

Activity	Aspect	Impact / Risks	Phase	Nature of Impact	Probability	Sensitivity of the Aspect	Severity of the Impact	Duration	Scale / Extent	Significance (without Mitigation)	Mitigation (can the impact be reversed, avoided, managed or mitigated?)	Probability	Sensitivity of the Aspect	Severity of the Impact	Duration	Scale / Extent	Significance (with Mitigation)	Time periods for implementation of Mitigation	Monitoring Method (Implementation & Compliance)	Monitoring Frequency	Person(s) Responsible for Monitoring	
Truck and heavy machinery operation.	Surface Water	Potential hydrocarbon contamination which may reach downstream surface water bodies.	All Phases	Negative	4 Highly Probable	4 Very sensitive	4 Moderate to High	4 Long Term	3 Local	60 High	Implement good housekeeping practices. All hydrocarbon storage in bunded areas with impervious surfaces. Drip trays and spill kits must be available on site for emergency situations.	4 Highly Probable	4 Very sensitive	2 Slight to Moderate	3 Medium Term	1 Isolated	40 Moderate	Throughout LoM	Groundwater monitoring will detect if there are any problems Annual EMP audit will include AIP	Quarterly	ECO / external specialist	
General site disturbance and existing alien / invasive species on site and surroundings.	Wetlands	Possible increase in exotic and invasive vegetation.	All Phases	Negative	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	42 Moderate	The mine must implement the Alien Invasive Species management plan, and update this plan annually (by a specialist).	3 Probable	4 Very sensitive	3 Moderate	3 Medium Term	3 Local	39 Low	Throughout LoM	Dust monitoring, GN704 audits, Annual EMP Audits and monthly internal ECO inspections	Annual	External Auditor	
Earth-moving, equipment and vehicle operation at the Mine (potential hydrocarbon spills, potential sediment mobilisation).	Surface Water	Potential water quality deterioration due to uncontained spills or sediment.	All Phases	Negative	5 Definite	4 Very sensitive	5 High	4 Long Term	4 Regional	85 Significant	Dust suppression measures must be in place. Clean and Dirty water separation must be implemented. Spills must be prevented and accidental spills cleaned immediately. Non-mineral wastes will be managed to comply with norms and standards and be stored in a designated area protected from runoff.	3 Probable	4 Very sensitive	3 Moderate	2 Short to Medium	2 Site	33 Low	Throughout LoM	Visual inspections, review of waste manifest	Monthly and Annually	ECO and external auditors	
Domestic and industrial waste generation, handling and disposal.	Surface water, groundwater and soil	Potential contamination through littering and/or incorrect waste disposal.	All Phases	Negative	4 Highly Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	56 Moderate	Environmental awareness training will be implemented to all employees and visitors to the site. Regular clean-up campaigns will be undertaken if necessary. Bins with covers will be provided in all necessary areas where waste is generated. Reputable contractors will be used to remove waste off site for disposal, and records of disposal will be kept.	3 Probable	4 Very sensitive	3 Moderate	3 Medium Term	1 Isolated	33 Low	Throughout LoM	Complaints Register maintained by ECO / security	Monthly review of complaints register, address as required	ECO, Mine Manager	
Truck and heavy machinery operation. Blasting, Coal processing (crushing, screening, washing at Ashley section).	Noise	Increase in ambient noise levels.	All Phases	Negative	4 Highly Probable	2 Somewhat sensitive	1 Slight	4 Long Term	1 Isolated	32 Low	Mining activities will be restricted to daylight hours. No unnecessary noise will be generated and this will be included in Environmental Awareness and induction training.	4 Highly Probable	2 Somewhat sensitive	1 Slight	4 Long Term	1 Isolated	32 Low	Throughout LoM	The waste storage area must be established at the onset of the Project and maintained throughout the LoM	Weekly internal inspections (ECO) and included in annual audits	Weekly and annually	ECO and external auditor
Domestic and industrial waste generation, handling and disposal	Fauna	Problem animals attracted to site due to incorrect waste storage.	All Phases	Negative	4 Highly Probable	4 Very sensitive	5 High	4 Long Term	3 Local	64 High	Ensure designated waste storage area is established with impervious floor, access control and visual screens in an appropriate central location. This area must be kept clean and neat and facilitate waste separation. Waste must not be stored on site for excessive time periods. This area will be classified as a dirty area and runoff to and from this area must be controlled.	2 Possible	4 Very sensitive	4 Moderate to High	3 Medium Term	2 Site	26 Low	Throughout LoM	As per maintenance Schedule. Spill kits permanently available wherever hydrocarbons are present. Clean-up as required (immediately)	ECO inspections and included in Annual Audits. Spills/contamination will also be detected in groundwater monitoring	Monthly inspections, quarterly monitoring and annual audits	ECO and external auditor (monitoring results to be analysed in accredited laboratory and interpreted by specialist)
Truck and heavy machinery operation, presence of hydrocarbons on site.	Groundwater	Impacts on groundwater quality due to potential hydrocarbon and other chemical spills.	All Phases	Negative	4 Highly Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	56 Moderate	Trucks, machinery and equipment will be regularly serviced to reduce the risk of leaks. Spill kits must be available on site and personnel trained on utilising these. Any leakages should be reported and treated immediately.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	1 Isolated	22 Low	Throughout LoM	Visual inspections, review of waste manifest	Monthly and Annually	ECO and external auditor	
Domestic and industrial waste generation, handling and disposal.	Visual	Odours and visual impacts.	All Phases	Negative	2 Possible	3 Sensitive	2 Slight to Moderate	4 Long Term	2 Site	22 Low	Waste management area to be designated, secured and screened from receptors. Good housekeeping and regular removal of waste off site for safe disposal.	2 Possible	3 Sensitive	1 Slight	4 Long Term	2 Site	20 Low	Throughout LoM	Groundwater monitoring will detect if there are any problems	Quarterly	Mine Manager, external specialist and contractor	
Provision of Services: Conservancy tanks and chemical toilets.	Groundwater	Environmental and health risks from sewage leaks / spills.	All Phases	Negative	3 Probable	4 Very sensitive	2 Slight to Moderate	4 Long Term	2 Site	36 Low	Facilities will be constructed as per approved engineering designs and maintained as per specification. Servicing will include removal without spillages by a suitable contractor.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	1 Isolated	22 Low	Throughout LoM	Stormwater management infrastructure to be established by ECO and included in annual audit	Visual inspection by ECO and included in annual audit	Monthly and Annually	ECO and external auditor
Sedimentation, compaction, pollution (including edge effects) resulting from mine activities.	Wetlands	Destruction of moist grassland and wetland areas within the footprint.	Construction	Negative	5 Definite	4 Very sensitive	5 High	5 Permanent	3 Local	85 Significant	Implement clean and dirty water throughout the site in accordance with GN704. Install silt traps where necessary. Prevent erosion and remedy eroded areas immediately if erosion is detected despite preventative measures.	5 Definite	4 Very sensitive	4 Moderate to High	3 Medium Term	1 Isolated	60 High	Throughout LoM	Stormwater management measures to be implemented prior to disturbance occurring in any given area of the Mine	Annual WUL Audits will include review of stormwater management measures	Annual	External Auditor
Opencast Mining (Shelley, Ashley and Macclesfield Sections), establishment of Adits, Haul Roads, vehicle movement, machinery operation, construction activities and general disturbance.	Soil	Loss of Land Capability.	Construction	Negative	5 Definite	4 Very sensitive	4 Moderate to High	5 Permanent	3 Local	80 Significant	Ensure proper storm water management designs are in place. If erosion occurs, corrective actions (erosion berms) must be taken to minimize any further erosion from taking place, and the erosion remediated. If erosion has occurred, topsoil should be sourced and replaced and shaped to reduce the recurrence of erosion. Compacted areas are to be ripped to loosen the soil structure and vegetation cover re-instated. Implement land rehabilitation measures and follow rehabilitation guidelines.	4 Highly Probable	4 Very sensitive	3 Moderate	5 Permanent	2 Site	56 Moderate	Throughout LoM	Demarcation to be established prior to disturbance of new areas, maintained throughout LoM	ECO site inspections, also included in annual audit	Monthly and Annually	ECO and external auditor
Existing opencast mining at Ashley and Shelley, Opencast Mining at Macclesfield Section, future establishment of adits, establishment of haul roads	Fauna	Displacement of faunal community (including threatened or protected species) due to habitat loss, disturbance and/or direct mortalities.	Construction	Negative	5 Definite	4 Very sensitive	5 High	3 Medium Term	3 Local	75 High	All necessary road mitigation measures must be put in place to slow (or stop) run-off on the existing access road or any other roads which may need to be constructed. This is a vital mitigation measure to prevent erosion and wildlife road mortalities.	4 Highly Probable	4 Very sensitive	4 Moderate to High	3 Medium Term	3 Local	56 Moderate	Throughout LoM	Demarcate areas prior to other activity commencing	Wetland Monitoring	Annual	Wetland Specialist
Existing opencast mining at Ashley and Shelley, Opencast Mining at Macclesfield Section, future establishment of haul roads.	Flora	Destruction of, and fragmentation, of the vegetation community (including portions of a Vulnerable vegetation type, wetlands and areas classified as a CBA: Irreplaceable).	Construction	Negative	5 Definite	4 Very sensitive	5 High	3 Medium Term	3 Local	75 High	Restrict all activities to the approved mining boundary. Areas to be developed (for roads, stockpiling, mining etc.) must be specifically demarcated so that only approved areas are impacted upon and preventing movement of workers into sensitive surrounding environments.	4 Highly Probable	4 Very sensitive	4 Moderate to High	3 Medium Term	3 Local	56 Moderate	Throughout LoM	Demarcate areas prior to other activity commencing	Visual inspections	Monthly and Annually	ECO and external auditor
Construction and mining activities.	Wetlands	Destruction of wetland areas.	Construction	Negative	5 Definite	4 Very sensitive	5 High	5 Permanent	2 Site	80 Significant	Wetlands not approved for mining must be clearly demarcated and designated as no-go areas. Rehabilitate all mined areas as soon as possible after mining. The wetland specialist must be consulted for rehabilitation in wetland areas.	5 Definite	4 Very sensitive	3 Moderate	3 Medium Term	1 Isolated	55 Moderate	Throughout LoM	Demarcate areas prior to other activity commencing	Visual inspections	Monthly and Annually	ECO and external auditor
Roads and Transport.	Flora	Destruction of vegetation and habitat.	Construction	Negative	5 Definite	4 Very sensitive	5 High	4 Long Term	2 Site	75 High	Use existing roads where possible. Only designated / approved roads to be used and driving outside of these areas will not be allowed.	5 Definite	4 Very sensitive	3 Moderate	3 Medium Term	1 Isolated	55 Moderate	Throughout LoM	Demarcate areas prior to other activity commencing	Visual inspections	Monthly and Annually	ECO and external auditor
Vegetation Removal, waste generation and handling of overburden.	Wetlands	Destruction of natural vegetation, including vegetation in wetland areas.	Construction	Negative	5 Definite	4 Very sensitive	5 High	4 Long Term	2 Site	75 High	Only remove vegetation in designated areas, which must be demarcated. Only remove vegetation as necessary (do not clear the entire site but rather clear immediately ahead of construction/ mining activity).	5 Definite	4 Very sensitive	3 Moderate	3 Medium Term	1 Isolated	55 Moderate	Throughout LoM	Demarcate areas prior to other activity commencing	Visual inspections	Monthly and Annually	ECO and external auditor
Construction of the Mine sections and associated infrastructure.	Social	Creation of temporary job opportunities.	Construction	Positive	5 Definite	4 Very sensitive	2 Slight to Moderate	2 Short to Medium Term	3 Local	55 Moderate	Implement the approved Social and Labour Plan. Recruitment from Local Communities prioritised. Manage job-seeker expectations and ensure clear communication.	5 Definite	4 Very sensitive	2 Slight to Moderate	2 Short to Medium	3 Local	55 Moderate	Throughout LoM	Prior to and throughout construction phase for each mine section	Community liaison officer and form reports	Monthly	Community liaison officer / HR
Roads and Transport.	Wetlands	Destruction of sensitive wetland habitat and loss of ecological functioning.	Construction	Negative	4 Highly Probable	4 Very sensitive	4 Moderate to High	4 Long Term	2 Site	56 Moderate	Limit vehicle movement to existing and designated (approved) roads and crossings. Vehicles will not be allowed to drive indiscriminately through the site.	4 Highly Probable	4 Very sensitive	4 Moderate to High	4 Long Term	1 Isolated	52 Moderate	Throughout LoM	Visual inspection of clear road signage	Monthly	ECO	

Construction and upgrade of berms, trenches, silt traps, PCDs etc.	Surface and Groundwater	Containment of contaminated water (reduced downstream water).	Construction	Negative	4	Highly Probable	4	Very sensitive	2	Slight to Moderate	2	Short to Medium Term	3	Local	44	Moderate	The impact can't be mitigated, dirty water must be contained on site and re-used in the process plant. The impact will disappear after the LoM and the dirty areas have been completely rehabilitated to clean areas, after which water will not be contained anymore.	4	Highly Probable	4	Very sensitive	2	Slight to Moderate	2	Short to Medium Term	3	Local	44	Moderate	Throughout LoM	GN704 audits to be undertaken annually as part of WUL Audits	Annual	External Auditor
Opencast Mining (Shelley, Ashley and Macclesfield Sections), establishment of Adits, Haul Roads, vehicle movement, machinery operation, construction activities and general disturbance.	Soil	Loss of topsoil as a resource - Contamination, Disturbance, Erosion, and Compaction.	Construction	Negative	4	Highly Probable	4	Very sensitive	4	Moderate to High	3	Medium Term	4	Regional	60	High	Topsoil is to be stripped when the soil is dry, as to reduce compaction, wherever possible. Bush clearing contractors will only clear bushes and trees larger than 1m, and the remaining vegetation will be stripped with the top 0.3 m of topsoil to conserve as much of the nutrient cycle, organic matter and seed bank as possible (only after alien vegetation has been removed). The subsoil (approximately 0.3 - 0.8 m thick) will then be stripped and stockpiled separately. The handling of the stripped topsoil will be minimized to ensure the soil's structure does not deteriorate significantly. Compaction of the removed topsoil must be avoided by prohibiting traffic on stockpiles. Topsoil stockpiles should only be used for the rehabilitation of the mined area. The stockpiles will be vegetated in order to reduce the risk of erosion, prevent weed growth and to reinstitute the ecological processes within the soil.	3	Probable	4	Very sensitive	4	Moderate to High	3	Medium Term	2	Site	39	Low	Prior to mining / construction in any given area	Visual inspection of topsoil stockpiles	Daily during stripping, monthly stockpile inspections	ECO
Construction and upgrade of berms, trenches, silt traps, PCDs etc.	Wetlands	Destruction of sensitive wetland habitat and loss of ecological functioning.	Construction	Negative	3	Probable	4	Very sensitive	4	Moderate to High	2	Short to Medium Term	2	Site	36	Low	Implement GN704 separation of clean and dirty water on site. Maintain dirty water management infrastructure to ensure spillages do not occur (operate with freeboard of 0.8m at least). Continue with annual wetland monitoring and adjust management accordingly.	3	Probable	4	Very sensitive	4	Moderate to High	2	Short to Medium Term	2	Site	36	Low	Throughout LoM	GN704 audits to be undertaken annually as part of WUL Audits	Annual	External auditor and External Specialist
Site clearing, establishment of infrastructure and excavation of pits and boxcuts/Adits	Visual	Altering the sense of place, dust generation, visual intrusion, light impacts.	Construction	Negative	5	Definite	3	Sensitive	3	Moderate	1	Short Term	3	Local	50	Moderate	Only remove vegetation where necessary for construction. Implement dust suppression measures. Storage of equipment overnight must be away from receptors, ensure good maintenance and housekeeping. Use vegetative screens around structures where possible. Limit operations to daylight hours, use downlights and low impact lighting for security purposes only where absolutely necessary.	5	Definite	3	Sensitive	1	Slight	1	Short Term	2	Site	35	Low	Throughout LoM	Visual inspections	Include in Monthly ECO reports and Annual audits	ECO and external auditor
Construction and upgrade of berms, trenches, silt traps, PCDs etc.	Surface Water & Wetlands	Increased runoff and associated potential silt-loading of drainage lines and downstream water bodies and wetlands.	Construction	Negative	4	Highly Probable	4	Very sensitive	4	Moderate to High	2	Short to Medium Term	3	Local	52	Moderate	Keep areas cleared of vegetation as small as possible. Rehabilitate disturbed areas as soon as possible. Soil stockpiles must not be sloped steeper than 1:3. Erosion on site must be prevented, and where it manifests, must be remediated immediately.	3	Probable	4	Very sensitive	3	Moderate	2	Short to Medium Term	2	Site	33	Low	Throughout LoM	Visual inspections	Monthly	ECO
Construction of the coal processing facility (Wash Plant)	Wetlands	Potential damage to wetlands if indiscriminate cement mixing and pouring takes place.	Construction	Negative	3	Probable	4	Very sensitive	3	Moderate	2	Short to Medium Term	2	Site	33	Low	Cement mixing may only be undertaken in designated areas where runoff and seepage are controlled (contained) in dirty water catchment areas with impervious floors or on trays.	3	Probable	4	Very sensitive	3	Moderate	2	Short to Medium Term	1	Isolated	30	Low	Construction phase and whenever cement mixing occurs	Surface and Groundwater monitoring, visual inspections	Monthly and Quarterly	ECO
Construction of the coal processing facility (Wash Plant).	Surface Water & Wetlands	Increased runoff velocity and associated potential erosion and silt-loading of drainage lines and downstream water bodies and wetlands.	Construction	Negative	4	Highly Probable	4	Very sensitive	4	Moderate to High	2	Short to Medium Term	3	Local	52	Moderate	Keep areas cleared of vegetation as small as possible. Rehabilitate disturbed areas as soon as possible. Soil stockpiles must not be sloped steeper than 1:3. Erosion on site must be prevented, and where it manifests, must be remediated immediately.	2	Possible	4	Very sensitive	3	Moderate	2	Short to Medium Term	1	Isolated	20	Low	Throughout LoM	Visual inspections	Monthly	ECO
Habitat loss and degradation due to pollutants and physical destruction of vegetation.	Wetlands	Loss of the ecological function of the wetland areas.	Construction and Operation	Negative	5	Definite	4	Very sensitive	5	High	4	Long Term	3	Local	80	Significant	Implement clean and dirty water separation throughout the site in accordance with GN704. Implement an emergency preparedness and response plan, including prevention of spills and clean-up of accidental spills. Demarcate development areas clearly and prevent access to no-go areas.	5	Definite	4	Very sensitive	4	Moderate to High	4	Long Term	2	Site	70	High	Throughout LoM	GN704 Audits, EMP Audits	Annual	External Auditor
Construction of overburden and topsoil stockpiles.	Visual	Visual intrusion of stockpiles.	Construction and Operation	Negative	5	Definite	3	Sensitive	3	Moderate	4	Long Term	3	Local	65	High	Shaping of stockpiles as they are developed to reduce angles of side slopes (slopes should not exceed 1:3). Maintain stockpile heights as approved (topsoil at 3m and overburden at a maximum of 8m). Vegetate stockpiles where possible.	4	Highly Probable	3	Sensitive	2	Slight to Moderate	4	Long Term	2	Site	44	Moderate	Throughout LoM	Visual inspections	Include in Monthly ECO reports and Annual audits	ECO and external auditor
Establishment and Operation of the Wash bay and Workshop Areas.	Surface and Groundwater	Potential hydrocarbon contamination.	Construction and Operation	Negative	3	Probable	4	Very sensitive	3	Moderate	4	Long Term	2	Site	39	Low	Implement good housekeeping practices. All hydrocarbon storage in bunded areas with impervious surfaces. Drip trays and spill kits must be available on site for emergency situations.	3	Probable	4	Very sensitive	3	Moderate	4	Long Term	2	Site	39	Low	Throughout LoM	Groundwater monitoring will detect if there are any problems	Quarterly	ECO / external specialist
Vehicle movement on surrounding road network.	Traffic	Deterioration of road conditions.	Construction and Operation	Negative	4	Highly Probable	3	Sensitive	3	Moderate	4	Long Term	3	Local	52	Moderate	Regular inspections by the Mine of the main routes to and from the site, along with regular reporting to and liaison with the relevant roads authorities. Maintain a complaints register and record community complaints regarding the state of roads. Resolve complaints in consultation with the roads authorities.	4	Highly Probable	3	Sensitive	2	Slight to Moderate	2	Short to Medium Term	2	Site	36	Low	Monthly inspections. Remediation as required	Visual inspection by ECO	Monthly	ECO
Provision of Services: Potable water from borehole.	Groundwater	Reduction in local groundwater availability.	Construction and Operation	Negative	4	Highly Probable	4	Very sensitive	2	Slight to Moderate	4	Long Term	3	Local	52	Moderate	Water use of the Mine must be measured and recorded. Water wastage will not be tolerated. Water users will be compensated for water loss caused by the Mine (or alternative water provided by the mine) if significant reduction in water levels can be attributed to the Mine's potable water use.	3	Probable	4	Very sensitive	1	Slight	4	Long Term	2	Site	33	Low	Throughout LoM	Flow meter readings maintained by ECO	Monthly	ECO & Mine Manager
Opencast Mining at Macclesfield Section.	Heritage Resources	Destruction or damage of Site 1: Graves within the Macclesfield Opencast Area.	Construction and Operation	Negative	5	Definite	5	Irreplaceable	5	High	5	Permanent	1	Isolated	80	Significant	A 50m Buffer will be established around the site, where no activities will be allowed. The site will be fenced to ensure no accidental disturbance occurs, with access being granted to families wishing to visit the graves. The area will be included in the Mine's blast monitoring program to ensure blasting and vibration does not negatively affect the Graves.	2	Possible	5	Irreplaceable	5	High	5	Permanent	1	Isolated	32	Low	Buffer to be demarcated prior to any activity at Macclesfield	Visual inspection by ECO and included in annual audit	Monthly and Annually	ECO and external auditor
Opencast Mining at Ashley, Shelley or Macclesfield Section, establishment of Adits to access underground reserves, underground mining.	Heritage Resources	Destruction of or damage to Palaeontological Resources.	Construction and Operation	Negative	3	Probable	4	Very sensitive	3	Moderate	5	Permanent	1	Isolated	39	Low	A chance find procedure will be implemented on site. When excavations begin the rocks and carbonaceous material must be given a cursory inspection by the environmental officer or designated person. If any fossiliferous material such as leaf impressions, stems, seeds, wood, insect wings, is identified, the palaeontologist will be consulted.	2	Possible	4	Very sensitive	3	Moderate	5	Permanent	1	Isolated	26	Low	Throughout LoM. Chance find procedure to be included in induction	Training records	As induction is presented	ECO
Opencast Mining at Ashley, Shelley or Macclesfield Section, establishment of Adits to access underground reserves, underground mining.	Heritage Resources	Destruction of or damage to Unknown Heritage Resources.	Construction and Operation	Negative	2	Possible	5	Irreplaceable	5	High	5	Permanent	1	Isolated	32	Low	It is possible that unknown heritage resources occur on the site. A Chance Find Procedure will be implemented on site. To ensure that heritage resources discovered at the site are not disturbed, all work in the area stopped and an archaeologist consulted, if heritage resources are discovered	2	Possible	4	Very sensitive	3	Moderate	5	Permanent	1	Isolated	26	Low	Implement chance find procedure and training before opencast mining commences and maintain throughout LoM	Environmental awareness training and induction material reviewed annually	As required	ECO
Containment of dirty water on site at opencast, adits and plant areas.	Surface Water	Reduction in Catchment yield due to containment of dirty water on site, ponding, infiltration and evaporation.	Construction and Operation	Negative	4	Highly Probable	4	Very sensitive	5	High	4	Long Term	4	Regional	68	High	The dirty water catchment must be managed as small as possible and all disturbed areas must be rehabilitated in such a way that the topography blends in with the surrounding topography in order to allow for free flow of runoff. Drainage within and off the site must be carefully designed to make the new land surface as stable and resistant to soil erosion as the local environment allows.	2	Possible	4	Very sensitive	3	Moderate	1	Short Term	1	Isolated	18	Insignificant	Throughout LoM	GN704 audits to be undertaken annually as part of WUL Audits	Annual	External Auditor
Vegetation Removal.	Surface Water	Erosion and subsequent sedimentation of surface water resources.	Construction and Operation	Negative	4	Highly Probable	4	Very sensitive	3	Moderate	4	Long Term	3	Local	56	Moderate	Keep areas cleared of vegetation as small as possible. Rehabilitate disturbed areas as soon as possible. Soil stockpiles must not be sloped steeper than 1:3. Erosion on site must be prevented, and where it manifests, must be remediated immediately.	2	Possible	4	Very sensitive	3	Moderate	1	Short Term	1	Isolated	18	Insignificant	Throughout LoM	Visual inspections	Monthly	ECO

Opencast Mining at Macclesfield Section.	Heritage Resources	Destruction or damage to Site 2: Historical Buildings 2km north of Macclesfield Opencast.	Construction and Operation	Negative	3 Probable	5 Irreplaceable	4 Moderate to High	5 Permanent	1 Isolated	45	Moderate	No mining activities will encroach on this site, as it is outside of the MRA. The site will be included in the Blast monitoring plan to ensure that blasting and vibrations do not negatively impact the site.	1 Unlikely	5 Irreplaceable	4 Moderate to High	5 Permanent	1 Isolated	15	Insignificant	Include in blast monitoring with each blast in the vicinity	Blast Specialist	With each blast	Blasting Specialist
Opencast Mining at Macclesfield Section.	Heritage Resources	Destruction or damage to Site 3: Graves 2km north of the Macclesfield Opencast.	Construction and Operation	Negative	3 Probable	5 Irreplaceable	4 Moderate to High	5 Permanent	1 Isolated	45	Moderate	No mining activities will encroach on this site, as it is outside of the MRA. The site will be included in the Blast monitoring plan to ensure that blasting and vibrations do not negatively impact the site.	1 Unlikely	5 Irreplaceable	4 Moderate to High	5 Permanent	1 Isolated	15	Insignificant	Include in blast monitoring with each blast in the vicinity	Blast Specialist	With each blast	Blasting Specialist
Operation of the Mine and associated infrastructure	Social	Creation of long-term job opportunities.	Operation	Positive	5 Definite	4 Very sensitive	2 Slight to Moderate	4 Long Term	3 Local	65	High	Implement the approved Social and Labour Plan. Recruitment from Local Communities prioritised. Manage job-seeker expectations and ensure clear communication.	5 Definite	4 Very sensitive	2 Slight to Moderate	4 Long Term	3 Local	65	High	Prior to and throughout construction phase for each mine section	Community liaison officer and form reports	Monthly	Community liaison officer / HR
Roll-over opencast mining: Removal of soil and soft overburden (and stockpiling or direct replacement).	Wetlands	Destruction of sensitive wetland habitat where authorisation is received to mine through these as stipulated in the IWWMP. Loss of ecological functioning.	Operation	Negative	5 Definite	4 Very sensitive	5 High	4 Long Term	2 Site	75	High	It must be ensured that wetland destruction is limited to those wetlands that have been authorised to mine through and does not encroach on wetlands earmarked for conservation. Delineate no-go areas clearly.	5 Definite	4 Very sensitive	3 Moderate	3 Medium Term	1 Isolated	55	Moderate	Throughout LoM	WUL Audit and Visual Inspections	Annual and Monthly	External Auditor and ECO
Opencast Mining (Shelley, Ashley and Macclesfield Sections), establishment of Adits, Haul Roads, vehicle movement, machinery operation, construction activities and general disturbance.	Soil	Loss of Land Capability.	Operation	Negative	5 Definite	4 Very sensitive	5 High	5 Permanent	3 Local	85	Significant	The rehabilitated (backfilled) areas must be assessed once a year for compaction, fertility, and erosion. Assessments must continue for at least 3 years post-closure of each section, or until the soil specialist is satisfied with the state of rehabilitation. The soils fertility must be assessed by a soil specialist yearly (during the dry season so that recommendations can be implemented before the start of the wet season) as to correct any nutrient deficiencies. Areas of subsidence must be reported and remediated as soon as possible with the best practices at the time of occurrence.	4 Highly Probable	4 Very sensitive	3 Moderate	4 Long Term	2 Site	52	Moderate	Annually for 3 years post closure of each section	Soil Specialist investigation	Annual	External specialist (ECO / Mine manager to appoint)
Dewatering of opencast and underground mining areas.	Groundwater	Alteration of groundwater flow and reduction of local groundwater quantity due to dewatering activities.	Operation	Negative	5 Definite	4 Very sensitive	3 Moderate	4 Long Term	3 Local	70	High	Larger fractures contributing to water flow are sealed to reduce water inflows into the mining area. Compensate registered water users for loss of water.	4 Highly Probable	4 Very sensitive	3 Moderate	3 Medium Term	3 Local	52	Moderate	Throughout LoM	Groundwater monitoring	Monthly and Quarterly	ECO & Mine Manager
Drilling and blasting, loading and hauling activities.	Visual	Dust generation, visual intrusion of infrastructure and activities.	Operation	Negative	5 Definite	3 Sensitive	3 Moderate	4 Long Term	3 Local	65	High	Implement a dust management plan on all haul roads. Implement a vehicle maintenance plan for all vehicles associated with the Mine. Ensure material is covered to prevent wind-blown dust from moving vehicles.	4 Highly Probable	3 Sensitive	2 Slight to Moderate	4 Long Term	2 Site	44	Moderate	Throughout LoM	Dust monitoring, vehicle maintenance plan included in internal audits	Monthly	ECO
Existing opencast mining at Ashley and Shelley, Opencast Mining at Macclesfield Section, future establishment of adits, establishment of haul roads	Fauna	Continued displacement and fragmentation of the faunal community (including threatened species) due to ongoing anthropogenic disturbances (noise, dust and vibrations) and habitat degradation (litter, road mortalities and/or poaching).	Operation	Negative	5 Definite	4 Very sensitive	4 Moderate to High	5 Permanent	3 Local	80	Significant	Restrict mining to the designated footprint areas, avoiding the areas classified as highly sensitive. Access to the mining areas must avoid highly sensitive areas. Areas of indigenous vegetation, even secondary communities, with the exception of approved mining areas should under no circumstances be fragmented or disturbed further or used as an area for dumping of waste.	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	2 Site	39	Low	Throughout LoM	Weekly internal inspections (ECO) and included in annual audits	Weekly and annually	ECO and external auditor
Opencast Mining (Shelley, Ashley and Macclesfield Sections), establishment of Adits, Haul Roads, vehicle movement, machinery operation, construction activities and general disturbance.	Soil	Loss of topsoil as a resource – Contamination, Disturbance, Erosion, and Compaction.	Operation	Negative	4 Highly Probable	4 Very sensitive	4 Moderate to High	4 Long Term	3 Local	60	High	Topsoil stockpiles are to be kept to a maximum height of 3m. The stockpiles will be vegetated in order to reduce the risk of erosion, prevent weed growth and to reinstate the ecological processes within the soil. The handling of the stripped topsoil will be minimized to ensure the soil's structure does not deteriorate significantly. Prevent compaction and contamination of stockpiles - vehicles will not be allowed to drive on stockpiles.	3 Probable	4 Very sensitive	4 Moderate to High	3 Medium Term	2 Site	39	Low	Visual inspection of topsoil stockpiles	Visual inspection by ECO and included in annual audit	Monthly and Annually	ECO and external auditor
Operation of water management infrastructure.	Surface and Groundwater	Potential for poor quality water impacting on groundwater and/or surface water and wetlands if pipelines or dams/trenches burst or leak.	Operation	Negative	4 Highly Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	56	Moderate	Pipelines, dams and trenches for potentially polluting substances to be located in the dirty water footprint. Establish water management infrastructure in accordance with approved engineering designs. Leaks / bursts to be reported and remediated immediately.	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	2 Site	39	Low	As required	Groundwater and Surface Water Monitoring	Monthly and Quarterly	External specialist (ECO / Mine manager to appoint)
Coal Processing: Crushing and Screening.	Surface Water	Potential contamination of surface water runoff which may reach downstream surface water bodies.	Operation	Negative	3 Probable	4 Very sensitive	4 Moderate to High	4 Long Term	3 Local	45	Moderate	Strict implementation of GN704 clean and dirty water separation on site.	3 Probable	4 Very sensitive	4 Moderate to High	4 Long Term	1 Isolated	39	Low	Throughout LoM	GN704 audits to be undertaken annually as part of WUL Audits	Annual	External Auditor
Roll-over opencast mining: Removal of soil and soft overburden (and stockpiling or direct replacement).	Surface Water	Increased runoff and associated potential silt-loading of drainage lines and downstream water bodies and wetlands.	Operation	Negative	3 Probable	4 Very sensitive	4 Moderate to High	4 Long Term	3 Local	45	Moderate	Keep areas cleared of vegetation as small as possible. Rehabilitate disturbed areas as soon as possible. Soil stockpiles must not be sloped steeper than 1:3. Erosion on site must be prevented, and where it manifests, must be remediated immediately.	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	2 Site	39	Low	Throughout LoM	Visual inspections	Monthly	ECO
Edge effects from operational area, blasting and dust impacts, altered fire regime.	Wetlands	Destruction / deterioration of wetland areas.	Operation	Negative	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	42	Moderate	Ensure that operational areas do not encroach on surrounding areas not designated for mining activities, by maintaining demarcations and environmental awareness training.	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	2 Site	39	Low	Throughout LoM	WUL Audit and Visual Inspections	Annual and Monthly	External Auditor and ECO
Blasting.	Heritage Resources	Ground vibration impact on graves.	Operation	Negative	4 Highly Probable	5 Irreplaceable	5 High	4 Long Term	4 Regional	72	High	Reduce charge mass per delay, changed or re-define blast design. The graves at Macclesfield will be left in-situ. Blasting with the current minimum charge (215kg) may not occur closer than 100m from the graves. Blasting within 75 m of the graves, the charge must be reduced to 127kg, and further reduced to 56kg if blasting at a 50m distance from the graves. These distances must be clearly demarcated on site throughout the mining of Pit B and C. No blasting may take place closer than 50m to the graves.	2 Possible	5 Irreplaceable	5 High	4 Long Term	4 Regional	36	Low	Buffer to be demarcated prior to any activity at Macclesfield. Blasting methods according to each blast	Blast Specialist, ECO to inspect demarcations weekly.	Weekly and with each blast	ECO and blasting specialist
Mining, crushing, wind erosion on exposed areas, material handling, loading & offloading, and vehicle movement.	Air Quality	Deterioration of air quality due to increased PM10 and PM2.5.	Operation	Negative	4 Highly Probable	3 Sensitive	4 Moderate to High	4 Long Term	2 Site	52	Moderate	Develop and implement a dust control plan for the operational phase. Implement dust suppression measures (e.g. water sprays on haul roads and other dust-generating areas). Vegetate stockpiles where possible. Install a continuous PM10 and PM2.5 monitor on site to measure emissions and report these annually to NAES. If exceedances of acceptable standards are recorded, additional measures must be implemented.	3 Probable	3 Sensitive	3 Moderate	4 Long Term	2 Site	36	Low	Continuous monitor to be established throughout operational phase. Adjust management measures based on monitoring results.	Continuous PM10 and PM2.5 monitor on site.	Continuous monitoring, monthly internal reporting, annual NAES	External specialist (ECO / Mine manager to appoint)
Establishment and Operation of the Wash bay and Workshop Areas.	Surface water, groundwater and soil	Incorrect maintenance of the Oil separator resulting in spills / pollution.	Operation	Negative	3 Probable	4 Very sensitive	4 Moderate to High	4 Long Term	2 Site	42	Moderate	Use an appropriate contractor to clean the separator as necessary and remove oils from site to an appropriate facility. Mine to keep records of safe disposal.	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	1 Isolated	36	Low	Throughout LoM	Safe disposal certificates	As required, internal monthly ECO Audits and include in annual external audits	ECO and external auditor
Mining, crushing, wind erosion on exposed areas, material handling, loading & offloading, and vehicle movement.	Air Quality	Deterioration of air quality due to emissions (CO, NOx, SO2).	Operation	Negative	4 Highly Probable	3 Sensitive	2 Slight to Moderate	4 Long Term	2 Site	44	Moderate	Implement a truck maintenance plan to ensure vehicles do not generate excessive fumes. Implement a strict speed limit on all roads. Driver training to include emissions awareness. Where possible, use newer equipment with improved combustion efficiency & technologies. Where possible, use cleaner fuels.	3 Probable	3 Sensitive	2 Slight to Moderate	4 Long Term	2 Site	33	Low	Maintenance plan, speed limits throughout LoM.	ECO site inspections, also included in annual audit.	Weekly, monthly and annually	ECO and external auditor

Vehicle movement on surrounding road network.	Traffic	Vehicle accidents / incidents.	Operation	Negative	4 Highly Probable	5 Irreplaceable	5 High	5 Permanent	1 Isolated	64	High	Implement the intersection upgrades as detailed in the traffic impact assessment, at the P21- and Haul Road intersection, P209/DS02 intersection and N11/Balleineich intersection. Maintain road signage and conditions throughout LoM. Use alternative haul road on high-traffic days, such as public holidays.	2 Possible	5 Irreplaceable	5 High	5 Permanent	1 Isolated	32	Low	Road upgrades and signage to be effected asap, prior to commencement of Macclesfield Section	Visual inspection by ECO	Monthly	ECO
Blasting	Social	Fly rock Impact on houses.	Operation	Negative	5 Definite	5 Irreplaceable	5 High	4 Long Term	4 Regional	90	Significant	Stemming control and audit, use proper stemming materials, re-design blasts, re-locate households.	2 Possible	5 Irreplaceable	2 Slight to Moderate	4 Long Term	4 Regional	30	Low	Prior to any blasting	Blasting specialist	With each blast	Blasting Specialist
Blasting	Social	Ground vibration Impact on houses.	Operation	Negative	4 Highly Probable	5 Irreplaceable	4 Moderate to High	4 Long Term	4 Regional	68	High	Reduce charge mass per delay, changed or re-define blast design. Relocate those people who live within 500m of the blast areas to suitable houses a safe and appropriate distance away.	2 Possible	5 Irreplaceable	2 Slight to Moderate	4 Long Term	4 Regional	30	Low	Prior to any blasting	Blasting specialist	With each blast	Blasting Specialist
Mining, crushing, wind erosion on exposed areas, material handling, loading & offloading, and vehicle movement.	Air Quality	Deterioration of air quality due to increased Dust Fallout.	Operation	Negative	4 Highly Probable	3 Sensitive	3 Moderate	4 Long Term	1 Isolated	44	Moderate	Develop and implement a dust control plan for the operational phase. Implement dust suppression measures (e.g. water sprays on haul roads and other dust-generating areas). Vegetate stockpiles where possible. Continue dust monitoring (monthly) and expand dust monitoring network to include Macclesfield Section, and the other Mine sections as they each enter into the construction phase. Annual reporting to NAEIS.	3 Probable	3 Sensitive	2 Slight to Moderate	4 Long Term	1 Isolated	30	Low	Plan to be compiled at the onset of operations and implemented, maintained and adjusted as required throughout the operational phase.	Monthly dust monitoring (network to include all active areas).	Monthly	External specialist (ECO / Mine manager to appoint)
Blasting.	Heritage Resources	Fly rock Impact on graves.	Operation	Negative	2 Possible	5 Irreplaceable	5 High	4 Long Term	4 Regional	36	Low	Stemming control and audit, use proper stemming materials, re-design blasts, implement buffers and adjust charges accordingly	2 Possible	5 Irreplaceable	2 Slight to Moderate	4 Long Term	4 Regional	30	Low	Buffer to be demarcated prior to any activity at Macclesfield. Blasting methods according to each blast.	Blast Specialist, ECO to inspect demarcations weekly.	Weekly and with each blast	ECO and blasting specialist
Operation of water management infrastructure.	Groundwater	Potential infiltration of contaminated water into groundwater table if leaks, spills or seepage occurs.	Operation	Negative	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	42	Moderate	Dirty water containment infrastructure will be constructed and maintained to engineering specification, to prevent leaks. Leak detection systems / methods must be implemented and leaks remedied upon detection.	2 Possible	4 Very sensitive	3 Moderate	4 Long Term	3 Local	28	Low	Throughout LoM, and as required (if leaks are detected)	Groundwater monitoring will detect if there are any problems	Quarterly	Mine Manager, external specialist and contractor
Blasting	Social	Fly rock Impact on Roads.	Operation	Negative	5 Definite	4 Very sensitive	3 Moderate	4 Long Term	4 Regional	75	High	Stemming control and audit, use proper stemming materials, re-design blasts, adjust charges according to distance from roads. Ensure inspections are done to remove rubble from roads after a blast. If blasting close to the road, the road must be closed for safety reasons in consultation with the roads authorities.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	4 Regional	28	Low	Prior to any blasting	Blasting specialist	With each blast	Blasting Specialist
Roll-over opencast mining: Blasting of Overburden.	Groundwater	Potential damage to groundwater aquifers and alteration of groundwater flow, potential groundwater contamination.	Operation	Negative	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	42	Moderate	Groundwater monitoring programme to be implemented. Blasting to be done by suitably qualified personnel, according to approved blast methodology. This should be monitored with each blast and the methodology adapted to reduce impacts where necessary.	2 Possible	4 Very sensitive	3 Moderate	4 Long Term	3 Local	28	Low	Throughout LoM	Groundwater monitoring, Blast monitoring	Quarterly and with each blast (weekly)	External specialist (ECO / Mine manager to appoint)
Roll-over opencast mining: Removal of soil and soft overburden (and stockpiling or direct replacement).	Groundwater	Impacts on groundwater volumes due to artificially increased recharge due to seepage from the stockpile areas.	Operation	Negative	3 Probable	4 Very sensitive	2 Slight to Moderate	4 Long Term	3 Local	39	Low	Minimise the size of stockpiles. Rehabilitate concurrently.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	3 Local	26	Low	Throughout LoM	Visual inspection and Materials balance	Monthly	Mine Manager and ECO
Existing opencast mining at Ashley and Shelley, Opencast Mining at Macclesfield Section, future establishment of adits, establishment of haul roads.	Flora	Continued removal and fragmentation of a Vulnerable vegetation community (including portions of wetlands and areas classified as CBA: Irreplaceable) due to open cast mining activities and encroachment by alien invasive plant species.	Operation	Negative	5 Definite	4 Very sensitive	4 Moderate to High	5 Permanent	3 Local	80	Significant	Mining and associated activities (laydown areas, waste storage areas etc.) must be restricted to the approved footprints, which should be clearly demarcated on site. It is recommended that an extensive alien plant management plan be compiled to remove all alien vegetation from within the project area.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	2 Site	24	Low	Demarcation to be established prior to disturbance of new areas, maintained throughout LoM. AIP Management plan implemented throughout LoM	ECO site inspections, also included in annual audit	Monthly and Annually	ECO and external auditor
Existing opencast mining at Ashley and Shelley, Opencast Mining at Macclesfield Section, future establishment of adits, establishment of haul roads.	Flora	Potential leaks, discharges, pollutant from mining activities leaching into the surrounding environment.	Operation	Negative	4 Highly Probable	4 Very sensitive	4 Moderate to High	4 Long Term	3 Local	60	High	Good housekeeping will be implemented to prevent spills and leaks from occurring. The site will be managed in accordance with GN704, to ensure accidental spills are contained in dirty areas.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	2 Site	24	Low	GN704 stormwater management plan: construct water management infrastructure prior to any other activities, maintain water monitoring throughout LoM	ECO site inspections, also included in annual audit and WUL Audit. Monthly surface water monitoring	Monthly and Annually	ECO and external auditor
Establishment and Operation of the Wash bay and Workshop Areas.	Surface and Groundwater	Water Use / wastage resulting in resource depletion.	Operation	Negative	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	2 Site	24	Low	Water use at the Mine must be measured and recorded. Water wastage will not be tolerated. Water users will be compensated for water loss caused by the Mine (or alternative water provided by the mine) if significant reduction in water levels can be attributed to mining activities.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	2 Site	24	Low	Throughout LoM	Flow meter readings maintained by ECO	Monthly	ECO
Operation of associated mining infrastructure.	Visual	Artificial light impacts at night.	Operation	Negative	3 Probable	3 Sensitive	2 Slight to Moderate	4 Long Term	2 Site	33	Low	Make use of down lighting and low impact lighting where lights are required for security at night. Limit operations to daylight hours. Avoid tall lights on periphery of site.	2 Possible	3 Sensitive	1 Slight	4 Long Term	1 Isolated	18	Insignificant	Throughout LoM	Visual Inspections	Monthly	ECO
Blasting	Social	Air blast Impact on houses.	Operation	Negative	2 Possible	5 Irreplaceable	3 Moderate	4 Long Term	4 Regional	32	Low	Stemming control and audit, use proper stemming materials, re-design blasts, re-locate households.	1 Unlikely	5 Irreplaceable	2 Slight to Moderate	4 Long Term	4 Regional	15	Insignificant	Prior to any blasting	Blasting specialist	With each blast	Blasting Specialist
Blasting	Social	Ground vibration Impact on Roads.	Operation	Negative	2 Possible	4 Very sensitive	3 Moderate	4 Long Term	4 Regional	30	Low	Reduce charge mass per delay, changed or re-define blast design.	1 Unlikely	4 Very sensitive	2 Slight to Moderate	4 Long Term	4 Regional	14	Insignificant	Prior to any blasting	Blasting specialist	With each blast	Blasting Specialist
Blasting	Social	Ground vibration Impact on Boreholes.	Operation	Negative	1 Unlikely	4 Very sensitive	1 Slight	4 Long Term	4 Regional	13	Insignificant	Reduce charge mass per delay, changed or re-define blast design.	1 Unlikely	4 Very sensitive	2 Slight to Moderate	4 Long Term	4 Regional	14	Insignificant	Prior to any blasting	Blasting specialist	With each blast	Blasting Specialist
Roll-over opencast mining: Mobilisation of overburden and subsoil stockpiles for filling of mined out voids.	Wetlands	Potential loss of flow to local wetland systems and catchment.	Operation and Decommissioning	Negative	4 Highly Probable	4 Very sensitive	4 Moderate to High	4 Long Term	3 Local	60	High	The impact can't be mitigated as the mining activities will inevitably reduce the catchments of downstream wetlands, as clean and dirty water separation must be implemented throughout LoM. The only mitigation possible is to minimise the size of the dirty water footprint as much as possible, the impact will be negated after LoM once all areas are regarded as clean areas.	4 Highly Probable	4 Very sensitive	4 Moderate to High	4 Long Term	2 Site	56	Moderate	Throughout LoM	GN704 audits to be undertaken annually as part of WUL Audits. Wetland Audits.	Annual	External auditor and specialist
Roll-over opencast mining: Mobilisation of overburden and subsoil stockpiles for filling of mined out voids.	Groundwater	Impacts on groundwater quality due to contaminant migration.	Operation and Decommissioning	Negative	4 Highly Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	56	Moderate	Replace carbonaceous, possibly AMD forming material at the bottom of the pit during rehabilitation (backfilling) to ensure early submergence and displacement of oxygen. Compact the carbonaceous material in the bottom of the pit. Seal off individual seepage zones in the fractured rock. Rehabilitated areas must be free draining to prevent the ingress of water.	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	2 Site	39	Low	Throughout LoM	Visual inspection, Materials Balance, groundwater monitoring as per IWUL	As pits are closed throughout LoM. Monthly materials balance. Quarterly groundwater monitoring	Mine Manager
Lack of adequate rehabilitation.	Wetlands	Deterioration of the watercourses.	Operation and Decommissioning	Negative	3 Probable	4 Very sensitive	5 High	4 Long Term	3 Local	48	Moderate	Implement the rollover mining method, ensuring continuous backfilling of opencast areas, and rehabilitate these areas concurrently with mining (shaping, vegetating) to reduce the rehabilitation liability at the end of LoM.	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	2 Site	39	Low	Throughout LoM	Visual inspections and material balance	Monthly	Mine Manager and ECO

Accumulation of water in opencast and underground mining areas.	Groundwater	Deterioration of groundwater quality due to poor quality seepage from the mining area.	Operation and Decommissioning	Negative	4 Highly Probable	4 Very sensitive	3 Moderate	5 Permanent	3 Local	60 High	The plume migration will be limited due to the drawdown cone reversing the local groundwater flow direction towards the mining areas during the operational phases. Larger fractures contributing to water flow are sealed to reduce water inflows into the mining area. In addition this will prevent these aquifer systems coming into contact with contaminated water post mining. Carbonaceous material must be placed and compacted at the bottom of the pit during backfilling. The pit must be kept as dry as possible through dewatering. This will reduce the risk of AMD conditions as exposure of pyritic material to water is reduced. Roll-over mining must be concurrent to rehabilitation as this will again assist in reducing exposure of pyritic material with the elements which leads to AMD formation. Install monitoring boreholes in the rehabilitated areas and downstream so the groundwater quality and level can be monitored. Additional measures (intercept drains and water treatment) must be implemented if AMD is detected in monitoring.	3 Probable	4 Very sensitive	2 Slight to Moderate	4 Long Term	2 Site	36 Low	As pits are closed throughout LOM	Groundwater monitoring	Quarterly	Mine Manager
Reprofiling of all disturbed areas and application of topsoil.	Surface Water & Wetlands	Increased runoff and associated potential silt-loading of drainage lines and downstream water bodies and wetlands.	Operation and Decommissioning	Negative	4 Highly Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	56 Moderate	Keep areas cleared of vegetation as small as possible. Rehabilitate disturbed areas as soon as possible. Soil stockpiles must not be sloped steeper than 1:3. Erosion on site must be prevented, and where it manifests, must be remediated immediately.	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	1 Isolated	36 Low	Throughout LOM	Visual inspections	Monthly	ECO
Sealing and closure of underground mining sections and opencast pits.	Groundwater	Recovery of groundwater levels due to removal of artificial recharge sources and ceasing of dewatering activities.	Decommissioning and Closure	Positive	4 Highly Probable	4 Very sensitive	3 Moderate	2 Short to Medium Term	3 Local	48 Moderate	The impact is positive and will occur naturally as dewatering of the mine areas cease. No mitigation is required.	4 Highly Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	56 Moderate	Prior to and throughout construction phase for each mine section	Groundwater level monitoring	Monthly	Mine Manager, external specialist or contractor
Decommissioning and Closure of the Mine and associated infrastructure.	Social	Loss of long-term job opportunities.	Decommissioning and Closure	Negative	5 Definite	4 Very sensitive	2 Slight to Moderate	2 Short to Medium Term	3 Local	55 Moderate	Before closure, communicate with employees the downscaling process to manage expectations. Assist with reference letters etc. where possible. Implement the SLP.	5 Definite	4 Very sensitive	2 Slight to Moderate	2 Short to Medium Term	3 Local	55 Moderate	Prior to and throughout construction phase for each mine section	Community liaison officer and form reports	Monthly	Community liaison officer / HR
Sealing and closure of underground mining sections and opencast pits.	Surface and Groundwater	Potential for poor quality leachate from decant or plume day lighting impacting on nearby water bodies.	Decommissioning and Closure	Negative	4 Highly Probable	4 Very sensitive	4 Moderate to High	2 Short to Medium Term	3 Local	52 Moderate	Rehabilitated areas must be free draining to prevent the ingress of water. Control groundwater levels within the rehabilitated material to prevent decant. Water should be pumped to treatment facilities. Construct downstream treatment ponds or artificial wetland systems to manage decant. Install monitoring boreholes at expected decant areas.	4 Highly Probable	4 Very sensitive	3 Moderate	2 Short to Medium Term	2 Site	44 Moderate	As areas are rehabilitated, and as required	Groundwater monitoring	Quarterly	External specialist (ECO / Mine manager to appoint)
Sealing and closure of boreholes as borehole water requirements cease.	Groundwater	Recovery of groundwater levels.	Decommissioning and Closure	Positive	3 Probable	4 Very sensitive	2 Slight to Moderate	2 Short to Medium Term	3 Local	33 Low	The impact is positive and will occur naturally as abstraction from boreholes by the Mine cease. No mitigation is required.	4 Highly Probable	4 Very sensitive	2 Slight to Moderate	2 Short to Medium Term	3 Local	44 Moderate	Prior to and throughout construction phase for each mine section	Groundwater level monitoring	Monthly as per IWUL	Mine Manager, external specialist or contractor
Removal of final sewage from septic tanks / chemical toilets from site.	Surface water, groundwater and soil	Risks during removal but reduced risk of contamination by sewage after removal.	Decommissioning and Closure	Negative	2 Possible	4 Very sensitive	3 Moderate	2 Short to Medium Term	2 Site	22 Low	Use an appropriate contractor to remove facilities from site without spillages, and legal disposal of sewage waste.	4 Highly Probable	4 Very sensitive	3 Moderate	2 Short to Medium Term	2 Site	44 Moderate	Upon decommissioning / closure	Groundwater monitoring	Monthly	Contractor and ECO
Removal of stockpiles and backfilling of pits, removal of infrastructure.	Visual	Visual intrusion - presence of activities, equipment and machinery.	Decommissioning and Closure	Negative	5 Definite	3 Sensitive	3 Moderate	1 Short Term	3 Local	50 Moderate	Limit activities to daylight hours, use only low impact lighting where it is required for security at night. Implement good housekeeping. Store equipment in designated area at night (preferably at Ashley workshop). Implement dust suppression.	5 Definite	3 Sensitive	2 Slight to Moderate	1 Short Term	1 Isolated	35 Low	Throughout LOM	Visual inspections, Dust Monitoring	Include in Monthly ECO reports and Annual audits	ECO and external auditor
Removal and conveyance of coal onto temporary in-pit / in-Adit ROM stockpiles.	Surface Water & Soils	Altered flow dynamics due to subsidence of surface in undermined areas.	Decommissioning and Closure	Negative	3 Probable	4 Very sensitive	3 Moderate	2 Short to Medium Term	2 Site	33 Low	Subsidence of surface areas will be monitored in undermined areas. Safety factors will be implemented.	3 Probable	4 Very sensitive	3 Moderate	2 Short to Medium Term	2 Site	33 Low	After underground mining	Engineering and ECO	Monthly	Engineering and ECO
Removal of the Wash bay and Workshop Areas.	Surface water, groundwater and soil	Removal of hydrocarbons and chemicals from site causing pollution.	Decommissioning and Closure	Negative	3 Probable	4 Very sensitive	4 Moderate to High	2 Short to Medium Term	2 Site	36 Low	Use suitable contractors to remove chemicals and hydrocarbons from site upon closure / decommissioning. If accidental spills occur these must be cleaned up immediately. A contamination assessment and subsequent remediation in terms of the NEM:WA will be undertaken if deemed necessary by the specialist.	3 Probable	4 Very sensitive	3 Moderate	2 Short to Medium Term	1 Isolated	30 Low	Upon decommissioning / closure	Visual inspection by ECO. Soil contamination assessment if required	Daily during removal of hydrocarbons and facilities	ECO, report to Mine manager, Soil Specialist, if required
Dismantling, removal and rehabilitation of unnecessary infrastructure.	Surface and Groundwater	If removal of infrastructure not done correctly, contamination can occur.	Decommissioning and Closure	Negative	3 Probable	4 Very sensitive	2 Slight to Moderate	2 Short to Medium Term	2 Site	30 Low	Follow the detailed closure plan and ensure contamination that may occur is contained and immediately remedied.	2 Possible	4 Very sensitive	2 Slight to Moderate	2 Short to Medium Term	2 Site	20 Low	Throughout Decommissioning / Closure activities	ECO inspection reports	Monthly	ECO, Mine Manager
Flow or seepage of polluted water from old mining areas.	Wetlands	Acid mine drainage polluting wetlands.	Closure and Rehabilitation	Negative	4 Highly Probable	4 Very sensitive	5 High	4 Long Term	4 Regional	68 High	Rehabilitated areas must be free-draining to prevent ponding and ingress of water. Mine-affected water should be intercepted at decant points and treated prior to being released into the environment. Installation of passive treatment systems will be considered.	4 Highly Probable	4 Very sensitive	3 Moderate	3 Medium Term	2 Site	48 Moderate	During rehabilitation (concurrent) and 3 years after closure	Visual inspection and groundwater monitoring	Monthly and Quarterly	ECO and external specialist
Existing opencast mining at Ashley and Shelley, Opencast Mining at Macclesfield Section, future establishment of adits, establishment of haul roads	Fauna	Displacement of the faunal community (including threatened or protected species) due to initial rehabilitation activities and successful rehabilitation resulting in the faunal species potentially re-establishing within the area (depending on rehabilitation success).	Closure and Rehabilitation	Negative	4 Highly Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	56 Moderate	Environmental awareness training will also apply to contractors during the closure and rehabilitation phases.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	2 Site	24 Low	At the onset of closure and rehabilitation activities	Weekly internal inspections (ECO) and included in annual audits	Weekly and annually	ECO and external auditor
Existing opencast mining at Ashley and Shelley, Opencast Mining at Macclesfield Section, future establishment of adits, establishment of haul roads.	Flora	Encroachment and displacement of an indigenous and vulnerable vegetation community by alien invasive plant species, potential re-establishment of natural species that were removed, the nature of which will depend on the amount of successful vegetation establishment.	Closure and Rehabilitation	Negative	4 Highly Probable	4 Very sensitive	3 Moderate	4 Long Term	3 Local	56 Moderate	It is recommended that an extensive alien plant management plan be implemented to remove all alien vegetation from within the project area.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	2 Site	24 Low	AIP Management plan compiled as part of the EMP Amendment. Implementation throughout LOM and update as necessary	ECO site inspections, also included in annual audit	Monthly and Annually	ECO and external auditor
Existing opencast mining at Ashley and Shelley, Opencast Mining at Macclesfield Section, future establishment of adits, establishment of haul roads	Fauna	Continued displacement and fragmentation of the faunal community (including threatened species) due to ongoing anthropogenic disturbances (noise, dust and vibrations) and habitat degradation (litter, road mortalities and/or poaching).	Decommissioning	Negative	5 Definite	4 Very sensitive	4 Moderate to High	5 Permanent	3 Local	80 Significant	Driving on access roads at night should be prevented in order to reduce or prevent wildlife road mortalities which occur more frequently during this period. All staff and visitors to the site must undergo an extensive induction process and must be made aware of the sensitive nature of the environment and faunal species which occur there.	3 Probable	4 Very sensitive	3 Moderate	4 Long Term	2 Site	39 Low	At the onset of activities and throughout LOM	Review of training material included in annual audit	Annual	External Auditor

Rehabilitation of opencast mining sections, adits, stockpile areas and haul roads.	Flora	Continued encroachment and displacement of indigenous vegetation community by alien invasive plant species.	Decommissioning	Negative	5 Definite	4 Very sensitive	3 Moderate	4 Long Term	3 Local	70	High	It is recommended that an extensive alien plant management plan be compiled to remove all alien vegetation from within the project area.	2 Possible	4 Very sensitive	2 Slight to Moderate	4 Long Term	2 Site	24	Low	AIP Management plan compiled as part of the EMP Amendment. Implementation throughout LoM and update as necessary.	ECO site inspections, also included in annual audit	Monthly and Annually (to continue at least 3 years after closure of each area, or until natural community has re-established satisfactorily)	ECO and external auditor
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