

Appendix 3 – Monitoring Program

Site Reference Latitude Longitude Monitoring location type			Surface Water and Leachate Monitoring Locations **			Ground Water Monitoring Locations #					
			SWB	SWC	LD	GWA (RN031131)	GWE (RN022487)	GWB01 (RN044317)	GWB02 (RN044318)	GWB03 (RN044319)	GWB04 (RN044340)
			-14.5044°S	-14.5064°S	Active Tip Face	-14.5103°S	-14.5084°S	-14.5057°S	-14.5068°S	-14.5055°S	-14.5084°S
			132.242°E	132.237°E		132.241°E	132.238°E	132.239°E	132.240°E	132.242°E	132.244°E
			Upgradient	Downgradient	Leachate	Upgradient	Upgradient	Downgradient	Downgradient	Upgradient	Upgradient
Parameter	Unit	Interim Trigger Values ^{††}	Frequency								
Field Measurements											
pH	-		Quarterly								
Electrical Conductivity (EC)	µs/cm										
Dissolved Oxygen (DO)	% Saturation										
Temperature	°C										
Major Ions											
Alkalinity (CaCO ₃)	mg/L		Quarterly								
Calcium (Ca)											
Chloride (Cl)											
Magnesium (Mg)											
Potassium (K)											
Sodium (Na)											
Sulfate (SO ₄)											

Parameter	Unit	Interim Trigger Values ^{††}	Frequency
Nutrients			
Ammonium (NH ₄)	mg/L	0.01 [†]	Quarterly
Nitrate (as N)			
Total Nitrogen (TN)		0.3 [†]	
Total Phosphorus (TP)			
Metals and Metalloids			
Aluminium (Al)	µg/L		Quarterly
Cadmium (Cd)		0.2 [*]	
Chromium (CrIII)		3 [§]	
Chromium (CrVI)		1 [*]	
Copper (Cu)		1.4 [*]	
Iron (Fe)		300 [‡]	
Lead (Pb)		3.4 [*]	
Manganese (Mn)		1900 [*]	
Nickel (Ni)		11 [*]	
Selenium (Se)		11 [*]	
Zinc (Zn)		8 [*]	
Other Leachate Indicators			
Total Organic Carbon (TOC)	mg/L		Quarterly

Parameter	Unit	Interim Trigger Values ^{††}	Frequency
Total Organic Carbon (TOC)	mg/L		Quarterly
Total Dissolved Solids (TDS)			
Biological Oxygen Demand (BOD)			
Volatile acids as acetic acid (VFA)			
Other			
Total Recoverable Hydrocarbons (TRH)	µg/L		Annually
Benzene		950*	
Ethylbenzene		80*	
Toluene		95 [*]	
o-Xylene		350*	
p-Xylene		200 [*]	
Naphthalene		16*	
Polychlorinated biphenyls (PCB)			
PFOS		0.13 [#]	
PFOA		220 [#]	

Key:

* – ANZECC default guideline values for toxicants at 95% species protection applying to typical slightly – moderately disturbed systems.

† – ANZECC default guideline values for physical and chemical stressors for tropical Australia for slightly disturbed ecosystems.

‡ – ANZECC default guidelines for recreational purposes: general chemicals.

§ – ANZECC freshwater low reliability trigger value. These figures should only be used as an indicative interim working level.

– PFAS NEMP 3.0 95% species protection – slightly to moderately disturbed systems

** – Refer to Appendix 2 for map of monitoring locations.

†† – Interim trigger values apply until site-specific trigger values are established in accordance with condition 67 of EPL289-03. Trigger values apply only to down-gradient monitoring locations.

Quarterly – nominally January, April, July and October. If not flowing at the time of attempted sampling, further attempts should be made within that quarter to obtain a sample at the same location.

Annually – nominally February/March, towards the end of the wet season.