

### 3. Rehabilitation Risk Assessment

The initial Rehabilitation Risk Assessment for the Mine was undertaken generally in accordance with *Australian Standard AS/NZS ISO 31000:2009 Risk Management*. The Rehabilitation Risk Assessment has been prepared to consider potential rehabilitation risks associated with any mine within the Tritton Copper Operations, and as such, also applies to those mines.

Risks to achieving the rehabilitation objectives and rehabilitation completion criteria outlined in Section 4, as well as the final landform outlined in Section 5, were identified and assessed jointly prior to the preparation of this plan by representatives from the following.

- Company staff, including specialists and/or managers for:
  - environmental;
  - geotechnical;
  - geological; and
  - operational activities.
- External consultants from:
  - R.W. Corkery & Co. Pty Limited (environmental management and approvals);
  - O’Kane Consulting Pty Ltd (geoscience); and
  - DnA Environmental (ecology).

Site-specific threats to rehabilitation were assessed based on both the results of previous rehabilitation and rehabilitation trials (see Section 9) as well as observations of site-specific conditions and threats to rehabilitation observed during site inspections. This risk assessment was completed with consideration of existing controls as well as those risk controls outlined in this Plan.

For each identified risk to rehabilitation, potential adverse outcomes were identified and allocated a risk rating based on the potential consequences and likelihood of occurrence. **Tables 6, 7, 8 and 9** present the consequence, likelihood, risk rating and residual risk rating used during this analysis. Where risks were determined to be unacceptable, namely those risks classified as “Moderate” or above, a Trigger Action Response Plan has been developed and is presented in Section 10.

In accordance with Schedule 8A of the *Mining Regulation 2016*, the Rehabilitation Risk Assessment is maintained as a ‘live’ document and is regularly reviewed in response to changes to operations where potential risks to rehabilitation may occur.

**Table 9** presents the results of the risk analysis assuming the implementation of standard mitigation measures and those outlined within this RMP.

**Table 6**  
**Tritton Consequence Table**

Level				
5	4	3	2	1
Descriptor				
Insignificant	Minor	Moderate	Major	Critical
Health and Safety				
First aid treatment or injury only	Medical Treatment Injury (MTI)	Single Lost Time Injury (LTI)	Multiple Lost Time Injuries	Permanent disability >30%
Low level soreness or small amount of pain	Restricted Work Injury (RWI)	Short term hospitalisation (<7 days)	Extended hospital treatment (>7 days)	One or more fatalities
	Presented to hospital (no overnight stay)	Reversible impairment to human health	Permanent disability <30%	
			Serious long-term health issue	
Environment				
No or very low environmental impact	Low environmental Impact	Moderate environmental impact	Major environmental impact	Severe environmental impact
Impact confined to a small area	Rapid clean-up by internal staff or contractors	Clean-up by internal staff or contractors	Considerable clean-up effort required by internal staff and external contractors	Likely species destruction and long recovery period
	Impact contained to area already impacted by operations	Impact confined within lease boundary	Impact may extend across lease boundary	Extensive clean-up using external resources
				Impact on a regional scale
Community/External Relations				
Isolated complaint received	Multiple or sporadic complaints received	Repeated or serious rate of complaints	Ongoing complaints from local groups, NGO's or regulators	High level concern from community, regulators, stakeholders and/or stakeholders
No media coverage	No media coverage	Local media interest and coverage	Regional/national media interests	Adverse national or international media coverage
No damage to reputation or relationships with stakeholders	Short-term damage with relationship with one or more stakeholders but no damage to reputation	Reversible damage with stakeholders and to reputation	Protests by external stakeholders	International damage to reputation
			Local or regional damage to reputation	
Legal				
Questionable or minor non-conformance with operating condition	Non-compliance with operating conditions	Breach of local or national law with potential prosecution by regulator	Major breach of local or national law	Significant breach of national or international law with potential jail sentence
No fine or prosecution	Could attach low level administrative response from regulator	Continuing occurrence of minor breach	Prosecution or penalties by regulator likely	Operations suspended or cease (short term or long term)

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**Table 6 (Cont'd)**  
**Tritton Consequence Table**

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Level				
5	4	3	2	1
Descriptor				
Insignificant	Minor	Moderate	Major	Critical
Legal				
Unlikely to attract regularity interest	No court appearance required		Short term treat to operations continuing	Licenses withdrawn or revoked
Easy to resolve			Civil action initiated	Class action initiated
Operational/Cost				
Minor impact, easily corrected with insignificant cost to the operation:	Minor damage/failure to equipment or infrastructure with minimal associated cost:	Damage/failure to equipment or infrastructure marginal cost to the operation:	Damage/failure to equipment or infrastructure resulting in significant cost to the operation:	Damage/failure to equipment or infrastructure resulting in a detrimental cost to the operation:
<\$5,000	\$5,000 - \$50,000	\$50,000 - \$100,000	\$100,000 - \$500,000	> \$500,000
Business Interruption				
Minimal disruption to concentrate production (<4hrs)	Minor loss of concentrate production (< 1 day)	Significant loss of concentrate production (1 - 3 days)	Major disruption to concentrate production (3-7 days)	Critical loss of revenue from extended disruption to concentrate production (>1 week)
<100,000	\$100, 000 to \$500, 000	\$500,000 - 1,500,000	\$1,500,000 - \$4,500,000	> \$4,500,000

Source: Tritton Resources

**Table 7**  
**Qualitative Likelihood Rating**

Level	Descriptor	Description in terms of full operating life of the Site	Description in terms of frequency
A	Almost Certain	Consequences expected to occur in most circumstances	Daily or continuous
B	Likely	Consequences will probably occur in most circumstances	Weekly or monthly
C	Possible	Consequences could occur at some time	Annually
D	Unlikely	Consequence will probably NOT occur in most circumstances	Within the life of the operation
E	Rare	Consequence may occur in exceptional circumstances	>100 years

Source: Tritton Resources

**Table 8**  
**Qualitative Risk Rating**

Likelihood		Consequence				
		5 Insignificant	4 Minor	3 Moderate	2 Major	1 Critical
A	Almost Certain	15(H)	10(H)	6(E)	3(E)	1(E)
B	Likely	19(M)	14(H)	9(H)	5(E)	2(E)
C	Possible	22(L)	18(M)	13(H)	8(E)	4(E)
D	Unlikely	24(L)	21(L)	17(M)	12(H)	7(E)
E	Rare	25(L)	23(L)	20(M)	16(H)	11(H)

Source: Tritton Resources

**Table 9**  
**Residual Risk Level Action**

Residual Risk Level	Priority	Actions to Minimise Risk	Actions to Maximise Opportunity
Critical	1	Detailed research and planning required; determine whether activity or task should be stopped pending further investigation	Detailed research and planned required; high payoff potential; pursue opportunity aggressively
High	2	Senior management attention; immediate corrective and preventative action required	Near term opportunity with above average rate of return; pursue diligently
Moderate	3	Conditionally acceptable risk – management responsibility assigned; corrective and preventative action plan developed	Opportunity to realise average rate of return with certainty pursue with existing plans
Low	4	Manage by routine procedures; accept risk	Manage by routine procedures

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**Table 10**  
**Rehabilitation Risk Assessment**

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Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>General</b>			
Insufficient skills and experience of rehabilitation personnel.	<ul style="list-style-type: none"> <li>• Site based environmental staff are to be supported by external consultants.</li> <li>• Procedural documents and records are to be located in central server for document control and storage.</li> <li>• Company to implement succession planning and staff training as much as is feasible.</li> <li>• Company to maintain a Rehabilitation Management Plan as a staff manual and ensure it is available for ease of guidance to new or inexperienced staff.</li> <li>• Company to assess and assign sufficient resources to manage environmental and closure risk.</li> </ul>	17 (M)	Section 7
Lack of clearly defined responsibilities.	<ul style="list-style-type: none"> <li>• Clearly mapped and available organisation chart and management plans to be maintained.</li> <li>• Position descriptions for relevant staff include rehabilitation and mine closure responsibilities.</li> <li>• Quality Assurance program to be established through Rehabilitation Management Plan.</li> <li>• Clear communication between departments and relevant stakeholders relating to rehabilitation planning, scheduling and execution.</li> </ul>	18 (M)	Section 7
Insufficient funding for or prioritisation of rehabilitation activities.	<ul style="list-style-type: none"> <li>• Budget and reforecast process applied.</li> <li>• Rehabilitation commitments acknowledged and understood at senior leadership level.</li> <li>• Long-term rehabilitation schedule to be included in Rehabilitation Management Plan with currently estimated costing for each action to be maintained confidentially for staff action and update.</li> <li>• All capital investment decision making to include recognition of rehabilitation and closure aspects.</li> </ul>	21 (L)	Section 7
Not compliant with permit/licence approvals.	<ul style="list-style-type: none"> <li>• Obligation Register to be regularly reviewed and updated. Development of a system to assign responsibilities from Obligation Register to 'Obligation Owners'.</li> <li>• Annual reporting, monitoring and Independent Environmental Audits as required under conditions of consent.</li> <li>• Trigger Action Response Plans (TARPs) and summary of legal and permit requirements included in RMPs.</li> <li>• Regular risk assessments used to identify and assess compliance with permit and licence conditions.</li> <li>• Devise and implement corrective actions (following audits, incidents, non-compliances, specialist reports) as needed.</li> </ul>	24 (L)	

**Table 10 (Cont'd)**  
**Rehabilitation Risk Assessment**

Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>Active Mining Phase of Rehabilitation</b>			
Poor / inadequate / lost opportunity to salvage topsoil & other biological resources through clearing, salvage and handling practices (including timing).	<ul style="list-style-type: none"> <li>• Progressive stripping and storage of topsoil.</li> <li>• Practices that minimise the re-handling of topsoil.</li> <li>• Topsoil tested and analysed through rehabilitation monitoring.</li> <li>• Habitat structures (timber / trees etc) retained for placement at rehabilitation.</li> <li>• Material inventory (including topsoil, NAF waste rock) and a projection of future closure requirements.</li> <li>• Geotechnical and geochemical characterisation of growth medium and capping material to be undertaken opportunistically as stripped.</li> <li>• Seed collection including a seed quantity inventory to be established where necessary to support ongoing purchase of seed and tubestock.</li> </ul>	21 (L)	6.2.1.1, 6.2.1.11
Limited pre-existing and stockpiled biological resources for salvage.	<ul style="list-style-type: none"> <li>• Progressive stripping and storage of topsoil.</li> <li>• Practices that minimise the re-handling of topsoil.</li> <li>• Topsoil tested and analysed through rehabilitation monitoring.</li> <li>• Habitat structures (timber / trees etc) retained for placement at rehabilitation.</li> <li>• Material inventory (including topsoil, NAF waste rock) and a projection of future closure requirements.</li> <li>• Develop contingency plan for where material inventory projection forecasts a deficit (TARP).</li> <li>• Investigate use of Company owned farming land for seed and biological resource salvage.</li> </ul>	21 (L)	6.2.1.11, 10.2
Adverse geochemical/chemical composition of materials such as overburden, tailings, heap leach, subsoils and topsoils etc	<ul style="list-style-type: none"> <li>• Design and Rehabilitation Planning                             <ul style="list-style-type: none"> <li>– Cover design/model for Heap Leach Pads.</li> <li>– Ongoing kinetic geochemical characterisation of waste rock and update of Waste Rock Characterisation and Management Plan.</li> <li>– Ongoing rehabilitation trials or assessments and accurate records.</li> </ul> </li> <li>• Rehabilitation brine trial on Murrawombie Heap Leach Pads (and broader implementation if successful).</li> <li>• Survey and testing of historical mining areas to identify contaminated areas / materials that need to be removed / treated prior to rehabilitation.</li> <li>• Rehabilitation-focused assessments of high-risk landforms including groundwater modelling, water balance modelling.</li> </ul>	17 (M)	6.2.1.4, 6.2.1.6, 6.2.1.9, 6.2.1.11, 9.1.1

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**Table 10 (Cont'd)**  
**Rehabilitation Risk Assessment**

Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>Active Mining Phase of Rehabilitation (Cont'd)</b>			
Handling and containment of waste materials including Tailings, waste rock, heap leach, waste / contaminated water.	<ul style="list-style-type: none"> <li>• Proactive waste classification and segregation (NAF / PAF) including update of Waste Rock Characterisation and Management Plan.</li> <li>• Design and Rehabilitation Planning                             <ul style="list-style-type: none"> <li>– Cover design/model for Heap Leach Pads.</li> <li>– Ongoing kinetic geochemical characterisation of waste rock and update of Waste Rock Characterisation and Management Plan.</li> <li>– Ongoing rehabilitation trials or assessments and accurate records.</li> </ul> </li> <li>• Rehabilitation brine trial on Murrawombie Heap Leach Pads (and broader implementation if successful).</li> <li>• Survey and testing of historical mining areas to identify contaminated areas / materials that need to be removed / treated prior to rehabilitation.</li> <li>• Rehabilitation-focused assessments of high-risk landforms including for example groundwater modelling or water balance modelling.</li> </ul>	17 (M)	6.2.1.4, 6.2.1.5, 6.2.1.9
Adverse surface and groundwater quality and quantity.	<ul style="list-style-type: none"> <li>• Sediment and erosion control structures/dams. Current studies indicate pits and underground workings act as groundwater sinks.</li> <li>• Closure plans include design for contaminated waters to passively drain towards pits.</li> <li>• Rehabilitation-focused assessments of high-risk landforms including groundwater modelling, water balance modelling.</li> <li>• Implement mitigation/containment controls as required.</li> </ul>	21 (L)	6.2.1.10
<b>Decommissioning Phase of Rehabilitation</b>			
Failure to disconnect services / remove infrastructure.	<ul style="list-style-type: none"> <li>• Survey records, as built records of services and evidence of prior decommissioning.</li> <li>• Decommissioning activities to commence in close association with the mine production schedule.</li> <li>• Infrastructure that can be used at the other nearby Tritton operations will be re-located to these facilities.</li> </ul>	21 (L)	6.2.2.2
Hazards associated with retained infrastructure.	<ul style="list-style-type: none"> <li>• Identification of equipment and material to be retained.</li> <li>• Prior to mine closure - undertake risk assessment on infrastructure that is proposed to be retained. Risk assessment to focus on future / long term liability for the environment, community and the beneficial use of land and water. Implement controls as identified.</li> </ul>	21 (L)	6.2.2.3

**Table 10 (Cont'd)**  
**Rehabilitation Risk Assessment**

Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>Decommissioning Phase of Rehabilitation (Cont'd)</b>			
Any identified hazards on items of heritage or biodiversity assets (e.g. known heritage items / fauna species at the operational site) e.g. migratory birds (utilising water sources), bats (utilising underground portals, etc.)	<ul style="list-style-type: none"> <li>Cultural and heritage registers.</li> <li>Flora and fauna registers.</li> <li>Annually monitoring.</li> <li>Undertake survey (fauna) and risk assessments prior to mine closure to ensure mine closure activities do not impact on heritage or fauna within active mining areas.</li> </ul>	21 (L)	
Generation of material and waste products from the demolition process (including hazardous waste materials).	<ul style="list-style-type: none"> <li>Survey and identification of generated wastes prior to commencing demolition.</li> <li>Hazardous materials, demolition products and transport assessments prior to demolition.</li> <li>Demolition according to relevant Australian Standards.</li> <li>Consultation with BSC regarding landfill impact.</li> <li>Maximise re-use and recycle principles, where feasible.</li> </ul>	21 (L)	6.2.1.5, 6.2.2.4, 6.2.2.5
Accumulation of groundwater in underground / open pit workings - impact on beneficial use of groundwater resources.	<ul style="list-style-type: none"> <li>Current studies indicate pits and underground workings act as groundwater sinks.</li> <li>Current groundwater monitoring network.</li> <li>Develop modelling assessment of long term/future groundwater impact risks. Mine closure plans adjusted following model results.</li> </ul>	21 (L)	
Failure to remove hazardous materials resulting in land / water contamination	<ul style="list-style-type: none"> <li>All spills reported and cleaned up.</li> <li>Designated hydrocarbon and chemical storage areas, with hydrocarbons stored in bunded areas (compliant with AS1940).</li> <li>Contaminated site register.</li> <li>Contamination assessment undertaken for all 'at risk' areas with remediation undertaken as required.</li> <li>Validation sampling undertaken to verify any residual contamination is below industry/government (NEPM) guidelines.</li> </ul>	24 (L)	6.2.2.5

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**Table 10 (Cont'd)**  
**Rehabilitation Risk Assessment**

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Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>Decommissioning Phase of Rehabilitation (Cont'd)</b>			
Failure to address contamination, resulting in residual contamination that impacts meeting mine closure criteria / impacts future beneficial land / surface water / ground water use.	<ul style="list-style-type: none"> <li>All spills reported and cleaned up.</li> <li>Designated hydrocarbon and chemical storage areas, with hydrocarbons stored in bunded areas (compliant with AS1940).</li> <li>Contaminated site register.</li> <li>Contamination assessment undertaken for all 'at risk' areas with remediation undertaken as required.</li> <li>Validation sampling undertaken to verify any residual contamination is below industry/government (NEPM) guidelines.</li> <li>Heap Leach Pads have HDPE liner and containment structures.</li> <li>Heap Leach Pads conceptual cover design advanced to detailed design.</li> <li>Groundwater and surface water monitoring during operations and post-closure.</li> <li>Consideration of passive water treatment options.</li> </ul>	21 (L)	6.2.2.4, 6.2.2.5
Unauthorised access to open pit / voids, underground workings, infrastructure areas and general mining landforms.	<ul style="list-style-type: none"> <li>Establish safety and security bunds during operational life of mine where possible.</li> <li>Underground workings and vent rises fitted with a concrete plug.</li> <li>Safety bunds, fencing and signs established to limit public access.</li> <li>Final landform assessment to ensure landforms are built to the approved final landform design and stable.</li> </ul>	16 (H)	6.2.2.1
<b>Landform Establishment Phase of Rehabilitation</b>			
Final landform does not conform to the approved final landform.	<ul style="list-style-type: none"> <li>All landforms planned and constructed as per approved project description, commitments, approvals and permits.</li> <li>Detailed final landform design plans - design landform for free drainage.</li> <li>Post closure 'as built' survey to confirm free draining landform i.e. built to design.</li> <li>Re-profile slopes or install drainage to provide a stable free-draining landform i.e. meets construction design.</li> <li>Where existing rehabilitation landforms show poor rehabilitation outcomes, develop and implement alternate designs.</li> </ul>	21 (L)	6.2.3.2, 6.2.3.3, 6.2.3.4
Lack of suitable materials for capping / encapsulation of adverse materials.			

**Table 10 (Cont'd)**  
**Rehabilitation Risk Assessment**

Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>Landform Establishment Phase of Rehabilitation (Cont'd)</b>			
Geotechnical instability of Final Open Pit voids.	<ul style="list-style-type: none"> <li>Final void designed to be geotechnically stable during the operational life of the pit and post closure.</li> <li>Any identified unstable pit walls addressed during operational life of mine.</li> <li>Geotechnical monitoring and/or inspection. If required, suitably qualified geotechnical engineer engaged to assess the instability and provide a range of recommendations to mediate the instability.</li> <li>Recommendations to be implemented in consultation with NSW Resource Regulator.</li> </ul>	20 (M)	6.2.3.4
Heap Leach Pad landform design is unstable.	<ul style="list-style-type: none"> <li>Heap Leach Pads conceptual cover design advanced to detailed design including detailed drainage design.</li> <li>Landform evolution modelling.</li> <li>Geotechnical assessment of materials and slope.</li> <li>Monitoring of cover performance (to cover all seasonal variations).</li> </ul>	21 (L)	6.2.3.3
Heap Leach lining or capping is unsuccessful / inadequate.	<ul style="list-style-type: none"> <li>Groundwater monitoring, and purge where necessary. Groundwater purge to be diverted to pit.</li> <li>Liner selection and installation QAQC.</li> <li>Schedule visual inspections and required repairs.</li> <li>Remedial Action Plan.</li> <li>Modelling (such as SeepW modelling of groundwater flow) to better understand risks at closure and plan for remediation.</li> <li>Heap Leach Pads conceptual cover design advanced to detailed design including detailed drainage design.</li> </ul>	21 (L)	
Leachate from Heap Leach Pads uncontained/released into environment.	<ul style="list-style-type: none"> <li>Current drainage controls maintained until closure.</li> <li>Detailed drainage design to direct runoff into the pit.</li> </ul>	21 (L)	
Overall Heap Leach Design unsuitable to sustain final land use.	<ul style="list-style-type: none"> <li>Heap Leach Pads conceptual cover design advanced to detailed design including detailed drainage design.</li> <li>Landform fenced to exclude grazing.</li> <li>Landform evolution modelling.</li> <li>Geotechnical assessment of materials and slope.</li> <li>Monitoring of cover performance.</li> </ul>	21 (L)	

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**Table 10 (Cont'd)**  
**Rehabilitation Risk Assessment**

Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>Landform Establishment Phase of Rehabilitation (Cont'd)</b>			
Generation and release of acid and metalliferous drainage.	<ul style="list-style-type: none"> <li>• Geochemical assessment of waste rock during mining.</li> <li>• Identification and selective handling and storing of NAF/PAF material.</li> <li>• Refinement of Waste Rock Characterisation and Management Plan.</li> <li>• Established containment to prevent release of AMD leachate - maintained throughout operational and post closure phases.</li> <li>• Geochemical characterisation of existing Waste Rock Emplacements (kinetic and static) - targeting failed or underperforming rehabilitation areas.</li> <li>• Remediation of identified failures in rehabilitation of emplacements.</li> </ul>	21 (L)	6.2.1.8, 6.2.3.3
Geotechnical instability of Waste Rock Emplacement leading to slope and landform failure.	<ul style="list-style-type: none"> <li>• Original design as proposed in SEE's and approved.</li> <li>• Stability of rehabilitated Waste Rock Emplacements monitored and assessed during operational mining phases.</li> <li>• Original design as proposed in SEE's and approved</li> <li>• Any failed slopes repaired following assessment and re-design by qualified Geotechnical engineer in consultation with restoration ecologist.</li> <li>• Understand long term stability and risks to the rehabilitated landform through landform evolution modelling.</li> </ul>	21 (L)	6.2.3.3
Waste Rock Emplacement leachate uncontained / released to environment.	<ul style="list-style-type: none"> <li>• Sediment dams located to capture runoff from waste rock emplacement.</li> <li>• Understand groundwater and surface water contamination risks for Waste Rock Emplacement by undertaking (for example) groundwater modelling. Implement mitigation / containment measures as required.</li> </ul>	21 (L)	6.2.3.3

**Table 10 (Cont'd)**  
**Rehabilitation Risk Assessment**

Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>Landform Establishment Phase of Rehabilitation (Cont'd)</b>			
Overall Waste Rock Emplacement landform design is unsuitable to sustain final land use.	<ul style="list-style-type: none"> <li>Stability of rehabilitated Waste Rock Emplacements monitored and assessed during operational mining phases.</li> <li>Undertake further characterisation and selective use of closure materials in Waste Rock Emplacement design and construction.</li> <li>Assess and develop corrective actions for existing rehabilitated Waste Rock Emplacement landforms to improve vegetation establishment and persistence (where required).</li> <li>Any failed slopes repaired following assessment and re-design by qualified geotechnical engineer in consultation with restoration ecologist.</li> <li>Landform evolution modelling to inform final landform establishment works that may be required.</li> <li>Waste Rock Emplacement design updated following completion of above study / assessments and rehabilitation outcomes.</li> </ul>	21 (L)	6.2.3.3
Soil erosion/pollution/sedimentation of waterways.	<ul style="list-style-type: none"> <li>Remediate eroding area through additional earthworks, soil works, revegetation or other stabilisation works.</li> <li>Cross-ripping (parallel to the contour).</li> <li>If current controls are unsuccessful, engage a suitably qualified professional in sediment and erosion control to prepare an assessment report and recommendations.</li> </ul>	21 (L)	6.2.3.1
<b>Growth Medium Development Phase of Rehabilitation</b>			
Physical and structural properties of substrate.	<ul style="list-style-type: none"> <li>Materials inventory and characterisation (including topsoil and NAF waste rock) with a projection of future closure requirements.</li> </ul>	21 (L)	6.2.4
Subsoil and topsoil deficit for rehabilitation activities.	<ul style="list-style-type: none"> <li>Undertake further characterisation and selective use of closure materials in Waste Rock Emplacement design and construction.</li> <li>Incorporate specific materials into detailed rehabilitation designs.</li> </ul>	21 (L)	6.2.4
Topsoil not applied as per plan.	<ul style="list-style-type: none"> <li>Topsoil applied as per mine closure planning requirements (nominally 100mm thick).</li> <li>Engage a restoration ecologist to re-evaluate vegetation type for each domain (therefore topsoil requirements) and incorporate findings into mine closure plans.</li> <li>Document amount of topsoil applied at the time of undertaking rehabilitation in 'as built' surveys and reports.</li> <li>Develop and implement quality assurance program.</li> </ul>	24 (L)	6.2.4

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**Table 10 (Cont'd)**  
**Rehabilitation Risk Assessment**

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Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>Growth Medium Development Phase of Rehabilitation (Cont'd)</b>			
Topsoil unsuitable for vegetation establishment.	<ul style="list-style-type: none"> <li>Minimise handling of all soils so they retain their structural integrity.</li> <li>Where possible direct placement of stripped topsoil to landform under rehabilitation.</li> <li>For sub-optimal soils, investigate stockpile amelioration to improve rehabilitation outcomes.</li> </ul>	24 (L)	6.2.4
<b>Ecosystem and Land Use Establishment Phase of Rehabilitation</b>			
Ant, insect, fauna predation of seed.	<ul style="list-style-type: none"> <li>Soil tests prior to revegetation works.</li> <li>Develop protocols for seed collection for other relevant species in consultation with a suitably qualified person.</li> <li>Purchase additional seed as required.</li> <li>Develop internal protocol for seed collection and storage.</li> </ul>	21 (L)	6.2.5
Poor quality tube stock.			
Weed infestation during plant establishment.			
Inappropriate or inadequate rehabilitation techniques including fleet / machinery selection.			
Inappropriate revegetation species mix for target final land use.			
Poor timing of revegetation works (sub-optimal climatic conditions for rehabilitation.			
<b>Ecosystem and Land Use Development Phase of Rehabilitation</b>			
Weather and climatic influences causing poor vegetation establishment resulting in failure to meet rehabilitation objectives / mine closure criteria.	<ul style="list-style-type: none"> <li>Selection of local native species adapted to local climate based on final land use vegetation type.</li> <li>Undertake rehabilitation trials on native species establishment and persistence.</li> <li>Develop and implement a revegetation strategy to guide revegetation works and improve the likelihood of success and reduce the likelihood of weed infestation or pest impacts.</li> <li>Under prevailing drought conditions - defer rehabilitation activities.</li> <li>Re-prepare (ripping, fertility/ameliorants etc.) and seeding of failed areas due to dry/drought conditions.</li> </ul>	21 (L)	6.2.6.3

**Table 10 (Cont'd)**  
**Rehabilitation Risk Assessment**

Risk	Risk Controls	Residual Risk Rating*	Where Addressed in this RMP
<b>Ecosystem and Land Use Development Phase of Rehabilitation (Cont'd)</b>			
Long term water quality issues (leachate, surface waters, etc).	<ul style="list-style-type: none"> <li>• Rehabilitation Monitoring</li> <li>• Ongoing rehabilitation trials and accurate records.</li> <li>• Survey and testing of historical mining areas to identify contaminated areas or materials that need to be removed or treated prior to rehabilitation.</li> <li>• Designated hydrocarbon and chemical storage areas with hydrocarbons stored in bunded areas (compliant with AS1940).</li> <li>• All spills reported and cleaned up.</li> <li>• Groundwater and surface water monitoring conducted during mine life to monitor impact with any contamination issues managed during active mine life.</li> <li>• Stormwater containment structures ensure that stormwater, leachate etc is contained.</li> </ul>	21 (L)	6.2.6.2
Damage to revegetation from pests, livestock, unauthorised machinery access, bushfire, vandalism, etc.	<ul style="list-style-type: none"> <li>• Pest control and population monitoring.</li> <li>• Exclusion fencing.</li> <li>• Rehabilitation inspections.</li> <li>• Staff inductions and training.</li> <li>• TARPs for identifying and implementing pest species management programs.</li> </ul>	18 (M)	6.2.6.1
Species established during revegetation operations do not meet mine closure objectives (diversity, structure, density, habitat).	<ul style="list-style-type: none"> <li>• Suitable pasture species to be used for rehabilitation of lands with a final land use of 'intermittent agriculture' to be identified from monitoring of analogue sites.</li> <li>• Ongoing monitoring of revegetation success with corrective actions applied during operational phases.</li> <li>• Topsoil management and analysis.</li> <li>• Annual compliance monitoring.</li> <li>• If required, suitably qualified ecologist or revegetation expert engaged to assess reasons for failure of revegetation and recommend actions to ensure that the final vegetation community corresponds as closely as possible to analogue sites.</li> </ul>	21 (L)	6.2.6.4
Erosion and failure of landform, drainage and water management storage structures	<ul style="list-style-type: none"> <li>• Detailed post closure drainage and containment structures designed to withstand climate change scenarios.</li> <li>• All containment structures to include safe overflow facilities.</li> </ul>	21 (L)	6.2.6.2

\*Risk rating assumes successful implementation of risk controls.

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