No.	Aspect	Risk Description	Caused By	Consequence Description	Existing Controls	Adequacy of Controls	Consequence Category	Consequence	Likelihood	Risk Rating
1	Stability	Structural failure such as excessive erosion or slumping	1. Inadequate/inappropriate final landform design 2. Poor material selection 3. Poor construction of final landform 4. Purposeful damage to TSF by human activity (malicious or not) 5. Tree establishment on TSF (e.g. Cypress Pine) 6. TSF cover/landform damaged by animal/pest activity i.e. damage to vegetation establishment	1. Excessive infiltration leading to groundwater impacted by AMD 2. Treatment required in perpetuity 3. Erosion 4. Landform failure 5. Onerous maintenance requirements post closure	1. Implementation of the Hera TSF Operations and Maintenance Manual 2. Regular inspection of the perimeter of the TSF, internal embankments and relevant structures 3. Detailed design process / Construction Quality Assurance (CQA) plan by suitably qualified person(s) 4. Geotechnical engineers to review filed TSF inspections regularly 5. Column trials and material stability testing undertaken 6. High rock content in growth media. 7. Exclusion via fencing 8. Vegetation establishment from modified ecosystem as part of cover 9. Independent surveillance report to be provided every 5 years 10. Training package for personnel undertaking inspections	Satisfactory	Damage/Loss	Moderate	Unlikely	Moderate
2	Stability	Structural failure due to inadequate slope stability	1. Poor design of embankments 2. Poor material selection 3. Poor construction 4. Static liquefaction 5. Earthquake activity	1. Release of tailings to environment 2. Significant cost for rework	1. Implementation of the Hera TSF Operations and Maintenance Manual 2. Regular inspection of the perimeter of the TSF, internal embankments and relevant structures 3. Low seismic activity region. 4. Water shedding landform - rainfall flows to decant pond 5. Detailed design process / Construction Quality Assurance (CQA) plan by suitably qualified person(s) 6. Low rainfall environment 7. Independent surveillance report to be provided every 5 years 8. Gentle slopes in place and to be reduced at closure in final landform	Satisfactory	Environment	Major	Rare	Moderate
3	Settlement	Excessive settlement leading to ponding and/or capping damage	1. Poor operational practices 2. Insufficient drying and consolidation 3. Inadequate/inappropriate final landform design	1. Excessive infiltration leading to groundwater impacted by AMD 2. Treatment required in perpetuity 3. Costs for rework / repair	1. Detailed design process / Construction Quality Assurance (CQA) plan by suitably qualified person(s) 2. Slurry thickened discharge (Operations Manual). 3. Monitoring of existing piezometers - no seepage detected	Satisfactory	Damage/Loss	Moderate	Rare	Moderate
4	Cover/capping	Excessive infiltration	1. Inadequate cover design 2. Poor material selection 3. Poor construction	1. Excessive infiltration/seepage leading to groundwater impacted by AMD (groundwater deterioration/degradation) 2. Treatment required in perpetuity	1. Implementation of the Hera TSF Operations and Maintenance Manual 2. Detailed design process for store and release cover / Construction Quality Assurance (CQA) plan by suitably qualified person(s) 3. Column trials and material stability testing continuing 4. Water shedding landform 5. Tailings consolidation reducing infiltration. 6. Conducting investigation of groundwater trends as per TARP. 7. Groundwater TARP 8. TSF design, 9. Low permeability of bedrock and tailings material 10. Landform design does not allow for ponding of water	Satisfactory	Damage/Loss	Major	Rare	Moderate
6	Surface Water	Seepage discharge to surface	1.Poor drainage design (internal and surface)	1. Seepage impact to vegetation 2. Embankment instability 3. Contamination to surface water from toe seepage or runoff (and sediment load/mobilisation)	1. Detailed design process for drainage / Construction Quality Assurance (CQA) plan by suitably qualified person(s) 2. Seepage collection trench in place 3. Five piezometers continue to be monitored and records kept 4. Regular maintenance inspections and record keeping	Satisfactory	Environment	Minor	Unlikely	Low

No.	Aspect	Risk Description	Caused By	Consequence Description	Existing Controls	Adequacy of Controls	Consequence Category	Consequence	Likelihood	Risk Rating
7	Surface Water	Overflow of decant pond	1.Poor drainage design (internal and surface) 2. inadequate maintenance	1. Contamination to surface water from decant water	1. Detailed design process for drainage / Construction Quality Assurance (CQA) plan by suitably qualified person(s) 2. Regular checks of position of decant pond as per operating manual 3. Decant Pond should be kept as low a level as possible in order reduce risk and to assist in accommodating 118,000m3 . 4. Implementation of Pollution Incident Response Management Plan	Satisfactory	Environment	Minor	Possible	Moderate
8	Stormwater Management	Surface water flow discharge to surface	1.Poor drainage design (internal and surface) 2. Poor maintenance of water structures	1. Contamination to surface water from overtopping or runoff (and sediment load/mobilisation)	1. Detailed design process for drainage / Construction Quality Assurance (CQA) plan by suitably qualified person(s) 2. Overland flow collected by clean water diversion and discharge to local creek 3. Decant pond repository for stormwater runoff event within TSF footprint 4. Decant pond only to be used for short term storage 5. Implementation of Pollution Incident Response Management Plan	Satisfactory	Environment	Minor	Possible	Moderate
9	Pipework	Failure of tailings delivery pipeline	1. Poor maintenance of pipeline 2. Incorrect operations	1. Contamination to surface water from uncontrolled release of tailings	1. Operating days inspections twice each operating shift - checklist completed 2. Monthly inspections of pumps and pipelines 3. Monthly inspections of emergency shutdowns button and pumps 4. Operator training on insepction procedures 5. Implementation of Pollution Incident Response Management Plan	Satisfactory	Environment	Moderate	Unlikely	Moderate
10	Geochemistry	Impacts of tailings geochemistry at closure unconfirmed	1. Inadequate planning and investigation 2. Runoff, seepage, infiltration, spill	1. Acid Mine Drainage impacts on seepage or cover vegetation 2. Acid Mine Drainage from the tailings material (PAF) impacting groundwater and/or surface water 3. Costs for landform rework or repair	1. Geochemical testing conducted for Federation EIS 2. All tailings to be managed and treated as PAF 3. Detailed design process TSF construction / Construction Quality Assurance (CQA) plan by suitably qualified person(s) 4. Undertake second stage of column trials (exposed to environment). 5. Consider additional options for outdoor cover trials.	Satisfactory	Damage/Loss	Moderate	Unlikely	Moderate
11	Waste Management	Inappropriate waste dispsoal from tailings processing	1. Unauthroised disposal of process waste 2. Incorrect storage and labelling of process waste	1. Additonal costs in waste disposal 2. Contamination to land	1. Licensed waste operators 2. Process plant operator training 3. Waste management plan 4. Hazardous materials management plan	Satisfactory	Reputation	Minor	Unlikely	Low
12	Rehabilitation	Significant rehabilitation requirement at end of mining	1. Limited consideration and planning for progressive rehabilitation of the TSF based on LOM	1. Significant additional costs 2. Delay to relinquish facility	1. Existing provision including monitoring and execution period 2. Detailed closure planning process iniated closer to end of LOM	Satisfactory	Damage/Loss	Minor	Unlikely	Low
13	Transport	Accidental release of tailings during road transport	1. Use of inappropriate use of equipment or vehicles	1. Cost to repair damage / spill	1. Drivers code of conduct 2. Traffic management plan 3. Implementation of Pollution Incident Response Management Plan 4. Emergency response procedures	Satisfactory	Damage/Loss	Minor	Rare	Low
14	Monitoring	Inadequate groundwater monitoring program and analysis to determine seepage impacts	1. Limited well locations 2. Limited trending of historic data 3. Less than adequate storage of historical / long term records / data 4. Groundwater quality not typically compared to tailings water quality, background or baseline	1. Long-term impacts to groundwater quality 2. Lack of confidence with regulator 3. Non-compliance with licence / lease / consent conditions	1. GWIA prepared for EIS 2. Groundwater TARP requiring investigation of levels outside of triggers 3. Ongoing groundwater monitoring	Satisfactory	Environment	Minor	Possible	Moderate
15	Safety and Human Health	Airborne dust emissions from TSF	1. Dry and windy conditions 2. Elevated / prominent landform in the area	1. Erosion 2. Landform instability 3. Impact to local amenity	1. No water can be sprayed onto TSF 2. Effective dust control on other areas around mine site 3. Community engagement regarding operations	Satisfactory	Environment	Minor	Possible	Moderate

Risk Matrix

Likelihood Rating	Consequence: Catastrophic	Major	Moderate	Minor	Low
Almost Certain	15	19	22	24	25
Likely	10	14	18	21	23
Possible	6	9	13	17	20
Unlikely	3	5	8	12	16
Rare	1	2	4	7	11

Likelihood (L)		
A	Almost Certain	Will occur at least once or multiple times each year. > 95% likelihood
B	Likely	Will occur multiple times in a year. 75% - 95% likelihood.
C	Possible	Will probably occur at least once 2-5 years. 25% to 75% likelihood.
D	Unlikely	Will occur once every 5-20 years. 5% to 25% likelihood.
E	Rare	Will occur every +20 years. <5% likelihood.

Consequence / Severity (C)						
Rank	Consequence	People	Damage / Loss	Environment	Business	Reputation
1	Catastrophic	Fatality(s).	Extreme financial loss (> US$1,500,000)	Irreparable Damage, very serious long term impairment of eco-systems	> 48 hours production delay	Major damage to reputation receiving national or international negative media OR production to cease as a result of statutory body concerns.
2	Major	Permanent or total disability resulting in an inability to work.	Major financial loss (US$0.75m - $1.5 m)	Major Impact, serious medium term environmental impact affecting whole ecosystem.	24 hr to 48 hr production delay	Major damage to reputation receiving state wide negative media OR Non-compliance with statutory requirements resulting in major fine.
3	Moderate	Lost Time Injury	Moderate financial loss (US$100 - 750k)	Moderate short term effects affecting part but not affecting whole of eco-system.	12 to 24 hr production delay	Moderate damage to reputation localised to the regional media OR Non-compliance with statutory requirements resulting in minor fine.
4	Minor	Medical treatment or injury resulting in change of normal duties.	Minor financial loss (US$20 - 100k)	Minor impact on biological or physical environment.	6 to 12 hr production delay.	Minor impact to reputation localised to community near mine OR technical divergence that **may** attract attention from statutory authorities.
5	Low	First Aid injury. Treatment on site return to normal duties.	Low financial loss (<$20k)	Limited damage to minimal area of low significance or previously disturbed areas.	< 6 hour production delay	No impact on stakeholders or reputation