



## **WILUNA URANIUM PROJECT**

### **APPENDIX 1**

## **Environmental Risk Assessment for Tailings and Mine Closure**



**Environmental Risk Assessment for Tailings and Mine Closure**

Risk Assessment - Closure Plan							
Aspect/ Activity	Event	Event Cause	Event Impact	Likelihood	Consequence	Risk Rating	Control
<b>Domain: Centipede / Millipede pit void, tailings storage area and stockpiles</b>							
Aspect - Groundwater	Seepage of metals or radionuclides into groundwater	Increased mobility of elements in waste rock as a result of mechanical disturbance.	Contamination of groundwater (reduction in beneficial use)	1	4	Medium	Include clay liner and water barriers in TSF design; Conduct routine groundwater monitoring to assess against closure criteria; periodically review solute transport model.
	Seepage of metals or radionuclides into groundwater	Underestimation of contaminants mobility/interactions	Reduction in beneficial use of groundwater; accumulation of contaminants in biota	2	4	Medium	Include clay liner and water barriers in TSF design; Conduct routine groundwater monitoring to assess against closure criteria; periodically review solute transport model.
	Seepage of metals or radionuclides into groundwater	Breach or bypassing of containment system	Reduction in beneficial use of groundwater; accumulation of contaminants in biota	2	4	Medium	Include clay liner and water barriers in TSF design; Conduct routine groundwater monitoring to assess against closure criteria; periodically review solute transport model.

Risk Assessment - Closure Plan							
Aspect/ Activity	Event	Event Cause	Event Impact	Likelihood	Consequence	Risk Rating	Control
<b>Domain: Centipede / Millipede pit void, tailings storage area and stockpiles</b>							
	Seepage of metals or radionuclides into groundwater	Loss of containment or contaminant behaviour not conforming to model.	Reduction in beneficial use of groundwater; accumulation of contaminants in biota	1	4	Medium	Include clay liner and water barriers in TSF design; Conduct routine groundwater monitoring to assess against closure criteria; periodically review solute transport model.
Aspect- Surface water	Discharge of water and/or sediment from area of breached tailings cover	Erosion of tailings cap and site flooding due to extreme rainfall	Contamination outside Project footprint	2	3	Medium	Construct tailings cover to be multi layer and ensure depth of cover and substrates used are adequate for containment
Activity: Tailings storage	Upward migration of metals or radionuclides through cover system	Inappropriate design or construction of cover system	Bioaccumulation of contaminants in soil and vegetation	3	4	High	Construct tailings cover to be multi layer and include barrier to salt upward migration. Conduct trials of cover system before finalising design.
	Release of radioactivity to the atmosphere	Insufficient depth of cover over the tailings	Localised radiation levels above background	2	3	Medium	Construct tailings cover to be multi layer and include barrier to radon emanation. Ensure depth of cover and substrates used are adequate for containment.

**Risk Assessment Matrix**

		Likelihood				
		Almost certain 5	Likely 4	Possible 3	Unlikely 2	Extremely unlikely 1
Consequence						
Very serious to catastrophic 5		Extreme	Extreme	High	High	High
Major 4		Extreme	High	High	Medium	Medium
Moderate 3		High	High	Medium	Medium	Low
Minor 2		Medium	Medium	Medium	Low	Low
Negligible 1		Low	Low	Low	Low	Low