

Attachment 3 – Surface Water Monitoring Program and Trigger Values

Table 1. Parameters and Sampling Frequency

Parameter	Units	Trigger Value	SW frequency	GW frequency
Flow	kL/day	-	Monthly ⁶	Continuous ⁷
Water Level	measure	-	Monthly ⁶	-
pH	pH units	6–8.5 ¹	Monthly ⁶	Quarterly
Electrical Conductivity	µS/cm	-		
Dissolved Oxygen	% saturation	-		
Temperature	°C	-		
Turbidity	NTU	-		
Metals/Metalloids (filtered (0.45µm) and unfiltered)				
Boron	µg/L	-	Monthly (Wet Season)	Quarterly
Chromium		20 ²		
Copper		3 ³		
Lead		6.6 ³		
Nickel		200 ³		
Zinc		23 ³		
Cadmium		1.4 ³	Annually	Annually
Cobalt		14 ³		
Major Ions				
Carbonate	mg/L	-	Monthly (Wet Season)	Quarterly
Bicarbonate				
Calcium				
Magnesium				
Potassium				
Sodium				
Chloride				
Sulphate				
Nutrients				
Ammonia (NH ₃ as N)	µg/L	-	Monthly (Wet Season)	Quarterly
Nitrate				
Nitrite				
Oxides of Nitrogen				
Total Nitrogen				
Total Phosphorous				
Filterable Reactive Phosphorous				
Other				
Total Organic Carbon	mg/L	-	Monthly (Wet Season)	Quarterly
Chemical Oxygen Demand		-		
Total Suspended Solids		50 ⁴		
Total Dissolved Solids		-		

Parameter	Units	Trigger Value	SW frequency	GW frequency
Hydrocarbons				
Total Recoverable Hydrocarbons	µg/L	-	Annually	Annually
Benzene	µg/L	900 ²		
Toluene	µg/L	-		
Ethylbenzene	µg/L	-		
Xylene	µg/L	-		
Naphthalene	µg/L	90 ²		
PFAS (per-and poly-fluoroalkyl substances) (Analysis on a minimum of 28 PFAS compounds using LC-MS/MS)				
PFOS	µg/L	0.9 ⁵	Annually	Annually
PFOA	µg/L	220 ⁵		

Trigger Value Notes:

1. Based on Darwin Harbour Water Quality Objectives Shoal Bay upper area marine ambient water quality)
2. Based on Hexavalent chromium 90% species protection ANZECC Water Quality Guidelines 2018 (ANZG 2018). Analyse for Trivalent and Hexavalent Chromium if total chromium exceeds trigger value
3. Based on 90% species protection for marine waters ANZECC Water Quality Guidelines 2018 (ANZG 2018)
4. Based on IECA Best Practice Erosion and Sediment Control Guidelines
5. Based on PFAS NEMP 3.0, 95% species protection (trigger values for the latest NEMP must be used when available)

Sampling notes:

6. SWStg1&2 and SWStg5 only during Wet season. Estimate the flow at time of sampling. Water level not required
 7. Continuous monitoring using flow meter
- Monthly (Wet Season) – October to April inclusive
- Quarterly – January, April, July, October
- Annually – January
- Sampling frequencies apply to all locations within each location type unless otherwise specified.

Table 2. Sampling Locations (MGA Zone 52)

Location type	Site Code	Easting	Northing
Surface Water	SW12	709035	8630495
	SW13	709065	8630504
	SW14	709287	8630536
	SW15	709395	8630693
	SW16	709490	8630756
	SWStg1&2	709749	8629989
	SWStg5	709003	8630206
Groundwater Intercept	GWILP1	709770	8630734
	GWILP2	709770	8630733
	GWILP3	709645	8630902
	GW12A	709765	8630602
	GW15	708952	8630107
	GW16	709811	8629975