

ARUMPO MINE REHABILITATION RISK ASSESSMENT v2		Updated Oct 2025										
GENERAL RISKS		Baseline on Bowtie		Initial				Residual				
Risks		Key Impacts	Consequence	Likelihood	Risk Rating	Controls	Consequence	Likelihood	Risk Rating			
Insufficient skills and experience of rehabilitation personnel	3	Inability to complete key rehabilitation activities	4	4	Very High	Qualified Mine Manager, Quarry Manager and Environmental Consultant appointed, Joe McBrien, Mick Josephs and Martin James, SIA. Site staff and rehabilitation contractors are adequately experienced and / or trained on executing RMP.	2	2	Low			
Lack of clearly defined responsibilities	3	Lack of understanding of responsibilities	4	4	Very High	Position descriptions, defined objectives, Rehab Management Plan and Annual rehabilitation reporting. A Closure Plan will be developed with responsibilities for all tasks relating to the decommissioning and removal of infrastructure	2	2	Low			
Insufficient funding/prioritisation of rehabilitation activities		Rehabilitation not completed	5	5	EXTREME	Rehabilitation Management Plan, Regulatory inspections, dedicated budget moving forward towards maintaining rehabilitation. Progressive and final removal of waste and infrastructure will be planned ahead of time in the RMP and Closure Plan	3	3	Medium			
Weather and climate influences	4	Regrowth setback	4	4	Very High	Replace Top soil at start of winter, fire break, stumps replace to reduce wind erosion, water management-sumps/drains, diversion bank, can water rehab areas. Long-term forecasts is checked and informs on how rehabilitation will take place. We will not plant in drought conditions or spread topsoil. Any semi established plantings will be monitored and irrigation may be applied to ensure survival.	3	3	Medium			
Damage to rehabilitation areas by fauna, vehicles, bushfires		Regrowth setback	3	4	high	Mine is hard to access, only the farmer and contractors are onsite. All areas are discussed in the induction and brought up quarterly during rehab review toolboxes. Fire trails are maintained along fence lines and adequate tracks are maintained within rehabilitation areas for firefighting access. See damage by fauna.	1	1	Low			
Grazing pressure from wild animals / farm livestock	7	Regrowth setback	4	4	High	Discussions with farmer to reduce stock within paddock, ongoing compensation discussion. Fencing is being investigated. Trail areas are being setup to exclude goat populations to check how much damage they are causing. Grazing fauna is removed by the farmer via mustering. He has been informed that he cannot enter rehabilitated areas and shown which areas. Any goats seen onsite are scared by an airhorn. Trail cameras have been setup and are checked daily by the QM while active mining is ongoing.	2	2	Low			
Active Mining Phase of Rehabilitation				Initial				Residual				
Risks		Key Impacts	Consequence	Likelihood	Risk Rating	Controls	Consequence	Likelihood	Risk Rating			
Poor topsoil management during active stage	2	Lack of top soil for rehabilitation completion	3	4	High	300mm of top soil prestripped- verified by survey, stock balance maintained. Topsoil is stripped ahead of overburden mining and stockpile separately. Topsoil is stripped ahead of mining using tractor scoops with laser levels. Topsoil stockpiles are included in mine engineer plans/drawings	2	2	Low			
Mix up of Stockpiles/burying top soil	2	Lack of top soil for rehabilitation completion	3	4	High	Stocks labelled on mine plan, separated from product stockpiles. Clear understanding of stockpiles at annual induction. Monitoring to take place for weeds	2	2	Low			
Limited Pre-existing Top Soil stocks	2	Lack of top soil for rehabilitation completion	4	4	Very High	Stock evaluation completed, stocks verified by survey.	2	2	Low			
Top soil/vegetation clearing conducted in adverse weather or seasonal conditions	2	Potential damage/loss of resource	4	4	Very High	Tree clearing in late summer/autumn, top soil removal in dry conditions. Seed resource found locally to supplant losses.	2	2	Low			
Adverse geochemical/chemical composition of overburden and top soil	1	Potential PAF material/contamination	1	1	Rare	No PAF material, contaminated soil removed from site. Soil testing to be carried out if in doubt, no allowance for soil testing normally.	1	1	Rare			
Adverse quality and quantity of surface and groundwater	4	Erosion, Sedimentation, contamination of groundwater	4	4	Very High	Mining well above water table, sediment basins/drains in place, diversion channel to Emu Tank. Checks taking place monthly to prevent large scale erosion.	2	2	Low			
Decommissioning Phase of Rehabilitation				Initial				Residual				
Risks		Key Impacts	Consequence	Likelihood	Risk Rating	Controls	Consequence	Likelihood	Risk Rating			
Impact on heritage items	12	Damage to or identification of items of heritage value	4	3	High	Field survey conducted- low risk determined, operations to cease if items discovered, training of site personnel	1	1	Rare			
Hazards associated with retained infrastructure	11	Failure to remove mine site infrastructure	3	2	Medium	All site infrastructure is portable, except phone tower and pad, some roads to remain with landowner consent	1	1	Rare			
Contamination from associated activities- storage and use of hydrocarbons	2	Contamination of soil	3	4	High	Bulk diesel storage onsite, hydrocarbons stored in bunded container, PIMRP, Fuel/Oil spill SOP, Hazard Inspections, Weekly Mine Site Inspection, SDS, Refuelling SOP. The nature of bentonite allows for fast absorption and capping to prevent penetration. Areas of high hydrocarbon use during operations (e.g. hydrocarbon dams and workshops) are inspected for potential contamination and treated as required prior to rehabilitation occurring	2	2	Low			
Contamination from associated activities- sewerage	2	Contamination of soil	2	3	Medium	Sewerage contained and disposed of	2	2	Low			
Contamination from associated activities- dirty water	2	Sedimentation build up	2	2	Low	Drains and sumps in place, regularly cleaned out, water diversion in place	1	2	Very Low			
Generation of waste from demolition process	11	Waste left onsite	2	3	Medium	Site infrastructure is portable, concrete phone tower pad will be removed at mine closure	1	2	Very Low			

Landform establishment phase of Rehabilitation									
Risks	Key Impacts	Consequence	Initial Likelihood	Initial Risk Rating	Controls	Residual Consequence	Residual Likelihood	Residual Risk Rating	
Unstable landform/mass movement due to poor design	11 Landform failure of backfill	3	3	Medium	Mine Plan for backfill design, 3:1 maximum slope on backfill, compaction during overburden replacement, survey, water management	2	2	Low	
Exposure/release of geochemically/geotechnically adverse material	11&2 Contaminated or unstable backfill	1	1	Rare	All backfill material inert, geotechnically stable	1	1	Rare	
Final landform unsuitable for final land use	11 Land does not meet requirements for grazing	4	4	Very High	Mine Plan- backfill design, adequate Top soil replacement, stable slope angles, cleared debris replaced, seed application if required, weed spraying undertaken. Sign off by landowner	2	2	Low	
Final landform not suitable for target plant species	8 Landform does not support regrowth of vegetation	4	4	Very High	As above, ripping of hard stand and laydown areas	2	2	Low	
Surface erosion caused by rainfall	8 Land does not meet requirements for grazing	3	3	High	Final landform is designed to consider long-term surface water management and heavy rainfall events. Timber from clearing is spread along batter contours as erosion control and throughout the rehabilitated area. Batters have a gradient no steeper than 1:7 and 1:4 for pit voids	2	2	Low	
Wind erosion over exposed surfaces	4 Reduces likelihood of growth	4	4	Very High	Topsoil replacement as avoided in drought conditions. Seeding occurs as soon as practicable following topsoil replacement.	2	1	Low	
Erosion of water drainage and storage structures	8 Reduces likelihood of growth	3	3	High	Final landform is designed to consider long-term surface water management and heavy rainfall events	2	2	Low	
Growth/Medium Development Phase of Rehabilitation									
Risks	Key Impacts	Consequence	Initial Likelihood	Initial Risk Rating	Controls	Residual Consequence	Residual Likelihood	Residual Risk Rating	
Physical and structural properties of substrate	1&3&8 Substrate unsuitable to support revegetation	3	4	High	Top soil stored in stockpiles, 300mm replaced, replaced late summer/early Autumn, can seed if required	2	2	Low	
Top soil deficit for rehabilitation activities	2 Lack of top soil for rehabilitation completion	3	4	High	Verification of current stocks, accurate removal of top soil pre-strip, verification of pre-strip volumes by survey, maintain up to date Top soil stock balance	2	2	Low	
Grazing pressure from wild animals / farm livestock	7 Reduces the chances of reseeding from mature plants	4	4	High	Discussions with farmer to reduce stock within paddock, ongoing compensation discussion. Fencing is being investigated. Trail areas are being setup to exclude goat populations to run trails on how much damage they are causing. Grazing fauna is removed by the farmer via mustering. He has been informed that he cannot enter rehabilitated areas and shown which areas.	2	2	Low	
Lack of seed and tubestock availability	6 Reduces the area that we can reseed	3	4	High	Entered discussions with a local seed supplier to supply annual stockpile of seeds based on monitoring of existing rehabilitation and planned rehabilitation.	3	2	Low	
Seeding and planting is undertaken outside of the optimal season	6 Reduces likelihood of growth	4	4	High	FWD program to include times to reseed and under what conditions along with methodologies. Contractors to be contacted ahead of time to ensure availability. Checks to be carried out by an ecologist annually	2	2	Low	
Seeds not adequately maintained prior to seeding	6 Reduces likelihood of growth	5	3	High	A seed database will be developed that allows for storage in an airconditioned space (likely compound lab)	1	1	Low	
Seeding is not carried out in an appropriate area	6 Reduces likelihood of growth	3	4	High	We use elevation models from RTK enable drones to find depressions where there is likely to be high water concentrations	2	2	Low	
Seed and/or tubestock damaged during rehabilitation activities	6 Reduces likelihood of growth	3	4	High	Site staff and rehabilitation contractors are adequately experienced	1	1	Low	
Topsoil has high salinity	6 Reduces likelihood of growth	3	3	High	Topsoil stockpiles will be tested and assessed for salinity levels to avoid placing higher salinity topsoil on batters	2	2	Low	
Topsoil surface has high compaction	6 Reduces likelihood of growth	3	2	Medium	Topsoil is ripped prior to and/or during seeding to reduce surface compaction. Topsoil and subsoil stockpiles are clearly shown on mine plan to prohibit vehicle access	2	2	Low	
Poor seed viability or dormancy	6 Reduces likelihood of growth	3	2	Medium	All seed is tested on delivery in the compound lab. Germination rates are checked before spreading infield. Seeds will be mixed to spread biodiversity and improve chances of something germinating. Seeds will be stored in an airconditioned lab prior to field work.	2	1	Low	
Ecosystem and Land use Establishment Phase of Rehabilitation									
Risks	Key Impacts	Consequence	Initial Likelihood	Initial Risk Rating	Controls	Residual Consequence	Residual Likelihood	Residual Risk Rating	
Weed infestation	7 Outcompetes target growth species	4	4	Very High	Weed control program in place with Land Owner, vehicle cleaning and inspections prior to entering site, Top soil taken from within mine lease. Monitoring program setup to monitor for weeds. Training to be given to mine manager and quarry manager on what is weeds.	2	2	Low	
Inappropriate rehabilitation techniques	3 Inappropriate rehabilitation techniques- including fleet	4	4	Very High	Progressive rehab, Rehab Plans submitted to Regulator, Proven rehab techniques and Approved RMP	2	2	Low	
Inappropriate revegetation species mix for rehab	6 Introduction of new species or lack of vegetation	4	4	Very High	Top soil stockpiled for final use, spraying program in place, Seed application if required	2	2	Low	

Weather and climate influences	4	Drought or bush fire	4	4	Very High	Replace Top soil at end of summer, fire break, stumps replace to reduce wind erosion, water management- sumps/drains, diversion bank, can water rehab areas	2	2	Low																																																										
Availability of areas for revegetation in optimal season conditions	4	Areas rehabed at wrong time of year- failed rehab	3	3	Medium	Annual Rehab Plan, understanding of key objectives, adequate capital and resources to complete, past practice	2	2	Low																																																										
Ecosystem and Land use development of Rehabilitation			Initial				Residual																																																												
Risks		Key Impacts	Consequen	Likeli	Risk Rating	Controls	Consequence	Likeliho	Risk Rating																																																										
Weather and climate influences	4	Drought, bush fire, climate change	4	4	Very High	Replace Top soil at end of summer, fire break, stumps replace to reduce wind erosion, water management- sumps/drains, diversion bank, can water rehab areas. Long-term forecasts is checked and informs on how rehabilitation will take place. We will not plant in drought conditions or spread topsoil. Any semi established plantings will be monitored and irrigation may be applied to ensure survival.	3	2	M																																																										
Long term water quality/quantity issues	4	Damage/erosion to rehab areas, build up of sediment	3	3	Medium	Diversion bank in place, water management plan, control of water flow to dam, cleaning/maintenance of sediment traps and drains	2	2	Low																																																										
Damage to rehab areas- caused by Fauna, domestic stock, vandalism, vehicles, fire	7	Potential damage to rehab areas	4	3	High	mine lease fenced, vehicles to be kept off rehab areas, mine is remote- vandals unlikely, fire break in place, grids installed at access points	2	2	Low																																																										
Limited vegetation redevelopment	2	Lack of growth of flora from Top soil stocks	4	3	High	Adequate top soil stocks, Top soil management as per SOEE, progressive rehab, exclusion zones on rehab areas, no grazing on mine lease	2	2	Low																																																										
Redisturbance of established rehab areas	7	rework of rehab areas	3	4	High	Mine Plan in place, areas previously mined have no remaining bentonite, use existing roads and infrastructure	2	2	Low																																																										
Insufficient establishment of target species/limited species diversity	5&6	Lack of regrowth for grazing purposes	3	3	Medium	Top soil resource from mine site, schedule top soil replacement for correct season, possibility of seeding if required, past successful rehab techniques, stable landform	2	2	Low																																																										
Limited vegetation structural development for final landuse	5&6	Unable to establish grazing pasture	4	3	High	As above	2	2	Low																																																										
Lack of infrastructure to support final land use	5	Failure to establishm of grazing pasture	3	3	Medium	Fence around lease, water diversion bank, water managenet- sumps/drains, Access Road to be left in place, firebreak installed, established rehab techniques, inspections, Plans	2	2	Low																																																										
Erosion and failure of landform, water management and storage structures	7	Failure of landform and rework of water management	4	4	Very High	Stable batter angles in final mine pit, stable landform design, monitoring regrowth, no stock until stable, water managemnt plan and diversions in place	2	2	Low																																																										
Lack of infrastructure to support final land use	5	Landowner unable to use land for grazing	5	4	Extreme	Access Road to remain, fencing in place, grids at gates, water diversion to dam (off mine lease),	2	2	Low																																																										
Landform design and construction does not align with agreements reached with landholders during pre-rehabilitation consultation		Landowner unable to use land for grazing	5	2	Medium	Landform design to incorporate formal landholder agreements and consider outcomes from landholder consultation	1	1	Low																																																										
Relationship between company/staff and landholders decline during the operational phase		Landowner unable to use land for grazing	5	3	Medium	Regular landholder engagement to occur as he works at the mine	1	2	Low																																																										
Landholders are not adequately consulted over the final landform		Landowner unable to use land for grazing	5	2	Medium	Regular landholder engagement to occur	1	1	Low																																																										
Mine subsidence affected areas			Initial				Residual																																																												
Risks		Key Impacts	Consequen	Likeli	Risk Rating	Controls	Consequence	Likeliho	Risk Rating																																																										
Subsidence cracking	8	Erosion of landform	3	2	Medium	Final gradients of backfill, water management, diversion banks, cross ripping if required	2	2	Low																																																										
<table border="1"> <tr> <td colspan="2" rowspan="2"></td> <td colspan="5">Consequence</td> </tr> <tr> <td colspan="5">How severe could the outcomes be if the risk event occurred?</td> </tr> <tr> <td colspan="2"></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td colspan="2"></td> <td>Insignificant</td> <td>Minor</td> <td>Significant</td> <td>Major</td> <td>Severe</td> </tr> <tr> <td rowspan="5">Likelihood ↑ What's the chance of the risk occurring?</td> <td>5 Almost Certain</td> <td>5 Medium</td> <td>10 High</td> <td>15 Very high</td> <td>20 Extreme</td> <td>25 Extreme</td> </tr> <tr> <td>4 Likely</td> <td>4 Medium</td> <td>8 Medium</td> <td>12 High</td> <td>16 Very high</td> <td>20 Extreme</td> </tr> <tr> <td>3 Moderate</td> <td>3 Low</td> <td>6 Medium</td> <td>9 Medium</td> <td>12 High</td> <td>15 Very high</td> </tr> <tr> <td>2 Unlikely</td> <td>2 Very low</td> <td>4 Low</td> <td>6 Medium</td> <td>8 Medium</td> <td>10 High</td> </tr> <tr> <td>1 Rare</td> <td>1 Rare</td> <td>2 Very low</td> <td>3 Low</td> <td>4 Medium</td> <td>5 Medium</td> </tr> </table>													Consequence					How severe could the outcomes be if the risk event occurred?							1	2	3	4	5			Insignificant	Minor	Significant	Major	Severe	Likelihood ↑ What's the chance of the risk occurring?	5 Almost Certain	5 Medium	10 High	15 Very high	20 Extreme	25 Extreme	4 Likely	4 Medium	8 Medium	12 High	16 Very high	20 Extreme	3 Moderate	3 Low	6 Medium	9 Medium	12 High	15 Very high	2 Unlikely	2 Very low	4 Low	6 Medium	8 Medium	10 High	1 Rare	1 Rare	2 Very low	3 Low	4 Medium	5 Medium
		Consequence																																																																	
		How severe could the outcomes be if the risk event occurred?																																																																	
		1	2	3	4	5																																																													
		Insignificant	Minor	Significant	Major	Severe																																																													
Likelihood ↑ What's the chance of the risk occurring?	5 Almost Certain	5 Medium	10 High	15 Very high	20 Extreme	25 Extreme																																																													
	4 Likely	4 Medium	8 Medium	12 High	16 Very high	20 Extreme																																																													
	3 Moderate	3 Low	6 Medium	9 Medium	12 High	15 Very high																																																													
	2 Unlikely	2 Very low	4 Low	6 Medium	8 Medium	10 High																																																													
	1 Rare	1 Rare	2 Very low	3 Low	4 Medium	5 Medium																																																													
Causes as per the Resource Regulator Bowtie rehab phase						Rehabilitation RA updated in Oct-25 after discussions and review with Shane Willis, CEO AB, Mick Josephs, QM, Martin James enviromental consultant, Daryl Sue, landowner and Joel Borace, Garraways Earthmoving (Rehab Specialist). All 2025 Updated are in red. Compiled by Joe McBrien																																																													
	1	Substrate geochemical and soil biota																																																																	
	2	Availability of substrate material																																																																	
	3	Physical/structural properties of substate																																																																	
	4	Unseasonal/adverse weather																																																																	
	5	Availabiltiy of areas for revegetation in optimal conditions																																																																	
	6	Availability and integretion of see resource																																																																	
	7	Damage to rehabilitation																																																																	
	8	Landform aspect or unit																																																																	