Environmental Factor (EPA)	Potential Impact	Project Phase			Inherent Risk Assessment			Proposed Mitigation Measures	Residual Risk Assessment		
		Construction	Operations	Closure	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Subterranean Fauna	Degradation of subterranean fauna habitat due to seepage from the TSF, WRD or pit		✓	✓	5	2	Medium	**Measures to Avoid:** • Siting key proposal elements (WRD and TSF) adjacent to the mine pit to confine any seepage extent. **Measures to Minimise:** • TSF location adjacent to the mine pit with minimised footprint. • Siting of encapsulated PAF cells in the WRD within the pit catchment. • Closely spaced grade control drilling and trained ore spotters to identify PAF material as part of selective material management. • Design of PAF cells in the WRD to minimise ingress of oxygen and water. • Siting of other mine infrastructure and associated surface water management infrastructure to minimise impacts to catchment areas. • Implementation of a project water management plan incorporating groundwater monitoring levels and quality and contingency actions. **Measures to Rehabilitate:** • Shaping the final WRD and TSF landforms to shed surface runoff away from the mine pit to ensure the pit remains a hydraulic sink. • Monitoring TSF seepage during operations for consideration in closure design. • Review of the site surface water model during operations to refine/validate assumptions and pit water balance. • Review of the merit and effectiveness of use of alkaline materials to buffer pH changes in tailings post-closure. • Consideration of a reactive transport model for seepage quality and pit lake water quality predictions.	2	2	Low
Subterranean Fauna	Permanent loss of subterranean fauna habitat and individuals due to open pit development.	✓	✓		4	1	Low				Low
Subterranean Fauna	Loss of subterranean fauna habitat and individuals from groundwater drawdown due to mine dewatering.		✓		3	2	Low				Low
Subterranean Fauna	Loss of subterranean fauna habitat and individuals from groundwater drawdown due to borefield groundwater abstraction.	✓	✓		3	2	Low				Low
Subterranean Fauna	Degradation of subterranean fauna habitat due to spills (hydrocarbons, reagents, chemicals or wastewater).	✓	✓		3	2	Low				Low
Subterranean Fauna	Loss of subterranean fauna habitat and individuals due to increased sediment loads in hyporheic zone along Sulphur Springs Creek.	✓	✓	✓	3	2	Low				Low
Subterranean Fauna	Loss of subterranean fauna habitat and individuals within the Minnieritchie Creek or Six Mile Creek catchments due to seepage from the TSF.		✓	✓	2	2	Low				Low
Subterranean Fauna	Degradation of subterranean fauna habitat due to poor quality seepage from water storage ponds.		✓		3	2	Low				Low
Subterranean Fauna	Degradation of subterranean fauna habitat and individuals downgradient of pit due to pit lake overtopping at closure.			✓	2	2	Low				Low
Subterranean Fauna	Loss of subterranean fauna habitat due to altered groundwater flow regime	✓	✓	✓	3	2	Low				Low

Environmental Factor (EPA)	Potential Impact	Project Phase			Inherent Risk Assessment			Proposed Mitigation Measures	Residual Risk Assessment		
		Construction	Operations	Closure	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Flora and Vegetation	Direct loss of native vegetation.	✓	✓		5	2	Medium	**Measures to Avoid:** • Project infrastructure has been located away, as far as practicable, from identified Pityrodia sp. Marble Bar (G. Woodman & D. Coultas GWDC Opp 4) individuals and the associated 50 m buffer area surrounding them. • Known locations of conservation significant species will be included in the site's GIS to ensure locations are avoided during any future activities. • Pre-clearance surveys undertaken prior to land clearing to erect clearly demarcated exclusion zones around Pityrodia sp. Marble Bar (G. Woodman & D. Coultas GWDC Opp 4) populations. • Land clearing to be conducted in accordance with internal Ground Disturbance Procedure. • Chemicals, hydrocarbons and other environmentally hazardous materials will be stored and handled in accordance with the Dangerous Goods Safety Act 2004 and associated regulations, including use of a bunded and sealed assembly area for hazardous chemicals (containerised) prior to offsite treatment/disposal by a licenced and authorised waste contractor. • Facilities containing hydrocarbons and/or chemicals have been designed within bunds to contain 110% of the contents of the material stored. • Pipelines containing chemical, hydrocarbons or tailings will either be double skinned or located within lined corridors to avoid any spills contacting soil, surface water or groundwater sources. • Storage of PAF waste rock and tailings within the catchment of the mine pit. • Re-contouring of parts of the mine pit catchment to shed surface runoff to adjacent catchments, to ensure the mine pit remains a hydraulic sink. • Known locations of weeds will be avoided, where practicable, for the development of project infrastructure. • Weed control will be implemented on areas to be disturbed for infrastructure. **Measures to Minimise:** • Land disturbance will be kept to the minimum necessary for development of the Proposal. • A Flora and Vegetation Environmental Management Plan will be implemented. • Ground disturbance procedures and an internal permitting system will be implemented. • Existing disturbed areas will be used wherever possible to minimise total ground disturbance. • The site induction program will provide written and verbal information on protection of vegetation, conservation significant flora and ground disturbance authorisation procedures. • Refuelling and fuel delivery inlets will be located on concrete or HDPE-lined pads to contain any drips and spills. The pads will drain to a sump to allow removal of collected material. • Overland pipes will be installed within bunds with catchment sumps constructed at low elevation points as required to provide containment capacity in the case of a pipeline leak. • Flow/pressure sensors will be fitted along pipelines to enable detection of flow anomalies (i.e. pipeline leaks). • Isolation valves will be installed at appropriate intervals along pipelines. • Spill kits will be located at strategic locations throughout the project area and employees trained in their use. • Implementation of a project water management plan incorporating groundwater monitoring levels and quality and contingency actions. • Location of TSF upgradient of the mine pit in steep sided, confined valley • TSF design to meet or exceed criteria applicable to High B consequence category facility under ANCOLD risk rating (ANCOLD 2019). • Comprehensive inspection of the TSF by Dams Engineer and Specialist (where relevant) after first year of operation, then every two years. • Intermediate inspection of the TSF by Dams Engineer annually. • Internal drainage collection and seepage monitoring and interception downstream of main embankment. • Saddle dams constructed with appropriate seepage prevention measures (low permeability cut off trench and embankment core, drainage collection on the upstream face). • Ongoing mine closure planning during the operational phase of the project, including TSF cover trials, to refine proposed designs. • pH amendment via lime addition conducted prior to final layers of tailings discharge to prevent the top surface of the tailings generating acid following sub-aerial deposition. • Closely spaced grade control drilling and trained ore spotters to identify PAF material as part of selective material management. • Design of PAF cells in the WRD to minimise ingress of oxygen and water. • Diverting 'clean' surface water flows away from operational areas as far as practicable. • A standardised elemental suite will be included for all future waste rock, leachate and water analysis. • Further studies of potential additional measures for the diversion of runoff away from the mine pit. • Dust suppression measures will be implemented. • Vehicle speed restrictions will apply. • Locations of weeds identified during baseline surveys within the Proposal footprint will be targeted for application of appropriate management actions during construction and operations. • A weed hygiene system will be implemented to avoid the spread of existing populations and the establishment of new populations. • Inspections targeting weeds will be conducted following significant rainfall, and depending on results, appropriate management actions will be implemented.	4	1	Low
Flora and Vegetation	Direct loss of conservation significant species.	✓	✓		4	3	High		2	3	Medium
Flora and Vegetation	Indirect impacts to vegetation communities 1a and 2a due to overtopping of pit lake at closure.			✓	4	2	Medium		1	2	Low
Flora and Vegetation	Indirect impacts to native vegetation in Sulphur Springs Creek catchment from contamination of groundwater due to seepage from the TSF, WRD or pit.		✓	✓	5	2	Medium		2	2	Low
Flora and Vegetation	Indirect impacts to native vegetation due to dust emissions (loss of health and condition).	✓	✓		4	2	Medium		3	2	Low
Flora and Vegetation	Indirect impacts to native vegetation due to dust emissions (loss of vegetation).	✓	✓		3	2	Low				Low
Flora and Vegetation	Introduction and/or increased spread of weeds	✓	✓		3	3	Medium		2	2	Low
Flora and Vegetation	Indirect impacts to native vegetation from modification of surface water or groundwater quality due to spills.	✓	✓		4	2	Medium		3	2	Low
Flora and Vegetation	Indirect impacts to vegetation communities in the Minnieritchie Creek and Six Mile Creek catchment areas from contamination of groundwater due to seepage from the TSF during operations.		✓		2	1	Low				Low
Flora and Vegetation	Indirect impacts to vegetation communities in the Minnieritchie Creek and Six Mile Creek catchment areas from contamination of groundwater due to seepage from the TSF at closure.			✓	2	1	Low				Low
Flora and Vegetation	Indirect impacts to vegetation communities in the Minnieritchie or Sulphur Springs Creek catchment areas from contamination of groundwater due to seepage from storage ponds.		✓		3	2	Low				Low
Flora and Vegetation	Indirect impacts to GDEs due to mine dewatering		✓		2	2	Low				Low
Flora and Vegetation	Indirect impacts to native vegetation from contamination of groundwater due to seepage from low grade stockpile or ROM pad		✓		3	2	Low				Low
Flora and Vegetation	Altered fire regime impacting vegetation health and condition	✓	✓		2	2	Low				Low
Flora and Vegetation	Indirect impacts to native vegetation from modification of groundwater flows and/or groundwater levels within SSC catchment area.	✓	✓	✓	3	2	Low				Low

Environmental Factor (EPA)	Potential Impact	Project Phase			Inherent Risk Assessment			Proposed Mitigation Measures	Residual Risk Assessment		
		Construction	Operations	Closure	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Flora and Vegetation	Indirect impacts to native vegetation from modification of groundwater flows and/or groundwater levels within MRC catchment area.	✓	✓	✓	2	2	Low	**Measures to Rehabilitate:** • Further studies to confirm recoverable topsoil volumes and characteristics. • Progressive and early rehabilitation will be undertaken on disturbed areas where possible. • Monitoring of rehabilitated areas will be undertaken to track progress against short, medium and long-term objectives. • Local provenance seed collection will be undertaken throughout the project life for use in rehabilitation activities. • Preparation and regular update of a MCP consistent with *Guidelines for Preparing Mine Closure Plans* (DMP and EPA 2015). • Spills will be cleaned up and contaminated soils will either be remediated or removed from site by a licenced third party. Incident investigation will be undertaken as required to determine the cause of environmentally harmful spills/leaks and control measures identified to prevent future incidents. As required, spills will be reported to the relevant authorities. • Decommissioning and removal of all storages and pipelines. • TSF cover design to minimise infiltration. • Monitoring TSF seepage during operations for consideration in closure design. • Lysimeters and ion-specific probes will be utilised during the operational and short-term post-closure phases to validate TSF modelling assumptions. • Review of the site surface water model during operations to refine/validate assumptions and pit water balance. • Review of the merit and effectiveness of use of alkaline materials to buffer pH changes in tailings post-closure. • Consideration of a reactive transport model for seepage quality and pit lake water quality predictions. • WRD rehabilitation to a design to maximise surface stability and minimise infiltration around PAF areas. • Early rehabilitation of final outer slopes of WRD. • Rehabilitation procedures to achieve surfaces that minimise susceptibility to wind erosion. • Rehabilitation monitoring to include presence of weeds to enable appropriate management actions to be implemented.			Low
Flora and Vegetation	Indirect impacts to native vegetation from modification of groundwater flows and/or groundwater levels within SMC catchment area.	✓	✓	✓	2	1	Low				Low
Flora and Vegetation	Erosion of mine waste landforms resulting in sediment discharge and smothering of plants.		✓	✓	3	2	Low				Low
Flora and Vegetation	Vehicle movements off designated roads and tracks resulting in loss or reduced health and condition of native vegetation.	✓	✓		2	2	Low				Low
Flora and Vegetation	Habitat fragmentation or modification for conservation significant species	✓	✓		1	2	Low				Low
Flora and Vegetation	Seepage from the TSF causing groundwater mounding and indirect impacts to vegetation health and condition		✓	✓	2	2	Low				Low
Flora and Vegetation	Indirect impacts to native vegetation due to overtopping of storage ponds		✓		3	2	Low				Low
Flora and Vegetation	Indirect impacts to native vegetation from modification of surface water flows.	✓	✓	✓	3	2	Low				Low
Flora and Vegetation	Direct or indirect impacts to other significant flora	✓	✓	✓	3	2	Low				Low

Environmental Factor (EPA)	Potential Impact	Project Phase			Inherent Risk Assessment			Proposed Mitigation Measures	Residual Risk Assessment		
		Construction	Operations	Closure	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Terrestrial and Inland Waters Environmental Quality	Contamination of soils or surface water due to overtopping of the pit lake at closure.			✓	4	3	High	**Measures to Avoid**: • Re-contouring of parts of the mine pit catchment to shed surface runoff to adjacent catchments, to ensure the mine pit remains a hydraulic sink. • Chemicals, hydrocarbons and other environmentally hazardous materials will be stored and handled in accordance with the Dangerous Goods Safety Act 2004 and associated regulations. • Facilities containing hydrocarbons and/or chemicals have been designed within bunds to contain 110% of the contents of the material stored. • Pipelines containing chemical, hydrocarbons or tailings will either be double skinned or located within lined corridors. • Location of the TSF immediately upgradient of the mine pit. • TSF design to meet or exceed criteria applicable to High B consequence category facility under ANCOLD risk rating (ANCOLD 2019). • TSF design to include extreme storm storage volume equivalent to a 1 in 1,000 year AEP 72 hour duration storm with no release, evaporation or decant. • TSF design to accommodate wave run-up associated with a 1:50 AEP wind velocity with an additional freeboard of 0.5 m. • OBE and MDE design earthquake loadings of 1 in 1,000 AEP and 1 in 5,000 AEP, respectively. • Construction supervised by Dams Engineer and Specialist (where relevant) to ensure the TSF is constructed as per design with as-built drawings. • Comprehensive inspection of the TSF by Dams Engineer and Specialist (where relevant) after first year of operation, then every two years. • Intermediate inspection of the TSF by Dams Engineer annually. • Routine inspections of the TSF by operations personnel. • Implementation of a TSF operating manual. • Consideration of PMP and PMF scenarios in project infrastructure and closure designs to contain any potential seepage from PAF cells in the WRD in the pit lake catchment. • Encapsulation of PAF waste rock within the WRD and within the catchment of the mine pit. • Designs and operational practice for water storages to ensure sufficient freeboard for a 1 in 100 year 72 hour rainfall event. • All available topsoil will be stored for use in future rehabilitation. • Topsoil will be stored in low stockpiles no higher than 2 m to optimise retain the viability of seeds. • During operations, underground PAF waste rock that cannot be immediately disposed in underground workings will be stored in the pit and within the mine dewatering cone of depression and either returned to the underground void or retained in the base of the pit where it will be covered by the pit lake post closure. **Measures to Minimise**: • Review of the site surface water model during operations to refine/validate assumptions • Overland pipes will be installed within bunds with catchment sumps constructed at low elevation points as required to provide containment capacity in the case of a pipeline leak. • Flow/pressure sensors will be fitted along pipelines to enable detection of flow anomalies (i.e. pipeline leaks). • Isolation valves will be installed at appropriate intervals along pipelines. • Spill kits will be located at strategic locations throughout the project area and employees trained in their use. • Spills will be cleaned up and contaminated soils will either be remediated or removed from site by a licenced third party. • Any material issues identified during routine inspections of the TSF will be rectified. • Location of the TSF immediately upgradient of the mine pit. • Implementation of a TSF operating manual. • Routine inspections of the TSF by operations personnel. • Implementation of a project water management plan incorporating groundwater monitoring levels and quality and contingency actions • Internal drainage collection and seepage monitoring and interception downstream of TSF main embankment. • TSF embankments constructed with appropriate seepage prevention measures (low permeability cut off trench and embankment core, drainage collection on the upstream face). • Monitoring at potential TSF seepage points and seepage recovery implemented where warranted.	1	3	Medium
Terrestrial and Inland Waters Environmental Quality	Contamination of soils, surface water or groundwater due to spills.	✓	✓	✓	4	2	Medium		3	2	Low
Terrestrial and Inland Waters Environmental Quality	Contamination of soils, surface water or groundwater due to a TSF embankment failure.		✓	✓	3	4	High		1	2	Low
Terrestrial and Inland Waters Environmental Quality	Contamination of Soils, Surface Water or Groundwater due to overtopping the TSF		✓		3	3	Medium		1	2	Low
Terrestrial and Inland Waters Environmental Quality	Contamination of surface and/or groundwater due to seepage from the TSF, WRD or pit.		✓	✓	5	2	Medium		1	2	Low
Terrestrial and Inland Waters Environmental Quality	The TSF becomes listed as a contaminated site under the Contaminated Sites Act 2003		✓	✓	4	3	High		2	2	Low

Environmental Factor (EPA)	Potential Impact	Project Phase			Inherent Risk Assessment			Proposed Mitigation Measures	Residual Risk Assessment		
		Construction	Operations	Closure	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Terrestrial and Inland Waters Environmental Quality	The WRD or pit becomes listed as a contaminated site under the Contaminated Sites Act 2003		✓	✓	4	2	Medium	• Ongoing mine closure planning during the operational phase of the project, including TSF cover trials, to refine proposed designs • TSF design to meet or exceed criteria applicable to High B consequence category facility under ANCOLD risk rating (ANCOLD 2019). • Comprehensive inspection of the TSF by Dams Engineer and Specialist (where relevant) after first year of operation, then every two years. • Intermediate inspection of the TSF by Dams Engineer annually. • Multi-element analysis of representative samples of each waste rock lithology will be conducted during future resource definition drilling programs to consolidate the value of the existing waste rock database. • Closely spaced grade control drilling and trained ore spotters to identify PAF material as part of selective material management. • A standardised elemental suite will be included for all future waste rock, leachate and water analysis. • Design of PAF cells in the WRD to minimise ingress of oxygen and water. • Subject to geological assessment, installation of one monitoring bore to assist in characterising the hydrological characteristics of the fault beneath the design floor of the pit and another upstream of the pit, close to surface water monitoring site MCI. • Where practicable, topsoil will not be handled when wet to avoid damaging soil structure and composition. • A series of sediment traps will be installed in zones where surface water modelling has indicated concentrated flows may result around infrastructure. This will reduce flow energy and remove sediment from stormwater. • Vehicle movements will be restricted to authorised roads and tracks. • Project induction to contain information about not driving out of designated areas. • Diverting 'clean' surface water flows away from operational areas as far as practicable. • Siting of other mine infrastructure and associated surface water management infrastructure to minimise impacts to catchment areas. • Maintaining a wetted tailings surface during operations. • Adoption of additional dust suppression measures for the TSF surface (such as binding agents or water spray) during embankment raises and the period between cessation of operations and installation of a TSF cover. **Measures to Rehabilitate:** • Preparation and regular update of a MCP consistent with Guidelines for Preparing Mine Closure Plans (DMP and EPA 2015). • Review of the site surface water model during operations to refine/validate assumptions and pit water balance. • Early and progressive rehabilitation of final landform surfaces (TSF and WRD) where practicable. • Decommissioning and removal of all storages and pipelines. • TSF closure design which includes a water shedding, erosion resistant cover designed to minimise infiltration. • Shaping edges of the TSF cover around the valley sides such that they integrate into the hillside face. • Routine inspections of TSF by a Dams Engineer during the first five years of the closure phase. • TSF spillway included in closure design with capacity for a 1 in 100,000 year AEP and freeboard allowance. • Monitoring TSF seepage during operations for consideration in closure design. • Lysimeters and ion-specific probes will be utilised during the operational and short-term post-closure phases to validate TSF modelling assumptions. • Review of the merit and effectiveness of use of alkaline materials to buffer pH changes in tailings post-closure. • Consideration of a reactive transport model for seepage quality and pit lake water quality predictions. • WRD rehabilitation to a design to maximise surface stability and minimise infiltration around PAF areas. • Removal of all surface water storages during the decommissioning and rehabilitation stages of the project. • TSF closure design which includes a water shedding, erosion resistant cover designed to minimise infiltration.	2	2	Low
Terrestrial and Inland Waters Environmental Quality	Contamination of soils or surface water due to overtopping of surface water storages.		✓		4	2	Medium		3	2	Low
Terrestrial and Inland Waters Environmental Quality	Contamination of groundwater due to seepage from storage ponds.		✓		3	2	Low				Low
Terrestrial and Inland Waters Environmental Quality	Contamination of soils due to particulate emissions from the TSF surface.		✓		4	2	Medium		2	2	Low
Terrestrial and Inland Waters Environmental Quality	Loss of topsoil and/or viability due to erosion, compaction or inappropriate handling and storage regime.	✓	✓	✓	3	1	Low				Low
Terrestrial and Inland Waters Environmental Quality	Contamination of groundwater due to seepage from low grade stockpile or ROM pad.		✓		3	2	Low				Low

Environmental Factor (EPA)	Potential Impact	Project Phase			Inherent Risk Assessment			Proposed Mitigation Measures	Residual Risk Assessment		
		Construction	Operations	Closure	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Terrestrial Fauna	Removal and/or fragmentation of habitat.	✓	✓		5	2	Medium	**Measures to avoid:** • As far as is practicable, project elements will be sited to avoid or minimise potential denning sites for Northern Quoll. • As far as is practicable, project elements will be sited to avoid or minimise disturbance to important bat roosts identified by Kingfisher (Appendix 23). • Artificial lights will be positioned to avoid directly illuminating bat roosts, with shielding installed as appropriate. • Barbed wire fences will not be used to avoid injury or death to bat species. **Measures to minimise:** • Clearing bat foraging habitat, particularly along drainage lines, will be minimised as far as practicable. • The use of insect repelling lighting will be considered to reduce the likelihood of bats being attracted to the area. • Clearing activities will be managed to ensure clearing is strictly limited to that necessary for operations. • Implementation of a project water management plan. • Siting of other mine infrastructure and associated surface water management infrastructure to minimise impacts to catchment areas. • Where practicable, access to known/suspected bat roosts within Development Envelope will be restricted. • Speed limits will be implemented. • Vehicle traffic will be confined to defined roads and tracks. • Pre-clearance surveys for conservation significant fauna will be conducted. If any such fauna are identified and where practicable, individuals will be relocated to similar habitats outside the Development Envelope within the region. • The site induction program will provide information on fauna of conservation significance including their appearance and habitats. Training will also discuss standard operating procedures in the event of fauna interactions. • Borrow pits will be designed, constructed and rehabilitated to minimise surface water ponding after rehabilitation. • Feral animal control will be undertaken as required, in co-operation with regional control programs. • The project site induction will include information on the prevention and management of fires. • Firefighting equipment will be located on site and in all mine vehicles and personnel will be trained in fire response. • A Hot Work Permit system will be developed and implemented. • Venturex will work with the pastoralist, Traditional Owners and DFES to undertake prescribed burns and install and maintain firebreaks, if required. • Grade control drilling will be conducted prior to mining each bench to enable PAF material to be identified and segregated based on total sulphur concentration, lithology and degree of weathering. • Storage of PAF waste rock from the pit in the WRD within the cone of depression resulting from mine dewatering. • Design of PAF cells to minimise ingress of oxygen and water. • Use of monitoring and pump back bores around the TSF as required. **Measures to rehabilitate:** • Disturbed areas will be rehabilitated as they become available. • Access to the pit lake will be restricted by establishment of an abandonment bund at closure. • The final pit profile will include steep slopes, a hard substrate and no shallow areas, making it unattractive to avifauna for foraging. • TSF closure design incorporates a multiple layer, low infiltration, erosion resistant, water shedding cover. • WRD closure design incorporates an engineered cover, designed to minimise ingress of air (oxygen) and water to the encapsulated PAF area. • Preparation and regular update of a Mine Closure Plan consistent with Guidelines for Preparing Mine Closure Plans (DMP and EPA 2015).	2	2	Low
Terrestrial Fauna	Loss of conservation significant fauna due to reduced surface water quality.		✓	✓	3	2	Low				Low
Terrestrial Fauna	Light spill impacts on conservation significant fauna.	✓	✓		3	2	Low				Low
Terrestrial Fauna	Mortality of conservation significant fauna due to interaction with vehicles and equipment.	✓	✓		4	2	Medium		3	2	Low
Terrestrial Fauna	Mortality of conservation significant fauna due to interaction with poor quality surface water.		✓	✓	3	2	Low				Low
Terrestrial Fauna	Degradation or loss of fauna habitat (potential GDEs) due to poor quality seepage from TSF, WRD or pit lake		✓	✓	3	3	Medium		3	2	Low
Terrestrial Fauna	Degradation or loss of fauna habitat due to pit overtopping			✓	3	2	Low				Low
Terrestrial Fauna	Reduced access to suitable drinking water (due to changes in water quality or levels in semi-permanent pools along Sulphur Springs or Minnieritchie Creeks).	✓	✓	✓	2	2	Low				Low
Terrestrial Fauna	Reduced health and condition of conservation significant fauna (birds and bat species) due to interaction with pit lake			✓	3	2	Low				Low
Terrestrial Fauna	Mortality of conservation significant fauna due to interaction with pit lake			✓	2	2	Low				Low
Terrestrial Fauna	Degradation of fauna habitat due to altered fire regime.	✓	✓		3	3	Medium		2	2	Low

Environmental Factor (EPA)	Potential Impact	Project Phase			Inherent Risk Assessment			Proposed Mitigation Measures	Residual Risk Assessment		
		Construction	Operations	Closure	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Social Surroundings	Particulate emissions may impact visual amenity.	✓	✓		3	2	Low	**Measures to avoid:** • Mining and processing sites are located over 6.7 km away from the nearest sensitive receptor. • Active engagement with Traditional Owners will be maintained. • Implement a 30 m exclusion zone surrounding each known heritage site for protection from ground disturbing activities, as agreed with the Traditional Owners. • Access to heritage sites present near the accommodation village will be restricted (via means such as fencing and signage as agreed with Traditional Owners). • Contamination of soils, surface water and groundwater, and hence the risk of contamination of bush tucker, will be avoided through: – Project design, by locating PAF material placement adjacent to, and within the catchment of the mine pit. – Diversion of surface catchment to ensure the mine pit remains a hydraulic sink. • Environmental monitoring and remedial action in the event of any adverse trends or spills. **Measures to minimise:** • Land disturbance will be kept to the minimum necessary for development of the Proposal. • Vehicle traffic will be confined to defined roads and tracks. • Where practical, machinery movements will be confined to defined roads and tracks. • Vehicles will be required to travel at safe operating speeds on unsealed roads. • Dust will be managed by watering unsealed roads with a water cart or fixed sprays. • Occupational hygiene requirements for dust will be complied with in operational areas. • Fixed and mobile equipment will be maintained and serviced to manufacturer's specifications to ensure efficient running with minimal noise or vibration emissions. • Minimisation of disturbance footprint. • Site induction will address the values and significance of heritage sites. • Site induction will address reporting protocols for personnel if a new site of potential cultural significance is encountered. • Ongoing communication with Traditional Owners will be recorded in Stakeholder Engagement Register. **Measures to rehabilitate:** • Disturbed areas will be rehabilitated upon completion of mining activities or where progressively able to do so. • Cleared vegetation will be, where practicable, directly placed in areas undergoing rehabilitation. Where this is not practicable, it will be stockpiled and retained for use on rehabilitated areas. • Early and progressive rehabilitation. • Use of local provenance seeds. • Recovery and storage of topsoil and vegetative material within disturbed areas.			Low
Social Surroundings	Noise and vibration from mining, processing or vehicle movements have the potential to impact sensitive premises (accommodation village).	✓	✓		2	2	Low				Low
Social Surroundings	Disruption to traditional use of the land and loss of access to sites of cultural significance.	✓	✓	✓	3	4	High		1	2	Low
Social Surroundings	Disturbance of heritage sites due to uncontrolled vehicle movements.	✓	✓		3	4	High		1	2	Low
Social Surroundings	Impacts to human health as a result of cultural activities such as bush tucker consumption.	✓	✓	✓	1	2	Low				Low
Hydrological Processes	Groundwater abstraction results in a reduction in downstream water availability in Sulphur Springs Creek.		✓		4	2	Medium	**Measures to avoid:** • None **Measures to minimise:** • All groundwater abstraction will be conducted in accordance with the *Rights in Water and Irrigation Act 1914*. A site groundwater licence operating strategy, meeting requirements under this Act, will be developed and implemented to ensure sustainable use of groundwater resources. • Groundwater abstraction volumes will be limited to that required for the Proposal. The mine dewatering regime will consider rate of groundwater drawdown and location of impact of drawdown. • A project water management plan, incorporating monitoring of groundwater levels, surface water flows and water quality to identify any changes beyond those predicted and trigger management actions (Appendix 17). • Clean surface water flows will be diverted around operational areas as far as practicable to minimise impacts to downstream flows in the catchment. • Where necessary, suitable floodways, drains and culverts will be installed to transfer flow past infrastructure and return it to its natural flow path. • Disturbance of watercourse banks by construction and/or operational activities will be kept to the minimum necessary for development of the Proposal. **Measures to rehabilitate:** • Revision of the site surface water model during operations to further refine assumptions and water quality predictions and inform closure designs and strategies.	3	2	Low
Hydrological Processes	Surface water management infrastructure results in a reduction in downstream water availability in Sulphur Spring Creek.	✓	✓	✓	3	2	Low				Low
Hydrological Processes	Mine dewatering and/or groundwater abstraction lowers groundwater levels, impacting on health of potential GDEs in Sulphur Spring Creek.		✓		2	2	Low				Low

Environmental Factor (EPA)	Potential Impact	Project Phase			Inherent Risk Assessment			Proposed Mitigation Measures	Residual Risk Assessment		
		Construction	Operations	Closure	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Air Quality	Particulate emissions from materials transport (aggregate and other construction materials) impacting human health.		✓		2	2	Low	**Measures to avoid**: • Mining and processing sites are located over 6.7 km away from the nearest sensitive receptor. • Heavy machinery operators will work in air-conditioned cabins and Personal Protective Equipment (PPE) will be used as required. **Measures to minimise**: • Land disturbance will be kept to the minimum necessary for development of the Proposal. • Vehicle traffic will be confined to defined roads and tracks. • Where practical, machinery movements will be confined to defined roads and tracks. • Vehicle hygiene measures to be adopted for the concentrate storage shed (including enclosed shed and wheel wash on exit). • Imposition of speed limits for vehicle traffic. • Dust minimisation measures will be implemented using water carts and fixed sprays. • Substitution of diesel with natural gas for the majority of required power generation. • Energy efficiency and greenhouse gas emissions will be considered as part of equipment selection and purchase. • Identify and implement cleaner production initiatives to increase energy efficiency where practicable. • Appropriate emission control mechanisms will be selected to ensure that emissions comply with statutory requirements and acceptable standards. • Regular maintenance of diesel combustion equipment. • Diesel engines will be regularly serviced to maintain efficiency and minimise harmful combustion products. **Measures to rehabilitate**: • Disturbed areas will be progressively rehabilitated where possible.			Low
Air Quality	Particulate emissions due to plant and power station operation impacting receptors (human health).		✓		2	1	Low				Low
Air Quality	Concentrate emissions from concentrate containers during transport impacting human health.		✓		2	1	Low				Low
Air Quality	Gaseous emissions from vehicles, earthmoving equipment and power station resulting in air pollution.	✓	✓		3	1	Low				Low
Air Quality	Gaseous emissions from vehicles, earthmoving equipment and power station impacting on human health.	✓	✓		2	1	Low				Low
Air Quality	Odour emissions from processing plant, reagents, landfill or WWTP impacting human health.		✓		3	2	Low				Low