

Freehand Sort	Key Elements	Step 3: Identify the risks, causes and potential consequences		Step 4: Identify the existing controls to manage the identified risks	Step 5: Determine RCE	Step 6/7/8: Determine the Expected Consequence/Likelihood applicable to the Expected Consequence/current level of risk			
		Risk Description - Something happens.....	Consequence - resulting in:	Existing Controls	Risk Control Effectiveness	Impact Category	Existing Risk		Existing Risk
Sequence Number	Key Element						Consequence	Likelihood	
<b>1 Exploration Drilling - Open Cut and Underground</b>									
1.01	Including construction of access tracks	European Heritage	Disturbance of sites of European heritage significance (Old Ulan Village etc)	Ulan currently undertake exploration activities in accordance with a Drilling and Exploration Management Plan. The location of exploration activities are generally flexible enough to avoid impacts on European heritage sites. The heritage assessment has been completed over the MOP area. All European Heritage items are recorded on heritage data base. Proposed works process.	Require Improvement	Community/ Reputation	2	A	3
1.02		Ecology	Loss of threatened native flora and fauna.	Ecological assessment undertaken for entire MOP area. Flora and fauna management plan (or similar) Drilling and Exploration Management Plan. The location of exploration activities are generally flexible enough to avoid impacts. Minimal disturbance minimises the potential impacts on ecological aspects. Proposed works process. Pre-drilling Environmental inspections. I&I NSW surface disturbance notice approval for Category 2 exploration	Satisfactory	Environment	3	B	9
1.03		Cultural Heritage	Disturbance of Aboriginal places or objects.	Aboriginal heritage assessment undertaken for entire MOP area. Aboriginal cultural heritage management plan Drilling and Exploration Management Plan. The location of exploration activities are generally flexible enough to avoid impacts. Minimal disturbance minimises the potential impacts on cultural heritage aspects. Proposed works process. Pre-drilling Environmental inspections. Aboriginal heritage data base (Version 10+)	Satisfactory	Regulatory	3	A	6
1.04		Erosion and Sediment Runoff	Sedimentation of local waterways.	Drilling and Exploration Management Plan. Erosion and Sediment Control Plan (or similar). Proposed works process. Pre-drilling and during drilling inspection Environmental training and awareness program	Satisfactory	Environment	2	C	8
1.05		Dust Generation	Degradation of air quality & visual amenity.		Satisfactory	Community/ Reputation	2	B	5
1.06		Noise Generation	Degradation of noise amenity (cumulative).	Drilling and Exploration Management Plan, which includes noise management measures. Noise Management Plan. Regulated operational hours. Permanent noise monitoring logging around site. Mechanical compliance inspections. During drilling inspection includes noise.	Satisfactory	Community/ Reputation	2	B	5
1.07		Land Use and Agricultural Productivity	Impact on land use, land capability and agricultural suitability.	Drilling and Exploration Management Plan. The location of exploration activities are generally flexible enough to avoid impacts. Minimal disturbance minimises the potential impacts on agricultural land. Proposed works process. Pre-drilling and during drilling environmental inspections. Drill sumps barricaded to prevent livestock access. Land access/lease agreements in place for drilling on private land. Face to face consultation with affected parties.	Satisfactory	Community/ Reputation	2	B	5
1.08		Hydrocarbon Contamination	Contamination of soil with hydrocarbons.	Drilling and Exploration Management Plan, which includes hydrocarbon management measures. During and post-drilling environmental inspections. Spill kits, sumps, bunds etc	Satisfactory	Environment	2	B	5
1.09		Other contamination - weeds, vermin etc	Introduction or spread of noxious weeds	Drilling and Exploration Management Plan. Post-drilling and ongoing environmental inspections.	Require Improvement	Environment	3	B	9
1.10		Rehabilitation	Failure of site rehabilitation - includes site access tracks and plugging/capping of boreholes	Drilling and Exploration Management Plan, which includes rehabilitation requirements. Post-drilling and ongoing environmental inspections. Flora and fauna management plan (or similar).	Satisfactory	Environment	2	C	8
<b>2 Open Cut Mining (Includes surface operations and Ulan West Box Cut)</b>									
2.01	Including land clearing - stripping, topsoil - stripping and storage, overburden removal coal extraction and	Erosion and Sediment Control - Dirty water management (Unlicensed discharge)	Sedimentation of local waterways.	Erosion and Sediment Control Plan (or similar). Proposed works process. Environmental and statutory inspections. Environmental training and awareness program. Dirty water management system. Progressive rehabilitation. Engineering and design of all erosion and sediment control structures. Final landform design.	Require Improvement	Environment/ Regulatory	3	B	9
2.02		Surface Water Management - Clean water	Contamination of clean water that should otherwise be diverted around the disturbance footprint. Loss of clean water from catchment. Increased water inventory on site due to clean water ingress.	Water Management Plan. Existing diversions - Goulburn River diversion. Final landform design to achieve free drainage from rehabilitated areas. Engineering design for clean water diversion around Ulan West box cut.	Require Improvement	Environment/ Regulatory/ Financial	3	D	17
2.03		Groundwater Management (stored water)	Recharge of aquifers (down dip) from water stored in voids adding to inrush potential and increased water make to underground workings	A detailed water balance model has been developed for the project to monitor groundwater interactions. Site water balance is reviewed periodically Draft water management strategy. Water sharing with Moolarben.	Require Improvement	Environment/ Regulatory/ Financial	3	D	17
2.04		Dust Generation	Degradation of air quality - Project specific and cumulative.	Air Quality Management Plan. Environmental monitoring network - alarms triggered. Dust suppression - water carts, sprays etc. Site speed restrictions. Statutory inspections. Large buffer areas.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
2.05		Noise Generation	Degradation of noise amenity - Project specific and cumulative.	Noise Management Plan. Environmental monitoring network. Workplace observations. Attended noise monitoring. Planned maintenance inspections. Various operational and engineering noise mitigation measures (Conveyor covers etc) Noise reduction program - subject to review with DECCW and DoP. Large buffer areas.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
2.06		Visual Amenity	Aesthetics of mine surface facilities.	Tree screening. Progressive rehabilitation. Audit of site lighting to ensure compliance with AS4282.	Satisfactory	Community/ Reputation	2	B	5

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Sequence Number	Key Element						Consequence	Likelihood	
2.07	Rehabilitation	Ecology	Loss of native flora and fauna.	Ecological assessment undertaken for entire MOP area. Flora and fauna management plan (or similar) Proposed works process. Detailed clearing protocols. Native seed harvesting/banking program.	Satisfactory	Environment	2	B	5
2.08		Public Safety	Unauthorised access to the site results in damage to property and/or equipment and/or injury to persons	Restricted entry to site - security gates at major access points. Site security contractors. Surveillance cameras. Inspections. 24/7 operations - staff always on site. Remote access gates are padlocked.	Satisfactory	OH&S	4	A	10
2.09		Blasting/vibration/over pressure	Noise and vibration community complaints. Possible non-compliance. Penalty Infringement Notice. Impacts on adjacent mines.	EPL 394 approval. Previous experience. Large buffer areas.	Require Improvement	Community/ Reputation/ Regulatory	2	B	5
2.10		Cultural Heritage	Disturbance of Aboriginal places or objects.	Aboriginal heritage assessment undertaken for entire MOP area. Aboriginal cultural heritage management plan. Proposed works process. Aboriginal heritage data base (Version 10+) Part 3A approval in accordance with management plans	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
2.11		Goulburn River diversion	Less than adequate rehabilitation success resulting in river bank instability and/or sedimentation of waterway.	Goulburn River diversion rehabilitation strategy. Environmental monitoring program.	Require Improvement	Community/ Reputation/ Regulatory/ Financial	3	C	13
2.12		Weeds, vermin etc	Infestation and spread of noxious weeds and vegetation/soil/fauna destruction from feral animals.	Flora and fauna management plan (or similar). Inspections. Noxious weeds and feral animal control programs.	Satisfactory	Community/ Reputation	2	B	5
2.13		Rehabilitation and Mine Closure	Failure to meet regulatory expectations.	Flora and fauna management plan. Conceptual mine closure planning. Environmental monitoring and inspections - long term. I&I NSW security deposit. Annual rehabilitation planning. AEMR inspection.	Satisfactory	Community/ Reputation/ Regulatory	3	B	9
<b>3 Underground Mining</b>									
3.01	Ulan West & Ulan Existing No. 3	Groundwater Management	Impacts on private water bores and impacts on Goulburn River and Talbragar River.	Water management Plan. Groundwater environmental management plan (details TARP). Extensive groundwater monitoring network. Annual groundwater model. 6 monthly water balance model. Annual private bore survey. Environmental reporting (AEMR etc)	Require Improvement	Community/ Reputation/ Environment/ Regulatory	3	C	13
3.02		Surface Water Management of extracted water from underground operations	Contamination of clean water.	Draft water management strategy. Accutech pipeline model - reticulation. Bobadeen water treatment facility. Licensed discharge. Water infrastructure management procedure. Bobadeen irrigation scheme. Water monitoring/ alarm system. Pipeline inspection/maintenance regime.	Require Improvement	Community/ Reputation/ Environment/ Regulatory	3	B	9
3.03		Noise Generation - vent fans	Degradation of noise amenity (cumulative).	Noise modelling. Noise Management Plan. Environmental monitoring network. Workplace observations. Attended noise monitoring. Planned maintenance inspections. Various operational and engineering noise mitigation measures. Large buffer areas.	Satisfactory	Community/ Reputation	2	B	5
3.04		Visual Amenity	Aesthetics of mine surface facilities.	Large buffer areas. Audit of site lighting to ensure compliance with AS4282.	Satisfactory	Community/ Reputation	2	B	5
3.05		Gas drainage	Ventilation management for underground operations resulting in requirements for addition infrastructure for gas drainage (pre-drainage, pipes etc)	Low gas mine - gas drainage not required.	Satisfactory	Environment	1	A	1
3.06		Bushfire	Damage to infrastructure, flora and fauna, rehabilitation and biodiversity offset areas. May result in smoke entering underground ventilation system or damaging ventilation system.	Bushfire management plan. Maintenance of APZ's. Co-operation with local RFS.	Satisfactory	Community/ Reputation/ Environment/ Financial	3	B	9
3.07		Rehabilitation and Mine Closure	Failure to meet regulatory expectations.	Flora and fauna management plan. Conceptual mine closure planning. Environmental monitoring and inspections - long term. I&I NSW security deposit. AEMR inspection.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
3.08		Subsidence	Impact on Archaeological sites. Impacts on Groundwater. Impacts on buildings (Bobadeen Homestead) and infrastructure (Powerlines, survey marks). Impacts on creeks/watercourses. Overhangs and cliff instability.	SMP approval and management plan. Mining Lease. Monitoring programs. Detailed subsidence assessments and reports. Extensive subsidence survey network. Engineering and design. Proposed works process.	Satisfactory	Community/ Reputation/ Environment/ Regulatory	3	B	9
3.09		Public Safety	Unauthorised access to the site results in damage to property and/or equipment and/or injury to persons	Restricted entry to site - security gates at major access points. Site security contractors. Surveillance cameras. Inspections. 24/7 operations - staff always on site. Remote access gates are padlocked.	Satisfactory	OH&S	4	A	10
3.10		Ecology	Loss of native flora and fauna.	Ecological assessment undertaken for entire MOP area. Flora and fauna management plan (or similar) Proposed works process. Detailed clearing protocols. Native seed harvesting/banking program. Flexibility in infrastructure design to mitigate impact.	Satisfactory	Environment	2	B	5
3.11		Cultural Heritage	Disturbance of Aboriginal places or objects.	Aboriginal heritage assessment undertaken for entire MOP area. Aboriginal cultural heritage management plan. Proposed works process. Aboriginal heritage data base (Version 10+) Part 3A approval in accordance with management plans Flexibility in infrastructure design to mitigate impact.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5

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<b>4 Operation of Coal Handling Infrastructure</b>									
4.01	OC & UG - Including Conveyors / Stockpiling / Crusher and Sizing Plant / CHPP / Rail Load Out Facilities	Noise Generation	Degradation of noise amenity - Project specific and cumulative.	Noise Management Plan. Environmental monitoring network. Workplace observations. Attended noise monitoring. Planned maintenance inspections. Various operational and engineering noise mitigation measures (Conveyor covers etc) Noise reduction program - subject to review with DECCW and DoP. Large buffer areas.	Satisfactory	Community/ Reputation/ Regulatory	3	B	9
4.02		Dust Generation	Degradation of air quality - Project specific and cumulative.	Air Quality Management Plan. Environmental monitoring network - alarms triggered. Dust suppression - water carts, sprays etc. Site speed restrictions. Statutory inspections. Large buffer areas.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
4.03		Visual Amenity	Aesthetics of mine surface facilities.	Tree screening. Audit of site lighting to ensure compliance with AS4282.	Satisfactory	Community/ Reputation	2	B	5
4.04		Erosion and Sediment Control - Dirty water management (Unlicensed discharge)	Sedimentation of local waterways.	Erosion and Sediment Control Plan (or similar). Proposed works process. Environmental and statutory inspections. Environmental training and awareness program. Dirty water management system. Engineering and design of all erosion and sediment control structures. Licensed discharge point (EPL 394).	Require Improvement	Environment/ Regulatory	2	C	8
<b>5 Tailings and Reject Management</b>									
5.01	OC & UG	Noise Generation	Degradation of noise amenity - Project specific and cumulative.	Noise Management Plan. Environmental monitoring network. Workplace observations. Attended noise monitoring. Planned maintenance inspections. Various operational and engineering noise mitigation measures (Conveyor covers etc) Large buffer areas.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
5.02		Dust Generation	Degradation of air quality - Project specific and cumulative.	Air Quality Management Plan. Environmental monitoring network - alarms triggered. Dust suppression - water carts, sprays etc. Site speed restrictions. Statutory inspections. Large buffer areas.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
5.03		Water Management	Contamination of waterways due to pumping of tailings overland from CHPP to emplacement area. - Includes crossing Goulburn River	Burst pipe protection. Inspections. Double sleeving of pipeline over river.	Satisfactory	Environment	3	A	6
5.04		Groundwater management	Potential interaction of tailings from East pit with Goulburn River.	Water management Plan. Goulburn River diversion water monitoring network.	Satisfactory	Environment/ Regulatory	3	B	9
5.05		Spontaneous Combustion	Impacts on air quality & rehabilitation	Spon Com Management Plan. Inspections	Require Improvement	Community/ Reputation/ Environment/ Regulatory/ Financial	3	C	13
5.06		Rehabilitation and Mine Closure	Failure to adequately rehabilitate the tailings and rejects emplacement in accordance with regulatory requirements. Potential shortfall and/or logistical constraints for delivering suitable capping material.	LOM reject emplacement strategy. Section 101 approval for discontinuance of reject emplacement area Final landform design. Conceptual Mine Closure Plan. Detailed capping procedures. Experience with capping tailings dam. Consideration of rehabilitation in current tailings dam design. Use existing voids for reject emplacement.	Satisfactory	Community/ Reputation/ Regulatory/ Financial	3	B	9
<b>6 Basalt Quarry</b>									
6.01		Blasting	Noise and vibration community complaints. Possible non-compliance. Penalty Infringement Notice. Impacts on underground operations.	EPL 394 approval. Previous experience. Large buffer areas. Small irregular operations.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
6.02		Noise	Degradation of noise amenity - Project specific and cumulative.	Noise Management Plan. Environmental monitoring network. Workplace observations. Attended noise monitoring. Planned maintenance inspections. Large buffer areas.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
6.03		Air quality	Degradation of air quality - Project specific and cumulative.	Air Quality Management Plan. Environmental monitoring network - alarms triggered. Site speed restrictions. Statutory inspections. Large buffer areas.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
6.04		Surface Water management - includes separation of clean and dirty and erosion sediment control.	Sedimentation of local waterways.	Erosion and Sediment Control Plan (or similar). Proposed works process. Environmental and statutory inspections. Environmental training and awareness program. Dirty water management system. Progressive rehabilitation. Engineering and design of all erosion and sediment control structures. Final landform design.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
6.05		Public Safety	Unauthorised access to the site results in damage to property and/or equipment and/or injury to persons	Random surveillance by site security contractors. Inspections. Remote access gates are padlocked.	Satisfactory	Community/ Reputation/ Regulatory	2	B	5
<b>7 Storage, Materials and Waste Management</b>									
7.01	Hydrocarbons and other chemicals	Hydrocarbon/Chemical Management	Water/Soil Contamination.	Oil water separator. Training. Bunding and storage (AS1940). Spill response procedure and kits. Bioremediation area.	Satisfactory	Environment	2	B	5
7.02	Waste Management	Pollution	Water/Soil Contamination.	Waste management contract in place. Waste management plan. All waste reports to offsite licensed disposal facility.	Satisfactory	Environment/ Regulatory	2	B	5
7.03	Explosives	Security and storage	Unauthorised use or theft	Nil	Poor or No Existing Controls	Regulatory	3	B	9
7.04	Sewerage	Pollution	Water/Soil Contamination.	Sewerage treatment plant. Licensed maintenance contractor - EPL identified. Inspections.	Satisfactory	Environment/ Regulatory	2	B	5