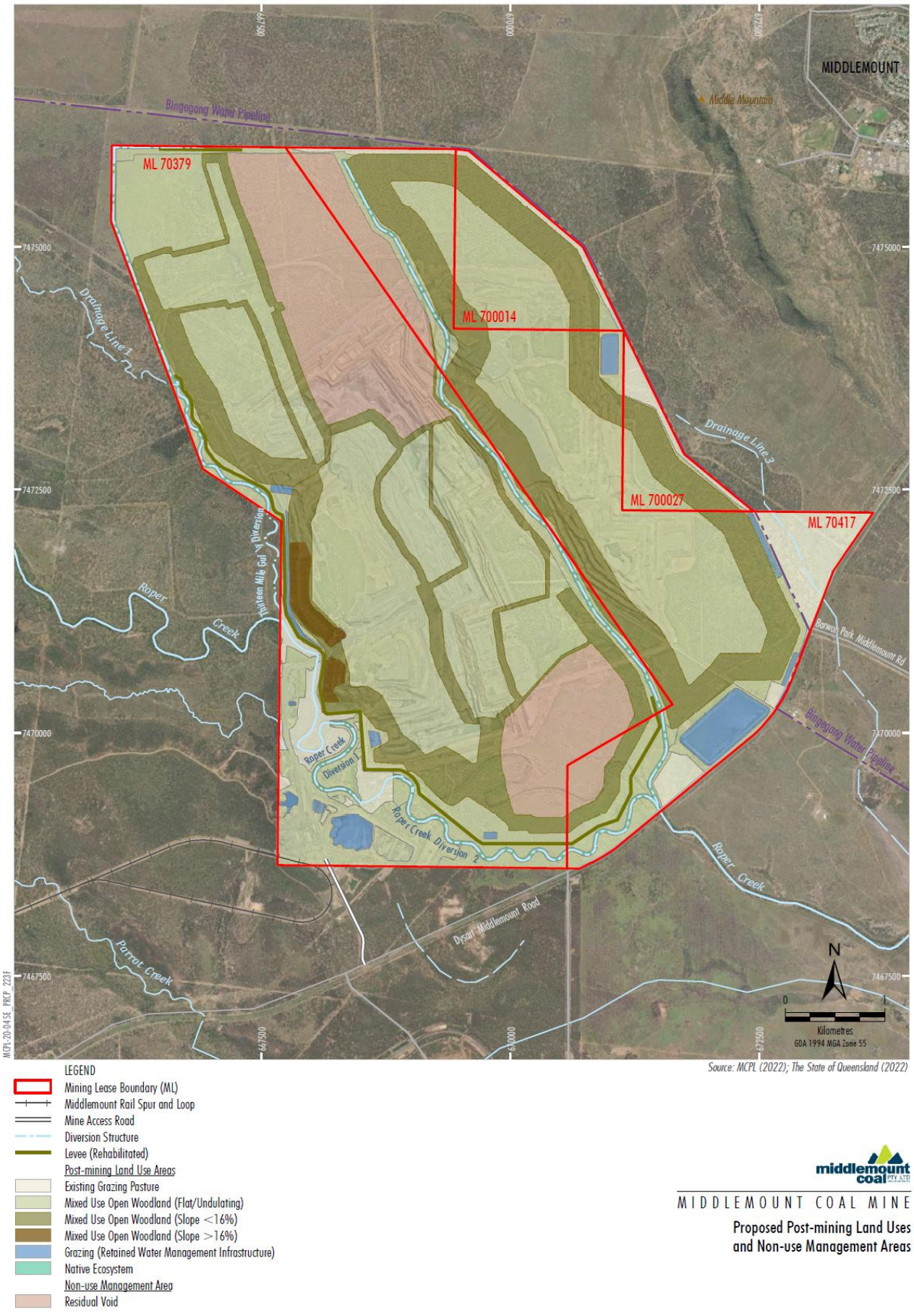
Figure 2 describes the intended end state of the site. Key items in this figure are the location of the NUMAs (i.e. the final voids), with the remainder of the site being returned to light intensity grazing with areas of vegetation.

4.3 *Key Assumptions*

The identification of key assumptions is a critical part of the risk assessment process – forming the basis for many engineering/project decisions. It is important that these assumptions are validated and reviewed as part of the risk management process. Key assumptions applied during the risk assessment process were:

- the risk assessment relates to rehabilitation at MCM and covers all MCM areas, not just the main rehabilitation areas; and
- risk ranking was undertaken on the basis of consequences being in excess of approved levels and in consideration of preventative and mitigating controls.

Figure 2: Post Mining Land Use and Non-Use Management Areas



5 METHOD

5.1 *Key Steps*

The key steps in the risk assessment process were:

1. Background analysis on any existing rehabilitation issues at MCPL and potential risks to successful rehabilitation of the MCM.
2. Facilitation of a team-based analysis to evaluate and treat risks, comprising:
    a. an open discussion with the team on “what do we want to achieve” in relation to the analysis;
    b. presentation on the context for the risk assessment;
    c. brain writing to capture general issues identified by the team;
    d. modified HAZOP - reviewing an aerial photo view of the mine to identify potential mine features which could contribute to rehabilitation risk (included as a stimulus for team members during the brain-writing activity);
    e. development of a matrix of issues relevant to rehabilitation areas;
    f. risk ranking of the identified issues/risks shown in Table 4 later in this document;
    g. identification of planned (existing) controls and additional (required) controls to mitigate risk levels to a tolerable state; and
    h. generation of an action plan to facilitate implementation of the identified additional required controls.
3. Complete draft report to AS/NZS ISO 31000: 2018 standard for review and signoff from participating personnel.
4. Finalise the report and issue as a controlled copy for ongoing use.

6 IDENTIFYING HAZARDS AND ISSUES

6.1 *Background Analysis of Documents*

The previous broad brush risk assessments and site context briefing were reviewed to determine the nature of specific threats to rehabilitation at the MCPL and the existing controls in place at the MCPL.

6.2 *Brain Writing*

Brain writing is a technique based on the work of Edward de Bono[1] (who built on the work of Alex Faickney Osborne) and is intended to promote creative thought amongst a group of people. As applied by Risk Mentor, the process involves:

1. Quiet reflection – where individuals write their thoughts on the subject onto paper or card(s).
2. Group discussion – with each person in the team taking a turn to read out one of their issues – and then refinement of each issue based on input from other team members who had similar items on their list.
3. Key word association (where relevant) to identify additional Issues for the risk register based on connection with the subject.

The team confirmed that all the issues identified in this brain writing phase were either addressed in the risk treatment analysis (Table 4) or have been referred to the Client (on the day of the team session).

6.3 *Modified HAZOP*

An aerial photograph (Figure 1 with and without the overlays) of the MCPL was used to identify existing rehabilitation areas and potential areas that may involve a risk to rehabilitation outcomes – with key word prompts connected with the various aspects of potential harm. The output from this process was added to the over-arching risk register from the team session (shown in Table 4 later in this report).

6.4 *Guideline Cross Map*

The main guidance information considered for the risk assessment comprised the elements presented in the Guideline. This requires the following key points be addressed:

- The reasons for selecting the treatment option (with each control having a nominated reason/purpose in Table 5 later in this report).
- Those responsible for approval and implementation of the plan (nominated roles in Table 5).
- Proposed actions (refer to Table 1 earlier in this report).

The additional points in the requirements around resource requirements, performance measures, reporting and monitoring, and timing and scheduling are intended for inclusion in the finalised PRC Plan in preparation at the time of this draft.

[1] De Bono, Edward – Six Thinking Hats. Penguin Books 2009 ISBN 9780141033051

7 ANALYSE RISK

Analysis of identified issues requires the stakeholders to determine the risk that the identified threat poses to the organisation or the importance of the potential control. Risk is the product of the consequence and the likelihood of the event occurring with and without controls in place.

Risk analysis involves determining the consequences or impact of a potential event occurring in combination with the likelihood of that event occurring. The result is a "level of risk" defined by the following:

Level of Risk = Consequence x Likelihood

The elements of risk level determination are as follows:

1. Consider the causal pathway – the balance between the intensity and frequency of the cause(s) and the preventative controls in place to prevent them from becoming incidents.
2. Identify existing mitigating control strategies and tactics that act to minimise negative outcomes from an incident.
3. Determine the consequences of the outcome reached by the causal pathway using the ratings in Table 6– with a negative impact or an opportunity. Where appropriate, the causal pathway considered should identify the dimension upon which is impacted (e.g., outcome is related to harming people, natural environment, property, process continuity, etc.).
4. Determine the likelihood of the outcome being reached using the ratings in Table 6 – giving balance to the cause, preventative and mitigating controls for a negative consequence or positive opportunity occurring. Likelihood is defined as the product of the probability of the event occurring and the overall exposure to the event.
5. Estimate the level of risk of an outcome by combining the consequence and likelihood rankings using the risk matrix shown in Table 6.
6. Identify and consider any uncertainties in the estimates, validate these where appropriate.

This technique was applied to reach the risk scores shown in Table 4. Note that in some instances the risk levels were not scored – which flows from guidance including:

- Uncertainty – if the causal pathway cannot be clearly described – any estimation of risk levels would be misleading, and the matter should be referred as an action to the Client to determine the level of risk more clearly.
- Being Control Related – where an issue such as failing to follow a procedure or a detection system not functioning are identified. In this case it is impossible to generate a meaningful risk score, as it requires the combination of the probability of the control failing AND the causal pathway being "traversed" at the same instant in time – which is rarely assessable in a team environment.
- Being Undefined – where a causal pathway has no clear outcome and so no meaningful risk score can be assigned.

8 ASSESS RISK

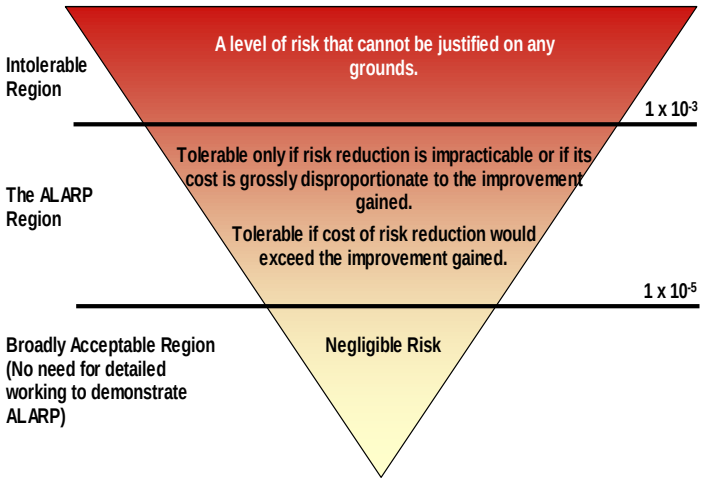
8.1 *Risk Acceptability and Risk Criteria*

The 'tolerability' of a risk is the willingness to live with a risk to secure benefits, on the understanding that the risk is being properly controlled (HB 203:2006 – *Environmental Risk Management – Principles and Process*). Legislation and good practice are targeted to reduce risk to "*As Low as Reasonably Practicable"* (ALARP). ALARP is often interchanged with "*As Low as Reasonably Achievable"* (ALARA).

The purpose of risk criteria is to allow the organisation to clearly define unacceptable levels of risk, or conversely the level of risk which is acceptable or tolerable. The risk criterion enables the organisation to prioritise actions proposed to control the risk during the risk assessment – leading to the development of the Risk Treatment Plan (Table 4).

The ALARP principle, as represented in the diagram below, was developed to assist in the definition of the acceptability of risk and to demonstrate that an organisation has done all that is practical in reducing the level of exposure to a risk. More often this is done qualitatively rather than as a quantitative probability as shown on the right-hand side of the diagram presented in Figure 3. A risk may be tolerable in the ALARP zone if the cost of removing the risk is disproportionate to the benefits gained.

Figure 3: Risk Criteria "ALARP"



8.2 *Risk Ranking*

The risk ranking likelihood, consequences, risk matrix and risk classifications considered by the team during the ranking process are outlined in Table 6 of this report. The teams considered cumulative impacts throughout all loss scenarios.

9 TREAT RISKS

A systems approach to the treatment of risks involves consideration of three aspects:

1. Areas of Intervention (Prevention, Monitoring, Mitigation, Response/Recovery);
2. Wheel of Safe Production (Nertney Wheel); and
3. Sequence of Barriers (Hierarchy of Controls).

Additional information is provided in the Appendices, in Section 12.2.

A selection of controls to reduce the likelihood of the risks associated with the topic under review were made with due regard to their prospective reliability. That is, installing engineering modifications is a superior control to relying on operator training efforts. As part of the process, existing controls are assessed and recommendations for amendments or additions made where these existing controls are deemed unacceptable or inadequate.

Further, the prospective reliability of the controls identified as issues were also reviewed. These controls were qualitatively reviewed by considering their position on the hierarchy of controls, the ability to detect any deterioration in the control and the ability to mitigate this deterioration.

9.1 *Risk Treatment Plan*

The Risk Treatment Plan given in Table 4 shows the risk evaluation results.

10 MONITOR AND REVIEW

10.1 *Nominated Coordinator and Report Review*

The nominated coordinator is the MCPL Health, Safety, Training, Environment & Community Manager. The coordinator should encourage all parties who attended the risk assessment team session to review this report and the identified hazards/issues – commenting as needed.

The nominated coordinator should also:

1. review the report to confirm the accuracy of the material recorded from the team session;
2. provide feedback to the parties who attended the risk assessment on any decisions which may be different from team expectations/recommendations raised on the day; and
3. monitor the completion of the additional actions to confirm there is close out of each action.

10.2 *Implementation of Risk Treatment Plan*

It is important to confirm the controls and actions identified are appropriately implemented and managed. The expectation of the team was that:

1. appropriate personnel would be allocated for implementation of recommended actions in a timely manner for completion;
2. any assumptions are validated; and
3. action items would be appropriately resourced and implemented.

MCPL managers can make modifications to the recommended actions, but these should be done in light of the risk management framework. Where a change is required, the basis for the change and a desktop review to assess if the risk of the underlying hazard remains tolerable is required.

It is also understood that the results from the risk analysis in this report would be incorporated into the MCPL PRC Plan.

10.3 *Communication and Consultation*

Communication and consultation form an integral part of the risk management process. It is the Client's responsibility to confirm that this report is shared with all participants involved in the process and other stakeholders as appropriate throughout the life cycle of the study subject area.

10.4 *Concluding Remarks*

A significant goal of the risk assessment process was to identify and analyse the rehabilitation related hazards/issues with rigour. The desired outcome was to prevent the identified hazards/issues from affecting successful rehabilitation of the MCM and to prevent losses to people, equipment, the environment, and consequential business, by evaluating the causal pathways and developing recommended controls for inclusion into an action plan.

This outcome was achieved by following the risk assessment process described within this document.

Ongoing review will be needed to implement and manage the additional required controls identified, and to ensure that subsequent risk management activities are conducted as required.

Dr Peter Standish would like to thank all personnel who arranged for the pre-session resources, team sessions and resources provided – and other team members who contributed to the risk assessment.

11 REFERENCES

Department of Industry and Investment (2011) *MDG1010 – Minerals Industry Safety and Health Risk Management Guideline*.

Queensland Department of Environment and Science (2019) *Guideline: Progressive Rehabilitation and Closure Plans (PRC Plans)*.

12 APPENDICES

12.1 *Risk Treatment Plan*

The following Risk Treatment Plan was developed by the team during the session on 17 September 2021.

Table 4 is presented in subject order.

The team identified control measures for the risks in Table 4 which are presented in full in Table 5. In line with the requirements of the PRC Plan guideline the issue being addressed is presented both in text form in the third column (addressing) and by specific items in the fifth column (Issues/Risks Covered).

Note that the coded values at the start of each control were entered by the author to assist in identifying the unique controls present on the site. There is some logic applied to these codes. Each of the controls related to a quality phase (Plan, Do, Check, Act) of Design (01D), Operation (02P), Supervisory Control and Data Acquisition (03S) or Abnormal Threat Response (04T). The controls are also related to different system aspects Personnel (R), Equipment/Built Items (E), Work Environment (V), Work Group Interaction (I), or System Optimisation (Y). Each logical grouping of these items is then numbered – so 01DV.01 is the first design control related to the environment identified in Table 4, etc.

12.2 *Assessment Basis*

Risks associated with successful progressive rehabilitation at MCM were considered by a review team of subject matter experts and site operational workers on 17 September 2021. The goal of the process was to describe credible hazards/issues and apply a risk ranking score to them. Table 6, drawn from the Yancoal Risk and Control Assessment Criteria appendix of the Risk Management Framework, was used during the risk ranking process.

Risks that were considered to be a result of controls failing could not be ranked during the team session and are flagged as such in Table 4. The basis here is that a failed control has an indeterminant outcome. For example, a failed fire extinguisher has no outcome unless there is a fire occurring. Maintenance and testing measures for the extinguisher are relevant – and would be stated as controls for these.

The potential for a fire is still a valid risk, however, and would be ranked (but separate to the specifics of the failed fire extinguisher).

Table 4 – Risk Treatment Plan

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.01.A	1	A	General	Insufficient resourcing (including skills and experience of rehabilitation personnel; funding for, or prioritisation of, rehabilitation activities; ongoing maintenance of rehabilitation requirements).	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact (R) Impact on Reputation	01DV.06 - Reduced area for final rehabilitation 01DY.03 - Offset arrangements 02PV.07 - Timing for access to rehabilitated areas 03SV.04 - Change management for rehabilitation 04TV.03 - Government rehabilitation bonds in place			**2**	**C**	**Moderate (6)**	**(6)**	Considers the reputation impacts related to failing to execute rehabilitation
MCPL.01.B	1	B	General	Lack of clearly defined responsibilities.	Rehabilitation inadequate, requiring further works.	(O) Asset Damage and Other (R) Impact on Reputation	01DV.06 - Reduced area for final rehabilitation 02PV.07 - Timing for access to rehabilitated areas 03SV.04 - Change management for rehabilitation 04TV.03 - Government rehabilitation bonds in place			**2**	**C**	**Moderate (6)**	**(6)**	
MCPL.01.C	1	C	General	Care and maintenance/premature closure.	Delayed rehabilitation.	(E) Environmental Impact	01DV.06 - Reduced area for final rehabilitation 02PV.07 - Timing for access to rehabilitated areas 03SV.04 - Change management for rehabilitation 04TV.03 - Government rehabilitation bonds in place			**2**	**C**	**Moderate (6)**	**(6)**	
MCPL.01.D	1	D	General	Poor monitoring records management, unable to demonstrate compliance with completion criteria.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.06 - Reduced area for final rehabilitation 02PE.08 - Drainage minimises water reporting to voids on site 02PV.07 - Timing for access to rehabilitated areas 03SV.02 - Biannual environmental audits 03SV.04 - Change management for rehabilitation 04TV.03 - Government rehabilitation bonds in place			**2**	**C**	**Moderate (6)**	**(6)**	
MCPL.01.E	1	E	General	Inadequate consultation with key stakeholders.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.06 - Reduced area for final rehabilitation 02PV.07 - Timing for access to rehabilitated areas 03SV.04 - Change management for rehabilitation 04TV.03 - Government rehabilitation bonds in place			**2**	**C**	**Moderate (6)**	**(6)**	
MCPL.01.F	1	F	General	Change in Isaac Regional Council Planning Scheme.	Final land use no longer aligns with local planning scheme.	(E) Environmental Impact	01DV.06 - Reduced area for final rehabilitation 02PV.07 - Timing for access to rehabilitated areas 03SV.04 - Change management for rehabilitation 04TV.03 - Government rehabilitation bonds in place			**2**	**C**	**Moderate (6)**	**(6)**	
MCPL.02.A	2	A	Decommissioning	Generation of waste products from demolition process (e.g., conveyors, electrical substations, compressors, services [pipes/cables], stores, laydown areas, etc.).	Inappropriate disposal of waste products (e.g., at licensed disposal facility).	(E) Environmental Impact	01DV.01 - Surveyed plans of all mine features 01DY.01 - Planning for decommissioning works 02PY.01 - Works conducted by suitable contractors 03SY.05 - Contractor Management Plan and Protocols			**2**	**D**	**Low (4)**	**(4)**	Localised consequences, unlikely to occur

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.02.B	2	B	Decommissioning	Failure to remove all infrastructure that is not to be retained post-closure (e.g., services, infrastructure, roads, carparks, hardstand areas, concrete footings).	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.01 - Surveyed plans of all mine features 01DY.01 - Planning for decommissioning works 02PY.01 - Works conducted by suitable contractors			**2**	**D**	**Low (4)**	**(4)**	
MCPL.02.C	2	C	Decommissioning	Failure to remove all hazardous materials (e.g., carbonaceous material on the surface, hazardous wastes, other wastes).	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.01 - Surveyed plans of all mine features 01DY.01 - Planning for decommissioning works 02PY.01 - Works conducted by suitable contractors 02PY.02 - Specific guidelines for hazardous chemicals 03SY.05 - Contractor Management Plan and Protocols			**2**	**D**	**Low (4)**	**(4)**	
MCPL.02.D	2	D	Decommissioning	Land contamination sites not successfully identified or remediated resulting in impacts to the environment.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.01 - Surveyed plans of all mine features 01DY.01 - Planning for decommissioning works 02PY.01 - Works conducted by suitable contractors 03SY.05 - Contractor Management Plan and Protocols			**2**	**D**	**Low (4)**	**(4)**	
MCPL.02.E	2	E	Decommissioning	Failure of borehole or gas well seals.	Resealing of boreholes or gas wells required.	(E) Environmental Impact	01DV.01 - Surveyed plans of all mine features 01DY.01 - Planning for decommissioning works 02PY.01 - Works conducted by suitable contractors 03SY.05 - Contractor Management Plan and Protocols 04TV.01 - Guidance on gas borehole decommissioning			**2**	**D**	**Low (4)**	**(4)**	
MCPL.02.F	2	F	Decommissioning	Lack of structural integrity of buildings and infrastructure to be retained in final land use.	Collapse/failure of infrastructure to be retained (e.g. dams).	(E) Environmental Impact	01DV.01 - Surveyed plans of all mine features 01DY.01 - Planning for decommissioning works 02PY.01 - Works conducted by suitable contractors 03SY.05 - Contractor Management Plan and Protocols			**2**	**D**	**Low (4)**	**(4)**	
MCPL.02.G	2	G	Decommissioning	Impacts on European/ historic heritage items.	Damage to heritage items. Prosecution.	(E) Environmental Impact	02PV.01 - Processes to identify all heritage items 02PV.02 - Site land disturbance permits 02PV.03 - Work is occurring within already disturbed footprints 03SV.01 - Database which tracks all known heritage items			**1**	**E**	**Low (1)**	**(1)**	Very limited extent of heritage items present and finding and damaging them would be rare
MCPL.02.H	2	H	Decommissioning	Impacts on Aboriginal heritage items.	Damage to heritage items. Prosecution.	(E) Environmental Impact	01DV.01 - Surveyed plans of all mine features 01DY.01 - Planning for decommissioning works 02PY.01 - Works conducted by suitable contractors 03SV.01 - Database which tracks all known heritage items			**1**	**E**	**Low (1)**	**(1)**	Very limited extent of archaeological items present and finding and damaging them would be rare

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.03.A	3	A	Ecology - flora and fauna	Landform aspect not suitable for intended target plant species - not meeting required habitats for woodland fauna. With causes including the establishment of overly steep slopes (18.5 degrees may be too steep for ongoing leading practice works on site)	Inability to meet post-mining land use criteria.	(E) Environmental Impact	01DV.10 - Selection of appropriate analogue and reference sites 01DY.02 - Revegetation plan (in line with PRCP). 02PV.04 - Rehabilitation of appropriate species of vegetation 02PV.05 - Long mine life (>20 years) 03SY.01 - Monitoring and adaptive management programs 03SY.02 - Milestone and completion criteria 03SY.03 - Annual reporting of PRCP progress to the Regulator. 04TV.02 - Internal reporting of any non-compliances	Action - Review the inclusion of more realistic approaches. Apply ecological engineering principles to stabilise the landform - particularly angles of spoil dumps and void position/size. Action - Identify suitable vegetation based on a digital landscape model - which will address both erosion as well as vegetation establishment (transition away from steeper slopes with rock mulch). Detailed geochemistry/soil chemistry to better characterise the terrain to support plant growth. Action - Review topsoil management, covering landform design, creation and appropriate topsoil management to optimise outcomes from the topsoil stores. Action - Seek approval for ongoing development of dumps at 10% batters (with rescheduled backfilling of final voids and use of 10% ramps as a natural guide for slope construction).	A Heap	**1**	**C**	**Low (3)**	**(3)**	Very minor impact – but could arise under current, approved landform
MCPL.03.B	3	B	Ecology - flora and fauna	Tree species established are not suited to riparian environment.	Rehabilitation inadequate, requiring further works and compromising long term stability of diversions	(E) Environmental Impact	01DY.02 - Revegetation plan (in line with PRCP). 02PV.04 - Rehabilitation of appropriate species of vegetation 02PV.05 - Long mine life (>20 years) 03SY.01 - Monitoring and adaptive management programs 03SY.02 - Milestone and completion criteria 03SY.03 - Annual reporting of PRCP progress to the Regulator. 04TV.02 - Internal reporting of any non-compliances			**1**	**C**	**Low (3)**	**(3)**	

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.03.C	3	C	Ecology - flora and fauna	Tree species established along creek diversions are not suited to riparian environment.	Rehabilitation inadequate, requiring further works and compromising long term stability of diversions	(E) Environmental Impact	01DY.02 - Revegetation plan (in line with PRCP). 02PV.04 - Rehabilitation of appropriate species of vegetation 02PV.05 - Long mine life (>20 years) 03SY.01 - Monitoring and adaptive management programs 03SY.02 - Milestone and completion criteria 03SY.03 - Annual reporting of PRCP progress to the Regulator. 04TV.02 - Internal reporting of any non-compliances	Action - Document the priority of diversion design in planning documentation - that is stress the diversion design and construction QA/QC for long term stability. Action - Confirm and document the availability of clean water for irrigation of the diversions to promote long term establishment of advantageous species mix.	A Heap	1	C	Low (3)	(3)	
MCPL.03.D	3	D	Ecology - flora and fauna	Inappropriate revegetation species mix for targeted final land use.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DY.02 - Revegetation plan (in line with PRCP). 01DV.10 - Selection of appropriate analogue and reference sites02PV.04 - Rehabilitation of appropriate species of vegetation 02PV.05 - Long mine life (>20 years) 03SY.01 - Monitoring and adaptive management programs 03SY.02 - Milestone and completion criteria 03SY.03 - Annual reporting of PRCP progress to the Regulator. 04TV.02 - Internal reporting of any non-compliances	Action - Confirm there is a documented transition plan for the post relinquishment land user - for management and maintenance requirements (stock movements and loadings to minimise erosion and loss of revegetated species). Action - Confirm the targetting of species that will suit a grazing PMLU.	A Heap	1	C	Low (3)	(3)	
MCPL.03.E	3	E	Ecology - flora and fauna	Poor quality Topsoil available and spread in areas for revegetation (with contributing factors from relatively young site and limited understanding of requirements by operational teams)	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan	Action - Review the topsoil execution practices on site (better QA and understanding for avoiding stockpiling of poor quality sub-soil materials)	A Heap	1	C	Low (3)	(3)	
MCPL.04.A	4	A	Final Landform	Unknown characterisation of spoil material.	Tertiary spoil material is highly susceptible to erosion which could lead to landform instability, landform failure and insufficient revegetation to meet PMLUs.	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control			2	D	Low (4)	(4)	Localised impact, unlikely to occur

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.04.B	4	B	Final Landform	Insufficient permian rock material for rock mulching and capping of relevant surfaces.	Landform instability, landform failure and insufficient revegetation to meet PMLUs.	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control 03SV.06 - Rehabilitation management plan			**2**	**D**	**Low (4)**	**(4)**	
MCPL.04.C	4	C	Final Landform	Final landform instability (e.g. in and out of pit dumps, steep slopes, erosion, highwalls, low walls etc.) affecting post-mining land use.	Landform failure (public safety risk).	(P) Harm to People	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control			**2**	**D**	**Low (4)**	**(4)**	
MCPL.04.D	4	D	Final Landform	Final landform instability (e.g. NUMAs, final voids, etc.) affecting post-mining land use.	Landform failure (public safety risk) and NUMAs causing environmental harm.	(P) Harm to People (E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control			**2**	**D**	**Low (4)**	**(4)**	
MCPL.04.E	4	E	Final Landform	Final landform instability (e.g. steep slopes, erosion, highwalls, low walls etc.) affecting post-mining land use (e.g. due to insufficient amelioration of dispersive tertiary spoil and soils).	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control			**2**	**D**	**Low (4)**	**(4)**	
MCPL.04.F	4	F	Final Landform	Final landform unsuitable for final land use (e.g. large rocks present affecting cultivation, settlement and surface subsidence leading to extended ponding etc.).	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control			**2**	**D**	**Low (4)**	**(4)**	
MCPL.04.G	4	G	Final Landform	Final landforms are not consistent with and do not complement the topography of the surrounding region.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control			**2**	**D**	**Low (4)**	**(4)**	
MCPL.04.H	4	H	Final Landform	Erosion and failure of drainage and water management/storage structures.	Impacts on water quality and potential discharge.	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control			**2**	**D**	**Low (4)**	**(4)**	

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.04.I	4	I	Final Landform	Failure of the tailings storage facility over time.	Impact on surrounding landform and movement of tailings off site (Pollution of land or surface water by tailings).	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 02PE.01 - Flocculant use achieving a stiff tailings deposition 02PE.06 - Capping of TSF 03SV.03 - RQP involvement in TSF design			**2**	**D**	**Low (4)**	**(4)**	
MCPL.04.J	4	J	Final Landform	Lack of infrastructure to support intended final land use (e.g. dams, fences, watering facilities, etc.). Note: Intended final land use is mixed use ecosystem services and low density beef cattle grazing, with a mixture of grasses and native woodland - minimal infrastructure required.	Farm dams retained insufficient to support grazing and additional dams required.	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control	Action - Develop a transition plan for the post relinquishment land user - for management and maintenance requirements (stock movements and loadings to minimise erosion and loss of revegetated species). Consider soil carbon and conditioning elements of the transition plan (which is a market mechanism that will provide a revenue incentive as part of the transition to the post mining land holder). Action - Confirm revegetation planning includes targeting of species that will suit a grazing PMLU.	A Heap	**2**	**D**	**Low (4)**	**(4)**	
MCPL.04.K	4	K	Final Landform	Landform (excluding final void domains) not free draining.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 01DV.03 - Geomorphic design protocols 01DV.04 - Factor of safety applied to designs 01DV.05 - Longitudinal study of erosion performance 02PV.06 - Erosion and sediment control			**2**	**D**	**Low (4)**	**(4)**	
MCPL.05.A	5	A	Rehabilitation Management	Loss of biological and habitat resources (e.g. subsoil, topsoil, vegetative material, seedbank, rocks, etc.) through clearing, salvage and handling practices.	High quality vegetation / habitat resources lost.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan							Note - these issues are control related - so are not ranked

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.05.B	5	B	Rehabilitation Management	Lack of availability and quality of seed resources.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PE.02 - External supplier of seeds 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan 03SV.06 - Rehabilitation Management Plan	Action - Confirm species selection based on local species and a database of available items that could flourish on the site. The selection should consider Brigalow seed - as a key target for selection and establishment.	A Heap					Control related
MCPL.05.C	5	C	Rehabilitation Management	Weed and pest control (or lack thereof), including damage from insects, plant disease, fauna and livestock.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan 03SV.07 - Weed and Pest Control Management Plan							Control related
MCPL.05.D	5	D	Rehabilitation Management	Weather and climatic influences (e.g. drought, intense rainfall events/flooding, bushfire, etc.).	Damage or delays to rehabilitation, requiring further works.	(E) Environmental Impact	01DV.07 - Dump designs allow for rainfall events 02PE.08 - Drainage minimises water reporting to voids on site 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan 03SV.06 - Rehabilitation Management Plan							Control related
MCPL.05.E	5	E	Rehabilitation Management	Insufficient establishment or cover of vegetation due to high plant mortality.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan 03SV.06 - Rehabilitation Management Plan							Control related
MCPL.05.F	5	F	Rehabilitation Management	Overgrazing of pasture rehabilitation areas.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PE.03 - Site security, fencing, etc. 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan 03SY.04 - Third party agreements							Control related
MCPL.05.G	5	G	Rehabilitation Management	Vandalism to revegetation areas.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PE.03 - Site security, fencing, etc. 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan							Control related
MCPL.05.H	5	H	Rehabilitation Management	Inadvertent or unauthorised access to rehabilitated areas by mining equipment and vehicles.	Damage or delays to rehabilitation (e.g. collapse of soil structure), requiring further works.	(E) Environmental Impact	02PE.03 - Site security, fencing, etc. 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan							Control related

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.05.I	5	I	Rehabilitation Management	Adverse/less well understood geotechnical/geochemical issues associated with dumps and process waste storage facilities (e.g. tailings, reject emplacements, presence of sodic sub-soils) overburden and waste rock dumps etc.	Failing to meet completion criteria, significant erosion and poor quality runoff/infiltration from rehabilitated surfaces effecting surface water and groundwater quality.	(E) Environmental Impact	01DE.01 - Tailings and dam designs and management systems 02PE.04 - Gypsum remediation to improve run-off 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan 03SV.08 - Water quality monitoring	Action - Review the available soil data to confirm if the holdings are sufficient. Action - Confirm/develop/document the site environmental processes and procedures provide an ongoing legacy for the site to maintain a knowledge base through to the completion of mining.	A Heap					Control related
MCPL.05.J	5	J	Rehabilitation Management	Inadequate capping or removal of carbonaceous material.	Spontaneous combustion event.	(E) Environmental Impact	01DE.01 - Tailings and dam designs and management systems 01DV.08 - Mine design considers carbonaceous material in dumps 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 02PV.09 - Stripping and stockpiling procedures 03SV.05 - Topsoil management plan							Control related
MCPL.05.K	5	K	Rehabilitation Management	Availability of suitable materials for capping of hazardous materials and tailings.	Unable to cap due to lack of suitable material on site.	(E) Environmental Impact	01DE.01 - Tailings and dam designs and management systems 01DV.08 - Mine design considers carbonaceous material in dumps 01DV.09 - Mine plan makes allowances for rehabilitation of the TSF 02PE.01 - Flocculant use achieving a stiff tailings deposition 02PE.05 - Stockpiling rock material for use as an erosion control 02PE.06 - Capping of TSF 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 02PV.09 - Stripping and stockpiling procedures 03SV.05 - Topsoil management plan							Control related
MCPL.05.L	5	L	Rehabilitation Management	Insufficient spreading of topsoil (not to required thickness) and/or development of soil crusting.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan							Control related
MCPL.05.M	5	M	Rehabilitation Management	Availability of suitable topsoil for growth medium to support revegetation.	Rehabilitation inadequate, requiring further works/importing of topsoil.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan							Control related

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.05.N	5	N	Rehabilitation Management	Topsoil or rock/soil mixture (in particular for dispersive tertiary spoil) unsuitable as growth medium.	Rehabilitation inadequate, requiring further works such as additional treatment/amelioration.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan							Control related
MCPL.05.O	5	O	Rehabilitation Management	Substrate inadequate to support revegetation or agricultural land capability (e.g. lack of organic matter, nutrient deficiency, lack of soil biota, adverse soil chemical properties, exposed hostile geochemical materials, overly compacted, and any other factors impeding the effective rooting depth).	Soil quality insufficient to support revegetation.	(E) Environmental Impact	As for MCM.04.I 01DE.01 - Tailings and dam designs and management systems 02PE.04 - Gypsum remediation to improve run-off 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan 03SV.08 - Water quality monitoring							Control related
MCPL.05.P	5	P	Rehabilitation Management	Adoption of inappropriate or inadequate rehabilitation techniques, timing and scheduling including allocation of the equipment fleet.	Rehabilitation inadequate, requiring further works and potentially compromising position with Regulators.	(E) Environmental Impact (R) Reputation	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 02PY.01 - Works conducted by suitable contractors 03SV.04 - Change management for rehabilitation 03SV.05 - Topsoil management plan 03SV.06 - Rehabilitation Management Plan 03SY.05 - Contractor Management Plan and Protocols	Action - reforecast rehabilitation execution program to produce a quality product in a wetter season and match schedules to what is achievable. Include the PRCP as part of critical decision making for MCPL (and potential for bringing in external providers to increase the pace of earthmoving activities). Action - document (and seek approval for) trials of leading practice revegetation techniques - flag the benefits of specialist contractors with appropriate equipment for spreading ameliorants, etc. Obtain ERM input on rehabilitation monitoring programs (with intended peer review from Verterra)	A Heap	**2**	**C**	**Moderate (6)**	**(6)**	Ranked to reflect relative severity of failing to implement effective rehabilitation on the site

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.05.Q	5	Q	Rehabilitation Management	Adoption of inappropriate or inadequate rehabilitation monitoring to inform maintenance program.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.02 - Biannual environmental audits 03SV.04 - Change management for rehabilitation 03SV.05 - Topsoil management plan 03SV.06 - Rehabilitation Management Plan							Control related
MCPL.05.R	5	R	Rehabilitation Management	Adoption of inappropriate or inadequate rehabilitation monitoring to demonstrate compliance with completion criteria.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan							Control related
MCPL.05.S	5	S	Rehabilitation Management	Rehabilitation doesn't align with analogue/reference site, unable to demonstrate compliance with completion criteria.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	01DV.10 - Selection of appropriate analogue and reference sites 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan 03SV.06 - Rehabilitation Management Plan							Control related
MCPL.05.T	5	T	Rehabilitation Management	Vegetation not self-sustaining, unable to demonstrate compliance with completion criteria.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan 03SY.02 - Milestone and completion criteria 04TV.01 - Guidance on gas borehole decommissioning							Control related
MCPL.05.U	5	U	Rehabilitation Management	Public/livestock access to void.	Risk to public safety and livestock.	(P) Harm to People	02PE.03 - Site security, fencing, etc. 02PE.07 - Bunding and barricading of voids and steep slopes 02PV.02 - Site land disturbance permits 02PV.08 - Cleared vegetation is mulched or burnt 03SV.05 - Topsoil management plan							Control related
MCPL.05.V	5	V	Rehabilitation Management	Legacy exploration bore holes not rehabilitated at end of mine life.	Rehabilitation inadequate, requiring further works.	(E) Environmental Impact	03SV.09 - Mine voids are ground water sinks 04TV.04 - Response to third party audits							Control related
MCPL.05.W	5	W	Rehabilitation Management	Discharge of particulates to the atmosphere during rehabilitation earthworks	Air pollution by discharge of particulates	(E) Environmental Impact	02PV.02 - Site land disturbance permits 03SV.06 - Rehabilitation Management Plan 03SY.05 - Contractor Management Plan and Protocols 04TV.02 - Internal reporting of any non-compliances							Control related

Ref	Aspect ID	Risk ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Loss Type	Existing / Proposed Risk Treatment / Control	Risk Assessment Follow-up Action	Person Responsible for Action	Ranking With Controls				Ranking Discussion
										Consequence	Likelihood	Residual Risk Level	Residual Risk Rank	
MCPL.06.A	6	A	Water	Contamination resulting from adjacent mining activities (e.g. storage and use of hydrocarbons/chemicals, drilling fluids, spillage of dirty or produced saline water, brine, sewage, tailings emplacement etc.).	Contamination of waterways or land resulting in infringement notice.	(E) Environmental Impact	02PE.08 - Drainage minimises water reporting to voids on site 02PE.09 - Over-topping buffer in site voids 02PY.02 - Specific guidelines for hazardous chemicals 03SV.09 - Mine voids are ground water sinks 03SY.06 - Water Management Plan			**2**	**D**	**Low (4)**	**(4)**	Impacts will be localised and are unlikely to occur
MCPL.06.B	6	B	Water	Diversion of surface water runoff away from catchment areas.	Loss of water flow downstream due to capture of water in voids.	(E) Environmental Impact	02PE.08 - Drainage minimises water reporting to voids on site 02PV.06 - Erosion and sediment control 03SY.06 - Water Management Plan	Action - Confirm that species selection and timing to minimise run off and growing period potential to provide cover for the cyclone season. Action - Confirm that site erosion and sedimentation controls are documented and include soil amelioration and additional organic matter incorporation and placement of hay over the rehabilitated areas.	A Heap	**2**	**D**	**Low (4)**	**(4)**	
MCPL.06.C	6	C	Water	Water accumulation in residual voids.	Overtopping/discharge to receiving environment.	(E) Environmental Impact	02PE.08 - Drainage minimises water reporting to voids on site 02PE.09 - Over-topping buffer in site voids 03SV.09 - Mine voids are ground water sinks			**2**	**D**	**Low (4)**	**(4)**	
MCPL.06.D	6	D	Water	Failure of final landform embankments in proximity to the southern residual void.	Inundation of the southern residual void and potential discharge to receiving environment.	(E) Environmental Impact	01DV.02 - Geotechnical analysis and design 02PY.01 - Works conducted by suitable contractors 03SY.05 - Contractor Management Plan and Protocols			**2**	**D**	**Low (4)**	**(4)**	
MCPL.06.E	6	E	Water	Groundwater seepage from residual voids.	Impact to receiving environment.	(E) Environmental Impact	02PE.08 - Drainage minimises water reporting to voids on site 03SV.09 - Mine voids are ground water sinks			**2**	**D**	**Low (4)**	**(4)**	
MCPL.06.F	6	F	Water	Poor water quality/excessive discharges (e.g. acid-drainage, high salinity, etc.).	Impact to receiving environment.	(E) Environmental Impact	02PV.09 - Stripping and stockpiling procedures 03SV.09 - Mine voids are ground water sinks 03SY.06 - Water Management Plan			**2**	**D**	**Low (4)**	**(4)**	

Table 5 – Rehabilitation Control/Business Input Information

Business Input (Control) Name	Expectation	Responsible	Addressing	Related Failure Mode/Risk
01DE.01 - Tailings and dam designs and management systems	01DE.01 - Tailings and other dams appropriately designs - to contain material and any affected water	Executive General Manager/SSE	Addressing potential for collapse or uncontrolled release of site fluids	MCPL.05.I - Geotechnical conditions not considered for waste storage facilities MCPL.05.J - Inadequate capping of reactive materials MCPL.05.K - Inadequate storage of capping materials MCPL.05.O - Substrate insufficient for revegetation
01DV.01 - Surveyed plans of all mine features	01DV.01 - Surveyed plans (and all infrastructure included in the PRCP) (to confirm that all locations, structures and features of substance are identified).	Senior Environment & Community Advisor	Preventing key items or built features not being addressed during rehabilitation as their physical locations are known and mapped	MCPL.02.A - Generation of wastes during decommissioning MCPL.02.B - Failure to remove all infrastructure MCPL.02.C - Failure to remove hazardous materials MCPL.02.D - Failure to identify contaminated lands MCPL.02.E - Failure of borehole or gas well seal MCPL.02.F - Unstable structure remaining on site MCPL.02.H - Impact on Aboriginal heritage items
01DV.02 - Geotechnical analysis and design	01DV.02 - Geotechnical analyses and implementation of designs to achieve long term stable landforms. As new materials are identified this leads to review and updating (as required) of designs.	Executive General Manager/SSE	Protection against changes in geotechnical conditions leading to final landform instability.	MCPL.04.A - Unknown characterisation of spoil material MCPL.04.B - Insufficient rock mulching material available MCPL.04.C - Final landform instability MCPL.04.D - Instability of NUMAs MCPL.04.E - Instability of steeper elements MCPL.04.F - Landform unsuited to final land use MCPL.04.G - Landform inconsistent with region MCPL.04.H - Sediment release from final landform MCPL.04.I - Tailings storage instability MCPL.04.J - Lack of supporting infrastructure. in final landform MCPL.04.K - Final landform does not free drain MCPL.06.D - Failure of final landform embankments near mining areas
01DV.03 - Geomorphic design protocols	01DV.03 - Current designs are aligned with relevant QLD design principles. Planned to implement geomorphic design principles being applied to the design of the final landform	Executive General Manager/SSE	Protection against longer term instability of the final landform	MCPL.04.A - Unknown characterisation of spoil material MCPL.04.B - Insufficient rock mulching material available MCPL.04.C - Final landform instability MCPL.04.D - Instability of NUMAs MCPL.04.E - Instability of steeper elements MCPL.04.F - Landform unsuited to final land use MCPL.04.G - Landform inconsistent with region MCPL.04.H - Sediment release from final landform MCPL.04.J - Lack of supporting infrastructure in final landform MCPL.04.K - Final landform does not free drain
01DV.04 - Factor of safety applied to designs	01DV.04 - Factor of safety of 2 applied to the void design - to address the weathering expected within 10's of years	Executive General Manager/SSE	Protection against longer term instability of the final landform	MCPL.04.A - Unknown characterisation of spoil material MCPL.04.B - Insufficient rock mulching material available MCPL.04.C - Final landform instability MCPL.04.D - Instability of NUMAs MCPL.04.E - Instability of steeper elements MCPL.04.F - Landform unsuited to final land use MCPL.04.G - Landform inconsistent with region MCPL.04.H - Sediment release from final landform MCPL.04.J - Lack of supporting infrastructure in final landform MCPL.04.K - Final landform does not free drain

Business Input (Control) Name	Expectation	Responsible	Addressing	Related Failure Mode/Risk
01DV.05 - Longitudinal study of erosion performance	01DV.05 - Prior studies of erosion potential of dumps and rehabilitation methodology has been developed.	Health, Safety, Training, Environment & Community Manager	Addressing potential for using incorrect inputs in final landform designs	MCPL.04.A - Unknown characterisation of spoil material MCPL.04.B - Insufficient rock mulching material available MCPL.04.C - Final landform instability MCPL.04.D - Instability of NUMAs MCPL.04.E - Instability of steeper elements MCPL.04.F - Landform unsuited to final land use MCPL.04.G - Landform inconsistent with region MCPL.04.H - Sediment release from final landform MCPL.04.J - Lack of supporting infrastructure in final landform MCPL.04.K - Final landform does not free drain
01DV.06 - Reduced area for final rehabilitation	01DV.06 - Progressive rehabilitation (in conformance with the PRCP) minimising the amount of land to rehabilitate	Health, Safety, Training, Environment & Community Manager	Addressing potential for extensive works being required at the end of mine life	MCPL.01.A - Insufficient resourcing for rehabilitation MCPL.01.B - Responsibilities not assigned MCPL.01.C - Premature mine closure MCPL.01.D - Poor monitoring records management MCPL.01.E - Inadequate Stakeholder consultation MCPL.01.F - Change in IRC Planning Scheme
01DV.07 - Dump designs allow for rainfall events	01DV.07 - Dump designs covering modelled rainfall events	Executive General Manager/SSE	Addressing potential for excessive erosion in heavy rainfall	MCPL.05.D - Appropriate weather events not considered
01DV.08 - Mine design considers carbonaceous material in dumps	01DV.08 - Mine design/mine planning identifies carbonaceous material and manages this appropriately	Senior Environment & Community Advisor	Addressing potential for spontaneous combustion in dumps or stockpiles	MCPL.05.J - Inadequate capping of reactive materials MCPL.05.K - Inadequate storage of capping materials
01DV.09 - Mine plan makes allowances for rehabilitation of the TSF	01DV.09 - Mine plan has significant time-frame for rehabilitating TSF whilst ongoing mining of the pit is occurring	Executive General Manager/SSE	Addressing potential for incomplete capping of the tailings storage facility	MCPL.05.K - Inadequate storage of capping materials
01DV.10 - Selection of appropriate analogue and reference sites	01DV.10 - Selection of appropriate analogue and reference sites - Verterra have reviewed the reference sites to confirm suitability and present a monitoring strategy based on which site suits which domain on site	Health, Safety, Training, Environment & Community Manager	Addresses potential to not achieve desired rehabilitation performance due to a lack of understanding of species mix and micro-climate impacts	MCPL.05.S - Poor selection of analogue/reference sites
01DY.01 - Planning for decommissioning works	01DY.01 - Appropriate planning and decommissioning works	Health, Safety, Training, Environment & Community Manager	Specifically identifies waste products to allow for their safe disposal on or off site	MCPL.02.A - Generation of wastes during decommissioning MCPL.02.B - Failure to remove all infrastructure MCPL.02.C - Failure to remove hazardous materials MCPL.02.D - Failure to identify contaminated lands MCPL.02.E - Failure of borehole or gas well seal MCPL.02.F - Unstable structure remaining on site MCPL.02.H - Impact on Aboriginal heritage items
01DY.02 - Revegetation plan (in line with PRCP).	01DY.02 - Revegetation plan (in line with PRCP) to identify appropriate species, purchase in line with the plan and arrange for planting and relevant nurturing to meet requirements	Health, Safety, Training, Environment & Community Manager	Achieve a species mix which will allow the completion criteria to be met	MCPL.03.A - Landform not suited to targeted species MCPL.03.B - Tree species not suited to riparian conditions MCPL.03.C - Tree species not suited to creek diversions MCPL.03.D - Inappropriate revegetation species mix
01DY.03 - Offset arrangements	01DY.03 - Provisions in place to provide like for like habitat to replace any degraded habitats on the mine site.	Health, Safety, Training, Environment & Community Manager	Minimise environmental impacts	MCPL.01.A - Insufficient resourcing for rehabilitation
02PE.01 - Flocculant use achieving a stiff tailings deposition	02PE.01 - Operational strategy is the use of flocculant - leading to a very stiff material - which would constrain any release.	Executive General Manager/SSE	Addresses long term escape of stored tailings	MCPL.04.I - Tailings storage instability MCPL.05.K - Inadequate storage of capping materials

Business Input (Control) Name	Expectation	Responsible	Addressing	Related Failure Mode/Risk
02PE.02 - External supplier of seeds	02PE.02 - External supplier of seeds	Executive General Manager/SSE	Addresses potential for poor germination rates and inappropriate seed mix	MCPL.05.B - Insufficient quality seed available
02PE.03 - Site security, fencing, etc.	02PE.03 - Site security, including rural fencing of lease, demarcation and signage, and exclusion of stock.	Executive General Manager/SSE	Addressing potential for overgrazing, access by unwanted third parties or feral animal access to the site	MCPL.05.F - Overgrazing of pastures MCPL.05.G - Failing to provide security against vandalism MCPL.05.H - Damage to rehabilitated areas from mining activities
02PE.04 - Gypsum remediation to improve run-off	02PE.04 - Gypsum remediation assists in improving run-off quality	Executive General Manager/SSE	Addressing poor quality run-off from the site	MCPL.05.I - Geotechnical conditions not considered for waste storage facilities MCPL.05.O - Substrate insufficient for revegetation
02PE.05 - Stockpiling rock material for use as an erosion control	02PE.05 - Rock material for hydraulic breaks over tailings	Executive General Manager/SSE	Addressing hydraulic erosion of the TSF dam wall (and other dam walls, drains, etc.)	MCPL.05.K - Inadequate storage of capping materials
02PE.06 - Capping of TSF	02PE.06 - Rehab management plan includes procedures for and description of capping requirements for the TSF	Senior Environment & Community Advisor	Addressing potential for incomplete capping of the tailings storage facility	MCPL.05.K - Inadequate storage of capping materials
02PE.07 - Bunding and barricading of voids and steep slopes	02PE.07 - Bunding and barricading - Construct a safety bund wall of competent rock and/or fencing to limit human and livestock/animal access	Senior Environment & Community Advisor	Addressing potential for injury to members of the public or livestock at the site	MCPL.05.U - Void is not isolated
02PE.08 - Drainage minimises water reporting to voids on site	02PE.08 - Executed designs minimise the catchment reporting to the void	Executive General Manager/SSE	Addressing the unwanted build up of water stocks in site voids	MCPL.06.A - Contamination of water due to site activities MCPL.06.B - Water diverted from catchment into voids MCPL.06.C - Water from voids discharging to the environment MCPL.06.E - Groundwater seepage from voids
02PE.09 - Over-topping buffer in site voids	02PE.09 - Significant buffer before over-topping and final void water balance indicates a very low risk of spill (<1% annual exceedance probability)	Health, Safety, Training, Environment & Community Manager	Addressing potential for over-topping of site voids post mining	MCPL.06.A - Contamination of water due to site activities MCPL.06.C - Water from voids discharging to the environment
02PV.01 - Processes to identify all heritage items	02PV.01 - Planning and survey process to identify all heritage items so that they can be avoided.	Health, Safety, Training, Environment & Community Manager	Prevent damage to a heritage site degrading environmental values in an area	MCPL.02.G - Impact on historic heritage items

Business Input (Control) Name	Expectation	Responsible	Addressing	Related Failure Mode/Risk
02PV.02 - Site land disturbance permits	02PV.02 - Site land disturbance permits	Health, Safety, Training, Environment & Community Manager	Preventing damage to heritage sites, natural features or other sensitive locations	MCPL.02.G - Impact on historic heritage items MCPL.03.E – Quality of available Topsoil is poor MCPL.05.A - Loss of habitat resources MCPL.05.B - Insufficient quality seed available MCPL.05.C - Inadequate weed and pest controls MCPL.05.D - Appropriate weather events not considered MCPL.05.E - Insufficient cover allowed for vegetation MCPL.05.F - Overgrazing of pastures MCPL.05.G - Failing to provide security against vandalism MCPL.05.H - Damage to rehabilitated areas from mining activities MCPL.05.I - Geotechnical conditions not considered for waste storage facilities MCPL.05.J - Inadequate capping of reactive materials MCPL.05.K - Inadequate storage of capping materials MCPL.05.L - Spreading of topsoil insufficient MCPL.05.M - Inadequate topsoil storage MCPL.05.N - Topsoil unsuitable as a growth medium MCPL.05.O - Substrate insufficient for revegetation MCPL.05.P - Selected rehabilitation techniques are inappropriate MCPL.05.Q - Inadequate rehabilitation monitoring and maintenance program adopted MCPL.05.R - Inappropriate monitoring program to demonstrate compliance MCPL.05.S - Poor selection of analogue/reference sites MCPL.05.T - Vegetation inappropriate for area MCPL.05.U - Void is not isolated MCPL.05.W - Discharge of particulates to atmosphere from earthworks
02PV.03 – Work is occurring within already disturbed footprints	02PV.03 - Work is predominantly occurring within already disturbed footprints	Executive General Manager/SSE	Preventing disturbance to less affected items of environmental value	MCPL.02.G - Impact on historic heritage items
02PV.04 - Rehabilitation of appropriate species of vegetation	02PV.04 - Rehabilitation protocols including identifying and planting appropriate species of vegetation	Health, Safety, Training, Environment & Community Manager	Minimise the potential that planted species will not lead to meeting required environmental values at closure	MCPL.03.A - Landform not suited to targeted species MCPL.03.B - Tree species not suited to riparian conditions MCPL.03.C - Tree species not suited to creek diversions MCPL.03.D - Inappropriate revegetation species mix
02PV.05 - Long mine life (>20 years)	02PV.05 - The long mine life (>20 years) means there is sufficient time to confirm the appropriate vegetation strategy and implement accordingly (time to trial multiple options in order to get the processes right for long term rehabilitation success).	Executive General Manager/SSE	Having a long mine life addresses the potential for seasonal variations to misrepresent the effectiveness of rehabilitation efforts	MCPL.03.A - Landform not suited to targeted species MCPL.03.B - Tree species not suited to riparian conditions MCPL.03.C - Tree species not suited to creek diversions MCPL.03.D - Inappropriate revegetation species mix

Business Input (Control) Name	Expectation	Responsible	Addressing	Related Failure Mode/Risk
02PV.06 - Erosion and sediment control	02PV.06 - Erosion and sediment control - informed by geochemistry assessments and site operating knowledge.	Health, Safety, Training, Environment & Community Manager	Protecting against releases to the wider environment during construction and for the longer term landform	MCPL.04.A - Unknown characterisation of spoil material MCPL.04.B - Insufficient rock mulching material available MCPL.04.C - Final landform instability MCPL.04.D - Instability of NUMAs MCPL.04.E - Instability of steeper elements MCPL.04.F - Landform unsuited to final land use MCPL.04.G - Landform inconsistent with region MCPL.04.H - Sediment release from final landform MCPL.04.J - Lack of supporting infrastructure in final landform MCPL.04.K - Final landform does not free drain MCPL.06.B - Water diverted from catchment into voids
02PV.07 - Timing for access to rehabilitated areas	02PV.07 - Subsequent land holders could not access the land until the ML's are relinquished and CDM sells the land to a subsequent party.	Executive General Manager/SSE	Prevents damage to the rehabilitated areas by third parties	MCPL.01.A - Insufficient resourcing for rehabilitation MCPL.01.B - Responsibilities not assigned MCPL.01.C - Premature mine closure MCPL.01.D - Poor monitoring records management MCPL.01.E - Inadequate Stakeholder consultation MCPL.01.F - Change in IRC Planning Scheme
02PV.08 - Cleared vegetation is mulched or burnt	02PV.08 - Vegetation is mulched or burnt	Executive General Manager/SSE	Addresses potential for unwanted species in the rehabilitated areas	MCPL.03.E – Quality of available Topsoil is poor MCPL.05.A - Loss of habitat resources MCPL.05.B - Insufficient quality seed available MCPL.05.C - Inadequate weed and pest controls MCPL.05.D - Appropriate weather events not considered MCPL.05.E - Insufficient cover allowed for vegetation MCPL.05.F - Overgrazing of pastures MCPL.05.G - Failing to provide security against vandalism MCPL.05.H - Damage to rehabilitated areas from mining activities MCPL.05.I - Geotechnical conditions not considered for waste storage facilities MCPL.05.J - Inadequate capping of reactive materials MCPL.05.K - Inadequate storage of capping materials MCPL.05.L - Spreading of topsoil insufficient MCPL.05.M - Inadequate topsoil storage MCPL.05.N - Topsoil unsuitable as a growth medium MCPL.05.O - Substrate insufficient for revegetation MCPL.05.P - Selected rehabilitation techniques are inappropriate MCPL.05.Q - Inadequate rehabilitation monitoring and maintenance program adopted MCPL.05.R - Inappropriate monitoring program to demonstrate compliance MCPL.05.S - Poor selection of analogue/reference sites MCPL.05.T - Vegetation inappropriate for area MCPL.05.U - Void is not isolated
02PV.09 - Stripping and stockpiling procedures	02PV.09 - Stripping processes lead to adequate burial (to prevent any spontaneous combustion threats)	Senior Environment & Community Advisor	Addressing potential for spontaneous combustion in dumps or stockpiles	MCPL.05.J - Inadequate capping of reactive materials MCPL.05.K - Inadequate storage of capping materials MCPL.06.F - Poor water quality discharging from the site

Business Input (Control) Name	Expectation	Responsible	Addressing	Related Failure Mode/Risk
02PY.01 - Works conducted by suitable contractors	02PY.01 Works conducted by suitably qualified contractors - including permits for disposing of any contaminated materials.	Executive General Manager/SSE	This business input/control is intended to minimise the potential for poor execution of required works. It is supported by appropriate supervision, inspection and test plans, and formal contractual arrangements to optimise the outcomes from any works.	MCPL.02.A - Generation of wastes during decommissioning MCPL.02.B - Failure to remove all infrastructure MCPL.02.C - Failure to remove hazardous materials MCPL.02.D - Failure to identify contaminated lands MCPL.02.E - Failure of borehole or gas well seal MCPL.02.F - Unstable structure remaining on site MCPL.02.H - Impact on Aboriginal heritage items MCPL.05.P - Selected rehabilitation techniques are inappropriate MCPL.06.D - Failure of final landform embankments near mining areas
02PY.02 - Specific guidelines for hazardous chemicals	02PY.02 - Specific guidelines in place - beyond standard planning and execution that address any hazardous materials on site	Senior Environment & Community Advisor	To minimise the outcome from any hazardous materials brought to, used or created by the operating site	MCPL.02.C - Failure to remove hazardous materials
03SV.01 - Database which tracks all known heritage items	03SV.01 - Database which tracks all known heritage items	Health, Safety, Training, Environment & Community Manager	To identify, geo-locate and characterise all items within proximity of the site and workings	MCPL.02.H - Impact on Aboriginal heritage items MCPL.03.B - Tree species not suited to riparian conditions MCPL.03.D - Inappropriate revegetation species mix
03SV.02 - Biannual environmental audits	03SV.02 - Two yearly internal (to the company) independent (to the site) environmental audits commissioned by the company and any recommendations are reviewed and actions tracked.	Executive General Manager/SSE	Challenge any slippage of standards and identify emerging conditions that may require additional resources to be allocated	MCPL.01.D - Poor monitoring records management MCPL.05.Q - Inadequate rehabilitation monitoring and maintenance program adopted
03SV.03 - RQP involvement in TSF design	03SV.03 - RPQ involvement of the TSF as a regulated structure - nominated as a significant risk to ecosystems but with low risk to potential downstream features (harm to humans and environment is low) - and subject to annual inspection	Executive General Manager/SSE	Addressing instability in the tailings storage facility (TSF)	MCPL.04.I - Tailings storage instability
03SV.04 - Change management for rehabilitation	03SV.04 - Processes available for amending PRCP in the event of requirement to close the mine early (meeting requirements of a stable landform).	Executive General Manager/SSE	Reducing the potential for delivered rehabilitation not meeting community expectations	MCPL.01.A - Insufficient resourcing for rehabilitation MCPL.01.B - Responsibilities not assigned MCPL.01.C - Premature mine closure MCPL.01.D - Poor monitoring records management MCPL.01.E - Inadequate Stakeholder consultation MCPL.01.F - Change in IRC Planning Scheme

Business Input (Control) Name	Expectation	Responsible	Addressing	Related Failure Mode/Risk
03SV.05 - Topsoil management plan	03SV.05 - Topsoil management plan (includes identifying the resource, addressing/treating any sodic soils, stockpiling to preserve soil quality, site wide topsoil study, monitoring of topsoil pre-rehab to confirm nutrient and soil chemistry levels/requirements) and topsoil balance reporting	Executive General Manager/SSE	Addressing potential for topsoil to not meet rehabilitation growing requirements	MCPL.03.E – Quality of available Topsoil is poor MCPL.05.A - Loss of habitat resources MCPL.05.B - Insufficient quality seed available MCPL.05.C - Inadequate weed and pest controls MCPL.05.D - Appropriate weather events not considered MCPL.05.E - Insufficient cover allowed for vegetation MCPL.05.F - Overgrazing of pastures MCPL.05.G - Failing to provide security against vandalism MCPL.05.H - Damage to rehabilitated areas from mining activities MCPL.05.I - Geotechnical conditions not considered for waste storage facilities MCPL.05.J - Inadequate capping of reactive materials MCPL.05.K - Inadequate storage of capping materials MCPL.05.L - Spreading of topsoil insufficient MCPL.05.M - Inadequate topsoil storage MCPL.05.N - Topsoil unsuitable as a growth medium MCPL.05.O - Substrate insufficient for revegetation MCPL.05.P - Selected rehabilitation techniques are inappropriate MCPL.05.Q - Inadequate rehabilitation monitoring and maintenance program adopted MCPL.05.R - Inappropriate monitoring program to demonstrate compliance MCPL.05.S - Poor selection of analogue/reference sites MCPL.05.T - Vegetation inappropriate for area MCPL.05.U - Void is not isolated
03SV.06 - Rehabilitation Management Plan	03SV.06 - Quantity of required species is in rehab management plan and monitoring of germination rates. The plan also covers monitoring of general rehabilitation performance, offset status/performance, and programmed and as-required maintenance works.	Executive General Manager/SSE	Addressing failure to execute rehabilitation works in line with PRCP and license requirements.	MCPL.04.B - Insufficient rock mulching material available MCPL.05.B - Insufficient quality seed available MCPL.05.D - Appropriate weather events not considered MCPL.05.E - Insufficient cover allowed for vegetation MCPL.05.S - Poor selection of analogue/reference sites MCPL.05.W - Discharge of particulates to atmosphere from earthworks
03SV.07 - Weed and Pest Control Management Plan	03SV.07 - Weed and Pest Control Management Plan	Executive General Manager/SSE	Addressing potential for rehabilitation failure due to weeds or invasive pests	MCPL.05.C - Inadequate weed and pest controls
03SV.08 - Water quality monitoring	03SV.08 - Water quality monitoring for site dams and the receiving environment	Health, Safety, Training, Environment & Community Manager	Addressing potential for cumulative impacts from poor quality water presence or release	MCPL.05.I - Geotechnical conditions not considered for waste storage facilities MCPL.05.O - Substrate insufficient for revegetation
03SV.09 - Mine voids are ground water sinks	03SV.09 - Ground water modelling of long-term performance indicate that voids will continue to act as a ground water sink	Health, Safety, Training, Environment & Community Manager	Addressing unintended releases to or draw from ground water/aquifers	MCPL.05.V - Failing to rehabilitate bore holes MCPL.06.A - Contamination of water due to site activities MCPL.06.C - Water from voids discharging to the environment MCPL.06.E - Groundwater seepage from voids MCPL.06.F - Poor water quality discharging from the site
03SY.01 - Monitoring and adaptive management programs	03SY.01 - Monitoring and adaptive management programs which determine relevant conditions and provide modification (within design parameters) of activities to achieve design goals	Health, Safety, Training, Environment & Community Manager	To prevent changes in performance from becoming more significant by reducing the impact of an emerging condition/threat	MCPL.03.A - Landform not suited to targeted species MCPL.03.B - Tree species not suited to riparian conditions MCPL.03.C - Tree species not suited to creek diversions MCPL.03.D - Inappropriate revegetation species mix

Business Input (Control) Name	Expectation	Responsible	Addressing	Related Failure Mode/Risk
03SY.02 - Milestone and completion criteria	03SY.02 - Milestone and completion criteria to confirm outcomes are being achieved	Health, Safety, Training, Environment & Community Manager	Prevent any long-term slippage of progressive rehabilitation	MCPL.03.A - Landform not suited to targeted species MCPL.03.B - Tree species not suited to riparian conditions MCPL.03.C - Tree species not suited to creek diversions MCPL.03.D - Inappropriate revegetation species mix
03SY.03 - Annual reporting of PRCP progress to the Regulator.	03SY.03 - Annual reporting of PRCP progress to the Regulator	Executive General Manager/SSE	Minimise the potential for executed rehabilitation drifting from community expectations	MCPL.03.A - Landform not suited to targeted species MCPL.03.B - Tree species not suited to riparian conditions MCPL.03.C - Tree species not suited to creek diversions MCPL.03.D - Inappropriate revegetation species mix
03SY.04 - Third party agreements	03SY.04 - Third party agreements - Any third party grazing would be in accordance with appropriate license terms (Rural licence)	Executive General Manager/SSE	Addressing unmanaged access to rehabilitated areas by third parties conducting rural businesses	MCPL.05.F - Overgrazing of pastures
03SY.05 - Contractor Management Plan and Protocols	03SY.05 - Contract management - confirming site requirements are met	Executive General Manager/SSE	Achieved well executed works being performed by contractors	MCPL.05.P - Selected rehabilitation techniques are inappropriate MCPL.05.W - Discharge of particulates to atmosphere from earthworks MCPL.06.D - Failure of final landform embankments near mining areas
03SY.06 - Water Management Plan	03SY.06 - Water Management Plan with clean and dirty water diversions around the pit	Executive General Manager/SSE	Addressing potential for unwanted collection, storage or release of waters on the site during operations and post closure	MCPL.06.A - Contamination of water due to site activities MCPL.06.B - Water diverted from catchment into voids MCPL.06.F - Poor water quality discharging from the site
04TV.01 - Guidance on gas borehole decommissioning	04TV.01 - Gas borehole guidance on decommissioning - that lead to a removal of any threats	Executive General Manager/SSE	To minimise outcome from encountering any unexpected legacy drill holes and associated features during rehabilitation	MCPL.02.E - Failure of borehole or gas well seal MCPL.05.T - Vegetation inappropriate for area
04TV.02 - Internal reporting of any non-compliances	04TV.02 - Internal reporting of any non-compliances (weekly/monthly) in order to alert management to any emerging threats and required allocation of resources	Health, Safety, Training, Environment & Community Manager	Minimise the extent to which rehabilitation works fail to meet requirements of the PRCP	MCPL.03.A - Landform not suited to targeted species MCPL.03.B - Tree species not suited to riparian conditions MCPL.03.C - Tree species not suited to creek diversions MCPL.03.D - Inappropriate revegetation species mix MCPL.05.W - Discharge of particulates to atmosphere from earthworks
04TV.03 - Government rehabilitation bonds in place	04TV.03 - Government holds bonds - which are sufficient to return the site to a stable, suitable landform in the event of the company failing.	Executive General Manager/SSE	Addresses failure of the company	MCPL.01.A - Insufficient resourcing for rehabilitation MCPL.01.B - Responsibilities not assigned MCPL.01.C - Premature mine closure MCPL.01.D - Poor monitoring records management MCPL.01.E - Inadequate Stakeholder consultation MCPL.01.F - Change in IRC Planning Scheme
04TV.04 - Response to third party audits	04TV.04 - Response to any third party audits - and activation of the exploration rehabilitation requirements	Executive General Manager/SSE	Addressing leaving an ongoing threat when one has been identified	MCPL.05.V - Failing to rehabilitate bore holes

Table 6 – Risk and Control Assessment Criteria

MCPL RISK MATRIX						
LIKELIHOOD		**RISK LEVEL**				
A **Very Likely** (5)	Likely to occur on site in most circumstances.	MODERATE (5)	MODERATE (10)	HIGH (15)	EXTREME (20)	EXTREME (25)
B **Likely** (4)	Probably will occur on site under certain circumstances.	LOW (4)	MODERATE (8)	HIGH (12)	HIGH (16)	EXTREME (20)
C **Possible** (3)	Could occur on site at some point in time.	LOW (3)	MODERATE (6)	MODERATE (9)	HIGH (12)	EXTREME (15)
D **Unlikely** (2)	May occur but not very likely on this site.	LOW (2)	LOW (4)	MODERATE (6)	MODERATE (8)	HIGH (10)
E **Rare** (1)	Highly unlikely to occur on this site.	LOW (1)	LOW (2)	LOW (3)	LOW (4)	MODERATE (5)

Area of Effect	**ESTIMATED LEVEL OF CONSEQUENCE**				
	Low (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
P Harm to People	Report only Near miss First aid injury (RO, FAI)	Medical treatment injury or restricted work injury (MTI, RWI)	Serious injury or disabling reversible impairment (LTI)	Fatality or disabling irreversible impairment	Multiple fatalities
E Environmental Impact	Environmental nuisance Limited damage to minimal area of low significance	Minor short term medium term material environmental harm to small area(s) of limited significance	Serious short to medium term environmental harm with widespread impacts	Major environmental harm Relatively wide spread medium to long term impacts	Extreme environmental harm Long term wide spread effects on environment
A Asset damage and other consequential business losses	Slight damage <$5,000 No disruption to operations	Minor damage <$50,000 Brief disruption < 12 hours	Localised damage <$500,000 Partial shutdown < 1 day	Major damage <$2,000,000 Major shutdown < 1 week	Extensive damage >$2,000,000 Extensive loss > 1 week
R Impact on Reputation	Slight impact Public aware but no public concern	Limited impact Some local public concern	Considerable impact with potential for wider public concern	National impact with potential for wider public concern	International impact. International public attention

RISK	ACCEPTABILITY / AUTHORITY TO PROCEED	ACTION TO TAKE
Extreme Risk	**UNACCEPTABLE RISK – STOP – DO NOT START** If an Formal Risk Assessment is being conducted, a Manager is to re-conduct / review risk assessment with a team and identify appropriate controls to reduce the risk to an acceptable level. If a JSEA is being conducted, then a formal Risk Assessment shall be conducted under the guidance of the Department Manger. Upon agreement with findings and the controls the SSE shall formally approve the risk assessment. The SSE may engage more people to review the risk assessment if an acceptable level of risk was not achieved. The SSE must be contacted if not present on the site at the time the hazard / risk are identified.	Cannot proceed until elimination, substitution or engineering controls or a combination of these are implemented to reduce the risk to Moderate or Low. The overall task approach must be under Supervision (minimum the Department Superintendent) when it is undertaken and the most senior personnel at MCPL are aware of the task's occurrence. Emergency Response considerations are documented within the risk assessment. Monitoring of the controls effectiveness (PTO) shall be undertaken and documented by the work's Supervisor throughout the activity.
High Risk	**UNACCEPTABLE RISK – STOP – DO NOT START** If an Formal Risk Assessment is being conducted, Departmental Superintendent is to reconvene the team (option to involve more experts) and review the Risk Assessment. Appropriate controls must be identified to reduce the risk to an acceptable level. If a JSEA is being conducted, then a formal Risk Assessment shall be conducted under the guidance of the Department Superintendent. Upon agreement with findings and the controls the Department Manager shall formally approve the JSEA or RA. The SSE shall review the RA and approve the commencement of the works if the Department Manager is not on site.	Cannot proceed until elimination, substitution or engineering controls or a combination of these are implemented to reduce the risk to Moderate or Low. The task must be Supervised (minimum Supervisor / OCE) while it is being performed and a senior MCPL Manager must be aware that the tsk is being performed. Monitoring of the controls effectiveness (PTO) shall be undertaken and documented by the work's Supervisor throughout the activity.
Moderate Risk	**ACCEPTABLE RISK – CAN START** Provided that identified controls are implemented immediately and the controls effectiveness is being monitored. Relevant OCE / Superintendent shall approve the Risk Assessment / JSEA.	Proceed with task: Requires supervision and monitoring of controls effectiveness.
Low Risk	**ACCEPTABLE RISK – CAN START PROVIDED:** Implement controls are identified. Continue to monitor for changes which may elevate risk score. Relevant OCE / Superintendent shall approve the Risk Assessment / JSEA.	Proceed with agreed controls in place.

12.3 *About Your Report*

Your report has been developed on the basis of your unique and specific requirements as understood by Risk Mentor and only applies to the subject matter investigated.

We have endeavoured to accurately gather information from observations, document reviews and from site personnel. Analysis has been conducted using the best methods of risk engineering science known to the author(s) and should represent a useful suite of information on which the site can base subsequent actions.

Even with all these efforts made it is possible that due to information reviewed being erroneous or incomplete errors may exist in the document or that the recommendations may not be fully effective in avoiding unwanted risks.

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