Waste Discharge Licence 248-03: Monitoring Report 2025

May 2026

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EXECUTIVE SUMMARY

Lithium Developments (Grants NT) Pty Ltd (LDGNT) operates the Grants Lithium Project on Mineral Lease 31726. LDGNT was granted Waste Discharge Licence (WDL248) on 25 July 2022, pursuant to Section 74 of the Water Act 1992. WDL248 licences the controlled discharge of mine wastewater from Mine Water Dam 1 (MWD1), via authorised Discharge Point 1 (DP1) subject to meeting licence conditions.

Two versions of WDL248 apply to this monitoring report comprising WDL248-02, which was in effect during the reporting period, and WDL248-03, which was granted on the 18 July 2025. Notably, the trigger value (TV) for total phosphorus (TP) was amended from 10 µg/L under WDL248-02 to 35 µg/L under WDL248-03 on the basis of a site specific TV for TP that was derived using robust background monitoring data inclusive of natural variation in rainfall and creek flow that represents the naturally occurring water quality in the local region. In consideration of the drafting of a WDL annual monitoring report which extends across two WDL versions, DLPE guidance is to report and discuss all notified exceedances that were reported under WDL248-02 for the reporting period but to use the TP trigger value in WDL248-03 to determine compliance with the criteria in Item 16 for the reporting period.

During the reporting period, discharge of 432.6 ML of mine wastewater through the licenced discharge point (DP1) occurred between 20 January and 14 April 2025. This represents a 15.6% increase in the of volume of mine wastewater discharged compared to the previous reporting period.

Monitoring program objectives were achieved except for marine surface water quality, macroinvertebrate, sediment and seagrass monitoring in Darwin Harbour.

Assessment of compliance with respective TVs at compliance site SW5 was undertaken in accordance with the requirements of Item 16 of WDL248-03. The assessment identified that for metals, hydrocarbons and other toxicants, all parameters complied except for filtered iron. Investigations found that filtered iron elevations above the TV at compliance site SW5 were all independent of activities undertaken by LDGNT at Grants mine and were attributed to natural wet season redox processes in seasonally inundated floodplains. For nutrients (noting that the TV for TP under WDL248-03 of 0.035mg/L was used for assessing compliance in this report) and physio-chemical parameters (DO, pH, EC, temperature), none of the median values exceeded or were not outside the range of the respective TVs and hence complied.

The riparian vegetation survey showed minimal changes and stable composition, structural characteristics and extent indicating that the mining activity is not impacting on riparian vegetation communities downstream.

The Biological and Sediment Monitoring 2025 Report concluded that the results of sampling in 2025 demonstrate that active discharge from Grants has had no significant impact on the aquatic ecosystems of waterways draining to Darwin Harbour.

Long term trend analysis found a substantial reduction in turbidity in the sediment basins in 2025 compared to the previous year and this is attributed to both re-establishment of ground cover vegetation in disturbed areas as well as a cessation of civil construction works and associated

ground disturbance. Long term trend analysis has also shown a notable decrease in TN in mine wastewater in 2025 compared to previous years; however, the reason for the decrease is not clear and may be related to the suspension of mining and processing activities during the 2025 reporting period. Mine wastewater also shows a long-term trend of increasing TP and filtered lithium but decreasing filtered aluminium.

An assessment of the environmental impact from the active discharge of mine wastewater and passive discharge of sediment basin water found the risk of such impacts occurring to be low or negligible. Additionally, Direct Toxicity Assessment of water sourced from downstream compliance point SW5 in March 2025, found no acute or chronic toxicity.

Planned actions to address exceedances or non-conformances as well as maintain or improve environmental performance have been documented including timeframes.

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List of Abbreviations

Abbreviation	Full Description
ACT	Australian Capital Territory
ALS	Australian Laboratory Services
ARMCANZ	Agriculture and Resource Management Council or Australia and New Zealand
ANZECC	Australian New Zealand Conservation Council
ANZG	Australian and New Zealand Guidelines for Fresh and Marine Water Quality
ATV	All-Terrain Vehicle
CoC	Chain of Custody
DGV	Default Guideline Value(s)
DH	Darwin Harbour
DLPE	Department of Lands, Planning and Environment
DO	Dissolved Oxygen
DP1	Discharge Point 1 (the authorised Discharge Point under WDL248)
DQO	Data Quality Objectives
EC	Electrical Conductivity
ESCP	Erosion Sediment Control Plan
GV	Guideline Value
HES	High Efficiency Sediment
HDPE	High Density Polyethylene
ID	Identification
LDGNT	Lithium Developments (Grants NT) Pty Ltd
LOR	Limit Of Reporting
ML	Mining Lease
MWD	Mine Water Dam
MWD1 C3	Mine Water Dam 1 Cell 3 (representative of mine wastewater subject to discharge under WDL248 during the reporting period)
NATA	National Association of Testing Authorities
NT	Northern Territory
NTU	Nephelometric Turbidity Unit
QA/QC	Quality Assurance / Quality Control
SB1A	Sediment Basin 1A (may also be referred to as Sed1)
SB2	Sediment Basin 2
SB3	Sediment Basin 3
SB4	Sediment Basin 4
SB5A	Sediment Basin 5 (may also be referred to as Sed5)
SSTV	Site Specific Threshold Values
SW	Surface Water
TKN	Total Kjeldahl Nitrogen
TN	Total Nitrogen
TP	Total Phosphorus
TV	Trigger Values
WDL	Waste Discharge License

1 Introduction

1.1 Background

Lithium Developments (Grants NT) Pty Ltd (LDGNT) operates the Grants Lithium Project (GLP) on Mineral Lease (ML) 31726. GLP commenced construction during quarter 4 of 2021, in accordance with Authorisation 1021-01. The approved Mining Management Plan, and supporting Water Management Plan, document the mining activities and water and wastewater management strategies to be implemented at GLP. One water management strategy is to discharge excess mine water and mine wastewater to an unnamed tributary which runs east of GLP, and then flows north, ultimately discharging to the West Arm of Darwin Harbour.

LDGNT holds Waste Discharge Licence (WDL) 248, pursuant to Section 74 of the Water Act 1992 (NT). WDL248-01 was granted on 25 July 2022 and licences the controlled discharge of mine wastewater from Mine Water Dam 1 (MWD1), via authorised Discharge Point 1 (DP1), subject to meeting licence conditions. WDL248-02 (see Appendix A) was granted on 20 December 2023 after an application for amendment submitted on 6 September 2023. An application to renew WDL248-02 was submitted on 29 April 2025 and WDL248-03 (see Appendix B) was granted on 18 July 2025. The Statement of Reasons (refer https://ntepa.nt.gov.au/_media/waste-and-pollution/register/wdl/mining/lithium-developments/wdl248-statement-of-reasons.pdf) relevant to the decision to grant renewed licence WDL248-03 includes an explanation of factors considered in deciding to amend the WDL including changes. Notably, the trigger value for total phosphorus (TP) was amended from 0.01mg/L under WDL248-02 to 0.035mg/L under WDL248-03 on the basis of a site specific TV for TP that has been derived using robust background monitoring data inclusive of natural variation in rainfall and creek flow that represents the naturally occurring water quality in the local region.

Another notable change relevant to WDL248-03 relates to the addition of upstream surface water monitoring point Hang Gong. Monitoring point Hang Gong is located upstream of compliance site SW5; however, Hang Gong's catchment is separate from LDGNT's Grants mine and has been disturbed consequent to historical mining and exploration activities. The inclusion of Hang Gong allows for improved understanding and interpretation of surface water chemistry at compliance site SW5 and assessment of environmental impact from the Licenced Action under WDL248.

In consideration of the drafting of a WDL annual monitoring report which extends across two WDL versions, DLPE guidance is to report and discuss all notified exceedances that were reported under WDL248-02 for the reporting period but to use the TP trigger value in WDL248-03 to determine compliance with the criteria in Item 16 for the reporting period. Additionally, DLPE guidance was that WDL monitoring report requirements under Condition 40 of WDL248-03 are to take precedence. It is also prudent to note that monitoring for the reporting period was required to be undertaken in accordance with Appendix 3 - 5 of WDL248-02. Having regard to the change from WDL248-02 to WDL248-03, for the balance of this report references are made to WDL248, WDL248-02 and WDL248-03 throughout the report and such references are specific and intentional in the context applied.

1.2 Scope and Purpose

The purpose of this WDL Monitoring Report is to fulfil the reporting requirements of WDL248-03 Item 13, which stipulates the Monitoring Report is due within 10 business days of each Anniversary Date of the licence (i.e., within 10 business days of 25 July). Condition 40 states:

The licensee must ensure that each Monitoring Report:

(40.1) is prepared in accordance with the requirements of the Administering Agency 'Guideline for Reporting on Environmental Monitoring' (or any other guideline as adopted by the Administering Agency from time to time);

(40.2) includes a tabulation, in Microsoft ® Excel ® format or another format requested by the Administering Agency, of all monitoring data required to be collected in accordance with this licence for the preceding 12-month period;

(40.3) includes a tabulation of monthly and annual contaminant loads discharged from the authorised discharge point specified in Item 5 for the preceding 12-month period. Contaminant loads must be calculated for metals, metalloids, nutrients and other parameters (excluding field parameters) listed in the monitoring program specified in Item 11. The calculations must be based on the daily discharge volume and the concentration of contaminant present in the discharge on that day. On the days when a sample was not taken then the concentration of the contaminant must be estimated using Linear Interpolation methodology;

(40.4) includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the Licensed Action over a minimum period of three years (of part thereof);

(40.5) includes a summary of any investigations undertaken by the Licensee in accordance with this licence for the preceding 12-month period; and.

(40.6) includes an assessment of environmental impact from the Licenced Action.

The monitoring required to be undertaken is detailed in Table 1-1 below.

Table 1-1 Summary of all monitoring to be undertaken (WDL248-02)

Category	Sample Site	Easting	Northing	Surface water quality[1]	Sediment quality	Macroinvertebrate	Riparian Vegetation	Seagrass
Freshwater stream	GDS SW1	693239	8599446	Daily, weekly, monthly	Annually	-	-	-
	GDS SW2	692989	8600073	Daily, weekly, monthly	Annually	-	-	-
	GUS SW4	693903	8599235	Daily, weekly, monthly	Annually	-	-	-
	GUS SW7	691498	8598943	Daily, weekly, monthly	Annually	-	-	-
	GDS SW8	692498	8599951	Daily, weekly, monthly	Annually	-	-	-
WDL compliance site	GDS SW5	693374	8600709	Daily, weekly, monthly	Annually	Annually	-	-
Sediment basins	Sed1	693167	8598623	Weekly, monthly	-	-	-	-
	Sed2	692657	8599847	Weekly, monthly	-	-	-	-
	Sed3	692155	8599446	Weekly, monthly	-	-	-	-
	Sed4	691928	8598961	Weekly, monthly	-	-	-	-
	Sed5	692775	8598072	Weekly, monthly	-	-	-	-
WDL discharge point	MWD1	693030	8598504	Prior to discharge, daily, weekly, monthly	Annually	-	-	-
Pit water body	PIT	693037	8598990	Monthly	-	-	-	-
Darwin Harbour	GDS DH1	694262	8603365	Monthly	Annually	Annually	-	Annually
Riparian vegetation	MVS1	694035	8601220	-	-	-	Annually	-
	RVS2	693834	8601132	-	-	-	Annually	-
	SVS3	693706	8600969	-	-	-	Annually	-

[1] Frequency of surface water quality monitoring depends on discharge. Freshwater sites will only be sampled when the watercourse is flowing, and Darwin Harbour sites will only be sampled for surface water quality during the wet season months.

1.3 Reporting Period

Item 10 of WDL248-03 specifies the Monitoring Report is for the reporting period 1 May to 30 April 2025.

1.4 Certification

I Liam Franklyn, Chief Operating Officer, have reviewed this report and I confirm that to the best of my knowledge and ability all the information provided in the report is true and accurate.

2 Activities Within Reporting Period

2.1 Mining Activities

LDGNT provided notice of intention to transition to Care and Maintenance to the Minister on 30 April 2024. Last material movement from the Grants pit occurred on 4 January 2024 and last processing of ore occurred on 4 June 2024. The Grants Lithium Project has remained in care and maintenance since 4 June 2024 and no mining, crushing or processing activities have been carried out since that time, nor civil construction activities.

2.2 Wastewater discharges

LDGNT initiated the discharge of mine wastewater on 20 January 2025 and ceased discharge on 14 April 2025. Table 2-1 provides the daily flow rate, daily volume and cumulative discharge volumes.

Table 2-1 DP1 Discharge Flow Rates and Volumes

Jan-25				Feb-25			
Date	Daily (ML)	Daily (L/s)	Cumul. (ML)	Date	Daily (ML)	Daily (L/s)	Cumul. (ML)
1				1	7.38	85.4	42.87
2				2	2.47	28.6	45.35
3				3	1.73	20.1	47.08
4				4	3.27	37.8	50.35
5				5	2.16	25.0	52.51
6				6	8.73	101.1	61.24
7				7	10.37	120.1	71.61
8				8	7.78	90.1	79.39
9				9	6.90	79.8	86.29
10				10	9.84	113.9	96.13
11				11	7.53	87.2	103.7
12				12	7.06	81.7	110.7
13				13	5.40	62.5	116.1
14				14	8.15	94.4	124.3
15				15	8.40	97.2	132.7
16				16	7.63	88.3	140.3
17				17	5.60	64.8	145.9
18				18	5.10	59.1	151.0
19				19	3.86	44.6	154.9
20	0.17	1.9	0.17	20	4.50	52.1	159.4
21	1.91	22.2	2.08	21	4.50	52.1	163.9
22	2.59	29.9	4.67	22	3.86	44.7	167.7
23	2.59	29.9	7.26	23	4.30	49.8	172.0
24	0.82	9.5	8.08	24	3.86	44.7	175.9
25	0.09	1.0	8.17	25	3.86	44.7	179.7
26	0.09	1.0	8.25	26	5.86	67.8	185.6
27	0.09	1.0	8.34	27	5.86	67.8	191.5
28	1.70	19.7	10.03	28	3.86	44.7	195.3
29	8.65	100.2	18.68				
30	7.95	92.0	26.63				
31	8.86	102.5	35.49				

Mar-25				Apr-25			
Date	Daily (ML)	Daily (L/s)	Cumul. (ML)	Date	Daily (ML)	Daily (L/s)	Cumul. (ML)
1	7.28	84.3	202.6	1	6.00	69.48	358.4
2	4.96	57.5	207.6	2	5.13	59.40	363.5
3	3.86	44.7	211.4	3	5.15	59.55	368.7
4	2.16	25.0	213.6	4	4.91	56.84	373.6
5	2.31	26.7	215.9	5	4.14	47.95	377.7
6	2.59	29.9	218.5	6	4.14	47.95	381.8
7	2.59	29.9	221.1	7	6.65	76.96	388.5
8	2.59	29.9	223.7	8	7.18	83.07	395.7
9	7.00	81.1	230.7	9	9.80	113.43	405.5
10	8.65	100.1	239.3	10	8.11	93.87	413.6
11	3.88	44.9	243.2	11	6.65	77.01	420.2
12	6.34	73.4	249.5	12	4.72	54.59	424.9
13	8.14	94.3	257.7	13	4.72	54.59	429.7
14	6.20	71.7	263.9	14	2.95	34.16	432.6
15	3.86	44.7	267.7	15			
16	3.86	44.7	271.6	16			
17	6.47	74.9	278.1	17			
18	5.30	61.3	283.4	18			
19	2.30	26.6	285.7	19			
20	3.10	35.9	288.8	20			
21	4.50	52.1	293.3	21			
22	5.10	59.0	298.4	22			
23	5.10	59.0	303.5	23			
24	5.10	59.0	308.6	24			
25	5.10	59.0	313.7	25			
26	5.10	59.0	318.8	26			
27	5.10	59.0	323.9	27			
28	6.35	73.5	330.2	28			
29	7.13	82.5	337.3	29			
30	7.50	86.8	344.8	30			
31	7.56	87.5	352.4				

Daily and cumulative volumes discharged for the reporting period are shown in Figure 2-1. A total of 432.6 ML of water was discharged from DP1.

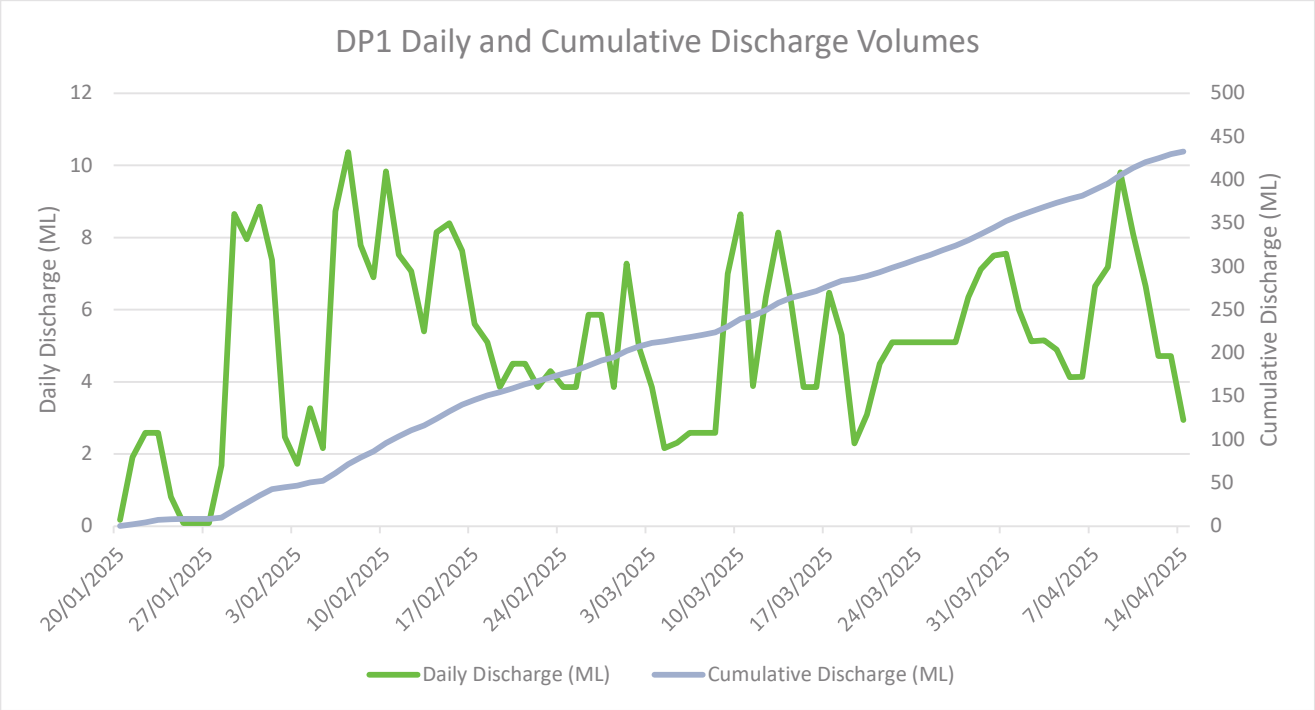


Figure 2-1 DP1 daily and cumulative discharge volumes

3 Monitoring Program

This section provides a summary of the WDL248-02 Monitoring Program, consistent with:

- Appendix 3 of WDL248-02: Surface water monitoring program
- Appendix 4 of WDL248-02: Fluvial sediment monitoring program, and
- Appendix 5 of WDL248-02: Biota monitoring program.

3.1 Surface Water Monitoring

The surface water monitoring program involves the regular monitoring of surface water sites upstream and downstream of the discharge point during discharge, the weekly monitoring of sediment basins during discharge, and monthly monitoring of the pit water. Discharge monitoring was undertaken at MWD1, close to DP1, the licenced discharge point, prior to discharge, and daily and weekly during discharge.

The compliance point for WDL248 is GDS SW5. The locations of surface water monitoring sites, sampled in accordance with WDL248 are shown on Figure 3-1. A summary of sites, analytes and monitoring frequency are provided in Table 3-1.

All surface water sampling is in accordance with relevant standards and guidelines including:

- Australian/New Zealand Standard on Water Quality Sampling - Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (AS/NZS 5667.1:1998/2016), Standards Australia, New South Wales.
- Australian Standard on Water Quality Sampling - Part 6: Guidance on sampling of rivers and streams (AS/NZS 5667.6:1998), Standards Australia, New South Wales.

- Australian/New Zealand Standard on Water Quality Sampling - Part 9: Sampling Guidance on sampling from marine waters (AS/NZS 5667.9:1998/2016), Standards Australia, New South Wales.
- ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia.
- EcOz Standard Operating Procedure Surface Water Sampling - update July 2020.

Freshwater sites were accessed on foot or via ATV, and samples collected from the side of the watercourse. Watercourses were only sampled when flowing.

The methodology for sampling of marine sites is to access via marine vessel (boat), and grab samples obtained from ~30 cm below the surface of the water, using sample poles.

Field parameters were measured in-situ using calibrated field equipment. Laboratory samples were collected in laboratory supplied, suitably treated containers, and stored chilled (in esky with ice bricks or portable fridge) until the samples can be dispatched to the laboratory. All samples were submitted to a NATA accredited laboratory, with Chain of Custody (CoC) forms provided to allow for the tracking of samples.

All sampling equipment was maintained and cleaned between sample sites to avoid cross contamination. Further details of sample methods are provided in the WDL248 Monitoring Program (Appendix C).

The names of all monitoring locations have been abbreviated for the purpose of preparing this report. For example, GDS SW1 is referred to as SW1. This has been done to avoid confusion between sites. For all parameter values less than the laboratory limit of reporting (LOR), half of the LOR was used for statistical analysis and load calculations.

3.2 Sediment Monitoring

Sediment samples were collected at four sites as described in Table 3-2. The sediment sampling locations are shown on Figure 3-1. Sediment samples were collected annually, during recessional flows (late wet season). Sediment sampling and analysis was undertaken in accordance with relevant standards and guidelines, including:

- Australian Standard on Water Quality Sampling - Part 19: Guidance on sampling of marine sediments (ISO 5667.19:2004)
- Australian Standard on Water Quality Sampling - Part 12: Guidance on sampling of bottom sediments (ISO 5667.12:1999)
- Recommendations for sampling and analysis of Darwin Harbour sediment (Munksgard 2013) and
- Simpson & Batley (2016): Sediment Quality Assessment.

The mine and freshwater sites were sampled in early June 2025 using a trowel. A 1 kg of sample at each location was collected to permit particle size distribution analysis.

In accordance with Appendix 4 of WDL248-02 samples were analysed for:

- Particle size distribution
- pH
- Electrical Conductivity (EC)

- Moisture content
- Metals:
    - Aluminium (Al)
    - Arsenic (As)
    - Cadmium (Cd)
    - Chromium (Cr)
    - Copper (Cu)
    - Iron (Fe)
    - Lead (Pb)
    - Lithium (Li)
    - Mercury (Hg)
    - Nickel (Ni)
    - Zinc (Zn), and
- Sulphate (SO_4), chloride (Cl), calcium (Ca), sodium (Na), potassium (K) and magnesium (Mg).

Metal analysis was completed on the <63 µm fraction. For all parameter values less than the laboratory limit of reporting (LOR), half of the LOR was used for statistical analysis and load calculation.

3.3 Biota monitoring

A summary of the biota monitoring program is provided in Table 3-3. A short description of each program is provided below. Technical reports, providing detailed methodology, results and interpretation of data collected during this reporting period are provided as appendices to this report.

3.3.1 Macroinvertebrates

Five monitoring locations, including a reference site (BP4 located on an unnamed creek upstream of Cox Peninsula Road), an upstream site (UC3 located on a tributary entering the unnamed creek between UC2 and GDS SW5) and three downstream sites (UC2, GDS SW5 and UC1) were sampled in early June 2025. The sampling locations are shown on Figure 3-2.

Sampling was consistent with the protocols outlined in the Darwin-Daly AUSRIVAS sampling manual (Lamche, 2007). Surface water and sediment samples were collected concurrently to facilitate the interpretation of data. Sediment samples were bank sieved to 2 mm and analysed for total metal and metalloid concentrations. Metal and metalloids (total and filtered), major ions and alkalinity, and nutrient concentrations were determined in water.

The univariate macroinvertebrate indices assessed at each site included:

- Relative abundance
- Taxa richness (family)
- PET richness,
- SIGNAL-2 and
- Community composition.

A detailed description of the macroinvertebrate monitoring program can be found in Section 5 of the WDL248 Monitoring Program (Appendix C) and in the Biological and Sediment Monitoring 2025 Report (Appendix F).

Surface water and sediment samples were collected concurrently to facilitate the interpretation of data. Sediment samples sieved to 2 mm and analysed for total metal and metalloid concentrations. Metal and metalloids (total and filtered), major ions and alkalinity, and nutrient concentrations were determined in water.

3.3.2 Riparian vegetation

Riparian vegetation occurs along watercourses and surface water features and are significant vegetation communities as they are spatially restricted and provide habitat to a relatively large number of species (DENR, 2019). Riparian vegetation monitoring was undertaken in accordance with WDL248 and WDL248 Monitoring Program to detect any changes to riparian vegetation health or extent which could occur from the discharge of mine wastewater from MWD1. There are two components to the survey:

- a drone survey; and
- ground based riparian vegetation site survey (which included photo-point monitoring).

The post wet-season riparian vegetation assessments were undertaken in May 2025. The drone survey was undertaken along a predefined flight path to map riparian vegetation extent and density and detect any changes in riparian vegetation condition since the baseline survey in 2019. The drone survey was designed to survey the three different riparian vegetation communities captured in the baseline study (EcOz 2019) – mangrove, riparian and swamp. Drone images were imported to create an orthomosaic image, and analysis was undertaken to assess vegetation extent and density (health) over time.

Riparian vegetation site assessments (on-ground) were undertaken at three established potential impact sites (MVS1, RVS2, SVS3) to record riparian vegetation species diversity and composition. The site locations are shown on Figure 3-3. Vegetation and photo monitoring data was compiled into a database that can be added to over time as monitoring data is collected annually. The vegetation data was analysed by comparing 2019 baseline data with the 2025 survey results to assess if there were any changes in vegetation health or the extent of the riparian vegetation.

A detailed description of the riparian vegetation monitoring program can be found in Section 4 of the WDL248 Monitoring Program (Appendix C) and the Biological and Sediment Monitoring Report 2025 (Appendix G).

Figure 3-1 WDL248 Monitoring and Compliance Locations

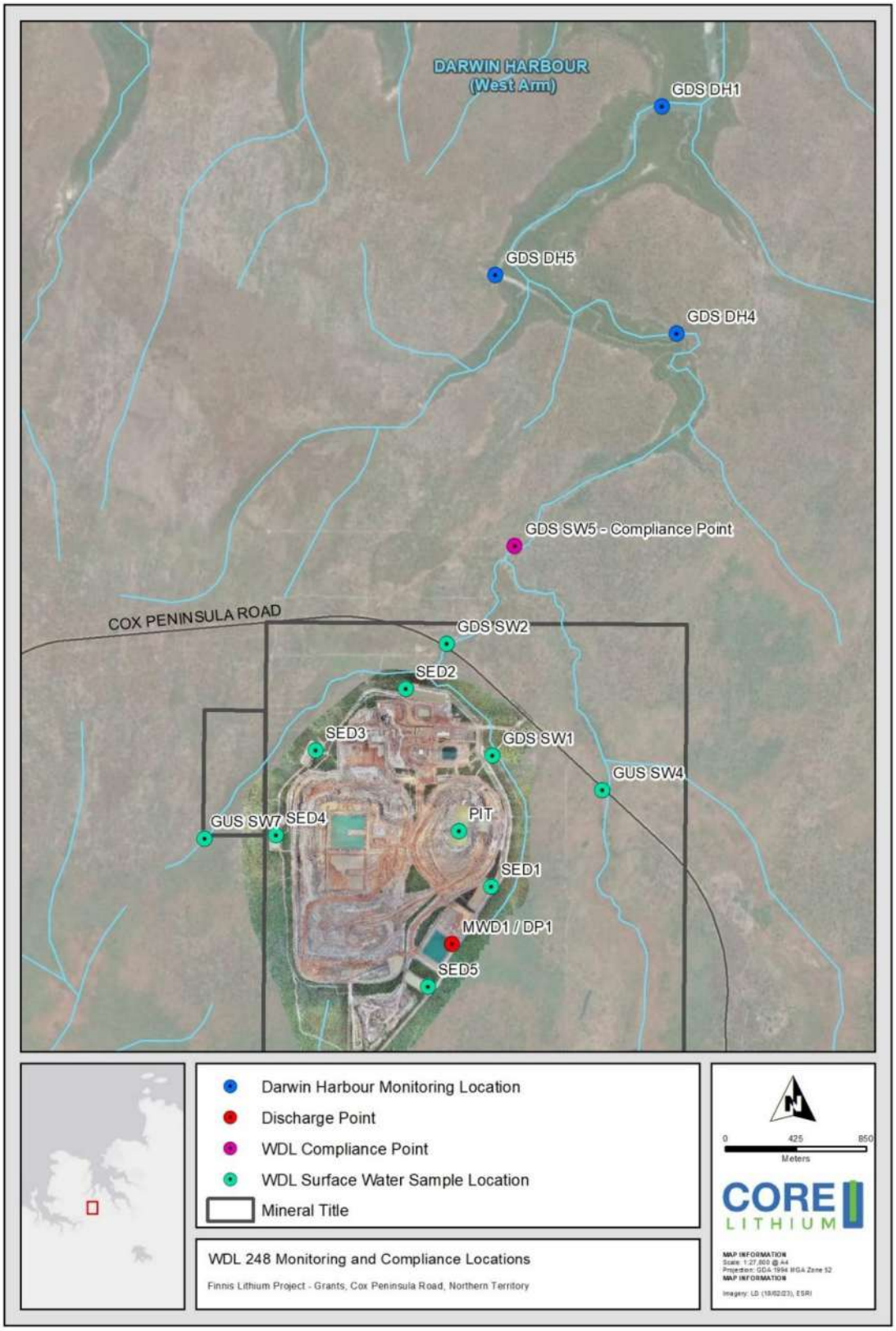


Figure 3-2 Macroinvertebrate sampling locations

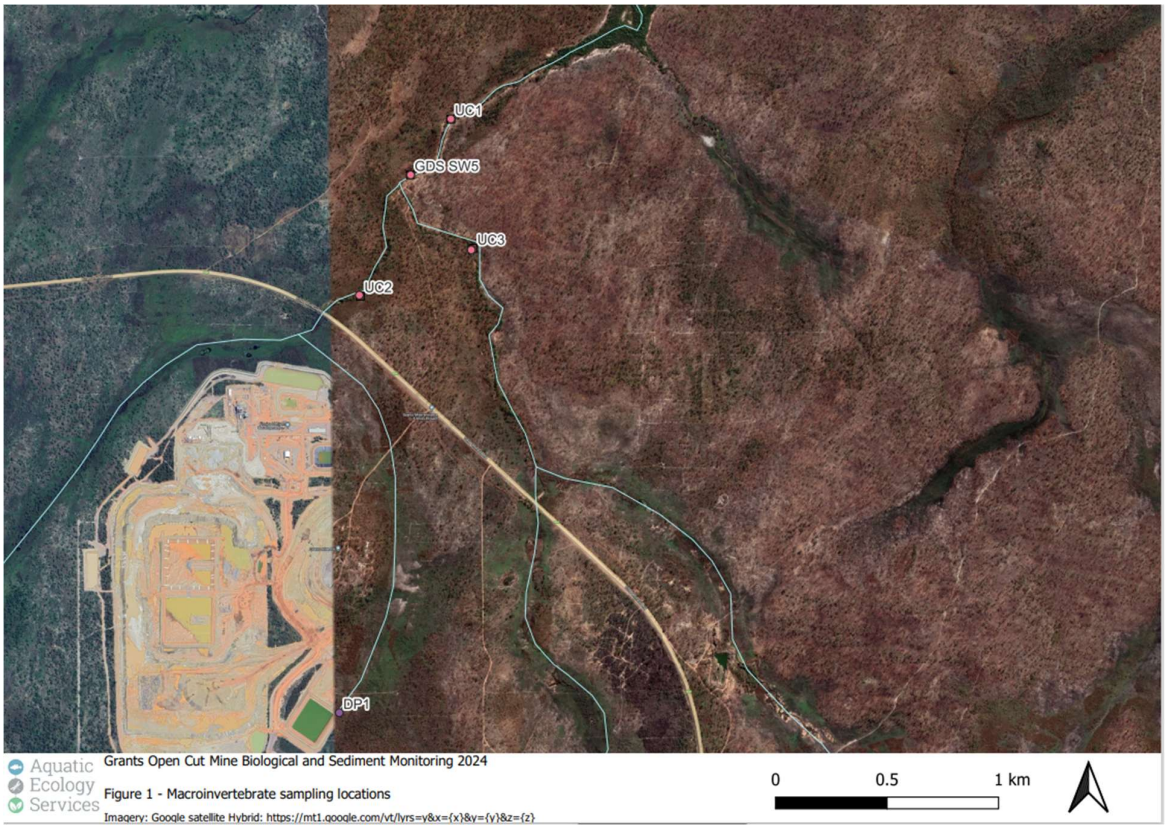


Figure 3-3 WDL248-02 Riparian Vegetation Monitoring Locations

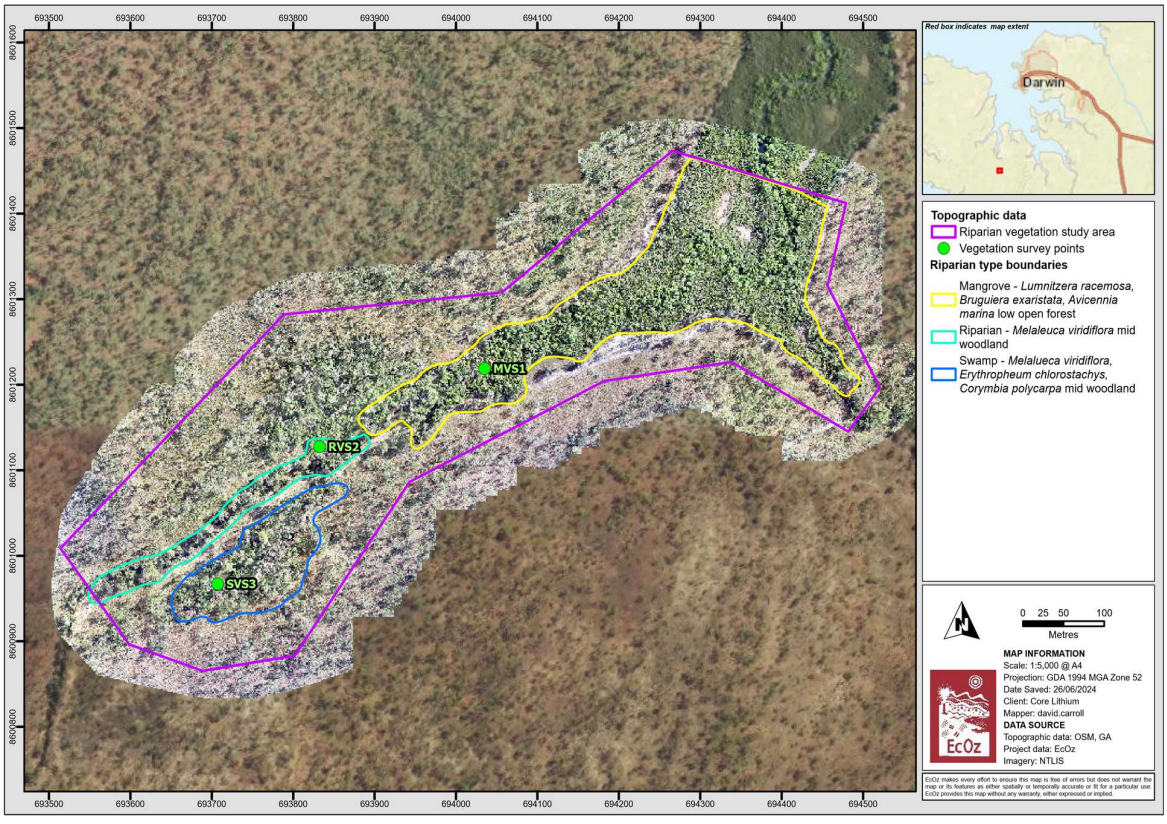


Table 3-1 Surface Water Monitoring Program (WDL248-02)

				Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Downstream Surface Water 4	Grants Downstream Surface Water 5	Grants Downstream Surface Water 7	Sediment Basins 1- 5					Discharge Point	Mine Pit Sump	Grants Downstream Darwin Harbour 1
Sampling Points																
Site Code				GDS SW1	GDS SW2	GDS SW4	GDS SW5	GDS SW7	Sed1	Sed2	Sed3	Sed4	Sed5	MWD1[1]	Pit	GDS DH1
Easting				693239	692989	693903	693374	691498	693167	692657	692155	691928	692775	693030	693037	694262
Northing				8599446	8600073	8599235	8600709	8598943	6598623	8599847	8599446	8598961	8598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**												
Field Parameters																
Flow		kL/day	In situ	D	D	D	D	D	N/A	N/A	N/A	N/A	N/A	C	N/A	N/A
Water Level		Measure		D	D	D	D	D	N/A	N/A	N/A	N/A	N/A	P, W	N/A	N/A
pH	pH	pH		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Electrical Conductivity	EC	µS/cm		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Turbidity	NTU	NTU		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Temperature	Temp	°C		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Oxidation Reduction Potential	OR	mV		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Dissolved Oxygen	DO	% sat.		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Nutrients																
Ammonia	NH_3	µg/L	Unfiltered (Excluding FRP)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Oxides of Nitrogen	NO_x			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Nitrate	NO_3			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Total Nitrogen	TN			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Total Phosphorus	TP			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Filterable Reactive Phosphorus	FRP			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Chlorophyll a	Chl-a			W	W	W	W	W	N/A	N/A	N/A	N/A	N/A	N/A	N/A	M[3]
Metals and Metalloids																
Aluminium	Al	µg/L	Total and Filtered (0.45µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Arsenic	As			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Cadmium	Cd			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Chromium	Cr			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Copper	Cu			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Iron	Fe			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Lead	Pb			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]

			Sampling Points	Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Downstream Surface Water 4	Grants Downstream Surface Water 5	Grants Downstream Surface Water 7	Sediment Basins 1- 5					Discharge Point	Mine Pit Sump	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GDS SW4	GDS SW5	GDS SW7	Sed1	Sed2	Sed3	Sed4	Sed5	MWD1[1]	Pit	GDS DH1
			Easting	693239	692989	693903	693374	691498	693167	692657	692155	691928	692775	693030	693037	694262
			Northing	8599446	8600073	8599235	8600709	8598943	6598623	8599847	8599446	8598961	8598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**												
Lithium	Li	µg/L	Total and Filtered (0.45µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Mercury	Hg			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Nickel	Ni			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Zinc	Zn			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Full elemental scan	-			A	A	A	A	A	A	A	A	A	A	A	A	A
Treatment Reagents (Item 9 Conditions on Discharge)																
Acrylamide	C_3H_5NO	µg/L	Total and Filtered (0.45µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Other																
Sulphate	SO_4	µg/L	Filtered (0.45µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Calcium	Ca			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Chloride	Cl			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Sodium	Na			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Potassium	K			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Magnesium	Mg			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Carbonate	CO_3^{2-}			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Bicarbonate	HCO_3			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Total Dissolved Solids	TDS			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Total Suspended Solids	TSS		Unfiltered	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]

Key:

P = prior to discharge

C = continuous

*D = within 24 hours of commencement of discharge **and** daily during discharge. When no discharge is occurring monitoring will be on a weekly basis.*

*W = within 24 hours of discharge **and** weekly during discharge. When no discharge is occurring monitoring will be on a monthly basis.*

F = weekly whilst discharging from sediment basins, Monthly during Wet Season irrespective of discharge.

M = monthly

A = Annually, at end of Wet Season on recessional flows.

[1] The sampling point in MWD1 will be located close to DP1 to ensure it is representative of discharge water quality.

[2] This sampling is only required where the licensee has conducted water treatment onsite using flocculants containing Acrylamide.

[3] During Wet Season only.

Table 3-2 Fluvial Sediment Monitoring Program (WDL248-02)

	Sampling Points	Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Downstream Surface Water 4	Grants Downstream Surface Water 5	Grants Downstream Surface Water 7	Discharge Point	Mine Pit Sump
	Site Code	GDS SW1	GDS SW2	GDS SW4	GDS SW5	GDS SW7	MWD1[1]	Pit
	Easting	693239	692989	693903	693374	691498	693030	693037
	Northing	8599446	8600073	8599235	8600709	8598943	8598504	8598990
PARAMETER	Abbrev.	Units	Analysis	FREQUENCY						
Environmental Field Data										
pH	pH	pH		A	A	A	A	A	A	A
Electrical Conductivity	EC	µS/cm		A	A	A	A	A	A	A
Moisture Content		%		A	A	A	A	A	A	A
Particle Size Distribution	PSD	%	<63µm >=63 µm & <=2mm >2mm	A	A	A	A	A	A	A
Aluminium	Al	mg/kg	<63µm sediment fraction	A	A	A	A	A	A	A
Arsenic	As			A	A	A	A	A	A	A
Cadmium	Cd			A	A	A	A	A	A	A
Chromium	Cr			A	A	A	A	A	A	A
Copper	Cu			A	A	A	A	A	A	A
Iron	Fe			A	A	A	A	A	A	A

	Sampling Points	Grants	Grants	Grants	Grants	Grants	Discharge	Mine Pit
	Site Code	GDS SW1	GDS SW2	GDS SW4	GDS SW5	GDS SW7	MWD1[1]	Pit
	Easting	693239	692989	693903	693374	691498	693030	693037
	Northing	8599446	8600073	8599235	8600709	8598943	8598504	8598990

PARAMETER	Abbrev.	Units	Analysis	FREQUENCY						
Environmental Field Data										
Lead	Pb	mg/kg	<63µm sediment fraction	A	A	A	A	A	A	A
Lithium	Li			A	A	A	A	A	A	A
Mercury	Hg^{-}			A	A	A	A	A	A	A
Nickel	Ni_3			A	A	A	A	A	A	A
Zinc	Zn			A	A	A	A	A	A	A
Other										
Sulphate	SO_4	mg/kg	Soluble ion extract	A	A	A	A	A	A	A
Calcium	Ca			A	A	A	A	A	A	A
Chloride	Cl			A	A	A	A	A	A	A
Sodium	Na			A	A	A	A	A	A	A
Potassium	K			A	A	A	A	A	A	A
Magnesium	Mg			A	A	A	A	A	A	A

Key:

A = Annually during recessional flow (late wet season / early dry season)

Table 3-3 Biota Monitoring Program (WDL248-02)

Project Name	Locations	Project Description	Report Frequency
Seagrass Assessment	West Arm, Darwin Harbour	Seagrass monitoring to determine whether any observed change in seagrass distribution or composition has occurred in the marine waters of West Arm, Darwin Harbour. Monitoring should aim to determine whether any change identified is naturally occurring or related to mine operations.	Annually
Vegetation Monitoring	Areas downstream of ML 31726	Monitoring of vegetation downstream of ML31726 to determine if mining activities are impacting riparian vegetation communities.	Annually
Macroinvertebrate study	Darwin Harbour and Areas downstream of ML 31726	Survey of macro-invertebrate abundance and diversity in aquatic ecosystems. Data is used to monitor potential impacts from mine operations.	Annually during recessional flow (late Wet Season / early Dry Season)

3.4 Assessment criteria and non-compliance reporting

A summary of the assessment criteria, as per WDL248-02, is provided in Table 3-4.

Table 3-4 WDL248-02 Discharge Trigger Values

			Sampling Points	Compliance
			Site Code	GDS SW5
			Easting	693374
			Northing	8600709
Parameter	**Abbrev.**	**Units**	**Analysis**	**Trigger Values**
Environmental Field Data				
pH	pH	pH	In situ	5.2-6.6[2]
Electrical Conductivity	EC	µS/cm		250[1]
Turbidity	NTU	NTU		12[3]
Dissolved Oxygen	DO	% sat.		50-100[2]
Nutrients				
Total Nitrogen	TN	µg/L	Unfiltered	400[3]
Total Phosphorus	TP			10[3 & 6]
Metals and Metalloinds[5]				
Aluminium	Al	µg/L	Total and Filtered (0.45 µm)	70[3]
Arsenic	As			13[1]
Cadmium	Cd			0.2[1]
Chromium	Cr			1[1]
Copper	Cu			1.4[1]
Iron	Fe			110[3]
Lead	Pb			3.4[1]
Lithium	Li			430[4]
Mercury	Hg			0.6[1]
Nickel	Ni			11[1]
Zinc	Zn			8[1]

Key:

[1] ANZG (2018) 95% species protection, freshwater.

[2] 20th and 80th percentile of background data for surface water quality as detailed at paragraph 6.2 of the Water Management Plan and data provided in support of amendment application 20 September 2023.

[3] 80th percentile of background data for surface water quality as detailed at paragraph 6.2 of the Water Management Plan and data provided in support of amendment application 20 September 2023.

[4] Ecotoxicity Assessment, sections 8.3 and 8.4 of the Water Management Plan.

[5] SSTVs for metals and metalloids apply to filtered samples only.

[6] The Trigger Value for Total Phosphorus under WDL248-03 has been amended to 35µg/L.

4 Results and Discussion

4.1 Surface Water

4.1.1 Flow and water level

Flow and water depth is recorded at the downstream compliance point (GDS SW5) by a telemetered gauging station. Sustained flow at the compliance point was first recorded on 31 December 2024 and ceased on 7 May 2025.

Table 4-1 Summary statistics of creek flow as measured at GDS SW5

Grants Downstream Sample Site – SW5		
	Flow (L/s)	Depth (m)
Minimum	437.7	0.28
Maximum	15333.5	1.92
Mean	1144.1	0.57

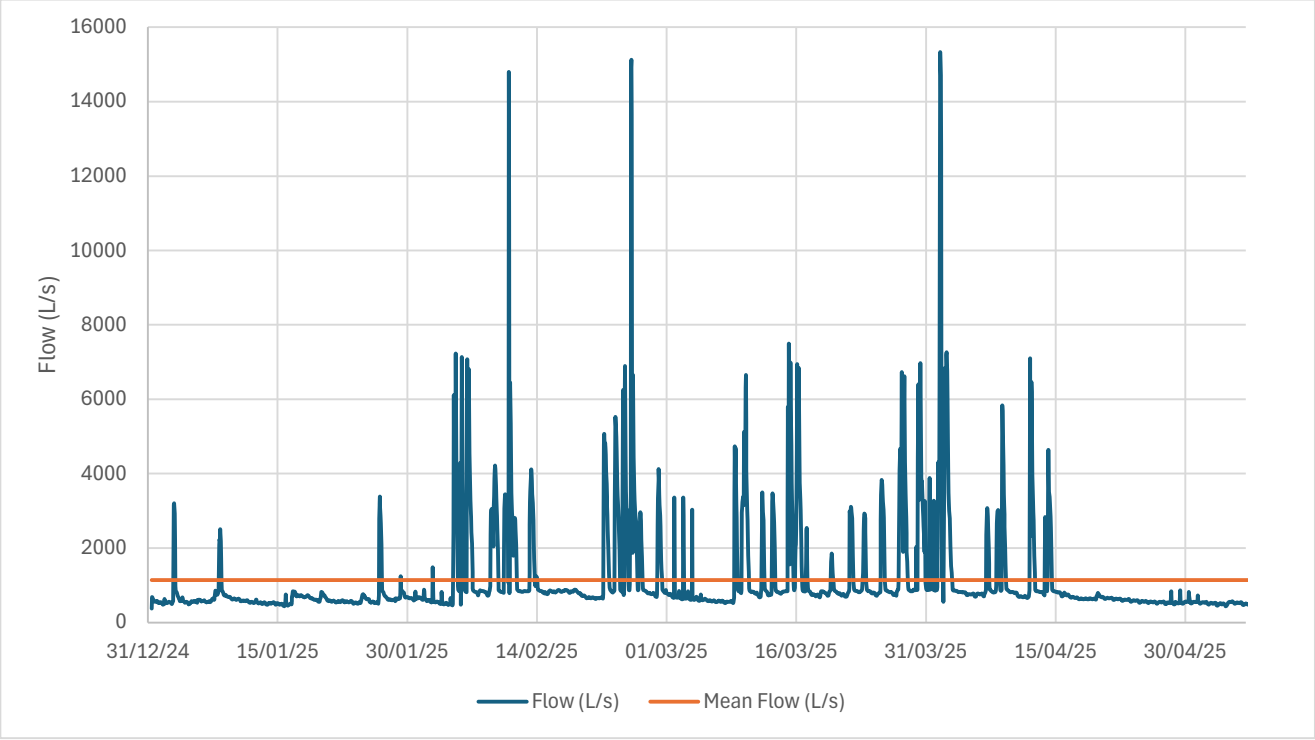


Figure 4-1. Flow at WDL248 compliance point (GDS SW5)

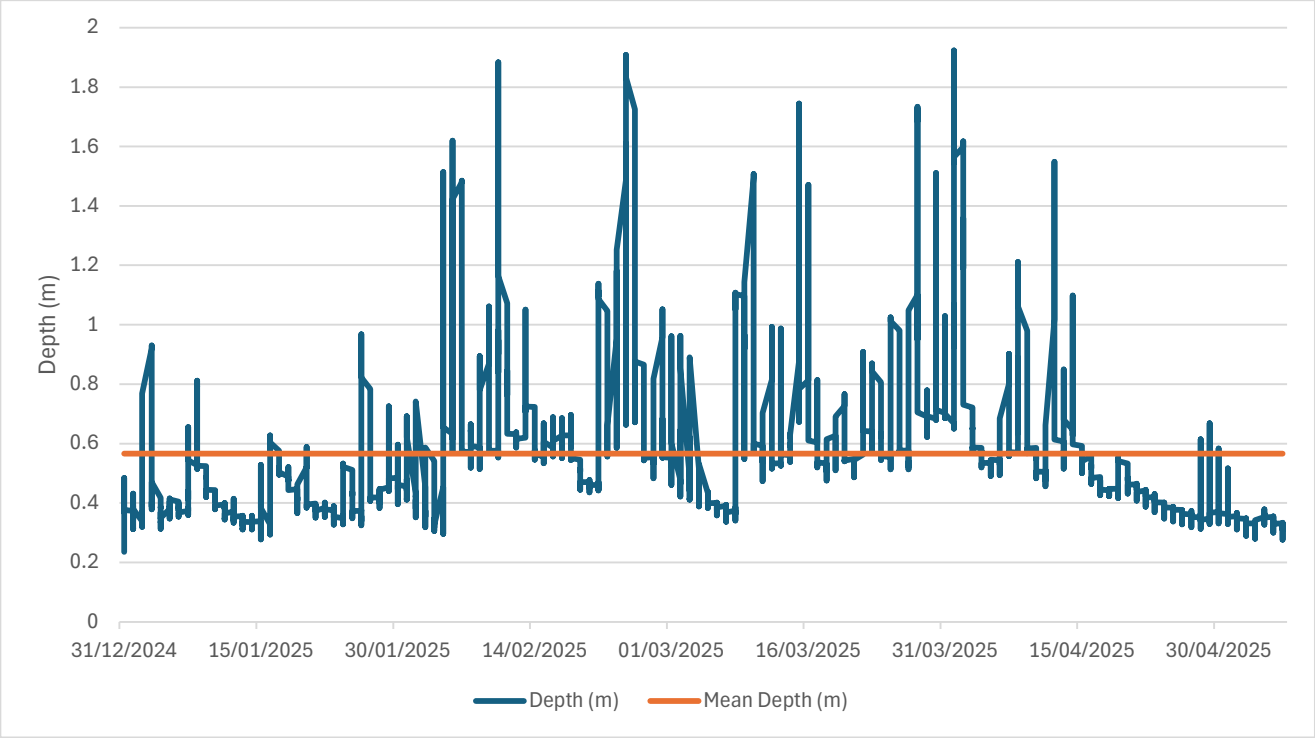


Figure 4-2. Water depth at WDL248 compliance point (GDS SW5)

4.1.2 In-situ water quality

A summary of the field data is provided in Table 4-2. The numbers in bold are above the respective WDL248-02 Trigger Value (TV). Neither the median nor the 80th percentile were exceeded for any parameter at the compliance point (GDS SW5).

Table 4-2. Field parameter summary data

Site/Parameter		pH	EC (µS/cm)	Turbidity (NTU)	DO (% Saturation)	Temperature (°C)	ORP (mV)
SW1	Median	**6.8**	52.8	10.6	86.5	29.1	162.7
	80th %ile	**7.2**	95.7	**25.8**	99.0	33.3	189.7
SW2	Median	6.2	13.5	5.8	85.5	29.0	143.2
	80th %ile	**6.9**	18.7	10.6	97.5	32.2	172.4
SW5	Median	6.4	21.7	8.0	88.0	30.0	157.3
	80th %ile	6.5	31.8	11.7	96.6	31.4	193.6
SW4	Median	**6.5**	15.3	6.8	80.6	29.0	144.3
	80th %ile	**7.1**	22.1	10.7	92.8	32.7	175.3
SW7	Median	6.1	13.2	8.9	84.5	30.0	164.9
	80th %ile	**6.9**	17.9	**13.2**	96.8	33.3	191.0
Hang Gong	Median	6.4	16.9	11.0	82.7	28.7	157.0
	80th %ile	**6.8**	21.4	**18.0**	93.0	30.6	195.6
MWD1 C3	Median	**7.9**	165.0	**16.7**	92.1	30.3	160.2
	80th %ile	**8.1**	213.8	**28.4**	100.5	32.4	184.0
SED1A	Median	**7.4**	36.6	**88.4**	89.1	28.8	168.0
	80th %ile	**7.8**	42.0	**123.2**	**98.8**	31.0	191.6
SED2	Median	**7.1**	34.7	**24.9**	90.6	28.4	170.4
	80th %ile	**7.5**	43.3	**55.5**	**104.1**	30.0	196.0
SED3	Median	**7.1**	26.4	**18.6**	98.9	29.0	172.1
	80th %ile	**7.5**	31.0	**25.5**	**109.9**	30.3	193.5
SED4	Median	**7.3**	15.0	10.5	96.9	30.0	163.1
	80th %ile	**7.7**	17.1	**13.2**	**104.5**	31.2	193.5
SED5A	Median	**7.6**	20.0	**39.2**	89.5	29.0	155.4
	80th %ile	**7.9**	25.6	**59.3**	**100.8**	30.0	185.3
WDL SSTV		**5.2 - 6.6**	**250**	**12**	**50 - 100**	**-**	**-**

4.1.3 pH

The upper pH limit of 6.6 was commonly exceeded at all monitoring locations except Compliance Point SW5. While monitoring indicates pH greater than 6.6 is common in the local receiving environment, pH recorded in MWD1 C3 (mine wastewater) and sediment basins was consistently elevated above the TV for pH. The distribution of pH data for various monitoring locations is illustrated in Figure 4-3.

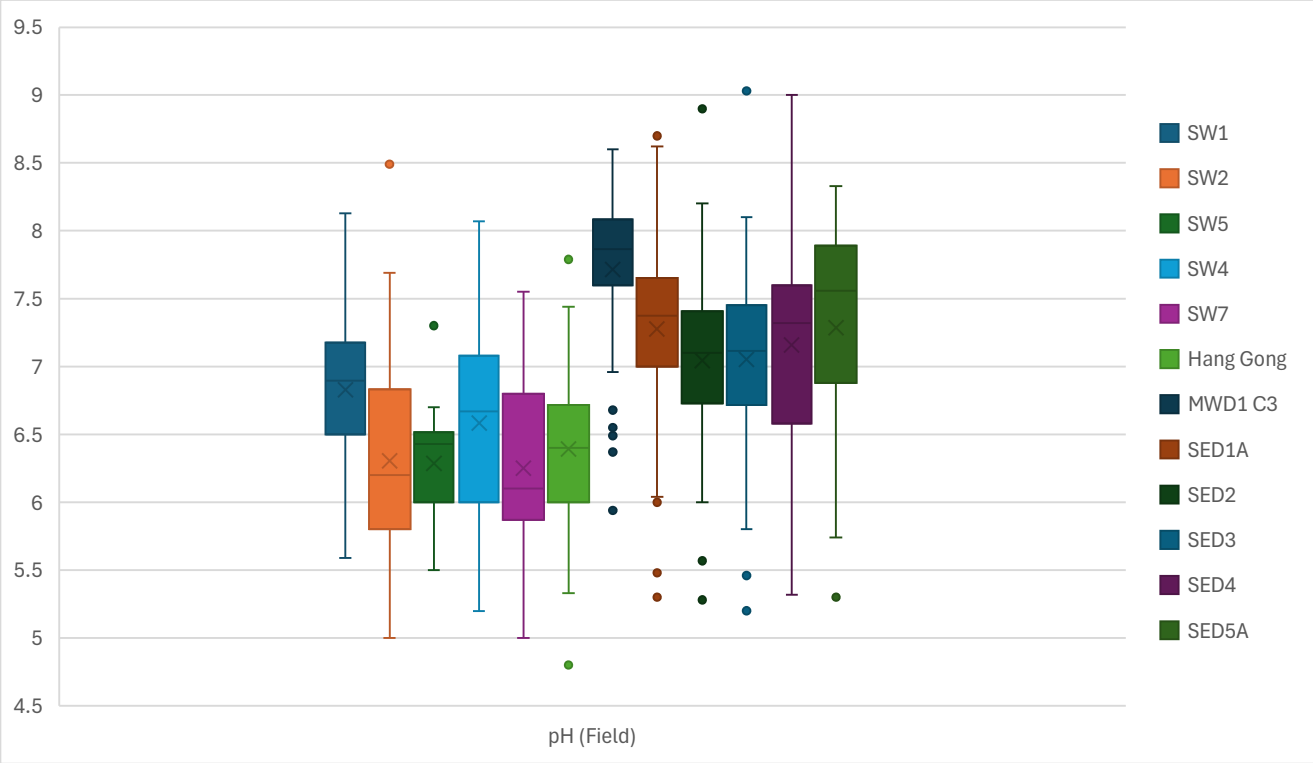


Figure 4-3. pH

4.1.4 Electrical Conductivity

All freshwater EC values remained below the WDL248 TV of 250 µS/cm. The highest EC values were reported for MWD1 C3 as shown in Table 4-2 and illustrated in Figure 4-4. Downstream surface water monitoring site SW1, which is situated in the upper mixing zone for mine wastewater discharge, also recorded elevated EC compared to other sites located in the receiving environment and sediment basins. Notably, EC at downstream water monitoring site SW2, also located in the mixing zone for mine wastewater discharge, indicates dilution of dissolved salts in mine affected wastewater discharge to background values.

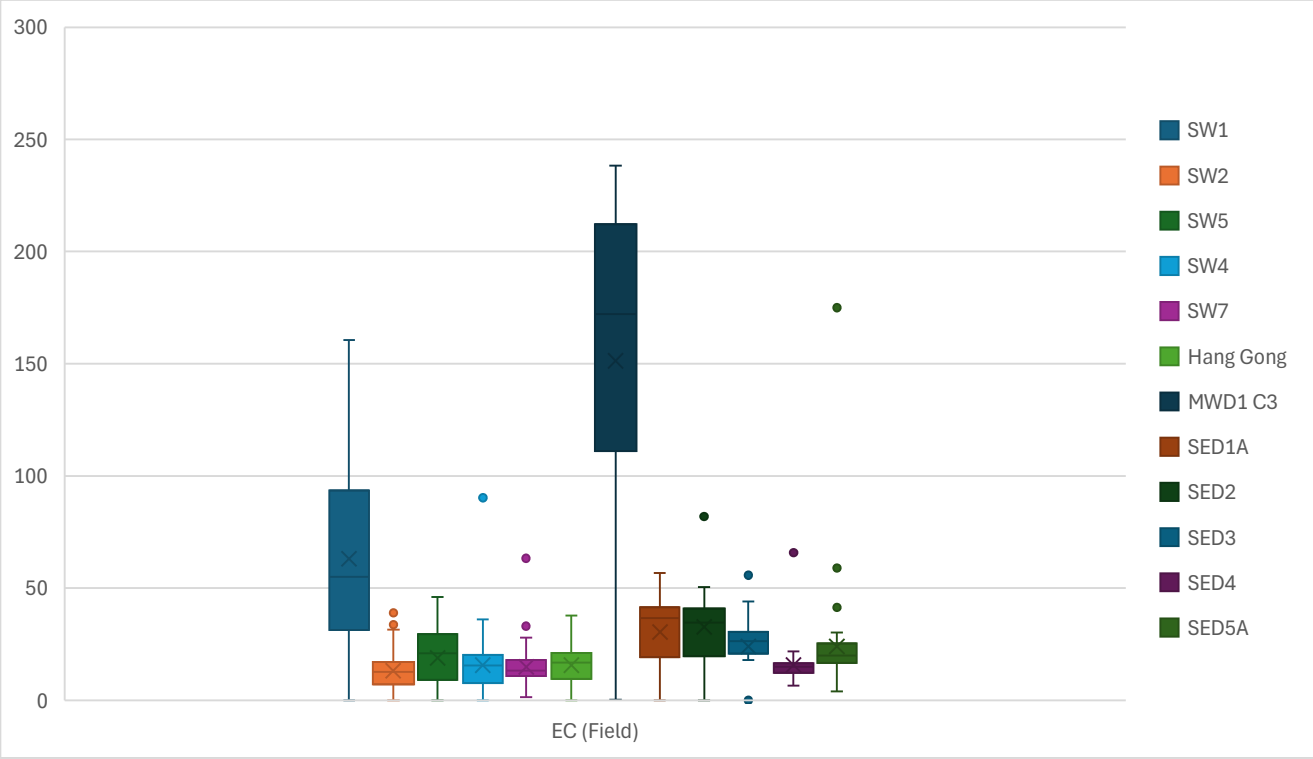


Figure 4-4 Electrical Conductivity

4.1.5 Turbidity

Turbidity, measured as NTU, generally complied with the TV of 12 NTU at all freshwater sites. Turbidity in MWD1 C3 and the sediment basins consistently exceeded the TV with the highest turbidity recorded in sediment basins Sed1A, Sed2 and Sed5A. The distribution of turbidity data is illustrated in Figure 4-5. Turbidity is temporally presented in Figure 4-6.

For the period of mine wastewater discharge, turbidity at GDS SW5 exceeded the WDL248 TV of 12 NTU on 13 of 85 sampling occasions (15% of sampling occasions). This is an improvement compared to the previous reporting period where turbidity at GDS SW5 exceeded the TV of 12 NTU on 34 of 56 sampling occasions (61% of sampling occasions).

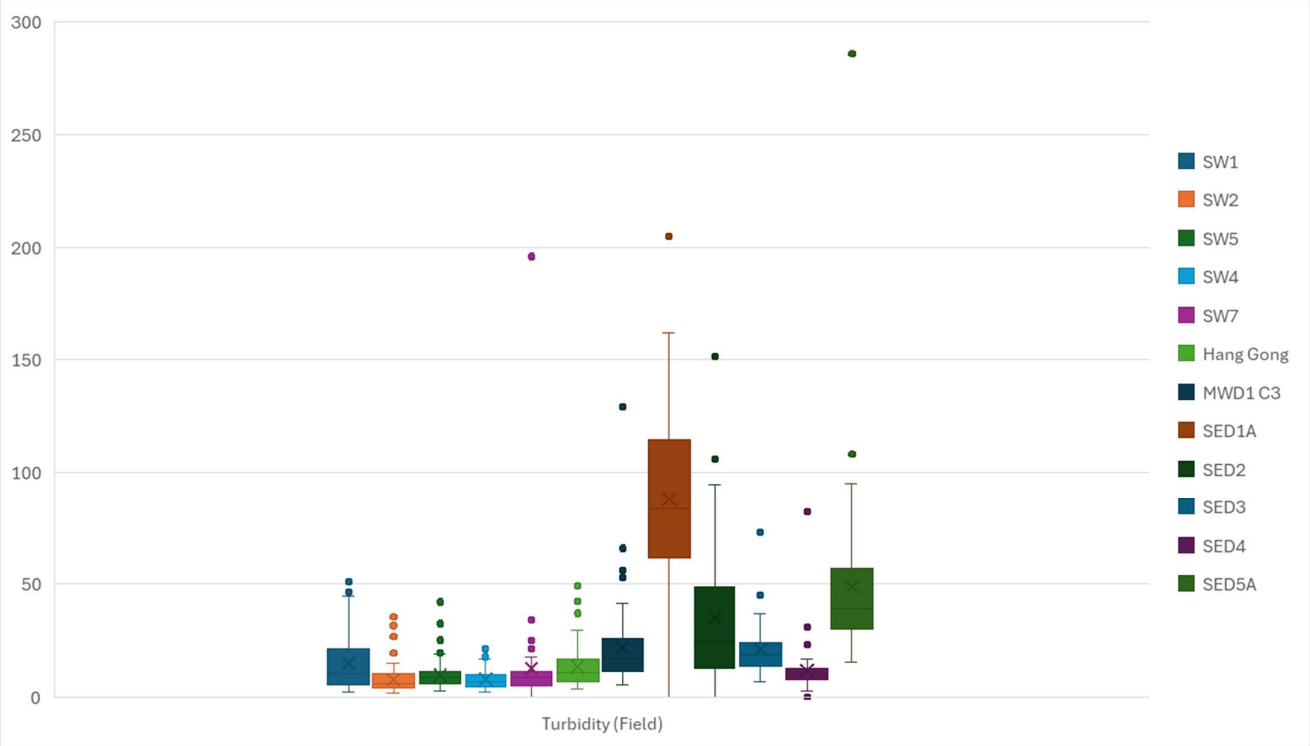


Figure 4-5. Turbidity

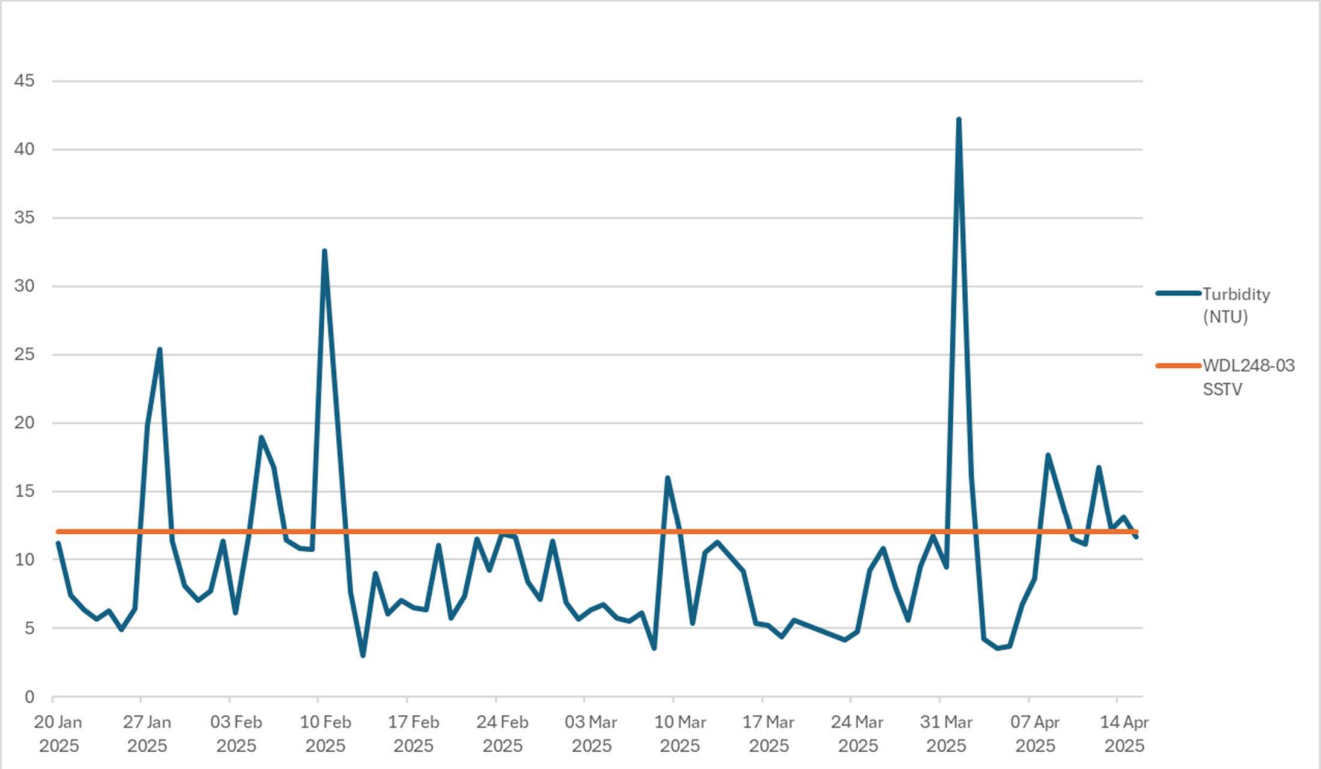


Figure 4-6. Compliance Point (SW5) Turbidity

4.1.6 Temperature

Water temperature was consistent across all sites, with median values ranging between 28.4°C and 30.0°C across all sites, including sites located in the water storages as well as site located in the freshwater receiving environment.

4.1.7 Dissolved oxygen

Dissolved oxygen (DO) concentrations were consistently above the lower WDL248 GV of 70%. The median DO concentrations conformed with the upper and lower limit GV's. The 80th percentile values for the sediment basins marginally exceeded the upper GV of 100%. The distribution of DO data is illustrated in Figure 4-7. No correlation between DO and chlorophyll-a was observed.

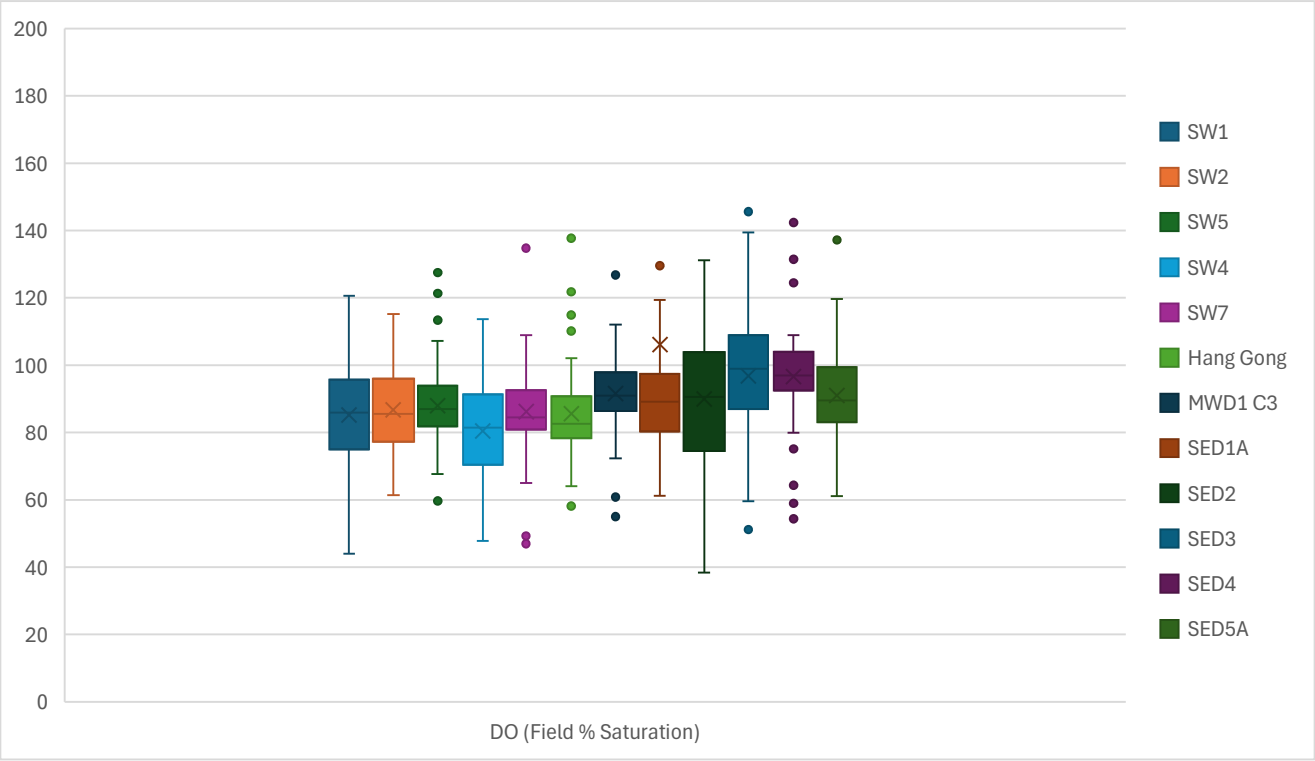


Figure 4-7. Dissolved Oxygen Percent Saturation

4.1.8 Nutrients

The median and 80th percentile values for nutrients are provided in Table 4-3. The numbers presented in bold are above the respective WDL248-02 Trigger Value (TV) and any exceedance at the compliance point (SW5) is shaded green. It is noted that the Total Phosphorus median of 0.02mg/L exceeded the WDL248-02 TV for Total Phosphorus of 0.01 mg/L but complied with the WDL248-03 TV for Total Phosphorus of 0.035 mg/L

Table 4-3. Nutrient concentrations (mg/L)

Site/Parameter		Ammonia (NH3 mg/L)	Nitrate (as N mg/L)	Nitrite (as N mg/L)	Kjeldahl Nitrogen Total (mg/L)	TN (mg/L)	TP (mg/L)	FRP (mg/L)	Chlorophyll a
SW1	Median	0.075	0.008	0.005	0.35	0.35	**0.025**	0.003	0.002
	80th %ile	0.168	0.044	0.005	0.48	**0.54**	**0.048**	0.005	0.003
SW2	Median	0.065	0.005	0.005	0.25	0.25	0.005	0.002	0.001
	80th %ile	0.190	0.005	0.005	0.40	0.40	**0.020**	0.002	0.001
SW5	Median	0.040	0.005	0.005	0.20	0.20	**0.020**	0.002	0.001
	80th %ile	0.080	0.005	0.005	0.32	0.32	**0.042**	0.004	0.001
SW4	Median	0.060	0.005	0.005	0.35	0.35	**0.015**	0.002	0.001
	80th %ile	0.240	0.005	0.005	0.50	**0.50**	**0.034**	0.002	0.001
SW7	Median	0.065	0.005	0.005	0.30	0.30	**0.030**	0.002	0.001
	80th %ile	0.090	0.005	0.005	0.44	**0.44**	**0.064**	0.002	0.001
Hang Gong	Median	0.040	0.005	0.005	0.20	0.20	0.010	0.002	0.001
	80th %ile	0.112	0.005	0.005	0.38	0.38	**0.020**	0.002	0.001
MWD1 C3	Median	0.040	0.015	0.005	0.90	**1.30**	**0.040**	0.007	0.006
	80th %ile	0.080	0.850	0.005	1.50	**1.50**	**0.060**	0.010	0.009
SED1A	Median	0.070	0.040	0.005	0.40	0.40	**0.040**	0.002	
	80th %ile	0.124	0.086	0.005	0.50	**0.60**	**0.060**	0.004	
SED2	Median	0.030	0.005	0.005	0.30	0.35	**0.055**	0.017	
	80th %ile	0.146	0.018	0.005	0.40	0.40	**0.096**	0.020	
SED3	Median	0.080	0.015	0.005	0.40	**0.45**	**0.030**	0.002	
	80th %ile	0.154	0.304	0.005	0.54	**0.84**	**0.070**	0.004	
SED4	Median	0.040	0.020	0.005	0.30	0.30	**0.020**	0.003	
	80th %ile	0.146	0.070	0.005	0.32	0.40	**0.030**	0.004	
SED5A	Median	0.020	0.040	0.005	0.20	0.30	**0.020**	0.002	
	80th %ile	0.064	0.340	0.005	0.30	**0.52**	**0.030**	0.002	
WDL248-02 SSTV						**0.40**	**0.010**		

4.1.9 Nitrogen

There were six exceedances of the WDL248-02 Total Nitrogen (TN) TV of 0.4mg/L recorded at the compliance point SW5 over the reporting period. However, neither the median (0.2mg/L) nor the 80th percentile (0.32mg/L) for TN exceeded the TV at SW5.

Figure 4-8 shows the distribution of TN across the monitoring sites. MWD1 C3 (mine wastewater) contains elevated concentrations of TN compared to the TV. Sed3 was also elevated in TN consistently above the TV. Notably, the 80th percentile for the upstream surface water reference site SW7 recorded TN of 0.44mg/L more than the TV.

All ammonia (NH_3) concentrations at the compliance point SW5, were below the ANZG (2018) 95% species protection toxicity value of 0.9mg/L. Additionally, all nitrate concentrations at SW5 were below the ANZG (2018) 95% species protection toxicity value of 0.64mg/L.

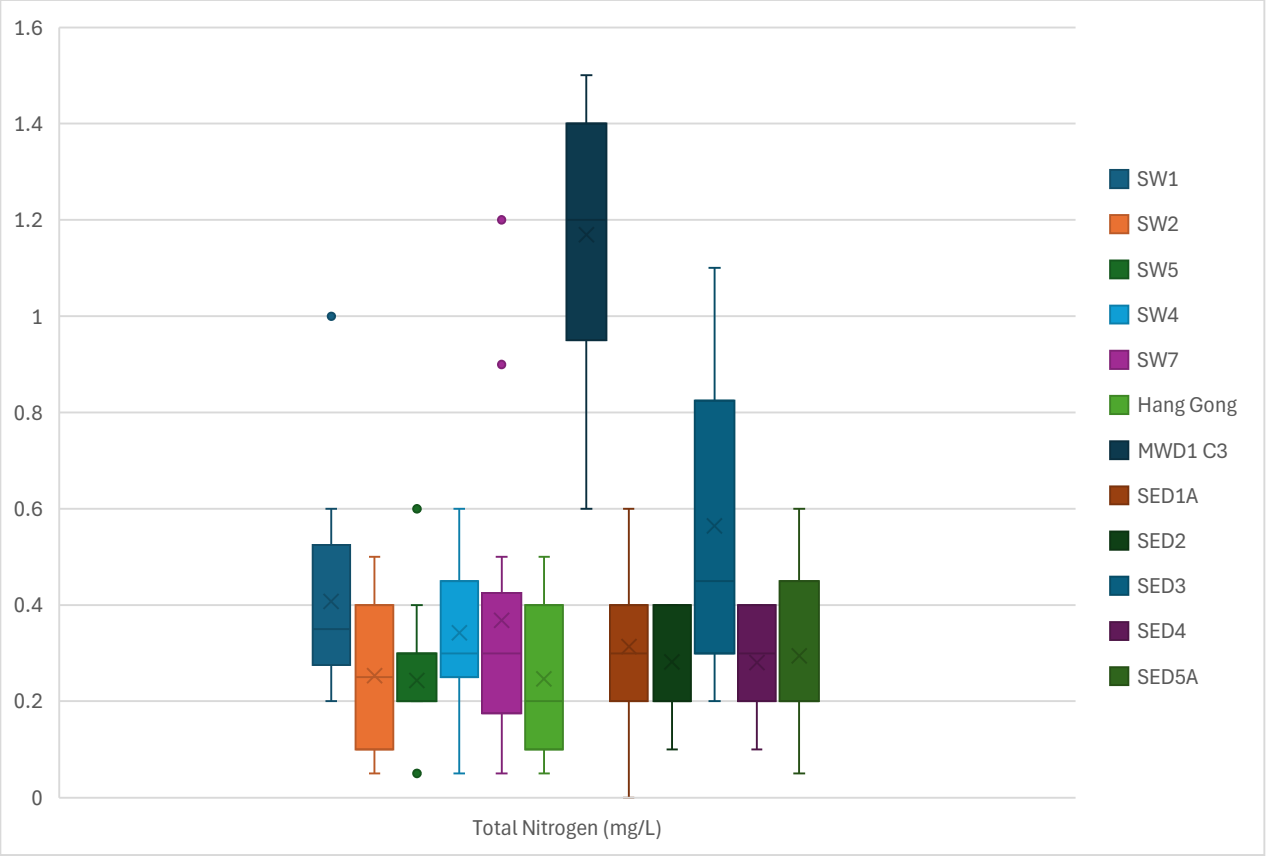


Figure 4-8. Total Nitrogen

Figures 4-9 to 4-12 show the distribution of Ammonia, Nitrate, Nitrate and Kjeldahl Nitrogen Total across the monitoring sites. The figures indicate that relevant to background that mine wastewater contains substantially elevated concentrations of Nitrate, Nitrite and Kjeldahl Nitrogen Total but relatively similar concentrations of Ammonia.

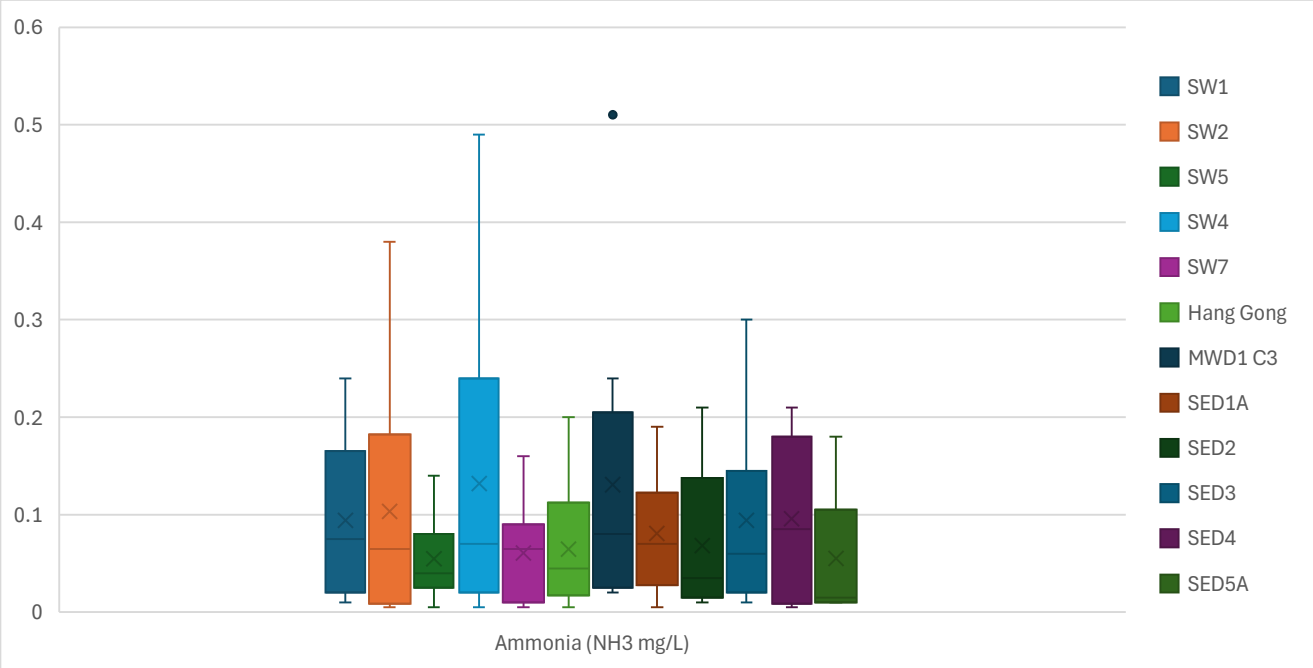


Figure 4-9. Ammonia

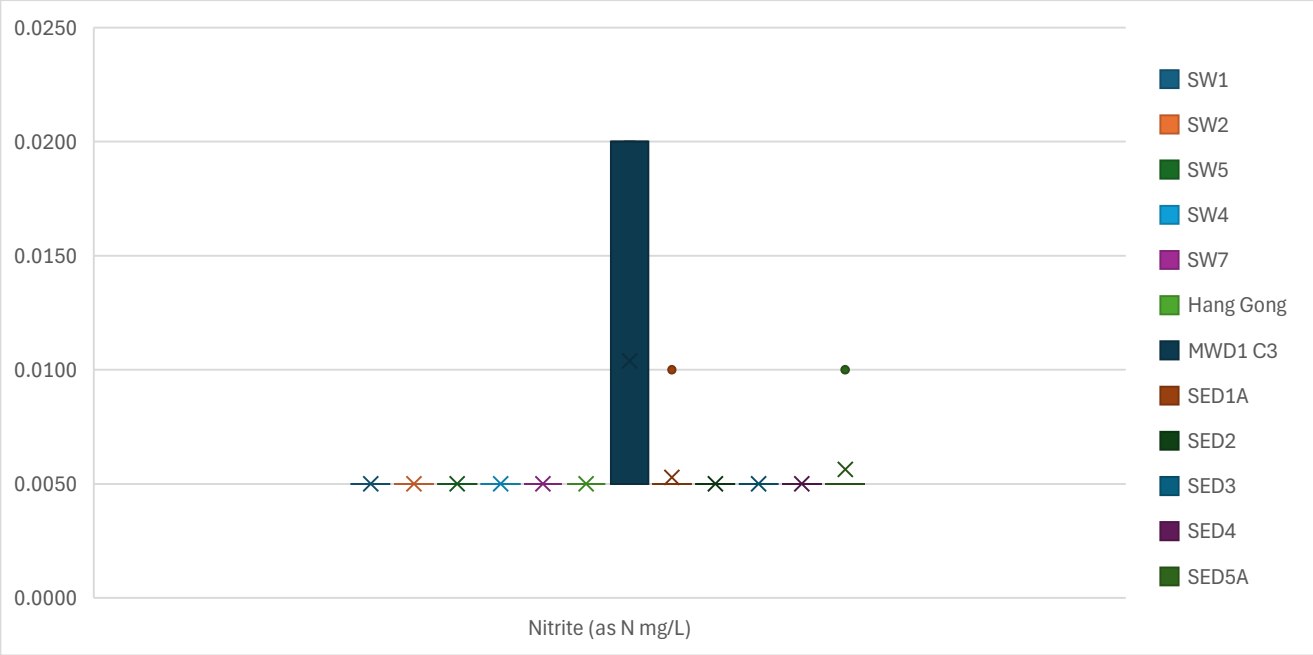


Figure 4-10. Nitrite

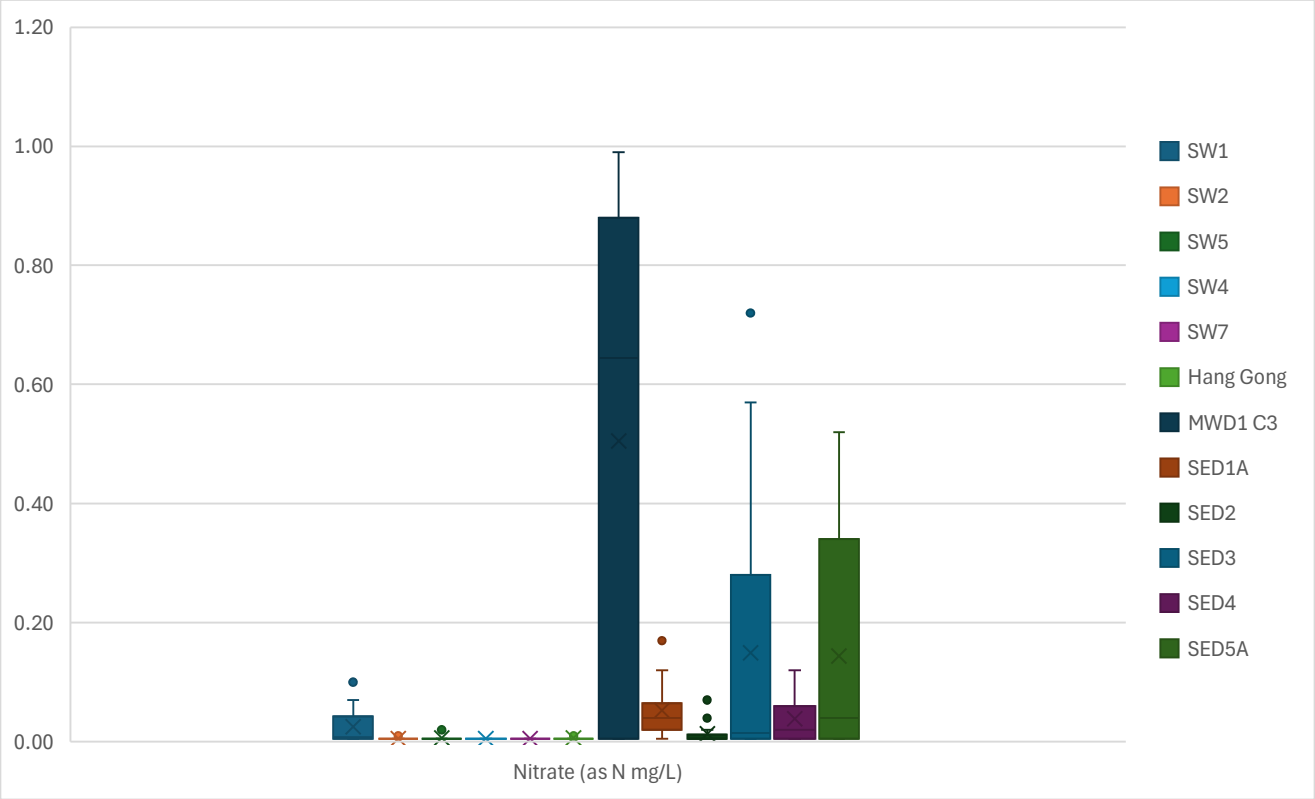


Figure 4-11. Nitrate

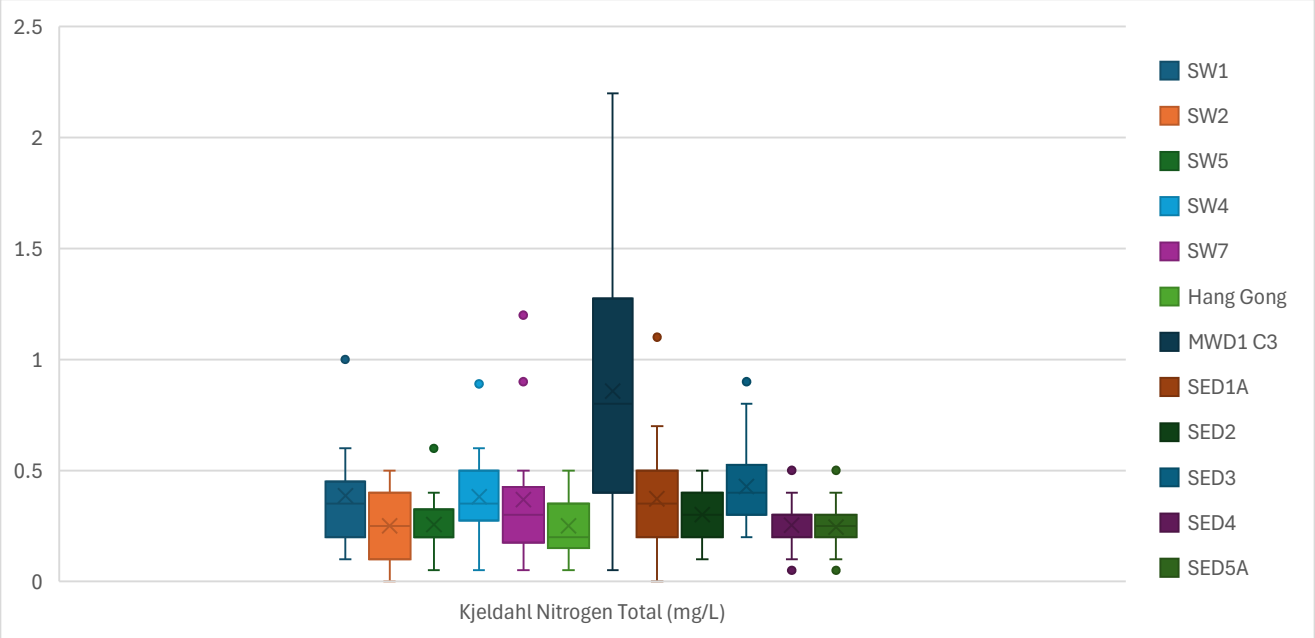


Figure 4-12. Kjeldahl Nitrogen Total

Figures 4-13 to 4-19 show the relative proportions of nitrogen species Ammonia, Nitrate, Nitrate and Kjeldahl Nitrogen Total across the monitoring sites SW7, MWD1C3, SW1, SW2, SW4, Hang Gong and SW5. The figures indicate that compared to relevant background monitoring sites that nitrogen speciation in mine wastewater is similar but does exhibit a greater proportion of nitrogen present in the form of Kjeldahl Nitrogen Total and a lower proportion of nitrogen present in the form of Ammonia.

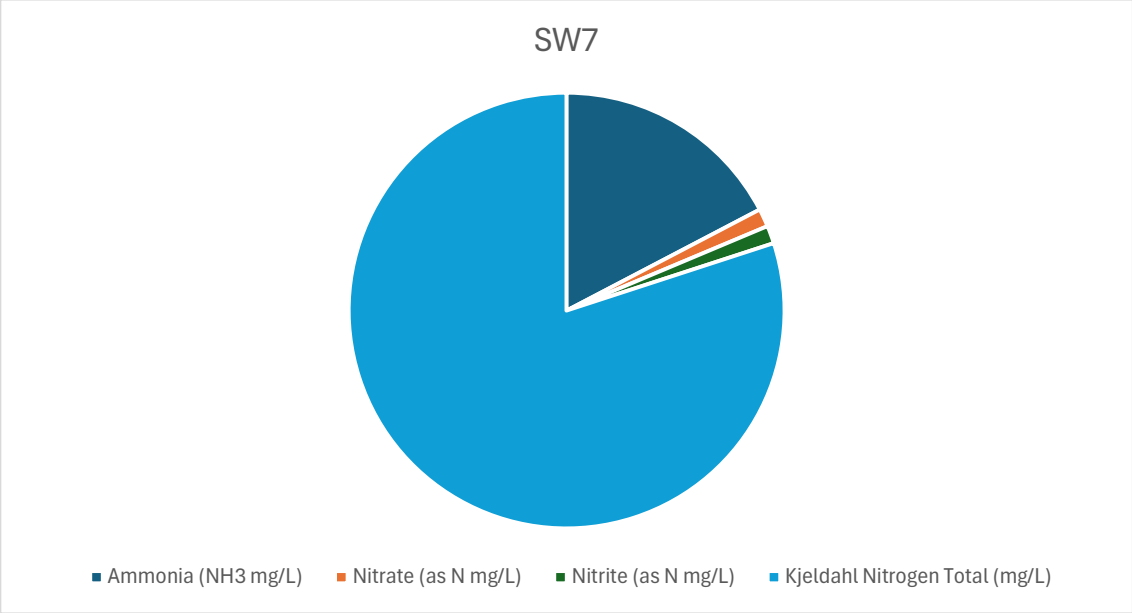


Figure 4-13. SW7 - Total Nitrogen Species

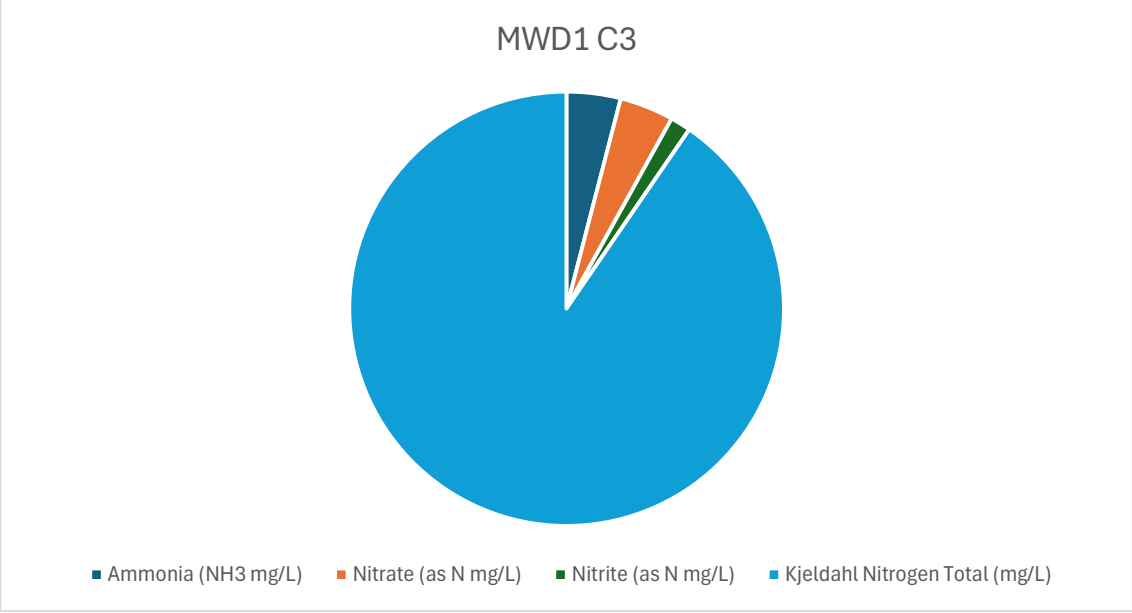


Figure 4-14. MWD1C3 - Total Nitrogen Species

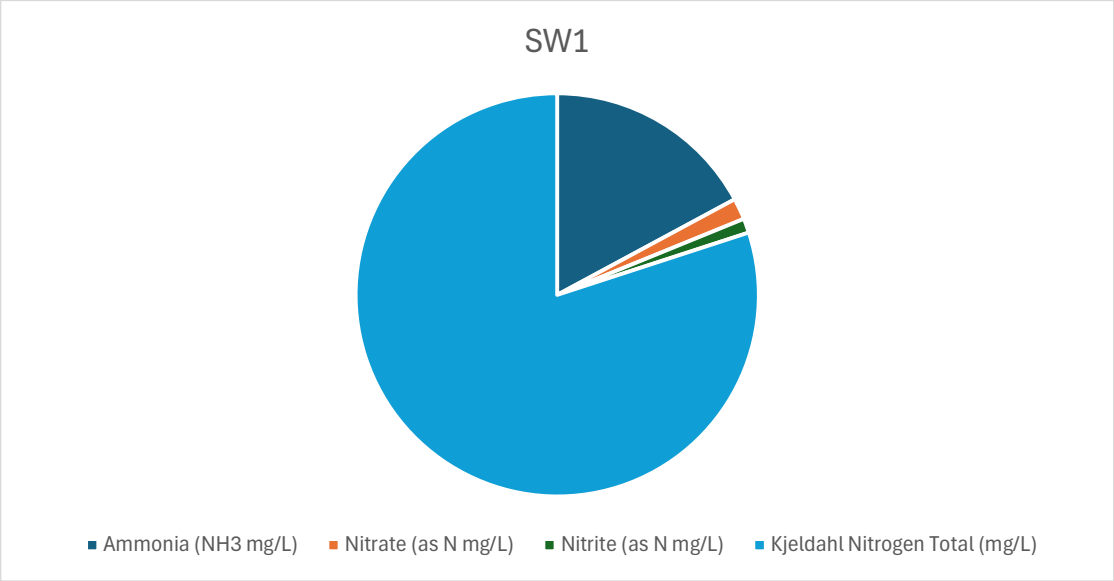


Figure 4-15. SW1 - Total Nitrogen Species

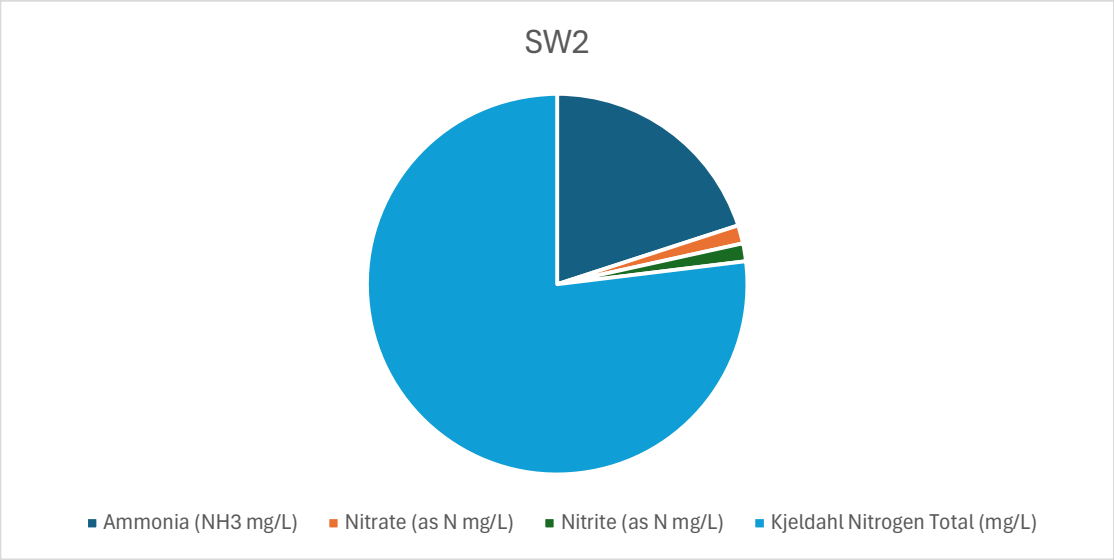


Figure 4-16. SW2 - Total Nitrogen Species

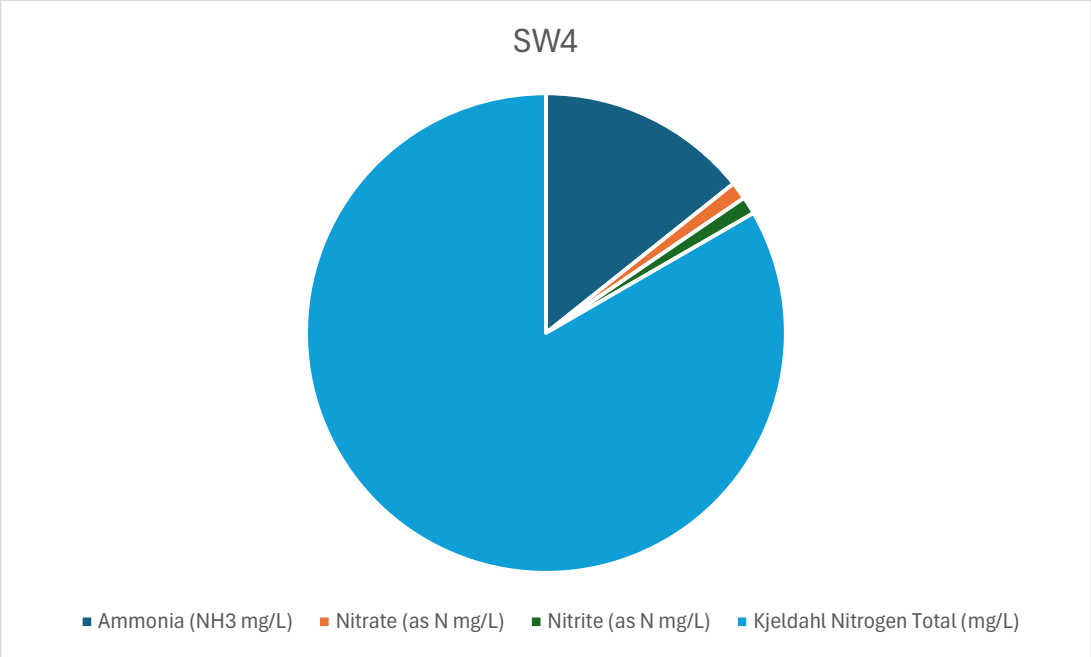


Figure 4-17. SW4 - Total Nitrogen Species

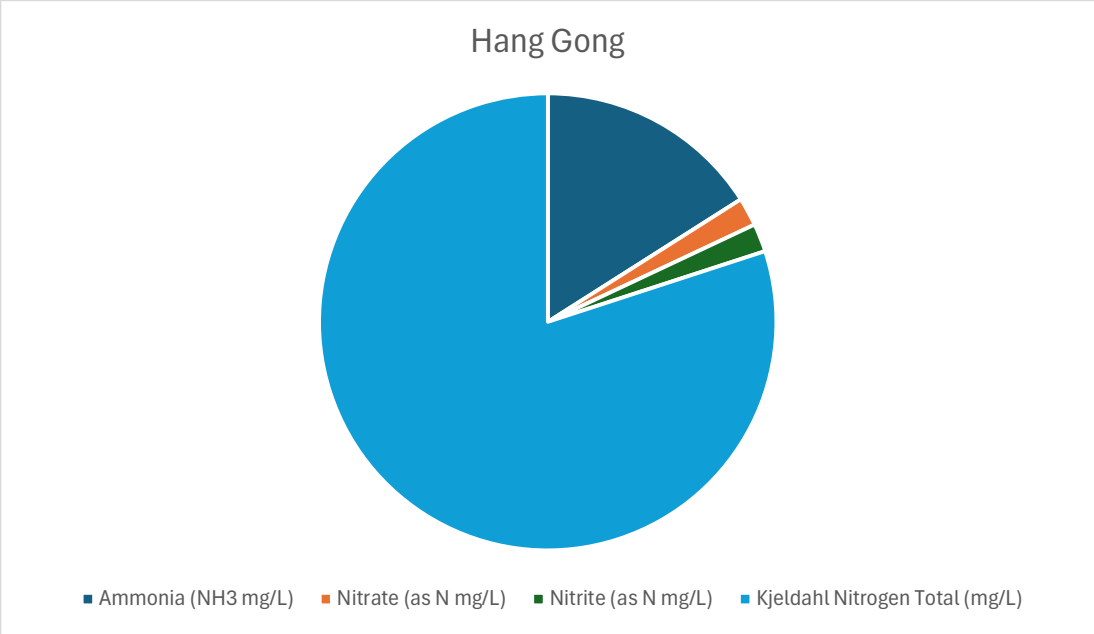


Figure 4-18. Hang Gong - Total Nitrogen Species

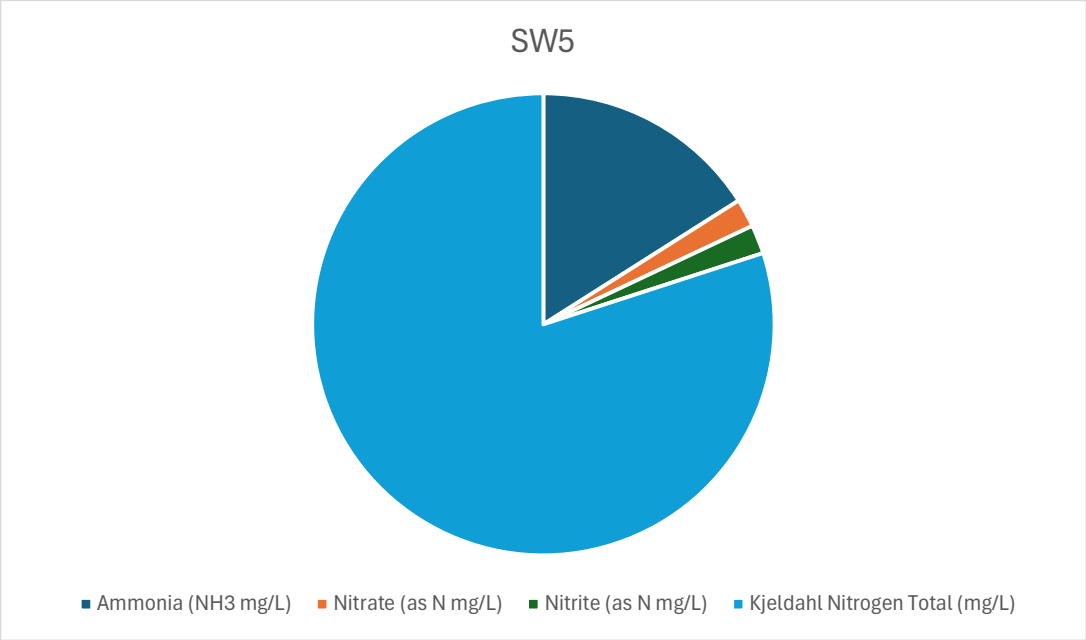


Figure 4-19. SW5 (Compliance Point) - Total Nitrogen Species

4.1.10 Phosphorus and Chlorophyll a

There were nine exceedances of the WDL248-02 Total Phosphorus (TP) TV of 0.01mg/L recorded at the compliance point SW5 during the reporting period, however only eight were recorded during the period when discharge of mine wastewater occurred (57% of sampling occasions). The median (0.02mg/L) and the 80th percentile (0.042mg/L) for TP also exceeded the WDL248-02 TV at SW5. Notably, the TV for TP under renewed licence WDL248-03 was amended to 0.035mg/L based on a site-specific TV for TP that has been derived using robust background monitoring data inclusive of natural variation in rainfall and creek flow that represents the naturally occurring water quality in the local region. Given reference to the WDL248-03 TP TV of 0.35mg/L, correspondingly, four TP exceedances of TV were recorded at GDS SW5 (28% of sampling occasions). Further, the TP median (0.02mg/L) complied with the WDL248-3 TV while the 80th percentile (0.042mg/L) was exceeded.

Figure 4-20 shows the distribution of TP across the monitoring sites. The figure indicates some variability in TP between the monitoring sites and that elevations in TP may be common in sediment basins Sed1A, Sed2 and Sed3. TP outliers were observed and are considered to related to natural variation. In the case of the sediment basins, the outliers may be related to elevated total suspended solids (site experience has found that high levels of TP can be correlated with high suspended solid results). With reference to Table 4-3 it is observed that the median TP for all sites, with exception to SW2 and Hang Gong, exceeded the WDL248-02 TV of 0.01mg/L. This illustrates the naturally occurring elevated presence of phosphorus in surface water in the local region. However, given the WDL248-03 TV of 0.35mg/L for TP, it is observed that only MWD1C3, Sed1A and Sed2 TP medians were exceeded.

Figure 4-20 shows the distribution of Filterable Reactive Phosphorus (FRP) across the monitoring sites. Relative elevations in FRP were observed in Sed2 and MWD1C3. FRP represents the amount of dissolved orthophosphate in a water sample that is readily available for biological uptake by and usable by plants and other aquatic organisms.

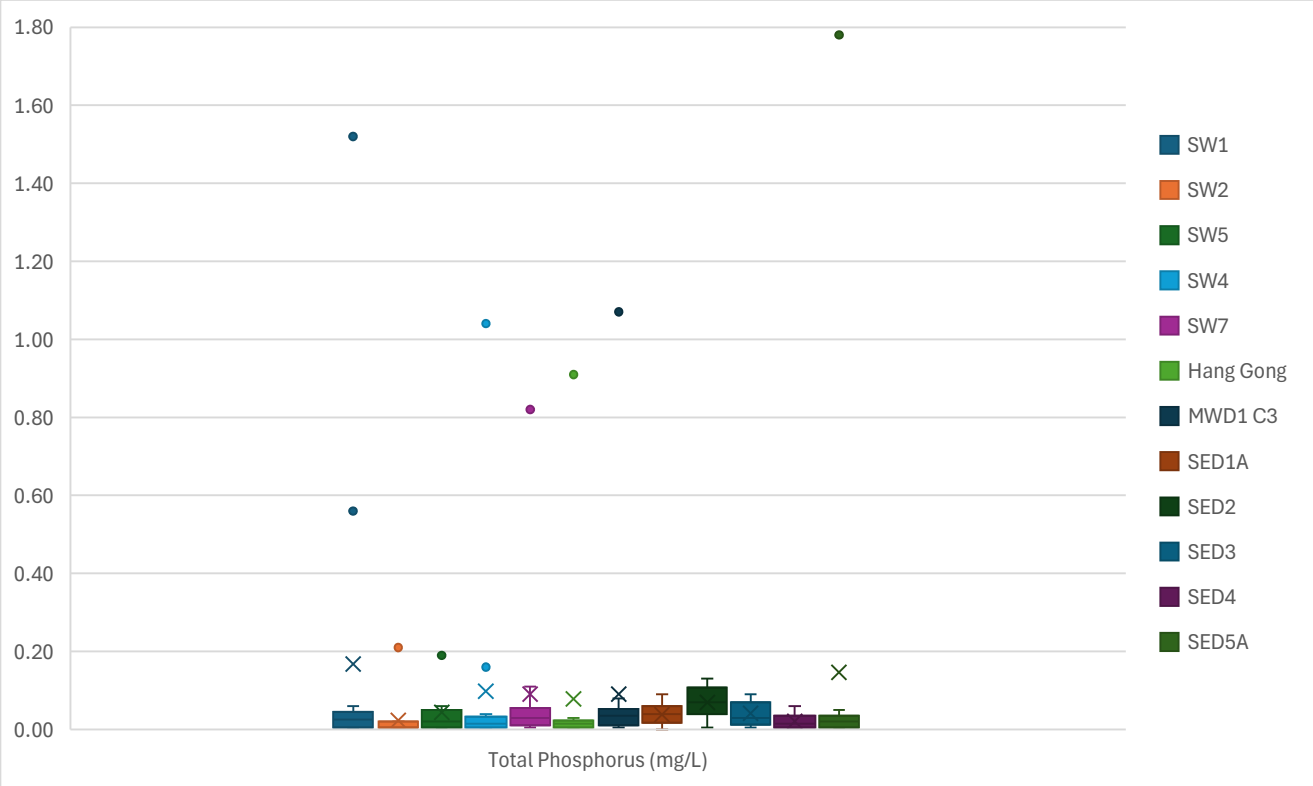


Figure 4-20. Total Phosphorus

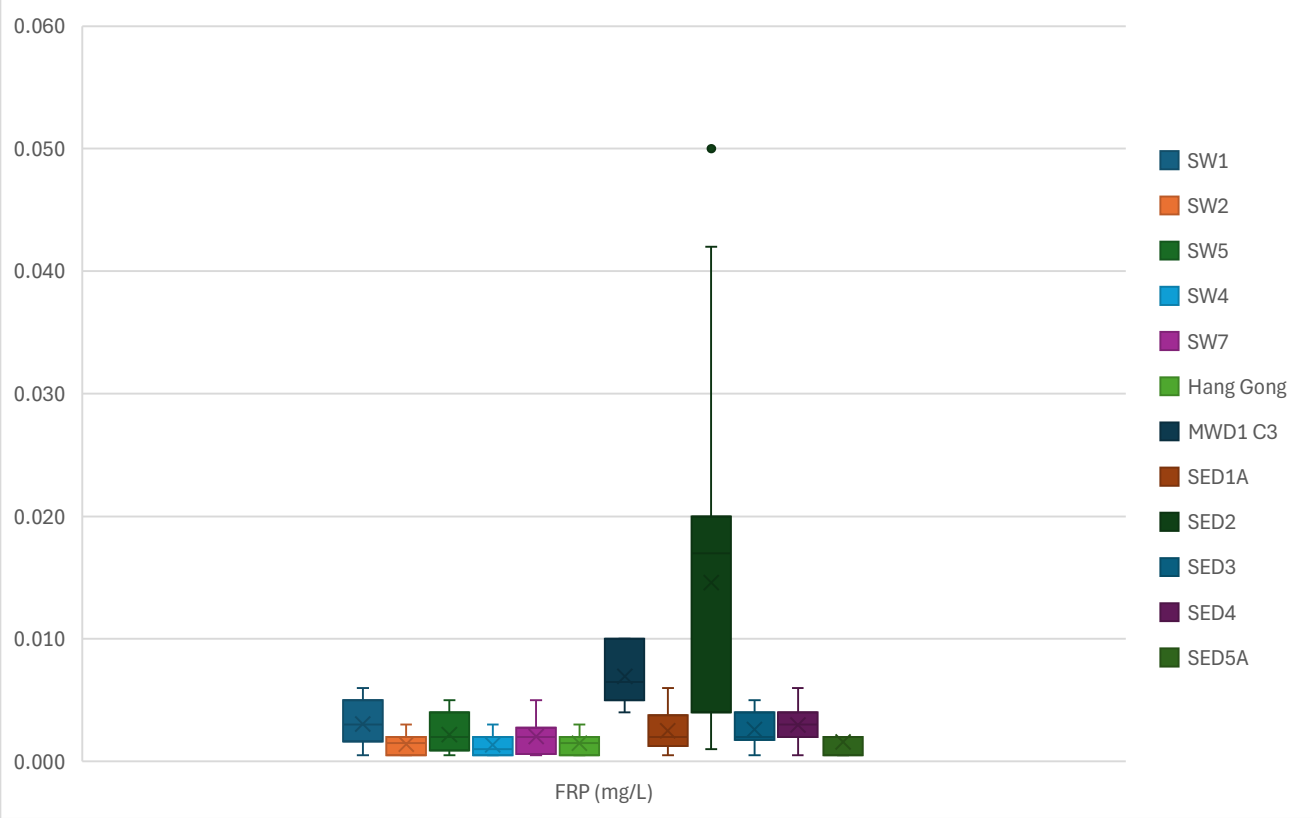


Figure 4-21. Filterable Reactive Phosphorus (FRP)

Figure 4-22 shows the distribution of Chlorophyll a across the monitoring sites. The highest concentrations of Chlorophyll a were observed in MWD1 C3 and SW1. It is noted that MWD1 C3 is a constructed impoundment which permanently holds water and may reasonably be expected to accumulate higher concentrations of Chlorophyll a compared to the ephemeral background surface water monitoring sites which have flow, mixing and effectively shorter residence times. The higher concentration of Chlorophyll a at SW1, which is situated in the upper mixing zone for mine wastewater discharge, is anticipated to be indicative of influence from MWD1 C3 discharge.

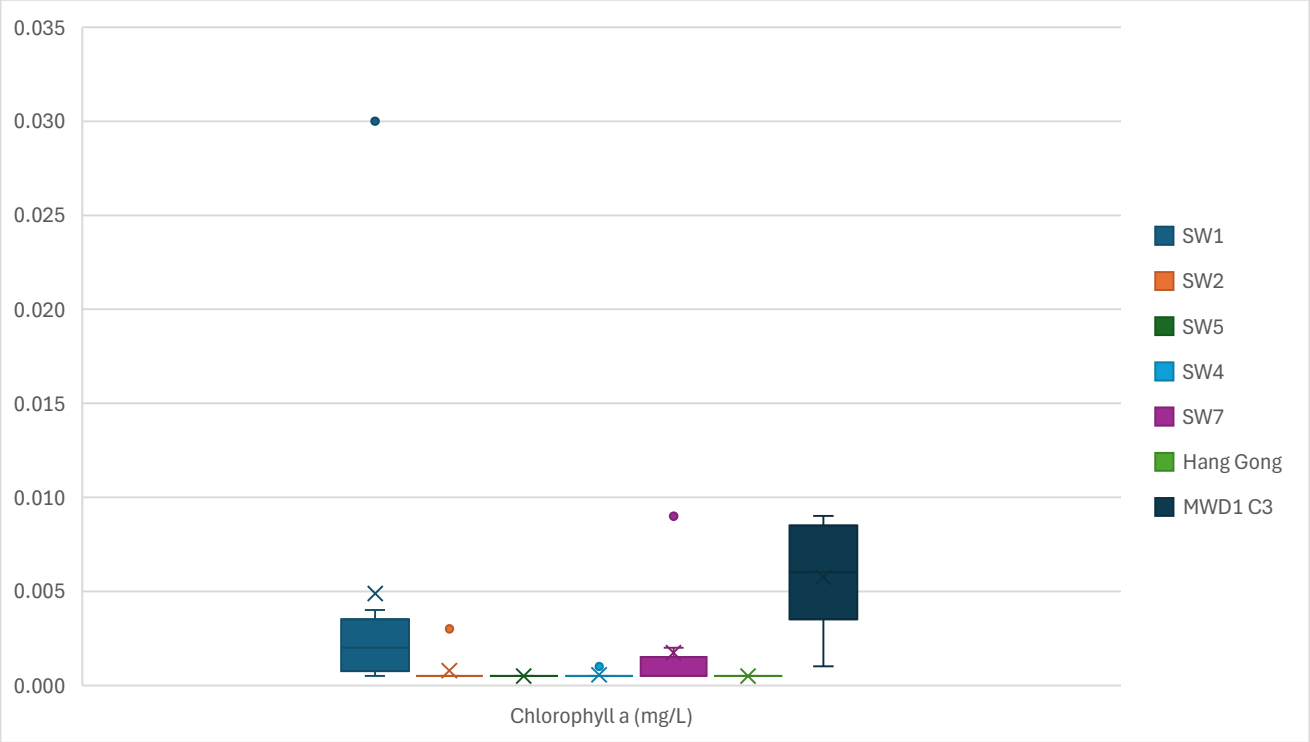


Figure 4-22. Chlorophyll a

Phosphorus is a key nutrient for plant growth, and chlorophyll, specifically chlorophyll a, is the pigment that allows plants (including algae) to perform photosynthesis. While the amount of phosphorus available can significantly influence plant growth the relationship can be complex. For example, algal growth is influenced by several limiting factors such as light, temperature, pH, nutrients (including essential metals such as iron, zinc, copper, manganese and molybdenum) and water movement. Analysis of the relationship between TP and chlorophyll a; and FRP and Chlorophyll a, has been undertaken using available monitoring data from sites SW1, SW2, SW5, SW7, Hang Gong and MWD1 C3. Regression analysis found that a R^2 value of 0.0004 between TP and chlorophyll a, indicating that as a variable TP explains 0.04% of variability in chlorophyll a. With respect to FRP and chlorophyll a, regression analysis found a R^2 value of 0.18, indicating that as a variable FRP explains 18% of variability in chlorophyll a. To illustrate the relationship Figures 4-23 and 4-24 present available monitoring data of TP vs chlorophyll a and FRP vs Chlorophyll a. While a weak relationship is observed between for FRP and chlorophyll a, it is hypothesized that the lack of water movement or relatively stationary water body that is MWD1 C3 is a contributing factor to the relatively higher chlorophyl a at this monitoring location. As previously discussed, the relative elevation in Chlorophyll a at SW1 is attributed to be related to its location in the upper mixing zone for mine wastewater discharge, and hence the results are anticipated to be indicative of influence from MWD1 C3 discharge. It is also possible that the relative elevation in Chlorophyll a at SW7, the upstream reference site, may be related to its location on a flood plain which may feature comparatively less water movement.

No unusual or excessive presence or growth of algae has been detected or reported during the surface water, fluvial sediment or biota monitoring program in the local receiving environment.

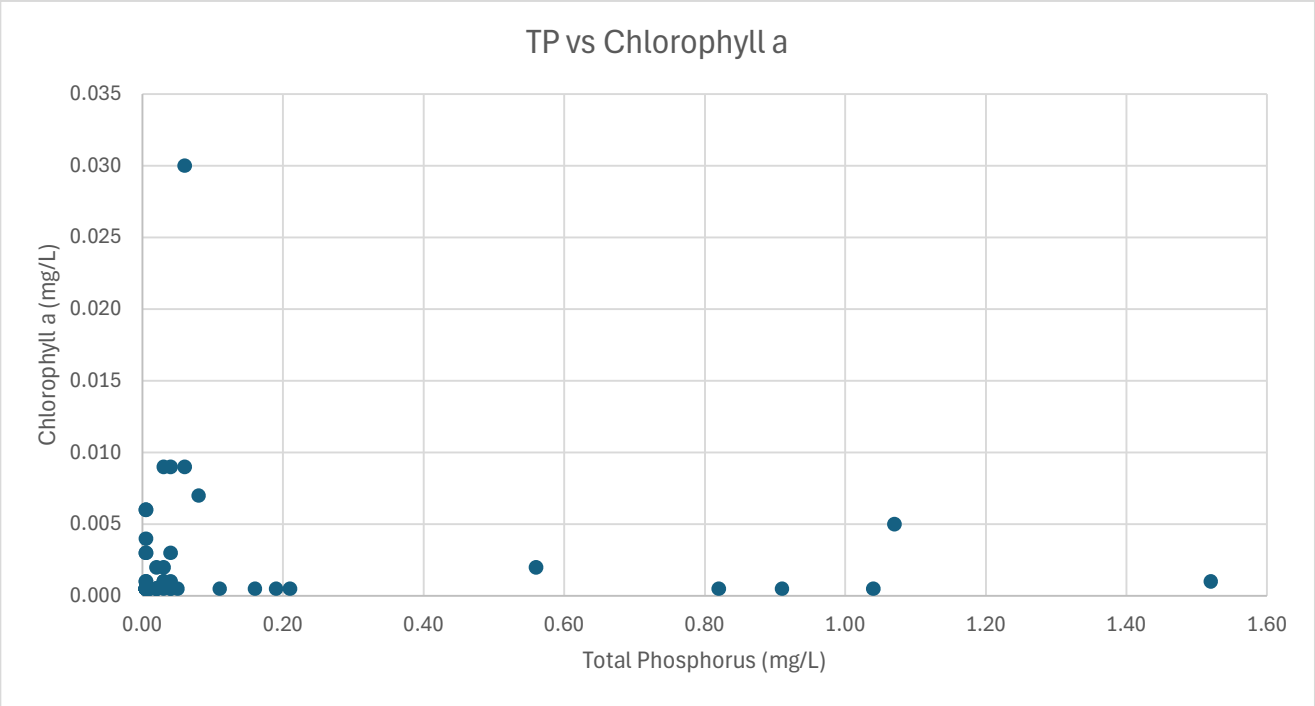


Figure 4-23. Total Phosphorus (TP) vs Chlorophyll a

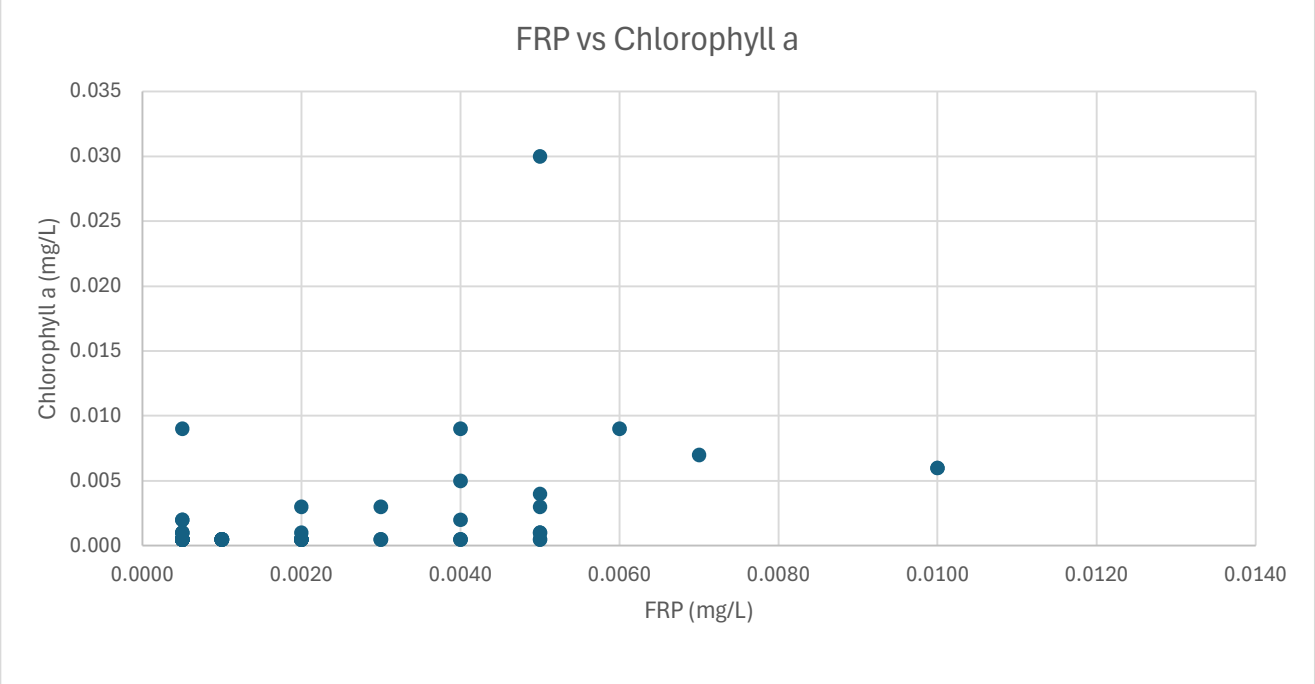


Figure 4-24. Filtered Reactive Phosphorus (FRP) vs Chlorophyll a

4.1.11 Metals and metalloids

The median and 80th percentile values for metal and metalloids are provided in Table 4-4 and Table 4-5. Those numbers in bold are above the respective WDL248 Trigger Value (TV) and any exceedance at the compliance point (SW5) is shaded green.

All mercury concentrations were less than the LOR and are not presented in the tables.

Table 4-4. Metal and metalloid concentrations (mg/L)

Site/Parameter		Aluminium (filtered mg/L)	Arsenic (filtered mg/L)	Cadmium (filtered mg/L)	Chromium (III+VI) (filtered mg/L)	Copper (filtered mg/L)	Iron (filtered mg/L)	Lead (filtered mg/L)	Lithium (filtered mg/L)	Nickel (filtered mg/L)	Zinc (filtered mg/L)
SW1	Median	0.005	0.0020	0.00005	0.0005	0.0005	0.025	0.0005	0.0880	0.0005	0.0025
	80th %ile	0.010	0.0030	0.00005	0.0005	0.0005	0.054	0.0005	0.1876	0.0005	0.0025
SW2	Median	0.010	0.0005	0.00005	0.0005	0.0005	0.060	0.0005	0.0040	0.0005	0.0025
	80th %ile	0.020	0.0005	0.00005	0.0005	0.0005	0.092	0.0005	0.0104	0.0005	0.0025
SW5	Median	0.020	0.0005	0.00005	0.0005	0.0005	0.105	0.0005	0.0170	0.0005	0.0025
	80th %ile	0.020	0.0005	0.00005	0.0005	0.0005	**0.156**	0.0005	0.0244	0.0005	0.0025
SW4	Median	0.020	0.0010	0.00005	0.0005	0.0005	**0.120**	0.0005	0.0070	0.0005	0.0025
	80th %ile	0.022	0.0010	0.00005	0.0005	0.0005	**0.212**	0.0005	0.0108	0.0005	0.0025
SW7	Median	0.035	0.0005	0.00005	0.0005	0.0005	0.060	0.0005	0.0020	0.0005	0.0025
	80th %ile	0.050	0.0005	0.00005	0.0005	0.0005	0.106	0.0005	0.0020	0.0005	0.0025
Hang Gong	Median	0.020	0.0010	0.00005	0.0005	0.0005	0.090	0.0005	0.0080	0.0005	0.0025
	80th %ile	0.030	0.0010	0.00005	0.0005	0.0005	**0.170**	0.0005	0.0142	0.0005	0.0025
MWD1 C3	Median	0.005	0.0120	0.00010	0.0005	0.0005	0.025	0.0005	0.3320	0.0020	0.0025
	80th %ile	0.005	0.0146	0.00020	0.0005	0.0005	0.025	0.0005	**0.6154**	0.0030	0.0076
SED1A	Median	0.015	0.0010	0.00005	0.0005	0.0005	0.025	0.0005	0.0430	0.0005	0.0025
	80th %ile	0.050	0.0020	0.00005	0.0005	0.0005	0.025	0.0005	0.0480	0.0005	0.0025
SED2	Median	0.005	0.0020	0.00005	0.0005	0.0005	0.025	0.0005	0.2915	0.0005	0.0025
	80th %ile	0.020	0.0030	0.00005	0.0005	0.0005	0.076	0.0005	0.4136	0.0005	0.0025
SED3	Median	0.005	0.0030	0.00005	0.0005	0.0005	0.025	0.0005	0.0670	0.0005	0.0025
	80th %ile	0.010	0.0034	0.00005	0.0005	0.0005	0.025	0.0005	0.0892	0.0005	0.0025
SED4	Median	0.005	0.0010	0.00005	0.0005	0.0005	0.025	0.0005	0.0030	0.0005	0.0025
	80th %ile	0.024	0.0020	0.00005	0.0005	0.0005	0.025	0.0005	0.0040	0.0005	0.0025
SED5A	Median	0.015	0.0005	0.00005	0.0005	0.0005	0.025	0.0005	0.0030	0.0005	0.0025
	80th %ile	0.020	0.0005	0.00005	0.0005	0.0005	0.025	0.0005	0.0040	0.0005	0.0025
WDL SSTV		**0.07**	**0.013**	**0.0002**	**0.001**	**0.0014**	**0.11**	**0.0034**	**0.43**	**0.001**	**0.005**
Limit of Reporting		0.01	0.001	0.0001	0.001	0.001	0.05	0.001	0.001	0.001	0.005

As indicated in Table 4-4, the 80th percentile for filtered iron was above the respective WDL248-02 TV at compliance point SW5. Notably the median and 80th percentile for filtered iron in mine wastewater discharge and sediment basin discharges were all below the respective TV indicating that neither mine wastewater nor sediment basin discharges were source(s) of filtered iron at SW5. Filtered iron was elevated at surface water monitoring locations SW4 and Hang Gong above the WDL248-02 TV and these catchments are anticipated to have contributed to elevated filtered iron at SW5. The observed elevations in filtered iron are attributed to natural wet season processes in seasonally inundated floodplains. Prolonged waterlogging likely created low-oxygen soil conditions, allowing iron and trace metals such as zinc to dissolve into porewater. This is a naturally occurring, temporary and self-attenuating process. As this water moves into oxygenated creek systems, iron and zinc oxidise and form particles, removing them from the dissolved phase.

Table 4-4 also shows that the 80th percentile for filtered lithium in MWD1 C3 was above the respective WDL248-02 TV. Notwithstanding, the median and 80th percentile valves at all downstream surface water locations including SW5 were below the respective WDL248-02 TV.

For the metals / metalloids, filtered aluminium, arsenic, cadmium, chromium (III+VI), copper, lead, nickel and zinc, all surface water monitoring sites recorded both median and 80th percentile values below the respective WDL248-02 TVs.

It is noteworthy that while the median and 80th percentile values for filtered zinc were below the TV, one exceedance of filtered zinc was recorded at compliance site SW5. Investigation found (refer Appendix H) that the elevated filtered zinc was independent of mine water discharges, and like observed elevations in filtered iron, is attributed to natural redox wet season processes in seasonally inundated floodplains. Prolonged waterlogging likely created low-oxygen soil conditions, allowing iron and trace metals such as zinc to dissolve into porewater. This is a naturally occurring, temporary and self-attenuating process. As this water moves into oxygenated creek systems, iron and zinc oxidise and form particles, removing them from the dissolved phase.

Figures 4-25 and 4-26 show the distribution of filtered iron and lithium respectively across the monitoring sites.

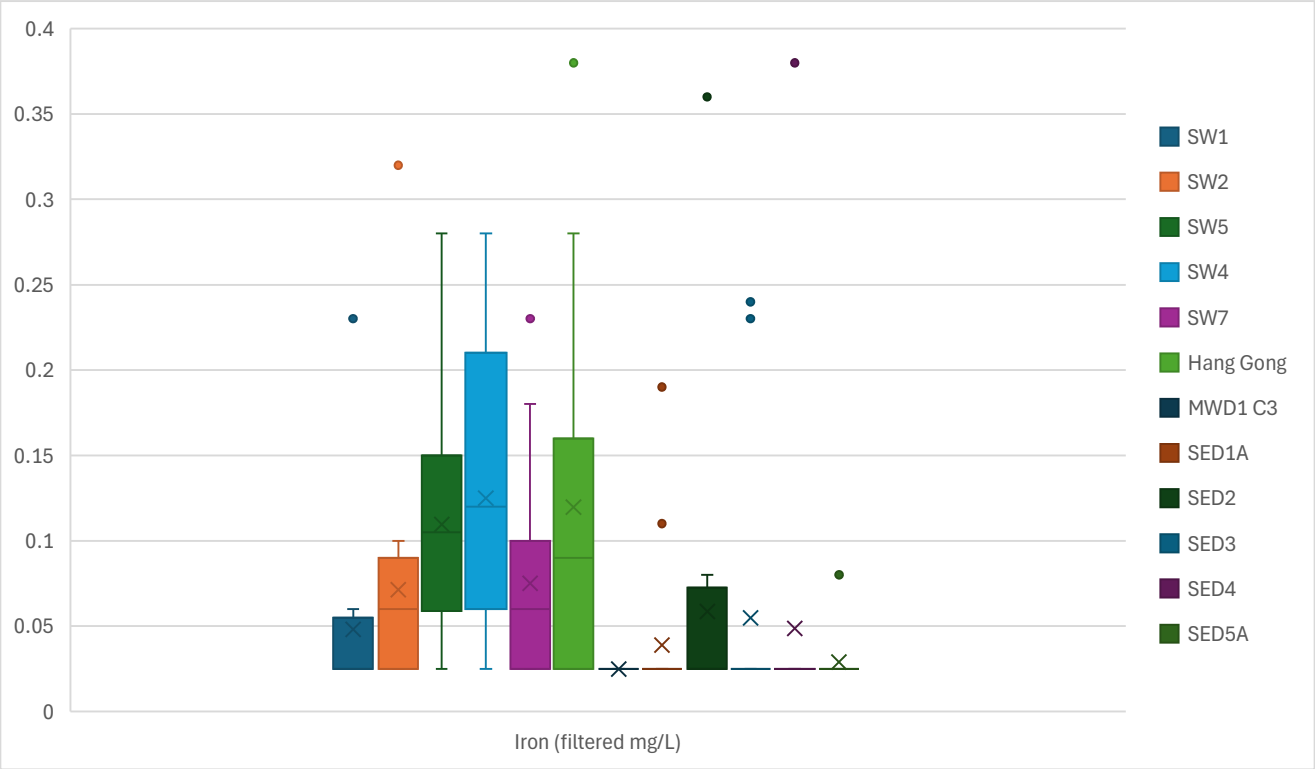


Figure 4-25. Filtered Iron

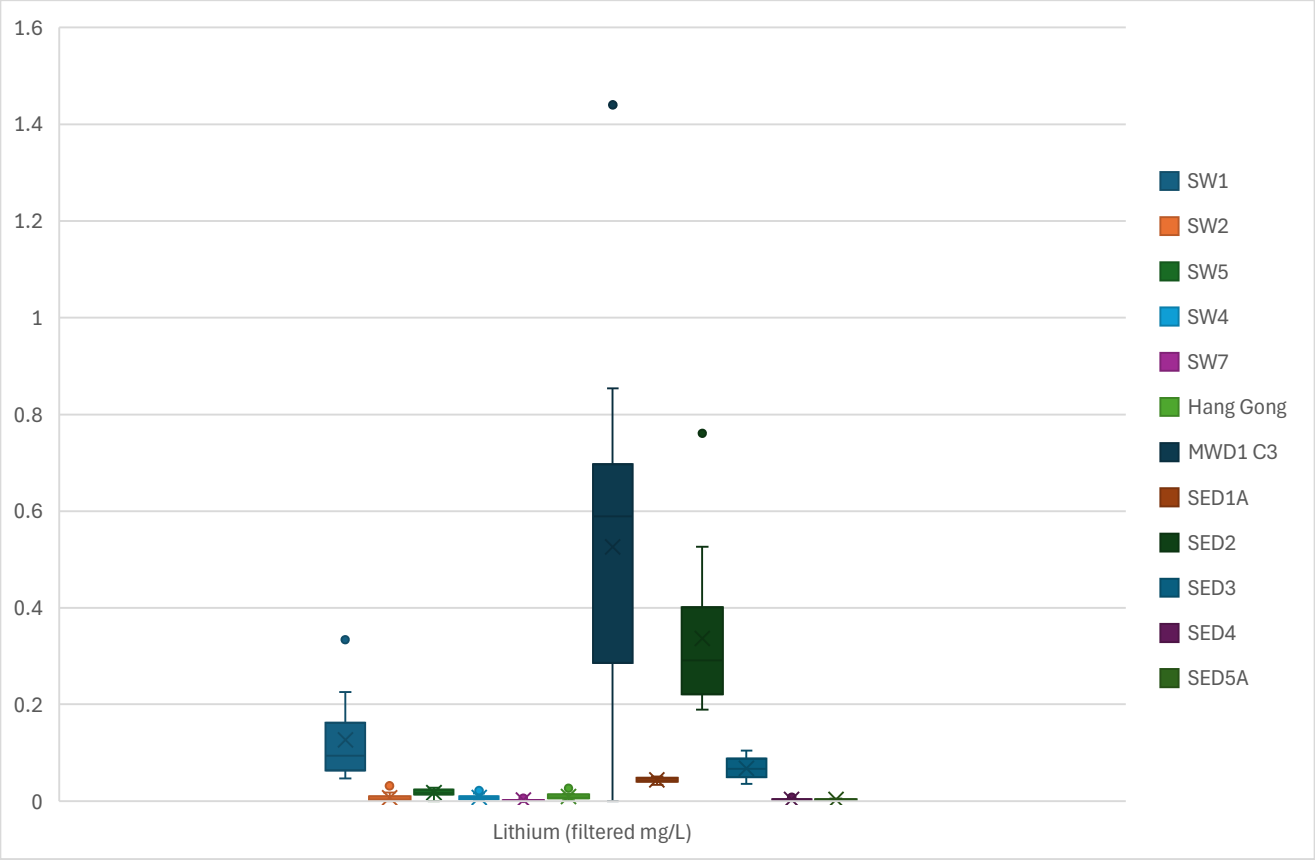


Figure 4-26. Filtered Lithium

4.1.12 Treatment reagents

Flocculants containing Acrylamide are not used on site and therefore no analysis of samples for this parameter occurred during this reporting period.

4.1.13 Hydrocarbons

For all samples taken for the annual reporting period no hydrocarbons were detected.

4.1.14 Other

The median and 80th percentile values for major ions, alkalinity and solids are provided in Table 4-5. There are no TVs in WDL248-02 applicable to these parameters. All carbonate concentrations were less than the LOR and are not presented in the table.

Table 4-5. Major ions, alkalinity and solids

Site/Parameter		SO_4	Cl^-	Ca	Mg	K	Na	HCO_3	TDS	TSS
SW4	Median	0.5	4.0	0.5	0.5	0.5	3.0	2.0	2.0	32.0
	80th %ile	2.4	4.0	0.5	0.5	0.5	5.0	3.4	3.4	39.8
SW7	Median	0.5	2.0	0.5	0.5	0.5	2.0	1.0	1.0	21.5
	80th %ile	0.5	3.0	0.5	0.5	0.5	2.2	1.4	1.4	24.6
MWD1	Median	30.5	3.5	11.5	7.5	5.5	14.0	18.5	18.5	160.0
	80th %ile	33.2	4.6	14.0	9.6	7.0	17.2	19.6	19.6	224.4
SW1	Median	5.0	3.0	2.0	2.0	2.0	6.0	8.0	8.0	78.0
	80th %ile	14.2	4.0	3.4	2.8	2.4	9.0	10.2	10.2	87.0
SW2	Median	1.0	2.0	0.5	0.5	0.5	3.0	3.0	3.0	32.0
	80th %ile	4.0	3.0	0.5	0.5	0.5	4.8	6.4	6.4	42.6
SW5	Median	0.5	2.5	0.5	0.5	0.5	2.5	2.0	2.0	32.0
	80th %ile	2.0	4.0	0.5	0.5	0.5	4.0	4.0	4.0	42.0
Sed1	Median	8.0	2.0	1.0	2.0	1.0	3.0	2.0	2.0	58.5
	80th %ile	8.0	2.8	1.8	2.0	2.0	3.8	2.0	2.0	102.0
Sed2	Median	7.0	3.0	3.0	2.0	2.0	3.0	6.0	6.0	94.0
	80th %ile	7.8	3.8	4.8	2.8	2.0	4.8	6.8	6.8	130.0
Sed3	Median	4.5	3.0	0.5	1.0	1.0	3.0	3.5	3.5	79.5
	80th %ile	6.2	4.4	0.5	1.0	1.4	3.4	5.0	5.0	104.8
Sed4	Median	1.0	3.0	0.5	0.5	0.5	2.0	0.5	0.5	42.0
	80th %ile	2.4	3.4	0.5	0.5	0.5	2.0	1.2	1.2	50.4
Sed5	Median	1.3	3.0	0.5	0.5	0.5	2.0	0.5	0.5	69.0
	80th %ile	2.0	3.0	0.5	0.5	0.5	2.0	0.5	0.5	113.0

For the freshwater surface water monitoring sites, the water is soft with low concentrations of major anions and cations.

Total suspended solids (TSS) concentrations were highest in sediment basins SED1A, 2, and 5A as shown in Figure 4-27. It is also observed that upstream reference site SW7 recorded elevated TSS concentrations relative to other upstream monitoring sites. A review of data at SW7 indicates that elevations in TSS were recorded in the very early wet season, likely during initial first flushes of the local catchment, following which TSS consistently recorded relatively low TSS concentrations.

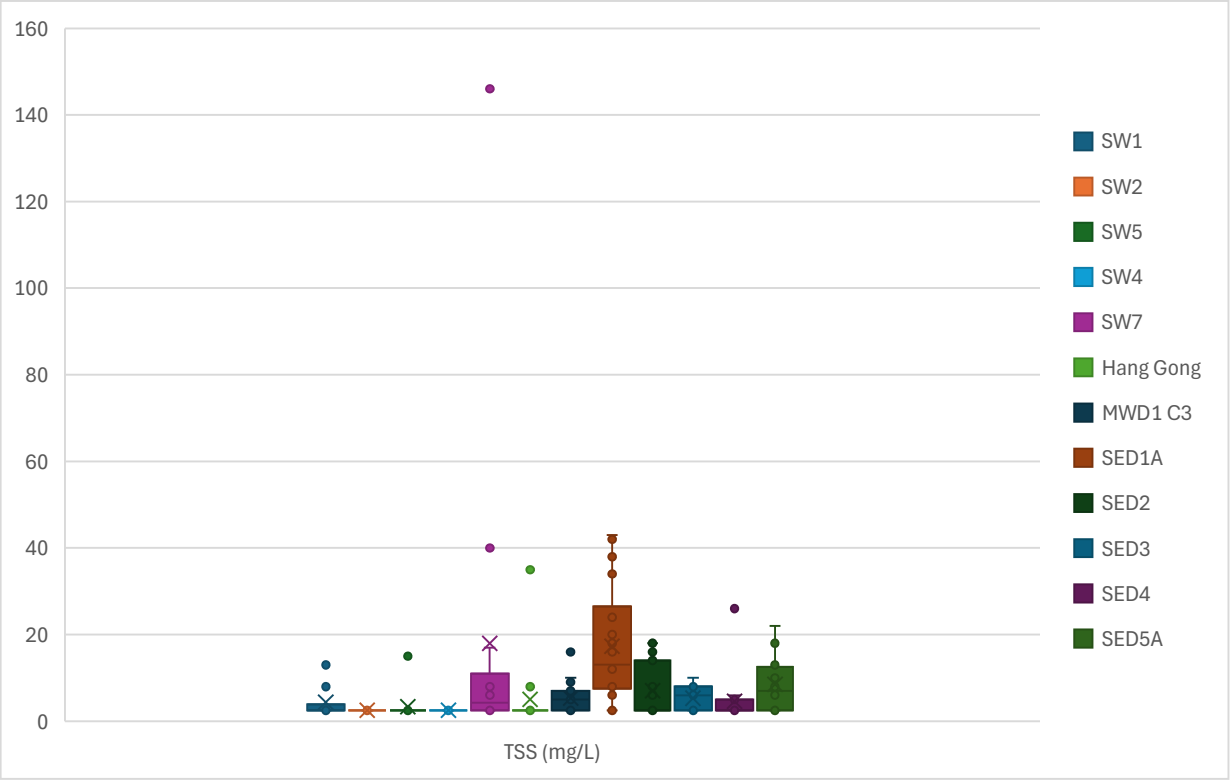


Figure 4-27. Total Suspended Solids concentrations

4.2 Quality Assurance / Quality Control

When completing the QA/QC assessment for the project and data, the following indicators (as identified in the data quality objectives or DQOs) were used to assess if the data obtained is considered fit for its intended uses; specifically, representativeness, completeness and comparability.

4.2.1 Field QA/QC

Sampling was undertaken in accordance with the following QA/QC protocols:

- All site workers were made familiar with the sampling methodology.
- Full details of all field activities and sample collection were recorded in field notes including detailed and relevant descriptions such as date and time, sampling point ID, depth of sampling, equipment used for sampling, sample appearance (colour, odour, clarity, sheen, etc.) and in-situ parameter results in surface water.
- New sterile nitrile gloves were worn and changed at each sample location and between samples to avoid cross-contamination.
- Sediment samples were collected using a Ponar 'Grab' Sampler and a trowel (where collected from the edge of the waterbody). Marine sediment samples were taken using a VanVeen grab sampler. Grab sampling equipment was cleaned before collecting the next sample.
- Surface water samples were collected using a sample pole and the Van Dorn grab sampler.
- Any equipment that contacted the sample (e.g., trowels, auger, water quality meter, jugs, grab samplers) was cleaned prior to sampling, and thoroughly rinsed with Decon 90 and demineralised water between samples.
- Sample containers were clearly marked with unique identification details, sampling date, sampler initials, project name and number and analyses required.
- Samples were stored in appropriate jars, bottles or bags, within a chilled insulated container with ice bricks. Of note is that despite the samples being kept chilled until dispatched to the laboratory, it was not possible to maintain them at temperatures below 6°C as recommended by the laboratories. Achieving low temperatures when storing the samples collected was particularly challenging due to the commonly high ambient temperatures in the Project area, as well as the limitations faced to maintain low storage temperatures when transporting samples from the Project area to Darwin. High temperatures in the samples can facilitate their degradation, and as such, reduce the accuracy of the results obtained. However, given samples were submitted to the laboratory within their respective holding time, the effect of any potential degradation is not expected to impact significantly on the results obtained.
- Chain of Custody (CoC) procedures were adhered to for all sample transfers. CoCs detailed all relevant contact details, sample numbers, sampling date and time, condition of sample, description of sample containers and sizes (including details of preservation), analyses required, detection or reporting limits and specific instructions and were signed by each person transferring and accepting custody.

4.2.2 Comparability

Comparability is a term used to express the ability to fairly compare sample test results taken from the same site at different times. All field personnel assigned to undertake the sampling for the project were briefed and made familiar with the sampling methodology so they would be aware of the sampling procedures to be followed.

No deviations from the sampling procedures were observed during the fieldwork and therefore no bias in the data collection is expected.

4.2.3 Laboratory QA/QC

Samples were analysed using the techniques and methods outlined in each sampling plan. In total there were 71 workorders undertaken with ALS.

An assessment of the laboratory data quality included a review of received laboratory reports and methods listed below.

- CoC form with laboratory signature and sample receipt notifications, date and time of receipt of samples and comment on the condition of samples, such as temperature, or damaged/ missing/ mislabelled samples
- Analytical methods and laboratory accreditation for methods used
- Laboratory LOR
- Holding and extraction times for each analysis and sample
- Method blanks
- Surrogate recoveries
- Matrix spikes recoveries
- Laboratory control samples
- Laboratory duplicates
- Parameter frequencies and summary of QA/QC outliers.

4.2.4 Laboratory documentation

Care was taken by the field team leader to ensure all samples were submitted to the laboratory. However, due to different field staff collecting samples, there were some instances where some field staff labelled samples differently (e.g., SW5 instead of GDS SW5).

4.2.5 Relative percentage difference

An acceptance criterion of 30% relative percentage difference (RPD) was adopted for samples and field duplicates, however, where concentrations were at least 10 times the limit of reporting, they were considered too low to determine RPDs with accuracy.

4.2.6 QA/QC Summary

Laboratory QA/QC outliers, RPDs above the criteria and the detection of some metals and inorganic compounds in duplicate samples were reported in this investigation. However, these were not likely to impact largely on the assessment of the results obtained.

4.3 Sediment Monitoring

Sediment sampling was undertaken in conjunction with biological monitoring. Findings relevant to sediment particle size distribution and quality are discussed below. For further detail refer Biological and Sediment Monitoring 2025 Report presented in Appendix F.

Sediment quality results presented in Table 4-6 below. Data are compared against the ARMCANZ & ANZECC 2000 default guidelines for toxicants in sediment. Site UC1 was not sampled as the tidal influence on the site would have influenced results that would not reflect the result of active discharge from Grants. Results are presented as total metals.

Table 4-6. Sediment Quality Results (Total metals mg/kg)

Analyte	LOR*	BP4	UC3	UC2	GDS SW5	DGV	GV-high
Aluminium	50	5290	1500	16900	3300	-	-
Arsenic	1	1.40	8.97	16.2	52.5	20	70
Cadmium	1	<0.1	<0.1	0.2	<0.1	1.5	10
Chromium	2	4.9	8.9	35.2	24.3	80	370
Copper	5	4.9	1.3	15.0	3.4	65	270
Iron	50	2850	4770	35600	26600	-	-
Lead	5	9.6	3.5	17.4	5.8	50	220
Lithium	0.1	5.1	2.2	50.2	3.8	-	-
Mercury	0.01	0.02	0.02	0.02	0.02	0.15	1.00
Nickel	2	2.8	1.2	13.8	4.0	21	52
Zinc	5	6.2	3.9	43.3	12.7	200	410

The Biological and Sediment Monitoring 2025 Report recorded the following observations based on the results:

- Total arsenic was above the DGV at GDS SW5.
- Cadmium was only recorded above the limit of reporting (LOR) at UC2.
- Metal concentrations in sediments were recorded in the highest concentration at UC2, except for arsenic.

Further, the report considered that arsenic is likely to be naturally present in sediments in the lower catchment. The site furthest downstream returned an arsenic value above the sediment DGVs and arsenic has been consistently detected at the site since baseline data collection in 2022 and again in 2023 and 2024 (AES 2022, AES 2023, AES 2024). The low concentration of arsenic at UC2, which is also downstream of Grants suggests that these results are not a result of discharges and sediment transport from the site. Sediment results from the tributary

entering the unnamed creek downstream of UC2, did not report elevated arsenic and are therefore not expected to be contributing to the results found downstream. Arsenic results indicate a potential risk to aquatic ecosystems, should it become bioavailable. There were no patterns in macroinvertebrate metrics or community composition that appeared to be associated to the DGV exceedance.

4.4 Biota (Macroinvertebrates)

The Biological and Sediment Monitoring 2025 Report provided as Appendix F includes extensive reporting, analysis and discussion of macroinvertebrates and should be referenced for further detail.

The Biological and Sediment Monitoring 2025 Report discussed that in 2025, macroinvertebrate sampling results showed improvement furthest downstream of Grants at GDS SW5, and other sites downstream demonstrated an improvement or similarity in health metrics from previous data. The results did not appear to have been affected by the reduction in flow at sites when compared with previous years where sites were flowing (AES 2025). Water quality results at UC1 reflected tidal influence related to the cease of flow in the unnamed creek. The suitability of the site for future sampling should be reviewed.

There were similarities in macroinvertebrate community composition between sites in each year, yet most operational years were very similar. The results do not indicate any impact to aquatic communities resulting from wet season active discharges. The community composition of samples from UC1 in 2024 was obvious and further evidences the needed review of the site's validity in the sampling design.

The compliance point, GDS SW5 showed an improvement in almost all metrics in 2025 compared to previous years, which aligned with other sites in the catchment. Although there were some observable differences between years, there was no significant difference found across sites sampled in both years for most macroinvertebrate metrics. The significant difference between baseline data and PET taxa richness can be attributed to higher values recorded in 2025 and were the same as 2024. The increase in 2025 is directly relative to increases in taxa richness. This significant difference is not considered to be a cause for concern, as it aligns with other metrics in terms of the ecosystem's condition at the time of sampling.

Macroinvertebrate and sediment sampling at Grants in 2025 was completed well into the dry season, and site characteristics reflected those conditions. Despite the late sampling, there appeared to be little effect on the validity of results. Habitat attributes of each site appeared to influence the differences in macroinvertebrate metrics and community composition.

The Biological and Sediment Monitoring 2025 Report concluded that the results of sampling in 2025 demonstrate that active discharge from Grants has had no significant impact on the aquatic ecosystems of waterways draining to Darwin Harbour.

Additionally, the Biological and Sediment Monitoring 2025 Report has recommended changes to refine biological and sediment monitoring program. These include:

- Rationalisation that BP4 is not a suitable reference site for this program, and that UC3 continues to be the upstream reference, due to its similarity in morphology and position in the catchment. BP4 is located on a larger and permanently inundated stream (East Charlotte River). BP4 has recorded very little difference in macroinvertebrate metrics at the site over time, which is to be expected given the morphology and permanent water presence at the site. Whereas, the smaller intermittent streams that drain to Darwin Harbour, such as the creek downstream of Grants, are much more flow reactive during rainfall events, and macroinvertebrate communities are heavily influenced by inter-annual differences in rainfall.
- Observation that site UC1 is in an ecotone of the unnamed creek draining from Grants. The intermittent influence of the tide is likely to be altering the macroinvertebrate community, depending on flow at the

time of spring tides. The site is unlikely to be a reliable monitoring point in the long-term. To continue the replication of downstream sites, it is suggested that a monitoring point should be established upstream of the confluence of the Unnamed Creek containing UC3 and Cox Peninsula Road.

- The undertaking of sediment monitoring in an upstream site on the Unnamed Creek to the north-west of the site, due to the site's location in the top headwaters of the stream to assist with understanding background sediment chemistry of the catchment. The report however notes that there would unlikely be water available for macroinvertebrate sampling.

4.5 Riparian vegetation

As previously discussed, riparian vegetation monitoring was conducted in May 2025 and included drone imagery, ground-based vegetation survey, and photographic documentation of the three riparian ecosystems (comprising swamp, riparian and mangrove). Results were then compared to the baseline survey conducted in June 2019.

The 2025 ground-based vegetation survey showed minimal changes in composition and structure across the plots when compared to the 2019 baseline survey. While two plots showed slight shifts in dominant species, vegetation classification and structure remained stable. The mangrove plot did not record a ground stratum during the 2025 survey, though open grassland beyond the plot and mangrove boundary was observed. The riparian plot upper stratum was confined to creek banks, while the mid layer and grassland dominated the remaining area, though with no compositional change. The swamp plot remained the most diverse, demonstrating stable classification across upper, mid, and ground strata, despite some variation in dominant species compared to 2019.

Aerial and VARI imagery indicated a slight decrease in the extent of swamp riparian vegetation, in contrast to a slight increase of the other two riparian ecosystems.

Overall, based on comparative analysis of the 2019 and 2025 monitoring surveys, the three riparian vegetation plots demonstrated stable composition, structural characteristics and extent indicating that the mining activity is not impacting on riparian vegetation communities downstream.

For further information refer the Riparian Vegetation Annual Monitoring Report provided as Appendix H.

4.6 Sample Completeness

Review of sample completeness in accordance with WDL248-02 has identified the following exceptions:

- Daily surface water field parameters not monitored on the 14 March 2025. The reason monitoring was not undertaken was because of closure of the Cox Peninsula Road consequent to a fatal traffic incident. Cox Peninsula Road was re-opened on the 15 March 2025 and monitoring was undertaken on the 15 March 2025 as soon as practicable.
- Darwin Harbour monitoring including marine surface water quality (GDS DH1); macroinvertebrate and sediment (GDS DH1, GDS DH4 and GDS DH5); and seagrass monitoring (GDS DH1, GDS DH4 and GDS DH5). The reason monitoring was not undertaken was because LDGNT did not attain access to a suitably compliant vessel, including operator, to access the Darwin Harbour and undertake monitoring works.

Noting Darwin Harbour sample completeness issues reported above and the cause related to access to a suitably compliance vessel, LDGNT undertook market research and partnered with a local supplier to gain access including operation of a suitable vessel constructed and maintained in survey. This vessel has been used to undertake marine surface water quality sampling in Darwin Harbour in accordance with WDL248-03 for the 2025 to 2026 reporting period. The vessel will also be used to undertake macroinvertebrate and sediment sampling in Darwin Harbour in May 2026. Additionally, O2 Marine, a marine specialist environmental consultancy recently established

in Darwin, has been engaged to undertake a comprehensive seagrass monitoring survey. It is noted seagrass monitoring previously undertaken in West Arm at sites GDS DH1, 2 and 3 had failed to detect seagrass. The sample design for the seagrass survey scheduled for May 2026 will include a more comprehensive sample design including use of a towed underwater video and downwards facing camera for sampling. Processing and assessment of underwater imagery will then be undertaken using semi-quantitative metrics (percent cover).

5 Contaminant Loads

Contaminant loads were calculated for DP1 (MWD1C3) over the reporting period. As tabulated in section 2.2, discharge from DP1 commenced on 20 January 2025 and ceased 14 April 2025 and a total of 432.6ML of mine wastewater was discharged. The calculations were based on the daily discharge volume and concentration of contaminant present in the discharge on that day. On the days when a sample was not taken, the concentration of the contaminant was estimated using linear interpolation methodology.

The contaminant loads for the reporting period are shown in Table 5-1. The contaminants are listed in order of load (highest to lowest).

Table 5-1. Monthly and Annual Contaminant Loads

Parameter	Jan 2025	Feb 2025	Mar 2025	Apr 2025	Total 2025 (kg)
TSS (kg)	133.2	800.5	553.1	330.3	1817.2
TN (kg)	46.0	223.3	198.5	78.1	545.9
Nitrate (As N kg)	0.2	70.3	141.6	68.6	280.6
Kjeldahl Nitrogen Total (kg)	48.2	131.9	52.9	9.6	242.6
Lithium (kg)	15.0	77.1	45.4	20.6	158.1
Ammonia (NH3 kg)	6.7	40.3	13.6	1.8	62.3
TP (kg)	1.2	44.3	4.4	2.0	51.9
Nitrite (as N kg)	0.7	12.2	13.3	13.1	39.3
Iron (kg)	0.9	4.0	3.9	2.0	10.8
Arsenic (kg)	0.18	1.94	1.96	0.88	4.96
Aluminium (kg)	0.54	1.27	0.79	0.40	3.00
FRP (kg)	0.22	0.90	1.11	0.57	2.81
Zinc (kg)	0.40	0.87	0.43	0.20	1.90
Nickel (kg)	0.02	0.37	0.38	0.16	0.92
Copper (kg)	0.02	0.08	0.09	0.04	0.23
Chromium (III+VI) (kg)	0.02	0.08	0.08	0.04	0.22
Lead (kg)	0.02	0.08	0.08	0.04	0.22
Cadmium (kg)	0.00	0.02	0.02	0.01	0.06
Mercury (kg)	0.00	0.01	0.01	0.00	0.02

6 Long Term Trend Analysis

Long term trend analysis has been undertaken for the preceding three years, comprising the reporting periods 2022/2023, 2023/2024 and 2024/2025. The commencement date for WDL248 was the 25 July 2022.

Long term trend analysis has been undertaken for key parameters, which have been identified as turbidity, TN, TP, filtered aluminium, filtered arsenic, filtered iron, filtered lithium and TSS, on the basis that these parameters

have been observed at elevated concentrations compared to background surface water quality and/or above the respective WDL248 TV's during the life of the monitoring program. Conversely, long term trend analysis has not been undertaken for the balance of the parameters where such parameters have consistently demonstrated similar chemistry to background surface water quality, consistently demonstrate conformance with respective TV's and/or consistently measured at below laboratory detection limits.

The long-term trend analysis includes mine wastewater, the discharge from which comprises the licensed action under WDL248, as well as the sediment basins from which passive discharge may occur and compliance point SW5.

Please note, that to facilitate graphical presentation using MS Excel, annual median concentrations and contaminant loads of key parameters for the reporting periods 2022/2023, 2023/2024 and 2024/2025 have been presented as 2023, 2024 and 2025 respectively in the charts below. Correspondingly, the narrative relevant to the graphs below also adopts this time reference.

6.1 Turbidity

Figure 6-1 graphically presents annual median turbidity for the available reporting periods. Turbidity has generally improved in 2025 compared to previous years and this is attributed to both re-establishment of ground cover vegetation in disturbed areas as well as a cessation of civil construction works and associated ground disturbance. It is observed that sediment basins Sed1A, Sed2 and Sed3 recorded highly elevated turbidity in 2024 compared to 2023 and 2025.

Figure 6-2 demonstrates that the annual median turbidity value at compliance site SW5 exceeded the respective WDL248 TV in both 2023 and 2024 but was below in 2025.

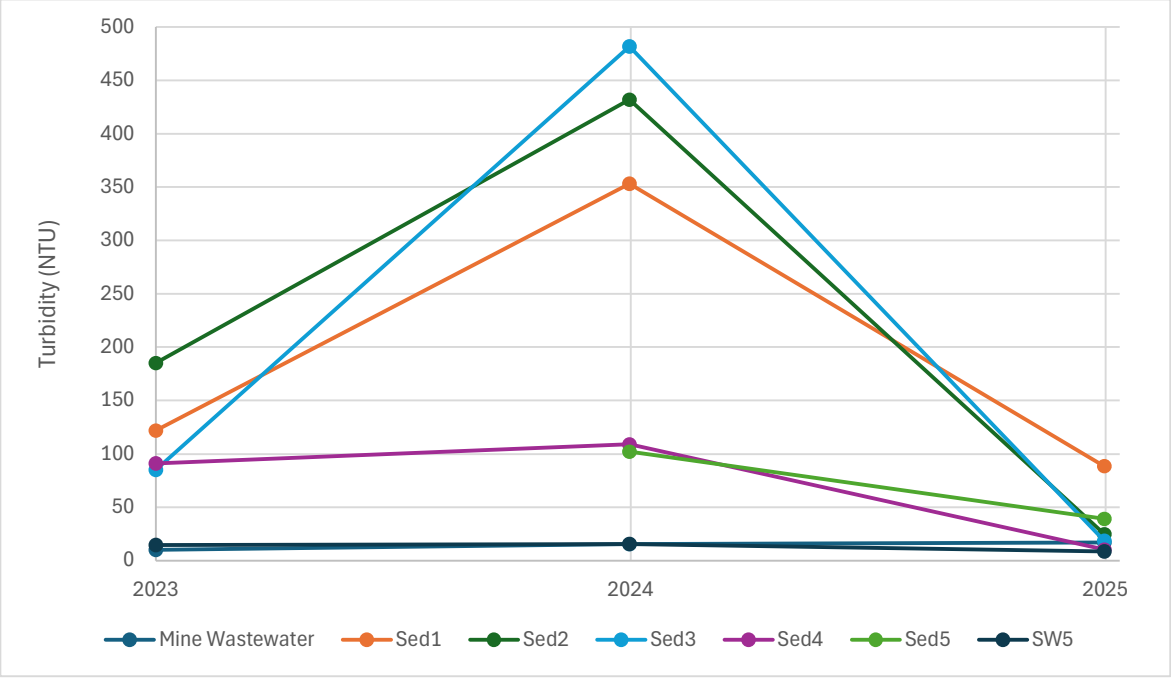


Figure 6-1. Annual Median Turbidity 2023 - 2025

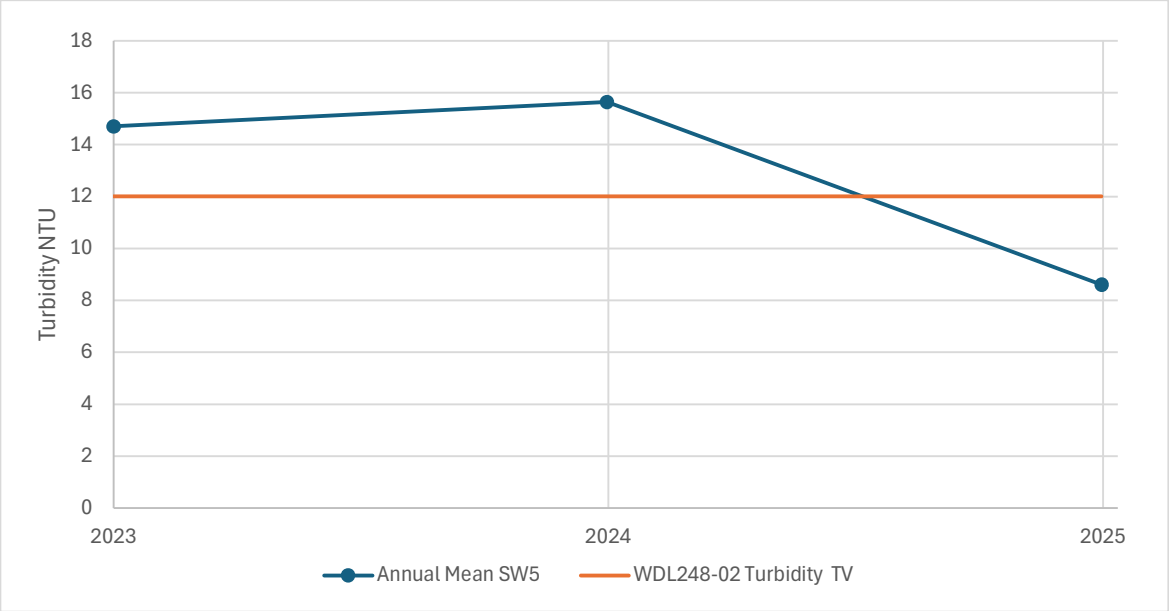


Figure 6-2. SW5 Annual Median Turbidity vs WDL248 TV

6.2 Total Nitrogen

Figure 6-3 graphically presents annual median TN values for the available reporting periods. TN median values are observed to be higher in 2024 compared to 2023 and 2025. Notable TN median values for mine wastewater were significantly reduced in 2025 compared to 2023 and 2024. The reason for the decrease in TN in mine wastewater is not clear but may be related to the suspension of mining and processing activities during the 2025 reporting period. It is also observed that annual median TN values for Sed1A, Sed2, Sed3 were also elevated in 2024 compared to 2023 and 2025.

Figure 6-4 illustrates that the annual median value for TN at compliance site SW5 exceeded the respective WDL248 TV in 2024 but was below the TV in 2023 and 2025.

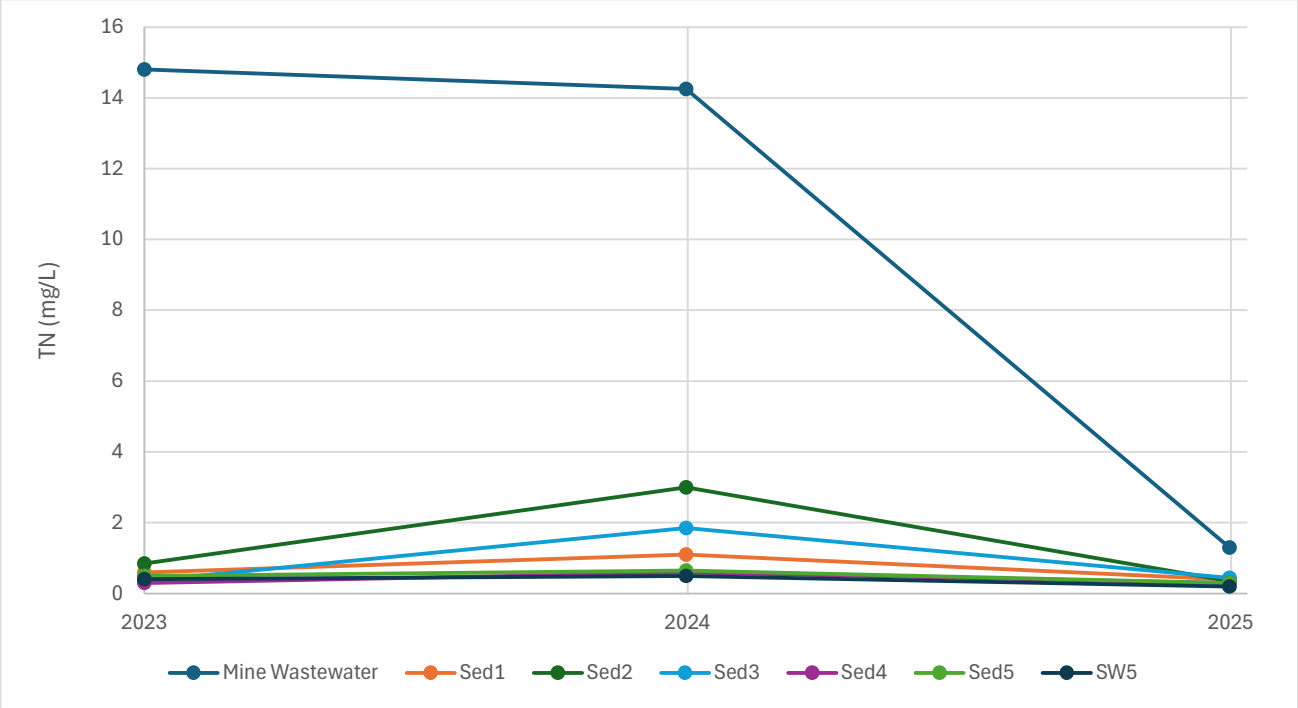


Figure 6-3. Annual Median TN 2023 - 2025

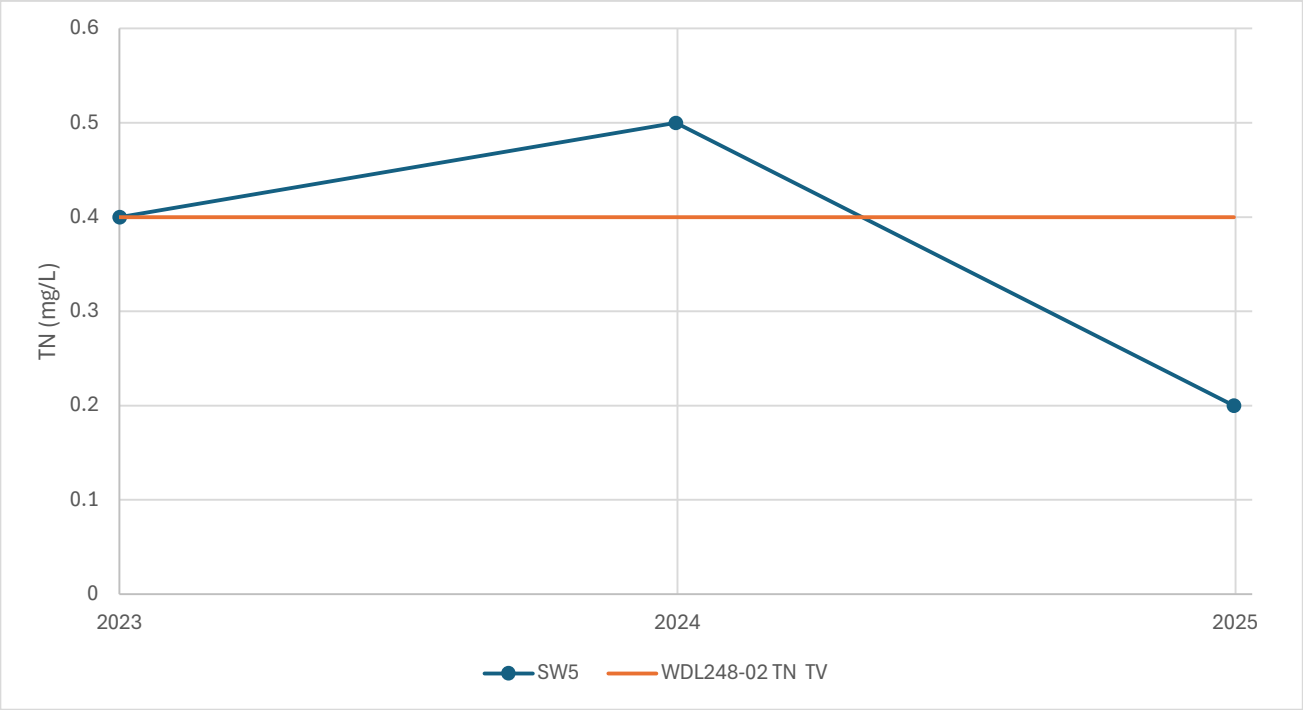


Figure 6-4. SW5 Annual Median TN vs WDL248 TV

6.3 Total Phosphorus

Figure 6-5 graphically presents annual median TP values for the available reporting periods. It is observed that annual median TP values for Sed1A, Sed2, Sed3 were substantially elevated in 2024 compared to 2023 and 2025. A similar trend for annual median TN values was also observed for Sed1A, Sed2 and Sed 3 over the same period. The reason for the decrease in TP values at Sed1A, Sed2 and Sed3 in 2025 is not clear but may be related to re-establishment of ground cover vegetation in disturbed areas as well as a cessation of civil construction works and associated ground disturbance. Based on anecdotal experience reviewing surface water monitoring data over successive years, it is inferred that phosphorus is naturally elevated in local soils and disturbances such as land clearing and/or civil works may result in elevation in phosphorus in surface water runoff.

Figure 6-6 illustrates that the annual median value for TP at compliance site SW5 has consistently exceeded the respective WDL248-02 TV of 0.01mg/L. Notably, WDL248 was renewed in 2025 and at this time the TV for TP was re-derived using a larger and more robust monitoring dataset from the upstream reference site (SW7) that was inclusive of natural variation in rainfall and creek flow over multiple years that represents the naturally occurring water quality in the local region. Having reference to the WDL248-03 TV of 0.035mg/L for Total Phosphorus, it is observed that the annual median value for TP at compliance site SW5 has consistently remained below the revised TP TV under WDL248-03 for all years.

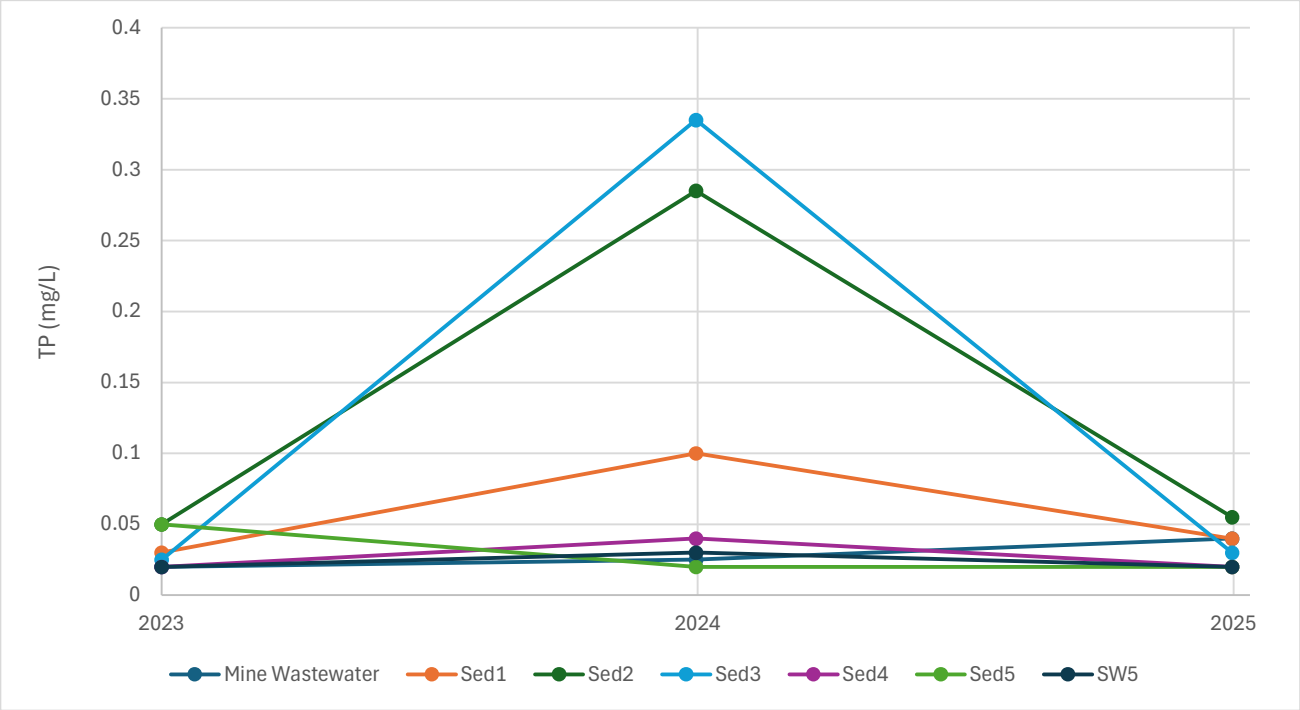


Figure 6-5. Annual Median TP 2023 - 2025

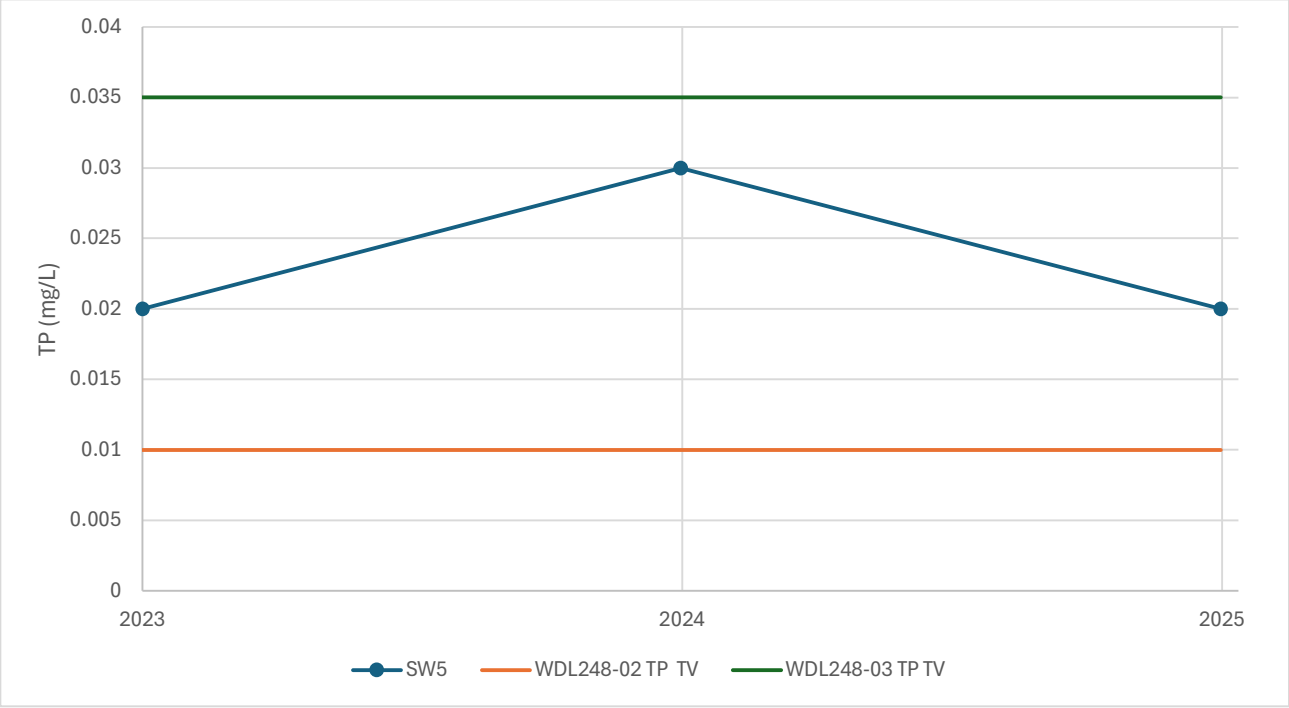


Figure 6-6. SW5 Annual Median TP vs WDL248 TV

6.4 Filtered Aluminium

Annual median filtered aluminium valves are presented graphically in Figure 6-7. There is a general trend at most sites of filtered aluminium values reaching a maximum in 2024 followed by a decrease in 2025 to levels in the range of those recorded in 2023. The observed trend in filtered aluminium may be related to a combination of

civil works and land disturbance contributing to an increase and subsequent re-establishment of ground cover vegetation in disturbed areas as well as a cessation of civil construction works contributing to a decrease. Nonetheless, the annual median filtered aluminium values were below the respective WDL248 TVs at all sites in all years.

Figure 6-8 illustrates that the annual median value for filtered aluminium at compliance site SW5 was consistently below respective WDL248-02 TV.

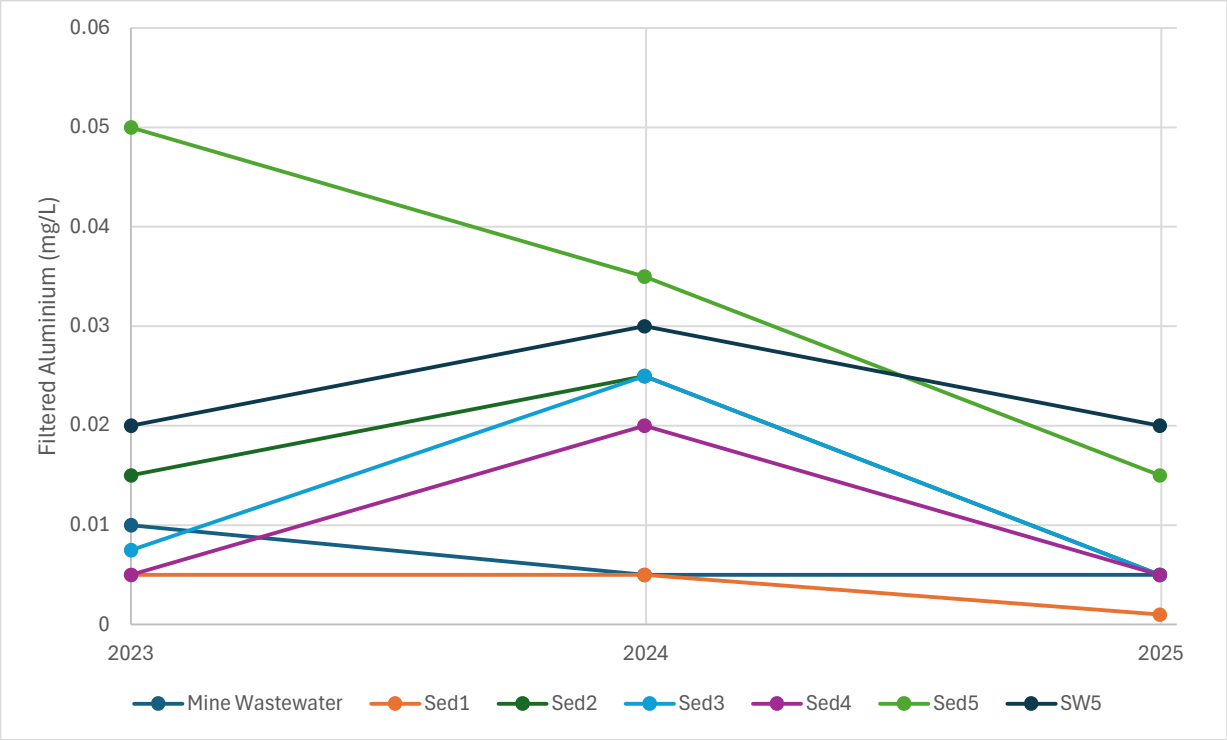


Figure 6-7. Annual Median Filtered Aluminium 2023 - 2025

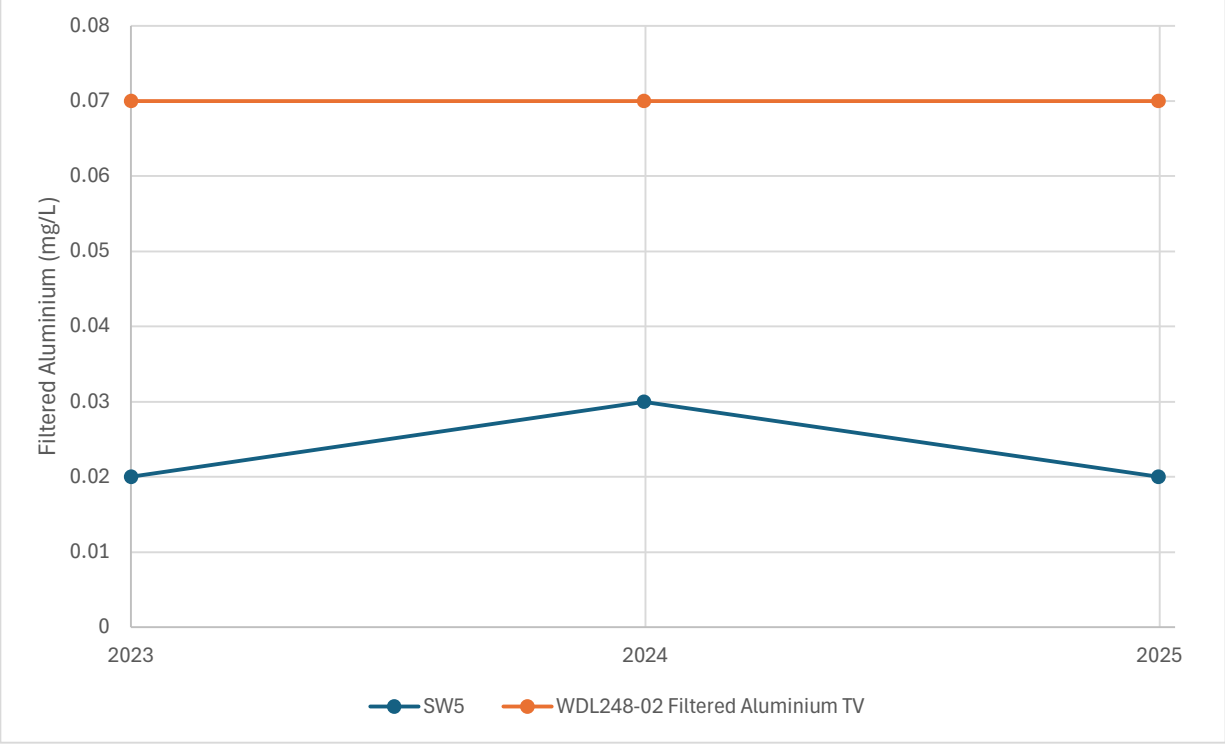


Figure 6-8. SW5 Annual Median Filtered Aluminium vs WDL248 TV

6.5 Filtered Arsenic

Annual median filtered arsenic valves are presented graphically in Figure 6-9. Filtered arsenic values at all sites, except mine wastewater, decreased from 2023 to 2024 following which there has been minimal variation in 2025. Mine wastewater filtered arsenic values increased from 2023 to 2024 and decreased from 2024 to 2025. The annual median filtered arsenic values for mine wastewater exceeded the respective TV in 2024 but was less than the TL in 2023 and 2025.

Figure 6-10 illustrates that the annual median value for filtered arsenic at compliance site SW5 was consistently below respective WDL248-02 TV.

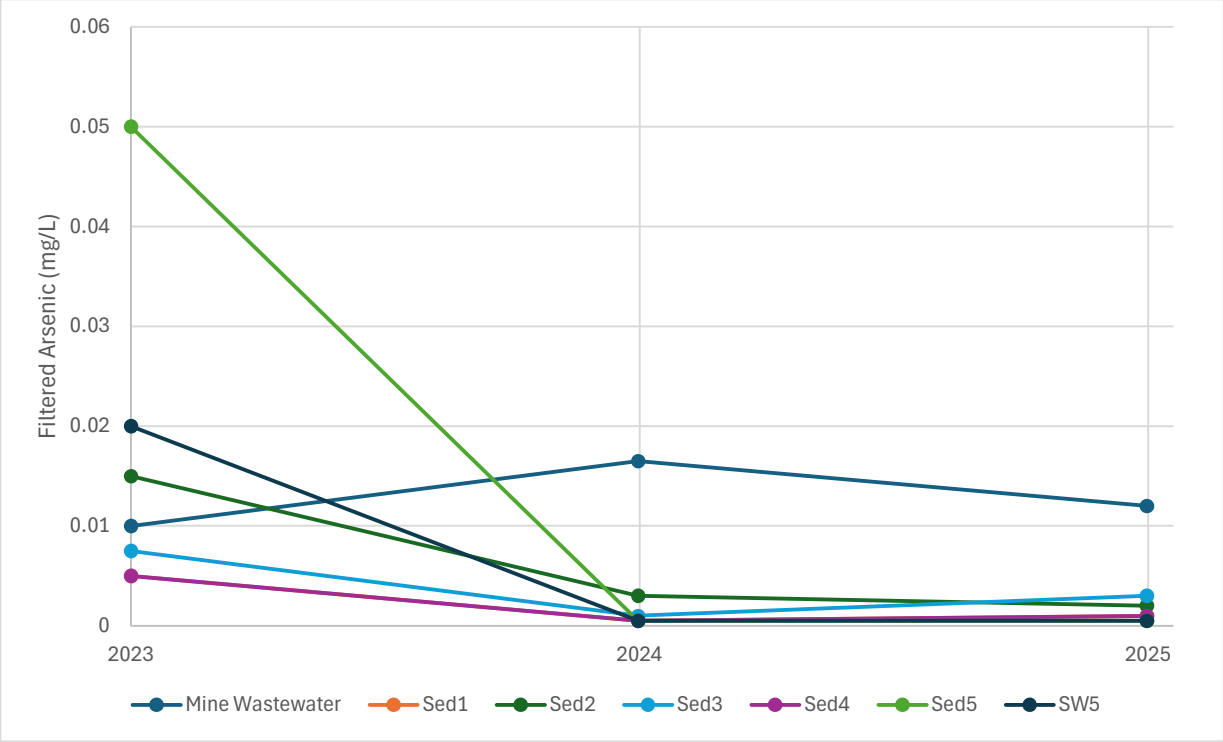


Figure 6-9. Annual Median Filtered Arsenic 2023 - 2025

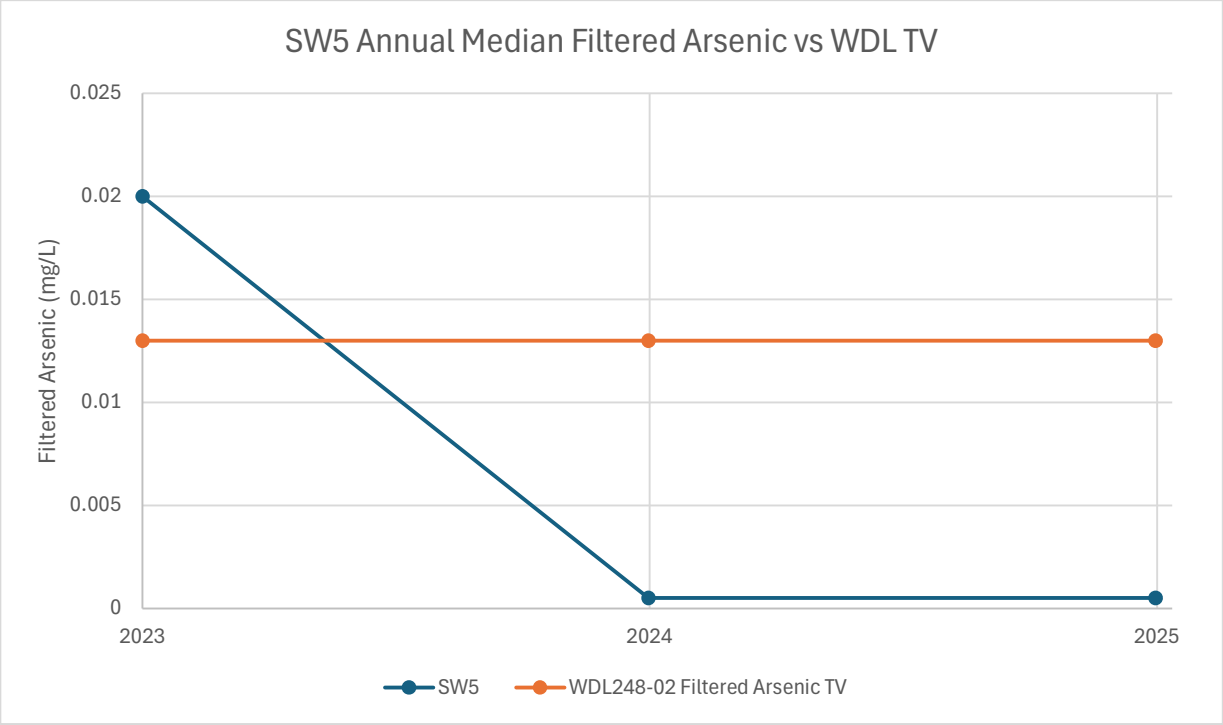
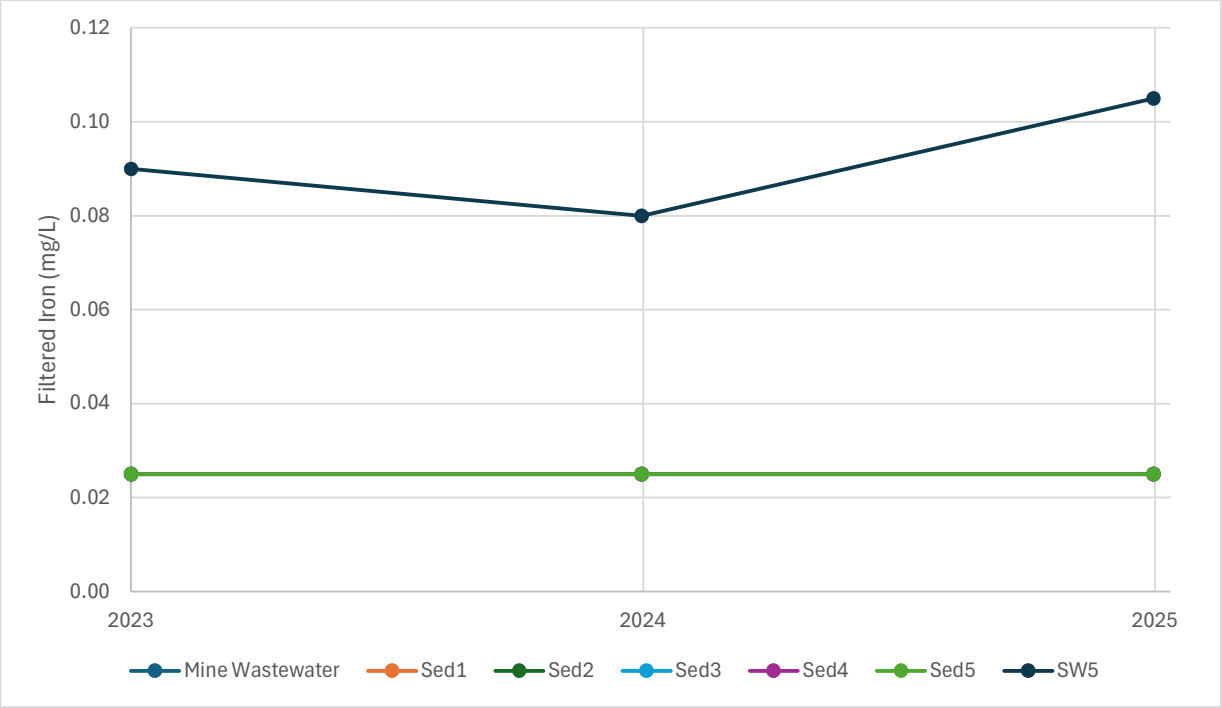


Figure 6-10. SW5 Annual Median Filtered Arsenic vs WDL248 TV

6.6 Filtered Iron

Annual median filtered iron valves are presented graphically in Figure 6-11. The annual median values for filtered iron for sites Mine Wastewater, Sed1A, Sed2, Sed3, Sed4 and Sed5A have all recorded a median value of 0.025 mg/L of filtered iron in all years. The annual median filtered iron values at SW5, whilst below the respective WDL248 TV, were elevated compared to mine wastewater and sediment basin water. Review of broader surface water moniotring data indicates the presence of filtered iron in water originating from catchments upstream of SW4 and Hang Gong. Observed elevations in filtered iron are attributed to natural wet season redox processes occurring in seasonally inundated floodplains.

Figure 6-12 illustrates that the annual median value for filtered iron at compliance site SW5 was consistently below respective WDL248-02 TV.



Note: Recorded values for Mine Wastewater, Sed1A, Sed2, Sed3, Sed4 and Sed5 have all recorded a median value of 0.025 mg/L filtered iron in all years and hence only a single line for these sites is represented in the above chart.

Figure 6-11. Annual Median Filtered Iron 2023 - 2025

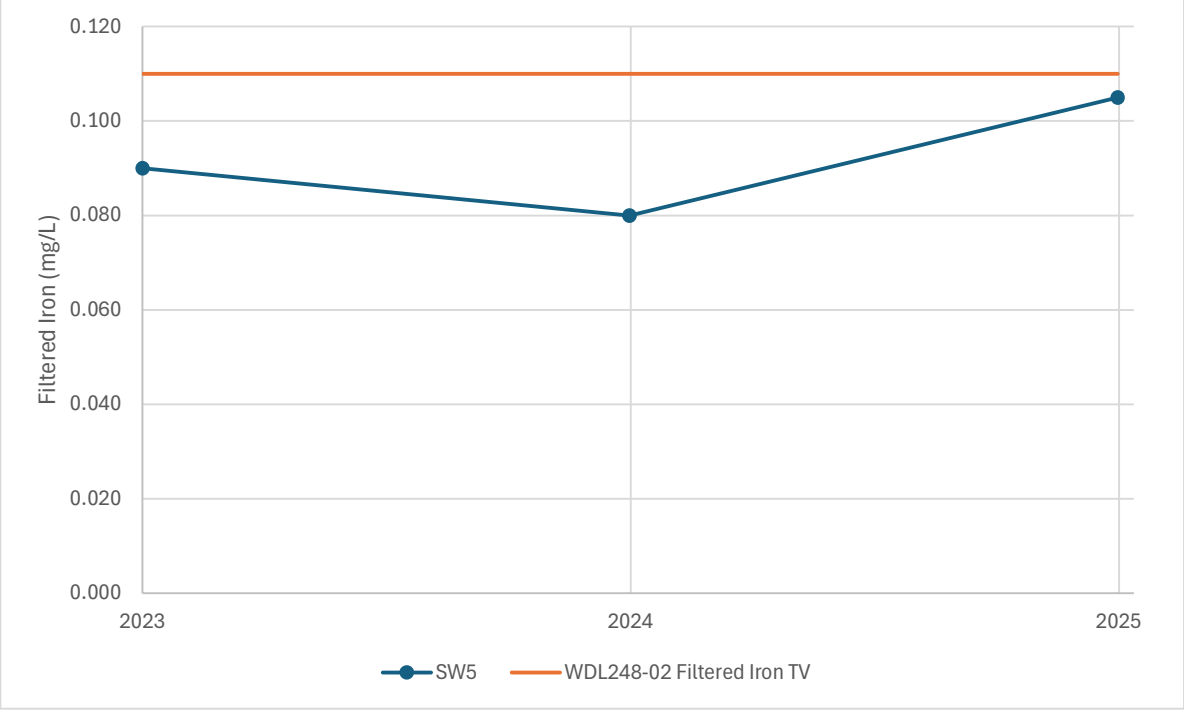


Figure 6-12 SW5 Annual Median Filtered Iron vs WDL248 TV

6.7 Filtered Lithium

Annual median filtered lithium valves are presented graphically in Figure 6-13. The highest filtered lithium values were observed in Mine Wastewater and Sed2. The annual median filtered lithium value for Mine Wastewater in 2024 was 0.487 mg/L which exceeded the respective WDL248 TV of 0.43 mg/L.

Figure 6-14 illustrates that the annual median value for filtered lithium at compliance site SW5 was consistently below respective WDL248 TV in all years.

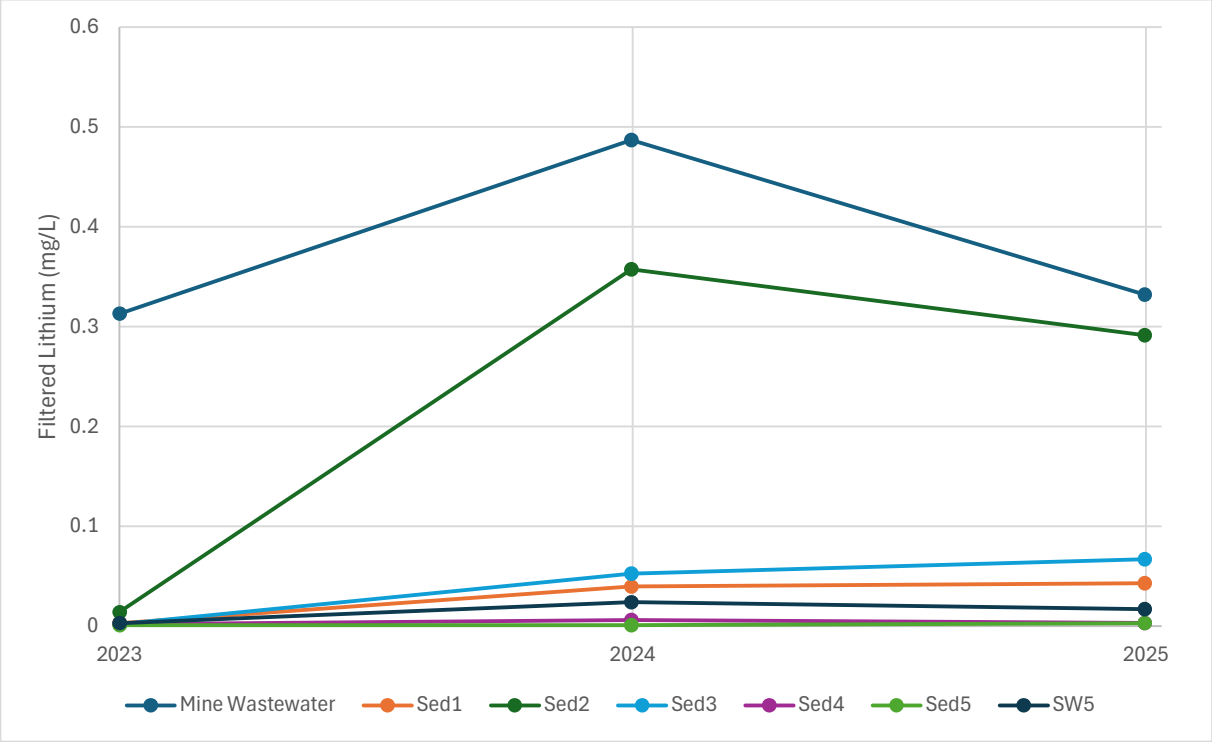


Figure 6-13. Annual Median Filtered Lithium 2023 - 2025

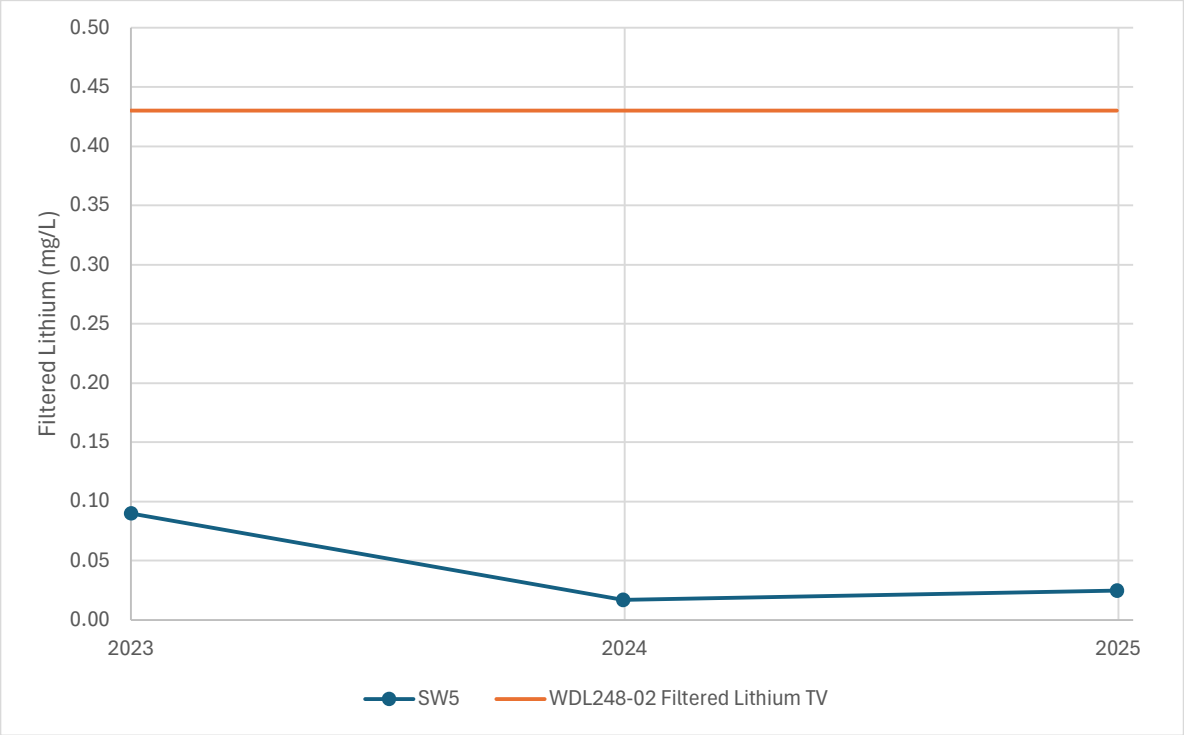


Figure 6-14 SW5 Annual Median Filtered Lithium vs WDL248 TV

6.8 Total Suspended Solids (TSS)

Figure 6-15 graphically presents TSS for the available reporting periods. The graph indicates that TSS values were highest in 2024 and generally decreased to minimum observed values in 2025. The observed trend in TSS may be related to a combination of civil works and land disturbance contributing to an increase and subsequent re-establishment of ground cover vegetation in disturbed areas as well as a cessation of civil construction works contributing to a decrease. It is noted that WDL248 does not apply a discharge trigger value for TSS.

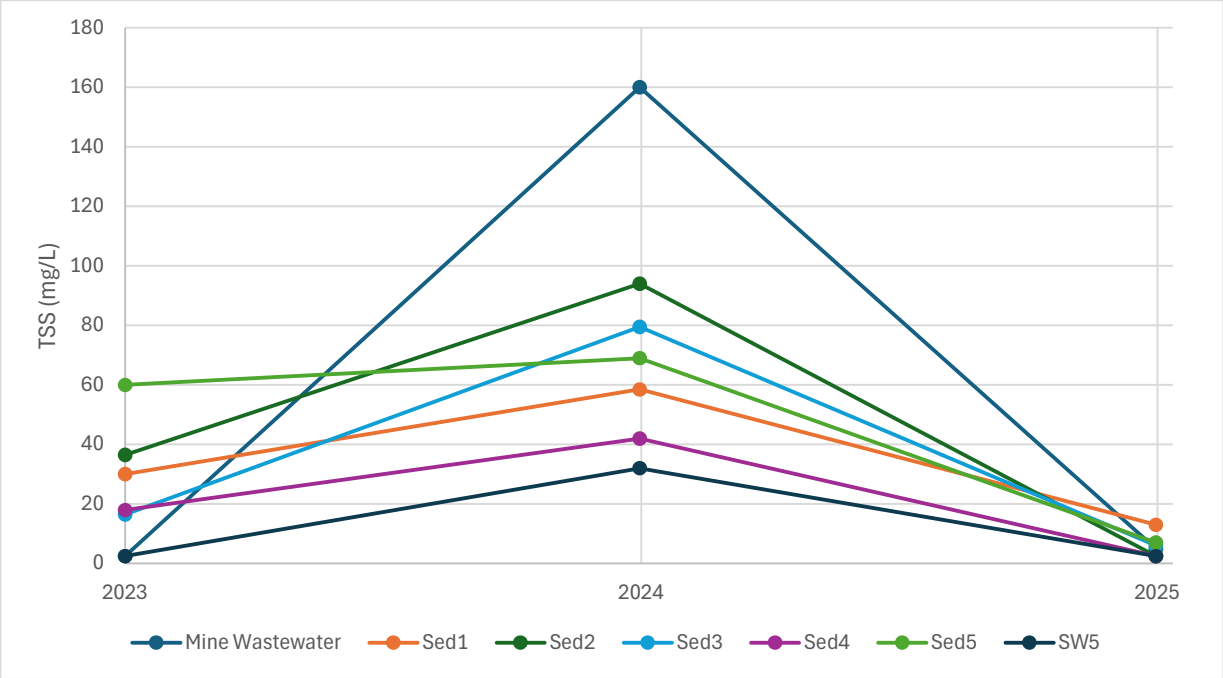


Figure 6-15. Annual Median Total Suspended Solids 2023 - 2025

6.9 Contaminant Loads

Annual contaminant loads for the identified key parameters TN, TP, filtered aluminium, filtered arsenic, filtered lithium, filtered iron and TSS are presented in Figures 6-16 to 6-21 respectively below.

Compared to the previous years, the parameters TSS, TN, filtered aluminium and filtered iron recorded the lowest contaminant loads in 2025 compared to 2023 and 2024.

Conversely, TP and filtered lithium contaminant loads have increased over time respectively recording the highest contaminant loads in 2025. The increase in TP contaminant loads in 2025 are related to an increase in the concentration of TP in mine wastewater as well as an increase in discharge volume compared to previous years. The increase in filtered lithium is largely related to an increase in discharge volume compared to previous years.

Filtered arsenic annual contaminant loads increased from 2023 to 2024 and slightly decreased from 2024 to 2025.

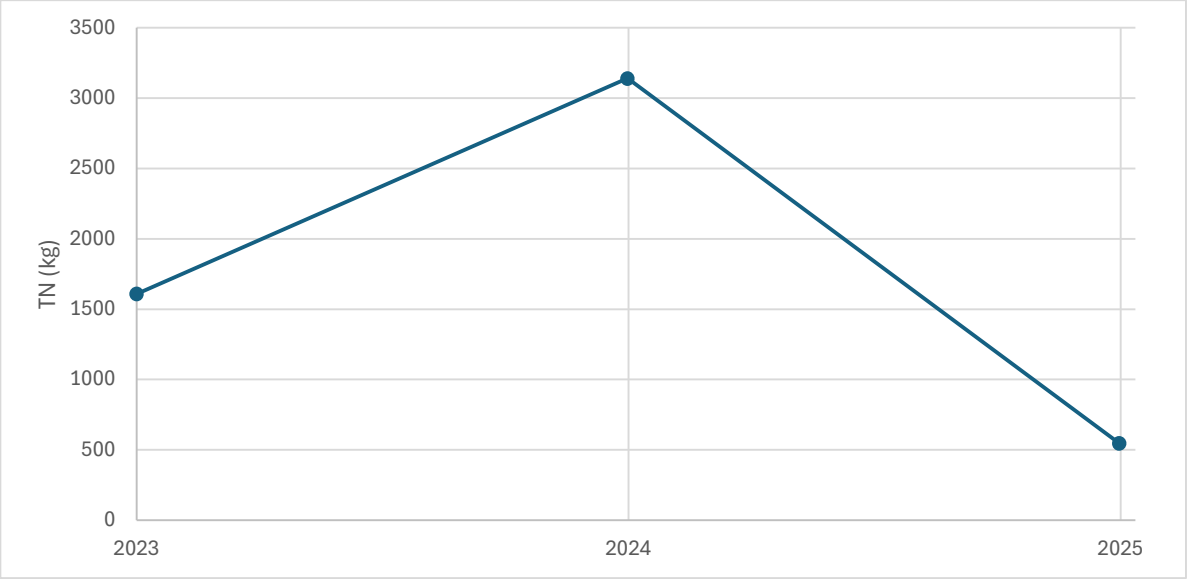


Figure 6-16. Total Nitrogen Loads 2023 - 2025

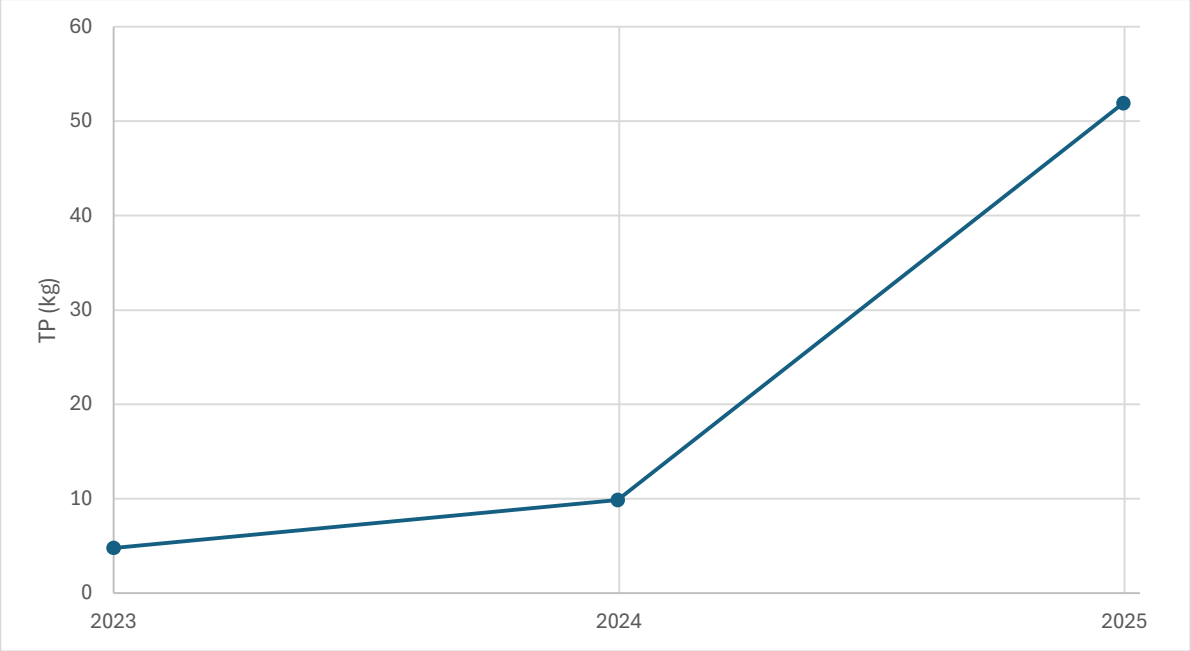


Figure 6-17. Total Phosphorus Loads 2023 - 2025

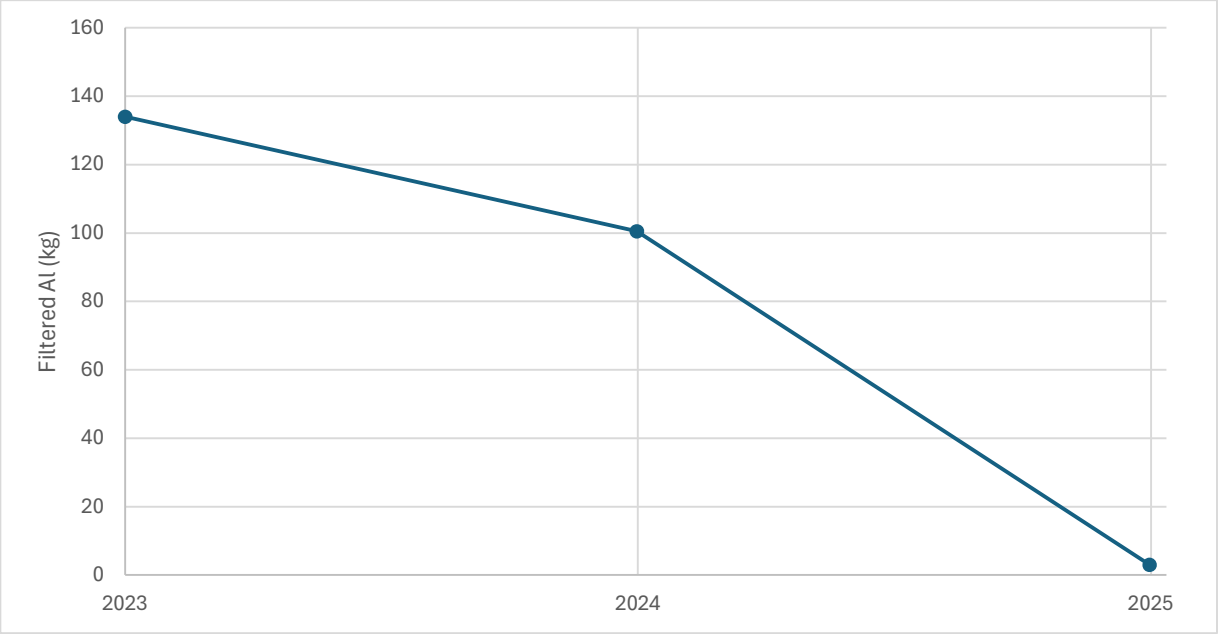


Figure 6-18. Filtered Aluminium Loads 2023 - 2025

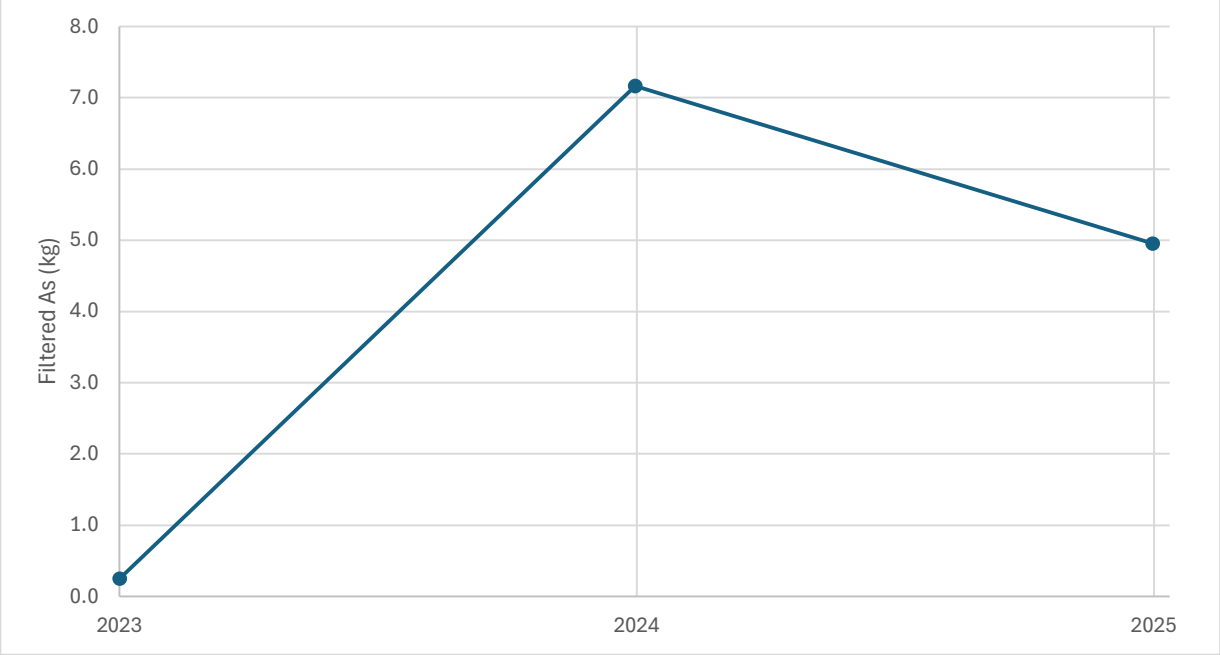


Figure 6-19. Filtered Arsenic Loads 2023 - 2025

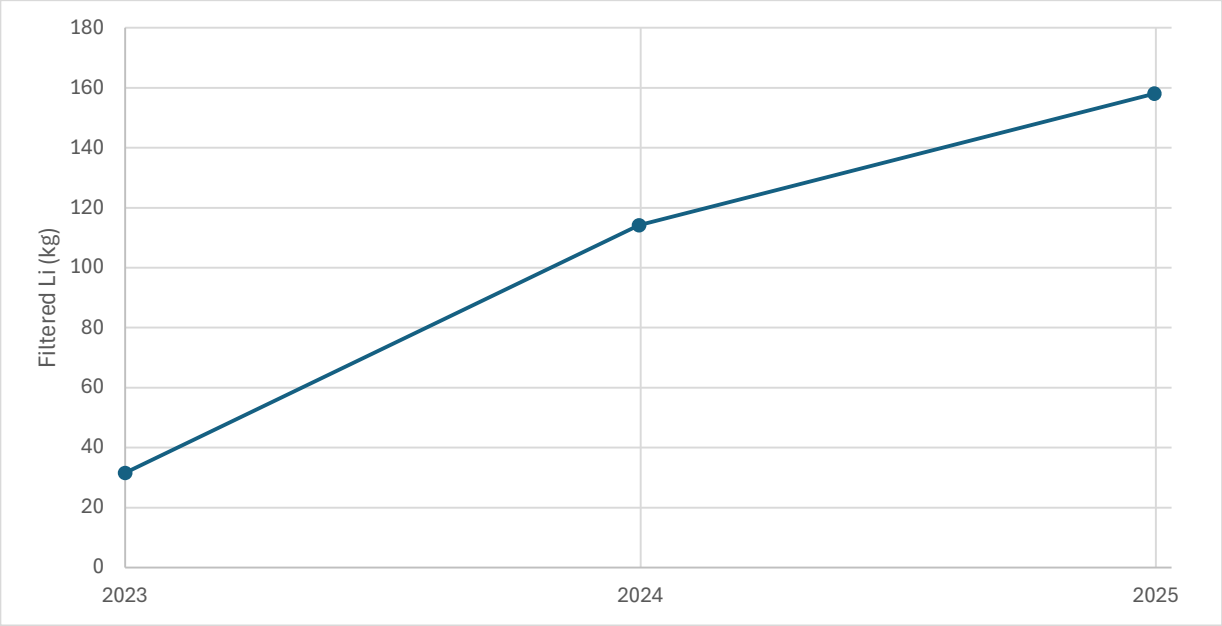


Figure 6-20. Filtered Lithium Loads 2023 - 2025

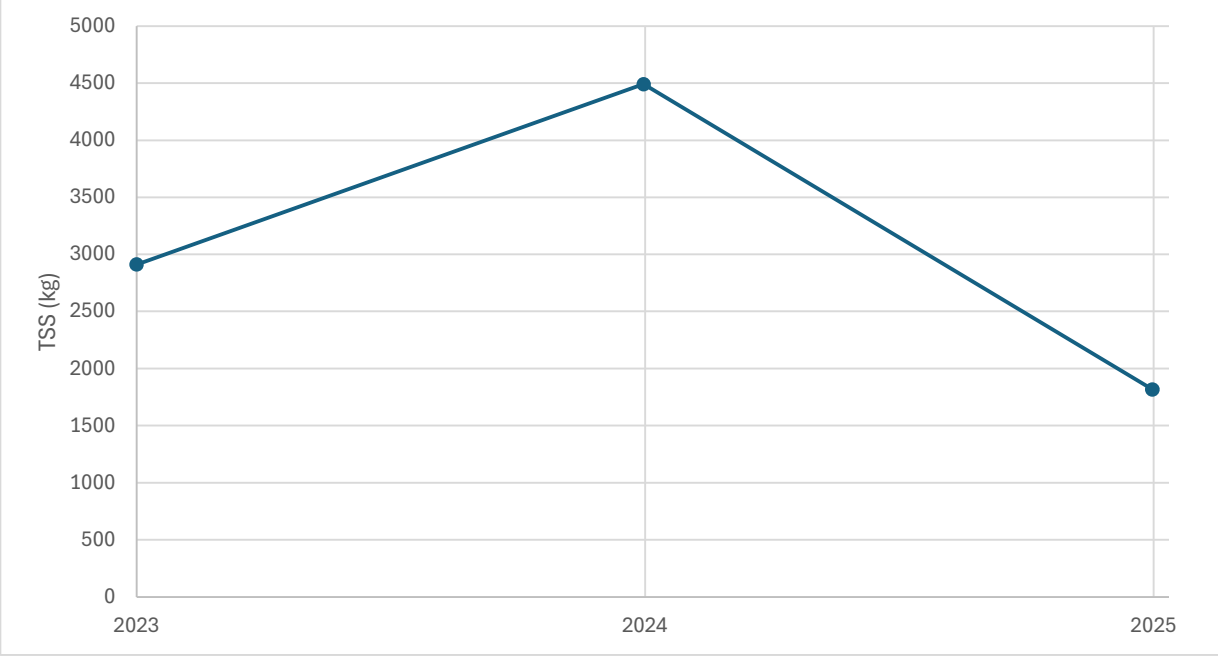


Figure 6-21. TSS Loads 2023 - 2025

7 Summary of Investigations

7.1 TV Exceedances

TV exceedances include non-notifiable (refer Condition 24 of WDL253) and notifiable exceedances in accordance with Conditions 24 and 25 respectively of WDL248-03.

Both non-notifiable and notifiable exceedances have been recorded and investigated as per the Investigation of TV Exceedances Register presented in Appendix H.

It is noted that five notifiable incidents were reported to DLPE during the reporting period. However, during processing of surface water monitoring data as part development of this annual monitoring report, two instances of exceeding the filtered iron TV twice were found, which were notifiable incidents under Item 12 of WDL248-02. However, at the time the filtered iron exceedances occurred, it was not reconciled that each of the two exceedances required reporting and investigation as notifiable incidents in accordance with Condition 41. The omission of these two notifiable incidents has been reported in the Annual Return. Notwithstanding, it is noted that the individual filtered iron exceedances were recorded and investigated in accordance with WDL248-02 Condition 27 at the time of each individual detection.

A summary of the notifiable incidents is provided in Table 7-1.

Table 7-1 Summary of WDL248-02 Item 10 Notifiable Incidents

Date	Description	Actions
27/01/2025	TP of 0.05mg/L recorded at compliance point SW5, an exceedance of three or more times the trigger value for TP under WDL248-02 of 0.01mg/L.	Reported to NT DLPE 5/02/2025
19/02/2025	TP of 0.19mg/L recorded at compliance point SW5, an exceedance of three or more times the trigger value for TP under WDL248-02 of 0.01mg/L.	Reported to DLPE 28/02/2025
5/03/2025	Two instances of filtered iron (0.14mg/L and 0.18mg/L on the 19/02/2025 and 5/03/2025 respectively) exceeding the trigger value of 0.11mg/L at compliance point SW5 under WDL248-02.	*Reported in Annual Return to DLPE 25/08/2026.
31/03/2025	Two instances of filtered iron (0.18mg/L and 0.28mg/L on the 19/02/2025 and 31/03/2025 respectively) exceeding the trigger value of 0.11mg/L at compliance point SW5 under WDL248-02.	*Reported in Annual Return to DLPE 25/08/2026.
12/03/2025	TP of 0.06mg/L recorded at compliance point SW5, an exceedance of three or more times the trigger value for TP under WDL248-02 of 0.01mg/L.	Reported to DLPE on 24/03/2025
1/04/2025	Turbidity recorded at compliance point SW5 at 42.2NTU, an exceedance of three or more times the trigger value under WDL248-02.	Reported to DLPE on 1/04/2025
14/04/2025	Turbidity exceedances of the trigger value under WDL248-02 recorded on three consecutive sampling occasions (12/04/2025 at 16.8NTU, 13/04/2025 at 12.13NTU and 14/04/2025 at 13.06NTU).	Reported to DLPE on 14/04/2025

7.2 Ecotoxicology

Direct toxicity assessment of mine affected water was completed in March 2024, during the previous reporting period, using a range of concentrations of water sourced from the Fines Storage Facility, Grants Pit, and the downstream compliance point SW5. No acute toxicity was observed in any of the samples. However, chronic toxicity was observed in the Grants Pit and TSF samples, with the TSF showing the most chronic toxicity.

Building on ecotoxicology investigations undertaken in 2024, direct toxicity assessment was undertaken for mine wastewater (MWD1C3), Sed2 and SW5 using water samples collected on 26 March 2025. Discharge from MWD1C3 was occurring prior to and during the time of sampling. Testing was undertaken using freshwater cladoceran *Ceriodaphnia dubia* for survival (Acute) and reproduction (Chronic) toxicity using water from SW7 as a diluent. It is noted that testing was only undertaken using *Ceriodaphnia dubia* as this is the most sensitive species available for ecotoxicology testing. The EC and pH for SW7 were low and below the threshold for normal reproduction and so EC was raised to 100 µs/cm and pH to 8.0 prior to use as the diluent. The toxicity test report showed that the only sample to show an effect, albeit minor, was reproduction for Sed2. Refer Toxicity Test Report RT2314/1 in Appendix I.

8 Compliance with Trigger Values

An assessment of compliance with respective TVs at compliance site SW5 is required to be undertaken in accordance with the requirements of Item 16 of WDL248-03. Further, Department advice is to use the TP TV of 0.35 mg/L in WDL248-03 to determine compliance with criteria in Item 16 for the reporting period.

For ease of reference, Item 16 of WDL248-03 is reproduced below.

Item	Detail
16. Compliance with trigger values	For the annual reporting period, the trigger values at Item 7 shall be regarded as being complied with if: (a) For metals, hydrocarbons and other toxicants, not more than one measurement or, if more than 20 samples are collected, 5% of the measured values, exceed the trigger values specified in Item 7; (b) For nutrient and physical-chemical parameters (DO, pH, EC, temperature), the median value of measurements does not exceed, or is not outside the range of, the trigger values specified in Item 7; and (c) For any other indicators, not more than 20% of samples exceed, or are outside the range of, the trigger values specified in Item 7.

An assessment of compliance with the TV at Item 7 identified compliance for all parameters listed in WDL248-03 Appendix 2 with exception to the filtered iron. For the reporting period, 4 out of 17 samples for filtered iron at SW5 exceeded the TV. The source of filtered iron at SW5 has been discussed in section 6.6 of this report and was attributed to surface water originating from catchments upstream of SW4 and Hang Gong. While these catchments have been disturbed consequent to historical mining and exploration activities, the observed elevations in filtered iron are attributed to natural wet season redox processes occurring in seasonally inundated floodplains. Having regard to Grants mine, review of mine wastewater and sediment basin water over the reporting period confirms that filtered iron has consistently been recorded at low values relative to the respective TV and/or below laboratory limit of reporting.

9 Impacts of Wastewater Discharge

An assessment of compliance with TVs at compliance site SW5 in accordance with Item 16 of WDL248-03 identified compliance for all parameters with exception to filtered iron. Observed elevations in filtered iron were associated with surface water runoff upstream of surface water monitoring sites SW4 and Hang Gong and not related to activities undertaken by LDGNT at Grants mine. Further, observed elevations in filtered iron were attributed to natural wet season redox processes occurring in seasonally inundated floodplains. Prolonged waterlogging likely created low-oxygen soil conditions, allowing iron and trace metals such as zinc to dissolve into soil porewater. This is a naturally occurring, temporary and self-attenuating process. As this water moves into oxygenated creek systems, iron and zinc oxidise and form particles, removing them from the dissolved phase.

Field and laboratory monitoring results have recorded relatively minor excedences of TV's at SW5 of short duration, these include turbidity (13 instances), TP (5 instances), filtered iron (4 instances) and filtered zinc (1 instance). In the Australian Guidelines for Water Quality Monitoring and Reporting, exceedances of a trigger level are an 'early perturbation' and 'early warning' mechanism of a potential problem. Hence, appropriate responses include investigation to understand causal and contributing factors as well as corrective and mitigating actions. The recorded exceedances have been investigated and where applicable appropriate corrective and mitigative actions undertaken. Having regard to the nature and short duration of the exceedances, environmental impact from the active discharge of mine wastewater and passive discharge of sediment basin water is assessed to be low or negligible risk.

The above assessment of environmental impact is supported by Direct Toxicity Assessment of various Grants mine water types completed in March 2024 and March 2025. In March 2024, testing included water sourced from the Fines Storage Facility, Grants Pit, and the downstream compliance point SW5. No acute toxicity was observed in any of the samples and chronic toxicity was only observed in the Grants Pit and TSF samples, with the TSF showing the most chronic toxicity. Testing in March 2025 included water sourced from mine wastewater (MWD1C3), Sed2 and SW5. No acute or chronic toxicity was observed in mine wastewater or water sourced from compliance point SW5. For Sed2 water test results indicate no acute toxicity but minor chronic or reproductive toxicity.

No algal blooms or similar indicators of nutrient enrichment were observed over the reporting period. All chlorophyll a concentrations were low in the freshwater receiving environment.

No hydrocarbons were detected at any of the surface water monitoring sites and no floating debris, oil grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter were observed in any mine wastewater or sediment basin discharges.

The 2025 riparian vegetation survey showed minimal changes and stable composition, structural characteristics and extent indicating that the mining activity is not impacting on riparian vegetation communities downstream.

The Biological and Sediment Monitoring 2025 Report concluded that the results of sampling in 2025 demonstrate that active discharge from Grants has had no significant impact on the aquatic ecosystems of waterways draining to Darwin Harbour.

10 Conclusion

This monitoring report is for the period 1 May 2024 to 30 April 2025 (the reporting period) to satisfy relevant requirements of WDL248.

LDGNT provided notice of intention to transition the project to Care and Maintenance to the Minister on the 30th of April 2024 and the project has remained in care and maintenance since 4 June 2024.

Two versions of WDL248 apply to this monitoring report comprising WDL248-02, which was in effect during the reporting period, and WDL248-03, which was granted on 18 July 2025. Notably, the trigger value for total phosphorus (TP) was amended from 0.01mg/L under WDL248-02 to 0.035mg/L under WDL248-03 on the basis of a site specific TV for TP that has been derived using robust background monitoring data inclusive of natural variation in rainfall and creek flow that represents the naturally occurring water quality in the local region. In consideration of the drafting of a WDL annual monitoring report which extends across two WDL versions, DLPE guidance is to report and discuss all notified exceedances that were reported under WDL248-02 for the reporting period but to use the TP trigger value in WDL248-03 to determine compliance with the criteria in Item 16 for the reporting period.

During the reporting period, discharge of 432.6 ML of mine wastewater through the licenced discharge point (DP1) occurred between the 20 January and the 14 April 2025. This represents a 15.6% increase in the of volume of mine wastewater discharged compared to the previous reporting period.

Monitoring program objectives were achieved except for marine surface water quality, macroinvertebrate, sediment and seagrass monitoring in Darwin Harbour.

Having regard to assessment of compliance with TVs for the annual reporting period in accordance with WDL248-03 Item 16, for metals, hydrocarbons and other toxicants, all parameters complied except for filtered iron. As discussed above, elevations in filtered iron above the respective TV at compliance site SW5 are not related to activities undertaken by LDGNT at Grants mine and are attributed to natural wet season redox processes occurring in seasonally inundated floodplains. For nutrients (noting that the TV for TP under WDL248-03 of 0.035mg/L is to be used for assessing compliance in this report) and physio-chemical parameters (DO, pH, EC, temperature), none of the median values exceeded or were not outside the range of the respective TVs and hence complied.

LDGNT reported five notifiable incidents under Item 12 of WDL248-02 over the reporting period relevant to surface water quality at compliance point SW5. Three notifiable incidents related to TP exceeding three or more times the TV for TP under WDL248-02. One notifiable incident related to turbidity exceeding three or more times the TV value for turbidity and one related to turbidity exceeding the TV on three consecutive sampling occasions. During the development of this annual monitoring report, two additional notifiable incidents were found that related to two instances of filtered iron exceeding the respective TV twice. These individual filtered iron exceedances were however each individually investigated at the time of detection and the source of filtered iron at SW5 was attributed surface water originating from catchments upstream of SW4 and Hang Gong and not related to activities undertaken by LDGNT at Grants mine. The annual median filtered iron valves for mine wastewater and the sediment basins were all below the respective TV.

The 2025 riparian vegetation survey showed minimal changes and stable composition, structural characteristics and extent indicating that the mining activity is not impacting on riparian vegetation communities downstream.

The Biological and Sediment Monitoring 2025 Report concluded that the results of sampling in 2025 demonstrate that active discharge from Grants has had no significant impact on the aquatic ecosystems of waterways draining to Darwin Harbour.

Long term trend analysis found a substantial reduction in turbidity in the sediment basins in 2025 compared to the previous year and this is attributed to both re-establishment of ground cover vegetation in disturbed areas as well as a cessation of civil construction works and associated ground disturbance. Long term trend analysis has also shown a notable decrease in TN in mine wastewater in 2025 compared to previous years however the reason for the decrease is not clear but may be related to the suspension of mining and processing activities during the 2025 reporting period. Mine wastewater also shows a long-term trend of increasing TP and lithium but decreasing aluminium.

An assessment of the environmental impact from the active discharge of mine wastewater and passive discharge of sediment basin water found the risk of such impact occurring to be low or negligible. Additionally, Direct Toxicity Assessment of water sourced from downstream compliance point SW5 in March 2025, found no acute or chronic toxicity.

Planned actions to address exceedances or non-conformances include:

Action	**Timing**
• Evaluate and engage a suitably trained and competent vessel owner and operator to facilitate access to Darwin Harbour to undertake marine surface water quality, macroinvertebrate, sediment and seagrass monitoring in Darwin Harbour sampling as per WDL248-03.	In progress. Marine surface water quality monitoring in Darwin Harbour undertaken in accordance with WDL248-03 for the 2025/2026 reporting period. Macroinvertebrate, sediment and seagrass monitoring scheduled and planned to be undertaken in accordance with WDL248-03 for the 2025/2026 reporting period,
• Review WDL 248-03 Trigger Value Exceedance Register to include explicit reference including definition of Item 10 Notifiable Incidents.	Completed 19/08/2025

Proposed actions to maintain and improve the monitoring program and environmental performance include:

Action	**Timing**
• Inspection and where relevant undertake maintenance of water management infrastructure including erosion and sediment controls.	Completed 1 November 2025
• Continue to undertake Phoslock and alum flocculant dosing via drone of mine wastewater and sediment basin water as required to treat TP and suspended sediments.	Ongoing

11 References

ANZG (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia, https://www.waterquality.gov.au/anz-guidelines.

Lamche, G. (2007). The Darwin-Daly Regional AUSRIVAS Models –Northern Territory: User Manual. Aquatic Health Unit–Department of Natural Resources, Environment and the Arts. Report 06/2007D.Fortune, J. (2006). The grainsize and heavy metal content of sediment in Darwin Harbour. Darwin, NT: Department of Natural Resources, Environment and the Arts, Northern Territory Government.

Munksgaard, N. C., Kaestli, M., Gibb, K., Dostine, P., & Townsend, S. (2013). Darwin Harbour Baseline Sediment Survey (2012). Charles Darwin University and Aquatic Health Unit, Northern Territory Department of Land Resource Management.

Radke, L., Smit N., Li, J., Hunt-Lew Fatt, K., Low Choy, D., Harries, S., Windsor, J., Nicholas, W.A. (2018): Benthic Sediment surveys of inner Darwin Harbour and shallow water areas in and around Bynoe Harbour (2017) GA0358 and GA039 - Post Survey Report. Record 2018/52. Geoscience Australia, Canberra. http://dx.doi.org/10.11636/Record.2018.052.

Simpson, SL & Batley, GE (2016), Sediment quality assessment; a practical handbook, CSIRO Publishing, Clayton, Victoria.

APPENDIX A

Waste Discharge Licence 248-02

Northern Territory Government

WASTE DISCHARGE LICENCE

(Pursuant to section 74 of the *Water Act 1992)*

Licensee	Lithium Developments (Grants NT) Pty Ltd
Licence Number:	**WDL248-02**
Registered Business Address:	Level 5, Flinders Street Adelaide SA 5000
ACN:	622 047 232
ABN:	70 622 047 232
Commencement Date:	25 July 2022
Amended on:	7 March 2023 20 December 2023
Expiry Date:	24 July 2025
Licensed Action:	Controlled discharge of wastewater from Mine Water Dam 1 (MWD1) through authorised discharge point (DP1) and into an unnamed ephemeral stream that feeds into West Arm, Darwin Harbour in accordance with Table 2 and subject to the conditions of this licence.

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INFORMATION ABOUT THIS LICENCE

This waste discharge licence is granted pursuant to section 74 of the *Water Act 1992* (NT) (Water Act), which empowers the Controller of Water Resources to, in accordance with the Water Act, grant a licence to a person to carry out an action that would otherwise be an offence against this Act.

Responsibilities of Licensee

- In addition to the conditions set out in this licence, general responsibilities of licensees are set out in the *Waste Management and Pollution Control Act 1998* (NT) (**WMPC Act**), the Water Act and the *Water Regulations 1992* (NT) (**Water Regulations**).
- It is an offence under the Water Act, if the holder of a waste discharge licence contravene or cause, suffer or permit a person to contravene a term or condition to which the waste discharge licence is subject (s 76 Water Act).
- Except as expressly provided for in this licence or applicable law, it is an offence under section 16 of the Water Act to wilfully cause or cause, directly or indirectly:
    - waste to come into contact with water; or
    - water to be polluted.

Duration of licence

- This licence will remain in force until its Expiry Date, it is surrendered by the licensee, or until it is suspended or revoked by the Controller of Water Resources.
- A licensee may surrender its licence at any time (s 94 Water Act).
- If the licensee wishes to surrender its licence it should complete the notification form approved by the Controller of Water Resources and provide a copy of the completed form to the Administering Agency.
- The authority to allow waste to come into contact with water or water to be polluted ends once a licence is surrendered, and any such occurrence after a licence is surrendered is an offence pursuant to s 16 of the Water Act.

Amendment, Modification or Revocation of Licence

- As set out in section 93 of the Water Act, the Controller of Water Resources may, by notice served on the holder of the licence:
    - amend or modify the terms and conditions of a licence; or
    - where the Controller of Water Resources is satisfied that the holder of the licence has contravened or failed to comply with a term or condition of the licence or of any other licence previously held by the person for a similar purpose during the 12 months immediately preceding the grant of the first-mentioned licence, the Controller of Water Resources may:
        - revoke a licence; or
        - suspend a licence.

Transfer of Licence

- Where a waste discharge licence is granted to a person in relation to the person's use of land and, during the period of this licence, the person's interest in the land is transferred to another person, the waste discharge licence shall be deemed to have also been transferred to the other person (s 92 Water Act).

- The licensee must ensure the contact details recorded with the Administering Agency for the licence are correct at all times in accordance with condition 6. Accordingly, it is recommended the transferee complete the Controller of Water Resources approved notification of transfer of a waste discharge licence form.

Public Register

- A copy of this Licence will be placed on the Register in accordance with section 95 of the Water Act.

- A copy of plans for environmental management, reports, submissions or documents provided at Schedule 1 Item 13 will be placed on the Register.

- The Register is freely available from the Northern Territory Environment Protection Authority (**NT EPA**) website.

Water Quality Standards

- The Administrator may declare, by notice in the *Gazette*, a beneficial use, quality standard, criteria or objectives which apply in relation to any waste or class of waste, or water or class of water (s 73 Water Act).

- A water or waste beneficial use, quality standard, criteria or objectives declared under s 73 of the Act and in force is an Environment Protection Objective for the purposes of the WMPC Act (s 18 WMPC Act).

- An Environment Protection Objective is a statutory instrument to establish principles on which:

    - Environmental quality is to be maintained, enhanced, managed or protected;

    - Pollution, or environmental harm resulting from pollution, is to be assessed, prevented, reduced, controlled, rectified or cleaned up; or

    - Effective waste management is to be implemented or evaluated.

- Schedule 1 Item 1 specifies the beneficial use, quality, standard, criteria or objective relevant to this licence at the date of issue.

Environmental Interests

- Environmentally sensitive or significant areas may be captured by and protected under the *Environment Protection Act 2019* (NT) and/or the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). As such, and to best protect and regulate our waterways, waste discharge licences must identify the sensitivity of the environment surrounding the location of the Licensed Action.

- Schedule 1 Item 2 specifies the sites of conservation significance (if any) relevant to this licence at the date of issue.

- Schedule 1 Item 3 specifies the Ramsar wetlands (if any) relevant to this licence at the date of issue.

Cultural Interests

- Under Commonwealth and Northern Territory laws it can be an offence to enter or remain on or damage a sacred site.
- Sites of Aboriginal significance including registered and recorded Aboriginal sacred sites may exist in the vicinity of the Licensed Action.
- It is the licensee's responsibility to contact the Aboriginal Areas Protection Authority, appropriate land council or other governing body and ensure that any Authority Certificates required as a result of conducting the Licensed Action are obtained and complied with.
- Further specific advice on any cultural requirement or implication of the licenced activity should be sought from the relevant land council and the Aboriginal Areas Protection Authority.

END NOTES

This licence is an amendment to WDL248-01.

WDL248-01 was an amendment, issued 7 March 2023.

WDL248 was issued 25 July 2022.

SCHEDULE 1 - ITEMS

1. Beneficial uses (condition 20)	Beneficial Uses and Objectives for the Darwin Harbour Region (Gazette No. 27, 7 July 2010).	
2. Sites of conservation significance (condition 20)	SOCS No. 6 Darwin Harbour.	
3. Ramsar wetlands (condition 20)	Not applicable.	
4. Licence Documents (condition 13)	(a) Water Management Plan - Appendix K, Mine Management Plan Grants Lithium Project (approved 10 June 2021). (b) Emergency Response Plan - Appendix R, Mine Management Plan Grants Lithium Project (approved 28 June 2019). (c) Stakeholder Engagement Plan - Core Lithium Grants Lithium Project Stakeholder Engagement Plan (issued 7 June 2021).	
5. Authorised Discharge Point(s) (condition 23)	Discharge Point 1 (DP1) from Mine Water Dam 1 (MDW1) as shown on the plan at Appendix 1.	Zone: 52 L Easting: 693153 Northing: 8598441
6. Source(s) of waste (condition 26)	Pit water, direct rainfall, and mine influenced water collected from Mineral Lease 31726 that is captured and stored in sediment basins and Mine Water Dam 2 (MWD2) and pumped to MWD1. Waters discharged through DP1 are pumped over the wall of MWD1 and released by a tee valve into the flow path of an adjacent unnamed ephemeral stream as shown at Appendix 1.	
7. Trigger values (condition 26)	The limits for parameters listed in Appendix 2.	
8. Compliance point (condition 26)	Grants Downstream Surface Water 5 (GDS SW5) as shown on the plan at Appendix 1.	Zone: 52 L Easting: 693374 Northing: 8600709
9. Conditions on discharge (condition 26)	Any authorised discharge must: (a) Not include wastewater generated outside of Mineral Lease 31726; (b) Not include wastewater treated with polyacrylamide flocculants with more than 0.05% of the neuro-toxin acrylamide monomer; (c) Occur only when the stream gauge at the compliance point GDS SW5 shows there is a sufficient flow to achieve trigger values at the compliance point at Item 8; (d) In the event wastewater is treated, occurs only when the treatment process has finished, including allowing sufficient residence time for settlement of flocculants and target contaminants.	
10. Monitoring Program (condition 30)	The Monitoring Program includes: (a) Surface water monitoring in accordance with Appendix 3. (b) Fluvial sediment monitoring in accordance with Appendix 4. (c) Biota monitoring in accordance with Appendix 5.	

11. Critical contaminants	Aluminium (Al), Arsenic (As), Copper (Cu), Iron (Fe), Lithium (Li), Zinc (Zn), Total Phosphorus (TP), Total Nitrogen (TN), Nitrate (NO_3) and Ammonia (NH_3).
12. Notifiable incidents (Conditions 41 -43)	Notifiable incidents include: (a) An exceedance of three or more times a trigger value specified in Item 7 at the compliance point in Item 8; (b) For physical and chemical stressors, an exceedance (or measurement outside the range) of a trigger value specified in Item 7 at the compliance point in Item 8, on three consecutive sampling occasions; (c) For toxicants, two or more exceedances of a trigger value specified in Item 7, at the compliance point in Item 8, during one annual reporting period ; (d) A discharge at a point not specified in Item 5; (e) A discharge from a source not specified in Item 6; (f) A failure to comply with condition 29; or (g) A failure to comply with condition 38.
13. Documents placed on Register (condition 13)	The following documents will be placed on the Register: (a) The Licence Documents at Item 4. (b) The Monitoring Report provided in accordance with condition 45. (c) The Annual Return.
14. Compliance with trigger values (condition 26)	For the annual reporting period, the trigger values at Item 7 shall be regarded as being complied with if: (a) For metals, hydrocarbons and other toxicants, not more than one measurement or, if more than 20 samples are collected, 5% of measured values, exceed the trigger values specified in Item 7; (b) For nutrients and physico-chemical parameters (DO, pH, EC, temperature), the median value of measurements does not exceed, or is not outside the range of, the trigger values specified in Item 7; and (c) For any other indicators, not more than 20% of samples exceed, or are outside the range of, the trigger values specified in Item 7.
15. Special conditions (condition 51)	By 31 January 2024 the licensee must (a) select an additional control site for inclusion in the water quality monitoring program that is representative of local background water quality and is not affected by activities conducted under the Mining Management Plan (b) Provide details of the location of the site and a justification for its suitability. (c) Commence monitoring the site at the same frequency and for the same parameters as listed in Appendix 3 for site GUS SW4.

LICENCE CONDITIONS

RULES FOR INTERPRETING THE CONDITIONS OF THIS LICENCE

1. Where there is a discrepancy between the conditions of this licence and any plan, standard, guideline or other document referred to in this licence, the conditions of this licence prevail to the extent of the inconsistency.
2. Any reference to any standard, guideline or code of practice (Australian or international) in this licence means the relevant parts of the current version of that standard, guideline or code of practice.
3. In this licence, unless the contrary intention appears, words that are defined in the Water Act are intended to have the meaning given to them in that Act.
4. In this licence, unless a contrary intention appears, terms are defined in the Definitions at the end of this licence.
5. In this licence a reference to an Item is a reference to an Item in Schedule 1.

GENERAL

6. The licensee must ensure the contact details recorded with the Administering Agency for this licence are correct at all times.
7. The licensee must at all times have a 24-hour emergency contact.
8. The licensee must notify the Administering Agency prior to making any operational change that will cause, or is likely to cause, an increase in the potential for environmental harm.
9. The licensee must display clear and legible signage, in English, in a prominent location at each public entrance to the premises of the Licensed Action that includes the following details:
    - 9.1. waste discharge licence number issued under the Water Act; and
    - 9.2. 24-hour emergency contact details.
10. The licensee must cause a hard copy of this licence to be available for inspection, at the premises of the Licenced Action, by any person on request.
11. Unless otherwise specified, within 10 business days of a request, the licensee must provide to the Administering Agency a copy of any document, monitoring data or other information in relation to the Licensed Action in electronic form by emailing environmentalregulation@nt.gov.au.
12. All notices, reports, documents or other correspondence required to be provided as a condition of this licence, unless otherwise specified as a condition of this licence, must be provided in electronic form by emailing environmentalregulation@nt.gov.au.
13. The licensee must maintain, implement and comply with the current version of the documents listed in Item 4.
14. Within 10 business days of any amendment being made to a document listed in in Item 4, the licensee must provide the amended document to the Administering Agency, along with:
    - 14.1. a tabulated summary of the amendment(s) with document references;
    - 14.2. reasons for the amendment(s); and
    - 14.3. an assessment of environmental risk associated with the amendment(s).
15. The Administering Agency may require the licensee to revise or amend and resubmit any document provided in accordance with this licence. Where the Administering Agency requires any document to be revised or amended, the licensee must submit it to the Administering Agency by the date specified by the Administering Agency.
16. The licensee must operate and maintain a community feedback telephone number enabling members of the public to contact, at any time, a person or voice mail system that can accept, on behalf of the licensee, enquiries or complaints about the Licensed Action, and to which the licensee must respond. The community feedback telephone number must be displayed:

16.1. where the licensee has a website, in a prominent location on the licensee's website;

16.2. in the Stakeholder Engagement Plan; and

16.3. in other publicly available documents relating to the Licensed Action.

17. The licensee must maintain a register of complaints that records the details of each complaint received in relation to the Licensed Action and provide a copy to the Administering Agency on request. Details of the compliant must (as is reasonably practicable) include, the following information:

17.1. the person to whom the complaint was made;

17.2. the person responsible for managing the complaint;

17.3. the date and time the complaint was reported;

17.4. the date and time of the event(s) that led to the complaint;

17.5. the contact details of the complainant if known, or where no details are provided a note to that effect;

17.6. the nature of the complaint;

17.7. the nature of event(s) giving rise to the complaint;

17.8. prevailing weather conditions at the time (where relevant to the complaint);

17.9. the action taken in relation to the complaint, including any follow-up contact with the complainant; and

17.10. if no action was taken, why no action was taken.

MONITORING INFORMATION

18. If the licence expires or is otherwise surrendered, suspended or revoked and the licence contained a condition that the licensee provide a report, record or other information, including in accordance with a monitoring program pursuant to section 77 of the Water Act, the licensee must provide any report, record, information or data available to the licensee up to and including the date the licence expired or was surrendered, suspended or revoked.

OPERATIONAL

19. Without limiting the conditions of this licence, in conducting the Licensed Action, the licensee must do all things reasonable and practicable to:

19.1. prevent or minimise the likelihood of pollution occurring as a result of, or in connection with, the Licensed Action;

19.2. prevent or minimise the likelihood of environmental harm occurring as a result, or in connection with, the Licensed Action;

19.3. effectively respond to pollution and the risk of pollution occurring as a result of, or in connection with, the Licensed Action;

19.4. effectively respond to environmental harm and the risk of environmental harm occurring as a result of or in connection with the Licensed Action; and

19.5. apply the principles of ecologically sustainable development.

20. The licensee must, without limiting any other condition of this licence, in conducting the Licensed Action do all things reasonable and practicable to ensure the Licensed Action does not adversely affect any:

20.1. declared beneficial use, quality, standard or objectives declared under section 73 of the Water Act;

20.2. sites of conservation significance; or

20.3. designated Ramsar wetlands,

including, but not limited to, those listed at Items 1, 2 and 3.

21. The licensee must ensure any plant and equipment used by the licensee in conducting the Licensed Action:

    21.1. is reasonably fit for the purpose and use to which it is put;

    21.2. is maintained and operational; and

    21.3. is operated by a person trained to use the plant and equipment.

22. No change, replacement or alteration of plant and equipment is permitted if the change, replacement or alteration increases the risk of environmental harm for the Licensed Action, unless approved by the Administering Agency.

DISCHARGES

23. The Licensee must only discharge waste to water from the authorised discharge points specified in Item 5.

24. Where the Administering Agency directs the licensee to cease discharge from an authorised discharge point identified in Item 5, the licensee must immediately cease the discharge.

25. A direction to cease discharge may be verbal or written, but a verbal direction from the Administering Agency will be provided in writing within 48 hours of the verbal direction. A failure to provide a written direction does not affect the requirement to comply with a verbal direction.

26. The licensee must ensure that discharge from each authorised discharge point:

    26.1. consists only of waste from the source(s) as specified in Item 6;

    26.2. does not cause a non-compliance with the conditions specified at Item 14 at the compliance point at Item 8;

    26.3. meets the conditions at Item 9.

27. Following any exceedance of a trigger value limit specified in Item 7 at the compliance point specified in Item 8, the Licensee must:

    27.1. investigate the exceedance, including undertaking targeted monitoring, in addition to routine monitoring; and

    27.2. take corrective action to mitigate any environmental harm and ensure the exceedance does not reoccur; and

    27.3. make a record of:

        27.3.1. when the exceedance was detected and by whom;

        27.3.2. the date and time of the exceedance;

        27.3.3. the actual and potential causes and contributing factors to the exceedance;

        27.3.4. the risk of environmental harm arising from the exceedance;

        27.3.5. exceedances and details of the investigation and corrective action taken; and

        27.3.6. if no action was taken, why no action was taken.

28. The licensee must, for each authorised discharge point, install, operate and maintain a device to measure and record, for each discharge event:

    28.1. the time the discharge commenced and the duration of the discharge;

    28.2. the discharge rate of flow; and

    28.3. the discharge volume.

29. The licensee must ensure that the discharge from all discharge events at each authorised discharge point does not:

29.1. contain any floating debris, oil, grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter;

29.2. cause or generate odours which would adversely affect the use and amenity of surrounding waters;

29.3. cause algal blooms in the receiving water;

29.4. pollute groundwater;

29.5. cause visible change in the behaviour of fish or other aquatic organisms in the receiving water;

29.6. cause mortality of fish or other aquatic organisms;

29.7. cause erosion or degradation to the beds and banks of a watercourse; or

29.8. cause adverse impacts on plants or animals.

MONITORING

30. From the Commencement Date of this licence, the licensee must implement and comply with the Monitoring Program specified in Item 10.

31. The licensee must ensure that the Monitoring Program is designed, maintained and implemented in accordance with the following principles:

31.1. the need to monitor loads upstream and downstream, including in-stream decay in loads downstream, of authorised discharge points;

31.2. the need for event-based monitoring, in addition to routine monitoring, including revisiting sampling points as soon as practicable when samples cannot be collected at frequencies set in the Monitoring Program;

31.3. the need for special studies to better described in-stream physical, chemical and biological processes;

31.4. the need to target the possible critical contaminants listed at Item 11;

31.5. the need to select sampling points that provided representative (well mixed) samples;

31.6. the need to collect samples that are representative of discharge conditions, including taking samples from sampling points on the same day as discharge and consecutively from upstream to downstream; and

31.7. the need to adopt a range of biological surveys to assess the health of the system.

32. The licensee must ensure that all samples and field environmental data are collected in accordance with recognised Australian Standards and guidelines (such as AS/NZS 5667.1 1998, ANZG (2018), as updated from time to time).

33. For the parameters that require analysis at a laboratory, the licensee must ensure that all samples are analysed at a laboratory with current NATA accreditation or equivalent.

34. The licensee must ensure any samples collected in accordance with the Monitoring Program or in connection with the Licensed Action or this licence, are obtained by, or under the supervision of a qualified sampler.

35. The licensee must ensure that, for each sample collected in accordance with the Monitoring Program or the Licensed Action, the following information must be recorded and retained:

35.1. the date on which the sample was collected;

35.2. the time at which the sample was collected;

35.3. the location at which the sample was collected;

35.4. the name of the person who collected the sample;

35.5. the chain of custody forms relating to the sample;

35.6. the field measurements (if any) and analytical results (if any) relating to the sample; and

35.7. laboratory quality assurance and quality control documentation.

36. The licensee must for all land based monitoring points specified in the Monitoring Program:

36.1. install and maintain appropriate identification signage so that they are reasonably identifiable at all times; and

36.2. maintain safe access and egress, as is reasonably practicable.

37. The licensee must ensure that any proposed revisions to the Monitoring Program (other than typographical changes or revisions to formatting or referencing) are:

37.1. reviewed by a Qualified Person, who must produce a written report about their review;

37.2. submitted to the Administering Agency with justification for revisions; and

37.3. submitted to the Administering Agency, in both hard copy and electronic form (with a complete copy of the Qualified Person's written review), 20 business days prior to the proposed implementation date.

NOTIFICATION AND REPORTING

38. The licensee must keep records of all exceedances of trigger values of parameters specified in Item 7, including those that are not notifiable incidents listed at Item **Error! Reference source not found.**, and provide a copy on request of the Administering Agency.

39. The Licensee must keep records of all contraventions with this licence. These records must be adequate to enable the licensee to comply with the non-compliance notification conditions of this licence.

40. *This condition has been removed*

41. The licensee must notify the Administering Agency of any notifiable incident listed at Item **Error! Reference source not found.** or non-compliance with this licence, by emailing environmentalregulation@nt.gov.au, as soon as practicable after (and in any case within 24 hours after) first becoming aware of the non-compliance.

42. The licensee must include in the notification of the notifiable incident at Item **Error! Reference source not found.** or non-compliance, the following information:

42.1. when the incident or non-compliance was detected and by whom;

42.2. the date and time of the incident or non-compliance;

42.3. whether discharge was occurring at the time of the incident or non-compliance and the source of the discharge;

42.4. whether non-compliant discharge is still occurring; and

42.5. a date (within 10 business days of the incident or non-compliance) when an investigation report will be submitted to the Administering Agency.

43. Within 10 business days of notifying the Administering Agency of any notifiable incident at Item **Error! Reference source not found.** or non-compliance, the licensee must provide the Administering Agency an investigation report that includes:

43.1. when the incident or non-compliance was detected and by whom;

43.2. the date and time of the incident or non-compliance;

43.3. whether discharge was occurring at the time of the incident or non-compliance and the source of the discharge;

43.4. the actual and potential causes and contributing factors to the incident or non-compliance;

43.5. monitoring data of the discharge, and upstream and downstream water of the authorised discharge point, collected for the date the incident or non-compliance was detected and three sampling rounds prior;

43.6. available flow rates to demonstrate any influence streams and rivers may have had on the exceedance of trigger values;

43.7. rainfall recorded at the site prior to the exceedance of trigger values and incident or non-compliance;

43.8. the risk of environmental harm arising from the incident or non-compliance;

43.9. the action(s) that have or will be undertaken to mitigate any environmental harm arising from the incident or non-compliance;

43.10. corrective actions that have or will be undertaken to ensure the incident or non-compliance does not reoccur; and

43.11. if no action was taken, why no action was taken.

44. The licensee must submit a completed Annual Return, by emailing environmentalregulation@nt.gov.au, within 10 business days after each Anniversary Date of this licence, which report relates to the preceding 12 month period. The report must

44.1. be in the approved form; and

44.2. contain details of all notifiable incidents and non-compliances with this licence during the reporting period.

45. The licensee must complete and provide to the Administering Agency an annual report of data and information obtained through the implementation and performance of the Monitoring Program (the Monitoring Report), as prescribed by this licence, within 10 business days after each Anniversary Date of this licence.

46. The licensee must ensure that each Monitoring Report:

46.1. is prepared in accordance with the requirements of the Administering Agency 'Guideline for Reporting on Environmental Monitoring' (or any other guideline as adopted by the Administering Agency from time to time);

46.2. includes a tabulation of all monitoring data required as a condition of this licence (data must be provided electronically in Microsoft® Excel® format);

46.3. includes a tabulation of monthly and annual contaminant loads discharged from the authorised discharge point listed at Item 5. Contaminant loads must be calculated for total metals, total metalloids, total nutrients and other parameters (excluding field parameters) listed in Appendix 3. The calculations must be based on the daily discharge volume and the concentration of contaminant present in the discharge on that day. On the days when a sample was not taken then the concentration of the contaminant must be estimated using Linear Interpolation methodology;

46.4. includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the Licensed Action over a minimum period of three years (where the data is available

46.5. includes the actions taken and results of investigation for all incidents when a trigger value was exceeded as specified in condition 27; and

46.6. includes an assessment of environmental impact from the Licensed Action.

47. A copy of the documents listed at Item 13 will be placed on the Register.

PERFORMANCE IMPROVEMENT

48. *This condition has been removed*

49. *This condition has been removed*

50. *This condition has been removed*

51. The Licensee must comply with the conditions specified in Item 15.

END OF LICENCE CONDITIONS

This licence is not valid unless signed below:



For the Controller of Water Resources

Date: 20 December 2023

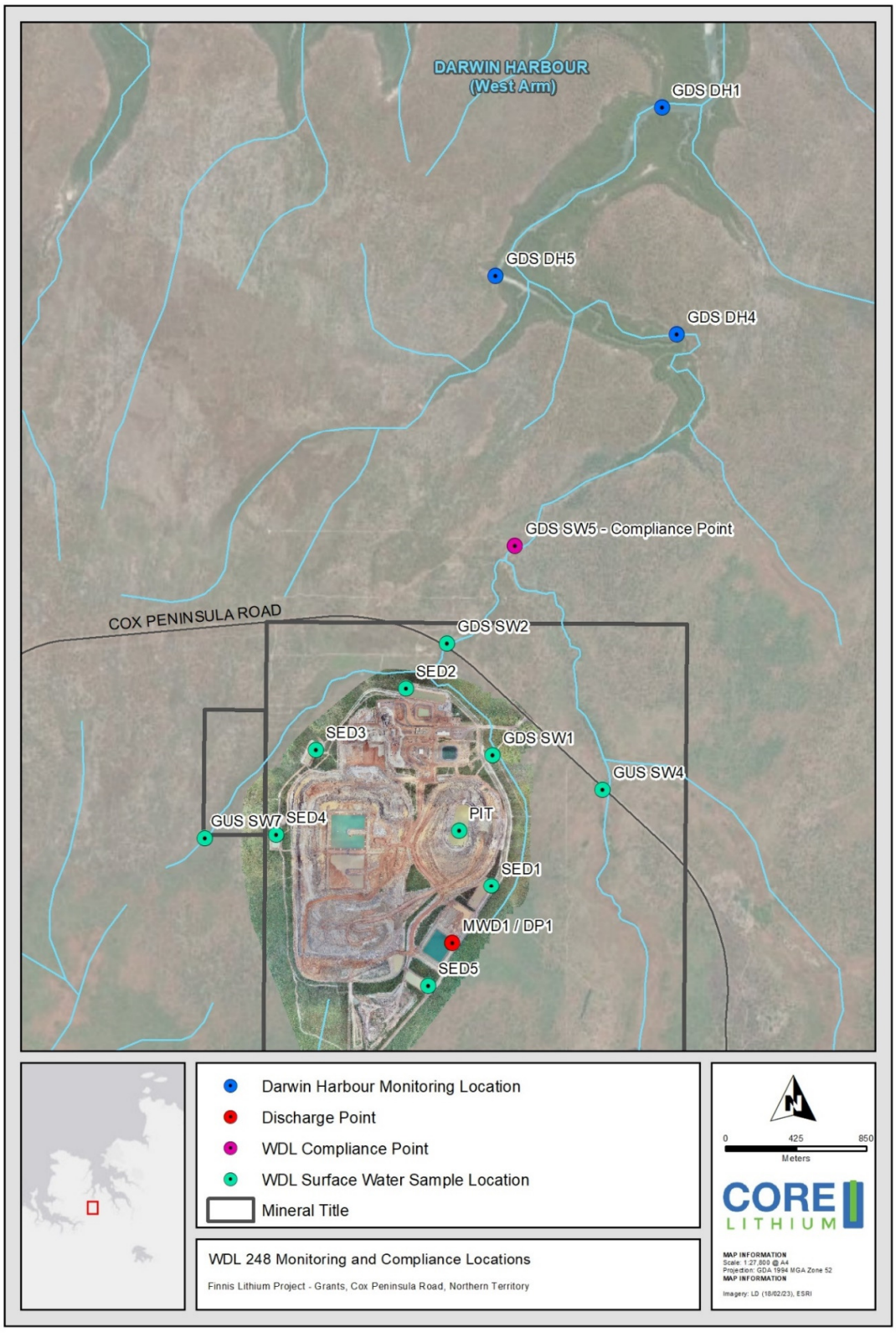
DEFINITIONS

In this licence, unless a contrary intention appears:

Term	Definition
24 hour emergency contact	the phone number of a person who can be contacted at any time and be capable of responding to and providing information about any incident associated with the Licensed Action.
Administering Agency	means the NT Government Department with responsibility for administering the Water Act.
AMD	acid and metalliferous drainage
Anniversary Date	annual anniversary of the Commencement Date.
Annual Return	an Administering Agency prescribed format for demonstrating and reporting compliance with the conditions of this licence.
ANZG (2018)	Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines.
Authority Certificate	a certificate issued under s 22(1) of the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT). An Authority Certificate permits a licensee to carry out work on land with or within the vicinity of a sacred site.
business days	a day not Saturday, Sunday or a public holiday, in Darwin, Northern Territory.
Consultation and Communication Plan	a written plan documenting proposed consultation and communications for the Licensed Action before, during and after the Licensed Action which includes a strategy for communicating with members of the public who are likely to have a real interest in, or be affected by, the Licensed Action.
contact details	includes the 24 hour emergency contact, and name, position title and phone number of a representative of the licensee who can be contacted about the licence and Licensed Action.
contaminant	has the meaning given in section 4 of the WMPC Act.
discharge	releasing or allowing a liquid, gas or other substance to flow out from where it has been confined.
Dry season	means 1 May to 31 October.
Emergency Response Plan	a written plan documenting the licensee's procedures for responding to emergencies caused by, resulting from or associated with the Licensed Action and that may cause environmental harm.
land	includes water and air on, above or under land.
Licensed Action	the Licensed Action as described on the covering page of this licence.
Linear Interpolation	a method to construct new data points within the range of known data points. $y = y1 + ((x – x1) * ((y2 – y1) / (x2 – x1))$ y in the unknown concentration between known concentrations y1 and y2 y1 in the first known concentration y2 is the second known concentration x is the day of the unknown concentration y x1 is the day of the first known concentration y1

	x2 is the day of the second known concentration y2
litter	litter, garbage, rubbish, refuse or waste matter, and includes the body of a dead animal.
Maintain	kept in a manner that it does not present or cause a risk of environmental harm or a hazard to persons or property or, for the purposes of documents including plans, a process of reviewing and amending documentation to ensure it is relevant.
NATA	National Association of Testing Authorities, Australia.
Incident and non-compliance notification	an Administering Agency prescribed format for notifying the Administering Agency of a non-compliance.
plant and equipment	all material items used in association with the Licensed Action, including (but not limited to) storage vessels and containers, pipe work and hosing, vehicles (including vessels), tools, and measuring equipment.
pollution	has the meaning given in section 4 of the WMPC Act.
public entrance	access to the licensed premises that is utilised by the public.
Qualified Person	a person registered under Section 68 of the WMPC Act.
qualified sampler	a person who has training and experience in obtaining samples from the relevant environmental medium.
Register	the register available at the website of the Northern Territory Environment Protection Authority (NT EPA).
waste	takes its meaning from the term in the WMPC Act.
wastewater	water that contains a contaminant or waste.
Water Act	*Water Act* (NT)
Wet season	means 1 November to 30 April and for the purposes of Appendix 3 includes any part of the Dry Season that discharge is occurring.
WMPC Act	*Waste Management and Pollution Control Act 1998* (NT)

APPENDIX 1: Map of Discharge Point, Compliance Point and Monitoring Sites



APPENDIX 2 : Discharge Trigger Values

			Sampling Points	Compliance Point
			Site Code	GDS SW5
			Easting	693374
			Northing	8600709
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**Trigger Values**
Environmental Field Data				
pH	pH	pH	In situ	5.2-6.6[2]
Electrical conductivity	EC	µS/cm		250[1]
Turbidity	NTU	NTU		12[3]
Dissolved oxygen	DO	% sat.		50-100[2]
Nutrients				
Total Nitrogen	TN	µg/L	Unfiltered	400[3]
Total Phosphorus	TP			10[3]
Metals and Metalloids[5]				
Aluminium	Al	µg/L	Total and Filtered (0.45 µm)	70[3]
Arsenic	As			13[1]
Cadmium	Cd			0.2[1]
Chromium	Cr			1[1]
Copper	Cu			1.4[1]
Iron	Fe			110[3]
Lead	Pb			3.4[1]
Lithium	Li			430[4]
Mercury	Hg			0.6[1]
Nickel	Ni			11[1]
Zinc	Zn			8[1]

Key:

[1] ANGZ (2018) 95% species protection, freshwater.

[2] 20th and 80th percentile of background data for surface water quality as detailed at paragraph 6.2 of the Water Management Plan and data provided in support of amendment application 20 September 2023.

[3] 80th percentile of background data for surface water quality as detailed at paragraph 6.2 of the Water Management Plan and data provided in support of amendment application 20 September 2023.

[4] Ecotoxicity Assessment, sections 8.3 and 8.4 of the Water Management Plan.

[5] SSTVs for metals and metalloids apply to filtered samples only

APPENDIX 3: Surface Water Monitoring Program

			Sampling Points	Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Upstream Surface Water 7	Sediment Basins 1-5					Discharge Point	Mine Pit Sump	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GUS SW4	GDS SW5	GUS SW7	Sed1	Sed2	Sed3	Sed4	Sed5	MWD1[1]	Pit	GDS DH1
			Easting	693239	692989	693903	693374	691498	693167	692657	692155	691928	692775	693030	693037	694262
			Northing	8599446	8600073	8599235	8600709	8598943	6598623	8599847	8599446	8598961	8598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**												
Field Parameters																
Flow	-	kL/day	In situ	D	D	D	C	D	N/A	N/A	N/A	N/A	N/A	C	N/A	N/A
Water Level	-	measure		D	D	D	C	D	N/A	N/A	N/A	N/A	N/A	P, W	N/A	N/A
pH	pH	pH		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Electrical conductivity	EC	µS/cm		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Turbidity	NTU	NTU		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Temperature	Temp	°C		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Oxidation Reduction Potential	OR	mV		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Dissolved oxygen	DO	% sat.		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Nutrients																
Ammonia	NH_3	µg/L	Unfiltered (excluding FRP)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Oxides of Nitrogen	NO_x			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Nitrate	NO_3			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Total Nitrogen	TN			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Total Phosphorus	TP			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Filterable Reactive Phosphorus	FRP			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Chlorophyll a	Chl-a			W	W	W	W	W	N/A	N/A	N/A	N/A	N/A	N/A	N/A	M[3]
Metals and Metalloids																
Aluminium	Al	µg/L	Total and Filtered (0.45 µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Arsenic	As			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Cadmium	Cd			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Chromium	Cr			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Copper	Cu			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Iron	Fe			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Lead	Pb			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Lithium	Li			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Mercury	Hg			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Nickel	Ni			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]

			Sampling Points	Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Upstream Surface Water 7	Sediment Basins 1-5					Discharge Point	Mine Pit Sump	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GUS SW4	GDS SW5	GUS SW7	Sed1	Sed2	Sed3	Sed4	Sed5	MWD1[1]	Pit	GDS DH1
			Easting	693239	692989	693903	693374	691498	693167	692657	692155	691928	692775	693030	693037	694262
			Northing	8599446	8600073	8599235	8600709	8598943	6598623	8599847	8599446	8598961	8598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**												
Zinc	Zn			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Full elemental scan	-			A	A	A	A	A	A	A	A	A	A	A	A	A
Treatment reagents (Item 9 Error! Reference source not found.**)**																
Acrylamide[2]	C_3H_5NO	µg/L	Total and Filtered (0.45 µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Other																
Sulphate	SO_4	mg/L	Filtered (0.45 µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Calcium	Ca			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Chloride	Cl			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Sodium	Na			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Potassium	K			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Magnesium	Mg			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Carbonate	CO_3^{2-}			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Bicarbonate	HCO3			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Total Dissolved Solids	TDS			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Total Suspended Solids	TSS		Unfiltered	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]

Key:

P = prior to discharge.

C = continuous

D = within 24 hours of commencement of discharge **and** daily during discharge. When no discharge is occurring monitoring will be on a weekly basis.

W = within 24 hours of discharge **and** weekly during discharge. When no discharge is occurring monitoring will be on a monthly basis.

F = weekly whilst discharging from sediment basins, Monthly during Wet season irrespective of discharge.

M = monthly.

A = Annually, at end of Wet season on recessional flows.

N/A = not applicable.

[1] The sampling point in MWD1 will be located close to DP1 to ensure it is representative of discharge water quality.

[2] This sampling is only required where the licensee has conducted water treatment onsite using flocculants containing Acrylamide.

[3] During Wet season only

APPENDIX 4: Fluvial Sediment Monitoring Program

			Sampling Points	Grants Downstream Surface Water 1	Grants Upstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Downstream Surface Water 7	Grants Downstream Surface Water 8	Discharge Point	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GUS SW4	GDS SW5	GDS SW7	GDS SW8	MWD1	GDS DH1
			Easting	693239	692989	693903	693374	691498	692465	693030	694262
			Northing	8599446	8600073	8599235	8600709	8598943	8599942	8598504	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**							
Environmental Field Data											
pH	pH	pH		A	A	A	A	A	A	A	A
Electrical conductivity	EC	µS/cm		A	A	A	A	A	A	A	A
Moisture content		%		A	A	A	A	A	A	A	A
Particle size distribution	PSD	%	<63µm >=63µm & <=2mm >2mm	A	A	A	A	A	A	A	A
Aluminium	Al	mg/kg	<63µm sediment fraction	A	A	A	A	A	A	A	A
Arsenic	As			A	A	A	A	A	A	A	A
Cadmium	Cd			A	A	A	A	A	A	A	A
Chromium	Cr			A	A	A	A	A	A	A	A
Copper	Cu			A	A	A	A	A	A	A	A
Iron	Fe			A	A	A	A	A	A	A	A
Lead	Pb			A	A	A	A	A	A	A	A
Lithium	Li			A	A	A	A	A	A	A	A
Mercury	Hg			A	A	A	A	A	A	A	A

			Sampling Points	Grants Downstream Surface Water 1	Grants Upstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Downstream Surface Water 7	Grants Downstream Surface Water 8	Discharge Point	Grants Downstream Darwin Harbour 1
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			Northing	8599446	8600073	8599235	8600709	8598943	8599942	8598504	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**							
Nickel	Ni			A	A	A	A	A	A	A	A
Zinc	Zn			A	A	A	A	A	A	A	A
Other											
Sulphate	SO_4	mg/kg	Soluble ion extract	A	A	A	A	A	A	A	A
Calcium	Ca			A	A	A	A	A	A	A	A
Chloride	Cl			A	A	A	A	A	A	A	A
Sodium	Na			A	A	A	A	A	A	A	A
Potassium	K			A	A	A	A	A	A	A	A
Magnesium	Mg			A	A	A	A	A	A	A	A

Key:

A = Annually during recessional flow (late Wet season/early Dry season)

APPENDIX 5: Biota Monitoring Program

Project Name	Locations	Project Description	Report Frequency
Seagrass assessment	West Arm, Darwin Harbour	Seagrass monitoring to determine whether any observed change in seagrass distribution or composition has occurred in the marine waters of West Arm, Darwin Harbour. Monitoring should aim to determine whether any change identified is naturally occurring or related to mine operations.	Annually
Vegetation monitoring	Areas downstream of ML 31726	Monitoring of vegetation downstream of ML 31726 to determine if mining activities are impacting riparian vegetation communities.	Annually
Macroinvertebrate study	Darwin Harbour and Areas downstream of ML 31726	Survey of macro-invertebrate abundance and diversity in aquatic ecosystems. Data is used to monitor potential impacts from mine operations.	Annually during recessional flow (late Wet season/early Dry season)

APPENDIX 6: Environmental Risk Mitigation 2022/23

3.2 Environmental Risk Mitigation

LDGNT are committed to best practice environmental management and to minimising impacts associated with mining. LDGNT propose to undertake the following to further investigate potential impacts and provide further data on any impacts associated with a change to monitoring and compliance of TN:

- WDL 248 requires monitoring from one site in Darwin Harbour (GDS DH1) monthly during discharge. LDGNT Propose to temporarily increase the frequency of sampling at the proposed temporary mixing zone compliance point (GDS DH1) to weekly to provide additional supporting information of appropriate mixing within the harbour and to bring monitoring requirements in line with existing compliance location, GDS SW5.
- Additional sample locations within the mixing zone have been proposed (DH4 and DH5 in Figure 1) to provide additional information the appropriate dilution of TN as it moves downstream through the mixing zone.
- Monthly water quality monitoring at two additional locations (GDS DH2 and GDS DH3) in the West Arm of Darwin Harbour during the wet season (when mine site discharges will occur) will be collected in accordance with the existing EcOz (2022) WDL 248 Monitoring Program (Attachment A). LDGNT will continue to collect water quality samples at these locations to provide a better understanding of the water quality in the West Arm region, and allow for comparison of water quality across West Arm.
- LDGNT will also undertake marine macroinvertebrate sampling at those same three Darwin Harbour water quality monitoring sites once per year, to assess whether mine site discharges are impacting on benthic infauna in West Arm. Again, this is additional monitoring to that required in WDL 248.
- LDGNT are planning to undertake additional ecotoxicity assessments of mine site water, to provide additional site specific ecotox data on a range of parameters. Currently, ecotoxicity assessment has been undertaken to develop a site-specific trigger value for lithium. Additional ecotox assessment will be undertaken in 2023

  to further refine and investigate site specific trigger values, and data can be interpreted to investigate potential impacts from turbidity.
- In May 2022, LDGNT engaged consultants to undertake baseline freshwater macroinvertebrate sampling in freshwater streams downstream of GLP, as well as one reference (control) site. LDGNT now have two rounds of baseline macroinvertebrate data that can be used as a baseline for future 'impact' macroinvertebrate monitoring rounds. This data will allow assessment of potential impacts of mine site water and wastewater discharges on aquatic ecosystems downstream. LDGNT will ensure that future macroinvertebrate data analysis considers macroinvertebrate species that are susceptible to toxicity (e.g. from metals) and also turbidity.
- LDGNT will irrigate mine wastewater as much as possible, with discharge as a last resort. LDGNT are developing an Irrigation Management Plan which will include nutrient load balance and limits, salinity/sodicity assessment, management procedures for irrigation and grass/vegetation management in the irrigation area, and monitoring requirements. Irrigation of wastewater at GLP is approved under the Mining Management Plan, however, LDGNT are developing the Irrigation Management Plan as an additional strategy to ensure irrigation is undertaken with minimal potential for environmental impacts.

(Source: Core Lithium – Waste Discharge Licence Amendment - Supporting Information, February 2023. NTEPA2021/0155-005~0001)

APPENDIX B

Waste Discharge Licence 248-03

Northern Territory Government

WASTE DISCHARGE LICENCE

(Pursuant to section 74 of the *Water Act 1992)*

Licensee	Lithium Developments (Grants NT) Pty Ltd
Licence Number:	**WDL248-03**
Registered Business Address:	Level 5, Flinders Street Adelaide SA 5000
ACN:	622 047 232
ABN:	70 622 047 232
Commencement Date:	25 July 2022
Renewal Issue Date:	18 July 2025
Expiry Date:	30 June 2030
Licensed Action:	Controlled discharge of wastewater from Mine Water Dam 1 (MWD1) through authorised discharge point (DP1) and into an unnamed ephemeral stream that feeds into West Arm, Darwin Harbour in accordance with Table 2 and subject to the conditions of this licence.

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INFORMATION ABOUT THIS LICENCE

This waste discharge licence is granted pursuant to section 74 of the *Water Act 1992* (NT) (Water Act), which empowers the Controller of Water Resources to, in accordance with the Water Act, grant a licence to a person to carry out an action that would otherwise be an offence against this Act.

Responsibilities of Licensee

- In addition to the conditions set out in this licence, general responsibilities of Licensees are set out in the *Waste Management and Pollution Control Act 1998* (NT) (WMPC Act), the Water Act and the Water Regulations 1992 (NT) (Water Regulations).
- It is an offence under the Water Act, if the holder of a waste discharge licence contravene or cause, suffer or permit a person to contravene a term or condition to which the waste discharge licence is subject (s 76 Water Act).
- Except as expressly provided for in this licence or applicable law, it is an offence under section 16 of the Water Act to wilfully cause or cause, directly or indirectly:
    - waste to come into contact with water; or
    - water to be polluted.

Duration of Licence

- This licence will remain in force until its Expiry Date, it is surrendered by the Licensee, or until it is suspended or revoked by the Controller of Water Resources.
- A Licensee may surrender its licence at any time (s 94 Water Act).
- If the Licensee wishes to surrender its licence it should complete the notification form available from the Administering Agency.
- Once a licence is surrendered, the authority to allow waste to come into contact with water or water to be polluted ends, and causing waste to come into contact with water or water to be polluted is an offence pursuant to section 16 of the Water Act.

Amendment, Modification or Revocation of Licence

- As set out in section 93 of the Water Act, the Controller of Water Resources may, by notice served on the holder of the licence:
    - amend or modify the terms and conditions of a licence; or
    - where the Controller of Water Resources is satisfied that the holder of the licence has contravened or failed to comply with a term or condition of the licence or of any other licence previously held by the person for a similar purpose during the 12 months immediately preceding the grant of the first-mentioned licence, the Controller of Water Resources may:
        - revoke a licence; or
        - suspend a licence.

Transfer of Licence

- Where a waste discharge licence is granted to a person in relation to the person's use of land and, during the period of this licence, the person's interest in the land is transferred to another person,

the waste discharge licence shall be deemed to have also been transferred to the other person (s 92 Water Act).

- The Licensee must ensure the contact details recorded with the Administering Agency for the licence are correct at all times in accordance with condition 6. Accordingly, it is recommended the transferee complete the notification of transfer of a waste discharge licence form available from the Administering Agency.

Public Register

- A copy of this Licence will be placed on the Register in accordance with section 95 of the Water Act.
- A copy of plans for environmental management, reports, submissions or documents provided at Schedule 1 Item 14 will be placed on the Register.
- The Register is freely available from the Northern Territory Environment Protection Authority (NT EPA) website.

Water Quality Standards

- The Administrator may declare, by notice in the *Gazette*, a beneficial use, quality standard, criteria or objectives which apply in relation to any waste or class of waste, or water or class of water (s 73 Water Act).
- A water or waste beneficial use, quality standard, criteria or objectives declared under s 73 of the Act and in force is an Environment Protection Objective for the purposes of the WMPC Act (s 18 WMPC Act).
- An Environment Protection Objective is a statutory instrument to establish principles on which:
    - Environmental quality is to be maintained, enhanced, managed or protected;
    - Pollution, or environmental harm resulting from pollution, is to be assessed, prevented, reduced, controlled, rectified or cleaned up; or
    - Effective waste management is to be implemented or evaluated.
- Schedule 1 Item 1 specifies the beneficial use, quality standard, criteria or objective relevant to this licence at the date of issue.

Environmental Interests

- Environmentally sensitive or significant areas may be captured by and protected under the *Environment Protection Act 2019* (NT) and/or the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). As such, and to best protect and regulate our waterways, waste discharge licences must identify the sensitivity of the environment surrounding the location of the Licensed Action.
- Schedule 1 Item 2 specifies the sites of conservation significance (if any) relevant to this licence at the date of issue.
- Schedule 1 Item 3 specifies the Ramsar wetlands (if any) relevant to this licence at the date of issue.

Cultural Interests

- Under Commonwealth and Northern Territory laws it can be an offence to enter or remain on or damage a sacred site.

- Sites of Aboriginal significance including registered and recorded Aboriginal sacred sites may exist in the vicinity of the Licensed Action.

- It is the Licensee's responsibility to contact the Aboriginal Areas Protection Authority, appropriate land council or other governing body and ensure that any authority certificates required as a result of conducting the Licensed Action are obtained and complied with.

- Further specific advice on any cultural requirement or implication of the Licensed Action should be sought from the relevant land council and the Aboriginal Areas Protection Authority.

END NOTES

WDL248 was issued on 25 July 2022.

WDL248-01 was an amendment and was issued on 7 March 2023.

WDL248-02 was an amendment and was issued on 20 December 2023.

This licence is a renewal and supersedes WDL248-02.

SCHEDULE 1 - ITEMS

Item	Detail	
1. Beneficial uses (condition 19)	Beneficial Uses and Objectives for the Darwin Harbour Region (Gazette No. 27, 7 July 2010). Beneficial Uses and Objectives for the Darwin Rural Adelaide River Water Control District (Gazette No. G13, 11 June 2024) The relevant beneficial uses are agriculture, aquaculture, environment, public water supply, cultural, industry, rural, stock and domestic, mining activity and petroleum activity.	
2. Sites of conservation significance (condition 19)	SOCS No. 6 Darwin Harbour.	
3. Ramsar wetlands (condition 19)	Not applicable.	
4. Licence Documents (condition 13)	(a) Grants Lithium Operational Water Management Plan (b) Finniss Lithium Project Emergency Preparedness Plan Emergency Response Plan (c) Core Lithium Grants Lithium Project Stakeholder Engagement Plan (d) Waste Discharge Licence 248 Monitoring Program (EcOz Consulting)	
5. Authorised Discharge Point(s) (condition 20)	Discharge Point 1 (DP1) from Mine Water Dam 1 (MWD1) as shown on the plan at Appendix 1.	Zone: 52 L Easting: 693153 Northing: 8598441
6. Source(s) of waste (condition 21)	Pit water, direct rainfall, and mine influenced water collected from Mineral Lease 31726 that is captured and stored in sediment basins and Mine Water Dams. Waters discharged through DP1 are pumped over the wall of Mine Water Dam 1 (MWD1) and released by a tee valve into the flow path of an adjacent unnamed ephemeral stream as shown at Appendix 1.	
7. Trigger values (condition 21)	The trigger values for parameters listed in Appendix 2.	
8. Compliance point (condition 21)	Grants Downstream Surface Water 5 (GDS SW5) as shown on the plan at Appendix 1.	Zone: 52 L Easting: 693374 Northing: 8600709
9. Limitations on discharge (condition 21)	Any authorised discharge must: (a) Not include wastewater generated outside of Mineral Lease 31726; (b) Not include wastewater treated with polyacrylamide flocculants with more than 0.05% of the neuro-toxin acrylamide monomer; (c) Occur only when the stream gauge at the compliance point GDS SW5 shows there is a sufficient flow to achieve trigger values at the compliance point at Item 8; (d) In the event wastewater is treated, occurs only when the treatment process has finished, including allowing sufficient residence time for settlement of flocculants and target contaminants.	

Item	Detail
10. Notifiable incidents (conditions 25 and 26)	Notifiable incidents include: (a) An exceedance of three or more times a trigger value specified in Item 7 at the compliance point in Item 8; (b) For physical and chemical stressors, an exceedance (or measurement outside the range) of a trigger value specified in Item 7 at the compliance point in Item 8, on three consecutive sampling occasions; (c) For toxicants, two or more exceedances of a trigger value specified in Item 7, at the compliance point in Item 8, during one annual reporting period; (d) A discharge at a point not specified in Item 5; (e) A discharge from a source not specified in Item 6; (f) A failure to comply with condition 23.
11. Monitoring Program (condition 27)	The Monitoring Program includes: (a) Surface water monitoring in accordance with Appendix 3. (b) Fluvial sediment monitoring in accordance with Appendix 4. (c) Biota monitoring in accordance with Appendix 5.
12. Annual Return (condition 38)	The Annual Return is due: (a) Within 10 business days of each Anniversary Date; and (b) On a date agreed by the Administering Agency in the event that the licence expires or is surrendered for the reporting period 1 May – 30 April of the preceding year (or part thereof).
13. Monitoring Report (condition 39)	The Monitoring Report is due: (a) Within 10 business days each Anniversary Date; and (b) On a date agreed by the Administering Agency in the event that the licence expires or is surrendered for the reporting period 1 May – 30 April of the preceding year (or part thereof).
14. Documents placed on Register (condition 42)	The following documents will be placed on the Register: (a) The Licence Documents at Item 4. (b) The Monitoring Report provided in accordance with condition 40. (c) The Annual Return.
15. Special conditions (condition 43)	1. The annual return required by condition 38 must contain details of all notifiable incidents and non-compliances with this licence during the reporting period. 2. The monitoring report required by condition 39 must include: (a) The records of trigger value exceedances collected in accordance with Condition 24.3 (b) An assessment of compliance with Condition 21.2 including supporting data analysis.

Item	Detail
16. Compliance with trigger values	For the annual reporting period, the trigger values at Item 7 shall be regarded as being complied with if: (a) For metals, hydrocarbons and other toxicants, not more than one measurement or, if more than 20 samples are collected, 5% of measured values, exceed the trigger values specified in Item 7; (b) For nutrients and physico-chemical parameters (DO, pH, EC, temperature), the median value of measurements does not exceed, or is not outside the range of, the trigger values specified in Item 7; and (c) For any other indicators, not more than 20% of samples exceed, or are outside the range of, the trigger values specified in Item 7.

LICENCE CONDITIONS

RULES FOR INTERPRETING THE CONDITIONS OF THIS LICENCE

1. Where there is a discrepancy between the conditions of this licence and any plan, standard, guideline or other document referred to in this licence, the conditions of this licence prevail to the extent of the inconsistency.
2. Any reference to any standard, guideline or code of practice (Australian or international) in this licence means the relevant parts of the current version of that standard, guideline or code of practice.
3. In this licence, unless the contrary intention appears, words that are defined in the Water Act are intended to have the meaning given to them in that Act.
4. In this licence, unless a contrary intention appears, terms are defined in the Definitions at the end of this licence.
5. In this licence a reference to an Item is a reference to an Item specified in Schedule 1.

GENERAL

6. The Licensee must ensure the contact details recorded with the Administering Agency for this licence are correct at all times.
7. The Licensee must at all times have a 24-hour emergency contact.
8. The Licensee must notify the Administering Agency prior to making any operational change that will cause, or is likely to cause, an increase in the potential for environmental harm.
9. The Licensee must display clear and legible signage, in English, in a prominent location at each public entrance to the premises of the Licensed Action that includes the following details:
    - 9.1. waste discharge licence number issued under the Water Act; and
    - 9.2. 24-hour emergency contact details.
10. The Licensee must cause a hard copy of this licence to be available for inspection, at the premises of the Licensed Action, by any person on request.
11. Unless otherwise specified, within 10 business days of a request, the Licensee must provide to the Administering Agency a copy of any record, document, monitoring data or other information in relation to the Licensed Action in electronic form by emailing environmentalregulation@nt.gov.au.
12. All notices, reports, documents or other correspondence required to be provided as a condition of this licence, unless otherwise specified as a condition of this licence, must be provided in electronic form by emailing environmentalregulation@nt.gov.au.
13. The Licensee must maintain, implement and comply with the current version of the documents specified in Item 4.
14. Within 10 business days of any amendment being made to a document specified in Item 4, the Licensee must provide the amended document to the Administering Agency, along with:
    - 14.1. a tabulated summary of the amendment(s) with document references;
    - 14.2. reasons for the amendment(s); and
    - 14.3. an assessment of environmental risk associated with the amendment(s).
15. The Administering Agency may require the Licensee to revise or amend and resubmit any document provided in accordance with this licence. Where the Administering Agency requires any document to be revised or amended, the Licensee must submit it to the Administering Agency by the date specified by the Administering Agency.
16. The Licensee must operate and maintain a community feedback telephone number enabling members of the public to contact, at any time, a person or voice mail system that can accept, on behalf of the Licensee, enquiries or complaints about the Licensed Action, and to which the Licensee must respond. The community feedback telephone number must be displayed:

16.1. where the Licensee has a website, in a prominent location on the Licensee's website;

16.2. in the Consultation and Communication Plan; and

16.3. in other publicly available documents relating to the Licensed Action.

17. The Licensee must maintain a register of complaints that records the details of each complaint received in relation to the Licensed Action and provide a copy to the Administering Agency on request. Details of the complaints must (as is reasonably practicable) include, the following information:

17.1. the person to whom the complaint was made;

17.2. the person responsible for managing the complaint;

17.3. the date and time the complaint was reported;

17.4. the date and time of the event(s) that led to the complaint;

17.5. the contact details of the complainant if known, or where no details are provided a note to that effect;

17.6. the nature of the complaint;

17.7. the nature of event(s) giving rise to the complaint;

17.8. prevailing weather conditions at the time (where relevant to the complaint);

17.9. the action taken in relation to the complaint, including any follow-up contact with the complainant; and

17.10. if no action was taken, why no action was taken.

OPERATIONAL

18. Without limiting the conditions of this licence, in conducting the Licensed Action, the Licensee must do all things reasonable and practicable to:

18.1. minimise the likelihood of waste coming into contact with water or water being polluted as a result of, or in connection with, the Licensed Action;

18.2. prevent and minimise the likelihood of environmental harm occurring as a result, or in connection with, the Licensed Action;

18.3. effectively investigate, monitor and report on water being polluted as a result of, or in connection with, the Licensed Action;

18.4. effectively investigate, monitor and report on environmental harm and the risk of environmental harm occurring as a result of or in connection with the Licensed Action; and

18.5. apply the principles of ecologically sustainable development.

19. The Licensee must, without limiting any other condition of this licence, in conducting the Licensed Action do all things reasonable and practicable to minimise adverse effects to any:

19.1. declared beneficial use, quality, standard or objectives declared under section 73 of the Water Act;

19.2. sites of conservation significance; or

19.3. designated Ramsar wetlands,

including, but not limited to, those specified in Items 1, 2 and 3.

DISCHARGES

20. The Licensee must only discharge waste to water from the authorised discharge points specified in Item 5.

21. Discharges from each authorised discharge point must:

21.1. consist only of waste from the source(s) specified in Item 6;

21.2. not cause a non-compliance with the conditions specified in Item 16 at the compliance point at Item 8; and

21.3. comply with the limitations specified in Item 9.

22. The Licensee must, for each authorised discharge point, install, operate and maintain a device to measure and record, for each discharge event:

22.1. the time the discharge commenced and the duration of the discharge;

22.2. the discharge rate of flow; and

22.3. the discharge volume.

23. Discharges from each authorised discharge point must not:

23.1. contain any floating debris, oil, grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter;

23.2. cause or generate odours which would adversely affect the use and amenity of surrounding waters;

23.3. cause algal blooms in the receiving water;

23.4. pollute groundwater;

23.5. cause visible change in the behaviour of fish or other aquatic organisms in the receiving water;

23.6. cause mortality of fish or other aquatic organisms;

23.7. cause erosion or degradation to the beds and banks of a watercourse; or

23.8. cause adverse impacts on plants or animals.

INVESTIGATIONS AND NOTIFICATIONS

24. Following any exceedance of a trigger value specified in Item 7 at the compliance point specified in Item 8, the Licensee must make a record of:

24.1. when the exceedance was detected and by whom;

24.2. the date and time of the exceedance;

24.3. the actual and potential causes and contributing factors to the exceedance;

24.4. the risk of environmental harm arising from the exceedance;

24.5. exceedances and details of the investigation and corrective action taken; and

24.6. if no action was taken, why no action was taken.

25. If one of the incidents specified in Item 10 occurs, the Licensee must notify the Administering Agency by emailing environmentalregulation@nt.gov.au as soon as practicable after (and in any case within 24 hours after) first becoming aware of the incident, including the following information:

25.1. when the incident was detected and by whom;

25.2. the date and time of the incident;

25.3. whether discharge was occurring at the time of the incident and the source of the discharge;

25.4. whether discharge is still occurring; and

25.5. a date (within 10 business days of the incident) when an investigation report will be submitted to the Administering Agency.

26. Within 10 business days of notifying the Administering Agency of an incident specified in Item 10, the Licensee must provide the Administering Agency an investigation report that includes:

26.1. when the incident was detected and by whom;

26.2. the date and time of the incident;

26.3. whether discharge was occurring at the time of the incident and the source of the discharge;

26.4. the actual and potential causes and contributing factors to the incident;

26.5. monitoring data of the discharge, and upstream and downstream water of the incident, collected for the date the incident was detected and three sampling rounds prior;

26.6. available flow rates to demonstrate any influence streams and rivers may have had on the incident;

26.7. rainfall recorded at the site prior to the incident;

26.8. the risk of environmental harm arising from the incident;

26.9. the action(s) that have or will be undertaken to mitigate any environmental harm arising from the incident;

26.10. corrective actions that have or will be undertaken to ensure the incident does not reoccur; and

26.11. if no action was taken, why no action was taken.

MONITORING

27. From the Commencement Date of this licence, the Licensee must implement and comply with the Monitoring Program specified in Item 11.

28. The Licensee must to the extent practicable collect samples that are representative of discharge conditions that maximises the ability to detect potential impact from the Licenced Action, including collecting samples at sampling points.

29. In implementing the Monitoring Program the Licensee must to the extent practicable that samples collected at the sampling points are collected:

29.1. on the same date as discharge event; and

29.2. from the part of the waterway that provides representative (well mixed) samples.

30. If a sample is missed or cannot be collected at a sampling point at a frequency set in the Monitoring Program for any reason, the Licensee must revisit the sampling point to collect a sample as soon as possible after the missed collection.

31. The Licensee must ensure that all samples and field environmental data are collected in accordance with recognised Australian Standards and guidelines (such as AS/NZS 5667.1 1998, ANZG (2018), as updated from time to time).

32. For the parameters that require analysis at a laboratory, the Licensee must ensure that:

32.1. all samples are analysed at a laboratory with current NATA accreditation or equivalent; and

32.2. detection and reporting limits are appropriate to determine compliance with this licence.

33. The Licensee must ensure any samples collected in accordance with the Monitoring Program or in connection with the Licensed Action or this licence, are obtained by, or under the supervision of a qualified sampler.

34. The Licensee must ensure any plant and equipment used by the Licensee in conducting the Monitoring Program:

34.1. is fit for the purpose and use to which it is put, including that it is properly calibrated;

34.2. is maintained and operational; and

34.3. is operated by a person trained to use the plant and equipment.

35. The Licensee must ensure that, for each sample collected in accordance with the Monitoring Program or the Licensed Action, the following information must be recorded and retained:

    35.1. the date on which the sample was collected;

    35.2. the time at which the sample was collected;

    35.3. the location at which the sample was collected;

    35.4. the name of the person who collected the sample;

    35.5. the chain of custody forms relating to the sample;

    35.6. the field measurements (if any) and analytical results (if any) relating to the sample; and

    35.7. laboratory quality assurance and quality control documentation.

36. The Licensee must for all land based monitoring points specified in the Monitoring Program:

    36.1. install and maintain appropriate identification signage so that they are reasonably identifiable at all times; and

    36.2. maintain safe access and egress, as is reasonably practicable.

RECORDING AND REPORTING

37. The Licensee must keep records of all contraventions with this licence. These records must be adequate to enable the Licensee to comply with the notification and reporting conditions of this licence.

38. The Licensee must submit a completed Annual Return, by emailing environmentalregulation@nt.gov.au as specified in Item 12.

39. The Licensee must complete and provide to the Administering Agency a report of data and information obtained through the implementation and performance of the Monitoring Program (the Monitoring Report), as prescribed by this licence, on the dates specified in Item 13.

40. The Licensee must ensure that each Monitoring Report:

    40.1. is prepared in accordance with the requirements of the Administering Agency 'Guideline for Reporting on Environmental Monitoring' (or any other guideline as adopted by the Administering Agency from time to time);

    40.2. includes a tabulation, in Microsoft ® Excel ® format or another format requested by the Administering Agency, of all monitoring data required to be collected in accordance with this licence for the preceding 12-month period;

    40.3. includes a tabulation of monthly and annual contaminant loads discharged from the authorised discharge point specified in Item 5 for the preceding 12-month period. Contaminant loads must be calculated for metals, metalloids, nutrients and other parameters (excluding field parameters) listed in the monitoring program specified in Item 11. The calculations must be based on the daily discharge volume and the concentration of contaminant present in the discharge on that day. On the days when a sample was not taken then the concentration of the contaminant must be estimated using Linear Interpolation methodology;

    40.4. includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the Licensed Action over a minimum period of three years (of part thereof);

    40.5. includes a summary of any investigations undertaken by the Licensee in accordance with this licence for the preceding 12-month period; and

    40.6. includes an assessment of environmental impact from the Licensed Action.

41. If the licence expires or is otherwise surrendered, suspended or revoked and the licence contained a condition that the Licensee provide a notice, report, record or other information after that date, the Licensee must provide any report, record, information or data available to the Licensee up to and including the date the licence expired or was surrendered, suspended or revoked.

42. A copy of the documents listed specified in Item 14 will be placed on the Register.

SPECIAL CONDITIONS

43. The Licensee must comply with the conditions specified in Item 15.

END OF LICENCE CONDITIONS

This licence is not valid unless signed below:



ANDREW JOHNSON
Controller of Water Resources

Dated the 18 July 2025

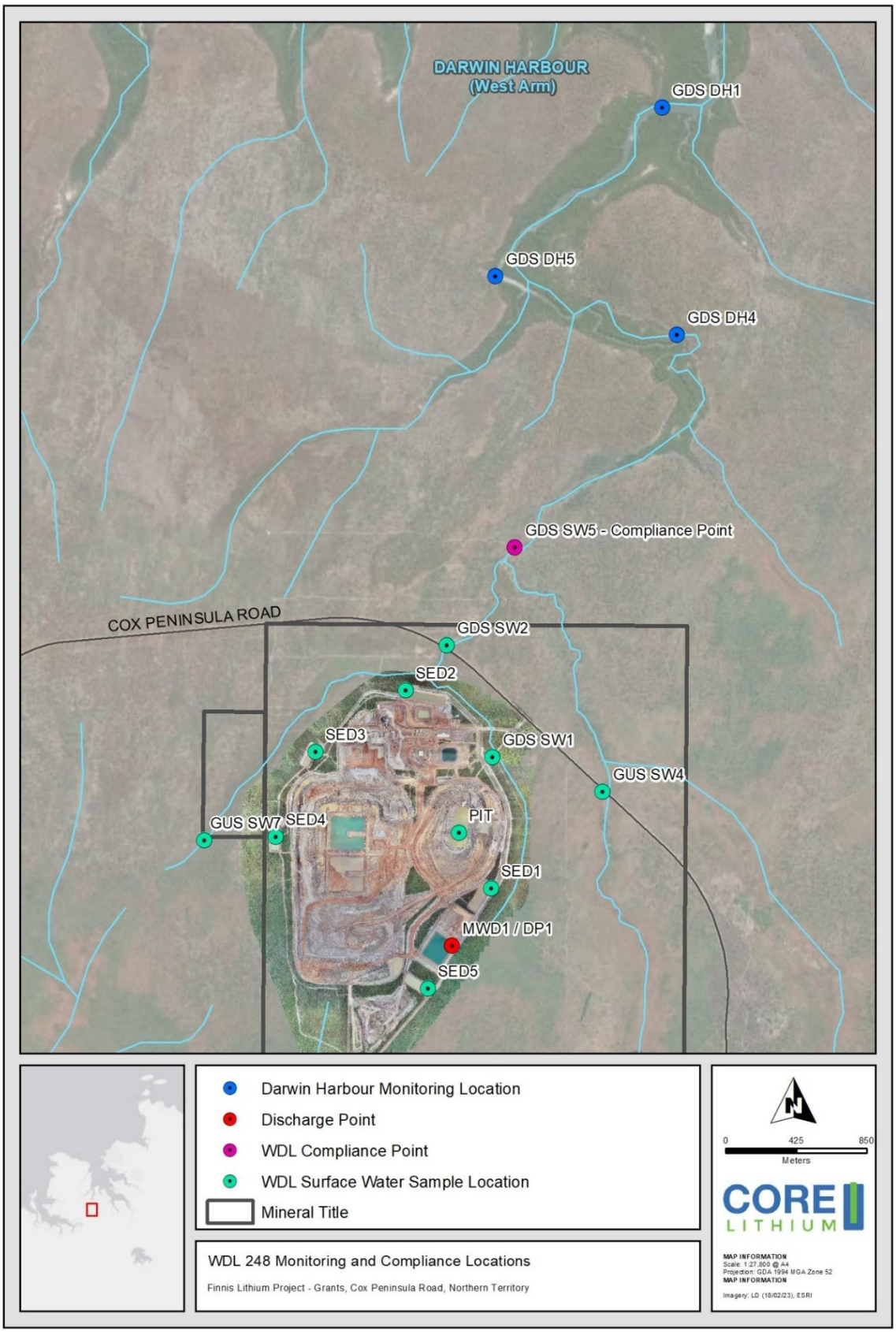
DEFINITIONS

In this licence, unless a contrary intention appears:

Term	Definition
24 hour emergency contact	the phone number of a person who can be contacted at any time and be capable of responding to and providing information about any incident associated with the Licensed Action.
Administering Agency	means the NT Government Department with responsibility for administering the Water Act.
Anniversary Date	annual anniversary of the Commencement Date.
Annual Return	an Administering Agency prescribed format for demonstrating and reporting compliance with the conditions of this licence.
ANZG (2018)	Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at http://www.waterquality.gov.au/anz-guidelines.
business days	a day not Saturday, Sunday or a public holiday, in Darwin, Northern Territory.
Consultation and Communication Plan	a written plan documenting proposed consultation and communications for the Licensed Action before, during and after the Licensed Action which includes a strategy for communicating with members of the public who are likely to have a real interest in, or be affected by, the Licensed Action.
contact details	includes the 24 hour emergency contact, and name, position title and phone number of a representative of the Licensee who can be contacted about the licence and Licensed Action.
discharge	releasing or allowing a liquid, gas or other substance to flow out from where it has been confined.
Dry season	means 1 May to 31 October.
Emergency Response Plan	a written plan documenting the Licensee's procedures for responding to emergencies caused by, resulting from or associated with the Licensed Action and that may cause environmental harm.
Licensed Action	the Licensed Action as described on the covering page of this licence.
Linear Interpolation	a method to construct new data points within the range of known data points. *y = y1 + ((x – x1) * ((y2 – y1) / (x2 – x1)))* y is the unknown concentration between known concentrations y1 and y2 y1 is the first known concentration y2 is the second known concentration x is the day of the unknown concentration y x1 is the day of the first known concentration y1 x2 is the day of the second known concentration y2
litter	litter, garbage, rubbish, refuse or waste matter, and includes the body of a dead animal.
NATA	National Association of Testing Authorities, Australia.
plant and equipment	all material items used in association with the Licensed Action, including (but not limited to) storage vessels and containers, pipe work and hosing, vehicles (including vessels), tools, and measuring equipment.

Term	Definition
pollution	has the same meaning as *pollute* as defined in section 4 of the Water Act.
public entrance	access to the licensed premises that is utilised by the public.
qualified sampler	a person who has training and experience in obtaining samples from the relevant environmental medium.
Register	the register available at the website of the Northern Territory Environment Protection Authority (NT EPA).
wastewater	water that contains a waste.
Water Act	*Water Act 1992* (NT).
Wet season	means 1 November to 30 April.

APPENDIX 1: Map of Discharge Point, Compliance Point and Monitoring Sites



APPENDIX 2 : Discharge Trigger Values

			Sampling Points	Compliance Point
			Site Code	GDS SW5
			Easting	693374
			Northing	8600709

PARAMETER	Abbrev.	Units	Analysis	Trigger Values
Environmental Field Data				
pH	pH	pH	In situ	5.2-6.6[2]
Electrical conductivity	EC	µS/cm		250[1]
Turbidity	NTU	NTU		12[3]
Dissolved oxygen	DO	% sat.		50-100[2]
Nutrients				
Total Nitrogen	TN	µg/L	Unfiltered	400[3]
Total Phosphorus	TP			35[6]
Metals and Metalloids[5]				
Aluminium	Al	µg/L	Total and Filtered (0.45 µm)	70[3]
Arsenic	As			13[1]
Cadmium	Cd			0.2[1]
Chromium	Cr			1[1]
Copper	Cu			1.4[1]
Iron	Fe			110[3]
Lead	Pb			3.4[1]
Lithium	Li			430[4]
Mercury	Hg			0.6[1]
Nickel	Ni			11[1]
Zinc	Zn			8[1]

Key:

[1] ANGZ (2018) 95% species protection, freshwater.

[2] 20th and 80th percentile of background data for surface water quality as detailed at paragraph 6.2 of the Water Management Plan and data provided in support of amendment application 20 September 2023.

[3] 80th percentile of background data for surface water quality as detailed at paragraph 6.2 of the Water Management Plan and data provided in support of amendment application 20 September 2023.

[4] Ecotoxicity Assessment, sections 8.3 and 8.4 of the Water Management Plan.

[5] SSTVs for metals and metalloids apply to filtered samples only

[6] 80th percentile of background data for surface water quality. Data provided in support of amendment application May 2025 (NTG File Reference: 33-D25-6780).

APPENDIX 3: Surface Water Monitoring Program

Sampling Points				Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Upstream Surface Water 7	Hang Gong Upstream Surface Water 8	Sediment Basins 1-5					Discharge Point	Mine Pit Sump	Grants Downstream Darwin Harbour 1
Site Code				**GDS SW1**	**GDS SW2**	**GUS SW4**	**GDS SW5**	**GUS SW7**	**GUS SW8**	**Sed 1**	**Sed 2**	**Sed 3**	**Sed 4**	**Sed 5**	**MWD1[1]**	**Pit**	**GDS DH1**
Easting				693239	692989	693903	693374	691498	693322	693167	692657	692155	691928	692775	693030	693037	694262
Northing				8599446	8600073	8599235	8600709	8598943	8600641	6598623	8599847	8599446	8598961	8598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**													
Field Parameters																	
Flow	-	kL/day	In situ	D	D	D	C	D	D	N/A	N/A	N/A	N/A	N/A	C	N/A	N/A
Water Level	-	measure		D	D	D	C	D	D	N/A	N/A	N/A	N/A	N/A	P, W	N/A	N/A
pH	pH	pH		D	D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Electrical conductivity	EC	µS/cm		D	D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Turbidity	NTU	NTU		D	D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Temperature	Temp	°C		D	D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Oxidation Reduction Potential	OR	mV		D	D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]

Sampling Points				**Grants Downstream Surface Water 1**	**Grants Downstream Surface Water 2**	**Grants Upstream Surface Water 4**	**Grants Downstream Surface Water 5**	**Grants Upstream Surface Water 7**	**Hang Gong Upstream Surface Water 8**	**Sediment Basins 1-5**					**Discharge Point**	**Mine Pit Sump**	**Grants Downstream Darwin Harbour 1**
Site Code				**GDS SW1**	**GDS SW2**	**GUS SW4**	**GDS SW5**	**GUS SW7**	**GUS SW8**	**Sed 1**	**Sed 2**	**Sed 3**	**Sed 4**	**Sed 5**	**MWD1[1]**	**Pit**	**GDS DH1**
Easting				693239	692989	693903	693374	691498	693322	693167	692657	692155	691928	692775	693030	693037	694262
Northing				8599446	8600073	8599235	8600709	8598943	8600641	6598623	6599847	6599446	6598961	6598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**													
Dissolved oxygen	DO	% sat.		D	D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Nutrients																	
Ammonia	NH_3	µg/L	Unfiltered (excluding FRP)	W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Oxides of Nitrogen	NO_x			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Nitrate	NO_3			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Total Nitrogen	TN			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Total Phosphorus	TP			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Filterable Reactive Phosphorus	FRP			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]

Sampling Points				Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Upstream Surface Water 7	Hang Gong Upstream Surface Water 8	Sediment Basins 1-5					Discharge Point	Mine Pit Sump	Grants Downstream Darwin Harbour 1
Site Code				GDS SW1	GDS SW2	GUS SW4	GDS SW5	GUS SW7	GUS SW8	Sed 1	Sed 2	Sed 3	Sed 4	Sed 5	MWD1[1]	Pit	GDS DH1
Easting				693239	692989	693903	693374	691498	693322	693167	692657	692155	691928	692775	693030	693037	694262
Northing				8599446	8600073	8599235	8600709	8598943	8600641	6598623	6599847	6599446	6598961	6598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**													
Chlorophyll a	Chl-a			W	W	W	W	W	W	N/A	N/A	N/A	N/A	N/A	N/A	N/A	M[3]
Metals and Metalloids																	
Aluminium	Al	µg/L	Total and Filtered (0.45 µm)	W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Arsenic	As			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Cadmium	Cd			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Chromium	Cr			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Copper	Cu			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Iron	Fe			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Lead	Pb			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Lithium	Li			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Mercury	Hg			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]

Sampling Points				**Grants Downstream Surface Water 1**	**Grants Downstream Surface Water 2**	**Grants Upstream Surface Water 4**	**Grants Downstream Surface Water 5**	**Grants Upstream Surface Water 7**	**Hang Gong Upstream Surface Water 8**	**Sediment Basins 1-5**					**Discharge Point**	**Mine Pit Sump**	**Grants Downstream Darwin Harbour 1**
Site Code				**GDS SW1**	**GDS SW2**	**GUS SW4**	**GDS SW5**	**GUS SW7**	**GUS SW8**	**Sed 1**	**Sed 2**	**Sed 3**	**Sed 4**	**Sed 5**	**MWD1[1]**	**Pit**	**GDS DH1**
Easting				693239	692989	693903	693374	691498	693322	693167	692657	692155	691928	692775	693030	693037	694262
Northing				8599446	8600073	8599235	8600709	8598943	8600641	6598623	6599847	6599446	6598961	6598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**													
Nickel	Ni			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Zinc	Zn			W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Full elemental scan	-			A	A	A	A	A	A	A	A	A	A	A	A	A	A
Treatment reagents (Item 9)																	
Acrylamide[2]	C_3H_5NO	µg/L	Total and Filtered (0.45 µm)	W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Other																	
Sulphate	SO_4	mg/L	Filtered (0.45 µm)	W	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Calcium	Ca			W	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Chloride	Cl			W	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A

			Sampling Points	Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Upstream Surface Water 7	Hang Gong Upstream Surface Water 8	Sediment Basins 1-5					Discharge Point	Mine Pit Sump	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GUS SW4	GDS SW5	GUS SW7	GUS SW8	Sed 1	Sed 2	Sed 3	Sed 4	Sed 5	MWD1[1]	Pit	GDS DH1
			Easting	693239	692989	693903	693374	691498	693322	693167	692657	692155	691928	692775	693030	693037	694262
			Northing	8599446	8600073	8599235	8600709	8598943	8600641	6598623	6598497	6599446	6598961	6598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**													
Sodium	Na			W	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Potassium	K			W	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Magnesium	Mg			W	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Carbonate	CO_3^{2-}			W	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Bicarbonate	HCO_3			W	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Total Dissolved Solids	TDS			W	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Total Suspended Solids	TSS		Unfiltered	W	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]

Key:

P = prior to discharge.

C = continuous

D = within 24 hours of commencement of discharge **and** daily during discharge. When no discharge is occurring monitoring will be on a weekly basis.

W = within 24 hours of discharge **and** weekly during discharge. When no discharge is occurring monitoring will be on a monthly basis.

F = weekly whilst discharging from sediment basins, Monthly during Wet season irrespective of discharge.

M = monthly.

A = Annually, at end of Wet season on recessional flows.

N/A = not applicable.

[1] The sampling point in MWD1 will be located close to DP1 to ensure it is representative of discharge water quality.

[2] This sampling is only required where the licensee has conducted water treatment onsite using flocculants containing Acrylamide.

[3] During Wet season only

APPENDIX 4: Fluvial Sediment Monitoring Program

			Sampling Points	**Grants Downstream Surface Water 1**	**Grants Upstream Surface Water 2**	**Grants Upstream Surface Water 4**	**Grants Downstream Surface Water 5**	**Grants Upstream Surface Water 7**	**Grants Downstream Surface Water 8**	**Discharge Point**	**Grants Downstream Darwin Harbour 1**
			Site Code	**GDS SW1**	**GDS SW2**	**GUS SW4**	**GDS SW5**	**GDS SW7**	**GDS SW8**	**MWD1**	**GDS DH1**
			Easting	693239	692989	693903	693374	691498	692465	693030	694262
			Northing	8599446	8600073	8599235	8600709	8598943	8599942	8598504	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**							
Environmental Field Data											
pH	pH	pH		A	A	A	A	A	A	A	A
Electrical conductivity	EC	µS/cm		A	A	A	A	A	A	A	A
Moisture content		%		A	A	A	A	A	A	A	A
Particle size distribution	PSD	%	<63µm >=63µm & <=2mm >2mm	A	A	A	A	A	A	A	A
Aluminium	Al	mg/kg	<63µm sediment fraction	A	A	A	A	A	A	A	A
Arsenic	As			A	A	A	A	A	A	A	A
Cadmium	Cd			A	A	A	A	A	A	A	A
Chromium	Cr			A	A	A	A	A	A	A	A
Copper	Cu			A	A	A	A	A	A	A	A
Iron	Fe			A	A	A	A	A	A	A	A
Lead	Pb			A	A	A	A	A	A	A	A
Lithium	Li			A	A	A	A	A	A	A	A
Mercury	Hg			A	A	A	A	A	A	A	A
Nickel	Ni			A	A	A	A	A	A	A	A

			Sampling Points	Grants Downstream Surface Water 1	Grants Upstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Upstream Surface Water 7	Grants Downstream Surface Water 8	Discharge Point	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GUS SW4	GDS SW5	GDS SW7	GDS SW8	MWD1	GDS DH1
			Easting	693239	692989	693903	693374	691498	692465	693030	694262
			Northing	8599446	8600073	8599235	8600709	8598943	8599942	8598504	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**							
Zinc	Zn			A	A	A	A	A	A	A	A
Other											
Sulphate	SO_4	mg/kg	Soluble ion extract	A	A	A	A	A	A	A	A
Calcium	Ca			A	A	A	A	A	A	A	A
Chloride	Cl			A	A	A	A	A	A	A	A
Sodium	Na			A	A	A	A	A	A	A	A
Potassium	K			A	A	A	A	A	A	A	A
Magnesium	Mg			A	A	A	A	A	A	A	A

Key:

A = Annually during recessional flow (late Wet season/early Dry season)

APPENDIX 5: Biota Monitoring Program

Monitoring should be undertaken in accordance with Dwyer, H. and Clark, N. (2022) Waste Discharge Licence 248 Monitoring Program, prepared by EcOz Environmental Consultants for Lithium Developments (Grants NT).

Project Name	Locations	Project Description	Report Frequency
Seagrass assessment	West Arm, Darwin Harbour	Seagrass monitoring to determine whether any observed change in seagrass distribution or composition has occurred in the marine waters of West Arm, Darwin Harbour. Monitoring should aim to determine whether any change identified is naturally occurring or related to mine operations.	Annually
Vegetation monitoring	Areas downstream of ML 31726	Monitoring of vegetation downstream of ML 31726 to determine if mining activities are impacting riparian vegetation communities.	Annually
Macroinvertebrate study	Darwin Harbour and Areas downstream of ML 31726	Survey of macro-invertebrate abundance and diversity in aquatic ecosystems. Data is used to monitor potential impacts from mine operations.	Annually during recessional flow (late Wet season/early Dry season)

APPENDIX C

WDL248 Monitoring Program

Waste Discharge Licence 248 Monitoring Program

Lithium Developments Grants Northern Territory



DOCUMENT CONTROL RECORD

Job	EZ21190
Document ID	213910-47
Author(s)	Helen Dwyer, Nicole Clark

DOCUMENT HISTORY

Rev	Reviewed by	Approved by	Issued to	Date
1	Suz Barber	Helen Dwyer	Lithium Developments (Grants NT) Pty Ltd	5/05/2022
2	Suz Barber	Helen Dwyer	NT EPA	18/05/2022
3	Helen Dwyer	Helen Dwyer	Lithium Developments (Grants NT) Pty Ltd	25/07/2022
4	Helen Dwyer	Helen Dwyer	Lithium Developments (Grants NT) Pty Ltd	29/08/2022
5	Helen Dwyer	Helen Dwyer	Lithium Developments (Grants NT) Pty Ltd	24/11/2022

Recipients are responsible for eliminating all superseded documents in their possession.

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Attachment A –Waste Discharge Licence 248 for Lithium Developments Grants Northern Territory
Attachment B –Procedure for Surface Water Sampling
Attachment C – Field Sheets from the Darwin-Daly AUSRIVAS Manual

1 INTRODUCTION

Waste Discharge Licence (WDL) 248 was granted to Lithium Developments Grants Northern Territory (LDGNT) on 25 July 2022. WDL 248 authorises discharge of mine wastewater from the Grants Lithium Project (GLP) site. Controlled discharge will occur from Water Dam 1 (MWD1), via authorised discharge point 1 (DP1), into an unnamed watercourse which ultimately discharges into West Arm, Darwin Harbour. The WDL is provided as Attachment A of this document.

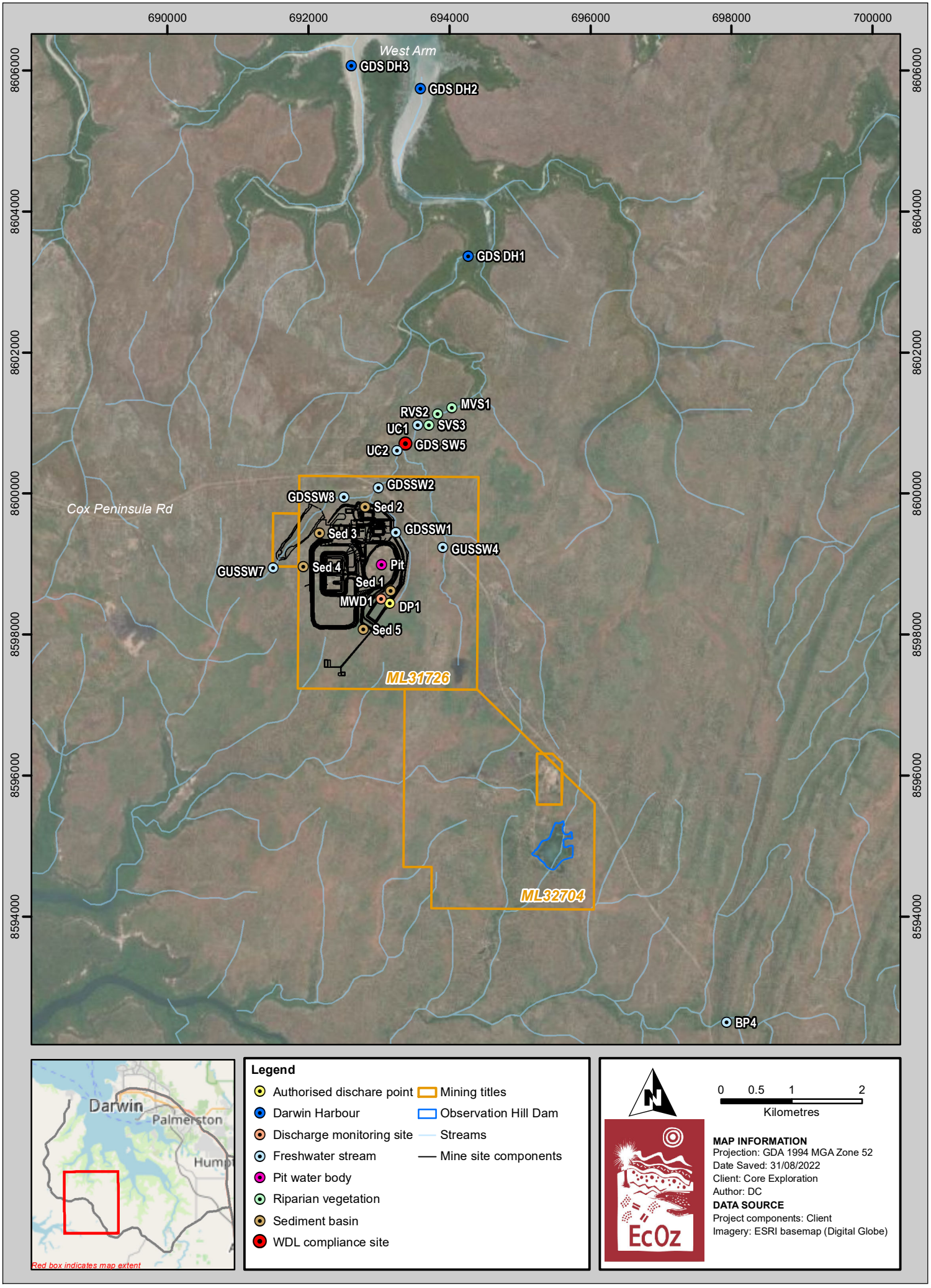
Condition 30 of WDL 248 requires implementation of the monitoring program, detailed in Appendices 3 to 5 of the WDL. Monitoring is required to be undertaken for surface water quality, fluvial sediment quality, and biota in watercourses downstream of GLP and in the West Arm of Darwin Harbour. A summary of all WDL monitoring sites, and type of monitoring that is to be undertaken at each site, is provided in Table 1-1. The locations of monitoring sites are shown on Figure 1-1.

This document details the monitoring that will be undertaken by LDGNT to satisfy the requirements of WDL 248. The monitoring program identifies monitoring locations, describes sampling methodology where appropriate, and references supporting documents which form part of LDGNT's overall Environmental Management System.

Table 1-1. Summary of all monitoring to be undertaken for WDL 248

Category	Sample Site	Easting	Northing	Surface water quality[1]	Sediment quality	Macroinvertebrate	Riparian Vegetation	Seagrass
Freshwater stream	GDS SW1	693239	8599446	Daily, weekly, monthly	Annually	-	-	-
	GDS SW2	692989	8600073	Daily, weekly, monthly	Annually	-	-	-
	GUS SW4	693903	8599235	Daily, weekly, monthly	Annually	-	-	-
	GUS SW7	691498	8598943	Daily, weekly, monthly	Annually	-	-	-
	GDS SW8	692498	8599951	Daily, weekly, monthly	Annually	-	-	-
WDL compliance site	GDS SW5	693374	8600709	Daily, weekly, monthly	Annually	Annually	-	-
Sediment basins	Sed1	693167	8598623	Weekly, monthly	-	-	-	-
	Sed2	692657	8599847	Weekly, monthly	-	-	-	-
	Sed3	692155	8599446	Weekly, monthly	-	-	-	-
	Sed4	691928	8598961	Weekly, monthly	-	-	-	-
	Sed5	692775	8598072	Weekly, monthly	-	-	-	-
WDL discharge point	MWD1	693030	8598504	Prior to discharge, daily, weekly, monthly	Annually	-	-	-
Pit water body	PIT	693037	8598990	Monthly	-	-	-	-
Darwin Harbour	GDS DH1	694262	8603365	Monthly	Annually	Annually	-	Annually
	GDS DH2	693587	8605738	Monthly	Annually	Annually	-	Annually
	GDS DH3	692608	8606060	Monthly	Annually	Annually	-	Annually
Freshwater stream	UC1	693544	8600969	Annually	Annually	Annually	-	-
	UC2	693255	8600608	Annually	Annually	Annually	-	-
	BP4	697926	8592497	Annually	Annually	Annually	-	-
Riparian vegetation	MVS1	694035	8601220	-	-	-	Annually	-
	RVS2	693834	8601132	-	-	-	Annually	-
	SVS3	693706	8600969	-	-	-	Annually	-

[1] Frequency of surface water quality monitoring depends on discharge; refer to Table 2-1 for detail. Freshwater sites will only be sampled when the watercourse is flowing, and Darwin Harbour sites will only be sampled for surface water quality during the wet season months. Refer to Table 2-1 Attachment A for the detailed surface water quality monitoring schedule.



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\EZ21190 - Grants Waste Discharge Licence - Core Lithium\01 Project Files\Report maps\All monitoring locations.mxd

Figure 1-1. All Grants WDL Monitoring Sites

2 SURFACE WATER QUALITY

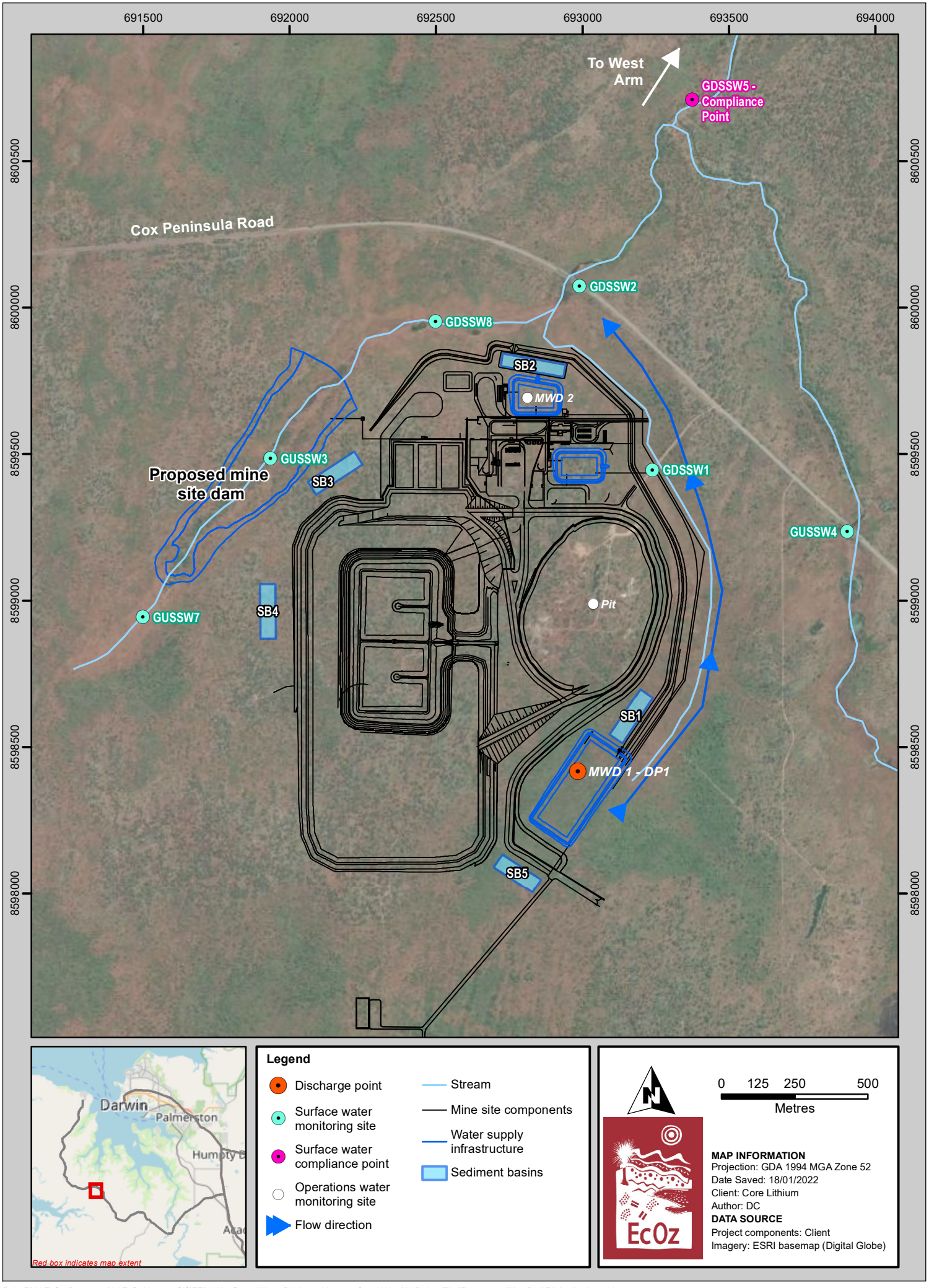
2.1 Freshwater

Surface water quality sampling will be undertaken in accordance with Appendix 3 of WDL 248 (see Attachment A). This includes regular monitoring of surface water sites upstream and downstream of the discharge point during discharge, weekly monitoring of sediment basins during discharge, and monthly monitoring of the pit water. Discharge monitoring will be undertaken at MWD1, close to DP1, the licenced discharge point, prior to discharge, and daily and weekly during discharge. The compliance point for the WDL is GDS SW5, and frequent monitoring will be undertaken during discharge. Details of water quality monitoring methodology and monitoring locations are provided in the Water Management Plan for the GLP. Locations of surface water monitoring sites which will be sampled in accordance with WDL 248 are shown on Figure 2-1. A summary of sites, analytes and monitoring frequency are provided in Table 2-1.

Table 2-1. Surface water monitoring program for WDL (freshwater sites)

Site	Description	Analytes	Frequency
GUS SW4, GUS SW7	Freshwater streams – upstream or reference	**Field parameters**: Flow, water level, pH, electrical conductivity, temperature, ORP, dissolved oxygen, turbidity. **Nutrients**: Total nitrogen, nitrate, oxides of nitrogen, ammonia, total phosphorus, filterable reactive phosphorus. **Metals and metalloids:** Total and dissolved Al, As, Cd, Cr, Cu, Fe, Pb, Li, Hg, Ni, Zn *Full elemental scan once per year **Other:** $S0_4$, Ca, Cl, Na, K, Mg, $C0_3^{2-}$, HC03, total dissolved solids, total suspended solids.	**During discharge[2]:** Daily field measurements Weekly laboratory parameters **When not discharging:** Weekly field measurements Monthly laboratory parameters
GDS SW1, GDS SW2	Freshwater stream – downstream of mine site		
GDS SW5	Compliance point		As above, and continuous flow and water level monitoring
MWD1	Discharge point		Continuous flow **During discharge:** Prior to discharge (all analytes) Daily field measurements Weekly laboratory parameters **When not discharging:** Weekly field measurements Monthly laboratory parameters
Sed 1, Sed 2, Sed 3, Sed 4, Sed 5	Sediment basins		**During discharge**: Weekly (all analytes) **When not discharging:** Monthly (all analytes) – wet season only Note flow and level are N/A
Pit	Mine site pit (discharge source water)		Monthly (all analytes) Note flow and level are N/A

[2] For all monitoring during discharge, the first monitoring event must occur within 24 hours of discharge commencing.



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\EZ21190 - Grants Waste Discharge Licence - Core Lithium\01 Project Files\Report maps\Map for WDL Application.mxd

Figure 2-1. Map of surface water sites (freshwater) to be monitored for WDL248

2.2 Marine Water

Appendix 3 of WDL 248 requires monthly monitoring of GDS DH1, located within Darwin Harbour, to be undertaken during the wet season. Two additional sites will also be sampled to provide context for comparison of data from GDS DH1 and provide water quality data for areas of Darwin Harbour downstream of the discharge point to identify any potential impacts from mine site discharges. Details of the monitoring to be undertaken in Darwin Harbour is provided in Table 2-2, and locations are shown on Figure 1-1.

Table 2-2. Darwin Harbour Monitoring Program

Monitoring Location	Description	Analytes	Frequency
GDS DH1	Marine monitoring site, ~4km downstream of WDL compliance point (GDS SW5).	**Field parameters**: Temperature, pH, electrical conductivity, salinity, ORP, dissolved oxygen, turbidity. **Nutrients**: Ultra-trace in saline waters Total nitrogen, nitrate, oxides of nitrogen, ammonia, total phosphorus, filterable reactive phosphorus. **Metals:** Total and dissolved (ultra-trace) Al, As, Cd, Cr, Cu, Fe, Pb, Li, Hg, Ni, Zn Total suspended solids	Monthly during the wet season Plus a full elemental scan of metals (total and dissolved) once per year, nominally at end of each wet season.
GDS DH2	Marine monitoring site, ~8 km downstream of compliance point, near confluence of branch of western arm of West Arm.		
GDS DH3	Marine monitoring site, reference site, on western arm of West Arm.		

2.3 Sample methods

All surface water sampling will be in accordance with relevant standards and guidelines including:

- *Australian/New Zealand Standard on Water Quality Sampling - Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples* (AS/NZS 5667.1:1998/2016), Standards Australia, New South Wales.
- *Australian Standard on Water Quality Sampling – Part 6: Guidance on sampling of rivers and streams* (AS/NZS 5667.6:1998), Standards Australia, New South Wales.
- *Australian/New Zealand Standard on Water Quality Sampling - Part 9: Sampling Guidance on sampling from marine waters* (AS/NZS 5667.9:1998/2016), Standards Australia, New South Wales.
- ANZG 2018. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia.
- EcOz *Standard Operating Procedure Surface Water Sampling* – Update July 2020.

This will ensure representative samples are collected, and also avoid contamination of samples (of particular importance for saline waters which require ultra-trace analysis for nutrients and metals).

Freshwater sites will be accessed on foot or via ATV, and samples will be collected from the side of the watercourse. Watercourses will only be sampled when flowing.

Marine sites will be accessed via marine vessel (boat), and grab samples will be obtained from ~30 cm below the surface of the water, using sample poles. Sampling will be undertaken during neap tides, on an outgoing (ebb) tide.

Field parameters will be measured in-situ using calibrated field equipment. Laboratory samples will be collected in laboratory supplied, suitably treated containers, and stored chilled (in esky with ice bricks or portable fridge) until the samples can be dispatched to the laboratory. All samples will be submitted to a NATA accredited laboratory, within required holding times, and Chain of Custody forms will be provided to allow for tracking of samples.

All sampling equipment will be maintained and cleaned between sample sites to avoid cross contamination. Details of sample methods are provided in the standards and guidelines listed above.

A detailed description of general surface water sampling methodology is provided in the *Procedure for Surface Water Sampling*, at Appendix B.

2.4 Data management and reporting

All surface water data will be entered into the Surface Water Quality Database and compared to guideline values; site-specific trigger values, the default ANZG 2018 guideline values (for fresh or marine waters as applicable), and the Darwin Harbour Water Quality Objectives. Field data will be entered manually, while laboratory data will be provided in ESdat form, and will automatically be entered into the database. In order to ensure laboratory results are automatically issued to ESdat, ensure the following email address is listed on the COC to receive results: esdat_au+corelithium@esdatlabsync.net.

Data will be compared to guideline values and any exceedance of a guideline value will be investigated. This may include additional water quality sampling. Data will also be compared over time to identify any trends in water quality that may be attributable to waste discharges or mine site operations.

As per Condition 44 and Condition 45 of WDL 248, LDGNT will prepare an Annual Return and a Monitoring Report and submit both reports to the Administering Agency annually, within 10 business days of 25 July (the licence anniversary date).

In the event that the surface water monitoring program identifies a non-compliance with WDL 248, LDGNT will notify the Administering Agency as soon as practicable (and in any case within 24 hours) after first becoming aware of the non-compliance. If a non-compliance with WDL 248 occurs, then an investigation report will be prepared and submitted to the Administering Agency within 10 business days of the notification. As per Item 12 of Schedule 1 of WDL 248, a non-compliance with WDL 248 includes:

- An exceedance of a trigger value stipulated in the licence at the compliance point (GDS SW5) on three consecutive sampling occasions
- An exceedance of three or more times the trigger value at the compliance point (GDS SW5).

Trigger values are provided in Appendix 2 of WDL 248 (see Attachment A).

3 SEDIMENT

Fluvial sediment monitoring will be undertaken annually in accordance with Appendix 4 of WDL248 (see Attachment A).

3.1 Sample methods

Sediments will be sampled from freshwater sites GDS SW1, GDS SW2, GUS SW4, GDS SW5, GDS SW7, GDS SW8 and MWD1 – locations shown on Figure 1-1. Sediment sampling will be undertaken in accordance with relevant standards and guidelines, including:

- Australian Standard – *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1: non-volatile and semi volatile compounds* (AS 4482.1-2005)
- *Australian Standard on Water Quality Sampling – Part 19: Guidance on sampling of marine sediments* (ISO 5667.19:2004)
- *Australian Standard on Water Quality Sampling – Part 12: Guidance on sampling of bottom sediments* (ISO 5667.12:1999)
- *Recommendations for sampling and analysis of Darwin Harbour sediment* (Munksgard 2013)
- Simpson & Batley (2016): *Sediment Quality Assessment.*

Sediment samples are to be collected annually, during recessional flows (late wet season), and for efficiency will usually be collected at the same time as macroinvertebrate samples (see Section 5).

At each sample site, three grab samples will be collected from the stream. If water is present in the stream, samples will be collected from each side of the bank, or along one bank depending on access (e.g. two samples from the left bank and one from the right bank, or three samples spread along a length of the bank). Entering watercourses with flowing water or deep pools in them is not safe due to the risk of crocodile interaction. If, however, the watercourse is dry, then sediment samples can be collected across the stream; one from either bank and one from the middle of the stream. Note that, when selecting sample locations, ensure that they will be representative of sediment settling in the watercourse. The use of a shovel may be required to ensure representative samples are collected.

Samples are collected using the following methodology:

1. Clean sample equipment (trowel and/or shovel) using a 5/95 mix of Decon 90 and demineralised water.
2. Ensure sampler is wearing new nitrile powder free gloves (new gloves are to be worn for each sample).
3. Scrape away leaf litter or other debris from the ground surface. Avoid collecting pebbles and gravel as the laboratory cannot analyse large fractions.
4. Use the shovel and/or trowel to dig up sediment and transfer sample to clean, appropriately treated and laboratory supplied sample containers (250 mL sample jars and 500 mL sample bags).
5. Metals analysis is to be undertaken on the <63 µm fraction of sediment, and as such 1 kg of sample is to be provided to the laboratory for metals analysis, plus sufficient sample volume for particle size distribution and the other analytes. Samplers are to check sample volume requirements with the laboratory prior to undertaking the sampling.
6. Samples will be kept separate (i.e. collect and submit three samples per site for analysis); do not composite the samples as that will influence how the guideline values are applied.

7. Once sample containers are full, place samples in an esky with ice bricks, or vehicle fridge, until they are delivered to a NATA accredited laboratory for analysis.
8. Clean sample equipment before collecting the next sample (firstly wipe off any residual sediment with paper towel, and then wash with the Decon 90 mixture).
9. Once all sediment samples have been collected, submit the samples to a NATA accredited laboratory, with accompanying Chain of Custody forms.

In accordance with Appendix 4 of the WDL (at Attachment A), samples will be analysed for pH, EC, moisture content, particle size distribution, metals (Al, As, Cd, Cr, Cu, Fe, Pb, Li, Hg, Ni, Zn) and sulphate, calcium, chloride, sodium, potassium and magnesium. As discussed above, metals are to be analysed on the <63 µm fraction.

Sediment samples will also be collected from the three Darwin Harbour sites, as per Table 3-1 below (locations are shown on Figure 1-1) and from the macroinvertebrate sampling locations (see Section 5 below). At GDS DH1 – GDS DH3, sediment will be collected from a boat, using a Van Veen grab sampler (or similar), and then placed in suitable laboratory supplied containers, for submission to a NATA accredited laboratory for analysis. Sampling equipment will be cleaned between sites as per the above sample procedure.

Table 3-1. Darwin Harbour Sediment monitoring

Monitoring Location	Description	Analytes	Frequency
GDS DH1	Marine sediment monitoring site, ~4km downstream of compliance point.	pH, EC, moisture content Particle size distribution **Metals**: <63 µm fraction Al, As, Cd, Cr, Cu, Fe, Pb, Li, Hg, Ni, Zn **Anions/cations:** Sulphate, calcium, chloride, sodium, potassium and magnesium	Annually, at end of the wet season (nominally May)
GDS DH2	Marine monitoring site, ~8 km downstream of compliance point, near confluence of branch of western arm of West Arm.		
GDS DH3	Marine monitoring site, reference site, on western arm of West Arm.		

3.2 Data management and reporting

All sediment quality data will be entered into the Sediment Quality Database and compared to the ANZG (2018) toxicant default guidelines for sediment quality, as well as relevant baseline studies (for example, benthic sediment sampling campaign of Middle Arm and West Arm, Darwin Harbour [Radke et al. 2021]). Data will be compared over time to determine if there are detectable changes or trends in sediment quality. Changes or trends will be investigated to assess whether the change is attributable to mine site discharges

As with surface water quality data, laboratory data will be automatically entered into the database in ESdat form, and compared to guideline values. In order to ensure laboratory results are automatically issued to ESdat, ensure the following email address is listed on the COC to receive results: esdat_au+corelithium@esdatlabsync.net.

Reporting on sediment data will be within the Monitoring Report, which will be prepared and submitted annually, within 10 business days of 25 July of each year.

4 RIPARIAN VEGETATION

Riparian vegetation occurs along watercourses and surface water features and are significant vegetation communities as they are spatially restricted and provide habitat to a relatively large number of species (DENR 2019). Riparian vegetation monitoring will be undertaken in accordance with Appendix 5 of the Draft WDL, to detect any changes to riparian vegetation health or extent which could occur as a result of discharge of mine wastewater from MWD1.

Below is a Riparian Vegetation Monitoring Plan (RVMP) which includes:

- Assessment of baseline information
- Monitoring parameters, methodology and frequency
- Data analysis

4.1 Baseline surveys

A previous survey, The Mangrove and Riparian Vegetation Assessment (EcOz 2019) was undertaken to assess the riparian vegetation prior to mining activities commencing.

Three types of monitoring were undertaken; an aerial drone survey to look at the overall riparian vegetation health and assist in mapping the riparian vegetation extent, an on-ground field survey to assess vegetation structure and composition within the mapped riparian vegetation extent, and photo point monitoring. Note, the drone survey was undertaken post-wet season (March) and the vegetation site assessments and photo point monitoring was undertaken in the dry season (June).

Three riparian vegetation survey plots were established within the mangrove study site, representing riparian, swamp and mangrove communities (MVS1, RVS2 and SVS3). Table 4-1 provides a summary of baseline survey results, and Figure 4-1 shows the location of the three different riparian communities, and the monitoring sites. No reference site has been established for LDGNT (as there are no suitable sites within close proximity to the mine site), and there is no intent to add a site as part of this RVMP as the objective is to examine if there is a change in vegetation compared to baseline. The BP33 reference site, located upstream of Charlotte's creek will be used as a reference site if required – the details are within the BP33 Riparian Vegetation Monitoring Plan (EcOz 2022).

The baseline study provides a spatial dataset from which to monitor changes in riparian vegetation boundaries within the study sites. The baseline assessment indicates that vegetation communities within the study sites are in good condition, with limited pre-development disturbance. This is with the exception of the swamp community, which occurs downstream of the mine site in the West Arm catchment. Weeds and impacts from off-road racing tracks were observed within this vegetation community.

The baseline riparian vegetation site assessments and photo point monitoring was undertaken in the dry season (June). In future, the monitoring will be undertaken using the same methods as baseline, however in the post-wet season (March) when water discharge events occur.

Table 4-1. Summary of baseline riparian vegetation descriptions

Vegetation type & survey site	Vegetation Description	Other species present	NVIS code	Landform	Soil	Drainage	Fire	Weeds	Disturbance	Hydrology	Intact riparian vegetation area size (ha)
Mangrove (MVS1)	*Lumnitzera racemosa, Bruguiera exaristata, Avicennia marina* with isolated *Excoecaria ovalis* low open forest, over *Fimbristylis* sp. and *Xerochloa imberbis* mid sparse tussock grassland	None recorded	T6c	Mangrove flat near tidal creek	Brown sandy clay surface soils, some pebbles present ranging in size (2 – 6 cm)	Very poorly drained	Nil	None	None	Tidal, towards upper tide limit. Large pool located adjacent to vegetation assessment site – approximately 4 m wide.	5.18
Riparian (RVS2)	*Melaleuca viridiflora* mid woodland over *Acacia plectocarpa, Lumnitzera racemosa* (on the edge of creek) and *Avicennia marina* (in creek channel) mid open shrubland, over *Germainia grandiflora, Dapsilanthus* sp. and *Xerochloa imberbis* mid tussock grassland	**Mid stratum** *Thespesia populneoides* **Ground stratum** *Asteraceae sp., Wrightia saligna, Flagellaria indica, Acrostichum speciosum, Gymnanthera nitida, Lindernia lobelioides, Diospyros littorea*	T7i	Flat, adjacent to creek channel	Brown clay loam; rocks and pebbles common in channel adjacent to site	Poorly drained	2+ years since last fire causing minimal impact	None	Motorbike tracks nearby	Some pools nearby, inundated on large high tides and with freshwater during wet season	0.76
Swamp (SVS3)	*Melaleuca viridiflora, Erythrophleum chlorostachys* and *Corymbia polycarpa* mid woodland over *Lophostemon lactifluus, Clerodendrum floribundum* and *Denhamia obscura* mid open shrubland over *Sorghum intrans, , Aristida* sp. and *Pandanus spiralis* mid tussock grassland	**Mid stratum (M1):** *Alphitonia excelsa, Grevillea decurrens* **Ground stratum** *Germainia grandiflora, Acacia difficilis,* Fern sp., *Themeda* sp., *Wrightia saligna, Livistona humilis, Osbeckia australiana, Dianella odorata, Brachychiton megaphyllus, Fern sp.1, Antidesma ghesaembilla*	T7i	Lower slope, flat open depression	Brown sandy loam. Some quartz present near creek	Poorly drained – some wet season inundation	Last year (relatively low impact fire)	Annual mission grass scattered near site. Patches of *Hyptis suaveolens, Calopogonium mucunoides* and *Passiflora foetida* recorded nearby	None	Wet season inundation	1.5

4.1.1 Standards and guidelines

Monitoring will be in accordance with best practice guidelines and standards, including *Northern Territory guidelines and field methodology for vegetation survey and mapping* (Brocklehurst et. al. 2007) and the *NT Sampling and Processing Manual* (Llyod and Cook 1996). Details are provided below for each type of monitoring.

4.2 Methods

Drone survey

A drone survey will occur annually, post-wet season (April/May). The drone will be flown along the existing flight path corresponding to the baseline survey (EcOz 2019) to capture the riparian vegetation extent (see Figure 4-1).

- Use DJI Phantom 4pro drone to capture images at a height of 75m (75% front overlap and 65% side overlap) using the DroneDeploy app.
- Drone will be flown in the desirable conditions i.e. in the middle of the day to avoid sun light interference. Observations will also be noted i.e. timing of flight, and the weather to replicate similar conditions for future surveys.
- When importing drone data to create the orthomasoaic, the same methods as per methods in baseline report outlined in Section 3, will be applied.
- A 5cm pixel image will be exported for the survey site, a colour orthomosaic and a plant health image, displayed in red, green and blue.
- The boundary of the riparian vegetation will then be delineated using the orthomosaic imagery and remote sensing techniques.

Riparian vegetation site assessments

Monitoring will be undertaken post-wet season (April/May), after wastewater discharge events. Three riparian vegetation monitoring sites MVS1, RVS2 and SVS3 will be monitored using the same monitoring method outlined in Section 3 in the Mangrove and Riparian Vegetation Assessment (EcOz 2019). Plots will be established and vegetation species, height and % cover will be recorded within each plot. Vegetation continuity will also be monitored by traversing a 100 m long transect and estimating the canopy cover. Photo points will be established an four photographs will be taken in the same location, facing north, east, south and west, each monitoring round, to allow comparison over time.

4.3 Monitoring schedule

Table 4-2 outlines the riparian vegetation monitoring schedule that will be followed for the duration the of the WDL.

Table 4-2. Riparian vegetation monitoring schedule

Monitoring	Objective	When	Monitoring undertaken	Frequency of monitoring	Locations
Riparian vegetation site assessment survey	To capture data outlined in Table 4-1 after wet season discharges	End of Wet season (April/May)	Site assessment at all identified locations	Annual - 2023 onwards	MVS1, RVS2 and SVS3
Photo point monitoring	To capture photo points after wet season discharges	End of Wet season (April/May)	Photo monitoring at riparian vegetation assessment sites	Annual - 2023 onwards	MVS1, RVS2 and SVS3
Ongoing drone survey	To continue drone survey monitoring after wet season discharges	End of Wet season (April/May)	Drone flight	Annual - 2023 onwards	Flight path as per previous survey

4.4 Data management and reporting

4.4.1 Drone survey

The intent of analysing drone data is to determine if there is reduction in riparian vegetation extent and/or structure compared to baseline survey. If there are gaps in vegetation i.e. if there is a retraction of mapped riparian vegetation, further on-ground assessments will be undertaken. A vegetation monitoring database will be maintained which will record:

- The riparian vegetation area size (ha) based on drone mapping
- All drone images captured during the drone surveys organised in folders.
- A zip-file of all tiff files derived from drone surveys (both orthomosaic and plant health image).
- Spatial data.

4.4.2 Riparian vegetation site assessments

The data collected will be analysed using the Before After/Control Impact (BACI) approach. BACI will be applied by performing statistical analysis to test whether there is a significant difference between the baseline data and ongoing data sets collected at the same sites. Data analysis will include:

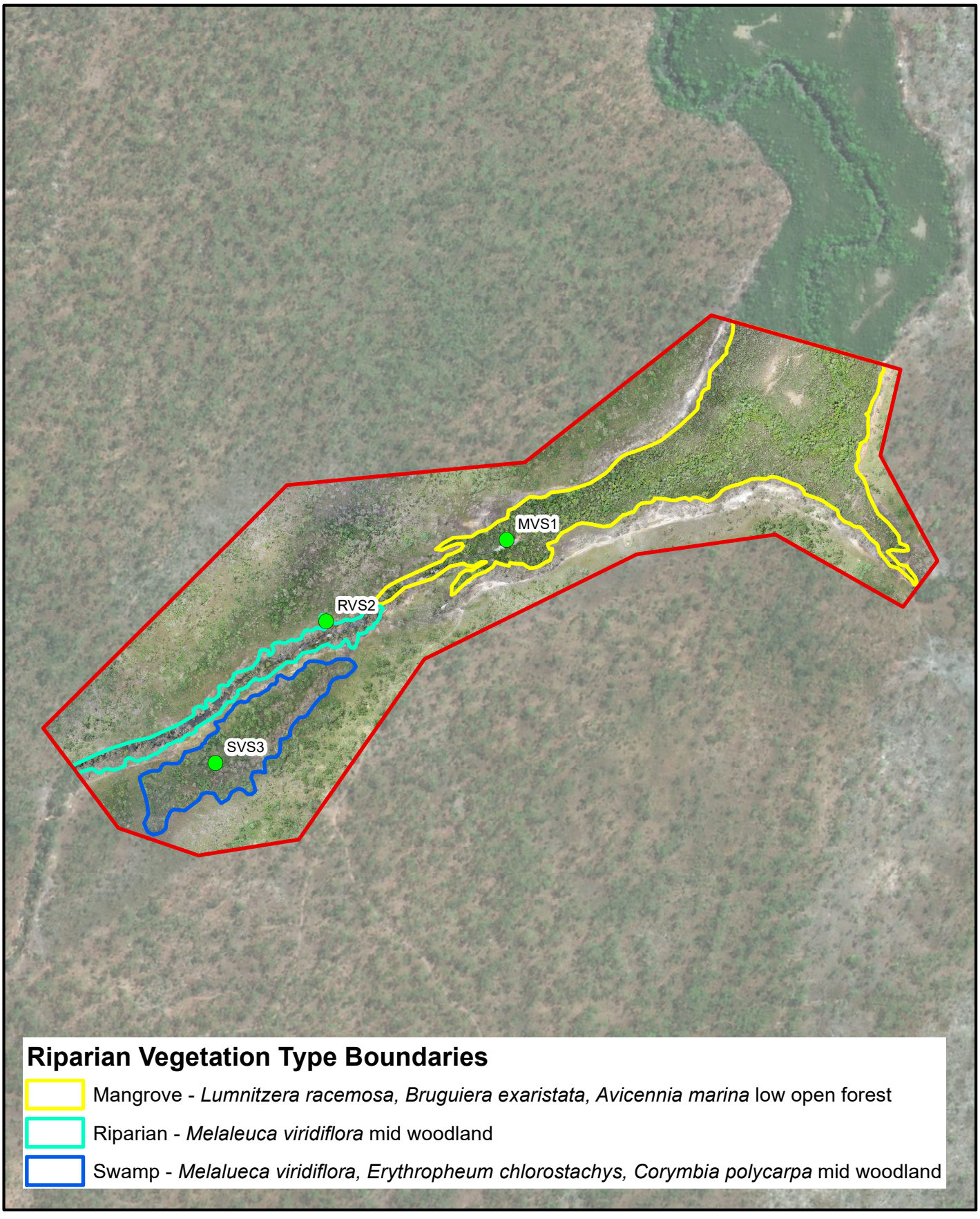
- Species composition (%) using vegetation data collected for upper, mid, ground strata data
- Average heights of plants across riparian vegetation sites.
- Canopy cover (%) for each dominant, and emergent species across riparian vegetation assessment sites compared to reference site data.
- Plants alive or dead (%) across all riparian vegetation sites.

This data will also be stored within the vegetation monitoring database.

4.4.3 Photo point monitoring

The intent of analysing photo point data is to determine if there are visual on-ground changes compared to baseline survey. All photographs will be labelled with site name, direction and date and stored in a separate zip-file.

Results of riparian vegetation monitoring will be reported on annually within the Monitoring Report, which will be prepared and submitted to the Administering Agency within 10 business days of the 25 July of each year.



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\EZ19042 - Grants Project supplementry ecology 2019\01 Project Files\Riparian veg assessment\Figure 3. Mangrove ecosystem vegetation boundaries.mxd

Figure 4-1. Map of riparian vegetation type boundaries and monitoring locations

5 MACROINVERTEBRATES

Appendix 5 of the Draft WDL requires macroinvertebrate monitoring within Darwin Harbour and areas downstream of the GLP. Macroinvertebrate sampling will be undertaken within the freshwater habitats downstream of the discharge point, and within Darwin Harbour sites which are also monitored for water quality, sediment and seagrass habitat.

Baseline macroinvertebrate sampling was undertaken in freshwater habitats downstream of the mine site in 2017, and two of these sites will be monitored ongoing to allow comparison of data over time. Sediment and water quality samples will also be collected during macroinvertebrate sampling to inform macroinvertebrate data analysis. Macroinvertebrate sampling is summarised in Table 5-1.

Table 5-1. Macroinvertebrate monitoring program

Sites	Site type	Purpose	Survey timing
UC1, UC2	Freshwater macroinvertebrates	Comparison to 2017 baseline data – downstream of mine site	Annually during recessional flows (April/May)
GDS SW5		Compliance point data	
Control (BP4)		Reference site	
GDS DH1, GDS DH2	Marine macroinvertebrates	Darwin Harbour sites downstream of mine site	Annually during recessional flows (April/May)
GDS DH3		Reference site	

5.1 Sample methods

Macroinvertebrate sampling will be undertaken annually during the recessional flows each wet season (April/May). Site locations are shown on Figure 1-1. The freshwater sites were visited and sampled in May 2022, and so are known to be accessible and appropriate for macroinvertebrate sampling. A suitable and accessible reference site near the LDGNT site could not be located, and so a reference site on an unnamed tributary of the Charlotte River, upstream of Cox Peninsula Road, has been selected as a representative reference site for both LDGNT and the adjacent BP33 mine site. The location of this site is shown on Figure 1-1 (see 'BP4'). If, during future monitoring events, the reference site UC3 (which was sampled by GHD in 2017) is found to be suitable, then it may also be sampled as a reference site. However, during sampling in 2022 there was insufficient water at site UC3 which indicates it ceases to flow soon after the wet season.

For both marine and freshwater sites, water quality samples will be collected (including measurement of field parameters and collection of surface water samples) prior to sediment and macroinvertebrate sampling to minimise contamination of water quality samples (e.g. with sediment or vegetation). Water will be analysed for the same parameters as per the surface water monitoring schedule (see Section 2). Following collection of water samples, macroinvertebrate sampling will be undertaken, and sediment samples will be collected (to be analysed for the same parameters as per Section 3).

Freshwater

Macroinvertebrate sampling will be undertaken in accordance with the *NT AUSRIVAS Sampling and Processing Manual* (Lloyd and Cook 2001) and the *Darwin-Daly Regional AUSRIVAS Models – Northern Territory* (Lamche 2007). All sampling sites are chosen from steep edge habitat with no undercut and away from any fast-flowing stream sections. Habitat descriptions of the site will be noted on the Field Sheets from the NT Darwin-Daly Region AUSRIVAS User Manual (provided at Attachment C); field notes will include site location, a sketch of the site, water quality field data, and a description of the sampled site).

At each site one person will rake along the bank and submerged root matter, and another will sweep through the water in the disturbed area with a 250 µm net to capture the removed material, which will include macroinvertebrates. Samples will be sieved on the bank through sieves of decreasing aperture to remove leaf litter and other material. This material is then thoroughly rinsed with water collected from the sample site multiple times. The remaining material is examined for any macroinvertebrates before being disposed of. All material from the finest sieve (250 µm) will be washed into a jar, which is then filled with ethanol for preservation.

Refer to the *Darwin-Daly Regional AUSRIVAS Models – Northern Territory* User Guide (Lamche 2007) for detailed sample methodology.

Samples will be labelled and stored upright in an esky, transported safely to avoid accidental damage to samples. Samples will be submitted to a suitably qualified AUSRIVAS taxonomist for identification and data analysis.

Marine water

Marine macroinvertebrate samples will be collected via a boat, using a Van Veen grab sampler. The Van Veen will be lowered over the boat and a grab sample collected. The sediment will be emptied into a clean stainless steel container for onboard processing. A number of different sized sieves will be used to remove as much sediment, sand, rock, coral and other material from the sample, using filtered marine water to carefully wash the material through the sieves. Material from the finest sieve (10 µm) will be washed into a sample jar, which is then filled with ethanol for preservation. All samples will be submitted to a suitably qualified taxonomist with experience processing and analysing marine macroinvertebrate samples.

5.2 Data management and reporting

Freshwater

Freshwater samples will be analysed in accordance with the *Darwin-Daly Regional AUSRIVAS Models – Northern Territory* (Lamche 2007). Taxa will be identified to family level where possible, except for key taxa (as per Darwin-Daly regional AUSRIVAS User Manual) which either require identification to only order level, or sub-family level. Following identification, taxa counts will be recorded in a database and samples preserved and archived.

Macroinvertebrate metrics will be generated (abundance, taxa richness, PET richness, Signal-2) and presented for each site. AUSRIVAS modelling will be completed and OE50 scores and bandings presented for each site. Multivariate analysis of macroinvertebrate community composition will be completed to understand the differences and similarities between the sites. Data will be compared between years to identify whether there is any change in macroinvertebrate diversity (species richness) or abundance.

Marine

Marine samples will be analysed and macroinvertebrates (aka benthic infauna) identified to the lowest taxonomic level possible, or morpho-species. Statistical analysis will be undertaken on the samples (e.g. PRIMER and P.A.S.T) to calculate:

- Diversity indices, to assess species richness, diversity, evenness and dominance within samples
- Multivariate analysis to assess species abundance
- Environmental correlations – to assess whether there is a correlation between environmental data (e.g. water quality data) and macroinvertebrate data.

Results of macroinvertebrate sample processing and analysis will be reported in standalone reports prepared by the taxonomist. Key findings of macroinvertebrate sampling will be reported in the annual Monitoring Report, to be prepared and submitted to the Administering Agency within 10 business days of the 25 July each year.

6 SEAGRASS

Seagrass monitoring will be undertaken in West Arm, at sites GDS DH1, GDS DH2 and GDS DH3 (see Table 2-2 and Figure 1-1 for locations), in accordance with Appendix 5 of the Draft WDL. Benthic habitat mapping, based on modelling undertaken by the Australian Institute of Marine Science (AIMS) in collaboration with the Northern Territory Government, shows low likelihood of seagrass habitat within West Arm (Galaiduk et al. 2019 and Siwabessy et al. 2020). Additionally, the extent of seagrass is known to fluctuate in the Darwin Region, due to factors such as turbidity and wind and wave action, which tends to be greater during the wet season. As such, the spatial extent and percentage cover of seagrass generally declines during the wet season and recovers and expands during the dry season (Cardno 2014). Cardno noted low seagrass cover in wet season months such as February, but greater seagrass cover in May through to October/November.

Seagrass surveys are generally undertaken in accordance with the *Monitoring and Sampling Manual: Environmental Protection (Water) Policy – Guidance on seagrass monitoring* (Qld DES 2018) and associated resources including the *Manual for Scientific Monitoring of Seagrass Habitat* (Short et. al. 2015). However, seagrass monitoring usually focusses on well-established seagrass meadows and their extent, composition and biomass over time, and many of the proposed methods in DES (2018) are designed and selected for seagrass meadows. The methods are inappropriate for application in this case as the study area is situated within mangrove lined tidal channels with no known seagrass meadows in the vicinity.

The method proposed below was selected based on the likely limited presence of seagrass, access, and safety considerations:

- Three monitoring locations will be accessed via boat (locations shown on Figure 1-1 and Table 1-1).
- At each location one 50 m transect will be established perpendicular to the channel (i.e. across the channel).
- Seagrass survey will be undertaken at three sites along the transect; one at each end and one in the middle.
- At each of the three sites along the transect, a 0.5 m x 0.5 m quadrat on a frame will be lowered to the seabed.
- A GoPro camera will be attached to the frame, which will be programmed to take photos of the quadrat within a short time frame, i.e. every 10 seconds. The frame will be moved slightly between photographs to collect four photographs per site.
- Once photographs are taken, the quadrat will be lifted to the surface again via a davit, before moving on to the next site.
- Seagrass (if present) will be identified to the genus level as per Roeleofs et al. 2005 and photographs will be used to assess percent cover using the seagrass percentage cover photo guide in *Manual for Scientific Monitoring of Seagrass Habitat* (Short et. al. 2015).
- Common species in the Darwin Harbour area include *Halophila ovalis*, *Halophila decipiens and Halodule uninervis* and it is anticipated that, if present, these will be identifiable from the imagery obtained.

The survey will be undertaken in May, at the same time as Darwin Harbour water quality, sediment and macroinvertebrate sampling. The survey will occur when seagrass is likely to be recovering, and, if present, will likely be visible. The survey will be timed for neap tides, to maximise visibility (water clarity) and ensure photographs show visible/identifiable seabed. Photographs will be reviewed, and presence/absence of seagrass noted, as well as percent cover if present.

Results of seagrass monitoring will be reported on in the annual Monitoring Report, to be prepared and submitted to the Administering Agency within 10 business days of the 25 July each year.

One round of seagrass monitoring will be undertaken, following which the requirement for ongoing seagrass monitoring will be reviewed. If no seagrass is present in the tributaries of West Arm downstream of GLP then LDGNT will seek to remove the requirement for seagrass monitoring from WDL 248.

LDGNT is open to opportunities for collaboration with government and industry, or contribution to broader seagrass monitoring programs within Darwin Harbour to assess long term harbour health. Guidance from the Northern Territory Environment Protection Authority and/or Department of Environment, Parks and Water Security would be sought in this regard.

7 REFERENCES

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ATTACHMENT A –WASTE DISCHARGE LICENCE 248 FOR LITHIUM DEVELOPMENTS GRANTS NORTHERN TERRITORY

Northern Territory Government

WASTE DISCHARGE LICENCE

(Pursuant to section 74 of the *Water Act 1992)*

Licensee	Lithium Developments (Grants NT) Pty Ltd
Licence Number:	**WDL248**
Registered Business Address:	Level 5, Flinders Street Adelaide SA 5000
ACN:	622 047 232
ABN:	70 622 047 232
Commencement Date:	25 July 2022
Expiry Date:	24 July 2025
Licensed Action:	Controlled discharge of wastewater from Mine Water Dam 1 (MWD1) through authorised discharge point (DP1) and into an unnamed ephemeral stream that feeds into West Arm, Darwin Harbour in accordance with Table 2 and subject to the conditions of this licence.

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INFORMATION ABOUT THIS LICENCE

This waste discharge licence is granted pursuant to section 74 of the *Water Act 1992* (NT) (Water Act), which empowers the Controller of Water Resources to, in accordance with the Water Act, grant a licence to a person to carry out an action that would otherwise be an offence against this Act.

Responsibilities of Licensee

- In addition to the conditions set out in this licence, general responsibilities of licensees are set out in the *Waste Management and Pollution Control Act 1998* (NT) (**WMPC Act**), the Water Act and the *Water Regulations 1992* (NT) (**Water Regulations**).
- It is an offence under the Water Act, if the holder of a waste discharge licence contravene or cause, suffer or permit a person to contravene a term or condition to which the waste discharge licence is subject (s 76 Water Act).
- Except as expressly provided for in this licence or applicable law, it is an offence under section 16 of the Water Act to wilfully cause or cause, directly or indirectly:
    - waste to come into contact with water; or
    - water to be polluted.

Duration of licence

- This licence will remain in force until its Expiry Date, it is surrendered by the licensee, or until it is suspended or revoked by the Controller of Water Resources.
- A licensee may surrender its licence at any time (s 94 Water Act).
- If the licensee wishes to surrender its licence it should complete the notification form approved by the Controller of Water Resources and provide a copy of the completed form to the Administering Agency.
- The authority to allow waste to come into contact with water or water to be polluted ends once a licence is surrendered, and any such occurrence after a licence is surrendered is an offence pursuant to s 16 of the Water Act.

Amendment, Modification or Revocation of Licence

- As set out in section 93 of the Water Act, the Controller of Water Resources may, by notice served on the holder of the licence:
    - amend or modify the terms and conditions of a licence; or
    - where the Controller of Water Resources is satisfied that the holder of the licence has contravened or failed to comply with a term or condition of the licence or of any other licence previously held by the person for a similar purpose during the 12 months immediately preceding the grant of the first-mentioned licence, the Controller of Water Resources may:
        - revoke a licence; or
        - suspend a licence.

Transfer of Licence

- Where a waste discharge licence is granted to a person in relation to the person's use of land and, during the period of this licence, the person's interest in the land is transferred to another person, the waste discharge licence shall be deemed to have also been transferred to the other person (s 92 Water Act).

- The licensee must ensure the contact details recorded with the Administering Agency for the licence are correct at all times in accordance with condition 6. Accordingly, it is recommended the transferee complete the Controller of Water Resources approved notification of transfer of a waste discharge licence form.

Public Register

- A copy of this Licence will be placed on the Register in accordance with section 95 of the Water Act.

- A copy of plans for environmental management, reports, submissions or documents provided at Schedule 1 Item 13 will be placed on the Register.

- The Register is freely available from the Northern Territory Environment Protection Authority (**NT EPA**) website.

Water Quality Standards

- The Administrator may declare, by notice in the *Gazette*, a beneficial use, quality standard, criteria or objectives which apply in relation to any waste or class of waste, or water or class of water (s 73 Water Act).

- A water or waste beneficial use, quality standard, criteria or objectives declared under s 73 of the Act and in force is an Environment Protection Objective for the purposes of the WMPC Act (s 18 WMPC Act).

- An Environment Protection Objective is a statutory instrument to establish principles on which:

    - Environmental quality is to be maintained, enhanced, managed or protected;

    - Pollution, or environmental harm resulting from pollution, is to be assessed, prevented, reduced, controlled, rectified or cleaned up; or

    - Effective waste management is to be implemented or evaluated.

- Schedule 1 Item 1 specifies the beneficial use, quality, standard, criteria or objective relevant to this licence at the date of issue.

Environmental Interests

- Environmentally sensitive or significant areas may be captured by and protected under the *Environment Protection Act 2019* (NT) and/or the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). As such, and to best protect and regulate our waterways, waste discharge licences must identify the sensitivity of the environment surrounding the location of the Licensed Action.

- Schedule 1 Item 2 specifies the sites of conservation significance (if any) relevant to this licence at the date of issue.

- Schedule 1 Item 3 specifies the Ramsar wetlands (if any) relevant to this licence at the date of issue.

Cultural Interests

- Under Commonwealth and Northern Territory laws it can be an offence to enter or remain on or damage a sacred site.
- Sites of Aboriginal significance including registered and recorded Aboriginal sacred sites may exist in the vicinity of the Licensed Action.
- It is the licensee's responsibility to contact the Aboriginal Areas Protection Authority, appropriate land council or other governing body and ensure that any Authority Certificates required as a result of conducting the Licensed Action are obtained and complied with.
- Further specific advice on any cultural requirement or implication of the licenced activity should be sought from the relevant land council and the Aboriginal Areas Protection Authority.

END NOTES

This licence is a new licence, as such there are no historical records associated with the licence.

SCHEDULE 1 - ITEMS

1. Beneficial uses	Beneficial Uses and Objectives for the Darwin Harbour Region (Gazette No. 27, 7 July 2010).	
2. Sites of conservation significance	SOCS No. 6 Darwin Harbour.	
3. Ramsar wetlands	Not applicable.	
4. Licence Documents	(a) Water Management Plan - Appendix K, Mine Management Plan Grants Lithium Project (approved 10 June 2021). (b) Emergency Response Plan - Appendix R, Mine Management Plan Grants Lithium Project (approved 28 June 2019). (c) Stakeholder Engagement Plan - Core Lithium Grants Lithium Project Stakeholder Engagement Plan (issued 7 June 2021).	
5. Authorised Discharge Point(s)	Discharge Point 1 (DP1) from Mine Water Dam 1 (MDW1) as shown on the plan at Appendix 1.	Zone: 52 L Easting: 693153 Northing: 8598441
6. Source(s) of waste	Pit water, direct rainfall, and mine influenced water collected from Mineral Lease 31726 that is captured and stored in sediment basins and Mine Water Dam 2 (MWD2) and pumped to MWD1. Waters discharged through DP1 are pumped over the wall of MWD1 and released by a tee valve into the flow path of an adjacent unnamed ephemeral stream as shown at Appendix 1.	
7. Trigger values	The limits for parameters listed in Appendix 2.	
8. Compliance point	Grants Downstream Surface Water 5 (GDS SW5) as shown on the plan at Appendix 1.	Zone: 52 L Easting: 693374 Northing: 8600709
9. Conditions on discharge	Any authorised discharge must: (a) Not include wastewater generated outside of Mineral Lease 31726; (b) Not include wastewater treated with polyacrylamide flocculants with more than 0.05% of the neuro-toxin acrylamide monomer; (c) Occur only when the stream gauge at the compliance point GDS SW5 shows there is a sufficient amount of water to dilute discharge water to achieve trigger values; (d) In the event wastewater is treated, occurs only when the treatment process has finished, including allowing sufficient residence time for settlement of flocculants and target contaminants.	
10. Monitoring Program	The Monitoring Program includes: (a) Surface water monitoring in accordance with Appendix 3. (b) Fluvial sediment monitoring in accordance with Appendix 4. (c) Biota monitoring in accordance with Appendix 5.	
11. Critical contaminants	Aluminium (Al), Arsenic (As), Copper (Cu), Iron (Fe), Lithium (Li), Zinc (Zn) and Total Phosphorus (TP).	

12. Non-compliances	Non-compliances include the following exceedances: (a) An exceedance of a trigger value specified in Item 7 at the compliance point in Item 8, on three consecutive sampling occasions. (b) An exceedance of three times or more a trigger value specified in Item 7 at the compliance point in Item 8.
13. Documents placed on Register	The following documents will be placed on the Register: (a) The Licence Documents at Item 4. (b) The Monitoring Report provided in accordance with clause 45. (c) The Annual Return.

LICENCE CONDITIONS

RULES FOR INTERPRETING THE CONDITIONS OF THIS LICENCE

1. Where there is a discrepancy between the conditions of this licence and any plan, standard, guideline or other document referred to in this licence, the conditions of this licence prevail to the extent of the inconsistency.
2. Any reference to any standard, guideline or code of practice (Australian or international) in this licence means the relevant parts of the current version of that standard, guideline or code of practice.
3. In this licence, unless the contrary intention appears, words that are defined in the Water Act are intended to have the meaning given to them in that Act.
4. In this licence, unless a contrary intention appears, terms are defined in the Definitions at the end of this licence.
5. In this licence a reference to an Item is a reference to an Item in Schedule 1.

GENERAL

6. The licensee must ensure the contact details recorded with the Administering Agency for this licence are correct at all times.
7. The licensee must at all times have a 24 hour emergency contact.
8. The licensee must notify the Administering Agency prior to making any operational change that will cause, or is likely to cause, an increase in the potential for environmental harm.
9. The licensee must display clear and legible signage, in English, in a prominent location at each public entrance to the premises of the Licensed Action that includes the following details:
    - 9.1. waste discharge licence number issued under the Water Act; and
    - 9.2. 24 hour emergency contact details.
10. The licensee must cause a hard copy of this licence to be available for inspection, at the premises of the Licenced Action, by any person on request.
11. Unless otherwise specified, within 10 business days of a request, the licensee must provide to the Administering Agency a copy of any document, monitoring data or other information in relation to the Licensed Action in electronic form by emailing waste@nt.gov.au.
12. All notices, reports, documents or other correspondence required to be provided as a condition of this licence, unless otherwise specified as a condition of this licence, must be provided in electronic form by emailing waste@nt.gov.au.
13. The licensee must maintain, implement and comply with the current version of the documents listed in Item 4.
14. Within 10 business days of any amendment being made to a document listed in in Item 4, the licensee must provide the amended document to the Administering Agency, along with:
    - 14.1. a tabulated summary of the amendment(s) with document references;
    - 14.2. reasons for the amendment(s); and
    - 14.3. an assessment of environmental risk associated with the amendment(s).
15. The Administering Agency may require the licensee to revise or amend and resubmit any document provided in accordance with this licence. Where the Administering Agency requires any document to be revised or amended, the licensee must submit it to the Administering Agency by the date specified by the Administering Agency.
16. The licensee must operate and maintain a community feedback telephone number enabling members of the public to contact, at any time, a person or voice mail system that can accept, on behalf of the licensee, enquiries or complaints about the Licensed Action, and to which the licensee must respond. The community feedback telephone number must be displayed:

16.1. where the licensee has a website, in a prominent location on the licensee's website;

16.2. in the Stakeholder Engagement Plan; and

16.3. in other publicly available documents relating to the Licensed Action.

17. The licensee must maintain a register of complaints that records the details of each complaint received in relation to the Licensed Action and provide a copy to the Administering Agency on request. Details of the compliant must (as is reasonably practicable) include, the following information:

17.1. the person to whom the complaint was made;

17.2. the person responsible for managing the complaint;

17.3. the date and time the complaint was reported;

17.4. the date and time of the event(s) that led to the complaint;

17.5. the contact details of the complainant if known, or where no details are provided a note to that effect;

17.6. the nature of the complaint;

17.7. the nature of event(s) giving rise to the complaint;

17.8. prevailing weather conditions at the time (where relevant to the complaint);

17.9. the action taken in relation to the complaint, including any follow-up contact with the complainant; and

17.10. if no action was taken, why no action was taken.

MONITORING INFORMATION

18. If the licence expires or is otherwise surrendered, suspended or revoked and the licence contained a condition that the licensee provide a report, record or other information, including in accordance with a monitoring program pursuant to section 77 of the Water Act, the licensee must provide any report, record, information or data available to the licensee up to and including the date the licence expired or was surrendered, suspended or revoked.

OPERATIONAL

19. Without limiting the conditions of this licence, in conducting the Licensed Action, the licensee must do all things reasonable and practicable to:

19.1. prevent or minimise the likelihood of pollution occurring as a result of, or in connection with, the Licensed Action;

19.2. prevent or minimise the likelihood of environmental harm occurring as a result, or in connection with, the Licensed Action;

19.3. effectively respond to pollution and the risk of pollution occurring as a result of, or in connection with, the Licensed Action;

19.4. effectively respond to environmental harm and the risk of environmental harm occurring as a result of or in connection with the Licensed Action; and

19.5. apply the principles of ecologically sustainable development.

20. The licensee must, without limiting any other condition of this licence, in conducting the Licensed Action do all things reasonable and practicable to ensure the Licensed Action does not adversely affect any:

20.1. declared beneficial use, quality, standard or objectives declared under section 73 of the Water Act;

20.2. sites of conservation significance; or

20.3. designated Ramsar wetlands,

including, but not limited to, those listed at Items 1, 2 and 3.

21. The licensee must ensure any plant and equipment used by the licensee in conducting the Licensed Action:

    21.1. is reasonably fit for the purpose and use to which it is put;

    21.2. is maintained and operational; and

    21.3. is operated by a person trained to use the plant and equipment.

22. No change, replacement or alteration of plant and equipment is permitted if the change, replacement or alteration increases the risk of environmental harm for the Licensed Action, unless approved by the Administering Agency.

DISCHARGES

23. This licence authorises discharges of waste to water from the authorised discharge point(s) as identified in Item 5 and in accordance with the conditions of this licence.

24. Where the Administering Agency directs the licensee to cease discharge from an authorised discharge point identified in Item 5, the licensee must immediately cease the discharge.

25. A direction to cease discharge may be verbal or written, but a verbal direction from the Administering Agency will be provided in writing within 48 hours of the verbal direction. A failure to provide a written direction does not affect the requirement to comply with a verbal direction.

26. The licensee must ensure that discharge from each authorised discharge point:

    26.1. consists only of waste from the source(s) as specified in Item 6;

    26.2. does not exceed the trigger value limits at Item 7 at the compliance point at Item 8;

    26.3. meets the conditions at Item 9.

27. Following any exceedance of a trigger value limits at Item 7 at the compliance point at Item 8 the licensee must take corrective action to mitigate any environmental harm and ensure the exceedance does not reoccur.

28. The licensee must, for each authorised discharge point, install, operate and maintain a device to measure and record, for each discharge event:

    28.1. the time the discharge commenced and the duration of the discharge;

    28.2. the discharge rate of flow; and

    28.3. the discharge volume.

29. The licensee must ensure that the discharge from all discharge events at each authorised discharge point does not:

    29.1. contain any floating debris, oil, grease, petroleum hydrocarbon sheen, scum, litter or other objectionable matter;

    29.2. cause or generate odours which would adversely affect the use and amenity of surrounding waters;

    29.3. cause algal blooms in the receiving water;

    29.4. pollute groundwater;

    29.5. cause visible change in the behaviour of fish or other aquatic organisms in the receiving water;

    29.6. cause mortality of fish or other aquatic organisms;

    29.7. cause erosion or degradation to the beds and banks of a watercourse; or

    29.8. cause adverse impacts on plants or animals.

MONITORING

30. From the Commencement Date of this licence, the licensee must implement and comply with the Monitoring Program specified in Item 10.

31. The licensee must ensure that the Monitoring Program is designed, maintained and implemented in accordance with the following principles:

    31.1. the need to monitor loads upstream and downstream, including in-stream decay in loads downstream, of authorised discharge points;

    31.2. the need for event-based monitoring, in addition to routine monitoring, including revisiting sampling points as soon as practicable when samples cannot be collected at frequencies set in the Monitoring Program;

    31.3. the need for special studies to better described in-stream physical, chemical and biological processes;

    31.4. the need to target the possible critical contaminants listed at Item 11;

    31.5. the need to select sampling points that provided representative (well mixed) samples;

    31.6. the need to collect samples that are representative of discharge conditions, including taking samples from sampling points on the same day as discharge and consecutively from upstream to downstream; and

    31.7. the need to adopt a range of biological surveys to assess the health of the system.

32. The licensee must ensure that all samples and field environmental data are collected in accordance with recognised Australian Standards and guidelines (such as AS/NZS 5667.1 1998, ANZG (2018), as updated from time to time).

33. For the parameters that require analysis at a laboratory, the licensee must ensure that all samples are analysed at a laboratory with current NATA accreditation or equivalent.

34. The licensee must ensure any samples collected in accordance with the Monitoring Program or in connection with the Licensed Action or this licence, are obtained by, or under the supervision of a qualified sampler.

35. The licensee must ensure that, for each sample collected in accordance with the Monitoring Program or the Licensed Action, the following information must be recorded and retained:

    35.1. the date on which the sample was collected;

    35.2. the time at which the sample was collected;

    35.3. the location at which the sample was collected;

    35.4. the name of the person who collected the sample;

    35.5. the chain of custody forms relating to the sample;

    35.6. the field measurements (if any) and analytical results (if any) relating to the sample; and

    35.7. laboratory quality assurance and quality control documentation.

36. The licensee must for all land based monitoring points specified in the Monitoring Program:

    36.1. install and maintain appropriate identification signage so that they are reasonably identifiable at all times; and

    36.2. maintain safe access and egress, as is reasonably practicable.

37. The licensee must ensure that any proposed revisions to the Monitoring Program (other than typographical changes or revisions to formatting or referencing) are:

    37.1. reviewed by a Qualified Person, who must produce a written report about their review;

    37.2. submitted to the Administering Agency with justification for revisions; and

37.3. submitted to the Administering Agency, in both hard copy and electronic form (with a complete copy of the Qualified Person's written review), 20 business days prior to the proposed implementation date.

RECORDING AND REPORTING

38. The licensee must keep records of all exceedances of trigger values of parameters specified in Item 7, including those that are not an exceedance listed at Item 12, and provide a copy on request of the Administering Agency.

39. The licensee must keep records of all non-compliances with this licence. These records must be adequate to enable the licensee to comply with the non-compliance notification conditions of this licence.

40. A non-compliance with this licence includes the exceedances listed at Item 12.

41. The licensee must notify the Administering Agency of any non-compliance with this licence by emailing waste@nt.gov.au, as soon as practicable after (and in any case within 24 hours after) first becoming aware of the non-compliance.

42. The licensee must include in the notification of non-compliance the following information:

42.1. when the non-compliance was detected and by whom;

42.2. the date and time of the non-compliance;

42.3. whether discharge was occurring at the time of the non-compliance and the source of the discharge;

42.4. whether non-compliant discharge is still occurring; and

42.5. a date (within 10 business days of the non-compliance) when an investigation report will be submitted to the Administering Agency.

43. Within 10 business days of notifying the Administering Agency of any non-compliance, the licensee must provide the Administering Agency an investigation report that includes:

43.1. when the non-compliance was detected and by whom;

43.2. the date and time of the non-compliance;

43.3. whether discharge was occurring at the time of the non-compliance and the source of the discharge;

43.4. the actual and potential causes and contributing factors to the non-compliance;

43.5. monitoring data of the discharge, and upstream and downstream water of the authorised discharge point, collected for the date the non-compliance was detected and three sampling rounds prior;

43.6. available flow rates to demonstrate any influence streams and rivers may have had on the exceedance of trigger values;

43.7. rainfall recorded at the site prior to the exceedance of trigger values and non-compliance;

43.8. the risk of environmental harm arising from the non-compliance;

43.9. the action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance;

43.10. corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur; and

43.11. if no action was taken, why no action was taken.

44. The licensee must submit a completed Annual Return, by emailing waste@nt.gov.au, within 10 business days after each Anniversary Date of this licence, which report relates to the preceding 12 month period.

45. The licensee must complete and provide to the Administering Agency a report of data and information obtained through the implementation and performance of the Monitoring Program (the Monitoring Report), as prescribed by this licence, within 10 business days after each Anniversary Date of this licence.

46. The licensee must ensure that each Monitoring Report:

    46.1. is prepared in accordance with the requirements of the Administering Agency 'Guideline for Reporting on Environmental Monitoring' (or any other guideline as adopted by the Administering Agency from time to time);

    46.2. includes a tabulation of all monitoring data required as a condition of this licence (data must be provided electronically in Microsoft® Excel® format);

    46.3. includes a tabulation of monthly and annual contaminant loads discharged from the authorised discharge point listed at Item 5. Contaminant loads must be calculated for total metals, total metalloids, total nutrients and other parameters (excluding field parameters) listed in Appendix 3. The calculations must be based on the daily discharge volume and the concentration of contaminant present in the discharge on that day. On the days when a sample was not taken then the concentration of the contaminant must be estimated using Linear Interpolation methodology;

    46.4. includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the Licensed Action over a minimum period of three years (where the data is available); and

    46.5. includes an assessment of environmental impact from the Licensed Action.

47. A copy of the documents listed at Item 13 will be placed on the Register.

PERFORMANCE IMPROVEMENT

48. Prior to discharge from the authorised discharge point listed at Item 5, the licensee must develop and provide to the Administering Agency, an operational procedure that:

    48.1. calculates the discharge dilution ratio;

    48.2. monitors compliance with condition 26; and

    48.3. adjusts the discharge rate during discharge events as flow in the catchment varies.

49. The licensee must ensure that water quality monitoring stations, including water level and flow meters, are installed and operational before 31 October 2022.

50. By 31 August 2023, the licensee must develop a plan for a wastewater management and treatment that provides for:

    50.1. a reduction in total contaminant loads discharged compared to total contaminant loads discharged during the 2022/23 wet season; and

    50.2. details of what flocculants and coagulants and other treatment additives will be used, their breakdown products and their potential to contaminate the environment.

END OF LICENCE CONDITIONS

This licence is not valid unless signed below:

JOANNE TOWNSEND
Controller of Water Resources
Dated the 25 JULY 2022

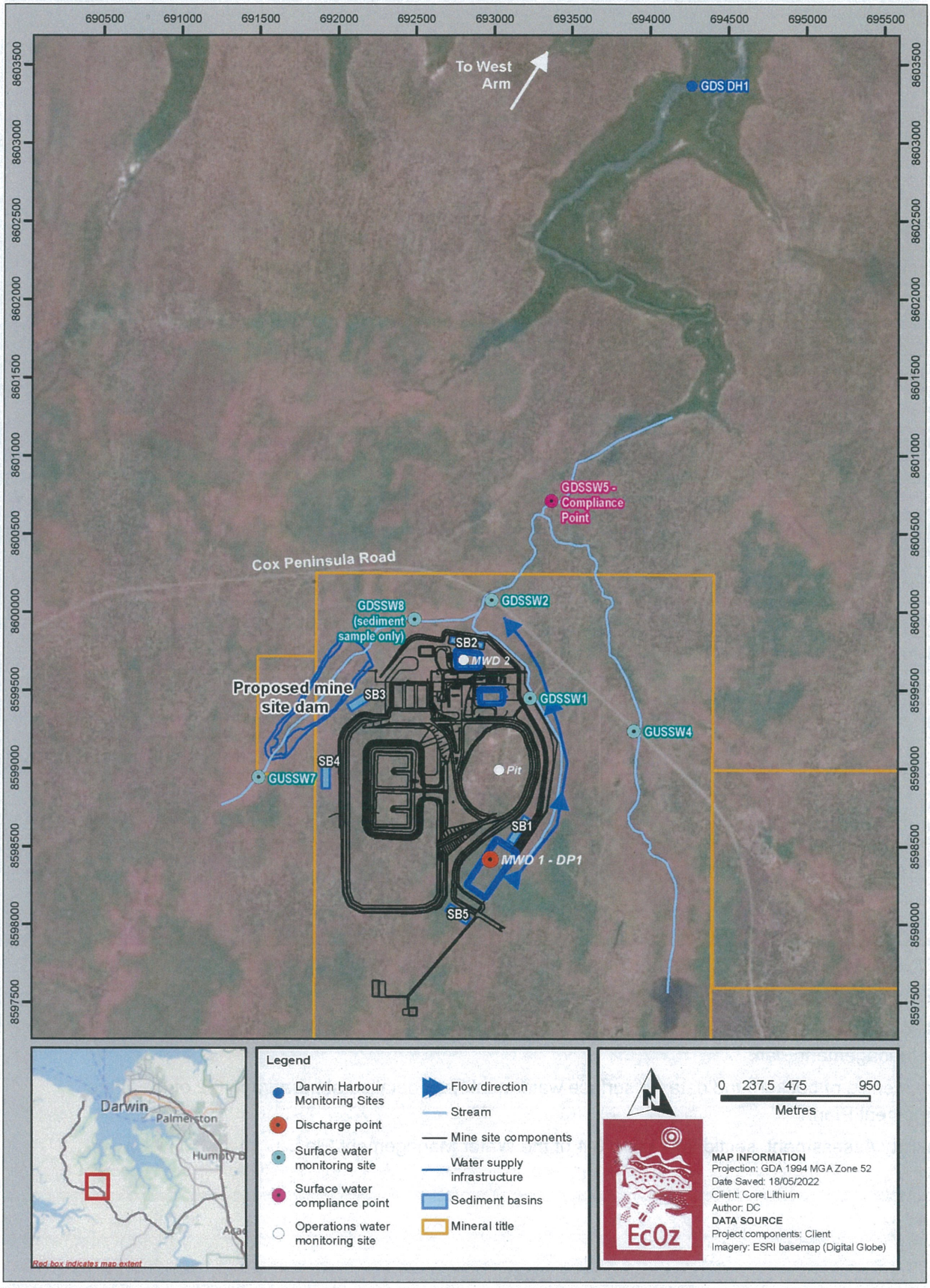
DEFINITIONS

In this licence, unless a contrary intention appears:

Term	Definition
24 hour emergency contact	the phone number of a person who can be contacted at any time and be capable of responding to and providing information about any incident associated with the Licensed Action.
Administering Agency	means the NT Government Department with responsibility for administering the Water Act.
Anniversary Date	annual anniversary of the Commencement Date.
Annual Return	an Administering Agency prescribed format for demonstrating and reporting compliance with the conditions of this licence.
ANZG (2018)	Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines.
Authority Certificate	a certificate issued under s 22(1) of the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT). An Authority Certificate permits a licensee to carry out work on land with or within the vicinity of a sacred site.
business days	a day not Saturday, Sunday or a public holiday, in Darwin, Northern Territory.
Consultation and Communication Plan	a written plan documenting proposed consultation and communications for the Licensed Action before, during and after the Licensed Action which includes a strategy for communicating with members of the public who are likely to have a real interest in, or be affected by, the Licensed Action.
contact details	includes the 24 hour emergency contact, and name, position title and phone number of a representative of the licensee who can be contacted about the licence and Licensed Action.
contaminant	has the meaning given in section 4 of the WMPC Act.
discharge	releasing or allowing a liquid, gas or other substance to flow out from where it has been confined.
Dry season	means 1 May to 31 October.
Emergency Response Plan	a written plan documenting the licensee's procedures for responding to emergencies caused by, resulting from or associated with the Licensed Action and that may cause environmental harm.
land	includes water and air on, above or under land.
Licensed Action	the Licensed Action as described on the covering page of this licence.
Linear Interpolation	a method to construct new data points within the range of known data points. $y = y1 + ((x - x1) * ((y2 - y1) / (x2 - x1))$ y in the unknown concentration between known concentrations y1 and y2 y1 in the first known concentration y2 is the second known concentration x is the day of the unknown concentration y x1 is the day of the first known concentration y1 x2 is the day of the second known concentration y2

Term	Definition
litter	litter, garbage, rubbish, refuse or waste matter, and includes the body of a dead animal.
Maintain	kept in a manner that it does not present or cause a risk of environmental harm or a hazard to persons or property or, for the purposes of documents including plans, a process of reviewing and amending documentation to ensure it is relevant.
NATA	National Association of Testing Authorities, Australia.
non-compliance notification	an Administering Agency prescribed format for notifying the Administering Agency of a non-compliance.
plant and equipment	all material items used in association with the Licensed Action, including (but not limited to) storage vessels and containers, pipe work and hosing, vehicles (including vessels), tools, and measuring equipment.
pollution	has the meaning given in section 4 of the WMPC Act.
public entrance	access to the licensed premises that is utilised by the public.
Qualified Person	a person registered under Section 68 of the WMPC Act.
qualified sampler	a person who has training and experience in obtaining samples from the relevant environmental medium.
Register	the register available at the website of the Northern Territory Environment Protection Authority (NT EPA).
waste	takes its meaning from the term in the WMPC Act.
wastewater	water that contains a contaminant or waste.
Water Act	*Water Act* (NT)
Wet season	means 1 November to 30 April and for the purposes of Appendix 3 includes any part of the Dry Season that discharge is occurring.
WMPC Act	*Waste Management and Pollution Control Act 1998* (NT)

APPENDIX 1: Map of Discharge Point, Compliance Point and Monitoring Sites



APPENDIX 2 : Discharge Trigger Values

				Sampling Points	Compliance Point
				Site Code	GDS SW5
				Easting	693374
				Northing	8600709
PARAMETER	**Abbrev.**	**Units**	**Analysis**		**Trigger Values**
Environmental Field Data					
pH	pH	pH	In situ		5.2-6.6[2]
Electrical conductivity	EC	µS/cm			250[1]
Turbidity	NTU	NTU			12[3]
Dissolved oxygen	DO	% sat.			70-92[2]
Nutrients					
Total Nitrogen	TN	µg/L	Unfiltered		200[3]
Total Phosphorus	TP				10[3]
Metals and Metalloids					
Aluminium	Al	µg/L	Total and Filtered (0.45 µm)		70[3]
Arsenic	As				13[1]
Cadmium	Cd				0.2[1]
Chromium	Cr				1[1]
Copper	Cu				1.4[1]
Iron	Fe				110[3]
Lead	Pb				3.4[1]
Lithium	Li				430[4]
Mercury	Hg				0.6[1]
Nickel	Ni				11[1]
Zinc	Zn				8[1]

Key:

[1] ANGZ (2018) 95% species protection, freshwater.

[2] 20th and 80th percentile of background data for surface water quality as detailed at paragraph 6.2 of the Water Management Plan.

[3] 80th percentile of background data for surface water quality as detailed at paragraph 6.2 of the Water Management Plan.

[4] Ecotoxicity Assessment, sections 8.3 and 8.4 of the Water Management Plan.

APPENDIX 3: Surface Water Monitoring Program

			Sampling Points	Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Upstream Surface Water 7	Sediment Basins 1-5					Discharge Point	Mine Pit Sump	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GUS SW4	GDS SW5	GUS SW7	Sed1	Sed2	Sed3	Sed4	Sed5	MWD1[1]	Pit	GDS DH1
			Easting	693239	692989	693903	693374	691498	693167	692657	692155	691928	692775	693030	693037	694262
			Northing	8599446	8600073	8599235	8600709	8598943	6598623	8599847	8599446	8598961	8598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**												
Field Parameters																
Flow	-	kL/day	In situ	D	D	D	C	D	N/A	N/A	N/A	N/A	N/A	C	N/A	N/A
Water Level	-	measure		D	D	D	C	D	N/A	N/A	N/A	N/A	N/A	P, W	N/A	N/A
pH	pH	pH		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Electrical conductivity	EC	µS/cm		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Turbidity	NTU	NTU		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Temperature	Temp	°C		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Oxidation Reduction Potential	OR	mV		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Dissolved oxygen	DO	% sat.		D	D	D	D	D	F	F	F	F	F	P, D	M	M[3]
Nutrients																
Ammonia	NH_4^+	µg/L	Unfiltered (excluding FRP)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Oxides of Nitrogen	NO_x			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Nitrate	NO_3			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Total Nitrogen	TN			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Total Phosphorus	TP			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Filterable Reactive Phosphorus	FRP			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Metals and Metalloids																
Aluminium	Al	µg/L	Total and Filtered (0.45 µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Arsenic	As			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Cadmium	Cd			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Chromium	Cr			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Copper	Cu			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Iron	Fe			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Lead	Pb			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Lithium	Li			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Mercury	Hg			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Nickel	Ni			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Zinc	Zn			W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]

			Sampling Points	Grants Downstream Surface Water 1	Grants Downstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Upstream Surface Water 7	Sediment Basins 1-5					Discharge Point	Mine Pit Sump	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GUS SW4	GDS SW5	GUS SW7	Sed1	Sed2	Sed3	Sed4	Sed5	MWD1[1]	Pit	GDS DH1
			Easting	693239	692989	693903	693374	691498	693167	692657	692155	691928	692775	693030	693037	694262
			Northing	8599446	8600073	8599235	8600709	8598943	6598623	8599847	8599446	8598961	8598072	8598504	8598990	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**												
Full elemental scan	-			A	A	A	A	A	A	A	A	A	A	A	A	A
Treatment regents (condition Error! Reference source not found.)																
Acrylamide[2]	C_3H_5NO	µg/L	Total and Filtered (0.45 µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]
Other																
Sulphate	SO_4	mg/L	Filtered (0.45 µm)	W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Calcium	Ca			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Chloride	Cl			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Sodium	Na			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Potassium	K			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Magnesium	Mg			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Carbonate	CO_3^{2-}			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Bicarbonate	HCO3			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Total Dissolved Solids	TDS			W	W	W	W	W	F	F	F	F	F	P, W	M	N/A
Total Suspended Solids	TSS		Unfiltered	W	W	W	W	W	F	F	F	F	F	P, W	M	M[3]

Key:

P = prior to discharge.

C = continuous

D = within 24 hours of commencement of discharge **and** daily during discharge. When no discharge is occurring monitoring will be on a weekly basis.

W = within 24 hours of discharge **and** weekly during discharge. When no discharge is occurring monitoring will be on a monthly basis.

F = weekly whilst discharging from sediment basins, Monthly during Wet season irrespective of discharge.

M = monthly.

A = Annually, at end of Wet season on recessional flows.

N/A = not applicable.

[1] The sampling point in MWD1 will be located close to DP1 to ensure it is representative of discharge water quality.

[2] This sampling is only required where the licensee has conducted water treatment onsite using flocculants containing Acrylamide.

[3] During Wet season only

APPENDIX 4: Fluvial Sediment Monitoring Program

			Sampling Points	Grants Downstream Surface Water 1	Grants Upstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Downstream Surface Water 7	Grants Downstream Surface Water 8	Discharge Point	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GUS SW4	GDS SW5	GDS SW7	GDS SW8	MWD1	GDS DH1
			Easting	693239	692989	693903	693374	691498	692465	693030	694262
			Northing	8599446	8600073	8599235	8600709	8598943	8599942	8598504	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**							
Environmental Field Data											
pH	pH	pH		A	A	A	A	A	A	A	A
Electrical conductivity	EC	µS/cm		A	A	A	A	A	A	A	A
Moisture content		%		A	A	A	A	A	A	A	A
Particle size distribution	PSD	%	<63µm >=63µm & <=2mm >2mm	A	A	A	A	A	A	A	A
Aluminium	Al	mg/kg	<63µm sediment fraction	A	A	A	A	A	A	A	A
Arsenic	As			A	A	A	A	A	A	A	A
Cadmium	Cd			A	A	A	A	A	A	A	A
Chromium	Cr			A	A	A	A	A	A	A	A
Copper	Cu			A	A	A	A	A	A	A	A
Iron	Fe			A	A	A	A	A	A	A	A
Lead	Pb			A	A	A	A	A	A	A	A
Lithium	Li			A	A	A	A	A	A	A	A
Mercury	Hg			A	A	A	A	A	A	A	A

			Sampling Points	Grants Downstream Surface Water 1	Grants Upstream Surface Water 2	Grants Upstream Surface Water 4	Grants Downstream Surface Water 5	Grants Downstream Surface Water 7	Grants Downstream Surface Water 8	Discharge Point	Grants Downstream Darwin Harbour 1
			Site Code	GDS SW1	GDS SW2	GUS SW4	GDS SW5	GDS SW7	GDS SW8	MWD1	GDS DH1
			Easting	693239	692989	693903	693374	691498	692465	693030	694262
			Northing	8599446	8600073	8599235	8600709	8598943	8599942	8598504	8603365
PARAMETER	**Abbrev.**	**Units**	**Analysis**	**FREQUENCY**							
Nickel	Ni			A	A	A	A	A	A	A	A
Zinc	Zn			A	A	A	A	A	A	A	A
Other											
Sulphate	SO_4	mg/kg	Soluble ion extract	A	A	A	A	A	A	A	A
Calcium	Ca			A	A	A	A	A	A	A	A
Chloride	Cl			A	A	A	A	A	A	A	A
Sodium	Na			A	A	A	A	A	A	A	A
Potassium	K			A	A	A	A	A	A	A	A
Magnesium	Mg			A	A	A	A	A	A	A	A

Key:

A = Annually during recessional flow (late Wet season/early Dry season)

APPENDIX 5: Biota Monitoring Program

Project Name	Locations	Project Description	Report Frequency
Seagrass assessment	West Arm, Darwin Harbour	Seagrass monitoring to determine whether any observed change in seagrass distribution or composition has occurred in the marine waters of West Arm, Darwin Harbour. Monitoring should aim to determine whether any change identified is naturally occurring or related to mine operations.	Annually
Vegetation monitoring	Areas downstream of ML 31726	Monitoring of vegetation downstream of ML 31726 to determine if mining activities are impacting riparian vegetation communities.	Annually
Macroinvertebrate study	Darwin Harbour and Areas downstream of ML 31726	Survey of macro-invertebrate abundance and diversity in aquatic ecosystems. Data is used to monitor potential impacts from mine operations.	Annually during recessional flow (late Wet season/early Dry season)

ATTACHMENT B –PROCEDURE FOR SURFACE WATER SAMPLING

Procedure
Surface Water Sampling



www.ecoz.com.au

DOCUMENT CONTROL RECORD

Job	EcOz Environmental Consultants internal procedure
Document ID	202888-14
Author(s)	Emma Smith, Mike Welch, Casey Hawkey, Corinne Hutchinson

DOCUMENT HISTORY

Rev	Updated by	Reviewed by	Date
1.A	-	R. Hall	22 Apr 2011
1.0	-	R. Hall	26 Apr 2012
1.1	-	R. Hall	21 May 2013
1.2	-	E. Smith	24 Feb 2014
1.3	-	M. Welch	16 Jul 2014
1.4	-	C. Hutchinson	20 Nov 2018
2	-	E. Lewis	31 Jul 2020
3	-	J. Dymalla	20 Sept 2021
4	A. Faraone	J. Dymalla	1 Sept 2022

Recipients are responsible for eliminating all superseded documents in their possession.

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1 INTRODUCTION

1.1 Purpose

To ensure sampling methods obtain samples representative of the surface water, and to ensure all sampling is consistent, undertaken in a safe manner and follows best-practice procedures in accordance with relevant standards.

1.2 Scope

This Procedure applies to all surface water sampling undertaken by EcOz Environmental Consultants (EcOz) personnel, noting that some sampling requirements may vary on a project-specific basis.

1.3 Standards and other requirements

To ensure the quality and accuracy of the measurements, sampling procedures have been developed in accordance with the following standards and guidelines:

- Australian Standard on Water Quality Sampling - *Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples* (AS/NZS 5667.1:1998);
- Australian Standard on Water Quality Sampling - *Part 4: Guidance on sampling from lakes, natural and man-made* (AS/NZS 5667.4:1998);
- Australian Standard on Water Quality Sampling – *Part 6: Guidance on sampling of rivers and streams* (AS/NZS 5667.6:1998);
- Australian Standard on Water Quality Sampling – *Part 10: Guidance on sampling of waste waters* (AN/NZS 5667.10:1998)
- ANZG 2018, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality,* Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia, Available: www.waterquality.gov.au/anz-guidelines
- ANZECC & ARMCANZ 2000, *Australian Guidelines for Water Quality Monitoring and Reporting*, National Water Quality Management Strategy Paper No 7, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

2 EQUIPMENT, SAFETY AND TRAINING

2.1 Equipment

The following equipment list is provided for guidance and personnel should consider project-specific sampling requirements when preparing for field sampling:

- **Map** showing monitoring sites.
- **GPS** – with coordinates uploaded for locating sample sites.
- **Site access or permit** requirements that may be required, such as keys, ID cards, contractor induction certificates, vehicle licence, Indigenous land access permit.
- **Job Safety Plan** (JSP).
- **Field Data Sheets** – enough for all sample sites plus some spares – see Appendix A – EcOz Surface Water Sampling Field Data Sheet.
- **Folder/clipboard** and waterproof notebook.
- **Stationary**: Pens / pencils, permanent markers for completing sample bottle labelling
- **Sample bottles** obtained from relevant laboratories being used (e.g. ALS, Envirolabs, etc.). Ensure that specific bottles are obtained for each parameter to be tested and appropriate pre-treatment is undertaken (e.g. preservatives). Ensure sufficient sample bottles are available for each bore, a duplicate, split and field blank sample (see definitions in Section 4.2), and spare bottles, particularly the glass bottle types.
- **Insulated cooler** with frozen ice bricks or portable Engle fridge/freezer.
- **Field meters** to measure water parameters (e.g. pH, temperature, EC, DO, ORP, turbidity); calibrated on the day of sampling.
- **Calibration solutions** and copies of the EcOz Calibration Record Sheet (if in field for >1 day) or in the event of an issue with field meters – see Appendix B - Calibration Record Sheet.
- **Camera**
- **Polypropylene sampling jug** for collecting field measurements and filling sample bottles if unable to fill bottles directly from hose.
- **Sample pole**
- **Decon 90** solution mixed with deionised water (1:20) to clean equipment between sample sites.
- **Deionised water** for collection of field blanks and rinsing equipment between sample sites.
- **Syringes and filters** (for sampling dissolved metals/ ultra-trace nutrients etc).
- **Powder-free gloves**
- **Spare batteries** for camera, GPS and field test meters
- **Chain of Custody (COC)** forms from the relevant laboratories (one for bulk of samples and one for spilt samples).
- **Plastic sleeves** (snap-lock bags) to protect COC forms inside the insulated containers.

- **Consignment (Con) Notes** for freighting samples to laboratories (either using Toll, Australian Air Express or TNT depending on the client and sampling location), pre-filled as much as possible with relevant account number, laboratory address, contacts etc.
- **Communications equipment** (e.g. mobile/satellite phone, radio).
- **PPE** – see below.
- **Garbage bag** for used filters, syringes, gloves and other general waste generated during sampling.

2.2 OH&S requirements

A JSP must be completed for each sampling event which includes all project and personnel information including emergency contacts, and an assessment of the potential hazards and required hazard control measures. Standard potential hazards and hazard control measures are listed in Table 2-1 below.

Table 2-1. Standard hazard management for surface water sampling

Task	Potential Hazards	Hazard Controls
Driving to and around site	Animals on road	• Do not swerve to avoid hitting fauna on the road, slow down and maintain line • Avoid travelling on roads early morning, late afternoon and night
	Other vehicles	• Maintain good observation when driving • Even on quiet roads, always assume the possibility of an oncoming vehicle
	Road conditions	• Stay within speed limits and drive according to conditions
	Driver fatigue	• Regularly swap drivers and take breaks
	Flat tyres	• Carry spare tyres, jack and tools • All party members must be proficient in changing a tyre on the type of vehicle being used
	Getting lost	• Use GPS, maps and radio • Ensure at least two personnel if working in remote areas. • Prepare scheduled call-in procedure prior to leaving office and abide by this procedure • Agree on procedure in the event of a missed call-in (e.g. time to wait before calling emergency services)
	Bogging	• Avoid driving in wet areas • Carry vehicle recovery equipment • At least one party member must be proficient safe use of recovery equipment • Maintain communications (e.g. radio channel 40, sat phone) • Vehicle recovery only to be undertaken by personnel who have undertaken 4WD recovery training In areas of high risk, vehicles to travel in pairs, with the second vehicle not proceeding into boggy areas until first vehicle has made it through
	Mechanical failure	• Pre-start vehicle checks • Maintain communications (e.g. radio channel 40, sat phone)
Surface water sampling	Unsafe worksite	• Upon arrival to each site, perform an assessment of potential risks/dangers unique to the area and mitigate accordingly (Take 5)
	Cuts/abrasions	• Wear full PPE when performing sampling
	Tripping/slipping/strains	• Care taken walking in rough / overgrown terrain (or seek alternative route) • Use appropriate lifting techniques (e.g. bend knees), 2 person lifts and lift within capabilities
	Dehydration/heat	• Adequate water and electrolyte replacement carried for all personnel

	exhaustion	• Competent first aid trained person within sampling group • Correct PPE • First aid is readily available
	Sunburn	• Use sunscreen and wear correct PPE (e.g. hat, long sleeves)
	Fast flowing water	• Always sample with more than one person (one person to act as a spotter) • Carry communications (e.g. radio/mobile) • Use sample pole to sample sites with fast flow • All personnel must be competent swimmers
	Snake bite	• Correct PPE (e.g. sturdy boots, long pants/gators) • All personal have first aid training • Care taken when stepping over logs • Each person to carry snake bandage at all times
	Dangerous animals (e.g. cattle, buffalo, pigs)	• Assess each site for potential dangerous animals upon arrival (Take 5) • Maintain safe distance from any animals • Shelter in vehicle if required
	Ticks	• Check body and clothing for ticks at the end of each day • Shirts to remain tucked into the trousers • Advising other personnel of the locations where ticks have been seen/recorded • Ticks to be carefully removed to avoid squeezing the tick • Seek medical advice if a tick bite is found
	Crocodiles	• Assess sample site for crocodiles and evidence of slides upon arrival • Do not enter water • Use sample pole to maintain distance from edge • Always have two people with one person acting as a spotter at any given time • Always have radio or satellite phone to ensure communication in case of emergency
	Getting lost finding sites	• Always carry a GPS and maps • Ensure all personnel are fit and capable of task prior to leaving • Make GPS waypoint of vehicle prior to leaving • Carry a radio and sat phone • Avoid travelling to unknown areas if no clear path • Prepare scheduled call-in procedure prior to leaving office and abide by this procedure • Agree on procedure in the event of a missed call-in i.e. time to wait before calling emergency services
Sampling contaminated sites	Working around contaminated water	• Assess site for safety considerations prior to commencing work • Have an evacuation plan and recovery equipment prepared • Use sampling pole to allow distance from edge • Know the location of the nearest emergency shower and whether it is in operating condition • Take care near edges and have a spotter present • Do not work near edge of if risk of falling • Always carry a radio and sat phone to ensure communication
	Acidic water in pits and drains	• Avoid coming into contact with water • Wear gloves if handling water
	Exposure	• Adequate water and electrolyte replacement carried • Correct PPE • First aid is readily available

Standard PPE should be worn, including:

- Sturdy boots (steel cap and laces if industrial/mine site).
- Hat, safety/polarised sunglasses, sunscreen.
- Protective gloves for manual handling.
- Hard hat (if required for working around machinery)

- Long pants and shirt (high-visibility if industrial/mine site).

2.3 Training and competency

All personnel conducting water sampling shall be familiar with this Procedure and have received field training from experienced personnel. This includes training in sample collection, using and calibrating field meters.

All personnel conducting water sampling shall have a current first-aid certificate.

Each field party conducting sampling in a remote area with difficult or boggy access must include a member trained in vehicle recovery who has completed the 4WD training course and has field experience in vehicle recovery.

2.4 Site access

Personnel must ensure that any required permits (e.g. Indigenous land access permit), and/or land access permissions are obtained prior to undertaking water sampling.

Personnel must also ensure that all site induction requirements are fulfilled, ID cards (e.g. Aviation Security ID Card (ASIC), Maritime Security ID Card (MSIC)), licences, contractor induction cards/certificates and keys are obtained prior to mobilising to site.

Ensure that all possible site restrictions are known, such as possession and/or use of mobile phones, cameras, flammables, particular chemicals, prior to mobilisation to site.

3 PROCEDURE

3.1 Contamination prevention precautions

3.1.1 Keep hands away from sample bottle openings and the inside of bottle lids. Be aware that sources of contamination include permanent markers, insect repellent, sunscreen, deodorant, dust and perspiration.

3.1.2 Always wear powder-free gloves and use new gloves for each sample site.

3.1.3 Do not allow the opening of sample bottles and bottle lids to touch the ground.

3.1.4 Only clean, sealed and pre-prepared preserved sample bottles obtained from a NATA accredited laboratory are to be used for laboratory samples.

3.1.5 Ensure equipment is cleaned thoroughly after each sample site with Decon 90 solution (5 %) and rinsed with deionised water.

3.1.6 Ensure sample bottles are filled to the top leaving no headspace unless otherwise specified by the laboratory.

3.1.7 Do not overfill the bottle, particularly not for sample bottles with preservative.

3.1.8 For the bottles containing preservative, after sample collection, put the lid on and shake immediately.

3.1.9 After sample collection, ensure all sample bottles are tightly sealed and stored upright in an insulated cooler (with ice-bricks) or fridge at <4°C. Do not use loose ice as this can contaminate the samples if they are left in the melted ice water.

3.2 Preparation

3.2.1 Prior to undertaking a field sampling trip, ensure that a JSP has been completed and signed by all field personnel, and by the Project Manager.

3.2.2 Gather all equipment listed in Section 2.1.

3.2.3 Bottles may need to be ordered from the laboratory. Contact the laboratory for advice on what bottles are required (certain analytes require particular bottles and preservatives).

3.2.4 Put together a package of sample bottles for each site (i.e. in a large snap-lock bag), including bottles for duplicates, split samples and blanks.

3.2.5 Label each bottle with the site name (or duplicate, split, blank) and sampler's name. Sample date and time are to be labelled in the field at the time of sample collection.

3.2.6 For metals analysis, tick the box on the bottle label for either *dissolved metals field filtered* or *total metals*, depending on whether samples for metals analysis will be filtered in the field.

3.2.7 Calibrate the field test meters (e.g. pH, temperature, EC, DO, ORP, turbidity) according to the manufacturer's instructions. Complete a Calibration Record Sheet (Appendix B).

3.2.8 Ensure camera and GPS (if required) are fully charged and have sufficient memory.

3.2.9 Depending on the number of sites being sampled, prepare a sufficient volume of Decon 90 solution (i.e. 1:20 Decon:deionised water) to use for cleaning sampling equipment in the field.

3.2.10 Print out the required number of blank Surface Water Sampling Field Data Sheets (Appendix A), laboratory COC forms, maps and bore reports.

3.2.11 Ensure that ice bricks have been put in the freezer, or the Engel fridge has been sufficiently chilled, to keep samples cool as they are collected.

3.3 Travel to sample sites

3.3.1 Review JSP prior to travel to ensure that all potential hazards have been assessed and personnel are familiar with any risks.

3.3.2 When undertaking routine surface water sampling, it is best that at least one of the field team has previous experience sampling all the sites.

3.3.3 Refer to maps, photos and marked GPS locations to confirm the correct location.

3.4 Field observations and in-situ parameters

3.4.1 Fill in the Surface Water Sampling Field Data Sheet with the sample site ID, date, time, your name, field observations such as weather conditions, water colour, clarity, water depth, flow rate, any obvious pollution (e.g. rubbish, odours, surface film, etc.), flora/fauna present, and any other issues that may affect the samples.

3.4.2 Wear powder-free gloves when collecting field samples.

3.4.3 Ideally, in-situ readings (pH, temperature, DO, EC, ORP and turbidity) are collected directly from the water body being sampled by immersing the meters in the water to be sampled. However, if safety and/or logistical issues preclude this, field readings may need to be taken from the sampling jug. In this case the DO sensor will need to be slowly swirled in the sampling jug to move water over the membrane. The sample pole can be used to collect water from water bodies that are difficult to access.

3.4.4 Record the in-situ parameters just below the water surface (between 0.2 and 0.5 m depth), depending on water depth. Alternatively, if collecting samples from various depths (e.g. depth profiling), ensure the field meter is lowered to the desired depth.

3.4.5 If collecting field readings from the sampling jug, collect a representative water sample using the jug, or sampler mounted on a sampling pole. Ensure that the jug/sampler is fully immersed and rinsed at least 3 times, tipping the rinse water away from (e.g. on the bank), or downstream of, where the sample is to be collected.

3.4.6 If sampling flowing waters, ensure that you are standing downstream of where you are sampling so as not to contaminate the sample.

3.4.7 Record all the readings on the Surface Water Sampling Field Data Sheet; one sheet to be filled out per site.

3.5 Laboratory sample collection

3.5.1 Wear powder-free gloves when collecting laboratory samples.

3.5.2 Take out the required pre-labelled sample bottles. Label bottles with sample date and time.

3.5.3 Keep hands away from sample bottle openings and the inside of bottle lids. Be aware that sources of contamination include permanent markers, insect repellent, sunscreen, deodorant, dust and perspiration.

3.5.4 If safe to do so, fill bottles directly from the water body being sampled, otherwise use the jug and/or the sample pole to collect a water sample. Be careful not to overfill bottles which contain preservatives. If the flow rate is very rapid, it may be required to fill the bottles containing preservative using a jug (pre-cleaned with Decon 90 and deionised water). Rinse the jug three times with water being sampled (disposing of rinse water away from, or downstream of, sample collection point) prior to filling laboratory bottles from jug.

3.5.5 For samples requiring field filtering (e.g. dissolved metals), draw some water from the jug into a syringe, put a filter on the end of the syringe, rinse the filter by pushing a few drops of the sample through onto the ground, then fill the bottle leaving no headspace. Depending on the size of the syringe, it may be necessary to draw several syringes-full of water to fill the sample bottle.

3.5.6 Once all bottles are filled and tightly capped with lids, place them upright into the insulated cooler and store below 4°C.

3.6 Collection of field blanks, split samples and duplicates

3.6.1 To collect a field blank, simply follow the steps outlined in Section 3.5 above using laboratory supplied rinsate water/field blank water instead of water from the site being sampled.

3.6.2 For split samples and duplicates, repeat all the above steps outlined in Section 3.5 above at the site(s) chosen for these samples (generally at least 1 in 10 sample sites). Label the sample bottle as ‘Split’ or ‘Duplicate’. Be sure to note collection of these samples on the Surface Water Sampling Field Data Sheet otherwise it will not be possible to track which site these samples were collected from because the site name is not permitted to be recorded on the bottle.

3.7 Cleaning of field equipment

3.7.1 After sampling each site, rinse all sampling equipment (e.g. jugs, field meter probes) with the pre-mixed Decon 90 solution, followed by deionised water.

3.7.2 Dispose of used filters, syringes, and gloves appropriately. Consumable sampling equipment are single use only and fresh gloves, syringes and filters are required at each site.

3.8 Sample dispatch

3.8.1 Once sampling is completed, pack the samples securely in an insulated cooler with ice bricks. Ensure that samples have sufficient contact with the ice bricks to stay as cool as possible.

3.8.2 Fill out the COC, put in a plastic sleeve (snap-lock bag) and place inside the insulated container.

3.8.3 If required, provide a copy of the COC to the client.

3.8.4 Samples must be dispatched to a NATA accredited laboratory within the required holding times, noting that:

- Samples must be dropped off at the receiving laboratory no later than 14:00 each day.
- Sample dispatch on Fridays and weekends is not acceptable for sample analysis with short holding times (e.g. microbiological, nutrients) as samples will not be transported from Darwin until the following Monday. Other parameters with longer holding times can be kept in a fridge until dispatch on Monday.

3.8.5 If sending samples direct to the laboratories:

- Tape up an insulated cooler and label with an address, consignment note and the appropriate handling stickers (e.g. fragile, keep chilled etc.).
- Deliver samples direct to freight company or organise pick-up, ensuring that samples will be dispatched in time to meet laboratory holding times (usually by 16:00 on day of sampling for overnight priority service).

3.8.6 Remember to also prepare a small insulated cooler containing the split sample for sending to a separate laboratory.

3.9 Data management

3.9.1 All Surface Water Sample Data Sheets should be saved to the project file Field and Lab Data folder on MFiles, and all photographs are to be saved to the project folder at Z:\02 EcOz Resource Materials\01 Image Bank, and labelled according to the relevant site name.

3.9.2 Correspondence and document from the laboratory should be saved to the project file Field and Lab Data folder on MFiles (e.g. results, sample receipt notices, certificate of analysis and QA/QC information).

4 ACRONYMS AND DEFINITIONS

4.1 Acronyms

COC	Chain of Custardy
DO	Dissolved Oxygen
EC	Electrical Conductivity
JSP	Job Safety Plan
mbgl	Meters below ground level
NATA	Nation Association of Testing Authorities
ORP	Oxidation-Reduction Potential
pH	Measurement of an aqueous solutions acidity or basicity. Ranges between 1 and 14.
PPE	Personal Protective Equipment
SWQ	Surface Water Quality
TOC	Top of Casing

4.2 Definitions

QA/QC Quality Assurance/Quality Control, which may include:

- Duplicate sample – collected during each sampling event (e.g. 1 duplicate for every 10 samples collected) to detect both natural environmental variation, and any errors from filed sampling methodologies.
- Split sample - collected during each sampling event (e.g. 1 split for every 10 sample sites) and sent to a different laboratory to detect any Lab-based discrepancies.
- Field blank sample – collected during each sampling event to evaluate potential contamination from personnel and/or sampling equipment.

APPENDIX A SURFACE WATER SAMPLING FIELD DATA SHEET

EcOz Environmental Services

Surface Water Field Data Sheet

PROJECT:		DATE and TIME:	
SITE NUMBER / NAME:			
SAMPLERS NAME:		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR		PRESENCE OF AQUATIC FAUNA	
ODOUR		AQUATIC PLANTS	
SURFACE SCUM/ALGAE		EROSION	
RIPARIAN CONDITION		GROSS POLLUTANTS	
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)		WATER FLOW (m/sec)	
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions:			

FIELD SAMPLES

Parameter	Unit	Result	Meter Used	Date of calibration
pH				
Temperature				
E.C				
TDS				
Salinity				
D.O				
ORP				
Turbidity				

LABORATORY SAMPLES

Analytes Requested	Containers Used	QA/QC Samples Collected (circle)
		Duplicate Split Blank

Any other comments or special procedures (see over):

APPENDIX B FIELD METER CALIBRATION RECORD SHEET

EcOz Environmental Consultants

Probe Calibration Record Sheet

Date:				**Calibrated By:**				
Serial # of Probes Calibrated:		**pH:**		**EC:**		**DO:**		**Turbidity:**
Pre-Calibration Reading:				**Post Calibration Reading (Checking):**				
pH								
pH 7.00 Standard:		**pH 4.01 Standard:**		**pH 7.00 Standard:**		**pH 4.01 Standard:**		
pH:	mV:	pH:	mV:	pH:	mV:	pH:	mV:	
For pH 7.00: mV should be zero ± 50 mV. **For pH 4.01: mV should be +165 to +180 mV greater than the pH 7.00 mV value.**								
pH readings (circle): Good Some Problems explain here:								
EC								
Temperature at time of calibration:				**Relative calibration value:**				
EC Calibration Solution Used (circle): 447 µS/cm 1413 µS/cm 2570 µS/cm 12880 µS/cm								
EC µS/cm:	TDS g/L:	Sal ppt:		EC µS/cm:	TDS g/L:	Sal ppt:		
EC readings (circle): Good Some Problems explain here:								
Turbidity								
Turbidity 0 NTU		**Turbidity 124 NTU**			**Turbidity 1010 NTU**			
Pre cal:	Post cal:	Pre cal:	Post cal:		Pre cal:	Post cal:		
Turbidity readings (circle): Good Some Problems explain here:								
DO								
Barometric Pressure (mmHg) set for DO: (Look up local hPa on BoM usually around 1010)				**DO reading after stabilization:**				
DO readings (circle): Good Some Problems explain here:								
ORP								
240 MV standard								
ORP Pre calibration:				**ORP post calibration:**				
Probes require servicing? (e.g. DO membrane needs changing, probes need to be cleaned or sent away, batteries need replacing)								
				Actioned (tick): ☐ **Date:**				
Any other actions required? (e.g. order more calibration solutions or DO replacement membranes)								
				Actioned (tick): ☐ **Date:**				

Calibrator's Signature:

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ATTACHMENT C – FIELD SHEETS FROM THE DARWIN-DALY AUSRIVAS MANUAL

6. APPENDIX 1 – FIELD SHEETS

FIELD SHEETS

AUSRIVAS - Darwin Daly regional Models

Date **Site Code** **Site Name** **Field Team**

GPS coordinates: (*predictor variables family level model*):

Zone (UTM) **Easting** **Northing** **Datum**

Landholders and contact details

Site comments, observations

ACCESS SKETCH

SITE NAME **SITE CODE**

Indicate any features that assist locating exact sample site on subsequent trips.

WATER QUALITY

Time	**Instrument**	**Instrument Serial No.**	
pH	**units**	**E.C.**	**µS/cm**
D.O.	**mg/L**	**Water Temperature**	**°C**
Turbidity	**NTUs**	**Instrument and serial number**	

Water samples for laboratory water quality analysis

(ALKALINITY is a *predictor variable for genus level model*)

Bottle lable	**Analysis**
	Alkalinity

Observations relating to water quality (e.g. water oil, scum, foam, sediment odours)

MACROINVERTEBRATE SAMPLING

EDGE Length sampled _____m

Collected by _____

No. of containers used _____

Edge description

☐ Vertical 90°

☐ Angled 45-90°

☐ Undercut

Edge habitat mainly composed of roots from

☐ Paperbark / Melaleuca ☐ shrub

☐ other common riparian trees ☐ grass

Edge habitat

☐ roots covered by algae ☐ overhanging vegetation

Habitat velocity & depth **Flow meter serial no. _____Fan set no.____**

(*predictor variable genus level model*)

Meter Reading (Revolutions per 40s)				**Habitat depth (cm)**		
1	**2**	**3**	**Fan details**	**1**	**2**	**3**

Stream Width (at water level) (*predictor variable genus and family level models*): six measurements or estimations are taken in a 100m reach upstream of the macroinvertebrate sampling site.

Number	**1**	**2**	**3**	**4**	**5**	**6**
Width (m)						

☐ measured ☐ estimate only

Comments

DESCRIPTION OF THE REACH (reach 100 m upstream of sample site)

Habitats within 100 m reach

Sand/Silt bed	☐	Riffle	☐
Gravel/Rock bed	☐	Run	☐
Macrophytes	☐	Pool	☐
Snags	☐		

Description of stream characteristics

Width between top of levee banks (bankfull width) _____ m

Other levees ☐

Height of levee bank from water surface _____ m

Flow observable ☐

RIPARIAN ZONE (within 100 m reach)

Riparian zone width -left bank (facing downstream) _____ m

-right bank _____ m

Riparian vegetation type

Monsoon-vine forest/Rainforest	☐	Riparian shrubland	☐
Riparian forest	☐	Riparian grassland	☐
Riparian woodland	☐	Other: _____	

Weeds ☐

Evidence of fire Riparian Zone ☐

Beyond Levee Banks ☐

Cattle access ☐

Comments

SKETCH OF 100 M REACH

Indicate: ■ **water quality measurements** **macroinvertebrate sample sites** **location of vehicle access**

• **water sample collection** **width measurements**

➘ **location of Photographs** **direction of flow**

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APPENDIX D

Tabulated Water Quality Monitoring Data

			Field							Inorganics	BTEX							TRH								TPH					Biological	Other	
			Temperature (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	DO % Saturation (Field)	Electrical Conductivity (Field)	pH (Field)	Turbidity (Field)	Total Phosphorus as P Organic Phosphate as PO4	Sulfate as SO4 - Turbidimetric (Filtered)	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total) as CaCO3	Cations Total	Cations Total	Electrical Conductivity (lab)	% Ionic Balance	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	Salinity	Total Suspended Solids (lab)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10 Fraction (F1)	C6-C10	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (sum)	C6-C9 Fraction	>C9-C16 Fraction	>C15-C28 Fraction	>C28-C36 Fraction	C10-C36 Fraction (Sum)	Chlorophyll a	Fluoride	Fluoride (filtered)
			°C	mg/L	mV	%	µS/cm	-	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	µS/cm	%	mg/L	mg/L	mg/L	mg/L	ppt	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L
										0.01	1	0.01	1	1	1	1	0.01	0.01	1	0.01	0.1	0.01	0.01	0.1		5	0.005	1	2	2	2	2	2	1	20	20	100	100	100	100	100	20	50	100	50	50	0.001	0.001	0.001
Field ID	**Date**	**Sample Comments**																																															
GDS SW1	**20 Jan 2025**		33.9	17.8	201.8	88.9	27.4	6.3	39.6	<0.01	4	<0.01	6	<1	<1	6	0.29	0.13	31	-	0.4	<0.01	<0.01	0.4	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GDS SW1	**21 Jan 2025**		29.2	18.86	228.5	68.8	29	5.9	14																																									
GDS SW1	**22 Jan 2025**		31.7	38.13	176.04	90.92	28.66	6.6	9.48																																									
GDS SW1	**23 Jan 2025**		29.2	46.65	170.8	82.77	71.76	6.7	7.23																																									
GDS SW1	**24 Jan 2025**	**TDS, EC Error**	33.8		18.94	105		6.9	8.15																																									
GDS SW1	**25 Jan 2025**	**Temp error**		24.3	127.73	112.9	37.4	6.7	16.25																																									
GDS SW1	**26 Jan 2025**		28.4	27.4	110.09	78.6	42.2	6.6	14.83																																									
GDS SW1	**27 Jan 2025**	**EC Error**	33.3	18.7		99	28.7	-	26.6	0.02	2	<0.01	5	<1	<1	5	0.23	0.22	31	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
GDS SW1	**28 Jan 2025**	**TDS, EC Error**	37.2		276.6	110.9		6.3	9.2																																									
GDS SW1	**29 Jan 2025**	**Temp error**	-	10.2	276.65	109.6	4.1	6	44.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**30 Jan 2025**	**Temp error**	-	4.6	236.3	75.7	71.4	6.6	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**31 Jan 2025**	**Temp error**	-	57.5	273.7	99.7	88.4	6.9	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**01 Feb 2025**	**Temp error**	-	40.5	47.5	104.8	13.3	5.8	25.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**02 Feb 2025**	**Temp error**	-	62.4	58.3	97.9	96.1	6.7	21.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**03 Feb 2025**	**Temp error**	-	16.5	35.9	65	89.6	7.1	20.6	0.06	2	0.01	31	<1	<1	31	0.83	0.82	82	-	1	0.01	<0.01	1	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	-	-
GDS SW1	**04 Feb 2025**	**Temp error**	-	21.5	120.7	82.8	33.1	6.3	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**05 Feb 2025**	**Temp error**	-	20.4	168	86.7	31.3	6.4	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**06 Feb 2025**	**Temp error**	-	19.9	126	89.1	5.9	6.6	29.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**07 Feb 2025**		32.3	39.9	112.8	84	61.6	6.7	37.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**08 Feb 2025**		29.2	49.5	48.5	74.9	76.2	6.6	16.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**09 Feb 2025**		31	26.2	87	85.9	41	6.2	25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**10 Feb 2025**		30.2	28	20	75.5	43.1	6.5	36	0.56	7	<0.01	8	<1	<1	8	0.39	0.49	44	-	0.4	<0.01	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
GDS SW1	**12 Feb 2025**	**EC, TDS, Temp Error**			64.8	44		7	7.8	<0.01	20	<0.01	20	<1	<1	20	0.93	0.89	102	-	0.6	<0.01	<0.01	0.6	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW1	**13 Feb 2025**		32	33	89	84	5	6	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**14 Feb 2025**	**TDS, EC Error**	29		171	92		6	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**15 Feb 2025**		28	59	145	78	91	7	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**16 Feb 2025**		28	56	138	75	87	7	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**17 Feb 2025**	**EC, TDS Error**	33.4		159.2	81.9		6.9	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**18 Feb 2025**		37.7	61.9	195.4	90	95.4	6.8	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**19 Feb 2025**		31.7	61.1	201	85.4	93.9	6.8	5.5	1.52	19	<0.01	26	<1	<1	26	1.03	1.09	106	-	0.6	<0.01	<0.01	0.6	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GDS SW1	**20 Feb 2025**	**No TDS, EC**	35.2		176.9	96.9		7	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**21 Feb 2025**		35	96.1	176.63	93.04	147.9	7.01	7.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**22 Feb 2025**		37	42.56	150.3	94.22	65.6	6.91	9.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**23 Feb 2025**		31	35.98	143.7	91.82	54.98	7.11	11.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**24 Feb 2025**		28	32.94	135.94	72.33	5.67	6.99	17.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**25 Feb 2025**		28	31.21	174.87	67.71	48.1	6.68	32.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**26 Feb 2025**	**EC, TDS Error**	40		133.77	86.22		6.73	7.01	<0.01	21	<0.01	14	<1	<1	14	1.06	0.8	86	-	0.2	<0.01	<0.01	0.2	-	13	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GDS SW1	**27 Feb 2025**		32	56.03	209.19	94.28	86.74	7.27	3.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**28 Feb 2025**		28	28.5	183.82	63.32	43.83	6.61	23.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**01 Mar 2025**		28	59.96	191.65	60.85	92.32	7	4.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**02 Mar 2025**		29	85.98	189.17	64.57	132.27	7.21	5.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**03 Mar 2025**		29.07	74.84	187.29	75.67	115.13	7.56	4.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**04 Mar 2025**		30.24	94	165.62	87.64	129.4	7.65	7.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**05 Mar 2025**		34.04	85.89	89.71	92.59	132.14	7.5	10.78	<0.01	28	<0.01	26	<1	<1	26	1.22	1.31	124	-	0.4	<0.01	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	-	-
GDS SW1	**06 Mar 2025**		32.63	70.62	153.22	87.74	18.64	7.34	8.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**07 Mar 2025**		32.61	85.36	154.46	93.94	131.35	7.75	3.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**08 Mar 2025**		27.98	104.39	162.23	67.04	16.58	7.24	3.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**09 Mar 2025**		27.93	41.46	179.3	77.14	63.78	7.74	7.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**10 Mar 2025**		28	26.48	118.42	65.21	4.73	6.5	38.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**11 Mar 2025**		28	69.8	177.68	66.48	17.35	6.89	2.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**12 Mar 2025**		27	43.71	168.45	60.23	67.2	6.73	8.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**13 Mar 2025**		27	76.21	186.04	56.82	117.28	6.82	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**14 Mar 2025**	**No access to mine site**																																																	
GDS SW1	**15 Mar 2025**		29	24.14	164.82	78.38	37.14	6.82	43.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**16 Mar 2025**		27.35	22.33	163.21	66.73	34.35	6.48	36.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**17 Mar 2025**		36.65	43.98	160.72	81.21	67.69	6.78	3.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**18 Mar 2025**		33.76	89.91	170.64	108.04	139.73	8.13	4.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**19 Mar 2025**		31.3	88.12	204.59	88.35	135.57	7.02	4.01	0.04	32	0.07	18	<1	<1	18	1.11	1.27	131	-	0.2	0.07	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW1	**20 Mar 2025**		32.06	30.59	226.94	102.52	47.62	7.69	6.84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**21 Mar 2025**		27.90	48.02	215.03	69.46	73.88	7.43	4.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**22 Mar 2025**		28.01	35.22	167.00	80.20	54.18	7.34	14.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**23 Mar 2025**		30	54.31	185.01	84.41	83.56	6.85	2.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**24 Mar 2025**		30	35.65	184.12	96.35	54.92	6.94	3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**25 Mar 2025**		27	7.34	202	94.3	0.5	5.59	10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**26 Mar 2025**		26	8.37	227	105.6	0.4	5.81	12.2	0.02	10	0.03	9	<1	<1	9	0.47	0.54	60	-	0.2	0.03	<0.01	0.2	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GDS SW1	**27 Mar 2025**		30	7.31	188	98.5	0.7	6.11	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**28 Mar 2025**	**EC Error**	27	8.15	205	103.8		5.97	21.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**29 Mar 2025**		27	9.39	224	120.6	0.4	5.85	11.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**30 Mar 2025**		26	6.77	220	85.9	0.2	6.14	21.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**31 Mar 2025**		28.73	41	183	95.5	62	6.44	6.4	0.04	17	0.1	10	<1	<1	10	0.64	0.71	72	-	0.4	0.1	<0.01	0.5	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	-	-
GDS SW1	**01 Apr 2025**		26.56	21	178	71.2	32	5.85	27.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**02 Apr 2025**		33.11	14	141	97.9	21	6.37	39.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**03 Apr 2025**		34.15	36	108	80.6	55	7.37	46.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**04 Apr 2025**		27.54	57	140	196.3	88	7.01	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**05 Apr 2025**		27.99	68	138	197.6	15	7.18	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**06 Apr 2025**		26.79	71	161	149.9	19	7.05	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**07 Apr 2025**		31	6.73	147	91.1	0.4	7.72	23.3	<0.01	23	0.05	9	<1	<1	9	0.74	0.49	58	-	0.1	0.05	<0.01	0.2	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GDS SW1	**08 Apr 2025**		35	18.59	164.76	119.88	28.61	7.43	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**09 Apr 2025**		27	13.46	119.07	62.94	2.71	6.56	13.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**10 Apr 2025**		28	29.9	114.26	80.71	46	7	11.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**11 Apr 2025**		28	25.54	76.96	83.73	39.3	7.22	10.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**12 Apr 2025**		28	11.39	74.25	100.81	17.52	7.52	20.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**13 Apr 2025**		28	20.59	94.28	107.35	31.68	7.84	11.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW1	**14 Apr 2025**		29	14.9	125.76	112.86	22.94	7.16	10.05	0.04	12	0.04	11	<1	<1	11	0.53	0.49	63	-	0.3	0.04	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.005	0.004
GDS SW1	**15 Apr 2025**		27.68	17.93	79.71	69.81	27.59	7.25	11.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**29 Dec 2024**		33.1	13.3	212.4	70	2.5	5.8	6.9	<0.01	<1	0.01	3	<1	<1	3	0.12	0.09	18	-	0.1	0.01	<0.01	0.1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**20 Jan 2025**		33	9.5	167.5	91.6	14.7	6.1	5.7	<0.01	<1	<0.01	6	<1	<1	6	0.18	0.13	14	-	0.4	<0.01	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW2	**21 Jan 2025**		29.1	10.3	219	59.8	15.8	5.8	5.3																																									
GDS SW2	**22 Jan 2025**		28.58	9.46	228.98	63.48	14.56	5.51	5.41																																								
GDS SW2	**23 Jan 2025**		28.75	9.16	190.61	82.97	14.18	5.8	5.07																																								
GDS SW2	**24 Jan 2025**	**EC, TDS Error**	33.1		19.9	118.5		6.3	5.06																																								
GDS SW2	**25 Jan 2025**		32.14	8.51	166.92	119.78	13.1	6	5.2																																								
GDS SW2	**26 Jan 2025**		28.1	9.31	107.26	77.9	14.32	6.4	4.41																																								
GDS SW2	**27 Jan 2025**		34.2	6.7	150.5	100.7	1.3	5.6	6.3	<0.01	1	<0.01	<1	<1	<1	<1	0.08	0.09	14	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW2	**28 Jan 2025**	**DO error**	35.6	8.35	7.07		13.7	8.9	35.7																																								
GDS SW2	**29 Jan 2025**		29.1	99.9	222.2	99.9	11.9	5.9	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**30 Jan 2025**		47.7	2.1	172.7	81.5	29.6	6.2	8.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**31 Jan 2025**	**Temp. error**	-	1.3	238.4	112.8	2	6.2	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**01 Feb 2025**	**Temp. error**	-	9.1	62.2	99.4	18.6	5.5	19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**02 Feb 2025**	**Temp. error**	-	10.8	77.1	105	16.7	6.1	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**03 Feb 2025**	**Temp. error**	-	7.3	63.6	96	11.2	5.8	11.9	0.01	<1	<0.01	2	<1	<1	2	0.1	0.09	13	-	0.4	<0.01	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW2	**04 Feb 2025**	**

			Field														Inorganics	BTEX								TRH								TPH					Biological	Other	
			Temperature (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	DO % Saturation (Field)	Electrical Conductivity (Field)	pH (Field)	Turbidity (Field)	Total Phosphorus as P Organic Phosphate as PO4	Sulfate as SO4 - Turbidimetric (Filtered)	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Electrical Conductivity (lab)	% Ionic Balance	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	Salinity	Total Suspended Solids (Lab)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10 Fraction (F1)	C6-C10	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (sum)	C6-C9 Fraction	>C9-C16 Fraction	>C15-C28 Fraction	>C28-C36 Fraction	>C10-C36 Fraction (Sum)	Chlorophyll a	Kjeldahl	Kjeldahl (filtered)
			°C	mg/L	mV	%	µS/cm	-	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	µS/cm	%	mg/L	mg/L	mg/L	mg/L	ppt	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L
										0.01	1	0.01	1	1	1	1	0.01	0.01	1	0.01	0.1	0.01	0.01	0.1		5	0.005	1	2	2	2	2	2	1	20	20	100	100	100	100	100	20	50	100	50	50	0.001	0.001	0.001
Field ID	**Date**	**Sample Comments**																																										
GDS SW1	**20 Jan 2025**		33.9	17.8	201.8	88.9	27.4	6.3	39.6	<0.01	4	<0.01	6	<1	<1	6	0.29	0.13	31	-	0.4	<0.01	<0.01	0.4	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GDS SW1	**21 Jan 2025**		29.2	18.86	228.5	68.8	29	5.9	14																																			
GDS SW1	**22 Jan 2025**		31.7	38.13	176.04	90.92	28.66	6.6	9.48																																			
GDS SW1	**23 Jan 2025**		29.2	46.65	170.8	82.77	71.76	6.7	7.23																																			
GDS SW1	**24 Jan 2025**	**TDS, EC Error**	33.8		18.94	105		6.9	8.15																																			
GDS SW1	**25 Jan 2025**	**Temp error**		24.3	127.73	112.9	37.4	6.7	16.25																																			
GDS SW1	**26 Jan 2025**		28.4	27.4	110.09	78.6	42.2	6.6	14.83																																			
GDS SW1	**27 Jan 2025**	**EC Error**	33.3	18.7		99	28.7	-	26.6	0.02	2	<0.01	5	<1	<1	5	0.23	0.22	31	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
GDS SW2	**23 Mar 2025**		30	10.47	106.21	85.38	16.12	6.13	2.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**24 Mar 2025**		30	12.29	113.35	86.84	18.91	6.44	2.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**25 Mar 2025**	**EC Error**	27	5.86	127	75		5.26	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**26 Mar 2025**	**EC Error**	26	14.6	143	185.1		5.34	4.6	0.01	1	<0.01	1	<1	<1	1	0.12	0.09	15	-	0.1	<0.01	<0.01	0.1	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GDS SW2	**27 Mar 2025**	**EC Error**	30	5.86	162	77.8		5.15	31.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**28 Mar 2025**	**EC Error**	27	7.43	207	94.5		5.78	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**29 Mar 2025**	**EC Error**	26	6.95	128	87.1		6.36	9.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**30 Mar 2025**	**EC Error**	26	8.57	187	108.5		5.77	8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**31 Mar 2025**	**EC Error**	28.55	0	115	73.9		6.16	4.1	0.02	<1	<0.01	3	<1	<1	3	0.12	0.09	15	-	0.1	<0.01	<0.01	0.1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW2	**01 Apr 2025**	**EC Error**	26.23	0	235	70.1		5.19	26.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**02 Apr 2025**	**EC Error**	30.77	0	162	71.1		6.02	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**03 Apr 2025**	**EC Error**	29.14	0	149	96.4		6.83	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**04 Apr 2025**		29.33	5	150	73.6	7	7.15	10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**05 Apr 2025**		28.89	1	160	64	2	7.02	10.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**06 Apr 2025**		27.26	1	177	115.2	2	6.84	8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**07 Apr 2025**	**EC Error**	29	6.65	199	87.6		6.72	2.1	<0.01	<1	<0.01	2	<1	<1	2	0.1	0.09	13	-	<0.1	<0.01	<0.01	<0.1	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GDS SW2	**08 Apr 2025**		32	4.97	145.89	105.75	7.66	6.41	11.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**09 Apr 2025**		27	4.64	77.26	82.35	7.8	6.16	10.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**10 Apr 2025**		27	5.12	90.23	87.44	7.91	6.31	10.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**11 Apr 2025**		27	5.78	50.14	82.92	8.89	6.24	10.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**12 Apr 2025**		28	3.63	55.44	95.86	5.59	6.42	10.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**13 Apr 2025**		29	4.63	104.52	105.15	7.13	7.46	11.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW2	**14 Apr 2025**		29	4.59	61.51	108.47	7.7	7.69	11.21	0.02	<1	<0.01	1	<1	<1	1	0.24	0.09	16	-	0.1	<0.01	<0.01	0.1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	0.001
GDS SW2	**15 Apr 2025**		28.07	3.97	81.99	78.8	6.1	6.28	10.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**17 Dec 2024**		32.6	100.6	-52.9	99.8	149.8	6.7	3.9	0.02	6	<0.01	6	<1	<1	6	0.86	0.83	107	-	0.4	<0.01	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**29 Dec 2024**	**Temp. error**	-	10.9	239.1	113.4	16.4	7.3	6.9	0.02	1	<0.01	4	<1	<1	4	0.3	0.31	40	-	0.2	<0.01	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**13 Jan 2025**		31	24.3	169.2	86	37.1	6.5	6.3	0.02	<1	<0.01	6	<1	<1	6	0.2	0.13	21	-	<0.1	<0.01	<0.01	<0.1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**20 Jan 2025**		30.3	14.4	202.6	94.4	22.1	6.3	11.2	<0.01	<1	<0.01	10	<1	<1	10	0.31	0.13	24	-	0.4	<0.01	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW5	**21 Jan 2025**		32.1	18.4	175.5	96.2	28.4	6.5	7.4																																			
GDS SW5	**22 Jan 2025**		30.2	20.03	198.66	97.2	16.07	5.8	6.32																																			
GDS SW5	**23 Jan 2025**		31.1	21.92	173.59	93.4	33.8	6.1	5.65																																			
GDS SW5	**24 Jan 2025**		34.3		76.37	99.8		6.4	6.22																																			
GDS SW5	**25 Jan 2025**		30.4	2.5	147.68	97.8	3.8	6.4	4.92																																			
GDS SW5	**26 Jan 2025**		29.8	15.47	107.7	93.66	23.7	6.2	6.41	0.05	1	<0.01	3	<1	<1	3	0.16	0.13	22	-	0.2	<0.01	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW5	**27 Jan 2025**		33	10.5	148.1	94.3	16.1	5.8	19.8																																			
GDS SW5	**28 Jan 2025**		33.5	15.01	9.9		23.1	6.2	25.4																																			
GDS SW5	**29 Jan 2025**		-	11	261	96.7	38.4	5.7	11.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**30 Jan 2025**		29.6	2.1	250.4	94.7	33.6	6	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**31 Jan 2025**	**Temp. error**	-	11.6	250.9	86.9	17.9	6.6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**01 Feb 2025**	**Temp. & EC error**	-	-	190	105.3	-	6	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**02 Feb 2025**	**Temp. error**	-	154.4	142.7	92.5	23.8	5.9	11.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**03 Feb 2025**	**Temp. error**	-	2.6	46	89	4	6.3	6.1	<0.01	<1	<0.01	5	<1	<1	5	0.21	0.17	27	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW5	**04 Feb 2025**	**Temp. error**	-	10	112.1	84.9	16	5.9	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**05 Feb 2025**	**Temp. error**	-	10.9	95	83.6	16.8	5.9	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**06 Feb 2025**	**Temp. error**	-	9.6	157	82.7	14.8	5.8	16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**07 Feb 2025**		30.2	12.4	126.9	86	19.2	5.8	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**08 Feb 2025**		28.8	1.3	39.1	81.2	2	6	10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**09 Feb 2025**		29	1.3	25.3	83.3	2.1	6	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**10 Feb 2025**		27.8	7.7	44.4	83.4	11.8	5.5	32.6	<0.01	<1	<0.01	2	<1	<1	2	0.1	0.04	12	-	0.4	<0.01	<0.01	0.4	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW5	**11 Feb 2025**	**No TDS, Redox, DO, Turb**	33				18.2	6.15																																				
GDS SW5	**12 Feb 2025**		29.4	15.9	87	89.8	25	6.5	7.6	<0.01	2	0.02	3	<1	<1	3	0.19	0.13	24	-	<0.1	0.02	<0.01	<0.1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW5	**13 Feb 2025**		31	30	112	86	46	6	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**14 Feb 2025**	**EC, TDS Error**	-		132	87		6	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**15 Feb 2025**	**EC, TDS Error**	28		169	77		6	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**16 Feb 2025**	**EC, TDS Error**	28		155	88		6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**17 Feb 2025**		30.5	14.2	149.1	87.1	21.9	6.5	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**18 Feb 2025**		31.2	17.3	127.1	88.8	26.7	6.4	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**19 Feb 2025**		31.6	16.7	149	86.9	25.8	6.2	11	0.19	1	<0.01	5	<1	<1	5	0.23	0.17	27	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW5	**20 Feb 2025**		32.1	4	130.8	94.1	35.6	6.6	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**21 Feb 2025**		32	20.65	138.85	83.43	31.77	6.53	7.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**22 Feb 2025**		31	20.73	151.65	88.53	31.89	6.6	11.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**23 Feb 2025**		28	17.8	121.43	86.15	27.37	6.5	9.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**24 Feb 2025**		28	15.67	169.47	82.29	24.12	6.47	11.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**25 Feb 2025**		28	14.75	174.18	78.74	22.69	6.6	11.64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**26 Feb 2025**		30	15.1	200.65	92.07	23.24	6.6	8.37	0.02	1	<0.01	2	<1	<1	2	0.14	0.13	22	-	0.6	<0.01	<0.01	0.6	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GDS SW5	**27 Feb 2025**		32	21.45	197.57	84.11	33.1	6.49	7.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**28 Feb 2025**		32	21.45	197.57	84.11	33.1	6.49	7.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**01 Mar 2025**		29	20.09	182.62	81.68	3.91	6.52	11.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**02 Mar 2025**		30	18.53	153.17	72.31	28.54	6.47	6.84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**03 Mar 2025**		30	23.03	174.13	67.65	35.43	6.11	5.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**04 Mar 2025**		30.59	23.28	134.21	83.24	35.81	6.5	6.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**05 Mar 2025**		31.74	24.88	136.83	79.69	38.29	6.6	6.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**06 Mar 2025**		32.31	13.58	133.47	89.21	2.89	6.6	5.73	<0.01	<1	<0.01	4	<1	<1	4	0.16	0.17	19	-	0.2	<0.01	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW5	**07 Mar 2025**		31.73	13.4	160.12	85.38	2.56	6.5	5.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**08 Mar 2025**		32.53	21	125.53	91.67	32.31	6.6	6.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**09 Mar 2025**		29.44	13.94	110.12	81.79	21.45	6.5	3.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**10 Mar 2025**		27.72	17.52	175.86	78.35	26.95	6.6	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**11 Mar 2025**		27	15.64	153.45	78.5	24.1	6.27	11.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**12 Mar 2025**		31	19.74	155.22	89.01	3.34	6.49	5.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**13 Mar 2025**		29	25.64	151.07	81.33	39.12	6.09	10.47	0.06	3	<0.01	5	<1	<1	5	0.25	0.13	26	-	0.2	<0.01	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**14 Mar 2025**		29	17.44	172.16	87.58	26.84	6.48	11.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**14 Mar 2025**	**No access to mine site**																																										
GDS SW5	**15 Mar 2025**		34	9.57	177.5	78.24	14.72	6.48	9.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**16 Mar 2025**		29.05	-	184.45	84.78	-	6.49	5.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**17 Mar 2025**		37.11	17.29	142.25	84.77	26.6	6.49	5.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**18 Mar 2025**		30.81	24.1	141.83	92.3	37.7	6.58	4.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**19 Mar 2025**		29.83	21.73	206.44	80.3	33.41	6.6	5.56	<0.01	2	<0.01	3	<1	<1	3	0.19	0.22	22	-	0.2	<0.01	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW5	**20 Mar 2025**		30.26	21.19	176.48	84.96	32.59	6.52	8.68																																			
GDS SW5	**21 Mar 2025**		29.73	18.10	172.59	76.96	27.84	6.46	5.43																																			
GDS SW5	**22 Mar 2025**		28.81	17.88	173.69	80.38	27.51	6.28	5.02																																			
GDS SW5	**23 Mar 2025**		30	17.89	146.04	90.03	27.52	6.49	4.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**24 Mar 2025**		30	20.45	133.08	90.06	31.46	6.47	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**25 Mar 2025**		27	8.23	173	105.9	0.1	5.92	9.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**26 Mar 2025**	**EC error**	28	9.81	150	127.5		5.96	10.8	0.02	1	<0.01	3	<1	<1	3	0.19	0.13	25	-	0.3	<0.01	<0.01	0.3	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GDS SW5	**27 Mar 2025**	**EC error**	28	6.04	231	78.7		5.62	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**28 Mar 2025**	**EC error**	29	10.74	237	141.1		5.62	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**29 Mar 2025**	**EC error**	27	7.54	256	96.4		5.91	9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**30 Mar 2025**	**EC error**	27	4.68	196	59.6		6.34	11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GDS SW5	**31 Mar 2025**		27.84	1	185	77.2	1	5.53	9.4	0.02	1	<0.01	3	<1	<1	3	0.16	0.13	19	-	0.2	<0.01	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GDS SW5	**01 Apr 2025**	**E

			Field														Inorganics	BTEX								TRH									TPH					Biological	Other	
			Temperature (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	DO % Saturation (Field)	Electrical Conductivity (Field)	pH (Field)	Turbidity (Field)	Total Phosphorus as P Organic Phosphate as PO4	Sulfate as SO4 - Turbidimetric (Filtered)	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total) as CaCO3	Cations Total	Cations Total	Electrical Conductivity (lab)	% Ionic Balance	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	Salinity	Total Suspended Solids (lab)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10 Fraction (F1)	C6-C10	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (sum)	C6-C9 Fraction	>C9-C14 Fraction	>C15-C28 Fraction	>C23-C36 Fraction	>C10-C36 Fraction (Sum)	Chlorophyll a	Cobalt-sum	Cobalt-sum (filtered)
			°C	mg/L	mV	%	µS/cm	-	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	µS/cm	%	mg/L	mg/L	mg/L	mg/L	ppt	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L
										0.01	1	0.01	1	1	1	1	0.01	0.01	1	0.01	0.1	0.01	0.01	0.1		5	0.005	1	2	2	2	2	2	1	20	20	100	100	100	100	100	20	50	100	50	50	0.001	0.001	0.001
Field ID	**Date**	**Sample Comments**																																												
GDS SW1	**20 Jan 2025**		33.9	17.8	201.8	88.9	27.4	6.3	39.6	<0.01	4	<0.01	6	<1	<1	6	0.29	0.13	31	-	0.4	<0.01	<0.01	0.4	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GDS SW1	**21 Jan 2025**		29.2	18.86	228.5	68.8	29	5.9	14																																						
GDS SW1	**22 Jan 2025**		31.7	38.13	176.04	90.92	28.66	6.6	9.48																																						
GDS SW1	**23 Jan 2025**		29.2	46.65	170.8	82.77	71.76	6.7	7.23																																						
GDS SW1	**24 Jan 2025**	**TDS, EC Error**	33.8		18.94	105		6.9	8.15																																						
GDS SW1	**25 Jan 2025**	**Temp error**		24.3	127.73	112.9	37.4	6.7	16.25																																						
GDS SW1	**26 Jan 2025**		28.4	27.4	110.09	78.6	42.2	6.6	14.83																																						
GDS SW1	**27 Jan 2025**	**EC Error**	33.3	18.7		99	28.7	-	26.6	0.02	2	<0.01	5	<1	<1	5	0.23	0.22	31	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
GUS SW4	**16 Feb 2025**	**EC, TDS error**	28		131	60		6	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**17 Feb 2025**	**EC, TDS error**	32.7		151.8	88.4		6.4	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**18 Feb 2025**		35.3	15.5	129.5	95.3	24	6.3	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**19 Feb 2025**		31.9	18.2	181.1	68.2	28.1	5.5	5.1	1.04	<1	<0.01	4	<1	<1	4	0.16	0.17	21	-	0.4	<0.01	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GUS SW4	**20 Feb 2025**		34.6	11.7	155.6	88.6	17.9	6.1	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**21 Feb 2025**		34	19.73	157.59	87.93	3.36	6.67	11.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**22 Feb 2025**		34	16.93	152.43	91.6	26.6	6.59	8.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**23 Feb 2025**		29	14.85	133.25	86.74	22.84	7.31	8.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**24 Feb 2025**		28	12	98.86	74.06	18.48	6.78	8.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**25 Feb 2025**		27	11.91	148.41	75.19	18.32	7.16	6.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**26 Feb 2025**		34	58.67	210.92	93.18	9.31	7.22	7.25	<0.01	1	<0.01	2	<1	<1	2	0.12	0.09	17	-	0.3	<0.01	<0.01	0.3	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GUS SW4	**27 Feb 2025**		31	12.43	176.6	77.56	19.13	6.77	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**28 Feb 2025**		27	10.62	148.14	72.35	16.34	6.91	6.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**01 Mar 2025**		28	10.35	168.56	56.3	15.94	7.02	4.51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**02 Mar 2025**		29	12.52	164.98	52.34	19.27	7.13	4.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**03 Mar 2025**		30.52	22.63	127.6	61.26	34.82	7.2	6.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**04 Mar 2025**		31.25	23.41	143.53	60.42	36.2	6.97	6.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**05 Mar 2025**		36.86	18.66	115.85	91.14	28.65	7.08	8.61	<0.01	<1	<0.01	3	<1	<1	3	0.12	0.17	18	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GUS SW4	**06 Mar 2025**		32.28	11.44	158.73	83.87	17.59	7.02	5.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**07 Mar 2025**		33.27	20.1	120	93.84	3.92	7.14	6.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**08 Mar 2025**		27.78	13.42	143.28	59.94	2.64	7.59	5.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**09 Mar 2025**		27.54	11.29	170.11	79.51	17.48	7.82	9.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**10 Mar 2025**		27	9.7	92.97	70.5	14.92	6.71	4.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**11 Mar 2025**		28	13.2	159.29	47.8	2.3	6.39	2.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**12 Mar 2025**		27	13.85	155.06	64.23	21.33	6.84	3.81	0.04	3	<0.01	5	<1	<1	5	0.25	0.13	18	-	0.5	<0.01	<0.01	0.5	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**13 Mar 2025**		27	12.85	156.35	64.9	19.78	7.25	4.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**14 Mar 2025**	**No access to mine site**																																														
GUS SW4	**15 Mar 2025**		27	4.79	146.16	86.22	7.42	7.01	8.51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**16 Mar 2025**		26.67	6.8	153.23	74.88	1.46	6.52	5.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**17 Mar 2025**		34.1	10.45	83.8	92.25	15.98	7.23	3.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**18 Mar 2025**		32.82	20.09	152.08	96.07	3.92	8.07	3.87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**19 Mar 2025**		30.47	17.93	178.65	85.21	27.58	7.45	4.3	0.02	1	<0.01	3	<1	<1	3	0.14	0.13	18	-	0.2	<0.01	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GUS SW4	**20 Mar 2025**		30.13	11.35	216.13	96.66	17.53	7.68	3.39																																					
GUS SW4	**21 Mar 2025**		28.09	12.96	202.58	55.21	19.94	6.85	2.60																																					
GUS SW4	**22 Mar 2025**		29.44	14.76	153.59	81.29	22.78	7.12	6.13																																					
GUS SW4	**23 Mar 2025**		29	16.9	91.98	84.06	26	6.26	2.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**24 Mar 2025**		29	14.69	103.72	92.63	22.53	6.96	2.64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**25 Mar 2025**	**EC error**	28	5.77	157	74.6		5.45	9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**26 Mar 2025**	**EC error**	26	7.64	142	96.2		5.99	8.3	0.01	<1	<0.01	3	<1	<1	3	0.14	0.13	20	-	0.2	<0.01	<0.01	0.2	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GUS SW4	**27 Mar 2025**	**EC error**	30	7.28	150	96.9		5.75	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**28 Mar 2025**	**EC error**	26	6.41	209	80.6		6.03	21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**29 Mar 2025**	**EC error**	27	5.38	145	69.3		5.83	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**30 Mar 2025**	**EC error**	26	6.17	198	77.8		6.32	19.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**31 Mar 2025**	**EC, TDS error**	28.38		178	87.6		6.32	5	0.03	<1	<0.01	2	<1	<1	2	0.1	0.09	17	-	8.9	<0.01	<0.01	8.9	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GUS SW4	**01 Apr 2025**	**EC, TDS error**	26.55		202	67.9		5.54	22.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**02 Apr 2025**	**EC, TDS error**	30.29		140	76.2		6.41	8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**03 Apr 2025**	**EC, TDS error**	31.41		141	93.2		7.45	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**04 Apr 2025**		27.79	2	148	170.4	4	6.83	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**05 Apr 2025**		28.1	4	127	54.8	5	7.39	2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**06 Apr 2025**		27.44	2	164	49.4	4	7.03	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**07 Apr 2025**	**EC error**	29	7.59	153	100.2		7.58	4.5	<0.01	1	<0.01	3	<1	<1	3	0.16	0.09	20	-	<0.1	<0.01	<0.01	<0.1	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GUS SW4	**08 Apr 2025**		32	6.92	135.01	108.29	1.63	6.77	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**09 Apr 2025**		27	6.72	77.92	81.25	1.34	6.38	10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**10 Apr 2025**		28	9.61	38.3	73.73	14.79	6.54	10.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**11 Apr 2025**		28	8.54	117.07	73.71	13.14	7	10.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**12 Apr 2025**		27	4.05	56.18	101.61	6.23	7.24	15.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**13 Apr 2025**		29	5.86	95.65	88.16	9.2	7.6	10.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW4	**14 Apr 2025**		29	5.75	41.79	108.09	8.85	6.85	15.39	0.02	<1	<0.01	2	<1	<1	2	0.1	0.13	18	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	0.002
GUS SW4	**15 Apr 2025**		28.27	5.68	108.18	70.38	8.74	7.28	10.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**20 Jan 2025**		30.6	9	186.5	82.5	13.8	6.1	195.9	0.04	<1	<0.01	3	<1	<1	3	0.14	0.09	14	-	1.2	<0.01	<0.01	1.2	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.009	-	-
GUS SW7	**27 Jan 2025**	**Probe error**	-	-	-	-	-	-	-	0.03	<1	<0.01	2	<1	<1	2	0.12	0.17	15	-	0.5	<0.01	<0.01	0.5	-	146	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
GUS SW7	**31 Jan 2025**	**Temp. error**	-	8.32	171.5	99.65	12.8	5.9	35.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**01 Feb 2025**	**Temp. error**	-	10.4	164.9	108.9	63.3	6.9	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**02 Feb 2025**	**Temp. error**	-	11.5	105.8	82.2	18.1	5.6	26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**03 Feb 2025**	**Temp. error**	-	16.5	35.9	65	25.4	5.6	23	0.11	<1	<0.01	2	<1	<1	2	0.15	0.13	19	-	0.9	<0.01	<0.01	0.9	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GUS SW7	**04 Feb 2025**	**Temp. error**	-	7.6	79.6	75.2	11.6	5.4	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**05 Feb 2025**	**Temp. error**	-	7.3	79	83.6	11.2	5.8	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**06 Feb 2025**	**Temp. error**	-	7.9	132	77.6	12	5.6	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**07 Feb 2025**		33.2	8.6	22.2	83.4	13.2	5.9	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**08 Feb 2025**		28.6	8.2	47.4	69.8	12.7	5.3	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**09 Feb 2025**		31.1	9	46.6	78.8	14.1	5.6	16.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**10 Feb 2025**		29.9	1	22.7	84.5	1.5	5.7	26.5	0.03	<1	<0.01	2	<1	<1	2	0.12	0.09	15	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GUS SW7	**11 Feb 2025**	**No access**																																													
GUS SW7	**12 Feb 2025**	**EC, TDS error**	30.5		51.7	81.7		6.9	7.4	<0.01	<1	<0.01	2	<1	<1	2	0.12	0.09	16	-	0.4	<0.01	<0.01	0.4	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GUS SW7	**13 Feb 2025**	**EC, TDS error**	29		97	83		6	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**14 Feb 2025**		29	13	146	92	33	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**15 Feb 2025**		28	9	123	84	14	7	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**16 Feb 2025**		28	6	122	83	1	7	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**17 Feb 2025**		35.9	8.8	145.6	78.2	13.6	6.9	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**18 Feb 2025**		35.5	8.4	102.9	85.4	13	6.1	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**19 Feb 2025**	**EC, TDS error**	32.8		181.4	84.4		5.6	7.1	0.82	<1	<0.01	3	<1	<1	3	0.14	0.09	17	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GUS SW7	**20 Feb 2025**		33.7	7.4	147.2	104.2	11.4	6.7	8.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**21 Feb 2025**	**No access**																																												
GUS SW7	**22 Feb 2025**		37	18.18	139.72	80.54	27.96	6.17	16.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**23 Feb 2025**		30	10.72	160.05	87.63	16.4	7.52	5.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**24 Feb 2025**		28	5.08	109.83	85.2	7.82	6.2	25.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**25 Feb 2025**		27	12.1	193.49	84.04	18.64	7.42	7.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**26 Feb 2025**		34	11.63	198.36	87.49	17.9	7.14	13.69	0.1	<1	<0.01	<1	<1	<1	<1	0.06	0.09	14	-	0.4	<0.01	<0.01	0.4	-	8	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
GUS SW7	**27 Feb 2025**		35	11.96	185.05	89.9	18.41	6.24	6.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**28 Feb 2025**		28	9.42	170.25	79.92	14.5	6.09	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**01 Mar 2025**		28	7.68	168.08	77.15	11.82	6.32	5.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**02 Mar 2025**		29	8.26	181.94	73.14	12.72	6.09	5.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**03 Mar 2025**		30.77	13.1	160.27	83.47	19.89	7.55	5.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**04 Mar 2025**		30.58	11.67	147.27	73.63	17.92	6.27	21.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GUS SW7	**05 Mar 2025**	**Temp. error**	-	9.8	120.43	86.67	15.8	7.1	9.81	0.01	<1	<0.01	2	<1	<1	2	0.12	0.09	13	-	0.2	<0.01	<0.01	0.2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-
GUS SW7	**06 Mar 2025**		32.33	8.43	156.99	89.83	13.1	7.3	5.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			Field							Inorganics	BTEX								TRH							TPH					Biological	Other	
			Temperature (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	DO % Saturation (Field)	Electrical Conductivity (Field)	pH (Field)	Turbidity (Field)	Total Phosphorus as P (Organic Phosphate as P)	Sulfate as SO4 - Turbidimetric (Filtered)	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Electrical Conductivity (Lab)	% Ionic Balance	Hydroxide Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	Salinity	Total Suspended Solids (Lab)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10 Fraction (F1)	C6-C10	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (sum)	C6-C9 Fraction	>C9-C16 Fraction	>C15-C28 Fraction	>C28-C36 Fraction	C10-C36 Fraction (Sum)	Chlorophyll a	Cobalt-dissolved	Cobalt-dissolved (filtered)
			°C	mg/L	mV	%	µS/cm	-	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	µS/cm	%	mg/L	mg/L	mg/L	mg/L	ppt	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
										0.01	1	0.01	1	1	1	1	0.01	0.01	1	0.01	0.1	0.01	0.01	0.1	-	5	0.005	1	2	2	2	2	2	1	20	20	100	100	100	100	100	20	50	100	50	50	0.001	0.001	0.001
Field ID	**Date**	**Sample Comments**																																															
GDS SW1	**20 Jan 2025**		33.9	17.8	201.8	88.9	27.4	6.3	39.6	<0.01	4	<0.01	6	<1	<1	6	0.29	0.13	31	-	0.4	<0.01	<0.01	0.4	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GDS SW1	**21 Jan 2025**		29.2	18.86	228.5	68.8	29	5.9	14																																									
GDS SW1	**22 Jan 2025**		31.7	38.13	176.04	90.92	28.66	6.6	9.48																																									
GDS SW1	**23 Jan 2025**		29.2	46.65	170.8	82.77	71.76	6.7	7.23																																									
GDS SW1	**24 Jan 2025**	**TDS, EC Error**	33.8		18.94	105		6.9	8.15																																									
GDS SW1	**25 Jan 2025**	**Temp error**		24.3	127.73	112.9	37.4	6.7	16.25																																									
GDS SW1	**26 Jan 2025**		28.4	27.4	110.09	78.6	42.2	6.6	14.83																																									
GDS SW1	**27 Jan 2025**	**EC Error**	33.3	18.7		99	28.7	-	26.6	0.02	2	<0.01	5	<1	<1	5	0.23	0.22	31	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
HANG GONG	**24 Jan 2025**		30.1	12.16	116.4	98	18.7	6.2	7.3																																									
HANG GONG	**25 Jan 2025**		30.1	10.34	139.85	99.8	15.9	6.2	7.78																																									
HANG GONG	**26 Jan 2025**		29.1	10.8	159.2	84.77	16.6	5.8	8.4																																									
HANG GONG	**27 Jan 2025**	**EC error**	29.4	10	-	94.7	15.4	-	37.9																																									
HANG GONG	**28 Jan 2025**		33.9	9.74	241.2		14.9	6	27.6																																									
HANG GONG	**29 Jan 2025**		27.6	11	263.9	100.8	17	5.7	15.3																																									
HANG GONG	**31 Jan 2025**	**Temp. error**	-	11	241.8	84.7	16.9	6.4	10.7																																									
HANG GONG	**01 Feb 2025**	**Temp. & EC error**	-	12.1	104.4	87.9	-	4.8	37.2																																									
HANG GONG	**02 Feb 2025**	**Temp. error**	-	13.6	60.5	89.2	21	5.9	16.8																																									
HANG GONG	**03 Feb 2025**	**Temp. error**	-	12.8	38	89	19.8	5.9	17.6																																									
HANG GONG	**04 Feb 2025**	**Temp. error**	-	11	198.4	78.3	16	5.9	49.4																																									
HANG GONG	**05 Feb 2025**	**Temp. error**	-	9.9	132	80.8	15.3	5.7	28																																									
HANG GONG	**06 Feb 2025**	**Temp. error**	-	8.1	93	82.2	12.5	5.9	23.4																																									
HANG GONG	**07 Feb 2025**		30	11.8	78.5	77.2	18.2	5.9	15.9																																									
HANG GONG	**08 Feb 2025**		28.7	12.9	115.8	80.3	19.9	6.7	11.8																																									
HANG GONG	**09 Feb 2025**		29.3	13.1	77.4	79.3	2.2	6	16.5																																									
HANG GONG	**10 Feb 2025**		28.2	8.9	48.3	80.8	13.7	5.6	25.1																																									
HANG GONG	**12 Feb 2025**	**EC, TDS error**	28.6		131.6	79.6		6.6	9																																									
HANG GONG	**13 Feb 2025**	**EC, TDS error**	29		89	84		6	16																																									
HANG GONG	**14 Feb 2025**	**EC, TDS error**	28		129	80		6	9																																									
HANG GONG	**15 Feb 2025**	**EC, TDS error**	27		154	76		6	7																																									
HANG GONG	**16 Feb 2025**	**EC, TDS error**	28		136	75		6	7																																									
HANG GONG	**17 Feb 2025**	**EC, TDS error**	30.7		168	87.1		6.5	7.5																																									
HANG GONG	**18 Feb 2025**		30.9	18.2	152	85	28	6.1	7.1																																									
HANG GONG	**19 Feb 2025**		30.6	17.7	185	78.2	27.2	5.8	5.8																																									
HANG GONG	**20 Feb 2025**		32.2	12.5	145.2	80.8	19.3	6.5	6.8																																									
HANG GONG	**21 Feb 2025**		33	16.16	154.2	83.43	24.85	6.32	8																																									
HANG GONG	**22 Feb 2025**		30	20.65	161.33	84.8	31.77	6.5	24.69																																									
HANG GONG	**23 Feb 2025**		28	18.59	132.81	80.9	28.6	6.61	11.93																																									
HANG GONG	**24 Feb 2025**		28	14.04	136.71	77.62	21.61	6.99	18.03																																									
HANG GONG	**25 Feb 2025**		27	13.65	168.64	79.1	2.99	6.71	18.25																																									
HANG GONG	**26 Feb 2025**		32	16.8	188.37	92.93	25.86	7.35	5.21																																									
HANG GONG	**27 Feb 2025**		30	10.6	174.06	78.96	16.24	6.52	7.1																																									
HANG GONG	**28 Feb 2025**		27	12.97	157.94	73.66	19.95	6.44	17.03																																									
HANG GONG	**01 Mar 2025**		29	10.06	186.01	69.32	15.5	6.43	7.51																																									
HANG GONG	**02 Mar 2025**		30	10.44	172.2	65.45	16.8	6.34	6.55																																									
HANG GONG	**03 Mar 2025**		30.48	21.54	140.75	90.24	33.13	7.79	8.06																																									
HANG GONG	**04 Mar 2025**		31.66	21.17	148.75	74.74	32.57	7.1	6.89																																									
HANG GONG	**05 Mar 2025**		32.51	13.05	126.34	90.73	2.8	6.85	5.49																																									
HANG GONG	**06 Mar 2025**		31.36	11.82	168.89	87.69	18.18	7.12	5.92																																									
HANG GONG	**07 Mar 2025**		32.22	20.44	129.85	88.17	31.42	6.93	5.87																																									
HANG GONG	**08 Mar 2025**		28.73	13.71	110.33	71.05	21.11	7.1	3.67																																									
HANG GONG	**09 Mar 2025**		27.37	13.48	173.87	79.84	2.74	7.25	28.58																																									
HANG GONG	**10 Mar 2025**		27	11.68	118.03	74.34	17.97	6.33	17.17																																									
HANG GONG	**11 Mar 2025**		28	12.63	159.1	74.79	19.43	6.28	4.67																																									
HANG GONG	**12 Mar 2025**		28	15.88	168.09	73.46	24.43	6.5	25.54																																									
HANG GONG	**13 Mar 2025**		26	13.31	167.94	78.85	2.49	6.85	8.29																																									
HANG GONG	**14 Mar 2025**	**No access to mine site**																																															
HANG GONG	**15 Mar 2025**		27	9.49	161.36	79.58	14.61	6.7	11.37																																									
HANG GONG	**16 Mar 2025**		26.21	9.38	163.99	75.11	14.35	6.38	14.16																																									
HANG GONG	**17 Mar 2025**		30.59	11.01	113.57	90.36	16.94	6.64	4.96																																									
HANG GONG	**18 Mar 2025**		30.67	22.71	143.88	95.96	34.94	6.73	5.55																																									
HANG GONG	**19 Mar 2025**		30.58	17.05	161.74	82.54	26.23	6.7	6.37																																									
HANG GONG	**20 Mar 2025**		29.58	18.67	161.84	84.87	28.73	7.27	5.94																																									
HANG GONG	**21 Mar 2025**		29.45	17.33	169.73	75.93	26.86	6.88	5.43																																									
HANG GONG	**22 Mar 2025**		27.82	14.67	154.65	82.23	22.60	7.08	7.57																																									
HANG GONG	**23 Mar 2025**		28	12.95	91.29	82.62	19.93	6.34	3.69																																									
HANG GONG	**24 Mar 2025**		28	16.59	123.38	82.8	25.52	6.63	4.76																																									
HANG GONG	**25 Mar 2025**	**EC error**	27	6.24	189	79.5		5.95	6.9																																									
HANG GONG	**26 Mar 2025**	**EC error**	26	10.92	202	137.7		5.43	12.7																																									
HANG GONG	**27 Mar 2025**	**EC error**	28	8.49	194	110.1		6	5.1																																									
HANG GONG	**28 Mar 2025**	**EC error**	26	6.88	258	86.8		5.39	29.2																																									
HANG GONG	**29 Mar 2025**	**EC error**	27	9.48	203	121.8		5.86	7.8																																									
HANG GONG	**30 Mar 2025**	**EC error**	26	5.09	198	64.1		6.64	42.6																																									
HANG GONG	**31 Mar 2025**	**EC error**	27.87	0	206	91		5.99	5.2																																									
HANG GONG	**01 Apr 2025**	**EC error**	26.65	0	224	82.6		5.33	29.8																																									
HANG GONG	**02 Apr 2025**	**EC error**	29.47	0	173	77.8		6.16	10.1																																									
HANG GONG	**03 Apr 2025**	**EC error**	31.03	0	188	98.6		5.66	6.1																																									
HANG GONG	**04 Apr 2025**	**EC error**	28.94	0	157	200.9		6.92	8.3																																									
HANG GONG	**05 Apr 2025**	**EC error**	28.63	0	166	114.9		6.83	5.2																																									
HANG GONG	**06 Apr 2025**	**EC error**	27.81	0	200	58.1		6.42	7.5																																									
HANG GONG	**07 Apr 2025**	**EC error**	28	7.15	210	93.1		6.22	11.9																																									
HANG GONG	**08 Apr 2025**		30	8.02	251.45	102.03	12.34	6.39	18.14																																									
HANG GONG	**09 Apr 2025**		27	7.12	102.51	90.37	1.95	6.4	15.23																																									
HANG GONG	**10 Apr 2025**		28	8.25	79.21	92.12	12.72	6.56	16.86																																									
HANG GONG	**11 Apr 2025**		28	7.27	115.75	97.48	11.19	6.94	11.82																																									
HANG GONG	**12 Apr 2025**		26	4.61	90.46	97.02	7.6	6.94	20.38																																									
HANG GONG	**13 Apr 2025**		29	5.81	111.06	91.88	8.94	7.14	12.29																																									
HANG GONG	**14 Apr 2025**		28	7.33	82.27	99.27	11.27	7.44	14.94																																									
HANG GONG	**15 Apr 2025**		28.83	5.38	127.65	75.87	8.12	6.3	12.51																																									
MW01 C1	**30 Jul 2024**		25	0.08	105.9	111.6	131.2	8.8	4.3	0.03	19	0.35	38	<1	<1	38	1.3	1.32	146	-	0.4	0.35	<0.01	0.8	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
MW01 C1	**21 Aug 2024**		29	0.09	188.1	112.5	14.2	9	11.6	0.01	19	0.05	47	<1	<1	47	1.48	1.4	156	-	0.9	0.05	<0.01	1	-	6	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
MW01 C1	**29 Oct 2024**		35.3	0.1	166.4	139.9	164.1	9.3	33.7	0.08	15	<0.01	52	8	<1	60	1.68	1.51	168	-	2	<0.01	<0.01	2	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**25 Nov 2024**		34.7	0.1	125.3	133.4	158	9	33.2	0.03	12	<0.01	62	<1	<1	62	1.66	1.72	161	-	1.7	<0.01	<0.01	1.7	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**05 Dec 2024**		28.9	0.03	60.2	95.4	46.7	7.3	690	0.07	-	0.01	-	-	-	-	-	-	-	-	2.2	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**16 Dec 2024**		31.4	91.3	251.3	101.1	14.5	8.4	14.1	0.05	10	<0.01	60	<1	<1	60	1.58	1.35	152	-	1.6	<0.01	<0.01	1.6	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**06 Jan 2025**		30.2	79.7	301.3	91.7	122.6	8.1	23.7	0.04	11	<0.01	50	<1	<1	50	1.37	1.35	134	-	2	<0.01	<0.01	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**14 Jan 2025**		30.2	76.8	208.1	85.7	118.2	7.8	10.6	0.09	10	<0.01	49	<1	<1	49	1.3	1.07	133	-	1.7	<0.01	<0.01	1.7	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**20 Jan 2025**		29	77.1	278.5	88.1	119	7.8	7.4	0.02	10	0.02	48	<1	<1	48	1.31	1.03	124	-	1.7	0.02	<0.01	1.7	-	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.013	-	-
MW01 C1	**27 Jan 2025**		32.5	72.5	72	91.6	111.5	7.6	12.6	0.04	11	0.02	52	<1	<1	52	1.41	1.18	129	-	1.3	0.02	<0.01	1.3	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.007	-	-
MW01 C1	**31 Jan 2025**	**Temp. error**	-	98.3	306.8	111.8	151.2	7.6	12.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**01 Feb 2025**	**Temp. error**	-	89.3	244.9	109.6	137.5	7.4	9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**02 Feb 2025**	**Temp. error**	-	96.1	163	92	148.9	5.8	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**03 Feb 2025**	**Temp. error**	-	85.5	0.89	95.8	131.6	7.9	21.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**10 Feb 2025**		28.2	13.4	33.2	83.2	2.7	6.1	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**12 Feb 2025**	**EC, TDS error**	30.1		32.3	90.6		7.5	13.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**13 Feb 2025**		29.2	72.5	68.2	92.1	111.7	7.9	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**14 Feb 2025**		29	63	137	88	97	7	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**15 Feb 2025**	**EC, TDS error**	28		145	92		7	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**16 Feb 2025**		28	62	113	93	95	8	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**17 Feb 2025**		34.9	66.2	163.2	100.3	12.4	8.1	11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**18 Feb 2025**		34.1	65.2	170.6	96.5	1.6	7.8	98.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**21 Feb 2025**		32	70.67	158.5	97.22	18.73	8.48	16.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**22 Feb 2025**		35.46	76.19	92.65	97.5	117.24	8.46	13.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**23 Feb 2025**		34	71.18	151.03	93.89	19.51	8.15	13.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**24 Feb 2025**		29.76	67.17	158.59	88.27	13.65	7.95	18.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**25 Feb 2025**		30	8.08	205.98	75.97	12.43	7.79	6.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**26 Feb 2025**		31	72.28	179.3	90.68	111.13	7.8	18.72	0.41	10	0.01	33	<1	<1	33	0.98	0.9	106	-	1.2	0.01	<0.01	1.2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**27 Feb 2025**		30	58.54	180.12	85.45	9.8	7.69	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**28 Feb 2025**		30	61.34	210.66	85.44	94.22	7.87	15.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**01 Mar 2025**		31	51.28	177.51	85.29	78.89	7.86	13.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**02 Mar 2025**		31	48.81	187.93	89.37	75.32	8.1	12.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**03 Mar 2025**		32.32	64.25	181.53	87.82	98.79	8.1	11.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**04 Mar 2025**		32.83	61.87	172.55	97.28	95.18	8.3	8.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01 C1	**05 Mar 2025**		34.86	62.27	111.08	99.09

			Field														Inorganics	BTEX								TRH								TPH					Biological	Other	
			Temperature (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	DO % Saturation (Field)	Electrical Conductivity (Field)	pH (Field)	Turbidity (Field)	Total Phosphorus as P Organic Phosphate as PO4	Sulfate as SO4 - Turbidimetric (Filtered)	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total) as CaCO3	Cations Total	Cations Total	Electrical Conductivity (lab)	% Ionic Balance	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	Salinity	Total Suspended Solids (Lab)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10 Fraction (F1)	C6-C10	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (sum)	C6-C9 Fraction	>C9-C16 Fraction	>C15-C28 Fraction	>C28-C36 Fraction	>C10-C36 Fraction (Sum)	Chlorophyll a	Cadmium	Cadmium (filtered)
			^C	mg/L	mV	%	µS/cm	-	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	µS/cm	%	mg/L	mg/L	mg/L	mg/L	ppt	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L
										0.01	1	0.01	1	1	1	1	0.01	0.01	1	0.01	0.1	0.01	0.01	0.1		5	0.005	1	2	2	2	2	2	1	20	20	100	100	100	100	100	20	50	100	50	50	0.001	0.001	0.001
Field ID	Date	Sample Comments																																												
GDS SW1	20 Jan 2025		33.9	17.8	201.8	88.9	27.4	6.3	39.6	<0.01	4	<0.01	6	<1	<1	6	0.29	0.13	31	-	0.4	<0.01	<0.01	0.4	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GDS SW1	21 Jan 2025		29.2	18.86	228.5	68.8	29	5.9	14																																						
GDS SW1	22 Jan 2025		31.7	38.13	176.04	90.92	28.66	6.6	9.48																																						
GDS SW1	23 Jan 2025		29.2	46.65	170.8	82.77	71.76	6.7	7.23																																						
GDS SW1	24 Jan 2025	TDS, EC Error	33.8		18.94	105		6.9	8.15																																						
GDS SW1	25 Jan 2025	Temp error		24.3	127.73	112.9	37.4	6.7	16.25																																						
GDS SW1	26 Jan 2025		28.4	27.4	110.09	78.6	42.2	6.6	14.83																																						
GDS SW1	27 Jan 2025	EC Error	33.3	18.7		99	28.7	-	26.6	0.02	2	<0.01	5	<1	<1	5	0.23	0.22	31	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
MWD1 C1	05 Apr 2025		27.83	37	126	70.3	58	7.18	55.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C1	06 Apr 2025		28.74	38	152	60.1	59	7.36	53.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C1	07 Apr 2025		29	5.95	217	78.9	0.5	6.97	57.8	<0.01	8	<0.01	18	<1	<1	18	0.58	0.65	71	-	0.4	<0.01	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C1	08 Apr 2025		33	17.67	125.6	113.19	27.19	8.22	26.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C1	09 Apr 2025		29	18.13	106.17	101.97	27.83	7.73	22.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C1	10 Apr 2025		29	18.6	125.14	103.29	28.63	8.27	19.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	30 Jul 2024		24.7	0.08	105.9	133.8	146.9	10.1	73.4	0.2	7	<0.01	1	42	<1	44	1.25	1.04	152	-	2.7	<0.01	<0.01	2.7	-	29	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
MWD1 C2	21 Aug 2024	No field readings	-	-	-	-	-	-	-	0.01	6	<0.01	20	<1	<1	20	0.64	0.63	79	-	0.6	<0.01	<0.01	0.6	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
MWD1 C2	29 Oct 2024		34.1	0.1	160.6	208.9	161.8	9.9	68.4	0.1	5	<0.01	37	20	<1	57	1.47	1.31	152	-	3.6	<0.01	<0.01	3.6	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	25 Nov 2024		33.2	0.09	99	175.3	14.1	9.5	150.6	0.05	3	<0.01	56	<1	<1	56	1.41	1.4	144	-	2.4	<0.01	<0.01	2.4	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	16 Dec 2024		31.3	85.8	245.3	67.2	132.1	8.6	100.5	0.16	4	<0.01	57	<1	<1	57	1.45	1.26	144	-	4.3	<0.01	<0.01	4.3	-	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	06 Jan 2025		30.1	86.3	302.7	60.8	132.1	7.6	13.2	0.06	5	<0.01	59	<1	<1	59	1.71	1.2	143	-	2.7	<0.01	0.02	2.7	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	14 Jan 2025		30.9	86.3	207.9	65.6	132.8	7.5	6.4	0.07	3	0.03	58	<1	<1	58	1.42	0.92	144	-	2.3	0.03	<0.01	2.3	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	20 Jan 2025		29.7	83.1	277.7	74.7	127.9	7.6	10	0.04	3	0.28	56	<1	<1	56	1.38	0.99	137	-	2	0.25	0.03	2.3	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.005	-	-
MWD1 C2	27 Jan 2025		35	77.3	78.7	92.1	118.9	7.7	36.9	0.03	4	0.3	52	<1	<1	52	1.32	1.13	134	-	2	0.3	<0.01	2.3	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.011	-	-
MWD1 C2	31 Jan 2025	Temp. error	-	83.7	302.6	100.7	128.2	7.8	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	01 Feb 2025	Temp. error	-	83.9	239.5	112.5	129.1	8.2	33.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	02 Feb 2025	Temp. error	-	84.6	140.9	95.6	13.1	7.8	237.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	03 Feb 2025	Temp. error	-	82.2	9.8	93.6	126.5	8.3	83.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	10 Feb 2025		29.5	70.2	32.9	90.9	18	7.8	14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	12 Feb 2025	EC, TDS error	29.1		60	92.8		7.7	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	13 Feb 2025		26.7	72.4	69.9	92.1	111.4	8	29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	14 Feb 2025		29	65	129	79	11	7	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	15 Feb 2025	EC, TDS error	28		142	89		8	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	16 Feb 2025		29	60	110	90	89	8	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	17 Feb 2025		36.3	73.1	142.7	131.1	112.5	9	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	18 Feb 2025		32.6	66.3	148.3	125	12.1	9.3	34.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	21 Feb 2025	DO error	31	71.86	146.49		11.55	9.14	76.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	22 Feb 2025		35	79.6	69.07	120.15	122.45	9.21	40.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	23 Feb 2025		36	73.24	137.05	111.59	122.69	9.14	44.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	24 Feb 2025		30.12	63.17	149.48	75.13	97.19	8.91	50.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	25 Feb 2025		29	63.46	173.35	71.88	97.65	8.82	73.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	26 Feb 2025		31	69.64	155.63	91.04	17.62	9.12	52	0.09	6	<0.01	35	<1	<1	35	0.99	0.74	101	-	2	<0.01	<0.01	2	-	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	27 Feb 2025		31	57.22	159.99	88.25	88.7	9.12	47.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	28 Feb 2025		29	61.49	193.18	78.8	94.73	8.83	57.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	01 Mar 2025		30	57.98	161.3	81.14	89.2	8.72	50.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	02 Mar 2025		31	55.29	171.27	77.75	85.9	8.73	40.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	03 Mar 2025		31.37	61.23	189	77.43	94.21	8.47	39.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	04 Mar 2025		32.52	59.08	172.56	81.91	9.98	8.77	32.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	05 Mar 2025		33.92	61.39	96.32	94.74	94.46	8.7	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	10 Mar 2025		29	55.38	198.57	64.52	85.21	7.64	78.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	11 Mar 2025		29	57.21	155.13	70.05	88.2	7.82	56.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	12 Mar 2025		30	57.47	178.99	80.38	88.33	7.93	64.88	0.13	5	<0.01	38	<1	<1	38	1.03	0.83	91	-	1.7	<0.01	<0.01	1.7	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	13 Mar 2025		29	52.06	191.14	74.64	8.7	7.7	43.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	14 Mar 2025	No access to mine site																																														
MWD1 C2	15 Mar 2025		30	53.22	154.41	75.1	81.89	7.79	52.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	16 Mar 2025		28.5	50.4	137.35	75.9	77.59	7.82	33.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	17 Mar 2025		33.98	60.51	117.39	115.91	93.17	8.8	32.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	18 Mar 2025		33.25	53.9	163.09	110.76	83.14	8.46	75.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	19 Mar 2025		31.83	56.61	203.73	93.85	87.12	8.11	87.49	0.14	4	0.01	32	<1	<1	32	0.86	0.83	85	-	2.2	0.01	<0.01	2.2	-	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.044	-	-
MWD1 C2	20 Mar 2025		32.15	52.46	224.31	91.17	8.71	7.83	8.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	21 Mar 2025		28.96	53.34	216.33	87.26	81.92	8.06	32.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	23 Mar 2025		31	51.75	161.46	77.89	79.61	7.63	231.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	24 Mar 2025		30	53.47	142.92	86.41	82.27	7.85	43.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	25 Mar 2025		29	50	179.89	69.41	76.92	7.66	43.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	26 Mar 2025		28	5.23	166	67.5	0.6	5.98	212	0.04	7	0.04	28	<1	<1	28	0.85	0.71	85	-	1	0.04	<0.01	1	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	27 Mar 2025		31	5.21	173	70.6	0.7	6.81	204	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	28 Mar 2025		27	4.52	187	57.6	0.6	6.32	96.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	29 Mar 2025		27	7.94	197	102.2	0.6	6.32	82.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	30 Mar 2025		27	6.78	204	86.2	0.6	6.79	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	31 Mar 2025		28.97	39	182	73.5	61	6.58	80.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	01 Apr 2025		27.02	37	208	72.6	56	6.07	203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	02 Apr 2025		29.12	36	175	76.4	55	6.22	567	0.22	6	0.02	18	<1	<1	18	0.6	0.54	70	-	1.2	0.02	<0.01	1.2	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.034	-	-
MWD1 C2	03 Apr 2025		32.04	40	103	68.5	62	7.04	166	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	04 Apr 2025		27.78	37	113	61.1	56	7.03	135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	05 Apr 2025		27.24	37	144	58.4	57	6.94	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	06 Apr 2025		27.78	42	163	42.7	64	7.18	76.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	07 Apr 2025		29	5.52	183	72.6	0.5	7.42	69.9	0.08	6	0.02	28	<1	<1	28	0.8	0.59	72	-	1	0.02	<0.01	1	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	08 Apr 2025		32	17.39	141.71	106.93	26.76	8.22	66.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	09 Apr 2025		29	17.36	121.15	84.47	26.71	7.31	57.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C2	10 Apr 2025		29	18.62	122.44	94.14	28.66	7.91	54.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	30 Jul 2024		25.5	0.08	134.9	96.5	134.6	7.9	13.1	0.04	22	0.01	37	<1	<1	37	1.37	1.25	152	-	0.6	0.01	<0.01	0.6	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
MWD1 C3	21 Aug 2024	No field readings	-	-	-	-	-	-	-	0.1	9	<0.01	46	4	<1	50	1.38	1.27	152	-	2.4	<0.01	<0.01	2.4	-	16	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
MWD1 C3	29 Oct 2024		34.5	0.1	157.2	126.8	168.1	8.6	37.7	0.1	18	0.02	56	<1	<1	56	1.75	1.73	173	-	2.2	0.02	<0.01	2.2	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	25 Nov 2024		34.2	0.09	152.6	112.1	154	8.3	37.6	0.2	12	1.23	28	<1	<1	28	0.86	0.79	85	-	2.1	1.22	0.01	3.3	-	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	25 Nov 2024		-	-	-	-	-	-	-	0.01	16	<0.01	50	<1	<1	50	1.59	1.59	159	-	0.9	<0.01	<0.01	0.9	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	05 Dec 2024		31.1	0.02	103.6	108.2	41.7	7.1	53.5	0.06	-	0.08	-	-	-	-	-	-	-	-	1.7	-	-	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	16 Dec 2024		31.7	87.4	256	96.4	134.5	8.1	16.7	0.04	11	<0.01	54	<1	<1	54	1.5	1.43	149	-	1.1	<0.01	<0.01	1.1	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	06 Jan 2025		30.3	79.3	296.3	101	122.2	7.9	18.4	0.03	10	<0.01	47	<1	<1	47	1.32	1.31	133	-	1.5	<0.01	<0.01	1.5	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	14 Jan 2025		31	79.4	206.3	96.1	122.1	7.8	7.8	0.06	10	<0.01	48	<1	<1	48	1.31	1	131	-	1.3	<0.01	<0.01	1.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	20 Jan 2025		29.6	76.9	274.7	93.7	118.3	8.1	8.1	<0.01	10	<0.01	48	<1	<1	48	1.34	1.07	136	-	1.2	<0.01	<0.01	1.2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.006	-	-
MWD1 C3	21 Jan 2025		33.4	76.6	76.6	105.7	117.9	8.4	8.4																																						
MWD1 C3	22 Jan 2025		31.4	75.86	75.86	93.26	116.71	8.17	7.57																																						
MWD1 C3	23 Jan 2025		31.8	75.59	75.59	89.91	116.3	8	9.6																																						
MWD1 C3	24 Jan 2025		34.9			100.5		7.7	8.45																																						
MWD1 C3	25 Jan 2025		32.4	77.9	77.9	101.1	119.9	8	9.67																																						
MWD1 C3	26 Jan 2025		30.7	77.12	77.12	94.54	118.64	7.9	10.1																																						
MWD1 C3	27 Jan 2025	pH error	35	74.3		106.2	114.4		10	0.06	13	<0.01	42	<1	<1	42	1.28	1.26	128	-	1.5	<0.01	<0.01	1.5	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.009	-	-
MWD1 C3	28 Jan 2025		33.8	83.21	26.23		128.01	9	24.5																																						
MWD1 C3	31 Jan 2025	Temp. error	-	71.5	299.6	109.5	11	7.2	17.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	01 Feb 2025	Temp. error	-	86.6	243.8	105	133.2	8	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	02 Feb 2025	Temp. error	-	80.6	143.4	97.1	123.3	8.1	17.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	03 Feb 2025	Temp. error	-	82.1	23.6	93.1	126.3	8.3	18.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	04 Feb 2025	Temp. error	-	-	-	-	16	7

			Field												Inorganics	BTEX								TRH								TPH					Biological	Other	
			Temperature (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	DO % Saturation (Field)	Electrical Conductivity (Field)	pH (Field)	Turbidity (Field)	Total Phosphorus as P Organic Phosphate as PO4	Sulfate as SO4 - Turbidimetric (Filtered)	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total) as CaCO3	Cations Total	Anions Total	Electrical Conductivity (lab)	% Ionic Balance	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	Salinity	Total Suspended Solids (Lab)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10 Fraction (F1)	C6-C10	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (sum)	C6-C9 Fraction	>C9-C16 Fraction	>C15-C28 Fraction	>C28-C36 Fraction	>C10-C36 Fraction (Sum)	Chlorophyll a	Cobalt-sum	Cobalt-sum (filtered)
			°C	mg/L	mV	%	µS/cm	-	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	µS/cm	%	mg/L	mg/L	mg/L	mg/L	ppt	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L
										0.01	1	0.01	1	1	1	1	0.01	0.01	1	0.01	0.1	0.01	0.01	0.1		5	0.005	1	2	2	2	2	2	1	20	20	100	100	100	100	100	20	50	100	50	50	0.001	0.001	0.001
Field ID	**Date**	**Sample Comments**																																												
GDS SW1	**20 Jan 2025**		33.9	17.8	201.8	88.9	27.4	6.3	39.6	<0.01	4	<0.01	6	<1	<1	6	0.29	0.13	31	-	0.4	<0.01	<0.01	0.4	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GDS SW1	**21 Jan 2025**		29.2	18.86	228.5	68.8	29	5.9	14																																						
GDS SW1	**22 Jan 2025**		31.7	38.13	176.04	90.92	28.66	6.6	9.48																																						
GDS SW1	**23 Jan 2025**		29.2	46.65	170.8	82.77	71.76	6.7	7.23																																						
GDS SW1	**24 Jan 2025**	**TDS, EC Error**	33.8		18.94	105		6.9	8.15																																						
GDS SW1	**25 Jan 2025**	**Temp error**		24.3	127.73	112.9	37.4	6.7	16.25																																						
GDS SW1	**26 Jan 2025**		28.4	27.4	110.09	78.6	42.2	6.6	14.83																																						
GDS SW1	**27 Jan 2025**	**EC Error**	33.3	18.7	-	99	28.7	-	26.6	0.02	2	<0.01	5	<1	<1	5	0.23	0.22	31	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
MWD1 C3	**24 Mar 2025**		30	139.04	161.93	93.54	213.9	7.97	6.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**25 Mar 2025**		29	138.96	200.53	88.37	213.79	7.79	5.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**26 Mar 2025**		28	6.58	172	85.4	0.2	5.94	28.3	0.02	68	0.95	34	<1	<1	34	2.18	2.1	222	-	0.2	0.95	<0.01	1.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**27 Mar 2025**		30	6.13	167	81.6	0.2	6.96	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**28 Mar 2025**		28	5.91	184	76.4	0.19	6.49	39.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**29 Mar 2025**		28	6.52	198	84.9	0.19	6.37	40.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**30 Mar 2025**		28	6.49	193	83.8	0.18	6.99	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**31 Mar 2025**		29.71	123	181	90.4	19	6.68	41.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**01 Apr 2025**		26.8	15	201	56.2	23	6.37	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**02 Apr 2025**		28.4	115	161	60.8	177	6.55	53.2	<0.01	63	0.84	29	<1	<1	29	1.95	1.66	184	-	0.2	0.84	<0.01	1	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	-	-	-
MWD1 C3	**03 Apr 2025**		30.8	118	106	72.3	181	7.03	25.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**04 Apr 2025**		28.13	123	117	86.7	19	7.02	40.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**05 Apr 2025**		28.24	125	122	55	192	7.19	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**06 Apr 2025**		28.4	127	148	72.9	196	7.3	16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**07 Apr 2025**		30	6.67	187	88.7	0.19	7.41	27.9	0.04	54	0.87	32	<1	<1	32	1.82	1.8	199	-	<0.1	0.85	0.02	0.9	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**08 Apr 2025**		33	48.44	159.27	110.63	74.54	8.2	41.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**09 Apr 2025**		30	46.82	122.38	97.71	71.96	7.82	20.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**10 Apr 2025**		29	48.23	130.03	103.54	74.21	7.93	21.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**11 Apr 2025**		30	51.33	88.54	105.49	78.98	8.3	22.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**12 Apr 2025**		28	42.22	84.72	101.98	64.96	8.08	40.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**13 Apr 2025**		29	49.88	108.93	111.25	77.9	8.43	27.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWD1 C3	**14 Apr 2025**		30	43.01	137.29	108.36	66.17	8.15	25.56	0.01	51	0.89	31	<1	<1	31	1.74	1.89	211	-	0.2	0.88	0.01	1.1	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.009	-
MWD1 C3	**15 Apr 2025**		29.8	45.02	96.79	94.46	69.46	8.42	24.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pit	**08 Oct 2024**		27.3	0.15	133.1	98.5	258.3	8.5	3.6	0.06	56	0.7	71	<1	<1	71	2.7	3	292	-	0.5	0.68	0.02	1.2	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
Pit	**14 Jan 2025**		-	-	-	-	-	-	-	0.15	90	1.24	54	<1	<1	54	3.04	2.6	305	7.76	0.3	1.23	0.01	1.5	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIT	**12 Feb 2025**									<0.01	87	1.42	46	<1	<1	46	2.82	2.75	282	-	0.4	1.42	<0.01	1.8	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
SED1A	**29 Oct 2024**	**DO error**	36.3	0.03	197.6	-	53.7	7.4	128.1	0.07	10	<0.01	10	<1	<1	10	0.49	0.53	58	-	1.1	<0.01	<0.01	1	-	42	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED1A	**25 Nov 2024**		36.1	0.03	144.4	119.4	56.8	8.7	46.2	0.01	7	<0.01	13	<1	<1	13	0.49	0.62	56	-	0.7	<0.01	<0.01	0.7	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**05 Dec 2024**	**No field readings**								0.05	10	0.05	8	<1	<1	8	0.42	0.4	52	-	0.7	0.05	<0.01	0.8	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**16 Dec 2024**		31.4	30.6	242.3	93.5	47	7.1	50.3	0.02	8	0.05	8	<1	<1	8	0.38	0.49	52	-	0.4	0.05	<0.01	0.4	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**06 Jan 2025**		27.8	26.5	260.4	91	41	7.4	145.4	0.04	8	0.06	6	<1	<1	6	0.34	0.45	43	-	0.5	0.06	<0.01	0.6	-	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**13 Jan 2025**		29.9	27.2	165.1	94.5	41.8	7.1	115.1	0.06	12	0.02	9	<1	<1	9	0.51	0.4	43	-	0.2	0.02	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**20 Jan 2025**		28.2	25.7	278	82.4	39.5	7.6	123.8	<0.01	9	0.05	8	<1	<1	8	0.43	0.4	41	-	0.5	0.04	0.01	0.6	-	18	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED1A	**29 Jan 2025**		29.4	26.7	82.9	87.3	41.4	5.3	78.7	0.07	10	0.04	5	<1	<1	5	0.36	0.45	60	-	0.4	0.04	0.01	0.4	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**03 Feb 2025**		-	-	-	-	39.9	7.1	75.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**10 Feb 2025**		29	23.9	12.4	97.5	36.7	6.9	132.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**11 Feb 2025**	**No field readings**	-	-	-	-	-	-	-	0.02	7	0.12	5	<1	<1	5	0.33	0.32	39	-	0.3	0.12	<0.01	0.4	-	12	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED1A	**12 Feb 2025**		30.5	27.1	82.2	93.8	41.7	7.2	135.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**13 Feb 2025**	**EC, TDS error**	28.1		86.7	91.1		7.5	127.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**14 Feb 2025**		28	30	139	88	46	6	132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**15 Feb 2025**	**EC, TDS error**	-		155	89		7	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**16 Feb 2025**	**EC, TDS error**	28		129	90		7	93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**17 Feb 2025**	**EC, TDS error**	34.8		152.7	103.2		7.9	71.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**19 Feb 2025**		29.5	26.3	151.3	89.6	4.5	7.6	61.7	0.04	8	<0.01	6	<1	<1	6	0.37	0.45	44	-	0.3	<0.01	<0.01	0.3	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED1A	**24 Feb 2025**		28	28.39	166.27	78.25	43.68	7.63	89.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**25 Feb 2025**		28	27.91	183.82	67.05	42.95	7.15	204.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**26 Feb 2025**		31	27.74	185.78	86.91	42.68	7.37	122.85	0.03	8	0.07	5	<1	<1	5	0.32	0.32	41	-	0.2	0.07	<0.01	0.3	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**27 Feb 2025**		34	33.66	176.05	97.31	51.85	7.45	110.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**28 Feb 2025**		28	27.88	192.48	80.2	42.75	7.38	160.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**01 Mar 2025**		29	22.15	174.3	86.92	34.13	7.83	106.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**02 Mar 2025**		30	23.7	171.85	88.34	36.49	7.78	89.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**03 Mar 2025**		30.52	26.54	170.71	86.02	4.84	7.99	76.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**05 Mar 2025**		33.2	25.1	141.4	96.6	38.6	8.1	55.4	<0.01	17	<0.01	6	<1	<1	6	0.53	0.49	39	-	0.1	<0.01	<0.01	0.1	-	13	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED1A	**10 Mar 2025**		28	24.73	190.29	62.82	38.5	7.26	162.03	0.09	8	0.04	6	<1	<1	6	0.34	0.4	37	-	0.3	0.04	<0.01	0.3	-	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**11 Mar 2025**		29	24.06	161.13	75	37.2	7.22	136.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**12 Mar 2025**		28	26.55	171.92	80.75	4.85	7.55	93.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**13 Mar 2025**		28	26.39	193.19	81.63	4.6	7.52	88.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**14 Mar 2025**	**No access to mine site**								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**15 Mar 2025**		29	20.47	163.19	80.41	31.53	7.51	90.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**16 Mar 2025**		27.14	20.5	163	77.74	31.53	7.34	118.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**17 Mar 2025**		35.41	24.39	124.18	103.63	37.53	8.15	77.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**18 Mar 2025**		28.55	21.1	178.52	89.7	32.41	7.25	57.77	0.04	7	0.03	5	<1	<1	5	0.27	0.49	38	-	0.4	0.03	<0.01	0.4	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**19 Mar 2025**		31.77	27.67	196.93	95.1	42.57	7.78	51.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**20 Mar 2025**		31	23.78	166.91	90.59	36.56	7.46	55.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**24 Mar 2025**		28	22.75	171.66	88.43	35	7.55	40.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**25 Mar 2025**		27	6.62	218	84.3	0.2	6.04	65.6																																						
SED1A	**26 Mar 2025**	**EC error**	27	10.11	178	129.6		5.48	94.8	0.02	6	0.02	7	<1	<1	7	0.32	0.4	38	-	0.2	0.02	<0.01	0.2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**27 Mar 2025**	**EC error**	30	8.86	168	118.3		6.32	46.6																																						
SED1A	**28 Mar 2025**	**EC error**	26	5.69	197	72.4		6.5	88.3																																						
SED1A	**29 Mar 2025**		27	7.12	183	91.5	0.2	6.71	61.6																																						
SED1A	**30 Mar 2025**	**EC error**	26	4.96	197	62.8		6.94	99																																						
SED1A	**31 Mar 2025**		29.14	15	173	106.2	23	6.63	59.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**01 Apr 2025**		27.26	2	206	72.2	3	6.14	53.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**02 Apr 2025**		28.48	3	175	102.8	4	6.4	78.1	0.05	7	0.17	5	<1	<1	5	0.27	0.33	42	-	<0.5	0.17	<0.01	<0.5	-	43	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED1A	**03 Apr 2025**		32.31	18	99	74.2	28	7.35	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**04 Apr 2025**		27.99	18	113	61.2	28	7.31	91.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**05 Apr 2025**		28.18	21	104	68.1	32	7.58	74.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**06 Apr 2025**		28.32	20	133	68.3	3	7.72	62.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**07 Apr 2025**		29	6.79	176	89.1	0.3	7.95	63.7	<0.02	10	0.11	7	<1	<1	7	0.38	0.4	45	-	<0.2	0.11	<0.01	<0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED1A	**08 Apr 2025**		33	12.36	128.39	115.24	19.2	8.62	62.22																																						
SED1A	**09 Apr 2025**		28	9.76	128.04	99.12	15.3	7.29	78.03																																						
SED1A	**10 Apr 2025**		28	12.56	119.8	106.96	19.32	7.8	63.23																																						
SED1A	**14 Apr 2025**		29	11.58	94.36	109.09	17.82	8.1	64.29	0.06	9	0.06	7	<1	<1	7	0.38	0.4	46	-	0.4	0.06	<0.01	0.5	-	13	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	0.005	0.003
SED2	**29 Oct 2024**		35.6	0.05	193.3	130.9	82.5	8.9	47.5	0.05	18	<0.01	13	<1	<1	13	0.72	0.81	82	-	0.5	<0.01	<0.01	0.5	-	16	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED2	**25 Nov 2024**		33.1	0.05	87.4	107.1	81.9	6.9	18.9	0.01	20	<0.01	13	<1	<1	13	0.73	0.86	82	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED2	**05 Dec 2024**	**No field readings**	-	-	-	-	-	-	-	0.09	10	0.04	8	<1	<1	8	0.37	0.42	45	-	3.1	0.04	<0.01	3.1	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED2	**16 Dec 2024**		31.3	32.8	214.9	90	5.5	7.1	22.8	0.04	11	<0.01	10	<1	<1	10	0.48	0.53	57	-	0.4	<0.01	<0.01	0.4	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED2	**06 Jan 2025**		29.1	30.5	265.5	93.7	46.9	7.2	7.5	0.04	8	0.01	10	<1	<1	10	0.42	0.47	49	-	0.5	0.01	<0.01	0.5	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED2	**13 Jan 2025**		32	28	181.8	97.5	43.1	7.1	6.1	0.04	7	<0.01	12	<1	<1	12	0.44	0.34	45	-	0.1	<0.01	<0.01	0.1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED2	**20 Jan 2025**		28.9	29.5	284.1	77.6	45.3	7.3	8.7	<0.01	9	<0.01	12	<1	<1	12	0.48	0.34	49	-	0.2	<0.01	<0.01	0.2	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED2	**29 Jan 2025**		25.7	29.5	292.1	102.6	45.4	6.4	24.7	0.11	8	<0.01	9	<1	<1	9	0.4	0.34	49	-	0.2	<0.01	<0.01	0.2	-	25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED2	**03 Feb 2025**		-	-	-	-	43.5	7.3

			Field							Inorganics	BTEX							TRH						TPH					Biological	Other	
			Temperature (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	DO % Saturation (Field)	Electrical Conductivity (Field)	pH (Field)	Turbidity (Field)	Total Phosphorus as P Organic Phosphate as P	Sulfate as SO4 - Turbidimetric (Filtered)	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Electrical Conductivity (lab)	% Ionic Balance	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	Salinity	Total Suspended Solids (lab)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10 Fraction (F1)	C6-C10	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (sum)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	Chlorophyll a	Cobalt-cm	Cobalt-cm (filtered)
			°C	mg/L	mV	%	µS/cm	-	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	µS/cm	%	mg/L	mg/L	mg/L	mg/L	ppt	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L
										0.01	1	0.01	1	1	1	1	0.01	0.01	1	0.01	0.1	0.01	0.01	0.1		5	0.005	1	2	2	2	2	2	1	20	20	100	100	100	100	100	20	50	100	50	50	0.001	0.001	0.001
Field ID	**Date**	**Sample Comments**																																												
GDS SW1	**20 Jan 2025**		33.9	17.8	201.8	88.9	27.4	6.3	39.6	<0.01	4	<0.01	6	<1	<1	6	0.29	0.13	31	-	0.4	<0.01	<0.01	0.4	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GDS SW1	**21 Jan 2025**		29.2	18.86	228.5	68.8	29	5.9	14																																						
GDS SW1	**22 Jan 2025**		31.7	38.13	176.04	90.92	28.66	6.6	9.48																																						
GDS SW1	**23 Jan 2025**		29.2	46.65	170.8	82.77	71.76	6.7	7.23																																						
GDS SW1	**24 Jan 2025**	**TDS, EC Error**	33.8		18.94	105		6.9	8.15																																						
GDS SW1	**25 Jan 2025**	**Temp error**		24.3	127.73	112.9	37.4	6.7	16.25																																						
GDS SW1	**26 Jan 2025**		28.4	27.4	110.09	78.6	42.2	6.6	14.83																																						
GDS SW1	**27 Jan 2025**	**EC Error**	33.3	18.7	-	99	28.7	-	26.6	0.02	2	<0.01	5	<1	<1	5	0.23	0.22	31	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
SED3	**25 Nov 2024**		33.4	0.03	18.2	108.2	55.8	7.1	15.3	0.03	8	<0.01	15	<1	<1	15	0.52	0.68	56	-	0.9	<0.01	<0.01	0.9	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**16 Dec 2024**		32	26.4	220.4	98.9	4.6	7.2	25.4	0.03	6	0.04	10	<1	<1	10	0.38	0.4	44	-	0.5	0.04	<0.01	0.5	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**06 Jan 2025**		29.9	19.9	262.3	91.5	3.7	7.1	32.5	0.01	4	0.01	6	<1	<1	6	0.26	0.3	33	-	0.4	0.01	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**13 Jan 2025**		31.7	19.7	172.3	102.7	3.4	7.6	30.5	0.02	4	<0.01	9	<1	<1	9	0.32	0.19	31	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**20 Jan 2025**		29.6	18.3	279.4	88.1	28.2	7.6	13.5	<0.01	4	<0.01	8	<1	<1	8	0.3	0.15	30	-	0.6	<0.01	<0.01	0.6	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED3	**29 Jan 2025**		29.9	19.3	288.9	101.2	29.7	6.4	20.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**03 Feb 2025**		-	-	-	-	28.6	7.5	11.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**10 Feb 2025**	**EC error**	28.8		20.6	109.4		6.8	22.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**11 Feb 2025**	**No field readings**	-	-	-	-	-	-	-	0.03	5	0.01	4	<1	<1	4	0.27	0.19	28	-	0.3	0.01	<0.01	0.3	-	8	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED3	**12 Feb 2025**	**EC, TDS error**	28.8		95.9	98.7		7.7	30.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**13 Feb 2025**	**EC, TDS error**	29		101	91		7	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**14 Feb 2025**		28	21	142	102	44	6	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**15 Feb 2025**	**EC, TDS error**	28		155	94		7	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**16 Feb 2025**	**EC, TDS error**	28		133	99		7	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**17 Feb 2025**		33.9	15.7	163.3	115.5	24.2	8.1	9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**24 Feb 2025**		28	19.83	83.27	75.3	3.54	6.99	27.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**25 Feb 2025**		28	19.71	162.85	68.37	3.37	6.9	72.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**26 Feb 2025**		31	20.82	192.66	106.72	32.4	7.45	37	<0.01	4	0.01	6	<1	<1	6	0.23	0.07	27	-	0.3	0.01	<0.01	0.3	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**27 Feb 2025**		29	14.97	172.6	97.79	23.4	7.34	26.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**28 Feb 2025**		29	18	192.89	89.32	27.74	7.19	21.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**01 Mar 2025**		29	15.59	180.21	96.2	23.99	7.52	17.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**02 Mar 2025**		31	16.05	175.42	93.92	24.69	7.46	16.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**03 Mar 2025**		30.7	17.14	170.94	93.06	26.37	7.44	12.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**10 Mar 2025**		29	19.29	59.87	65.12	29.68	6.58	16.12	0.09	4	0.02	5	<1	<1	5	0.24	0.19	30	-	0.2	0.02	<0.01	0.2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**11 Mar 2025**		29	19.05	156.21	81.36	29.31	7.08	11.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**12 Mar 2025**		29	21.12	159.8	83.75	32.48	7.05	9.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**13 Mar 2025**		29	20.9	196.58	89.77	32.25	7.28	7.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**14 Mar 2025**	**No access to mine site**																																													
SED3	**15 Mar 2025**		29	18.86	175.42	85.75	28.93	7.09	15.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**16 Mar 2025**		27.58	17.9	177.37	78.72	27.51	6.76	13.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**17 Mar 2025**		34.42	21	130.7	125.31	32.3	7.99	8.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**18 Mar 2025**		29.13	18.66	194.24	108.4	28.7	7.27	6.68	0.07	5	0.05	6	<1	<1	6	0.25	0.35	34	-	0.4	0.05	<0.01	0.4	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**23 Mar 2025**		30	22.28	172.1	101.48	34.33	7.21	7.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**24 Mar 2025**		30	22.29	175.78	102.81	34.3	7.24	7.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**25 Mar 2025**	**EC error**	26	11.48	193	145.6		5.2	73.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**26 Mar 2025**		28	8.55	199	110.7	0.2	5.46	20.7	0.03	7	0.24	6	<1	<1	6	0.32	0.35	38	-	0.2	0.24	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**27 Mar 2025**	**EC error**	30	8.51	178	113.4		6.31	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**28 Mar 2025**	**EC error**	27	4.63	144	59.6		6.02	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**29 Mar 2025**	**EC error**	28	7.78	202	101.1		6.42	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**30 Mar 2025**	**EC error**	27	7.9	219	101.2		6.31	18.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**31 Mar 2025**		29.04	13	179	90.1	2	6.53	14.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**01 Apr 2025**		27.52	12	228	51.1	19	5.8	23.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**02 Apr 2025**		-	-	-	-	-	-	-	0.05	6	0.4	4	<1	<1	4	0.23	0.31	37	-	0.3	0.4	<0.01	0.7	-	10	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED3	**03 Apr 2025**		27.23	12	182	70.1	18	6.2	45.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**04 Apr 2025**		28.45	14	145	83	21	7.13	25.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**05 Apr 2025**		28.72	16	142	114.1	25	7.24	23.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**06 Apr 2025**		28.52	17	161	60.4	26	7.45	17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**07 Apr 2025**		30	7.95	186	105.9	0.3	7.6	20.2	0.02	16	0.57	6	<1	<1	6	0.51	0.4	51	-	0.4	0.57	<0.01	1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**08 Apr 2025**		33	14.87	140.08	139.46	22.87	9.03	23.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**09 Apr 2025**		28	13.38	115.68	109.38	2.58	7.09	20.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**10 Apr 2025**		29	14.48	126.83	113.38	22.26	7.4	20.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED3	**14 Apr 2025**		29	14.02	108.03	115.16	21.57	7.86	14.31	0.07	12	0.72	6	<1	<1	6	0.43	0.45	59	-	0.4	0.72	<0.01	1.1	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	0.004	0.003
SED4	**29 Oct 2024**		34.7	0.04	177.1	131.4	65.8	9	11.9	0.03	1	<0.01	1	<1	<1	1	0.15	0.13	22	-	0.5	<0.01	<0.01	0.5	-	26	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED4	**25 Nov 2024**		32.2	0.01	-116.5	94	21.9	6.5	9	<0.01	1	0.03	4	<1	<1	4	0.21	0.17	24	-	0.3	0.03	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**16 Dec 2024**		32.4	12.6	246.4	103.4	19.4	6.9	8.4	0.02	<1	<0.01	1	<1	<1	1	0.13	0.13	21	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**06 Jan 2025**		31.1	11.3	257.8	98.7	17.4	7	8.3	<0.01	1	0.04	2	<1	<1	2	0.14	0.13	18	-	0.2	0.04	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**13 Jan 2025**		32.3	11.1	165.8	107.6	17.1	7.1	5.8	0.02	<1	0.01	14	<1	<1	14	0.36	0.09	17	-32.3	<0.1	0.01	<0.01	<0.1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**20 Jan 2025**		30.4	10.7	271.1	89.9	16.5	7.6	5.1	<0.01	<1	<0.01	3	<1	<1	3	0.14	0.09	21	-	0.3	<0.01	<0.01	0.3	-	<5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED4	**29 Jan 2025**		29.8	11.1	285.8	108.9	17.1	6.4	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**03 Feb 2025**		-	-	-	-	15.8	6.9	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**10 Feb 2025**		29.9	9.7	49.3	97.2	14.9	6.4	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**11 Feb 2025**		-	-	-	-	-	-	-	<0.01	<1	0.06	2	<1	<1	2	0.12	0.09	15	-	0.3	0.06	<0.01	0.4	-	6	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED4	**12 Feb 2025**	**EC, TDS error**	29.2		94.5	99.2		7.6	11.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**13 Feb 2025**	**EC, TDS error**	29		104	96	12.82	7	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**14 Feb 2025**		29	9	141	98	15	6	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**15 Feb 2025**	**EC, TDS error**	29		147	97		7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**16 Feb 2025**	**EC, TDS error**	29		122	104		7	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**17 Feb 2025**		32.6	8.4	161.5	108	13	7.8	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**24 Feb 2025**		30	10.68	88.2	96.87	16.43	7.41	23.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**25 Feb 2025**		30	11.91	156.26	93.29	18.33	7.29	16.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**26 Feb 2025**		31	12.44	189.9	101.2	19.7	7.89	12.94	0.03	1	0.02	<1	<1	<1	<1	0.08	0.09	15	-	0.4	0.02	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**27 Feb 2025**		30	7.46	164.06	95.25	11.45	7.91	13.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**28 Feb 2025**		30.34	9.89	188.04	97.51	15.22	7.47	10.69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**01 Mar 2025**		30	7.9	173.3	96.85	12.16	7.82	9.64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**02 Mar 2025**		32	8.02	165.52	102.61	12.34	8.11	10.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**03 Mar 2025**		31.71	9.26	181.93	97.61	14.24	8.52	9.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**05 Mar 2025**		33.8	9.8	135.3	106.5	15.1	7.7	8.1	<0.01	<1	0.01	2	<1	<1	2	0.12	0.17	13	-	0.3	0.01	<0.01	0.3	-	5	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SED4	**10 Mar 2025**		30	9.04	61.81	91.19	13.92	7.23	9.53	0.05	2	<0.01	<1	<1	<1	<1	0.13	0.09	16	-	0.2	<0.01	<0.01	0.2	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**11 Mar 2025**		30	8.89	145.76	92.73	13.71	7.49	8.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**12 Mar 2025**		30	10.63	146.87	95.49	16.36	7.45	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**13 Mar 2025**		30	10.19	182.04	93.37	15.69	7.68	7.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**14 Mar 2025**	**No access to mine site**																																													
SED4	**15 Mar 2025**		30	7.51	165.86	91.65	11.56	7.32	7.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**16 Mar 2025**		28.96	7.61	162.19	86.6	11.7	7.09	6.97	-	-	-	-	-	-	-	-	-	-	-	7.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**17 Mar 2025**		33.28	9.37	122.52	99.64	14.42	7.92	5.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**18 Mar 2025**		30.05	8.23	168.42	93.39	12.66	7.51	4.87	0.02	<1	0.02	3	<1	<1	3	0.12	0.13	14	-	0.4	0.02	<0.01	0.4	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**23 Mar 2025**		30	9.31	157.55	96.41	14.33	7.43	2.64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**24 Mar 2025**		30	9.8	158.23	95.97	15.8	7.49	2.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**25 Mar 2025**	**EC error**	29	6.1	180	79.9		6.04	10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**26 Mar 2025**	**EC error**	28	7.26	230	94.9		5.32	12.5	0.01	<1	0.03	2	<1	<1	2	0.1	0.09	13	-	0.2	0.03	<0.01	0.2	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**27 Mar 2025**	**EC error**	30	9.33	180	124.5		6.41	8.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**28 Mar 2025**	**EC error**	28	8.23	159	106.8		6.33	10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**29 Mar 2025**	**EC error**	28	7.93	220	103.6		6.19	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**30 Mar 2025**	**EC error**	28	5.79	212	75.1		6.58	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SED4	**31 Mar 2025**		28.78	10	183	90.2	15	6.47	31	-	-	-	-	-

			Field																				Inorganics	BTEX								TRH								TPH					Biological	Other	
			Temperature (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	DO % Saturation (Field)	Electrical Conductivity (Field)	pH (Field)	Turbidity (Field)	Total Phosphorus as P (Organic Phosphate as P)	Sulfate as SO4 - Turbidimetric (Filtered)	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions - Total	Cations - Total	Electrical Conductivity (Lab)	Ionic Balance	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	Salinity	Total Suspended Solids (Lab)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10 Fraction (F1)	C6-C10	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (sum)	C6-C9 Fraction	>C9-C16 Fraction	>C15-C28 Fraction	>C28-C36 Fraction	>C10-C36 Fraction (Sum)	Chlorophyll a	Fluoride	Fluoride (filtered)
			°C	mg/L	mV	%	µS/cm	-	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	µS/cm	%	mg/L	mg/L	mg/L	mg/L	ppt	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L
										0.01	1	0.01	1	1	1	1	0.01	0.01	1	0.01	0.1	0.01	0.01	0.1		5	0.005	1	2	2	2	2	1	20	20	100	100	100	100	100	20	50	100	50	50	0.001	0.001	0.001
Field ID	**Date**	**Sample Comments**																																												
GDS SW1	**20 Jan 2025**		33.9	17.8	201.8	88.9	27.4	6.3	39.6	<0.01	4	<0.01	6	<1	<1	6	0.29	0.13	31	-	0.4	<0.01	<0.01	0.4	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-
GDS SW1	**21 Jan 2025**		29.2	18.86	228.5	68.8	29	5.9	14																																						
GDS SW1	**22 Jan 2025**		31.7	38.13	176.04	90.92	28.66	6.6	9.48																																						
GDS SW1	**23 Jan 2025**		29.2	46.65	170.8	82.77	71.76	6.7	7.23																																						
GDS SW1	**24 Jan 2025**	**TDS, EC Error**	33.8		18.94	105		6.9	8.15																																						
GDS SW1	**25 Jan 2025**	**Temp error**		24.3	127.73	112.9	37.4	6.7	16.25																																						
GDS SW1	**26 Jan 2025**		28.4	27.4	110.09	78.6	42.2	6.6	14.83																																						
GDS SW1	**27 Jan 2025**	**EC Error**	33.3	18.7		99	28.7	-	26.6	0.02	2	<0.01	5	<1	<1	5	0.23	0.22	31	-	0.3	<0.01	<0.01	0.3	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-
SEDSA	**23 Mar 2025**		29	15.09	156.65	96.35	23.12	7.69	22.71																										-	-	-	-	-	-	-					-	-	-
SEDSA	**24 Mar 2025**		30	16.7	146.43	98.7	25.68	7.54	24.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEDSA	**25 Mar 2025**	**EC error**	28	6.24	190	81.2		5.74	39.9																										-	-	-	-	-	-	-					-	-	-
SEDSA	**26 Mar 2025**	**EC error**	27	10.65	138	137.2		5.94	46.7	0.01	<1	0.02	2	<1	<1	2	0.18	0.13	22	-	0.2	0.02	<0.01	0.2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEDSA	**27 Mar 2025**	**EC error**	29	5.77	153	76.4		6.68	31.3																										-	-	-	-	-	-	-					-	-	-
SEDSA	**28 Mar 2025**	**EC error**	27	8.23	175	105		6.51	61.5																										-	-	-	-	-	-	-					-	-	-
SEDSA	**29 Mar 2025**	**EC error**	28	8.15	169	105.3		6.88	50.6																										-	-	-	-	-	-	-					-	-	-
SEDSA	**30 Mar 2025**	**EC error**	27	6.12	186	78.1		7.11	93.5																										-	-	-	-	-	-	-					-	-	-
SEDSA	**31 Mar 2025**		29.11	5	140	77.1	7	6.97	52.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEDSA	**01 Apr 2025**		28.25	114	209	61.1	175	6.14	30.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEDSA	**02 Apr 2025**		28.29	14	172	83.1	22	6.48	286	0.02	1	0.04	2	<1	<1	2	0.14	0.09	18	-	0.3	0.04	<0.01	0.3	-	22	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-
SEDSA	**03 Apr 2025**		29.65	3	114	82.7	4	7.31	67.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEDSA	**04 Apr 2025**		27.21	3	145	71.7	4	6.5	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEDSA	**05 Apr 2025**		27.23	4	205	67.9	6	6.14	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEDSA	**06 Apr 2025**		27.49	6	198	65.8	1	6.66	94.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEDSA	**07 Apr 2025**	**EC error**	28	7.76	180	101.2		7.6	42.5	<0.01	4	0.03	3	<1	<1	3	0.26	0.09	21	-	<0.1	0.03	<0.01	<0.1	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEDSA	**08 Apr 2025**		35	7.41	144.19	119.66	11.42	7.14	26.38																										-	-	-	-	-	-	-					-	-	-
SEDSA	**09 Apr 2025**		29	6.41	135.18	101.01	9.86	6.94	44.92																										-	-	-	-	-	-	-					-	-	-
SEDSA	**10 Apr 2025**		28	6.61	110.81	108.69	1.17	7.99	36.39																										-	-	-	-	-	-	-					-	-	-
SEDSA	**14 Apr 2025**		29	5.99	81.23	111.17	9.33	7.89	33.09	0.02	<1	<0.01	2	<1	<1	2	0.15	0.13	22	-	0.2	<0.01	<0.01	0.2	-	6	<0.005	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	390	190	580	<20	90	360	210	660	-	0.003	0.002
MWD2 C2	**02 Apr 2025**		28.21	54	178	68.9	83	6.2	31.4																										<20	<100	<100	<100	<100	<100							
MWD2 C2	**29 May 2024**		-	-	-	-	-	-	-																										<20	<100	<100	<100	<100	<100						-	-	-

Data Cleansing Notes:
Text converted to numbers
Identification and correcting or removing of erroneous / incredible data (eg. Temp 59.3oC, EC 118,253.40 etc...)

| Analyte | Aluminium | | Aluminium (filtered) | | Selenium | | Selenium (filtered) | | Antimony | | Antimony (filtered) | | Arsenic | | Arsenic (filtered) | | Barium | | Barium (filtered) | | Beryllium | | Beryllium (filtered) | | Bismuth | | Bismuth (filtered) | | Boron | | Boron (filtered) | | Cadmium | | Cadmium (filtered) | | Calcium (filtered) | | Cesium | | Cesium (filtered) | | Chromium (III+VI) | | Chromium (III+VI) (filtered) | | Cobalt | | Cobalt (filtered) | | Copper | | Copper (filtered) | | Iron | | Iron (filtered) | | Lead | | Lead (filtered) | | Lithium | | Lithium (filtered) | | Magnesium (filtered) | | Manganese | | Manganese (filtered) | | Mercury | | Mercury (filtered) | | Molybdenum | | Molybdenum (filtered) | | Nickel | | Nickel (filtered) | | Potassium (filtered) | | Silver | | Silver (filtered) | | Strontium | | Strontium (filtered) | | Thallium | | Thallium (filtered) | | Thorium | | Thorium (filtered) | | Tin | | Tin (filtered) | | Titanium | | Titanium (filtered) | | Uranium | | Uranium (filtered) | | Vanadium | | Vanadium (filtered) | | Zinc | | Zinc (filtered) | |
|---|---|---

Field ID	Date	Aluminium		Arsenic		Barium		Beryllium		Bismuth		Boron		Cadmium		Calcium		Chromium		Cobalt		Copper		Iron		Lead	
		Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status
659 SW1	29 Jan 2025	0.51	<LOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.018	<LOD	-	-
659 SW1	19 Feb 2025	0.22	<LOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<LOD	<1	<LOD
659 SW1	19 Feb 2025	0.22	<LOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<LOD	<1	<LOD
659 SW1	19 Feb 2025	0.12	<LOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	22 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	22 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	24 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	24 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Feb 2025	0.14	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	01 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	01 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	03 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	03 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 Mar 2025	0.06	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	08 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	10 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	10 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 Mar 2025	0.2	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	17 Mar 2025	0.07	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	17 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	24 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	24 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	31 Mar 2025	0.07	<LOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	31 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 Apr 2025	0.21	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	16 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	16 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	23 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	23 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	30 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	30 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	16 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	16 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	23 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	23 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	30 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	30 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	04 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	04 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	06 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	06 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	11 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	11 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	13 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	13 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	15 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Field ID	Date	Iron		Lead		Lithium		Magnesium		Manganese		Mercury		Molybdenum		Nickel		Phosphorus		Potassium		Selenium		Silicon		Silver	
		Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status	Value	Status
659 SW1	29 Jan 2025	0.51	<LOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Feb 2025	0.22	<LOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Feb 2025	0.12	<LOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	22 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	22 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	24 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	24 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Feb 2025	0.14	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Feb 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	01 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	01 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	03 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	03 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 Mar 2025	0.06	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	08 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	10 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	10 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 Mar 2025	0.2	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	17 Mar 2025	0.07	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	17 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	24 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	24 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	31 Mar 2025	0.07	<LOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	31 Mar 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 Apr 2025	0.21	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	16 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	16 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	23 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	23 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	30 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	30 Apr 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	05 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	07 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	12 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	14 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	16 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	16 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	19 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	21 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	23 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	23 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	26 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	28 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	30 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	30 May 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	02 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	04 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	04 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	06 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	06 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	09 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	11 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	11 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	13 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
659 SW1	13 Jun 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

| Field ID | Date | Metals | | |

| Field ID | Date | Metals | | |

| Analyte | | Aluminium | | Aluminium (filtered) | | Selenium | | Selenium (filtered) | | Antimony | | Antimony (filtered) | | Arsenic | | Arsenic (filtered) | | Barium | | Barium (filtered) | | Beryllium | | Beryllium (filtered) | | Bismuth | | Bismuth (filtered) | | Boron | | Boron (filtered) | | Cadmium | | Cadmium (filtered) | | Calcium (filtered) | | Cesium | | Cesium (filtered) | | Chromium (III+VI) | | Chromium (III+VI) (filtered) | | Cobalt | | Cobalt (filtered) | | Copper | | Copper (filtered) | | Iron | | Iron (filtered) | | Lead | | Lead (filtered) | | Lithium | | Lithium (filtered) | | Magnesium (filtered) | | Manganese | | Manganese (filtered) | | Mercury | | Mercury (filtered) | | Molybdenum | | Molybdenum (filtered) | | Nickel | | Nickel (filtered) | | Potassium (filtered) | | Silver | | Silver (filtered) | | Strontium | | Strontium (filtered) | | Thallium | | Thallium (filtered) | | Thorium | | Thorium (filtered) | | Tin | | Tin (filtered) | | Titanium | | Titanium (filtered) | | Uranium | | Uranium (filtered) | | Vanadium | | Vanadium (filtered) | | Zinc | | Zinc (filtered) | |
|---|---|---

| | | Metals | | |

APPENDIX E

Tabulated Sediment Quality Monitoring Data

Matrix:	SOIL		**Sample Type:**	**REG**	**REG**	**REG**	**REG**	**REG**	**REG**	**REG**
Workgroup:	ES2518049		**ALS Sample Number:**	ES2518049001	ES2518049002	ES2518049003	ES2518049004	ES2518049005	ES2518049006	ES2518049007
Project name/number:	Annual Water Testing - 2022		**Sample Date:**	05/06/2025	05/06/2025	05/06/2025	05/06/2025	05/06/2025	05/06/2025	05/06/2025
			Client sample ID (1st):	GDS SW2	UC3	GDS SW5	BPUS SW1	BPDS SW2	BPDS SW6	BP4
			Client sample ID (2nd):							
			Depth Type:							
			Depth (m):							
			Site:							
			Purchase Order:							

Analyte grouping/Analyte	**CAS Number**	**Unit**	**Limit of reporting**							
EA002: pH 1:5 (Soils)										
pH Value		pH Unit	0.1	**5.1**	**6.0**	**5.4**	**5.2**	**5.6**	**5.1**	**4.9**
EA010: Conductivity (1:5)										
Electrical Conductivity @ 25°C		µS/cm	1	**15**	**44**	**7**	**12**	**6**	**7**	**8**
EA055: Moisture Content (Dried @ 105-110°C)										
Moisture Content		%	1.0	**63.5**	**28.2**	**19.1**	**46.0**	**32.8**	**41.6**	**50.7**
ED040S : Soluble Sulfate by ICPAES										
Sulfate as SO4 2-	14808-79-8	mg/kg	10	<10	**10**	<10	<10	<10	<10	<10
ED045G: Chloride by Discrete Analyser										
Chloride	16887-00-6	mg/kg	10	**20**	**60**	<10	**10**	<10	<10	<10
ED093S: Soluble Major Cations										
Calcium	7440-70-2	mg/kg	10	<10	<10	<10	<10	<10	<10	<10
Magnesium	7439-95-4	mg/kg	10	<10	<10	<10	<10	<10	<10	<10
Sodium	7440-23-5	mg/kg	10	**20**	**50**	<10	<10	<10	<10	<10
Potassium	7440-09-7	mg/kg	10	<10	<10	<10	<10	<10	<10	<10
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES										
Aluminium	7429-90-5	mg/kg	50	**16900**	**1500**	**3300**	**6120**	**780**	**1220**	**5290**
Iron	7439-89-6	mg/kg	50	**35600**	**4770**	**26600**	**17000**	**1360**	**1920**	**2850**
Vanadium	7440-62-2	mg/kg	2	**36**	**8**	**30**	**13**	**2**	**2**	**5**
EG020-SD: Total Metals in Sediments by ICPMS										
Arsenic	7440-38-2	mg/kg	1.00	**16.2**	**8.97**	**52.5**	**23.0**	**2.49**	**1.80**	**1.40**
Cadmium	7440-43-9	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	mg/kg	1.0	**35.2**	**8.9**	**24.3**	**10.0**	**1.8**	**2.3**	**4.9**
Copper	7440-50-8	mg/kg	1.0	**15.0**	**1.3**	**3.4**	**5.6**	<1.0	**1.3**	**4.9**
Lead	7439-92-1	mg/kg	1.0	**17.4**	**3.5**	**5.8**	**8.4**	**1.2**	**2.8**	**9.6**
Nickel	7440-02-0	mg/kg	1.0	**13.8**	**1.2**	**4.0**	**4.0**	<1.0	**1.2**	**2.8**
Zinc	7440-66-6	mg/kg	1.0	**43.3**	**3.9**	**12.7**	**10.4**	**2.0**	**5.0**	**6.2**
EG020T: Total Metals by ICP-MS										
Lithium	7439-93-2	mg/kg	0.1	**50.2**	**2.2**	**3.8**	**13.6**	**1.6**	**2.0**	**5.1**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	7439-97-6	mg/kg	0.01	**0.02**	<0.01	<0.01	**0.02**	<0.01	<0.01	**0.04**
EP003: Total Organic Carbon (TOC) in Soil										
Total Organic Carbon		%	0.02	**5.81**	**0.37**	**0.27**	**3.85**	**0.30**	**1.56**	**4.77**

Matrix:	SOIL	Sample Type:	MB	LCS	DUP	MS	MS	DUP	LCS	LCS	DUP	DUP	MB	LCS	DUP	DUP	LCS	DUP	LCS	LCS	MS	DUP	MB	MB	LCS	LCS	LCS	LCS	DUP	DUP	DUP	REG	REG	REG	REG	REG	REG
			C	C	C						C	C	C					C	C	C			C														
			-	-	-						-	-	-					-	-	-			-														
			M	M	M						M	M	M					M	M	M			M														
			R	R	R	Q	Q	Q	Q	Q	R	R	R	Q	Q	Q	R	R	R	Q	Q	R	Q	Q	Q	Q	Q	Q	Q	Q	Q						
			G	G	G	C	C	C	C	C	G	G	G	C	C	C	G	G	G	C	C	G	C	C	C	C	C	C	C	C	C						
			8	8	4	-	-	-	-	-	3	2	7	-	-	-	2	2	3	-	-	4	-	-	-	-	-	-	-	-	-	E	E	E	E	E	E
			-	-	-	6	6	6	6	6	-	-	-	6	6	6	-	-	-	6	6	-	6	6	6	6	6	6	6	6	6	S	S	S	B	P	S
			6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	2	2	2	2	2	2
			6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	5	5	5	5	5	5
			6	6	6	7	7	7	7	7	6	6	6	7	7	7	6	6	6	7	7	6	3	3	3	3	3	3	3	3	3	1	1	1	2	0	1
			7	7	7	8	8	8	8	8	7	7	7	8	8	8	7	7	7	8	8	7	5	5	5	5	5	5	5	5	5	8	8	8	0	9	8
			8	8	8	1	1	1	2	2	8	8	8	2	3	3	8	8	8	2	2	8	4	4	4	4	4	4	4	4	4	0	0	2	9	6	4
			1	1	1	6	8	5	7	7	2	2	2	6	2	2	2	2	2	4	4	2	2	3	2	3	2	3	2	3	2	8	8	5	5	7	1
			5	5	5	-	-	-	-	-	4	6	4	-	-	-	5	5	4	-	-	4	-	-	-	-	-	-	-	-	-	2	2	3	7	8	4
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0
Workgroup:	ES2518049	ALS Sample Number:	2	3	7	6	9	0	1	2	5	5	1	2	2	1	2	7	2	3	6	6	1	1	2	2	3	3	5	5	6	2	4	2	2	5	1
		Sample Date:	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	23/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025	12/06/2025	12/06/2025	16/06/2025	17/06/2025	14/06/2025	13/06/2025

Analyte grouping/Analyte	CAS Number	Unit	Limit of reporting																																			
EA002: pH 1:5 (Soils)																																						
pH Value		%	0.1	----	----	----	----	----	----	101	100	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
pH Value		pH Unit	0.1	----	----	----	----	----	----	----	----	5.3	5.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	**5.8**	----	----	----
EA010: Conductivity (1:5)																																						
Electrical Conductivity @ 25°C		µS/cm	1	----	----	----	----	----	----	----	----	15	807	<1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	**762**	----	----	----
Electrical Conductivity @ 25°C		%	1	----	----	----	----	----	----	----	----	----	----	----	----	99.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)																																						
Moisture Content		%	1.0	----	----	----	----	----	----	----	----	----	----	----	----	64.7	<1.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	**1.2**	----	----	----	----	----
ED040S: Soluble Major Anions																																						
Sulfate as SO4 2-	14808-79-8	mg/kg	10	----	----	----	----	----	----	----	----	----	----	<10	----	----	----	----	<10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Sulfate as SO4 2-	14808-79-8	%	10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	100	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ED045G: Chloride by Discrete Analyser																																						
Chloride	16887-00-6	mg/kg	10	----	----	----	----	----	----	----	----	20	----	<10	----	----	----	----	----	----	----	----	20	----	----	----	----	----	----	----	----	----	----	----	----	----	----	**20**
Chloride	16887-00-6	%	10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	105	107	125	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
ED093S: Soluble Major Cations																																						
Calcium	7440-70-2	mg/kg	10	----	----	----	----	----	----	----	----	----	----	<10	----	----	----	----	<10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Calcium	7440-70-2	%	10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	106	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Magnesium	7439-95-4	mg/kg	10	----	----	----	----	----	----	----	----	----	----	<10	----	----	----	----	<10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Magnesium	7439-95-4	%	10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	103	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Sodium	7440-23-5	mg/kg	10	----	----	----	----	----	----	----	----	----	----	<10	----	----	----	----	<10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Sodium	7440-23-5	%	10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	100	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Potassium	7440-09-7	mg/kg	10	----	----	----	----	----	----	----	----	----	----	<10	----	----	----	----	<10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Potassium	7440-09-7	%	10	----	----	----	----	----	----	----	----	----	----	----	----	----	----	97.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES																																						
Aluminium	7429-90-5	mg/kg	50	<50	----	19000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Aluminium	7429-90-5	%	50	----	101	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Iron	7439-89-6	mg/kg	50	<50	----	34800	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Iron	7439-89-6	%	50	----	101	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Vanadium	7440-62-2	%	2	----	98.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS																																						
Arsenic	7440-38-2	mg/kg	1.00	<1.00	----	13.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Arsenic	7440-38-2	%	1.00	----	112	----	----	105	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Cadmium	7440-43-9	mg/kg	0.1	<0.1	----	0.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Cadmium	7440-43-9	%	0.1	----	108	----	----	104	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Chromium	7440-47-3	mg/kg	1.0	<1.0	----	30.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Chromium	7440-47-3	%	1.0	----	107	----	----	104	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Copper	7440-50-8	mg/kg	1.0	<1.0	----	12.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Copper	7440-50-8	%	1.0	----	107	----	----	105	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Lead	7439-92-1	mg/kg	1.0	<1.0	----	20.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Lead	7439-92-1	%	1.0	----	101	----	----	97.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Nickel	7440-02-0	mg/kg	1.0	<1.0	----	18.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Nickel	7440-02-0	%	1.0	----	104	----	----	103	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Zinc	7440-66-6	mg/kg	1.0	<1.0	----	31.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Zinc	7440-66-6	%	1.0	----	107	----	----	99.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
EG020T: Total Metals by ICP-MS																																						
Lithium	7439-93-2	mg/kg	0.1	<0.1	----	48.6	----	----	3.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	**3.4**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (Low Level)																																						
Mercury	7439-97-6	mg/kg	0.01	<0.01	----	0.03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Mercury	7439-97-6	%	0.01	----	100	----	89.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil																																						
Total Organic Carbon		%	0.02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	<0.02	<0.02	99.4	96.4	97.1	97.0	0.42	4.72	0.30	----	----	----	**0.41**	**0.29**	----

APPENDIX F

Biological and Sediment Monitoring 2025 Report

Grants Open Cut Mine

Biological and Sediment Monitoring 2025

Final Report



Aquatic Ecology Services

This report has been prepared for Core Lithium as a technical document. The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. As a result, not all relevant site features and conditions may have been identified in this report.

Rainfall and flow data were obtained from Core Lithium. Aquatic Ecology Services has made the assumption that all data has been validated and is correct.

Version	Prepared by	Reviewed by	Review Date
Draft 1.0	T Steele	C. Pietsch	12/08/2025
Draft 1.1	T Steele	P. Lander	20/08/2025
Final 2.0	T Steele		

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1. Background

1.1 Project Description

The Finniss Lithium Project is the first mining project for Core Lithium Limited (Core), located on the Cox Peninsula approximately 25km from Darwin. Lithium Developments (Grants NT) Pty Ltd (LDGNT) is a 100% owned subsidiary of Core and is the operator of the Grants Lithium Project, situated on mineral titles ML31726, ML32074, ML32278 and EMP28651. A Mining Authorisation was granted on 1 April 2020 under the *Mining Management Act 2001* for the Grants open cut mine. A mining operation and processing facility has been developed on ML31726 and the key physical components comprise an open cut pit, integrated waste rock dump and tailings storage facility, run-of mine pad, water management infrastructure and processing plant. Mining was suspended at the site in December 2023, with processing of ore continuing through to June 2024. The site is now in Care and Maintenance.

1.2 Catchment

The Grants open cut mine is located within the wider Darwin Harbour catchment. The catchment consists of several low order streams that are predominately unnamed tidal creek systems that flow to the West Arm of Darwin Harbour. The mine intersects two catchments. The freshwater sections of both catchments are short, and the mine is located at the headwaters of these catchments. The combined area of these two catchments is 13.6 km^2. Pre-mining, there was one existing water body (Observation Hill Dam) that was established in the 1980's, and which is used by LDGNT as a water source for mining operations. Observation Hill Dam is situated in the headwaters of a drainage line that discharges to the Charlotte River, approximately 3 km downstream. BP33 is also situated in the headwaters of the Charlotte River/Bynoe Harbour catchment.

1.3 Monitoring Program

In 2017, GHD conducted aquatic ecology surveys as part of the approvals process for the Finnis Lithium Project. This represented the first aquatic ecology surveys completed in the freshwater section of the Darwin Harbour catchment. The surveys included collection of data on fish, macroinvertebrate and *in situ* water quality. The first biological and sediment monitoring under the WDL was completed in 2022, and adopted sites from the EIS monitoring by GHD. The sampling design for monitoring in 2025 has adopted the sampling design for Grants, with an additional site included in a reference waterway in the Charlotte River catchment that has been included since 2022.

The Waste Discharge Licence (WDL248) for Grants authorises controlled discharge of wastewater from Mine Water Dam 1 through authorised discharge point (DP1) and into an unnamed ephemeral stream that feeds into West Arm, Darwin Harbour. The WDL stipulates the monitoring requirements for surface water, fluvial sediment and biota. A biological and sediment monitoring program was implemented to gather data before active discharge occurred from Grants. This follows the BACI design (Before, After, Control, Impact), allowing

for temporal comparison of aquatic ecosystem health that includes a period prior to the commencement of mining (2022).

1.4 Scope

Aquatic Ecology Services was engaged by Core Lithium to complete macroinvertebrate sampling and ID, data analysis and reporting for the freshwater biological and sediment components of the monitoring program. This report details the outcome of sampling completed in the dry season of 2025.

2. Study Design

2.1 Sampling sites

Five sites were visited during macroinvertebrate and sediment sampling in 2025 (Table 1). This included four downstream sites in the Darwin Harbour catchment, and one Reference site located upstream of all mining activity in the Charlotte River Catchment. Sites UC1, UC2 and UC3 were previously sampled by GHD in 2017. Site UC3 was not sampled in 2022 but was added to the monitoring program in 2023. Site UC3 is located on an unnamed tributary, east of the Grants site as shown in Figure 1. Site UC3 is an Upstream site, as it is located within a different hydrological sub-catchment as shown on Figure 1.

Sampling site UC1 was not sampled in 2025 due to tidal influence at the site making its results highly influenced by Darwin Harbour water quality (which would in turn influence sediment quality) and not appropriate for sampling under AUSRIVAS protocols for macroinvertebrates.

Table 1 – Sampling sites for the Grants Project Area. All coordinates in Zone 52L

Site Code	Site type	Description	Easting	Northing
BP4	Reference	Unnamed Creek upstream of Cox Peninsula Road	697786	8592522
UC3	Upstream	Tributary entering the unnamed creek between UC2 and GDS SW5	693645	8600380
UC2	Downstream	Unnamed Creek directly downstream of Grants, also referred to as GDS SW2	693137	8600170
GDS SW5	Downstream	Unnamed Creek at WDL compliance point	693365	8600709
UC1	Downstream	Unnamed Creek furthest downstream, directly upstream of estuary	693549	8600956

2.2 Timing

To meet the protocols outlined in the Darwin-Daly AUSRIVAS sampling manual (Lamche 2007), sampling was conducted in the post-wet season. Sampling must be conducted in the post-wet season during the recessional flow period, to capture the potential effects of mine water discharge during the preceding wet season. Sampling was undertaken in June.



Aquatic Ecology Services

Grants Open Cut Mine Biological and Sediment Monitoring 2025

Figure 1 - Macroinvertebrate sampling locations

Imagery: Google satellite Hybrid: https://mt1.google.com/vt/lyrs=y&x={x}&y={y}&z={z}

0 0.5 1 km

3. Methods

3.1 Habitat assessment

At each site, descriptions of habitat characteristics were recorded following the criteria listed in the Northern Territory AUSRIVAS "Darwin-Daly Region Model" field sheets (Lamche, 2007). Habitat assessments were undertaken in consideration of the whole reach sampled, including:

- Site description
- Water quality
- Instream physical characteristics (flow velocity and depth, instream habitat characteristics, bank height, riparian zone width)
- Riparian vegetation characteristics (types, %cover, exotic species, erosion, land use)
- Water quality observations (clarity, odour, oils, foam/scum, plumes etc.)
- Sketches of the site, including a cross - section of the reach.

The information recorded was used to assist interpretation of biological data. Data recorded was also used in conjunction with the biological community information as the basis of the overall health assessment.

Photos were taken of upstream and downstream portions of the reach sampled, as well as bank habitat and other key habitat features. This further characterises the habitat conditions at each site, serving as a pictorial record of site conditions that can be tracked over time using photos taken from the same photo points.

3.2 Water and sediment quality

3.2.1 In situ water quality

The physico-chemical parameters of the water at each site were measured using a calibrated multi-parameter water quality meter. The following parameters were recorded:

- Water temperature (°C)
- Dissolved oxygen (DO) concentrations (mg/L and % saturation)
- pH
- Electrical conductivity (EC) (µS/cm)
- Turbidity

The results were compared against the WDL Discharge Trigger Values (Appendix 2 of WDL248). The WDL Discharge Trigger Values (DTVs) are applicable at the downstream compliance site, GDS SW5.

3.2.2 Sediment grab sampling

Sediment sampling methods utilised at each site were in accordance with those outlined in Simpson and Batley (2016) and involved:

- The collection of a composite sample of sediment grabs from random areas of the substrate and sieved to 2mm
- Placing sediments into a laboratory-supplied container, labelled with site and sample details
- Keeping samples in chilled eskies for onward delivery to a NATA accredited laboratory for testing.

Total and acid-extractible metals were analysed for the parameters shown in Table 2.

Table 2 – Testing parameters for sediments collected at Grants

Lab Analyses	Analytes
Total recoverable metals	Aluminium, arsenic, cadmium, chromium, copper, iron, lead, lithium, mercury, nickel, zinc
Other parameters	Particle size distribution (PSD), total organic carbon (TOC), moisture content

Sediment quality results were compared against the toxicant default guidelines values (DGVs) for sediment quality (ANZG 2025). The sediment DGVs indicate the concentrations below which there is a low risk of unacceptable effects occurring, and should be used, with other lines of evidence, to protect aquatic ecosystems. In contrast, the 'upper' guideline values (GV-High), provide an indication of concentrations at which you might already expect to observe toxicity-related adverse effects.

3.3 Macroinvertebrates

3.3.1 Field sampling

Macroinvertebrate sampling followed procedures outlined in the Northern Territory AUSRIVAS Manual for the Darwin-Daly Region (Lamche, 2007). Sampling involved scraping submerged root matter associated with the lower bank to agitate and remove macroinvertebrates into the water column and sweeping a dip net through the water column downstream of the edge habitat, to collect the dislodged animals. Areas of riffle or fast flowing habitat, Pandanus roots and severe bank undercuts were avoided when collecting edge habitat samples.

Once collected, the samples were washed through 10mm and 250µm mesh sieves. The course mesh sieve was examined for large, conspicuous taxa, and these were placed in a labelled sample container. The sample collected in the fine mesh sieve was also placed in the labelled sample container and filled with 70% ethanol. All samples were sent to the macroinvertebrate laboratory for further processing and identification.

3.3.2 Laboratory processing

Samples were washed through a series of sieves (10mm, 500µm and 250µm mesh sizes). Any large, conspicuous taxa identified in the 10 mm mesh sieve were added to the contents of the large mesh fraction retained in the field. The contents of the 500µm mesh sieve were retained for macroinvertebrate identification and enumeration, while the 250µm fraction was retained as sample residue for quality assurance purposes. The contents of the 500µm mesh fraction was poured into a Marchant sub-sampler (Marchant, 1989) and extractions made randomly from cells (aliquots) in this apparatus.

These extractions were placed under a microscope and the taxa identified and counted. This process continued until either all aliquots were examined, or a total of 200 individuals had been counted and identified. The number of aliquots required to be processed to obtain a minimum 200 individual sub-sample was recorded in order to be able to calculate relative abundance. A Leica stereo-dissection microscope was used to examine specimens.

Taxa were identified to family level where possible, with the exception of key taxa identified in Lamche (2007), requiring identification to order level (e.g., Conchostraca, Oligochaeta etc.). Quality assurance processes were followed as per Lamche (2007). Five percent of samples were sent to an external laboratory and checked for correct identification by an AUSRIVAS accredited Senior Taxonomist.

3.4 Data analysis

A number of indices can be used to assess and/or quantify the influence of anthropogenic activities on macroinvertebrate communities. Responses to contaminants or changes in flow can result in anything from changes in abundance and diversity, through to changes in community composition through the loss or reduction of sensitive taxa. Macroinvertebrate community indices were calculated for each sample at each site.

A one-way ANOVA was performed for each macroinvertebrate index to understand if significant differences are present between baseline (2017 and 2022) and operations (2024) data. A summary of the univariate macroinvertebrate indices assessed as part of this study is provided below:

- Relative abundance – Total number of individual taxa collected at a site. This information is calculated based on processing requirements in the laboratory (% of sample processed).
- Taxa richness (Family) – Total number of taxa present at the site used as a measure of diversity of families (used for long-term data analysis).
- PET richness – total number of families from orders Plecoptera, Ephemeroptera and Trichoptera. PET taxa are generally more sensitive to disturbance.
- SIGNAL-2 – a biotic index that allocates a value to each macroinvertebrate family based on their sensitivity to pollution. The metric is calculated by averaging the index of all families collected. Lamche (2007) cautions against the use of the SIGNAL-2 index for assessing the status of Northern Territory macroinvertebrate communities. This measure is however, considered appropriate for this study as the number of pollution-sensitive versus pollution-tolerant families does provide some insight to the level of stress that the macroinvertebrate community is experiencing.
- To further interrogate SIGNAL-2 results, the tolerant taxa index was calculated from SIGNAL grade numbers. Taxa with SIGNAL grade numbers of 3 or less are designated as tolerant (Marshall *et al.* 2001), and the number of these tolerant taxa are compared to the overall taxa count and expressed as a percentage. This approach allows for a more nuanced assessment of any impacts associated with active discharge from Mine Water Dam 1 in the future and provides background data on the overall tolerance of taxa in the catchments.

Prior to 2021, biological monitoring programs commonly utilised the NT AUSRIVAS Darwin-Daly Early (dry season) Family level Edge habitat model. New guidance on the use of these models in the NT to understand impacts of point source pollution have since been published (ANZG 2024a). The updated guidance states that the models are not useful in understanding aquatic ecosystem health outside of the large rivers where macroinvertebrates have been collected, and therefore AUSRIVAS modelling has not been undertaken on the data collected in 2024.

In addition to univariate analysis of metrics, an assessment of differences in the macroinvertebrate community composition was undertaken. Statistical analysis was undertaken comparing sample groups from baseline (2022) and operations (2024). Sample data was fourth-root transformed prior to multivariate analysis and was completed using PRIMER Version 7.0.21. Non-metric Multidimensional Scaling (NMDS)

Ordination provides a representation of the relative similarity of entities (i.e., samples) based on their attributes (i.e., macroinvertebrate community composition) within a reduced dimensional space. The more similar sites are to each other, the closer they are located in the NMDS ordination space.

In this study, a NMDS plot was used for data to display the similarity between site types (Reference and Downstream). A similarity matrix for all pairs of samples based on the Bray-Curtis similarity coefficient was calculated. Stress, which is a measure of the distortion produced by compressing multi-dimensional data into a reduced set of dimensions, was used to gauge how reliable the patterns presented in two-dimensional NMDS plots are. Stress levels above 0.20 indicate a poor representation of inter-sample similarity and, as such, the NMDS results with stress values of this order require interpretation with caution (Clarke *et al.* 2014).

4. Site Conditions

Rainfall recorded at Darwin Airport is presented in Figure 2 and compared with the average for each month from the 2024-2025 wet season (October-March). A total of 1653mm of rain was recorded in the 2024/2025 wet season, compared with an average of 1582mm. The majority of rain was recorded from January to March, and was relatively evenly spread. More than twice the average rainfall was recorded in April and May of 2025, which was likely to prolong flows through the surrounding catchments. Discharges to Unnamed Creek were undertaken January to March, and discharge volumes reflected rainfall and flows within the unnamed creeks.

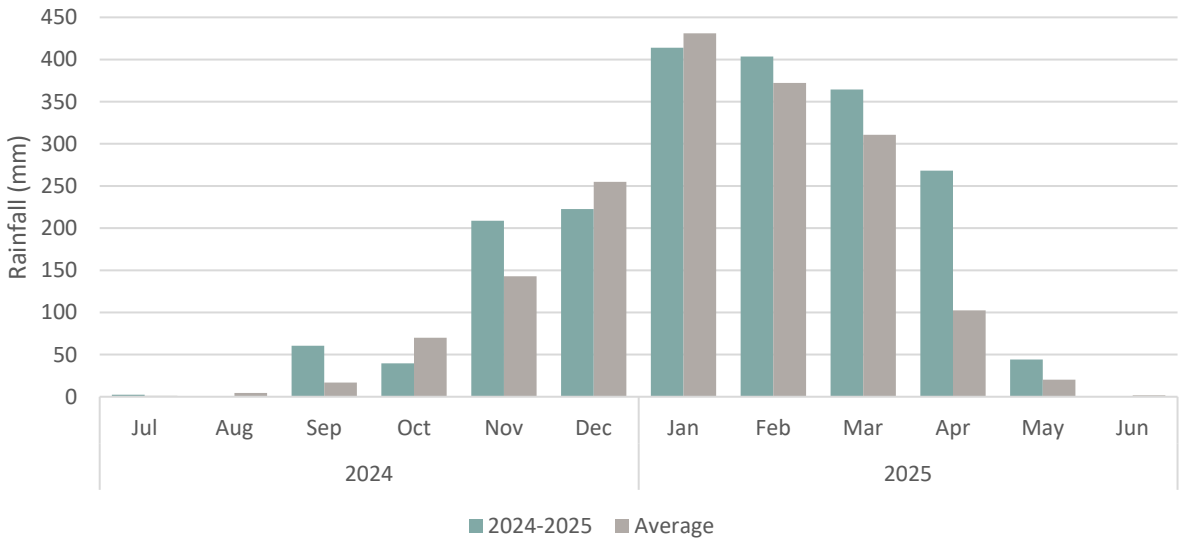


Figure 2 – Monthly Rainfall recorded at Darwin Airport (Station: 014015) July 2024-June 2025 compared with average rainfall

5. Results

5.1 Habitat characteristics

Habitat characteristics of each site are detailed below in Table 3. All sites downstream of Grants were reduced to isolated pools at the time of sampling. Conditions at UC1 were considered heavily influenced by the tide due to a lack of flow in the unnamed creek, and the site was not sampled in 2025.

Table 3 – Grants site descriptions, June 2025

Site description	Site photo
BP4 – Reference The site is located on an unnamed creek upstream of Cox Peninsula Road. The riparian zone was intact and consisted of paperbarks and pandanus, with little understorey. The riparian zone provided high shading, exposed roots and detritus in the creek bed. Sediments were made up of sand and silt, and some algae was present. Floating and submerged macrophytes were observed in deeper pools.	
UC3– Upstream The site was a series of pools. The substrate was majority sand and silt with some bedrock. Deeper areas of pools contained submerged macrophytes. Riparian vegetation was continuous, being made up of large overhanging vegetation that created a high amount of shade. Undercut banks and detritus were common throughout the site.	
UC2 – Downstream The site was made up of pool habitat connected by shallow runs. Floating and submerged macrophytes were present in deeper pools. Large woody debris, detritus and exposed roots were common. The riparian zone consisted of large paperbark trees, providing moderate shade. Native grasses and herbs were present in the understorey and were trailing in the water.	

Site description	Site photo
GDS SW5 - Downstream The site is located at the WDL compliance point. There was less riparian vegetation present at the site compared with other sites, and filamentous algae was observed. Despite a lack of vegetation, there was little erosion, and the substrate was made up of a mix of pebbles and gravel along with sand and silt. There were no deep pools present, and runs were connected by shallow riffles.	
UC1 – Downstream The site was a series of slow-flowing pools connected by shallow runs. The substrate was made up of gravel, sand and silt. Riparian vegetation was sparse, mainly being made up of large overhanging Melaleucas. Juvenile mangroves were also observed along the wetted fringe.	

5.2 Water quality

5.2.1 In situ

In situ water quality data collected at sampling sites is presented in Table 4. The following observations can be made about water parameters at sites associated with Grants:

- Water temperatures were similar at most sites, and warmest furthest downstream at GDS SW5.
- Dissolved oxygen was variable and did not appear to have a relationship to catchment position. DO was lowest at the Refence site, BP4.
- Conductivity was below the WDL DTV at GDS SW5, and water was considered fresh. The highest result was downstream at UC1, which was considered to be tidally influenced at the time.
- pH readings were above the upper WDL DTV and highest at GDS SW5. All other pH values were circumneutral.
- Turbidity was below the WDL discharge trigger value at GDS SW5, and similar at all sites.

Table 4 – In situ water quality results from Grants sites visited in April 2025. Exceedances highlighted in grey

Site Code	Time	Temp (°C)	DO (%)	EC (µS/cm)	pH	Turbidity (NTU)
WDL Discharge Trigger Values[1]			70-92	250	5.2-6.6	12
BP4	11:15	25.76	61.9	23	7.56	7.10
UC3	15:34	31.08	116.7	19.12	7.08	4.45
UC2	8:10	22.06	25.56	57.53	6.73	10.43
GDS SW5	14:23	33.55	142.82	154.28	8.30	4.47
UC1	10:15	28.58	105.23	29,448	8.75	7.71

[1] Applicable at WDL248 Compliance Point GDS SW5.

5.3 Sediment quality

Sediment particle size analysis and sediment quality results, for samples collected at sites associated with Grants are presented in (Table 5). Data are compared against the ARMCANZ & ANZECC 2000 default guidelines for toxicants in sediment. Site UC1 was not sampled as the tidal influence on the site would have influenced results that would not reflect the result of active discharge from Grants. Results are presented as total metals. The following observations are made based on the results:

- Total arsenic was above the DGV at GDS SW5.
- Cadmium was only recorded above the limit of reporting (LOR) at UC2.
- Metal concentrations in sediments were recorded in the highest concentration at UC2, except for arsenic. All metals were reduced in sediments downstream at GDS SW5.

Table 5 - Sediment quality results for samples collected at Grants. All results are presented in mg/kg

Analyte	LOR*	BP4	UC3	UC2	GDS SW5	DGV	GV-high
Aluminium	50	5290	1500	16900	3300	-	-
Arsenic	1	1.40	8.97	16.2	52.5	20	70
Cadmium	1	<0.1	<0.1	0.2	<0.1	1.5	10
Chromium	2	4.9	8.9	35.2	24.3	80	370
Copper	5	4.9	1.3	15.0	3.4	65	270
Iron	50	2850	4770	35600	26600	-	-
Lead	5	9.6	3.5	17.4	5.8	50	220
Lithium	0.1	5.1	2.2	50.2	3.8	-	-
Mercury	0.01	0.02	0.02	0.02	0.02	0.15	1.00
Nickel	2	2.8	1.2	13.8	4.0	21	52
Zinc	5	6.2	3.9	43.3	12.7	200	410

5.4 Macroinvertebrates

5.4.1 Relative abundance

The relative abundance of all samples collected in 2025 are presented in Figure 3. The highest relative abundance was recorded at UC2, with more than double the number of animals in each sample compared with any other site. No visible pattern was present in the results when viewed in the context of position in the catchment relative to Grants.

Historical data collected from 2017-2025 (Figure 4) showed higher relative abundances at all sites except UC3 in 2025, yet no significant difference found between baseline years and data collected in 2025 (p=>0.05. Appendix C). The significantly higher relative abundance score at UC2 in 2024 was the highest result received at a site to date. A trend of increasing relative abundance is observed at compliance point GDS SW5.

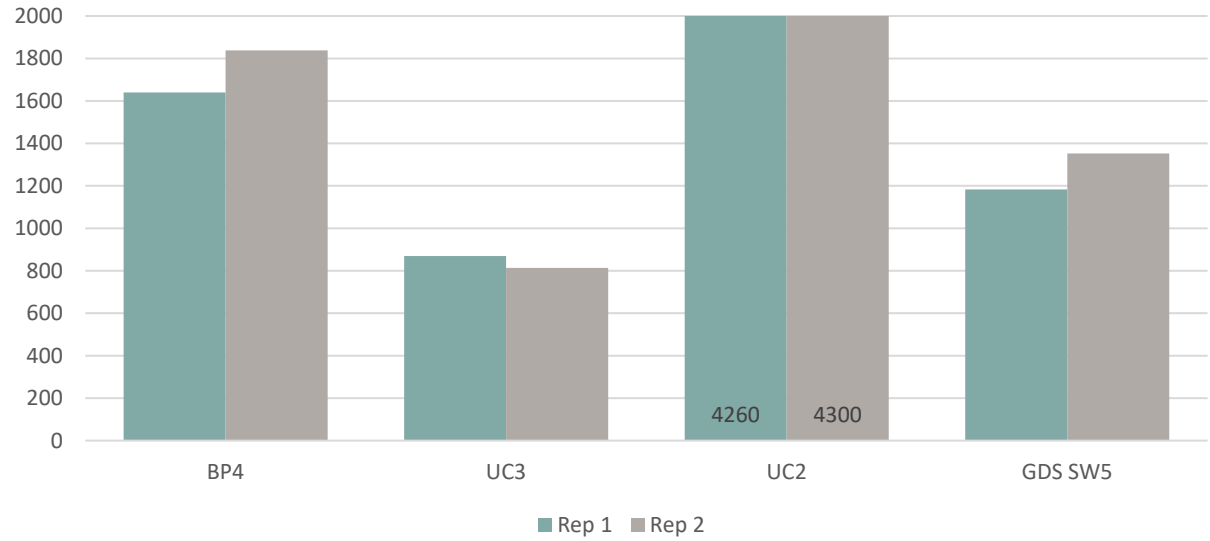


Figure 3 - Relative abundance of samples collected at Grants, June 2025

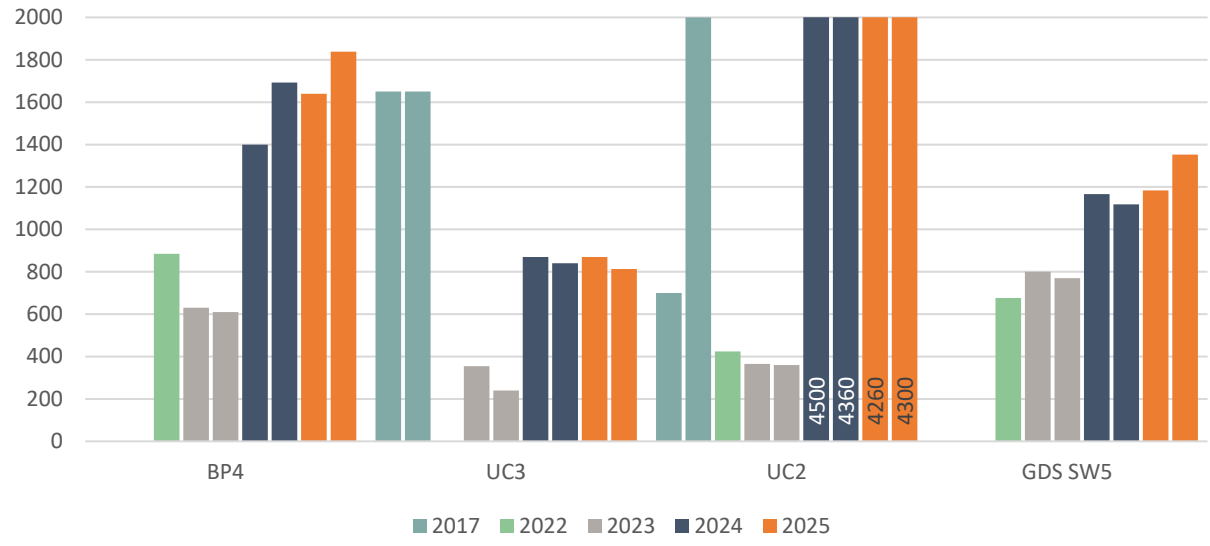


Figure 4 - Relative abundance of samples collected at Grants 2017 - 2025

5.4.2 Taxa richness

The taxa richness of samples collected in 2025 are presented in Figure 5. Macroinvertebrate diversity was lowest at the tributary site UC3, and increased with distance downstream between UC2 and GDS SW5.

Data collected from 2017-2025 is presented in Figure 6. Taxa richness results were higher at BP4 and GDS SW5 with sites UC3 and UC2 similar to 2024. As for relative abundance, a trend of increasing taxa numbers was observed at GDS SW5. Despite some notable differences in taxa richness, there was no significant difference (p=>0.05) between baseline and 2025 data (Appendix C).

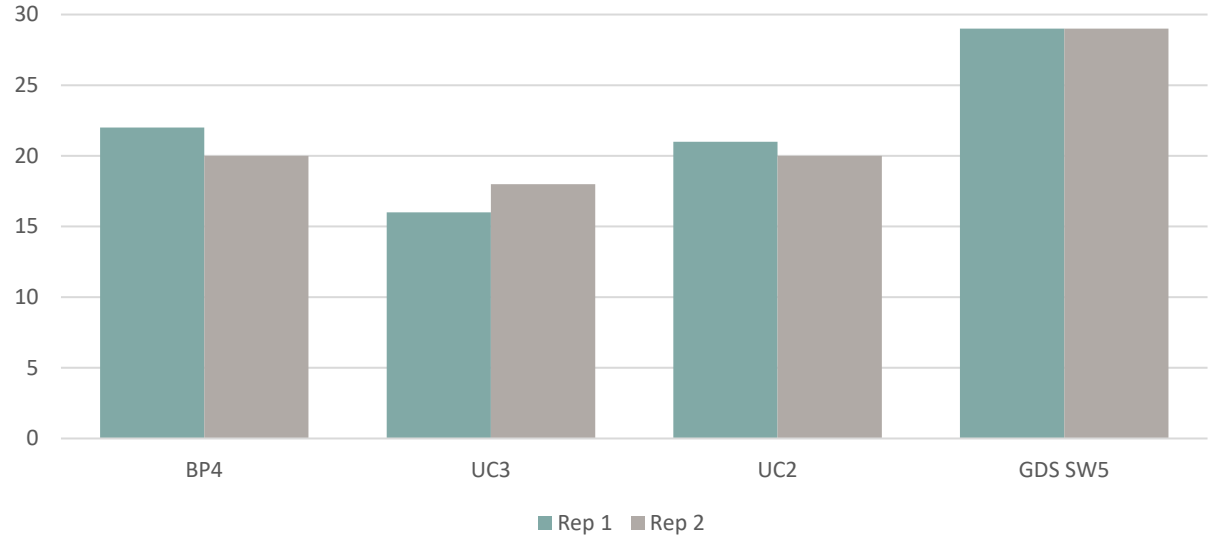


Figure 5 – Taxa richness of samples collected at Grants, June 2025

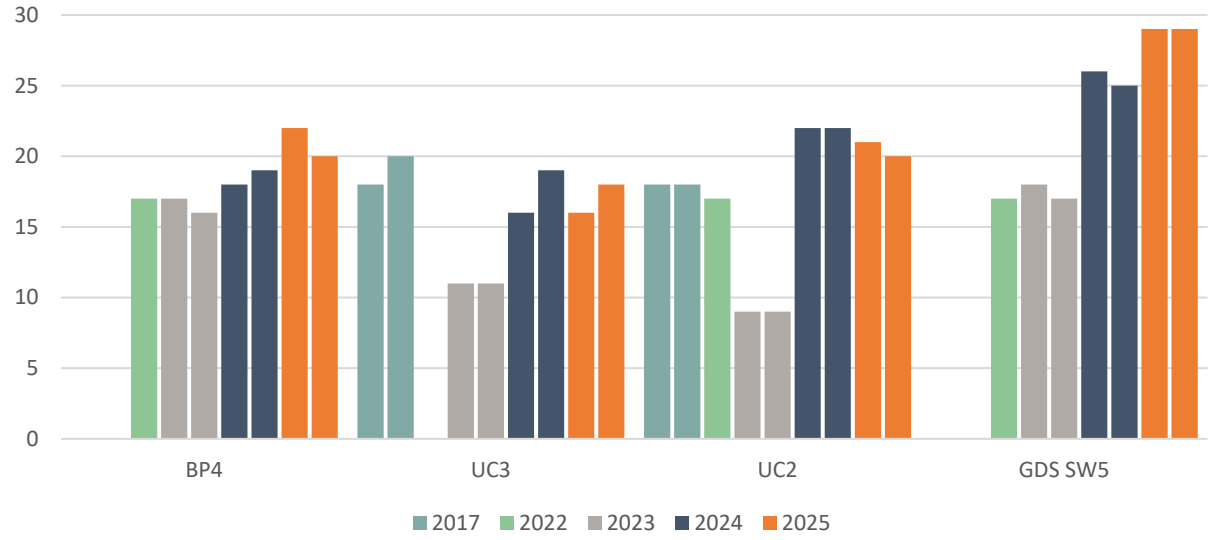


Figure 6 - Taxa richness of samples collected at Grants 2017 - 2025

5.4.3 PET richness

The PET richness of samples collected in 2025 are presented in Figure 7. There were more PET taxa found at GDS SW5 compared with other sites. The remaining sites contained similar numbers of PET taxa, with the least found at UC2.

When reviewing historical results, PET richness varied between years, but were similar over time (Figure 8), yet the same number were found in 2024 and 2025. There was a significant difference found between years (p=>0.03885, Table 6). Differences between time periods were mainly contributed to by high PET richness results recorded in 2025 (Figure 9).

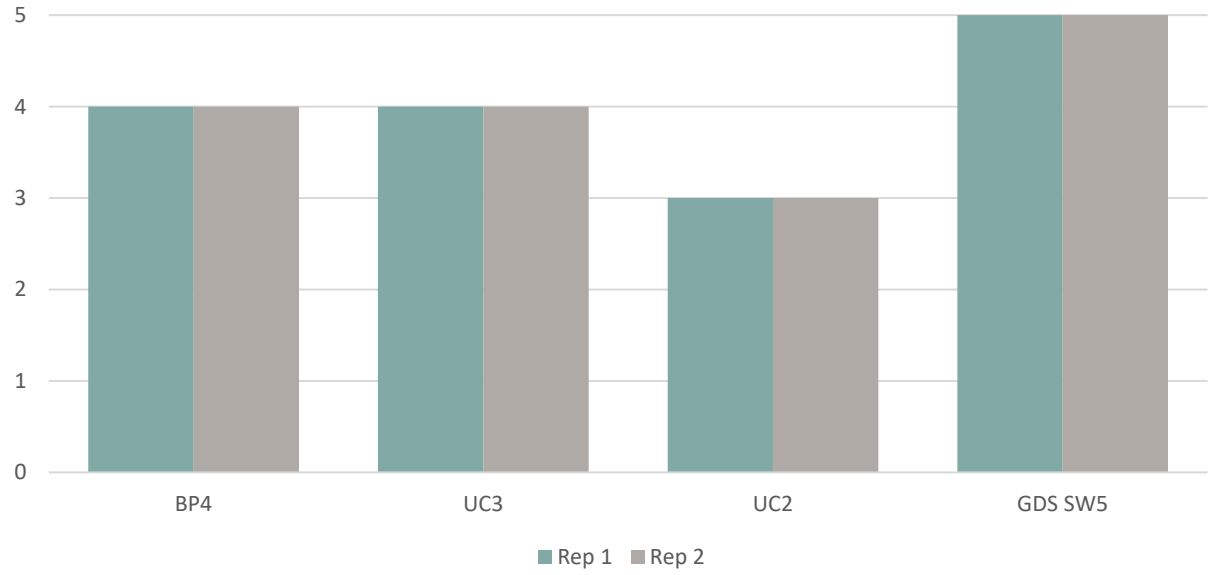


Figure 7 – PET richness of samples collected at Grants, June 2025

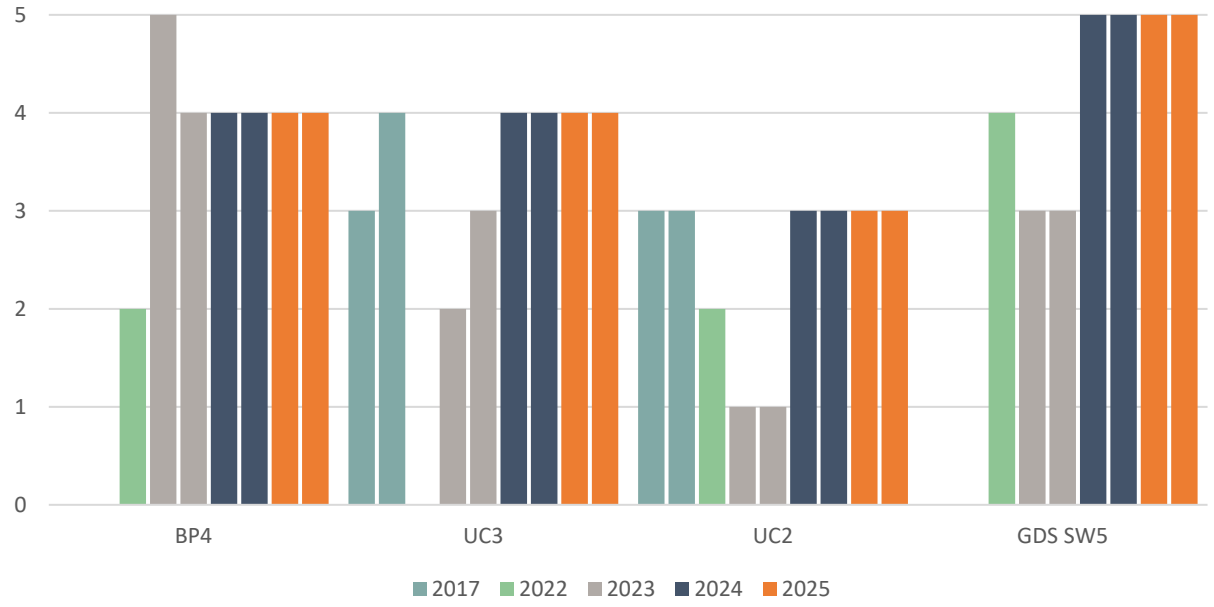


Figure 8 – PET richness of samples collected at Grants 2017 – 2025

Table 6 - Results of one-way ANOVA between baseline and 2025 data

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Groups (between groups)	1	3.2	3.2	4.9655	0.03885
Error (within groups)	18	11.6	0.6444		
Total	19	14.8	0.7789		

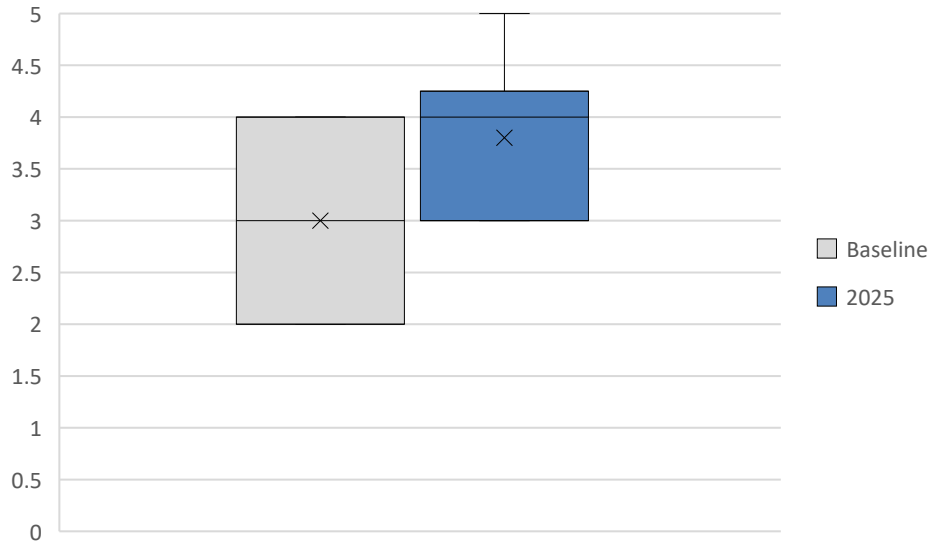


Figure 9 – Box and whisker plot demonstrating differences in PET richness between baseline and 2025

5.4.4 SIGNAL-2

SIGNAL-2 results are presented in Figure 10. Results were highest at the reference site, but all samples varied by only 0.7. When comparing historical results, similar SIGNAL-2 scores were recorded at all sites in 2025, with GDS SW5 increasing in its SIGNAL-2 score from 2024 There was no significant difference found between years (p=>0.05, Appendix C). SIGNAL-2 scores are indicative of a pollution tolerant community at all sites.

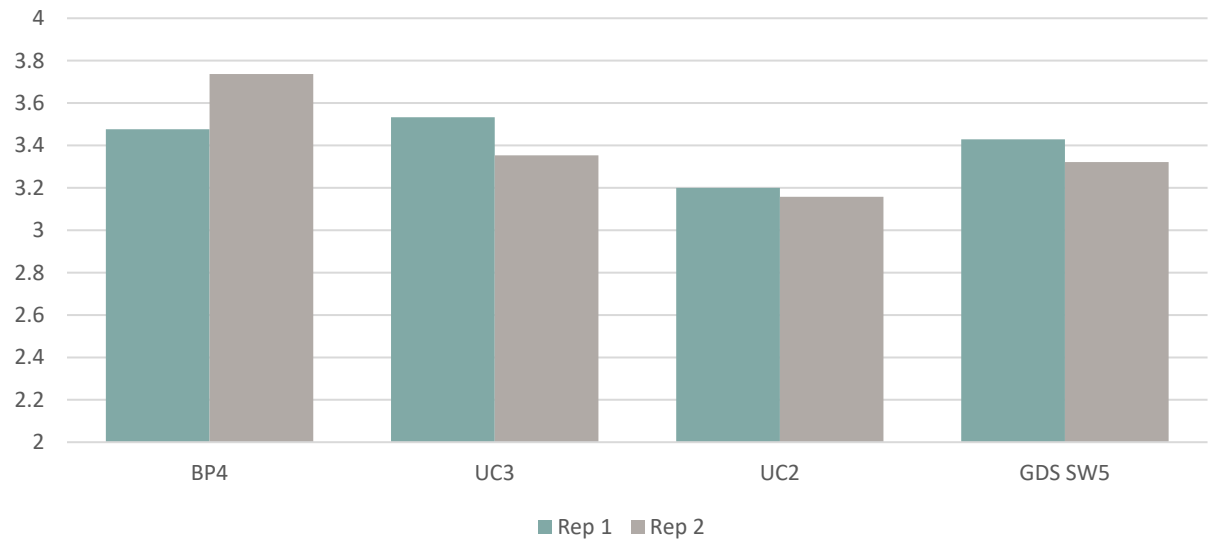


Figure 10 - SIGNAL-2 scores for samples collected at Grants, June 2025

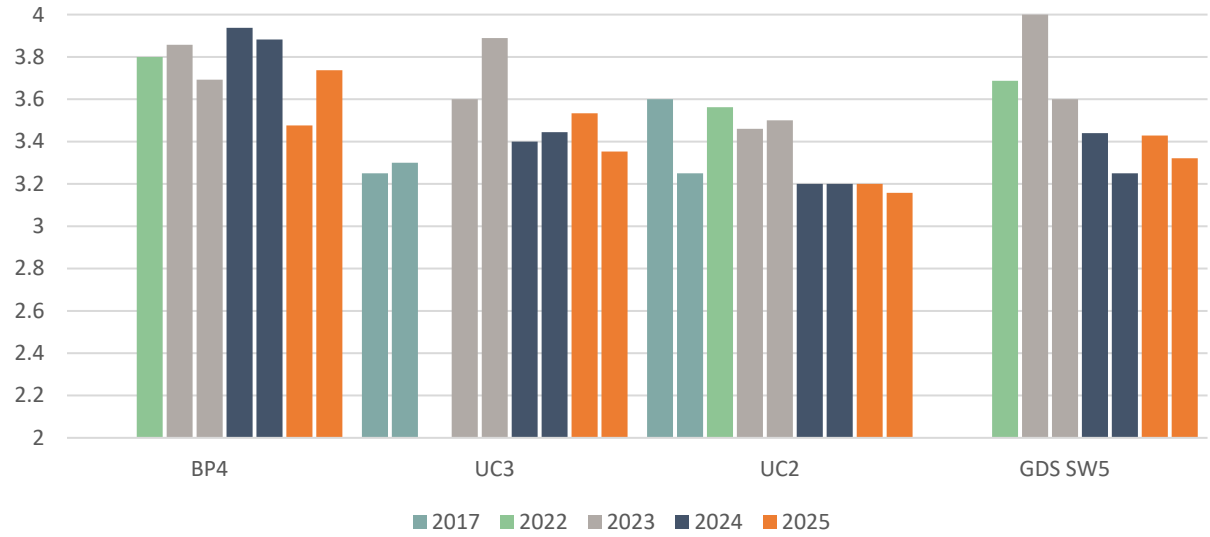


Figure 11 – SIGNAL-2 scores for samples collected at Grants, 2017 - 2025

5.4.5 Community composition

Approximately 16,257 individuals were collected across the Grants sites, comprising of 34 families from 12 orders. The NMDS plot (Figure 12) demonstrates that the similarity of the community was greatest between samples at each site, indicating that the habitat characteristics of each site is likely contributing to community composition. When comparing historical composition data (Figure 13), there is more similarity between samples collected between 2022 and 2025, with some separation with samples collected in 2017. The dissimilarity in the composition of samples at UC1 in 2024 are represented by the two pink diamonds that are separated far from all other historically collected samples.

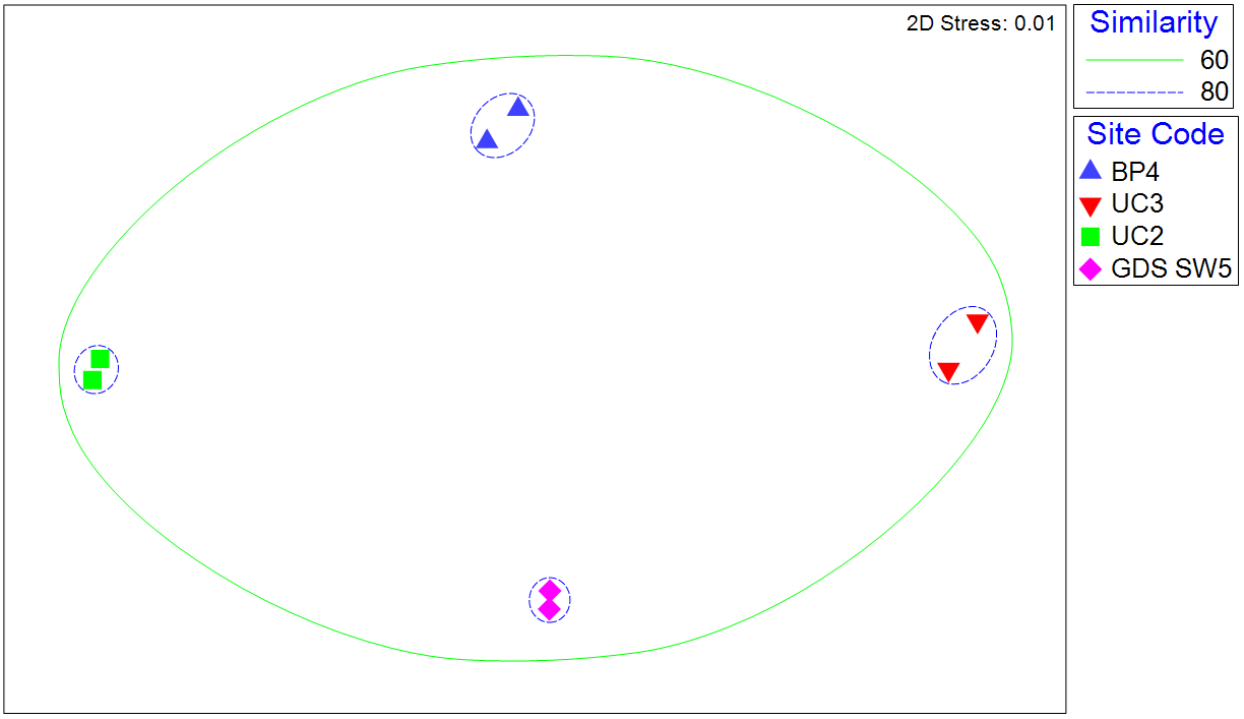


Figure 12 - NMDS plot showing variation in community composition between Grants sites in 2025

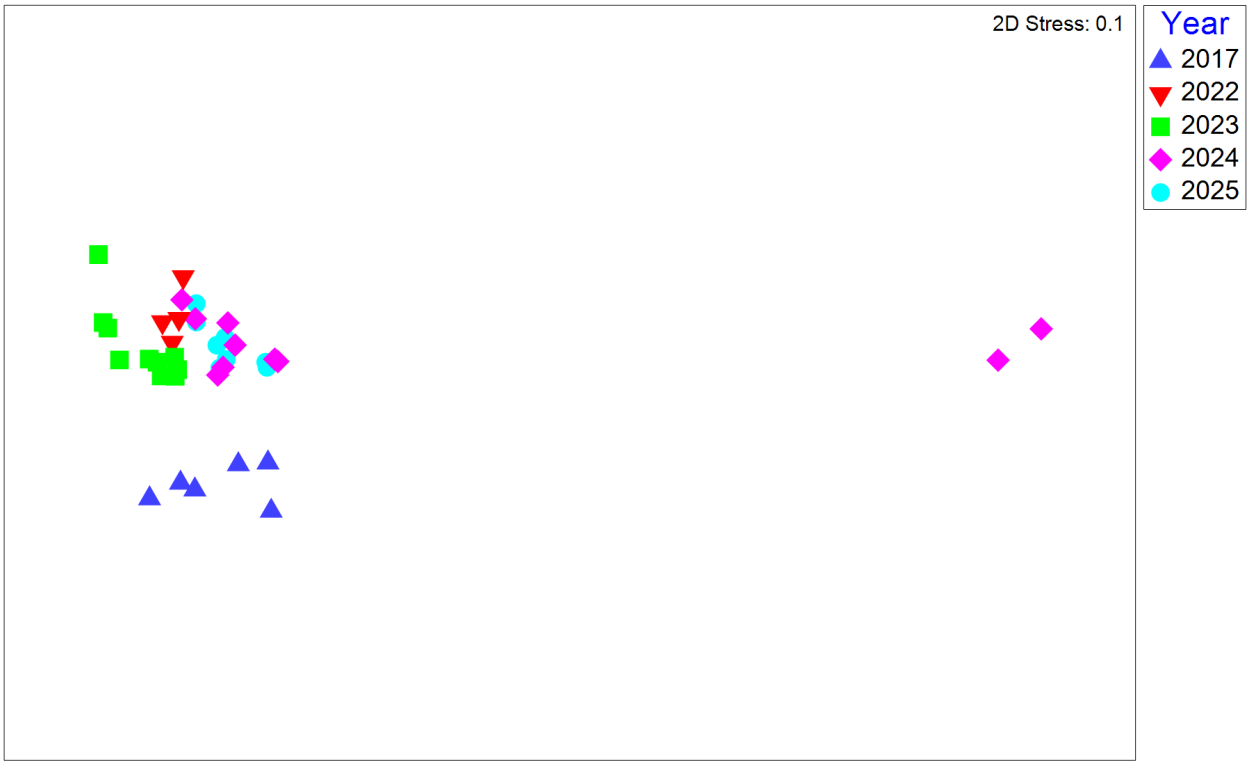


Figure 13 - NMDS plot showing variation in community composition between Grants sites 2017-2025

6. Discussion

Sampling in 2025 was undertaken after the cease of flow of all creeks surrounding Grants. Despite the later sampling time, community composition and the majority of sampling results were either similar or improved from those in previous years. Late rainfall in April and June 2025 was likely to have maintained aquatic habitat well into the dry season and results reflect a lack of exceedances for all but a single metal downstream. Site UC1, which has in previous years been noted to have seasonal tidal influence showed that during non-flowing periods the site is heavily influenced by tidal waters. The results of in situ water quality sampling rendered the site inappropriate for sampling in 2025, as sediment quality was likely to be more reflective of water quality influences of Darwin Harbour than any discharges from Grants. As the EC of water at the site was very high when compared with other sites, it was not considered appropriate for biological monitoring. Freshwater invertebrates were likely to be depauperate at the site due to high salinity and non-conformance to site requirements in AUSRIVAS protocols (Lamche 2007).

Sediment results downstream of Grants suggest that arsenic is likely to be naturally present in sediments in the lower catchment. The site furthest downstream returned an arsenic value above the sediment DGVs, which have been detected at the sites since baseline data collection in 2022 and again in 2023 and 2024 (AES 2022, AES 2023, AES 2024). The low concentration of arsenic at UC2, which is also downstream of Grants suggests that these results are not a result of discharges and sediment transport from the site. Sediment results from the tributary entering the unnamed creek downstream of UC2, did not report elevated arsenic and are therefore not expected to be contributing to the results found downstream. Arsenic results indicate a potential risk to aquatic ecosystems, should it become bioavailable. It should be noted however, that pH values were above neutral, posing little risk of arsenic becoming bioavailable. There were no patterns in macroinvertebrate metrics or community composition that appeared to be associated to the DGV exceedance.

In 2025, macroinvertebrate sampling results showed improvement furthest downstream of Grants at GDS SW5, and other sites downstream demonstrated an improvement or similarity in health metrics from previous data. The results did not appear to have been affected by the reduction in flow at sites when compared with previous years where sites were flowing (AES 2025). Water quality results at UC1 reflected tidal influence related to the cease of flow in the unnamed creek. The suitability of the site for future sampling should be reviewed.

There were similarities in macroinvertebrate community composition between sites in each year, yet most operational years were very similar. the results do not indicate any impact the aquatic communities resulting from wet season active discharges. The community composition of samples from UC1 in 2024 was obvious and further evidences the needed review of the site's validity in the sampling design.

The compliance point, GDS SW5 showed an improvement in almost all metrics in 2025 compared to previous years, which aligned with other sites in the catchment. Although there were some observable differences between years, there was no significant difference found across sites sampled in both years for the majority of macroinvertebrate metrics. The significant difference between baseline data and PET taxa richness can be attributed to higher values recorded in 2025, and were the same as 2024. The increase in

2025 is directly relative to increases in taxa richness. This significant difference is not considered to be a cause for concern, as it aligns with other metrics in terms of the ecosystem's condition at the time of sampling.

Macroinvertebrate and sediment sampling at Grants in 2025 was completed well into the dry season, and site characteristics reflected those conditions. Despite the late sampling, there appeared to be little effect on the validity of results. Habitat attributes of each site appeared to influence the differences in macroinvertebrate metrics and community composition., and the results of sampling in 2025 demonstrate that active discharge from Grants has had no significant impact on the aquatic ecosystems of waterways draining to Darwin Harbour.

7. Recommendations

The reference site, BP4 is located on a larger and permanently inundated stream (East Charlotte River). There has been very little difference in macroinvertebrate metrics at the site over time, which is not surprising, given the morphology and permanent water presence at the site. The smaller intermittent streams that drain to Darwin Harbour, such as the creek downstream of Grants are much more flow reactive during rainfall events, and macroinvertebrate communities are heavily influenced by inter-annual differences in rainfall. It is suggested that BP4 is not a suitable reference site for this program, and that UC3 continue as the upstream reference, due to its similarity in morphology and position in the catchment. Although there is only a single year of baseline data for the site collected in 2017, it is considered to be a more analogous site for the future understanding of changes in aquatic ecosystem heath associated with climatic conditions and mine water discharge.

Site UC1 is located in an ecotone of the unnamed creek draining from Grants. The intermittent influence of the tide is likely to be altering the macroinvertebrate community, depending on flow at the time of spring tides. The site is unlikely to be a reliable monitoring point in the long-term. To continue the replication of downstream sites, it is suggested that a monitoring point should be established upstream of the confluence of the Unnamed Creek containing UC3 and Cox Peninsula Road.

It is understood there is an upstream site on the Unnamed Creek to the north-west of the site. Due to the site's location in the top headwaters of the stream, it is unlikely that there would be water available for macroinvertebrate sampling. It is recommended that sediment monitoring is completed at the site during biological and sediment monitoring to assist with understanding background sediment chemistry of the catchment.

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Appendix A. Sediment Data

Analyte	Unit	LOR	BP4	UC3	UC2	GDS SW5
pH Value	Unit	0.1	4.9	6.0	5.1	5.4
Sulfate as SO4 2-	mg/kg	10	10	<10	<10	<10
Chloride	mg/kg	10	60	20	<10	<10
Calcium	mg/kg	10	<10	<10	<10	<10
Magnesium	mg/kg	10	<10	<10	<10	<10
Sodium	mg/kg	10	50	20	<10	<10
Potassium	mg/kg	10	<10	<10	<10	<10
Aluminium	mg/kg	50	5290	1500	16900	3300
Iron	mg/kg	50	2850	4770	35600	26600
Arsenic	mg/kg	1	1.40	8.97	16.2	52.5
Cadmium	mg/kg	0.1	<0.1	<0.1	0.2	<0.1
Chromium	mg/kg	1	4.9	8.9	35.2	24.3
Copper	mg/kg	1	4.9	1.3	15.0	3.4
Lead	mg/kg	1	9.6	3.5	17.4	5.8
Nickel	mg/kg	1	2.8	1.2	13.8	4.0
Zinc	mg/kg	1	6.2	3.9	43.3	12.7
Lithium	mg/kg	0.1	5.1	2.2	50.2	3.8
Mercury	mg/kg	0.01	0.04	<0.01	0.02	<0.01
Total Organic Carbon	%	0.02	4.77	0.37	5.81	0.27

Appendix B. Raw Macroinvertebrate Data

Order	Family/Sub-family	BP4	BP4	UC3	UC3	UC2	UC2	GDS SW5	GDS SW5
		1	2	1	2	1	2	1	2
Acarina		47	31	0	7	0	0	6	12
Coleoptera	Dytiscidae	53	8	0	7	80	60	56	47
Coleoptera	Elmidae	0	0	0	0	0	0	6	0
Coleoptera	Hydraenidae	40	69	0	0	60	40	6	6
Coleoptera	Hydrochidae	27	15	23	13	300	220	28	12
Coleoptera	Hydrophilidae	7	8	0	0	260	360	33	29
Crustacea	Atyidae	400	346	85	53	100	20	383	441
Decapoda	Palaemonidae	7	46	46	53	0	0	6	12
Decapoda	Parathelphusidae	7	8	0	0	20	20	6	6
Diptera	Ceratopogonidae	67	38	31	13	40	40	0	0
Diptera	Chironominae	587	738	246	220	1100	1140	67	53
Diptera	Culicidae	7	0	0	13	20	40	28	24
Diptera	Orthocladiinae	0	0	38	27	0	0	11	6
Diptera	Tabanidae	7	0	0	0	0	0	0	0
Diptera	Tanypodinae	147	215	92	147	620	580	106	153
Ephemeroptera	Baetidae	20	38	200	140	780	680	117	165
Ephemeroptera	Caenidae	53	69	46	53	240	360	117	112
Gastropoda	Planorbidae	0	0	0	0	0	0	33	47
Hemiptera	Gerridae	7	8	8	7	20	20	11	6
Hemiptera	Mesoveliidae	7	0	8	7	0	0	6	6
Hemiptera	Micronectidae	7	15	0	0	40	60	11	12
Hemiptera	Notonectidae	0	0	8	20	60	100	17	24
Lepidoptera	Crambidae	13	8	0	0	40	120	0	0
Notostraca	Aeshnidae	0	0	0	0	20	0	0	6
Odonata	Coenagrionidae	0	0	8	7	280	160	22	24
Odonata	Corduliidae	0	8	8	0	0	0	6	6
Odonata	Libellulidae	13	15	0	0	40	40	6	6
Odonata	Lindeniidae	0	0	0	0	0	0	11	12
Oligochaeta		113	146	15	20	20	60	39	88
Trichoptera	Calamoceratidae	7	0	0	0	0	0	0	0
Trichoptera	Ecnomidae	0	0	8	7	0	0	6	6
Trichoptera	Hydroptilidae	0	0	0	0	0	0	28	24
Trichoptera	Leptoceridae	0	8	0	0	120	180	11	6
Turbellaria	Dugesiidae	0	0	0	0	0	0	6	6

Appendix C. ANOVA Results

Relative abundance

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Groups (between groups)	1	5622302.239	5622302.239	4.3388	0.06478
Error (within groups)	15	19437083.99	1295805.599		
Total	16	25059386.23	1566211.639		

Taxa richness

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Groups (between groups)	1	9.8	9.8	0.84	0.44715
Error (within groups)	18	210	11.6667		
Total	19	219.8	11.5684		

SIGNAL-2

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Groups (between groups)	1	0.01818	0.01899	0.2688	0.51104
Error (within groups)	18	1.2174	0.06663		
Total	19	1.2355	0.07503		

Appendix D. Macroinvertebrate QA

Aquatic Ecology Services

Macroinvertebrate Identification
Quality Assurance Certificate

Site Code: BP4
Replicate: 2 of 2
Habitat: Edge
Identification Date: 1/08/2025
Identifier: T Steele
Identification Level: Family
QA Date: 8/08/2025
Senior Taxonomist: S Jones
Percentage Correct: 100%
QA Result: Pass

Taxonomy	Original Count	QA Count	Comment
Acarina	4	4	
Dytiscidae	1	1	
Hydraenidae	8	8	
Hydrochidae	2	2	
Hydrophilidae	1	1	
Atyidae	40	40	
Palaemonidae	5	5	
Parathelphusidae	1	1	
Ceratopogonidae	4	4	
Chironominae	85	83	
Tanypodinae	25	24	
Baetidae	4	4	
Caenidae	8	8	
Gerridae	1	1	
Micronectidae	2	2	
Crambidae	1	1	
Corduliidae	1	1	
Libellulidae	2	2	
Oligochaeta	17	16	
Leptoceridae	1	1	



Good science at a fair price

APPENDIX G

Riparian Vegetation Monitoring Report



WDL248-02
RIPARIAN VEGETATION ANNUAL MONITORING

2024- 25

Lithium Developments (Grants NT) Pty Ltd

Report Technics

Title	WDL248-02 Riparian Vegetation Annual Monitoring
Version	Version 1
Monitoring Period	2024- 25
Report Date	11/07/2025
Client	Lithium Developments (Grants) Pty Ltd ABN 80 146 287 809
Compliance	WDL248-02 (*Appendix B: Biological Monitoring*)

Consultant/ Author	Savannah Roots | Jaime Marr	
Sub consultant/ Review	Horsnell Environmental Consulting | Sally Horsnell	
Monitoring Date	15 May 2025, 1 day	
Endorsement	Jaime Marr 	Sally Horsnell
	Savannah Roots	HORSNELL ENVIRONMENTAL CONSULTING

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EXECUTIVE SUMMARY

Savannah Roots, commissioned by Lithium Developments (Grants NT) Pty Ltd, conducted the annual riparian vegetation monitoring for the 2024-25 wet season to comply with WDL248-02 Licence Conditions (Condition 30). This second annual monitoring report aims to assess if mining activities associated with the Licence are impacting riparian vegetation communities downstream.

The monitoring, conducted in May 2025, included drone imagery, ground-based vegetation survey, and photographic documentation of the three riparian ecosystems- swamp, riparian and mangrove. Results were then compared to the baseline survey conducted in June 2019.

The 2025 ground based vegetation survey showed minimal changes in composition and structure across the plots when compared to the 2019 baseline survey. While two plots showed slight shifts in dominant species, vegetation classification and structure remained stable. The mangrove plot did not record a ground stratum during the 2025 survey, though open grassland beyond the plot and mangrove boundary was observed. The riparian plot upper stratum was confined to creek banks, while the mid layer and grassland dominated the remaining area, though with no compositional change. The swamp plot remained the most diverse, demonstrating stable classification across upper, mid, and ground strata, despite some variation in dominant species compared to 2019.

Aerial and VARI imagery indicated a slight decrease in the extent of swamp riparian vegetation, in contrast to a slight increase of the other two riparian ecosystems.

Overall, based on comparative analysis of the 2019 and 2025 monitoring surveys, the three riparian vegetation plots demonstrated stable composition, structural characteristics and extent indicating that the mining activity is not impacting on riparian vegetation communities downstream.

.

1 Introduction

Savannah Roots was commissioned by Lithium Developments (Grants NT) Pty Ltd (LDGNT) to undertake the annual riparian vegetation monitoring for the 2024- 25 wet season period. Riparian monitoring is required annually as part of the WDL248-02 Licence Conditions and Monitoring Program (Condition 30). This is the second monitoring report since the commencement of the Licence (2022). The purpose of this annual riparian monitoring is to determine if mining activities associated with the Licence are impacting riparian vegetation communities downstream.

1.1 Background

A baseline mangrove and riparian vegetation survey was completed by EcOz in 2019 for the then proposed lithium mine under an Environmental Impact Statement assessment. The vegetation survey identified three riparian communities within a mangrove ecosystem located downstream of the mine in an unnamed tributary, these were swamp, riparian and mangrove. The unnamed tributary is part of the current onsite water management strategy, and the three riparian ecosystems have been included for riparian monitoring in the WDL248-02.

This report forms the multiple lines of evidence approach to monitor potential impacts from authorised discharge activities. The Licence allows controlled discharge from the Grants Lithium Project (GLP; ML31726) which discharges downstream of the mine to the unnamed tributary and ultimately to the tidal influence of the West Arm of Darwin Harbour. Monitoring of downstream riparian vegetation annually post wet season allows for early detection of any changes. Vegetation composition and density assessments are compared to the 2019 baseline survey which was completed before the Licence was granted. No reference site was established as there were no suitable sites within proximity of the mine and the purpose of these annual assessments is to determine if there is a change in vegetation compared to the baseline survey (EcOz, 2019).

Annual riparian monitoring includes spatial analysis of vegetation extent using drone imagery and on the ground assessments and photographic monitoring to determine species diversity, composition and other potential direct impacts. Surveys are completed post wet season in April/ May. This round of monitoring was undertaken 15 May 2025.

1.2 Project Location

The GLP is located 90 km southwest of Darwin along the Cox Peninsular Road. The riparian monitoring sites are located ~1- 1.7 km downstream of ML31726 and ~4km inland of the upper tidal limit influences of West Arm. The three monitoring sites and coordinates are listed in Table 1-1 and shown in Figure 1-1.

Table 1-1 Riparian Monitoring Site Coordinates

Site	Veg type	Easting	Northing	Location from mine
		GDA94 Zone 52		
MVS1	Mangrove	694035	8601220	Upper tidal limit of West Arm
RVS2	Riparian	693834	8601132	Ephemeral drainage line
SVS3	Swamp	693708	8600969	Ephemeral drainage line



Figure 1-1 Site and Monitoring Locations

2 Methodology

Monitoring methodology will be completed in line with Section 4 of the *Waste Discharge Licence 248 Monitoring Program* (EcOz, 2022) and Section 3 of the *Mangrove and Riparian Vegetation Assessment* (EcOz, 2019). As per previous surveys, the 2024- 25 survey will include:

1. An aerial drone survey to capture the overall riparian vegetation health and map the riparian vegetation extent;
2. On-ground field survey to assess vegetation structure and composition within the mapped riparian vegetation extent; and
3. Photo point monitoring at each of the cardinal points of the 20 x 20 m plots.

2.1 Done Survey

A drone survey will be undertaken at the end of the wet season and will follow the existing flight path and riparian boundaries. LGDNT will undertake the drone survey and provide orthomosaic imagery to Savannah Roots. LGDNT will use the in-house drone that is currently used for water treatment. The drone will be flown in desirable conditions i.e. in the middle of the day to avoid lighting interference.

The *WebODM* software will be used to import drone orthomosaic imagery and analyse results. The Visible Atmospherically Resistant Index (VARI) tool in *WebODM* will be used to assess vegetation health. VARI is a vegetation index that calculates the plant health by using red, green and blue band reflectance. The outline boundary of each riparian ecosystem will be measured and recorded. The outcome of this assessment will be a drone image with the VARI layer displaying the colour band reflectance and highlighted extent of each riparian boundary.

Drone imagery and analysis will be stored in a database so that it can be accessed for future annual comparative assessment.

2.2 Vegetation Field Survey

Coordinates and a GPS will be used to find each riparian monitoring plot. A 20 x 20m plot size plot will be set up and the upper, middle and lower layer vegetation characteristics will be recorded. The vegetation field survey will include:

- A record of three dominant species of each layer and as well as a list of non- dominant species present within the plot;
- Average height (m) of each layer;
- Canopy cover (%) for each dominant and emergent species;
- Plants dead/ alive (%);
- General field observations and impacts such as fire, weeds and feral animal influences

Results from the vegetation field survey are included in **Error! Reference source not found.**

2.3 Photo Point Monitoring

Photographs will be taken in each cardinal corner in each plot, facing inwards. Photographs will best represent the vegetation composition of the plot and replicate previous photo monitoring. Photos will be named based on plot and the cardinal corner that is being presented.

3 Results

3.1 Drone Survey

The drone survey was performed by Core Lithium Environmental Staff with suitable qualifications and who are trained in remote operations. The flight was undertaken on 1 May 2025 during optimal conditions. The following figure shows the drone imagery with the VARI index layer. The image highlights the extent of the outline of the mangrove, riparian and swamp ecosystems and the colour bands depict the health of each system. The green bands represent healthier plant condition. Each ecosystem area has been calculated in m^2.

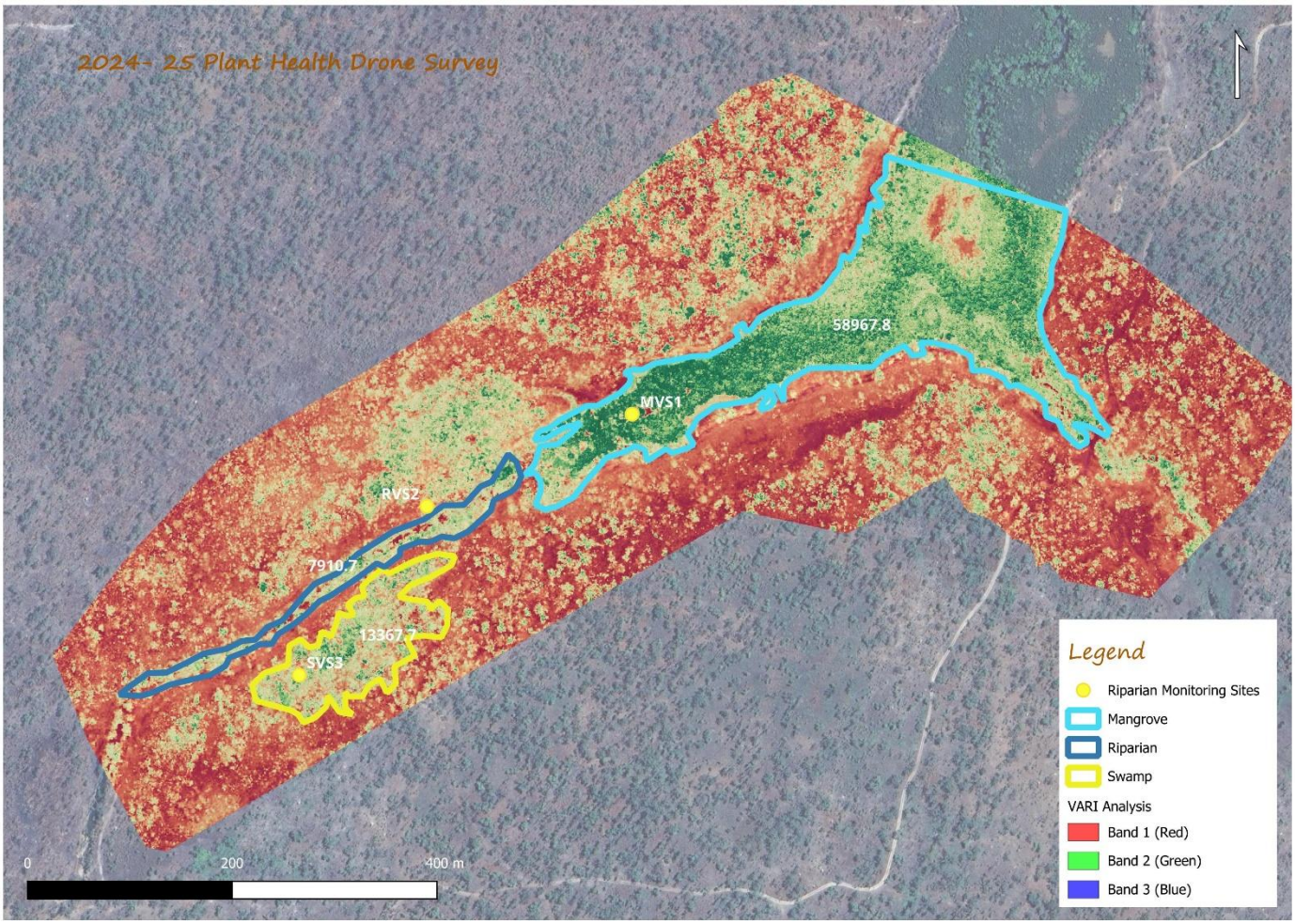


Figure 3-1 Results of the 2024- 25 Plant Health Assessment Using Drone Imagery

The following table (Table 3-1) shows the comparison of area size between the 2019 baseline survey and the 2024- 25 survey. Results show the riparian zone, which is closest to the authorised discharge point, increase in extent (4 %). The mangrove riparian zone, which is closest to the tidal influences of Darwin Harbour also recorded an increase of 12% whilst the swamp was the only site to record a decrease (14 %) in extent.

Table 3-1 Comparison of Area for Each Riparian Zone for 2019 and 2025 Survey

Riparian Zone	2019 Survey Area (ha)	2025 Survey Area (ha)	Difference (%)
Mangrove	5.18	5.9	12
Riparian	0.76	0.79	4
Swamp	1.50	1.3	14

3.2 Vegetation Field Survey

On the ground field monitoring was completed in one day on 5th May 2025, following cessation of discharge and prior to stress of water pressures on riparian vegetation during dry periods. Only one plot was found, SVS3 (swamp), from the coordinates provided in the initial mangrove and riparian vegetation survey report (EcOz, 2019). Similarly, only one cardinal corner of the swamp plot was located, no other markers were found. Recommendations have been included in Section **Error! Reference source not found.** for future surveys.

The 2025 riparian survey was conducted to best represent the initial assessment in 2019. Dominant species that were recorded in the initial assessment assisted in determining a location to undertake the vegetation field survey. A 20 x 20 m plot was established and all information listed in Section 2.2 was recorded.

Incidental observations noted each riparian community were in good condition with little impacts or disturbances. All sites recorded some form of vehicle tracks that ran alongside or through the plot. Buffalo and/ or pig rooting were also noted at all sites. No weeds were recorded at MVS1 though both RVS2 and SVS3 recorded *Passiflora foetida* and potential *Sida sp*. No recent fire was evident though mid- year fires have been recorded annually at RVS2 and SVS3 since 2023 (NAFI, 2025).

A comparison of vegetation description between the 2019 and 2025 survey is described in Table 3-2. Level 5 of the NVIS Information Hierarchy (Brocklehurst *et. al.*, 2007) was used to describe vegetation description with three dominant species of each stratum listed. Comparison of species presence for the two surveys are listed in Table 3-3

Table 3-2 Comparison of Vegetation Description

Site	2019 Vegetation Survey	2025 Vegetation Survey	Comparison
MVS1	*Lumnitzera racemosa, Bruguiera exaristata, Avicennia* marina low open forest, over *Fimbristylis* sp. and *Xerochloa imberbis* mid sparse tussock grassland	*Lumnitzera racemosa, Avicennia marina ovalis* and isolated individuals of *Xylocarpus moluccensis* low open forest, with *Bruguiera exaristata, Avicennia marina, Exoecaria ovalis* and isolated individuals of *Ceriops tagal*	There are some changes noted at the mangrove plot. The 2025 survey recorded no ground stratum. *Fimbristylis* sp. however was noted in the low open tussock grassland beyond the distinct boundary of the mangrove forest. *Avicennia marina* was recorded as dominant species in the upper and mid stratum. *Xylocarpus moluccensis* and *Ceriops tagal* were noted as isolated but established individual species within the plot.
RVS2	*Melaleuca viridiflora* mid woodland over *Acacia plectocarpa* mid open shrubland over *Germainia grandiflora* mid tussock grassland	*Melaleuca viridiflora* mid woodland with *Acacia plectocarpa, Lumnitzera racemosa and Avicennia marina mid* open shrubland over *Germainia grandiflora, Eriachne triseta* and *Themeda triandra* mid tussock grassland	There was no change of vegetation composition at RVS2. The dominant species at this plot were confined to the creek banks (*Melaleuca viridiflora, Acrostichum sp,* mangrove species and *Flagellaria indica*) or located in the mid open shrub and tussock grasslands (*Acacia plectocarpa, Germania grandiflora and Eriachne triseta*). *Thespesia populnea was* noted in the 2019 survey though a *Hibiscus tiliaceus* was noted outside of the plot area, on the bank of the other side of the creek system during the 2025 survey. Confirmation is required during the next survey to identify whether the mid stratum species is *H. tiliaceus* or in fact *T. populnea*. *Protasparagus racemosus* was also noted as a dominant and emergent ground cover on the banks of the other side of the creek.
SVS3	*Melaleuca viridiflora, Erythrophleum chlorostachys* and *Corymbia polycarpa* mid woodland over *Lophostemon lactifluus* mid open shrubland over *Sorghum intrans* mid tussock grassland	*Melaleuca viridiflora, Erythrophleum chlorostachys* and *Corymbia polycarpa* mid woodland with *Lophostemon lactifluus, Erythrophleum chlorostachys* and *Clerodendrum floribundum* mid open shrubland over *Sorghum intrans, pandanus spiralis and Dianella ordorata* mid tussock grassland	There is no change in vegetation structure though there is variations in mid and ground stratum dominant species. *Denhamia obscura* and *Aristida sp.* was missing from the plot and could not be identified in proximity of the plot. Instead *Erythrophleum chlorostachys* and *Dianella ordorata* were identified as part of the dominant species in mid and ground layers.

Table 3-3 Comparison of Vegetation Composition to Baseline Survey for Upper, Mid and Ground Stratum

Species	RVS2						SVS3						MVS1					
	2019			2025			2019			2025			2019			2025		
Dominant species	U	M	G	U	M	G	U	M	G	U	M	G	U	M	G	U	M	G
Acacia plectocarpa		✓			✓													
Acrostichum sp.																		
Aristida sp.									✓									
Avicennia marina		✓			✓								✓	✓		✓	✓	
Bruguiera exaristata														✓			✓	
Ceriops tagal																		
Clerodendrum floribundum								✓			✓							
Corymbia polycarpa							✓			✓								
Denhamia obscura								✓										
Dapsilanthus sp.			✓															
Dianella ordorata												✓						
Eriachne triseta						✓												
Erythrophleum chlorostachys							✓			✓	✓							
Exocoecaria ovalis														✓			✓	
Fimbristylis sp.															✓			
Germania grandiflora			✓			✓												
Hibiscus tiliaceus				✓														
Lophostemon lactifluus								✓			✓							
Lumnitzera racemosa		✓			✓								✓			✓		
Melalueuca viridiflora	✓			✓			✓			✓								
Pandanus spiralis									✓			✓						

Results

Species	RVS2						SVS3						MVS1					
	2019			2025			2019			2025			2019			2025		
Dominant species	U	M	G	U	M	G	U	M	G	U	M	G	U	M	G	U	M	G
Sorgham intrans									✓			✓						
Themeda triandra						✓												
Xerochloa imberbis			✓												✓			

The following graphs depict the cover (%; Figure 3-2)and also the height (m; Figure 3-3) estimate of each stratum in the three riparian sites. Whilst this data is not compared to the baseline survey, it assists in graphically identifying changes in composition of each riparian site over time. Of all sites, SVS3 shows the most variation in each strata layer and the most abundance of species that form the upper, mid and ground strata. RVS2 shows it is dominated by mid and ground strata whilst the MVS1 is dominated by only the upper and mid layers.

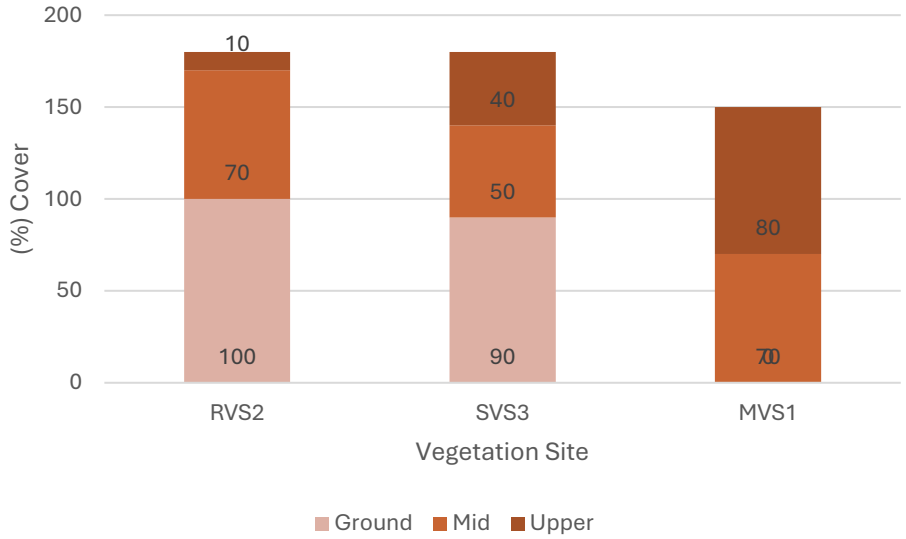


Figure 3-2 Cover (%) of Each Strata in Each Riparian Site

The following graph (Figure 3-3) illustrates the maximum height of each stratum. Although RVS2 had the least upper strata of all sites, it has one of the tallest strata with *Melaleuca viridiflora* accounting for the only dominant species in the upper strata within the plot (Table 3-3). Similarly, SVS3 recorded tall upper layer and mid layer when compared to the other sites.

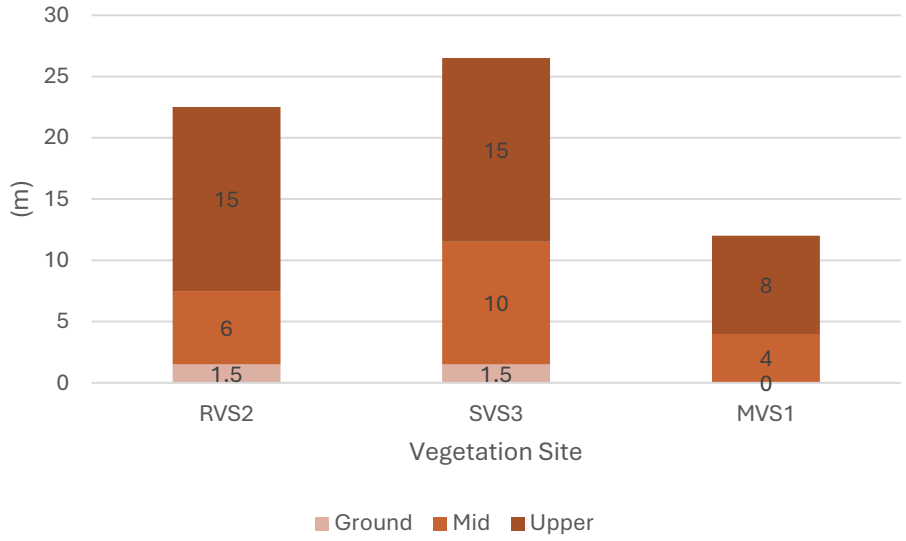


Figure 3-3 Height (m) of Each Strata in Each Riparian Sites

3.3 Photo Point Monitoring

The following images depict photo monitoring that was undertaken at each of the cardinal corners. Photo point monitoring assists in observing changes in time, in particular, species densities, re- generation and changes in community structure. Photo point monitoring was taken from Appendix A of the 2019 baseline survey (EcOz, 2019) though it is not clear which point represents each cardinal corner.

MVS1- 2019 Survey

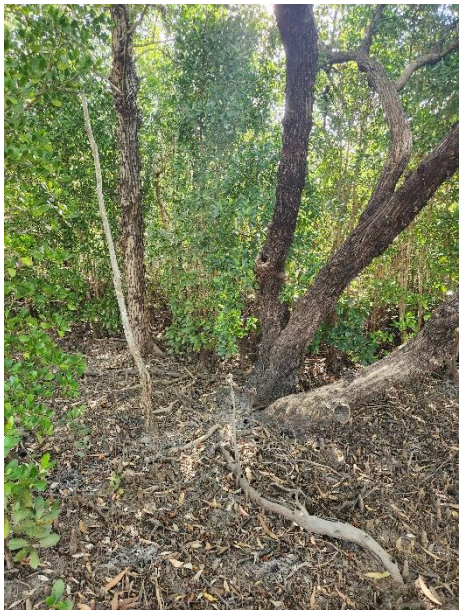
Lumnitzera racemosa, *Bruguiera exaristata*, *Avicennia marina* low open forest over *Fimbristylis sp*. and *Xerochloa imberbis* mid sparse tussock grassland



Photo 1 MVS1 2019 Photo Point Monitoring

MSV1- 2025 Survey

Lumnitzera racemosa, Avicennia marina ovalis and isolated individuals of *Xylocarpus moluccensis* low open forest, with *Bruguiera exaristata, Avicennia marina, Exoecaria ovalis* and isolated individuals of *Ceriops tagal*

North   East

South   West

Photo 2 MVS1 2025 Photo Point Monitoring

RVS2 2019 Survey

Melaleuca viridiflora mid woodland over *Acacia plectocarpa* mid open shrubland over *Germainia grandiflora* mid tussock grassland



Photo 3 RVS2 2019 Photo Point Monitoring

RVS2 2025 Survey

Melaleuca viridiflora mid woodland with *Acacia plectocarpa, Lumnitzera racemosa and Avicennia marina mid* open shrubland over *Germainia grandiflora, Eriachne triseta* and *Themeda triandra* mid tussock grassland

North   East

South   West

Photo 4 RVS2 2025 Photo Point Monitoring

SVS3 2019 Survey.

Melaleuca viridiflora, Erythrophleum chlorostachys and *Corymbia polycarpa* mid woodland over *Lophostemon lactifluus* mid open shrubland over *Sorghum intrans* mid tussock grassland



Photo 5 SVS3 2019 Photo Point Monitoring

SVS3 2025 Survey.

Melaleuca viridiflora, Erythrophleum chlorostachys and *Corymbia polycarpa* mid woodland with *Lophostemon lactifluus, Erythrophleum chlorostachys* and *Clerodendrum floribundum* mid open shrubland over *Sorghum intrans, pandanus spiralis and Dianella ordorata* mid tussock grassland

North   East

South   West

Photo 6 SVS3 2025 Photo Point Monitoring

4 Conclusion and Recommendations

Although there was slight change in dominant species present at two of the three plots, the vegetation composition and structure remained stable. The mangrove plot did not record ground stratum during the 2025 survey when compared to the 2019 survey, though noted open grassland beyond the plot and mangrove boundary.

The riparian plot recorded upper stratum along the creek banks only whilst the rest of the plot was dominated by mid layer which covered 70% of the plot and grassland which dominated 100% of the plot. In saying this there was no change in vegetation composition. It is recommended that during the 2026 annual survey, confirmation is required of a potential miss identification of *Hibiscus tiliaceus* or *Thespesia populnea*.

The swamp plot was the most diverse with species present when compared to the other two plots. It had three dominant species in upper, mid and ground stratum and a list of other species. There were some variations with the presence of dominant species in the mid and ground stratum when compared to the 2019 survey, though each stratum classification remained stable.

It is recommended that late dry season search for the four points of each monitoring plot be undertaken whilst vegetation is dry, low or burnt.

The arial imagery and VARI analysis shows the swamp riparian zone to be the only riparian area to decrease in extent, slightly. Its not clear what contributed to this decrease as the other two riparian zones recorded a slight increase in extent. During the ground survey, the swamp recorded some changes in dominant species though the vegetation classification remained the same.

Overall, based on comparative analysis of the 2019 and 2025 monitoring surveys, the three riparian vegetation plots demonstrated stable composition, structural characteristics and extent indicating that the mining activity is not impacting on riparian vegetation communities downstream.

5 References

a) Brocklehurst, P., Lewis, D., Napier, D. and Lynch, D. (2007). *Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping*. Technical Report No. 02/2007D. Department of Natural Resources, Environment and the Arts, Palmerston, Northern Territory.

b) EcOz Environmental Consultants (2019). *The Mangrove and Riparian Vegetation Assessment*, Prepared for Core Lithium, Grants Lithium Project

c) EcOz Environmental Consultants (2022). *Riparian Vegetation Monitoring Plan*, Prepared for Core Lithium, Grants Lithium Project

d) North Australia and Rangelands Fire Information (NAFI), 2025. *NAFI*. Hosted by Charles Darwin University. Accessed 16 June 2025 via Northern Australian Fire Information

Appendix A. Field Sheets

Site MVS1			Coordinates	E 694035	N 8601220
2025 Survey Description	*Lumnitzera racemosa* and *Avicennia marina ovalis* and isolated individuals *Xylocarpus moluccensis* low open forest, with *Bruguiera exaristata, Avicennia marina, Exoecaria ovalis* and isolated individuals of *Ceriops tagal*				
Upper Stratum	Low open forest dominated by *Lumnitzera racemosa* and *Avicennia marina*				
Mid Stratum	*Bruguiera exaristata, Avicennia marina, Exoecaria ovalis and isolated individuals of Ceriops tagal*				
Ground Stratum	-				



Other species					
Upper stratum	-	Mid stratum	-	Ground stratum	-

Site Description					
Drainage	Very poorly drained	Soils	Kandosols	Landform	Mangrove flat near tidal creek

General observations			
Fire History	No fire	Weeds	No weeds
Disturbance	Bike tracks and cattle/ buffalo tracks near plot in grassland area	Hydrology	Creek traverse from west to north of plot boundary

Structure summary					
Strata	Cover (%)	Height (m)	Dead/ Alive	NVIS code	Land Unit
Upper	80	6-8	0	T6c	9b marine
Mid	70	4	0	T6c	9b marine
Lower	0	0	-	T6c	9b marine

Site RVS2			Coordinates	E 693834	N 8601132
2025 Survey Description	*Melaleuca viridiflora mid woodland with Acacia plectocarpa, Lumnitzera racemosa and Avicennia marina mid open shrubland over Germainia grandiflora, Eriachne triseta and Themeda triandra mid tussock grassland*				
Upper Stratum	Mid woodland dominated by *Melaleuca viridiflora*				
Mid Stratum	Mid open shrubland dominated by *Acacia plectocarpa, Lumnitzera racemosa and Avicennia marina*				
Ground Stratum	Mid tussock grassland dominated by *Germainia grandiflora, Eriachne triseta and Themeda triandra*				





Other species					
Upper stratum	*Hibiscus tiliaceus/ Thespesia populnea*	**Mid stratum**	*Hibiscus tiliaceus/ Thespesia populnea*	**Ground stratum**	*Acrostichum* sp., *Flagellaria indica, Sida* sp., *Protasparagus racemosus, lindernia lobeliodes*

Site Description					
Drainage	Poorly drained	**Soils**	Plot- brown clay loam. Pebbles adjacent to plot	**Landform**	Mangrove flat near tidal creek

General observations			
Fire History	No evidence during survey though plot has recorded annual June/ July burns since 2023 (NAFI, 2025)	**Weeds**	*Passiflora foetida*
Disturbance	Car tracks on adjacent side of river, buffalo tracks crossing river downstream of plot, quite deep pig rooting in parts of the plot	**Hydrology**	Creek traverses south to east of plot boundary

Structure summary					
Strata	**Cover (%)**	**Height (m)**	**Dead (%)**	**NVIS code**	**Land Unit**
Upper	10	15	0	T7i	9b marine
Mid	70	6	5- old *Acacia*	T71	9b marine
Lower	100	1.5	0	T71	9b marine

Site SVS3			Coordinates	E 693834	N 8601132
2025 Survey Description	***Melaleuca viridiflora, Erythrophleum chlorostachys*** and ***Corymbia polycarpa*** mid woodland with ***Lophostemon lactifluus, Erythrophleum chlorostachys*** and ***Clerodendrum floribundum*** mid open shrubland over ***Sorghum intrans, pandanus spiralis and Dianella ordorata*** mid tussock grassland				
Upper Stratum	Mid woodland dominated by *Melaleuca viridiflora, Erythrophleum chlorostachys* and *Corymbia polycarpa*				
Mid Stratum	Mid open shrubland dominated by *Lophostemon lactifluus, Erythrophleum chlorostachys* and *Clerodendrum floribundum*				
Ground Stratum	Mid tussock grassland dominated by *Sorghum intrans, pandanus spiralis and Dianella ordorata*				
 					
Other species					
Upper stratum	-	**Mid stratum**	*Alphitonia excelsa, Grevillia decurrans, Terminalia ferdinandiana, Brachychiton paradoxus, Livistonia humilis, Buchanania obtusa*	**Ground stratum**	*Eriachne triseta, Themeda sp., Osbeckia Australiana, Brachychiton megaphyllus, Acrostichum sp., Ampelocissus acetosa, Crinum augustifolium,*
Site Description					
Drainage	Poorly drained- wet inundation	**Soils**	Brown sandy loam	**Landform**	Lower slope, flat open depression
General observations					
Fire History	Evidence of previous fire with fire scars noted on trunk of upper stratum. Plot has recorded annual June/ July burns since 2023 (NAFI, 2025)			**Weeds**	*New isolated stands of Passiflora foetida and Hyptis suaveolens*
Disturbance	Old vehicle tracks in swamp area and pig rooting in low lying swamp area			**Hydrology**	Creek ~ 100m away north of plot, water is present in swamp with slight flow
Structure summary					
Strata	**Cover (%)**	**Height (m)**	**Dead (%)**	**NVIS code**	**Land Unit**
Upper	40	10-15	2- Old growth on upper story *E. chlorostachys* made up most of % dead from termite attack.	T7i	6b Drainage system

Mid	50	2-10	0	T7i	6b Drainage system
Lower	90	1.5	0	T7i	6b Drainage system

APPENDIX H

Investigation of Trigger Value Exceedances

Date of Exceedence	Time of Exceedence	Details of Trigger Limit Exceedence	Time & Date Detected	Who (Initials)	Notification Required Under WDL248-02 Item 12 (Y/N)	Classification Non-Notifiable / Notifiable	Actual and Potential Causes &/or Contributing Factors	Risk of Environmental Harm	Investigation Details & Corrective Action Taken	If no action was taken, why no action was taken?	Additional Information / Comment(s)
27/01/2025	12:02	Turbidity measured at 19.8 NTU exceeded the trigger limit of 12 NTU under WDL248	12.02PM 27/01/2025	PL	N	Non-notifiable	At the time of the TL exceedence Core was discharging from MWD1 C3 at 1 L/s. Rainfall in the preceding 24 hrs to 6 am 27/01/2025 was 57.88mm. MWD1 C3 recorded turbidity of 10.0 NTU which is below the the WDL248 trigger limit of 12 NTU for SW5. Hang Gong Creek, located upstream of SW5 recorded 37.9 NTU. Runoff from Hang Gong Creek is considered to be the primary cause of turbidity above 12 NTU having regard to it's significant contribution to flow at SW5. Turbidity of 26.6 NTU at SW1 indicates passive discharge from SB1A may have also contributed but this may reasonable be regarded as a minor source given the substantially lower flow observed at SW1 compared to flow in Hang Gong Creek.	Low	The underlying cause of tubidity greater than 12 NTU at SW5 is attributed to elevated turbidity in Hang Gong Creek. Elevated turbidity at Hang Gong Creek may be related to historical mining activites and un-related to Core. Nor can Core undertake corrective action WRT Hang Gong. Core's MWD1 discharge had a turbidity of 10.0 NTU which complied with the TL's for SW5. Corrective action taken is treat SB1A with alum floc via drone.	NA	Hang Gong Creek has been subject to historical mine workings and correspondingly a number of open pits remain that fill and runoff to Hang Gong Creek each wet season. For claification, the Hang Gong Creek catchment has not been subject to mining by Core Lithium. Mine affected waste discharge from MWD1 is not associated with elevated turbidity at SW5.
27/01/2025	12:02	Total Phosphorus measured at 0.05mg/L, exceeding the trigger limit 3x of Total Phosphorus 0.01mg/L under WDL248-02.	10:13AM 5/02/2025	GL	Y	Notifiable	Total phosphorus was elevated throughout the up and downstream catchment. MWD1 C3 exceeded TP however was allowed to discharge as per the discharge calculator.	Low	Refer Notification and Investigation Report dated 20/02/2025	Refer Notification and Investigation Report dated 20/02/2025	Refer Notification and Investigation Report dated 20/02/2025
27/01/2025	12:02	Filtered Zinc measured at 0.012mg/L, exceeding the trigger limit of 0.008mg/L under WDL248	10:13AM 5/02/2025	GL	N	Non-notifiable	Filtered zinc was observed to be elevated throughout the catchment both upstream and downstream of Grants mine. Additionally, it is observed that the the ALS lab report denoted that 'It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.'	Low	Filtered Zinc was elevated above the TL's at almost all sites including upstream reference site SW7 and Hang Gong. Given MWD1C1 water quality (which contained filtered zinc at the same order of magnitude as SW7) and a discharge flow rate of 1L/s, it appears that the elevation in zinc is related to natural factors and is part of the normal environmental variation and likely influenced by rainfall received in the preceding 24 hrs.	No action taken as elevation in filtered zinc is considered to be related to natural factors and part of the normal environmental variation and not associated with mine water discharge.	Further review has attributed elevated filtered zinc to natural wet season processes in seasonally inundated floodplains. Prolonged waterlogging likely created low-oxygen soil conditions, allowing iron and trace metals such as zinc to dissolve into porewater. This is a naturally occurring, temporary and self-attenuating process. As this water moves into oxygenated creek systems, iron and zinc oxidise and form particles, removing them from the dissolved phase.
28/01/2025	12:45	Turbidity measured at 25.4 NTU exceeded the trigger limit of 12 NTU under WDL248.	12.45PM 28/01/2025	PL	N	Non-notifiable	Turbidity of 25.4 NTU above trigger limit of 12 NTU at SW5. Hang Gong Ck recorded turbidity of 27.6 NTU and was found to be a significant source of elevated turbidy at SW5. Turbidity at SW2 was measured at 35.7 NTU but the underlying source can not be readily identified noting that the MWD1 C3 turbidity was 23.3 NTU and Sed Basins 2 - 4 were passively discharging at minimal flow and ranged from 18.6 to 24.9 NTU. While discharge from MWD1 and passive discharge from the sediment basins contributed to turbidity greater than 12 NTU, available monitoring data indicates potential turbidity source(s) in addition to Grants mine. Additionally, substantial rainfall greater than 50 mm was recorded in the preceding 48hrs of the sample being taken and this rainfall may have contributed to elevated turbidy throughout the catchment.	Low	Investigation found that turbidity originating from catchment areas un-related to the Grants mine were a primary source of turbidity with such turbidity likely a consequence of high rainfall in the preceding 48 hours. Active discharge of mine water and passive discharge from Sediment Basins 2-4 was identified as a secondary source of turbidity. Corrective action taken is to treat MWD1 C3 and sediment basins with alum floc via drone.	NA	Turbidity at SW5 recorded <12 NTU on 28/01/2025.
5/02/2025	15:15	Turbidity measured at 19.1 NTU exceeded the trigger limit of 12 NTU under WDL248.	3:50PM 5/02/2025	PL	N	Non-notifiable	A review of monitoring records observed elevated turbidity of 52 NTU at SW1, 185 NTU at Sed Basin 1A and 219 NTU at SB2. Hang Gong recorded 28 NTU. High turbidity at Sediment Basin 1A and Sediment Basin 2 are considered to be the primary cause of elevated turbidity at SW5. The incidence of high rainfall greater than 100 mm in the preceding 24 hrs exceeded the sediment basins design rainfall event (5-day 85th percentile 5-day duration event of 55 mm) and hence this also contibuted to elevated turbidity at SW5.	Low	While Hang Gong contributed to elevated turbidity at SW5 the underlying cause was elevated turbidity in Sed Basins 1A and 2 consequent to very high rainfall. Corrective action is to undertake alum floc drone dosing in response to intense rainfall events where weather conditions permit.	NA	Mine affected waste discharge not associated with elevated turbidity at SW5.
6/02/2025	15:20	Turbidity measured at 16.8 NTU exceeded the trigger limit of 12 NTU under WDL248.	3.45PM 6/02/2025	PL	N	Non-notifiable	A review of monitoring records observed elevated turbidity of 29.9 NTU at SW1, 241 NTU at Sed Basin 1A and 23.4 NTU at Hang Gong. Sed Basin 1A was the primary cause with some contribution from Hang Gong. High rainfall period with 128.32 mm and 104.4 mm of rainfall falling on the 4 and 5 of February 2025.	Low	While Hang Gong contributed to elevated turbidity at SW5 the underlying cause was elevated turbidity in Sed Basins 1A consequent to very high rainfall. Corrective action is to undertake alum floc drone dosing where weather conditions permit.	NA	Mine affected waste discharge not associated with elevated turbidity at SW5.
10/02/2025	15:30	Turbidity measured at 32.66 NTU exceeded the trigger limit of 12 NTU under WDL248	7:30AM 11/02/2025	PL	N	Non-notifiable	A review of monitoring records observed elevated turbidity of 26.6 NTU at SW7, 36 NTU at SW1, 132.1 NTU at Sed 1A, 39.3 at MWD1 Cell 3 and 25.13 at Hang Gong. High rainfall period with consistent rainfall in the previous days and heavy rainfall (83.7 mm) recorded on the 10 February 2025. High rainfall is anticipated to have mobilised sediments both onsite and in the broader catchment.	Low	A major cause of turbidty is Sediment Basin 1A. Also contribution from MWD1 C3 and some of the broader catchment including the upstream catchment and Hang Gong. Corrective action is to undertake alum floc drone dosing in response to intense rainfall events where weather conditions permit.	NA	
19/02/2025	11:19	Filtered Iron measured 0.18mg/L, exceeding the trigger limit of 0.11mg/L	2:40PM 27/03/2025	GL	N	Non-notifiable	Review of monitoring records has identified that filtered iron was elevated at SW4 (0.21mg/L) and Hang Gong (0.28mg/L). Filtered iron in mine affected wastewater was measured at below the laboratory limit of detection. The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	Low	The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	No action taken as the cause(s) are not considered to be associated with LDGNT Grants mine operations or discharge of mine affected wastewater.	Further review has attributed elevated filtered iron to natural wet season processes in seasonally inundated floodplains. Prolonged waterlogging likely created low-oxygen soil conditions, allowing iron and trace metals such as zinc to dissolve into porewater. This is a naturally occurring, temporary and self-attenuating process. As this water moves into oxygenated creek systems, iron and zinc oxidise and form particles, removing them from the dissolved phase.
19/02/2025	11:19	Total Phosphorus measured at 0.19mg/L, exceeding 3x the trigger limit of 0.01mg/L under WDL248-02.	10:51AM 28/02/2025	PM	Y	Notifiable	Laboratory results found that Total Phosphorus (TP) was elevated in MWD1 C3 discharge at 1.07mg/L as well as elevated broadly across the catchment . For example, upstream reference site SW7 recorded TP of 0.82mg/L, SW4 recorded 1.04mg/L and SW1 1.52mg/L. Mine water discharge from MWD1 C3 is considered to be a cause. The elevaton of TP in the broader catchment is also considered to be a cause of naturogenic origin.	Low	Refer Notification and Investigation Report dated 14/03/2025	Refer Notification and Investigation Report dated 14/03/2025	Refer Notification and Investigation Report dated 14/03/2025
26/02/2025	13:53	Total Phosphorus measured at 0.02mg/L, exceeding the trigger limit of 0.01mg/L under WDL248	3:55PM 6/03/2025	GL	N	Non-notifiable	Laboratory results found that Total Phosphorus (TP) was elevated in MWD1 C3 discharge at 0.03mg/L as well as elevated broadly across the catchment . For example, upstream reference site SW7 recorded TP of 0.10mg/L, Hang Gong recorded 0.1mg/L. Mine water discharge from MWD1 C3 is considered to be a cause. The elevaton of TP in the broader catchment is also considered to be a cause of naturogenic origin.	Low	MWD1 C3 and some of the broader catchment including the upstream catchment and Hang Gong contributed to the increased phosphorus. Corrective action is to undertake phoslock drone dosing in response to intense rainfall events where weather conditions permit.	NA	
26/02/2025	13:53	Total Nitrogen measured at 0.06mg/L, exceeding the trigger limit of 0.4mg/L under WDL248	3:55PM 6/03/2025	GL	N	Non-notifiable	Laboratory results found that Total Nitrogen (TN) was elevated in MWD1 C3 discharge at 1.5mg/L as well as elevated broadly across the catchment . For example, upstream reference site SW7 recorded TN of 0.40mg/L, GUS4 recorded 0.3mg/L. Mine water discharge from MWD1 C3 is considered to be the main cause, with elevated TN acros the catchment.	Low	MWD1 C3 and some of the broader catchment including the upstream catchment and Hang Gong contributed to the increased total nitrogen. Corrective action is to undertake phoslock drone dosing in response to intense rainfall events where weather conditions permit.	NA	
5/03/2025	16:35	Filtered Iron measured at 0.14mg/L exceeding the trigger limit of 0.11mg/L. Also second iron exceedance and hence notifiable.	6:45AM 14/03/2025	GL	Y	Notifiable	Review of monitoring records has identified that filtered iron was elevated at SW4 (0.22mg/L) and Hang Gong (0.21mg/L). Filtered iron in mine affected wastewater was measured at below the laboratory limit of detection. The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	Low	The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	No action taken as the cause(s) are not considered to be associated with LDGNT Grants mine operations or discharge of mine affected wastewater.	Further review has attributed elevated filtered iron to natural wet season processes in seasonally inundated floodplains. Prolonged waterlogging likely created low-oxygen soil conditions, allowing iron and trace metals such as zinc to dissolve into porewater. This is a naturally occurring, temporary and self-attenuating process. As this water moves into oxygenated creek systems, iron and zinc oxidise and form particles, removing them from the dissolved phase.
9/03/2025	12:12	Turbidity measured at 16 NTU exceeded the trigger limit of 12 NTU under WDL248.	2:20PM 9/03/2025	GL	N	Non-notifiable	A review of monitoring records observed elevated turbidity of 28.5NTU at Hang Gong and 13.9 at MWD1 Cell 3. High rainfall period with consistent rainfall in the previous days (60.1mm, 90.26mm). High rainfall is anticipated to have mobilised sediments both onsite and in the broader catchment.	Low	A major cause of turbidty is Hang Gong Creek. Also contribution from MWD1 C3. Corrective action is to undertake alum floc drone dosing in response to intense rainfall events where weather conditions permit.	NA	
12/03/2025	13:30	Total Phosphorus measured at 0.06mg/L, exceeding 3x the trigger limit of 0.01mg/L under WDL248.	9:30AM 24/03/2025	GL	Y	Notifiable	Laboratory results found elevated Total Phosphorus in MWD1 C3 discharge (0.05 mg/L) and across the catchment, for example SW7 at 0.02mg/L, SW4 at 0.04mg/L, SW1 at 0.03mg/L, SW2 at 0.02mg/L and Hang Gong 0.03mg/L. Mine water discharge from MWD1 C3 is considered to be a cause. The elevaton of TP in the broader catchment is also considered to be a cause of naturogenic origin.	Low	Refer Notification and Investigation Report dated 4/04/2025	Refer Notification and Investigation Report dated 4/04/2025	Refer Notification and Investigation Report dated 4/04/2025

19/03/2025	11:19	Filtered Iron measured at 0.18mg/L exceeding the trigger limit of 0.11mg/L	14:30PM 27/03/2025	GL	N	Non-notifiable	Review of monitoring records has identified that filtered iron was elevated at SW4 (0.22mg/L) and Hang Gong (0.21mg/L). Filtered iron in mine affected wastewater was measured at below the laboratory limit of detection. The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	Low	The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	No action taken as the cause(s) are not considered to be associated with LDGNT Grants mine operations or discharge of mine affected wastewater.	Further review has attributed elevated filtered iron to natural wet season processes in seasonally inundated floodplains. Prolonged waterlogging likely created low-oxygen soil conditions, allowing iron and trace metals such as zinc to dissolve into porewater. This is a naturally occurring, temporary and self-attenuating process. As this water moves into oxygenated creek systems, iron and zinc oxidise and form particles, removing them from the dissolved phase.
26/03/2025	15:20	Total Phosphorus 0.02 mg/L, exceeding the trigger limit of 0.01mg/L under WDL248.	11:20AM 07/04/2025	GL	N	Non-notifiable	Laboratory results found that Total Phosphorus (TP) was elevated in MWD1 C3 discharge at 0.03mg/L as well as elevated broadly across the catchment . For example, upstream reference site SW7 recorded TP of 0.01mg/L, Hang Gong recorded 0.01mg/L. Mine water discharge from MWD1 C3 is considered to be a cause. The elevaton of TP in the broader catchment is also considered to be a cause of naturogenic origin.	Low	MWD1 C3 and some of the broader catchment including the upstream catchment and Hang Gong contributed to the increased phosphorus. Corrective action is to undertake phoslock drone dosing in response to intense rainfall events where weather conditions permit.	NA	
31/03/2025	13:12	Filtered Iron measured at 0.28mg/L exceeding the trigger limit of 0.11mg/L. Also second iron exceedance and hence notifiable.	11:50AM 08/04/2025	GL	Y	Notifiable	Review of monitoring records has identified that filtered iron was elevated at SW4 (0.28mg/L) and Hang Gong (0.38mg/L). Filtered iron in mine affected wastewater was measured at below the laboratory limit of detection. The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	Low	The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	No action taken as the cause(s) are not considered to be associated with LDGNT Grants mine operations or discharge of mine affected wastewater.	Further review has attributed elevated filtered iron to natural wet season processes in seasonally inundated floodplains. Prolonged waterlogging likely created low-oxygen soil conditions, allowing iron and trace metals such as zinc to dissolve into porewater. This is a naturally occurring, temporary and self-attenuating process. As this water moves into oxygenated creek systems, iron and zinc oxidise and form particles, removing them from the dissolved phase.
31/03/2025	13:12	Total Phosphorus 0.02 mg/L, exceeding the trigger limit of 0.01mg/L under WDL248.	11:50AM 08/04/2025	GL	N	Non-notifiable	Laboratory results found that Total Phosphorus (TP) was throughout the catchment. For example GUS SW7 was at 0.04mg/L, Hang Gong recorded 0.02mg/L. The elevaton of TP in the broader catchment is considered to be a cause of naturogenic origin.	Low	The broader catchment including the upstream catchment and Hang Gong contributed to the increased phosphorus.	No action taken as the cause(s) are not considered to be associated with LDGNT Grants mine operations or discharge of mine affected wastewater.	
1/04/2025	15:44	Turbidity at SW5 measured at 42.2 NTU, exceeding the trigger limit of 12 NTU three or more times under WDL248-02..	3.44PM 1/04/2025	GL	Y	Notifiable	High rainfall of 96mm rainfall received on the 1 April 2025 and significant rainfall in the preceding days caused elevated turbidity in mine wastewater discharge (MWD1 C3 at 129NTU) and broadly in the surrounding catchment (SW4 at 22.7NTU and Hang Gong at 29.8NTU).	Low	Refer Notification and Investigation Report dated 15/04/2025.	Refer Notification and Investigation Report dated 15/04/2025.	Refer Notification and Investigation Report dated 15/04/2025.
2/04/2025	14:37	Turbidty at SW5 measured at 16.2 NTU, exceeding the trigger limit of 12 NTU under WDL248.	2:37PM 02/04/2025	GL	N	Non-notifiable	A review of monitoring records observed elevated turbidity of 78.1NTU at Sed1A. High rainfall period with consistent rainfall in the previous days. High rainfall is anticipated to have mobilised sediments both onsite and in the broader catchment.	Low	A major cause of turbidty is Sediment Basin 1A. Also contribution from MWD1 C3 and some of the broader catchment including Hang Gong. Corrective action is to undertake alum floc drone dosing in response to intense rainfall events where weather conditions permit.	NA	
8/04/2025	16:19	Turbidty at SW5 measured at 17.6NTU, exceeding the trigger limit of 12 NTU under WDL248.	4:19PM 08/04/2025	GL	N	Non-notifiable	A review of monitoring records observed elevated turbidity of 18.14NTU at Hang Gong. MWD3 C1 also recorded elevated turbidity 41.23NTU. High rainfall period with consistent rainfall in the previous days. High rainfall is anticipated to have mobilised sediments both onsite and in the broader catchment.	Low	Also contribution from MWD1 C3 and some of the broader catchment including Hang Gong. Corrective action is to undertake alum floc drone dosing in response to intense rainfall events where weather conditions permit.	NA	
9/04/2025	8:45	Turbidty at SW5 measured at 14.5NTU, exceeding the trigger limit of 12 NTU under WDL248.	8:45AM 09/04/2025	GL	N	Non-notifiable	A review of monitoring records observed elevated turbidity of 15.23NTU at Hang Gong. MWD3 C1 also recorded elevated turbidity 20.13NTU. High rainfall period with consistent rainfall in the previous days. High rainfall is anticipated to have mobilised sediments both onsite and in the broader catchment.	Low	Also contribution from MWD1 C3 and some of the broader catchment including Hang Gong. Corrective action is to undertake alum floc drone dosing in response to intense rainfall events where weather conditions permit.	NA	
12/04/2025	12:00	Turbidty at SW5 measured at 16.8NTU, exceeding the trigger limit of 12 NTU under WDL248.	12:00PM 12/04/2025	GL	N	Non-notifiable	Review of monitoring records found turbidity elevated above the 12NTU trigger limit in mine wastewater discharge from MWD1 C3 at 40.13NTU as well as elevated turbidity two monitoring locations in the broader catchment. These two locations are SW4 at 15.02NTU and Hang Gong at 20.38NTU.	Low	The investigation identified sources of elevated turbidity to include mine water discharge as well elevated turbidity in some parts of the broader catchment of naturogenic origin. Corrective action is to undertake alum floc drone dosing in response to intense rainfall events where weather conditions permit.	NA	
13/04/2025	11:49	Turbidty at SW5 measured at 12.13NTU, exceeding the trigger limit of 12 NTU under WDL248.	11:49AM 13/04/2025	GL	N	Non-notifiable	Illegal gold prospecting sluice observed at a location upstream of SW5 has been identified as a cause of elevated turbidity at SW5. Monitoring records also show turbidity of 27.13NTU at MWD1 C3 and 12.29NTU at Hang Gong which may also have contributed the turbidity exceedance. Additionally it is noted that high rainfall of 39.9mm was recorded on the 13 April 2025.	Low	Investigation identified causes related to a combination of illegal gold prospecting activities, mine wastewater discharge and elevated turbidity in Hang Gong creek. Corrective action is to undertake alum floc drone dosing in response to intense rainfall events where weather conditions permit. Illegal mining activity reported to the relevant administering authority.	NA	
14/04/2025	15:30	Turbidity at SW5 measured at 13.06NTU, exceeding the trigger limit of 12 NTU under WDL248-02. Also exceedance of the waste discharge trigger value for turbidity on three consecutive sampling occassions.	15:30PM 14/04/2025	GL	Y	Notifiable	Review of monitoring records found causes of elevated turbidity include mine wastewater discharge from MWD1 C3 (25.56NTU) as well as elevated turbidty from part of the broader catchment (for example SW4 at 15.39NTU and Hang Gong 14.94NTU). High rainfall of 39.9mm and 39.34mm recorded on the 13/04/2025 and 14/04/2025.	Low	Refer Notification and Investigation Report dated 1/05/2025	Refer Notification and Investigation Report dated 1/05/2025	Refer Notification and Investigation Report dated 1/05/2025
14/04/2025	15:30	Filtered Iron measured at 0.12mg/L exceeding the trigger limit of 0.11mg/L	6:45AM 25/04/2025	GL	N	Non-notifiable	Review of monitoring records has identified that filtered iron was elevated at SW4 (0.13mg/L) and Hang Gong (0.16mg/L). Filtered iron in mine affected wastewater was measured at below the laboratory limit of detection. The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	Low	The cause of elevated filtered iron at SW4 and Hang Gong is not related to mine wastewater discharge. In the case of Hang Gong it may be relates to historical mining disturbanes. The cause of filtered iron at SW4 is not known.	No action taken as the cause(s) are not considered to be associated with LDGNT Grants mine operations or discharge of mine affected wastewater.	Further review has attributed elevated filtered iron to natural wet season processes in seasonally inundated floodplains. Prolonged waterlogging likely created low-oxygen soil conditions, allowing iron and trace metals such as zinc to dissolve into porewater. This is a naturally occurring, temporary and self-attenuating process. As this water moves into oxygenated creek systems, iron and zinc oxidise and form particles, removing them from the dissolved phase.

WDL248-02 Item 12. Notifiable Incidents (Conditions 41 to 43).

Notifiable incidents include:

(a) An exceedance of three or more times a trigger value specified in Item 7 at the compliance point in Item 8;
(b) For physical and chemical stressors, an exceedance (or measurement outside the range) of a trigger value specified in Item 7 at the compliance point in Item 8, on three consecutive sampling occasions;
(c) For toxicants, two or more exceedances of a trigger value specified in Item 7, at the compliance point in Item 8, during one annual reporting period ;
(d) A discharge at a point not specified in Item 5;
(e) A discharge from a source not specified in Item 6;
(f) A failure to comply with condition 29; or
(g) A failure to comply with condition 38

Also refer WDL248-03 at: https://ntepa.nt.gov.au/your-business/public-registers/licences-and-approvals-register/waste-discharge-licences

Notifiable incidents to be emailed to: environmentalregulation@nt.gov.au

APPENDIX I

Toxicity Test Report: TR2314/1

Toxicity Testing of MWDI C3, SED 2 and GDS SW5 Samples

Core Lithium

Test Report

April 2025

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Unit 27, 2 Chaplin Drive
Lane Cove NSW 2066 Australia
www.ecotox.com.au
ECOTOX SERVICES AUSTRALIA PTY LIMITED
ABN 95 619 426 201

Toxicity Test Report: TR2314/1

Accredited for compliance with ISO/IEC 17025

Client:	Core Lithium PO Box 7890 Perth WA 6850	**ESA Job #:** **Date Sampled:** **Date Received:**	PR2314 26 March 2025 28 March 2025
Attention:	Paul McHugh	**Sampled By:**	Client
Client Ref:	PO 21305	**ESA Quote #:**	PL2314_q01

Lab ID No.:	Sample Name:	Sample Description:
11972	MWDI C3	Aqueous sample, pH 8.0*, conductivity 222µS/cm*. Sample received at 11ºC* in apparent good condition.
11973	SED2	Aqueous sample, pH 6.9*, conductivity 49µS/cm*. Sample received at 11ºC* in apparent good condition.
11974	GDS SW5	Aqueous sample, pH 7.2*, conductivity 27µS/cm*. Sample received at 11ºC* in apparent good condition.
11975	GUS SW7	Aqueous sample, pH 6.5*, conductivity 50µS/cm*. Sample received at 11ºC* in apparent good condition.

*NATA accreditation does not cover the performance of this service

Test Performed:	Partial life-cycle toxicity test using the freshwater cladoceran *Ceriodaphnia dubia*
Test Protocol:	ESA SOP 102 (ESA 2016), based on USEPA (2002) and Bailey *et al*. (2000)
Test Temperature:	The test was performed at 25±1°C.
Deviations from Protocol:	Nil
Comments on Solution Preparation:	Samples SED2 (Lab ID 11973), GDS SW5 (Lab ID 11974) and sample GUS SW7 (Lab ID 11975) (sample diluent) were salinity adjusted to 100µS/cm with the addition of USEPA artificial GP2 salts to above the lower threshold for *C. dubia* reproduction. In addition the pH of, sample GUS SW7 (Lab ID 11975) (sample diluent) was raised to 8.0 with the dropwise addition of 0.1N HCl. Sample MWDI C3 (Lab ID 11972), sample SED2 (Lab ID 11973) and sample GDS SW5 (Lab ID 11974) were then serially diluted with conductivity-adjusted sample GUS SW7 (Lab ID 11975) to achieve the test concentrations. A Diluent Control (GUS SW7) and a DMW control were tested concurrently with the sample.
Source of Test Organisms:	ESA Laboratory culture
Test Initiated:	28 March 2025 at 1700h

Sample 11972: *MWDI C3*

Concentration (%)	% Unaffected at 7 days (Mean ± SD)
DMW Control	100 ± 0.0
Diluent Control	100 ± 0.0
6.3	100 ± 0.0
12.5	90.0 ± 31.6
25	100 ± 0.0
50	90.0 ± 31.6
100	100 ± 0.0

7 day EC10 (unaffected) = >100%
7 day EC50 (unaffected) = >100%
NOEC = 100%
LOEC = >100%

Sample 11972: *MWDI C3*

Concentration (%)	Number of Young (Mean ± SD)
DMW Control	16.2 ± 1.8
Diluent Control	15.8 ± 1.7
6.3	16.1 ± 1.7
12.5	15.5 ± 4.2
25	15.9 ± 2.8
50	14.5 ± 5.6
100	15.3 ± 3.3

7 day IC10 (reproduction) = >100%
7 day IC50 (reproduction) = >100%
NOEC = 100%
LOEC = >100%

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Sample 11973: *SED2*

Concentration (%)	% Unaffected at 7 days (Mean ± SD)
DMW Control	100 ± 0.0
Diluent Control	100 ± 0.0
6.3	100 ± 0.0
12.5	100 ± 0.0
25	90.0 ± 31.6
50	100 ± 0.0
100	88.9 ± 33.3

7 day EC10 (unaffected) = 91.0%*
7 day EC50 (unaffected) = >100%
NOEC = 100%
LOEC = >100%

Sample 11973: *SED2*

Concentration (%)	Number of Young (Mean ± SD)
DMW Control	16.2 ± 1.8
Diluent Control	15.8 ± 1.7
6.3	15.8 ± 1.4
12.5	16.3 ± 1.5
25	14.5 ± 5.2
50	15.7 ± 2.2
100	12.4 ± 5.3

7 day IC10 (reproduction) = 63.5%*
7 day IC50 (reproduction) = >100%
NOEC = 100%
LOEC = >100%

*The 95% Confidence Limits are not reliable

Sample 11974: GDS *SW5*

Concentration (%)	% Unaffected at 7 days (Mean ± SD)
DMW Control	100 ± 0.0
Diluent Control	100 ± 0.0
6.3	100 ± 0.0
12.5	100 ± 0.0
25	100 ± 0.0
50	100 ± 0.0
100	100 ± 0.0

7 day EC10 (unaffected) = >100%
7 day EC50 (unaffected) = >100%
NOEC = 100%
LOEC = >100%

Sample 11974: GDS *SW5*

Concentration (%)	Number of Young (Mean ± SD)
DMW Control	16.2 ± 1.8
Diluent Control	15.8 ± 1.7
6.3	15.2 ± 2.9
12.5	16.6 ± 3.1
25	15.8 ± 3.3
50	16.1 ± 1.8
100	15.8 ± 2.3

7 day IC10 (reproduction) = >100%
7 day IC50 (reproduction) = >100%
NOEC = 100%
LOEC = >100%

QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean % unaffected	≥80.0%	100%	Yes
Control mean number of young per surviving adult	≥15.0	16.2	Yes
Reference Toxicant within cusum chart limits	182.7-215.1 mgKCl/L	199.6 mg KCl/L	Yes

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Toxicity Test Report: TR2314/1

Test Report Authorised by: Dr Rick Krassoi, Director on 9 April 2025

Results are based on the samples in the condition as received by ESA.

NATA Accredited Laboratory Number: 14709

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Citations:

Bailey, H.C., Krassoi, R., Elphick, J.R., Mulhall, A., Hunt, P., Tedmanson, L. and Lovell, A. (2000) Application of *Ceriodaphnia cf. dubia* for whole effluent toxicity tests in the Hawkesbury-Nepean watershed, New South Wales, Australia: method development and validation. *Environmental Toxicology and Chemistry* 19:88-93.

ESA (2016) ESA SOP 102 – *Acute Toxicity Test Using Ceriodaphnia dubia.* Issue No 11. Ecotox Services Australasia, Sydney, NSW.

USEPA (2002) *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms.4th Ed.* United States Environmental Protection Agency, Office of Water, Washington DC.

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Chain-of-Custody Documentation

Datasheet ID: 601.2

Last Revised: 21 September 2018

Sample Receipt Notification

Attention : Paul McHugh

Client : Core Lithium
PO Box 7890
Perth WA 6850

Email : pmchugh@corelithium.com.au
Telephone : 08 8317 1704
Facsimile :

Date : 29/03/2025

Re : Receipt of Samples **Pages : 2**

ESA Project : PR2314 ☑ For Review ☐ Additional Documentation Required - Please Respond

Sample Delivery Details

Completed Chain of Custody accompanied samples: YES
Samples received in apparent good condition and correctly bottled: YES
Security seals on sample bottles and esky intact: YES

Date samples received : 28/03/2025
Time samples received : 8:00
No. of samples received : 4
Sample matrix : Aqueous
Sample temperature : 11-15°C

Comments : 1 x 5L of each sample received at 11 degrees C in apparent good condition

Contact Details

Projects Manager : Dr Rick Krassoi
Telephone : 61 2 9420 9481
Facsimile : 61 2 9420 9484
Email : rkrassoi@ecotox.com.au

Please contact customer services officer for all queries or issues regarding samples

Note that the chain-of-custody provides definitive information on the tests to be performed

Chain-of-Custody / Service Request Form

Datasheet ID: 601.1
Last Revised: 14 December 2022

Customer: Core Lithium
Contact Name: Garry Law
Phone: 0428674329 Email: glaw@corelithium.com.au (please provide an email address for sample receipt notification)
Purchase Order: 21305

Ship To: ~~Rick Krassi~~
Attention: Rick Krassi

11°C.

Sample Date (day/month /year)	Sample Time	Sample Name (exactly as written on the sample vessel)	Sample Method (eg. Grab, composite etc.)	Number and Volume of Containers (eg 2 x 1L)	Tests Requested (See reverse for guidance): Chronic Cerio						Comments / Instructions
11972 26/03/25	1546	MWDI C3		1x 5L	x						
11973 26/03/25	1500	SED2		1x5L	x						
11974 26/03/25	1515	GDS SW5		1x5L	x						
11975 26/03/25	1604	GUS SW7		1x5L	x						

Comments / Instructions

Note that testing will be delayed if an incomplete chain of custody is received

- Additional treatment of samples (i.e. spiking)
- Sub-contracted services (i.e. chemical analyses)
- Dilutions required (if different than 100% down to 6.25%)
- Sample holding time restriction (if applicable)
- Sample used for litigation (if applicable)

Note: An MSDS must be attached if Available

ESA Project Number: PR 2314

1) Released By:	Date: 27/6/23	2) Received By:	Date: 28/3/25	3) Released By:	Date:	4) Received By:	Date:
Garry Law							
Of: Core Lithium	Time: 8:30	Of: ESA	Time: 0800	Of:	Time:	Of:	Time:

Note that the chain-of-custody documentation will provide definitive information on the tests to be performed.

Ecotox Services Australia . Unit 27, 2 Chaplin Drive, Lane Cove NSW 2066 AUSTRALIA
Phone: 61 2 9420-9481 Email: info@ecotox.com.au

Statistical Printouts for the 3-brood Partial Life Cycle Test with *Ceriodaphnia dubia*

Ceriodaphnia Partial Life-Cycle Test-Reproduction

Start Date:	28/03/2025 17:00	Test ID:	PR2314/03	Sample ID:	GDS SW5
End Date:	4/04/2025 17:00	Lab ID:	11974	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:	EC of sample raised to 100uS/cm				

Conc-%	1	2	3	4	5	6	7	8	9	10
DMW Control	17.000	14.000	19.000	15.000	16.000	16.000	14.000	19.000	15.000	17.000
SW7 Diluent	14.000	16.000	14.000	19.000	18.000	16.000	14.000	16.000	16.000	15.000
6.3	15.000	14.000	13.000	17.000	16.000	18.000	14.000	19.000	9.000	17.000
12.5	16.000	18.000	16.000	14.000	11.000	19.000	22.000	17.000	16.000	
25	21.000	19.000	14.000	16.000	14.000	16.000	15.000	18.000	16.000	9.000
50	17.000	19.000	16.000	19.000	14.000	16.000	14.000	15.000	15.000	16.000
100	17.000	16.000	11.000	14.000	19.000	15.000	17.000	16.000	17.000	

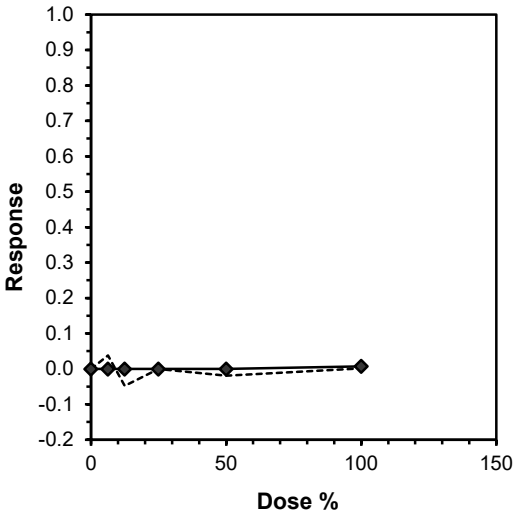
			Transform: Untransformed					1-Tailed			Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
DMW Control	16.200	1.0253	16.200	14.000	19.000	11.195	10					
SW7 Diluent	15.800	1.0000	15.800	14.000	19.000	10.674	10	*			15.891	1.0000
6.3	15.200	0.9620	15.200	9.000	19.000	19.068	10	0.522	2.400	2.759	15.891	1.0000
12.5	16.556	1.0478	16.556	11.000	22.000	18.645	9	-0.640	2.400	2.834	15.891	1.0000
25	15.800	1.0000	15.800	9.000	21.000	20.628	10	0.000	2.400	2.759	15.891	1.0000
50	16.100	1.0190	16.100	14.000	19.000	11.130	10	-0.261	2.400	2.759	15.891	1.0000
100	15.778	0.9986	15.778	11.000	19.000	14.445	9	0.019	2.400	2.834	15.778	0.9929

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.05)	0.786134	0.895	-0.41521	0.979392
Bartlett's Test indicates equal variances (p = 0.27)	6.341349	15.08627		
The control means are not significantly different (p = 0.62)	0.510754	2.100922		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Bonferroni t Test Treatments vs SW7 Diluent	100	>100		1	2.834361	0.17939	1.883755	6.605342	0.919129	5, 52

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



Ceriodaphnia Partial Life-Cycle Test-Reproduction

Start Date:	28/03/2025 17:00	Test ID:	PR2314/03	Sample ID:	GDS SW5
End Date:	4/04/2025 17:00	Lab ID:	11974	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:	EC of sample raised to 100uS/cm				

		Auxiliary Data Summary					
Conc-%	**Parameter**	**Mean**	**Min**	**Max**	**SD**	**CV%**	**N**
DMW Control	No of Young	16.20	14.00	19.00	1.81	8.31	10
SW7 Diluent		15.80	14.00	19.00	1.69	8.22	10
6.3		15.20	9.00	19.00	2.90	11.20	10
12.5		16.56	11.00	22.00	3.09	10.61	9
25		15.80	9.00	21.00	3.26	11.43	10
50		16.10	14.00	19.00	1.79	8.31	10
100		15.78	11.00	19.00	2.28	9.57	9
DMW Control	% unaffected	100.00	100.00	100.00	0.00	0.00	10
SW7 Diluent		100.00	100.00	100.00	0.00	0.00	10
6.3		100.00	100.00	100.00	0.00	0.00	10
12.5		100.00	100.00	100.00	0.00	0.00	9
25		100.00	100.00	100.00	0.00	0.00	10
50		100.00	100.00	100.00	0.00	0.00	10
100		100.00	100.00	100.00	0.00	0.00	9
DMW Control	pH	8.00	8.00	8.00	0.00	0.00	1
SW7 Diluent		7.60	7.60	7.60	0.00	0.00	1
6.3		8.10	8.10	8.10	0.00	0.00	1
12.5		8.10	8.10	8.10	0.00	0.00	1
25		8.10	8.10	8.10	0.00	0.00	1
50		8.00	8.00	8.00	0.00	0.00	1
100		7.20	7.20	7.20	0.00	0.00	1
DMW Control	DO %	99.90	99.90	99.90	0.00	0.00	1
SW7 Diluent		101.20	101.20	101.20	0.00	0.00	1
6.3		100.70	100.70	100.70	0.00	0.00	1
12.5		100.30	100.30	100.30	0.00	0.00	1
25		100.10	100.10	100.10	0.00	0.00	1
50		100.10	100.10	100.10	0.00	0.00	1
100		100.10	100.10	100.10	0.00	0.00	1
DMW Control	Cond uS/cm	173.00	173.00	173.00	0.00	0.00	1
SW7 Diluent		103.00	103.00	103.00	0.00	0.00	1
6.3		102.00	102.00	102.00	0.00	0.00	1
12.5		102.00	102.00	102.00	0.00	0.00	1
25		102.00	102.00	102.00	0.00	0.00	1
50		102.00	102.00	102.00	0.00	0.00	1
100		102.00	102.00	102.00	0.00	0.00	1

Ceriodaphnia Partial Life-Cycle Test-7 Day Unaffected

Start Date:	28/03/2025 17:00	Test ID:	PR2314/03	Sample ID:	GDS SW5
End Date:	4/04/2025 17:00	Lab ID:	11974	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:	EC of sample raised to 100uS/cm				

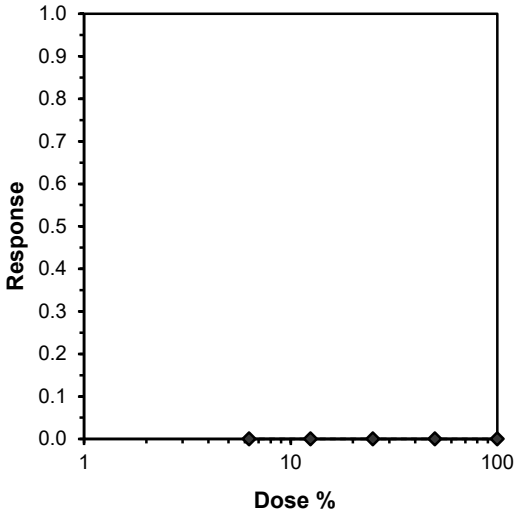
Conc-%	1	2	3	4	5	6	7	8	9	10
DMW Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
SW7 Diluent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Isotonic Mean	Isotonic N-Mean
DMW Control	1.0000	1.0000	0	10	10	10	0.6238			
SW7 Diluent	1.0000	1.0000	0	10	10	10	*		1.0000	1.0000
6.3	1.0000	1.0000	0	10	10	10	1.0000	0.0500	1.0000	1.0000
12.5	1.0000	1.0000	0	9	9	9	1.0000	0.0500	1.0000	1.0000
25	1.0000	1.0000	0	10	10	10	1.0000	0.0500	1.0000	1.0000
50	1.0000	1.0000	0	10	10	10	1.0000	0.0500	1.0000	1.0000
100	1.0000	1.0000	0	9	9	9	1.0000	0.0500	1.0000	1.0000

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs SW7 Diluent				

Log-Logit Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



Ceriodaphnia Partial Life-Cycle Test-7 Day Unaffected

Start Date:	28/03/2025 17:00	Test ID:	PR2314/03	Sample ID:	GDS SW5
End Date:	4/04/2025 17:00	Lab ID:	11974	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:	EC of sample raised to 100uS/cm				

		Auxiliary Data Summary					
Conc-%	**Parameter**	**Mean**	**Min**	**Max**	**SD**	**CV%**	**N**
DMW Control	No of Young	16.20	14.00	19.00	1.81	8.31	10
SW7 Diluent		15.80	14.00	19.00	1.69	8.22	10
6.3		15.20	9.00	19.00	2.90	11.20	10
12.5		16.56	11.00	22.00	3.09	10.61	9
25		15.80	9.00	21.00	3.26	11.43	10
50		16.10	14.00	19.00	1.79	8.31	10
100		15.78	11.00	19.00	2.28	9.57	9
DMW Control	% unaffected	100.00	100.00	100.00	0.00	0.00	10
SW7 Diluent		100.00	100.00	100.00	0.00	0.00	10
6.3		100.00	100.00	100.00	0.00	0.00	10
12.5		100.00	100.00	100.00	0.00	0.00	9
25		100.00	100.00	100.00	0.00	0.00	10
50		100.00	100.00	100.00	0.00	0.00	10
100		100.00	100.00	100.00	0.00	0.00	9
DMW Control	pH	8.00	8.00	8.00	0.00	0.00	1
SW7 Diluent		7.60	7.60	7.60	0.00	0.00	1
6.3		8.10	8.10	8.10	0.00	0.00	1
12.5		8.10	8.10	8.10	0.00	0.00	1
25		8.10	8.10	8.10	0.00	0.00	1
50		8.00	8.00	8.00	0.00	0.00	1
100		7.20	7.20	7.20	0.00	0.00	1
DMW Control	DO %	99.90	99.90	99.90	0.00	0.00	1
SW7 Diluent		101.20	101.20	101.20	0.00	0.00	1
6.3		100.70	100.70	100.70	0.00	0.00	1
12.5		100.30	100.30	100.30	0.00	0.00	1
25		100.10	100.10	100.10	0.00	0.00	1
50		100.10	100.10	100.10	0.00	0.00	1
100		100.10	100.10	100.10	0.00	0.00	1
DMW Control	Cond uS/cm	173.00	173.00	173.00	0.00	0.00	1
SW7 Diluent		103.00	103.00	103.00	0.00	0.00	1
6.3		102.00	102.00	102.00	0.00	0.00	1
12.5		102.00	102.00	102.00	0.00	0.00	1
25		102.00	102.00	102.00	0.00	0.00	1
50		102.00	102.00	102.00	0.00	0.00	1
100		102.00	102.00	102.00	0.00	0.00	1

Ceriodaphnia Partial Life-Cycle Test-Reproduction

Start Date:	28/03/2025 17:00	Test ID:	PR2314/01	Sample ID:	MWDI C3
End Date:	4/04/2025 17:00	Lab ID:	11972	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
DMW Control	17.000	14.000	19.000	15.000	16.000	16.000	14.000	19.000	15.000	17.000
SW7 Diluent	14.000	16.000	14.000	19.000	18.000	16.000	14.000	16.000	16.000	15.000
6.3	16.000	18.000	13.000	19.000	17.000	16.000	16.000	14.000	16.000	16.000
12.5	17.000	19.000	20.000	17.000	14.000	16.000	15.000	5.000	18.000	14.000
25	16.000	15.000	15.000	9.000	16.000	18.000	19.000	18.000	16.000	17.000
50	16.000	12.000	14.000	19.000	17.000	20.000	0.000	14.000	17.000	16.000
100	8.000	16.000	17.000	16.000	15.000	18.000	14.000	18.000	19.000	12.000

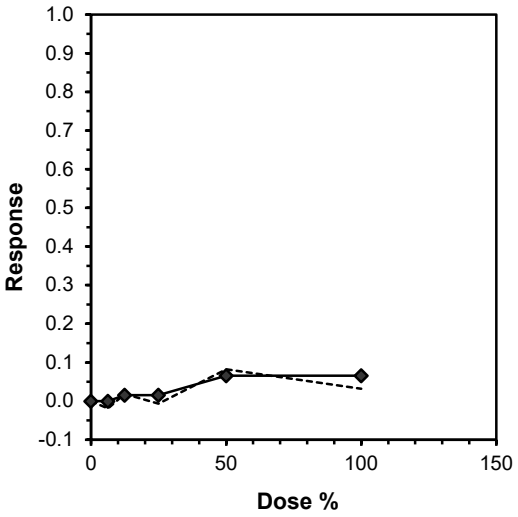
			Transform: Untransformed					Rank	1-Tailed	Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Mean	N-Mean
DMW Control	16.200	1.0253	16.200	14.000	19.000	11.195	10				
SW7 Diluent	15.800	1.0000	15.800	14.000	19.000	10.674	10	*		15.950	1.0000
6.3	16.100	1.0190	16.100	13.000	19.000	10.738	10	112.50	75.00	15.950	1.0000
12.5	15.500	0.9810	15.500	5.000	20.000	27.075	10	111.50	75.00	15.700	0.9843
25	15.900	1.0063	15.900	9.000	19.000	17.402	10	114.50	75.00	15.700	0.9843
50	14.500	0.9177	14.500	0.000	20.000	38.775	10	105.50	75.00	14.900	0.9342
100	15.300	0.9684	15.300	8.000	19.000	21.579	10	106.50	75.00	14.900	0.9342

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.05)	1.272921	0.895	-2.03659	6.433063
Bartlett's Test indicates unequal variances (p = 2.28E-03)	18.59784	15.08627		
The control means are not significantly different (p = 0.62)	0.510754	2.100922		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs SW7 Diluent				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05	42.109			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



Ceriodaphnia Partial Life-Cycle Test-Reproduction

Start Date:	28/03/2025 17:00	Test ID:	PR2314/01	Sample ID:	MWDI C3
End Date:	4/04/2025 17:00	Lab ID:	11972	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:					

		Auxiliary Data Summary					
Conc-%	**Parameter**	**Mean**	**Min**	**Max**	**SD**	**CV%**	**N**
DMW Control	No of Young	16.20	14.00	19.00	1.81	8.31	10
SW7 Diluent		15.80	14.00	19.00	1.69	8.22	10
6.3		16.10	13.00	19.00	1.73	8.17	10
12.5		15.50	5.00	20.00	4.20	13.22	10
25		15.90	9.00	19.00	2.77	10.46	10
50		14.50	0.00	20.00	5.62	16.35	10
100		15.30	8.00	19.00	3.30	11.88	10
DMW Control	% unaffected	100.00	100.00	100.00	0.00	0.00	10
SW7 Diluent		100.00	100.00	100.00	0.00	0.00	10
6.3		100.00	100.00	100.00	0.00	0.00	10
12.5		90.00	0.00	100.00	31.62	6.25	10
25		100.00	100.00	100.00	0.00	0.00	10
50		90.00	0.00	100.00	31.62	6.25	10
100		100.00	100.00	100.00	0.00	0.00	10
DMW Control	pH	8.00	8.00	8.00	0.00	0.00	1
SW7 Diluent		7.60	7.60	7.60	0.00	0.00	1
6.3		8.10	8.10	8.10	0.00	0.00	1
12.5		8.10	8.10	8.10	0.00	0.00	1
25		8.10	8.10	8.10	0.00	0.00	1
50		8.10	8.10	8.10	0.00	0.00	1
100		8.00	8.00	8.00	0.00	0.00	1
DMW Control	DO %	99.90	99.90	99.90	0.00	0.00	1
SW7 Diluent		101.20	101.20	101.20	0.00	0.00	1
6.3		100.60	100.60	100.60	0.00	0.00	1
12.5		100.20	100.20	100.20	0.00	0.00	1
25		100.10	100.10	100.10	0.00	0.00	1
50		100.10	100.10	100.10	0.00	0.00	1
100		100.30	100.30	100.30	0.00	0.00	1
DMW Control	Cond uS/cm	173.00	173.00	173.00	0.00	0.00	1
SW7 Diluent		103.00	103.00	103.00	0.00	0.00	1
6.3		128.00	128.00	128.00	0.00	0.00	1
12.5		146.00	146.00	146.00	0.00	0.00	1
25		172.00	172.00	172.00	0.00	0.00	1
50		191.00	191.00	191.00	0.00	0.00	1
100		222.00	222.00	222.00	0.00	0.00	1

Ceriodaphnia Partial Life-Cycle Test-7 Day Unaffected

Start Date:	28/03/2025 17:00	Test ID:	PR2314/01	Sample ID:	MWDI C3
End Date:	4/04/2025 17:00	Lab ID:	11972	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:					

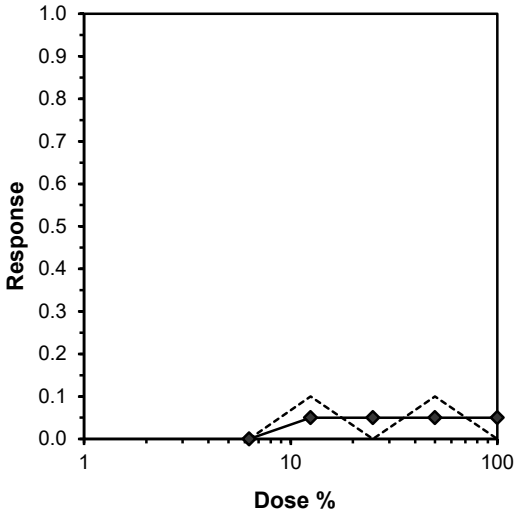
Conc-%	1	2	3	4	5	6	7	8	9	10
DMW Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
SW7 Diluent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Isotonic Mean	Isotonic N-Mean
DMW Control	1.0000	1.0000	0	10	10	10	0.6238			
SW7 Diluent	1.0000	1.0000	0	10	10	10	*		1.0000	1.0000
6.3	1.0000	1.0000	0	10	10	10	1.0000	0.0500	1.0000	1.0000
12.5	0.9000	0.9000	1	9	10	10	0.5000	0.0500	0.9500	0.9500
25	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0.9500	0.9500
50	0.9000	0.9000	1	9	10	10	0.5000	0.0500	0.9500	0.9500
100	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0.9500	0.9500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs SW7 Diluent				

Log-Logit Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



Ceriodaphnia Partial Life-Cycle Test-7 Day Unaffected

Start Date:	28/03/2025 17:00	Test ID:	PR2314/01	Sample ID:	MWDI C3
End Date:	4/04/2025 17:00	Lab ID:	11972	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:					

		Auxiliary Data Summary					
Conc-%	**Parameter**	**Mean**	**Min**	**Max**	**SD**	**CV%**	**N**
DMW Control	No of Young	16.20	14.00	19.00	1.81	8.31	10
SW7 Diluent		15.80	14.00	19.00	1.69	8.22	10
6.3		16.10	13.00	19.00	1.73	8.17	10
12.5		15.50	5.00	20.00	4.20	13.22	10
25		15.90	9.00	19.00	2.77	10.46	10
50		14.50	0.00	20.00	5.62	16.35	10
100		15.30	8.00	19.00	3.30	11.88	10
DMW Control	% unaffected	100.00	100.00	100.00	0.00	0.00	10
SW7 Diluent		100.00	100.00	100.00	0.00	0.00	10
6.3		100.00	100.00	100.00	0.00	0.00	10
12.5		90.00	0.00	100.00	31.62	6.25	10
25		100.00	100.00	100.00	0.00	0.00	10
50		90.00	0.00	100.00	31.62	6.25	10
100		100.00	100.00	100.00	0.00	0.00	10
DMW Control	pH	8.00	8.00	8.00	0.00	0.00	1
SW7 Diluent		7.60	7.60	7.60	0.00	0.00	1
6.3		8.10	8.10	8.10	0.00	0.00	1
12.5		8.10	8.10	8.10	0.00	0.00	1
25		8.10	8.10	8.10	0.00	0.00	1
50		8.10	8.10	8.10	0.00	0.00	1
100		8.00	8.00	8.00	0.00	0.00	1
DMW Control	DO %	99.90	99.90	99.90	0.00	0.00	1
SW7 Diluent		101.20	101.20	101.20	0.00	0.00	1
6.3		100.60	100.60	100.60	0.00	0.00	1
12.5		100.20	100.20	100.20	0.00	0.00	1
25		100.10	100.10	100.10	0.00	0.00	1
50		100.10	100.10	100.10	0.00	0.00	1
100		100.30	100.30	100.30	0.00	0.00	1
DMW Control	Cond uS/cm	173.00	173.00	173.00	0.00	0.00	1
SW7 Diluent		103.00	103.00	103.00	0.00	0.00	1
6.3		128.00	128.00	128.00	0.00	0.00	1
12.5		146.00	146.00	146.00	0.00	0.00	1
25		172.00	172.00	172.00	0.00	0.00	1
50		191.00	191.00	191.00	0.00	0.00	1
100		222.00	222.00	222.00	0.00	0.00	1

Ceriodaphnia Partial Life-Cycle Test-Reproduction

Start Date:	28/03/2025 17:00	Test ID:	PR2314/02	Sample ID:	SED2
End Date:	4/04/2025 17:00	Lab ID:	11973	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:	EC of sample raised to 100uS/cm				

Conc-%	1	2	3	4	5	6	7	8	9	10
DMW Control	17.000	14.000	19.000	15.000	16.000	16.000	14.000	19.000	15.000	17.000
SW7 Diluent	14.000	16.000	14.000	19.000	18.000	16.000	14.000	16.000	16.000	15.000
6.3	14.000	18.000	16.000	18.000	15.000	15.000	14.000	16.000	16.000	16.000
12.5	14.000	19.000	16.000	17.000	18.000	16.000	15.000	15.000	17.000	16.000
25	17.000	17.000	15.000	0.000	14.000	16.000	18.000	17.000	16.000	15.000
50	12.000	14.000	19.000	18.000	17.000	16.000	14.000	15.000	16.000	
100	14.000	11.000	14.000	19.000	0.000	12.000	16.000	14.000	12.000	

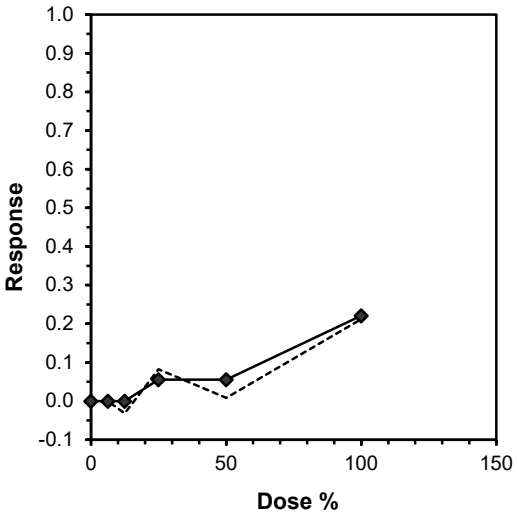
			Transform: Untransformed					Rank	1-Tailed	Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Mean	N-Mean
DMW Control	16.200	1.0253	16.200	14.000	19.000	11.195	10				
SW7 Diluent	15.800	1.0000	15.800	14.000	19.000	10.674	10	*		15.967	1.0000
6.3	15.800	1.0000	15.800	14.000	18.000	8.851	10	106.00	74.00	15.967	1.0000
12.5	16.300	1.0316	16.300	14.000	19.000	9.168	10	115.50	74.00	15.967	1.0000
25	14.500	0.9177	14.500	0.000	18.000	36.093	10	108.00	74.00	15.083	0.9447
50	15.667	0.9916	15.667	12.000	19.000	13.911	9	89.50	61.00	15.083	0.9447
100	12.444	0.7876	12.444	0.000	19.000	42.161	9	65.00	61.00	12.444	0.7794

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.05)	1.661595	0.895	-2.60405	10.80484
Bartlett's Test indicates unequal variances (p = 7.61E-06)	31.45783	15.08627		
The control means are not significantly different (p = 0.62)	0.510754	2.100922		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Wilcoxon Rank Sum Test	100	>100		1
Treatments vs SW7 Diluent				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05	23.797			
IC10	63.516			
IC15	78.642			
IC20	93.768			
IC25	>100			
IC40	>100			
IC50	>100			



Ceriodaphnia Partial Life-Cycle Test-Reproduction

Start Date:	28/03/2025 17:00	Test ID:	PR2314/02	Sample ID:	SED2
End Date:	4/04/2025 17:00	Lab ID:	11973	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:	EC of sample raised to 100uS/cm				

		Auxiliary Data Summary					
Conc-%	**Parameter**	**Mean**	**Min**	**Max**	**SD**	**CV%**	**N**
DMW Control	No of Young	16.20	14.00	19.00	1.81	8.31	10
SW7 Diluent		15.80	14.00	19.00	1.69	8.22	10
6.3		15.80	14.00	18.00	1.40	7.48	10
12.5		16.30	14.00	19.00	1.49	7.50	10
25		14.50	0.00	18.00	5.23	15.78	10
50		15.67	12.00	19.00	2.18	9.42	9
100		12.44	0.00	19.00	5.25	18.41	9
DMW Control	% unaffected	100.00	100.00	100.00	0.00	0.00	10
SW7 Diluent		100.00	100.00	100.00	0.00	0.00	10
6.3		100.00	100.00	100.00	0.00	0.00	10
12.5		100.00	100.00	100.00	0.00	0.00	10
25		90.00	0.00	100.00	31.62	6.25	10
50		100.00	100.00	100.00	0.00	0.00	9
100		88.89	0.00	100.00	33.33	6.50	9
DMW Control	pH	8.00	8.00	8.00	0.00	0.00	1
SW7 Diluent		7.60	7.60	7.60	0.00	0.00	1
6.3		8.10	8.10	8.10	0.00	0.00	1
12.5		8.10	8.10	8.10	0.00	0.00	1
25		8.00	8.00	8.00	0.00	0.00	1
50		7.90	7.90	7.90	0.00	0.00	1
100		6.90	6.90	6.90	0.00	0.00	1
DMW Control	DO %	99.90	99.90	99.90	0.00	0.00	1
SW7 Diluent		101.20	101.20	101.20	0.00	0.00	1
6.3		100.40	100.40	100.40	0.00	0.00	1
12.5		100.20	100.20	100.20	0.00	0.00	1
25		99.90	99.90	99.90	0.00	0.00	1
50		100.40	100.40	100.40	0.00	0.00	1
100		98.40	98.40	98.40	0.00	0.00	1
DMW Control	Cond uS/cm	173.00	173.00	173.00	0.00	0.00	1
SW7 Diluent		103.00	103.00	103.00	0.00	0.00	1
6.3		103.00	103.00	103.00	0.00	0.00	1
12.5		103.00	103.00	103.00	0.00	0.00	1
25		103.00	103.00	103.00	0.00	0.00	1
50		103.00	103.00	103.00	0.00	0.00	1
100		103.00	103.00	103.00	0.00	0.00	1

Ceriodaphnia Partial Life-Cycle Test-7 Day Unaffected

Start Date:	28/03/2025 17:00	Test ID:	PR2314/02	Sample ID:	SED2
End Date:	4/04/2025 17:00	Lab ID:	11973	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:	EC of sample raised to 100uS/cm				

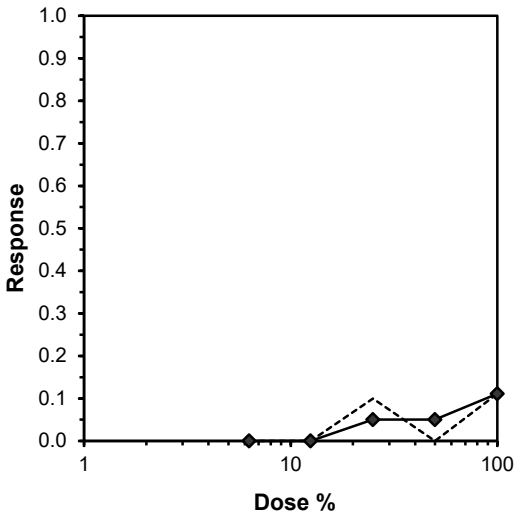
Conc-%	1	2	3	4	5	6	7	8	9	10
DMW Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
SW7 Diluent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
100	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical	Isotonic Mean	Isotonic N-Mean
DMW Control	1.0000	1.0000	0	10	10	10	0.6238			
SW7 Diluent	1.0000	1.0000	0	10	10	10	*		1.0000	1.0000
6.3	1.0000	1.0000	0	10	10	10	1.0000	0.0500	1.0000	1.0000
12.5	1.0000	1.0000	0	10	10	10	1.0000	0.0500	1.0000	1.0000
25	0.9000	0.9000	1	9	10	10	0.5000	0.0500	0.9500	0.9500
50	1.0000	1.0000	0	9	9	9	1.0000	0.0500	0.9500	0.9500
100	0.8889	0.8889	1	8	9	9	0.4737	0.0500	0.8889	0.8889

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs SW7 Diluent				

Log-Logit Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05	50.000			
IC10	91.027			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



Ceriodaphnia Partial Life-Cycle Test-7 Day Unaffected

Start Date:	28/03/2025 17:00	Test ID:	PR2314/02	Sample ID:	SED2
End Date:	4/04/2025 17:00	Lab ID:	11973	Sample Type:	AQ-Aqueous
Sample Date:	26/03/2025	Protocol:	EPAF 94	Test Species:	CD-Ceriodaphnia dubia
Comments:	EC of sample raised to 100uS/cm				

		Auxiliary Data Summary					
Conc-%	**Parameter**	**Mean**	**Min**	**Max**	**SD**	**CV%**	**N**
DMW Control	No of Young	16.20	14.00	19.00	1.81	8.31	10
SW7 Diluent		15.80	14.00	19.00	1.69	8.22	10
6.3		15.80	14.00	18.00	1.40	7.48	10
12.5		16.30	14.00	19.00	1.49	7.50	10
25		14.50	0.00	18.00	5.23	15.78	10
50		15.67	12.00	19.00	2.18	9.42	9
100		12.44	0.00	19.00	5.25	18.41	9
DMW Control	% unaffected	100.00	100.00	100.00	0.00	0.00	10
SW7 Diluent		100.00	100.00	100.00	0.00	0.00	10
6.3		100.00	100.00	100.00	0.00	0.00	10
12.5		100.00	100.00	100.00	0.00	0.00	10
25		90.00	0.00	100.00	31.62	6.25	10
50		100.00	100.00	100.00	0.00	0.00	9
100		88.89	0.00	100.00	33.33	6.50	9
DMW Control	pH	8.00	8.00	8.00	0.00	0.00	1
SW7 Diluent		7.60	7.60	7.60	0.00	0.00	1
6.3		8.10	8.10	8.10	0.00	0.00	1
12.5		8.10	8.10	8.10	0.00	0.00	1
25		8.00	8.00	8.00	0.00	0.00	1
50		7.90	7.90	7.90	0.00	0.00	1
100		6.90	6.90	6.90	0.00	0.00	1
DMW Control	DO %	99.90	99.90	99.90	0.00	0.00	1
SW7 Diluent		101.20	101.20	101.20	0.00	0.00	1
6.3		100.40	100.40	100.40	0.00	0.00	1
12.5		100.20	100.20	100.20	0.00	0.00	1
25		99.90	99.90	99.90	0.00	0.00	1
50		100.40	100.40	100.40	0.00	0.00	1
100		98.40	98.40	98.40	0.00	0.00	1
DMW Control	Cond uS/cm	173.00	173.00	173.00	0.00	0.00	1
SW7 Diluent		103.00	103.00	103.00	0.00	0.00	1
6.3		103.00	103.00	103.00	0.00	0.00	1
12.5		103.00	103.00	103.00	0.00	0.00	1
25		103.00	103.00	103.00	0.00	0.00	1
50		103.00	103.00	103.00	0.00	0.00	1
100		103.00	103.00	103.00	0.00	0.00	1