



Project Details

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Executive Summary

LDGNT was granted Waste Discharge Licence (WDL253) on 9 February 2024, pursuant to Section 74 of the Water Act 1992.

The purpose of this annual Monitoring Report is to fulfil the reporting requirements of WDL253 Condition 45, which stipulates that LDGNT must provide a Monitoring Report within 10 business days of the anniversary date of the licence (i.e. within 10 business days of 9 February 2026). This Monitoring Report has also been drafted to meet Condition 46 which details annual Monitoring Report content requirements.

Monitoring program objectives were achieved. Two sample completeness issues, one relating to access and one related to sample scheduling, were identified and corrective actions have been implemented to prevent recurrence.

A total of 94.25ML of mine water was discharged to the receiving environment over the period 21 March 2025 to 22 April 2025. A further 114.6 ML was discharged between 20 January and 9 February 2026.

Assessment of compliance with respective TVs at compliance site SW6 has been undertaken in accordance with the requirements of Item 14 of WDL253. During the reporting period 8 TV exceedances were recorded. Notably, none of the eight TV exceedances occurred at the time mine water discharges were occurring and none triggered reporting under Item 10 Notifiable incidents. Four of the exceedances, due to turbidity, filtered iron, filtered zinc and Total Phosphorus occurred on 20 May 2025 and were found to be independent of the BP33 site and attributed to seasonal variation (sample timing in the early dry season during recession flow). Three of the exceedances, turbidity, filtered aluminium and Total Phosphorus, on the 26 November 2025 were found to be related to a natural event (first flush runoff due to intense rainfall associated with Cyclone Fina). One exceedance on 16 December 2025, TP, was found to be independent of the BP33 site and attributed to natural mobilisation of TP associated with weathering processes during high-intensity wet season rainfall.

Macroinvertebrate and sediment monitoring for the 2024–2025 period found no significant differences between baseline and monitoring treatments, indicating dewatering did not affect downstream aquatic health during the 2024–2025 wet season. Additionally, the results do not suggest any effects associated with operational discharges were identifiable in the downstream aquatic ecosystems.

The following actions have been completed in relation to monitoring activities required under the WDL253:

- Establishment of a new access track to SW7 to facilitate safe wet season access.
- A review of sampling triggers under Appendix 5 Surface Water Monitoring Program, to ensure sampling schedules and triggers are relevant. Additionally, improved record keeping of samples including field observations (i.e. recording the presence/ absence of water) have been implemented.
- Cross-sectional survey of the channel at SW6 and velocimetry to enable flow estimates from water levels in real-time and retrospectively.

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Appendix

Appendix A: Waste Discharge Licence 253

Appendix B: Tabulated Water Quality Monitoring Data

Appendix C: Tabulated Sediment Quality Monitoring Data

Appendix D: BP33 Biological and Sediment Monitoring Report 2025

List of Abbreviations

Abbreviation	Full Description
ACT	Australian Capital Territory
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
AUSRIVAS	Australian River Assessment System
BC	Box Cut
CoC	Chain of Custody
DGVs	Default Guideline Value(s)
DLPE	Department of Lands, Planning and Environment
DO	Dissolved Oxygen
DP1	Discharge Point 1 (the authorised Discharge Point under WDL253)
DQO	Data Quality Objectives
EC	Electrical Conductivity
ESCP	Erosion Sediment Control Plan
GV	Guideline Value
HES	High Efficiency Sediment
HDPE	High Density Polyethylene
LDGNT	Lithium Developments (Grants NT) Pty Ltd
LiDAR	Light detection and ranging
LOM	Life of mine
LoR	Limit of Reporting
MAW	Mine affected water
MWD	Mine Water Dam
ML	Megalitre
NATA	National Association of Testing Authorities
NT	Northern Territory
NTU	Nephelometric Turbidity Unit
PET	Plecoptera, Ephemeroptera, Trichoptera
QA/QC	Quality Assurance / Quality Control
SB	Sediment Basin

Abbreviation	Full Description
SIGNAL-2	Stream invertebrate grade number
SSTV	Site Specific Threshold Values
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
TV	Trigger Values
WDL	Waste Discharge Licence

1 Introduction

1.1 Background

Lithium Developments (Grants NT) Pty Ltd (LDGNT) is constructing an underground lithium mine at the BP33 deposit within mineral leases ML32074 and ML32346.

The approved Mining Management Plan (2022) and approved BP33 Water Management Plan (2022), document the mining activities as well as the water and wastewater management strategies to be implemented and maintained.

LDGNT was granted Waste Discharge Licence 253 (WDL253) on 9 February 2024, pursuant to Section 74 of the Water Act 1992. WDL253 authorises the controlled discharge of treated, mine-influenced water from the Finnis Lithium Project BP33 Underground Mine, from Mine Water Dam 1, via authorised discharge point (DP1), into Drainage Line BP1 that feeds into the Charlotte River and then into Bynoe Harbour. A copy of WDL253 is presented in **Appendix A**.

1.2 Scope and Purpose

The purpose of this WDL Monitoring Report is to fulfil the reporting requirements of WDL253 Condition 45, which stipulates that LDGNT must provide a Monitoring Report within 10 business days of each Anniversary Date of the licence (i.e. within 10 business days of 9 February).

Condition 46 of the WDL states:

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 (of WDL253). 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 Licenced Action over a minimum period of three years (where the data is available);
- (46.5) includes the actions taken and the results of investigations 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 Licenced Action.”.

WDL253 commenced on the 9 February 2024, and this is the second Annual Monitoring Report.

1.3 Reporting Period

The reporting period is from 9 February 2024 to 9 February 2025.

1.4 Certification

I, Anthony Kirke, Project Director, 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 Project Activities and Status

LDGNT commenced early works, comprising development of the boxcut, improved access and associated surface works for water management of the BP33 underground mine in early August 2023. LDGNT suspended early works in late December 2023. The BP33 project was placed in Care and Maintenance on 31 May 2024.

Key works undertaken at BP33 since May 2024 under the Care and Maintenance Plan included annual maintenance of sediment and erosion control structures, including desilting of the forebays of Sediment Basins 1 and 2, as well as desilting the site drainage network and erosion repairs. No civil works or construction has occurred within the boxcut since the suspension of early works.

2.2 Wastewater Discharges

Dewatering of the boxcut to Sediment Basin 1 for passive discharge to Drainage Line BP1 was undertaken for the period 2.00 pm 21 March 2025 to 9.00 am 22 April 2025 and totalled 94.25ML. This discharge was undertaken in accordance with the then approved Water Management Plan, which allowed for boxcut water, during Stage 1 construction works, to be treated as Sediment water where water chemistry indicated minimal groundwater input and surface water trigger values. DLPE has since clarified that the definition of mine affected water under Environmental Approval EP2020/001-001 takes precedence and includes boxcut water irrespective of boxcut construction stage and water quality. To ensure alignment, LDGNT submitted an updated Water Management Plan to DLPE in September 2025 that adopted the definition of Mine affected water under Environmental Approval EP2020/001-001. This updated Water Management Plan was approved by the DLPE in January 2026.

Discharge of mine affected water from Mine Water Dam Cell 1 to authorised Discharge Point DP1 recommenced 12.30 pm 20 January 2026 and was ongoing as at midnight 9 February 2026. It is noted that the 9 February is the anniversary of the commencement date of WDL253. A volume of 114.6 ML was discharged between 20 January and 9 February 2026. Having regard to the annual Monitoring Report submission date specified in WDL253 Condition 45 (23 February 2026), as well as laboratory reporting timeframes and data handling requirements of this report (trend analysis and assessment of compliance against trigger values), it is impractical to consider discharges over this period in this report. It is proposed that water discharged for this period is captured in the 2026–2027 reporting period.

Table 2-1 provides the daily and cumulative discharge volumes made during the reporting period. A total of 94.25 ML of water was discharged over this period.

Table 2-1. Discharge volumes of water over the reporting period

Mar-25				Apr-25			
Date	Daily (L/s)	Daily (ML)	Cumul. (ML)	Date	Daily (L/s)	Daily (ML)	Cumul. (ML)
1/03/2025				1/04/2025	35.0	3.02	32.72
2/03/2025				2/04/2025	35.0	3.02	35.74
3/03/2025				3/04/2025	35.0	3.02	38.76
4/03/2025				4/04/2025	35.0	3.02	41.78
5/03/2025				5/04/2025	35.0	3.02	44.80
6/03/2025				6/04/2025	35.0	3.02	47.82
7/03/2025				7/04/2025	35.0	3.02	50.84
8/03/2025				8/04/2025	35.0	3.02	53.86
9/03/2025				9/04/2025	35.0	3.02	56.88
10/03/2025				10/04/2025	35.0	3.02	59.90
11/03/2025				11/04/2025	35.0	3.02	62.92
12/03/2025				12/04/2025	35.0	3.02	65.94
13/03/2025				13/04/2025	35.0	3.02	68.96
14/03/2025				14/04/2025	35.0	3.02	71.98
15/03/2025				15/04/2025	35.0	3.02	75.00
16/03/2025				16/04/2025	35.0	3.02	78.02
17/03/2025				17/04/2025	35.0	3.02	81.04
18/03/2025				18/04/2025	35.0	3.02	84.06
19/03/2025				19/04/2025	35.0	3.02	87.08
20/03/2025				20/04/2025	35.0	3.02	90.10
21/03/2025	14.6	1.26	1.26	21/04/2025	35.0	3.02	93.12
22/03/2025	14.6	1.26	2.52	22/04/2025	13.1	1.13	94.25
23/03/2025	35.0	3.02	5.54	23/04/2025			
24/03/2025	35.0	3.02	8.56	24/04/2025			
25/03/2025	35.0	3.02	11.58	25/04/2025			
26/03/2025	35.0	3.02	14.60	26/04/2025			
27/03/2025	35.0	3.02	17.62	27/04/2025			
28/03/2025	35.0	3.02	20.64	28/04/2025			
29/03/2025	35.0	3.02	23.66	29/04/2025			
30/03/2025	35.0	3.02	26.68	30/04/2025			
31/03/2025	35.0	3.02	29.70				

Jan-26				Feb-26			
Date	Daily (L/s)	Daily (ML)	Cumul. (ML)	Date	Daily (L/s)	Daily (ML)	Cumul. (ML)
1/01/2026				1/02/2026	118.5	10.24	71.40
2/01/2026				2/02/2026	119.4	10.32	81.72
3/01/2026				3/02/2026	60.1	5.19	86.91
4/01/2026				4/02/2026	59.6	5.15	92.06
5/01/2026				5/02/2026	59.4	5.13	97.19
6/01/2026				6/02/2026	50.7	4.38	101.57
7/01/2026				7/02/2026	50.5	4.36	105.93
8/01/2026				8/02/2026	50.2	4.34	110.27
9/01/2026				9/02/2026	50.1	4.33	114.60
10/01/2026				10/02/2026			
11/01/2026				11/02/2026			
12/01/2026				12/02/2026			
13/01/2026				13/02/2026			
14/01/2026				14/02/2026			
15/01/2026				15/02/2026			
16/01/2026				16/02/2026			
17/01/2026				17/02/2026			
18/01/2026				18/02/2026			
19/01/2026				19/02/2026			
20/01/2026	110.1	9.48	9.48	20/02/2026			
21/01/2026	109.6	9.47	18.95	21/02/2026			
22/01/2026	45.8	3.96	22.91	22/02/2026			
23/01/2026	22.9	1.98	24.89	23/02/2026			
24/01/2026	0	0	24.89	24/02/2026			
25/01/2026	0	0	24.89	25/02/2026			
26/01/2026	0	0	24.89	26/02/2026			
27/01/2026	126.1	10.89	35.78	27/02/2026			
28/01/2026	22.9	1.98	37.76	28/02/2026			
29/01/2026	22.7	1.96	39.72				
30/01/2026	125.8	10.87	50.59				
31/01/2026	122.3	10.57	61.16				

March 2025			April 2025		
Date	Daily (ML)	Cumulative (ML)	Date	Daily (ML)	Cumulative (ML)
1			1	3.02	32.72
2			2	3.02	35.74
3			3	3.02	38.76
4			4	3.02	41.78
5			5	3.02	44.80
6			6	3.02	47.82
7			7	3.02	50.84
8			8	3.02	53.86
9			9	3.02	56.88
10			10	3.02	59.90
11			11	3.02	62.92
12			12	3.02	65.94
13			13	3.02	68.96
14			14	3.02	71.98
15			15	3.02	75.00
16			16	3.02	78.02
17			17	3.02	81.04
18			18	3.02	84.06
19			19	3.02	87.08
20			20	3.02	90.10
21	1.26	1.26	21	3.02	93.12
22	1.26	2.52	22	1.13	94.25
23	3.02	5.54	23		
24	3.02	8.56	24		
25	3.02	11.58	25		
26	3.02	14.60	26		
27	3.02	17.62	27		
28	3.02	20.64	28		
29	3.02	23.66	29		
30	3.02	26.68	30		
31	3.02	29.70			

3 Monitoring Program

3.1 Monitoring Program Objectives

The monitoring program objectives are to:

- Undertake monitoring in accordance with the requirements of WDL253 including Appendix 5 Surface Water Monitoring Program and Appendix 6 Macroinvertebrate and Sediment Monitoring Program of WDL253.
- Undertake reporting in accordance with the requirement of WDL253 including:
 - Documentation of the surface water, sediment, and macroinvertebrate monitoring.
 - Report, interpret and discuss monitoring results for the reporting period, including sampling completeness, QA/QC, assessment of data against trigger values and sediment default guideline values, and calculation of monthly and annual contaminant loads.
 - Assess compliance with TVs.
 - Assess potential environmental impact.
 - Detail proposed actions to improve the monitoring program, improve environmental performance and/or address exceedances or non-conformances.

3.2 Surface Water Monitoring

The surface water monitoring program includes monitoring of specified operational sampling sites; and surface water sites located upstream and downstream of the discharge point as required by Appendix 5 of WDL253. Additionally, monitoring of boxcut water quality is also undertaken.

The compliance point for WDL253 is BPDS SW6. A summary of sites, analytes and monitoring frequency are provided in [Table 3-1](#). The locations of surface water monitoring sites, sampled in accordance with WDL253 are shown on [Figure 3.1](#).

All surface water sampling has been completed 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.

Monitoring sites were accessed via four-wheel drive, all-terrain vehicle (ATV) or on foot.

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 fridge) until the samples were 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.

The names of all monitoring locations have been abbreviated for the purpose of preparing this report. For example, BPUS SW1 is referred to as SW1. This has been done to avoid confusing between sites.

For all parameter values less than the laboratory limit of reporting (LOR), half of the LOR was used for statistical analysis.

Table 3-1. Surface water monitoring program (Appendix 5 of WDL253)

Parameter/Site			Operational			Upstream			Downstream				
			MWD Discharge ¹	SB1	SB2	BPUS SW4	BPUS SW5	BPUS SW7	BPUS SW1	BPDS SW2	BPDS SW3	BPDS SW6 Compliance	BPDS SW8
GPS Coordinates (latitude and longitude)			-12.7128115 130.7912214	-12.71146623 130.7920958	-12.71558608 130.7914748	-12.70776534 130.7936642	-12.71102426 130.796696	-12.72547491 130.7902228	-12.71243714 130.7925837	-12.7212 130.791	-12.716872 130.780576	-12.72537727 130.7860708	-12.72054092 130.7865124
Parameter	Abbrev	Unit	Frequency										
Field													
Flow	-	kL/day	C*	N/A	N/A	W	W	W	W	W	W	C	W
Water level	-	M	P, D	N/A	N/A	W	W	W	W	W	W	C	W
pH	-	Unit	P, D	WD	WD	W	W	W	W	W	W	D	W
Electrical Conductivity	EC	µS/cm	P, D	WD	WD	W	W	W	W	W	W	D	W
Turbidity	-	NTU	P, D	D	D	W	W	W	W	W	W	D	W
Temperature	-	C	P, D	WD	WD	W	W	W	W	W	W	D	W
Oxidation Reduction Potential	ORP	mV	P, D	WD	WD	W	W	W	W	W	W	D	W
Dissolved Oxygen	DO	% sat	P, D	WD	WD	W	W	W	W	W	W	D	W
Nutrients (unfiltered excluding FRP) and chlorophyll-a													
Ammonia	NH ₄ ⁺	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Oxides of Nitrogen	NOx	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Nitrate	NO ₃	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Total Nitrogen	TN	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W

Parameter/Site			Operational			Upstream			Downstream				
			MWD Discharge ¹	SB1	SB2	BPUS SW4	BPUS SW5	BPUS SW7	BPUS SW1	BPDS SW2	BPDS SW3	BPDS SW6 Compliance	BPDS SW8
Total Phosphorus	TP	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Filterable Reactive Phosphate	FRP	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Chlorophyll-a	Chl-a	µg/L	-	N/A	N/A	W	W	W	W	W	W	W	W
Metals and Metalloids – total and filtered (0.45 µm)													
Aluminium	Al	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Arsenic	As	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Cobalt	Co	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Copper	Cu	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Iron	Fe	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Lead	Pb	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Lithium	Li	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Nickel	Ni	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Zinc	Zn	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Full elemental scan		µg/L	A	A	A	A	A	A	A	A	A	A	A
Other – filtered (0.45 µm) excluding TSS													
Sulphate	SO ₄	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Chloride	Cl	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Calcium	Ca	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Magnesium	Mg	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Potassium	K	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Sodium	Na	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Carbonate	CO ₃ ²⁻	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Bicarbonate	HCO ₃	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W

Parameter/Site			Operational			Upstream			Downstream				
			MWD Discharge ¹	SB1	SB2	BPUS SW4	BPUS SW5	BPUS SW7	BPUS SW1	BPDS SW2	BPDS SW3	BPDS SW6 Compliance	BPDS SW8
Total Dissolved Solids	TDS	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Total Suspended Solids	TSS	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W

P = prior to discharge.

C = continuous

D = within 24 hours of commencement of discharge and daily during discharge. Weekly when no discharge is occurring.

WD = weekly during discharge (from sediment basins or MWD respectively)

W = within 24 h of discharge from MWD and weekly during discharge and for 2 weeks post discharge. Otherwise monthly when water is present, regardless of flow.

A = annually, at end of wet season on recession flows.

¹ The sampling point in the MWD will be located close to BP DP1 to ensure it is representative of discharge water quality.

* Continuous flow monitoring must be representative of discharge flows at BP DP1

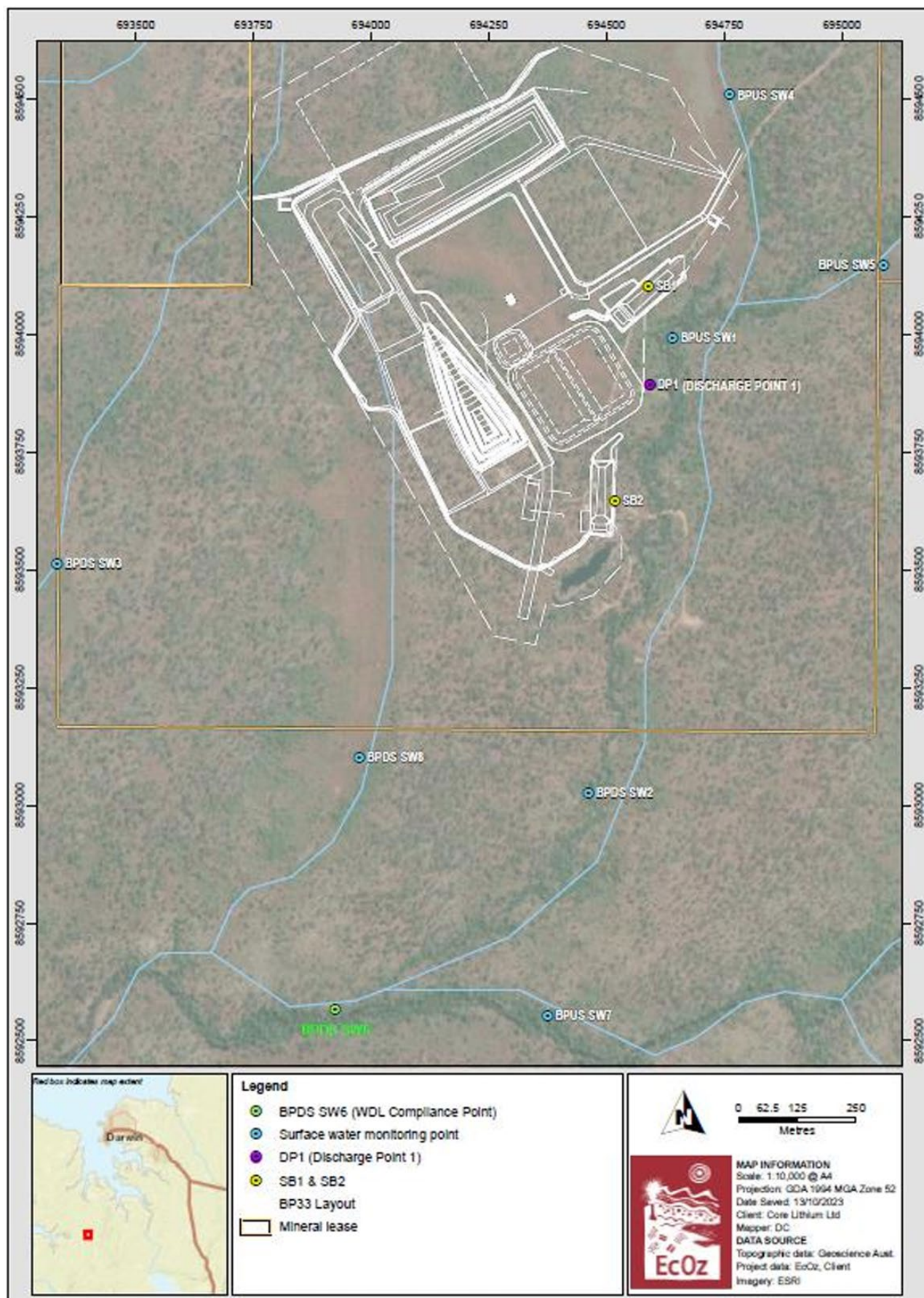


Figure 3.1. WDL253 Compliance Point, Discharge Point and Surface Water Monitoring Points.

3.3 Macroinvertebrate and Sediment Monitoring

Macroinvertebrate and sediment monitoring was undertaken in accordance with the requirements of WDL253 Appendix 6. Macroinvertebrate and sediment monitoring programs are described in sections 3.3.1 and 3.3.2.

3.3.1 Macroinvertebrate Monitoring

The macroinvertebrate monitoring program included seven monitoring sites:

- BP4 (Upstream reference site located an unnamed creek upstream of Cox Peninsula Road)
- BPUS SW1 (Unnamed creek upstream of historical BP33 pit)
- BPD SW2 (Unnamed creek downstream of historical BP33 pit)
- BP3 – also known as Compliance Site BPDS SW6 (East Charlotte River downstream of Unnamed creek)
- GDS SW5 (WDL248 Grants mine compliance site and downstream monitoring site)
- UC1 (WDL248 Grants downstream monitoring site)
- UC2 (WDL248 Grants downstream monitoring site).

A summary of the macroinvertebrate monitoring program is provided in [Table 3-2](#) and the location of the monitoring sites are as shown on [Figure 3.2](#). It is noted that three of the sites (GDS SW5, UC1 and UC2) are relevant to WDL248 (Grants mine) and are not relevant to this report.

Sampling was undertaken in early June 2025 and 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 is provided in **Appendix D**.

3.3.2 Sediment Monitoring

Sediment monitoring was undertaken at the same seven sites monitored for macroinvertebrates (i.e. BP4, BPUS SW1, BPD SW2, BP3, GDS SW5, UC1 and UC2) (refer [Table 3-2](#)).

Surface water physicals, macroinvertebrate, and sediment samples were collected concurrently to facilitate data analysis. Sediment samples were 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.

Sediment sampling locations are shown on [Figure 3.1](#). Sediment samples were collected during recessionary flows (late wet/ early dry 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 sample at each location and samples were analysed for:
 - Particle size distribution
 - pH
 - Electrical Conductivity (EC)
 - Moisture content
 - Metals:
 - Aluminium (Al)
 - Arsenic (As)
 - Cadmium (Cd)
 - Chromium (Cr)
 - Cobalt (Co)
 - Copper (Cu)
 - Iron (Fe)
 - Lead (Pb)
 - Lithium (Li)
 - Mercury (Hg)
 - Nickel (Ni)
 - Zinc (Zn)
- Sulphate (SO₄), chloride (Cl), calcium (Ca), sodium (Na), potassium (K) and magnesium (Mg).
- Metal analysis was completed on the <63µm size fraction. For all parameter values less than the laboratory limit of reporting (LOR), half of the LOR was used for statistical analysis.

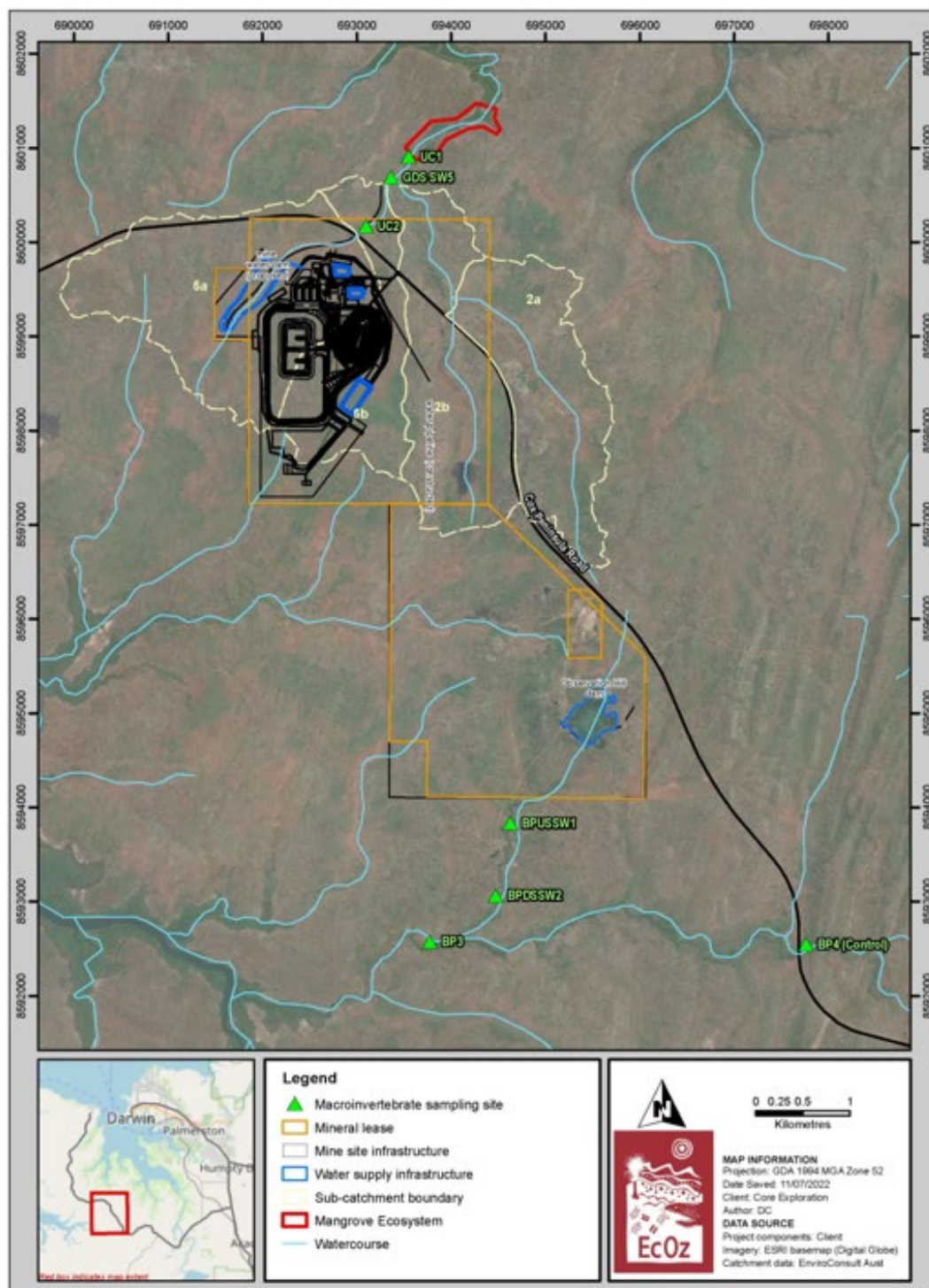


Figure 3.2. Macroinvertebrate and Sediment Sampling Sites.

Table 3-2. Macroinvertebrate and sediment monitoring program (Appendix 6 of WDL253)

Site			BP4	BPUS SW1	BPDS SW2	BP3	GDS SW5	UC1	UC2
GPS Coordinates (latitude and longitude)			-12.7255462 130.8216379	-12.71243714 130.7925837	-12.7212 130.791	-12.7253908 130.7847151	-12.6518245 130.7804192	-12.6495807 130.7820973	-12.6567103 130.7783543
Macroinvertebrate Sampling			A	A	A	A	A	A	A
Sediments									
Metals and metalloids - <63 µm sediment fraction analysed									
Aluminium	Al	mg/kg	A	A	A	A	A	A	A
Arsenic	As	mg/kg	A	A	A	A	A	A	A
Cadmium	Cd	mg/kg	A	A	A	A	A	A	A
Chromium	Cr	mg/kg	A	A	A	A	A	A	A
Cobalt	Co	mg/kg	A	A	A	A	A	A	A
Copper	Cu	mg/kg	A	A	A	A	A	A	A
Iron	Fe	mg/kg	A	A	A	A	A	A	A
Lead	Pb	mg/kg	A	A	A	A	A	A	A
Lithium	Li	mg/kg	A	A	A	A	A	A	A
Mercury	Hg	mg/kg	A	A	A	A	A	A	A
Nickel	Ni	mg/kg	A	A	A	A	A	A	A
Zinc	Zn	mg/kg	A	A	A	A	A	A	A
Nutrients									
Total Nitrogen	TN	µg/L	A	A	A	A	A	A	A
Total Phosphorus	TP	µg/L	A	A	A	A	A	A	A
Other									
Particle Size Distribution			A	A	A	A	A	A	A
Total Organic Carbon	Mg/L		A	A	A	A	A	A	A
Moisture Content	%		A	A	A	A	A	A	A

A = annually, at end of wet season on recessional flows. Sediment and biological sampling to be undertaken concurrently.

3.4 Assessment Criteria and Non-compliance Reporting

A summary of the assessment criteria, as per WDL253, is provided in Table 3-3.

Table 3-3. WDL253 trigger values

			Sampling Points	Compliance Point
			Site Code	BPDS SW6
			Easting	-12.72537727
			Northing	130.7860708
Parameter	Abbrev.	Units	Analysis	Trigger Values ¹
pH	pH	pH	<i>In situ</i>	5.4 ² -6.7 ³
Electrical Conductivity	EC	µS/cm		250 ¹
Turbidity	NTU	NTU		14 ³
Dissolved Oxygen	DO	% sat.		50-100
Total Nitrogen	TN	µg/L	Unfiltered	300 ³
Total Phosphorus	TP			20 ³
Aluminium	Al	µg/L	Total and Filtered (0.45 µm)	70 ³
Arsenic	As			13
Cadmium	Cd			0.2
Chromium	Cr			1
Cobalt	Co			1.4
Copper	Cu			1.4
Iron	Fe			380 ³
Lead	Pb			3.4
Lithium	Li			430 ⁴
Mercury	Hg			0.6 ¹
Nickel	Ni			11
Zinc	Zn			8

Key:

¹ ANZG (2018) 95% species protection, freshwater, unless otherwise specified.

² 20th percentile of background data for surface water quality.

³ 80th percentile of background data for surface water quality.

⁴ Ecotoxicity Assessment – see Grants Water Management Plan (WRM, 2023).

4 Results and Discussion

Results for the water-monitoring program for WDL253 including flow, surface water, sediment and macroinvertebrates are presented and discussed below. Monitoring data for water and sediment quality are presented in tables in **Appendices B** and **C**, respectively.

This report presents and discusses monitoring data for the period 9 February to 17 December 2025. It is impractical to consider water monitoring results in this report for the period 17 December 2025 to the 9 February 2026 having regard to laboratory reporting timeframes (including laboratory Christmas – New Year shutdown) and data handling requirements of this report (trend analysis and assessment of compliance against trigger values). It is proposed that water discharged for this period is captured in the 2026–2027 reporting period.

No samples were taken from BPDS SW8 and one sample was collected at SW3 due to their locations in the upper catchments (refer Figures 4.1 and 4.2). Both sites are characteristic of upper floodplain landform with no defined drainage line or channel. Both sites seldom host flow or sufficient water to take samples.

For the one sample collected from SW3, water depth at the time of sampling was estimated to be 0.02 m and was collected via syringe. As per discussion in Section 4.1, some results at SW3 (including Total Nitrogen and Total Suspended Solids) appear to be anomalous and are likely an artifact of sampling excessively shallow water.



Figure 4.1. Location of SW3 in upper catchment floodplain.



Figure 4.2. Location of SW8 in upper catchment floodplain.

4.1 Surface Water

4.1.1 Rainfall

Table 4.1 summarises monthly rainfall for the period February 2025 to January 2026. For the period 1 February to 12 October 2025, rainfall recorded by the Bureau of Meteorology Darwin Airport weather station was adopted. The Grants weather station was re-commissioned with the installation of a new tipping bucket rainfall gauge on 13 October 2025. Rainfall observations from 13 October 2025 to present have adopted rainfall records from the Grants Weather Station. For the February 2025 to January 2026 period rainfall has been above the Darwin Airport long-term average of 1,711mm.

Table 4-1. Monthly rainfall from February 2025 to January 2026.

Month	Rainfall (mm)
February 2025	385.8
March 2025	359.2
April 2025	259.0
May 2025	46.4
June 2025	0
July 2025	0
August 2025	0
September 2025	36
October 2025	106.2

Month	Rainfall (mm)
November 2025	508.4
December 2025	554.8
January 2026	644.2
Total February 2025 – January 2026	2900

4.1.2 Flow

Stream flow was recorded at the downstream compliance point (BPDS SW6) by a telemetered gauging station. For the 2024–2025 wet season, flow ceased approximately 10 May 2025 and for the 2025–2026 wet season sustained flow was recorded on 18 November 2025. For the period 9 February 2025 to 15 January 2026, flow statistics are presented in Table 4.2 and Figure 4.1.

Table 4.2. Summary statistics of creek flow as measured at BPDS SW6.

BP33 Compliance Site – BPDS SW6	
Statistic	Flow (L/s)
Minimum	29
Mean	4,368
Maximum	22,431

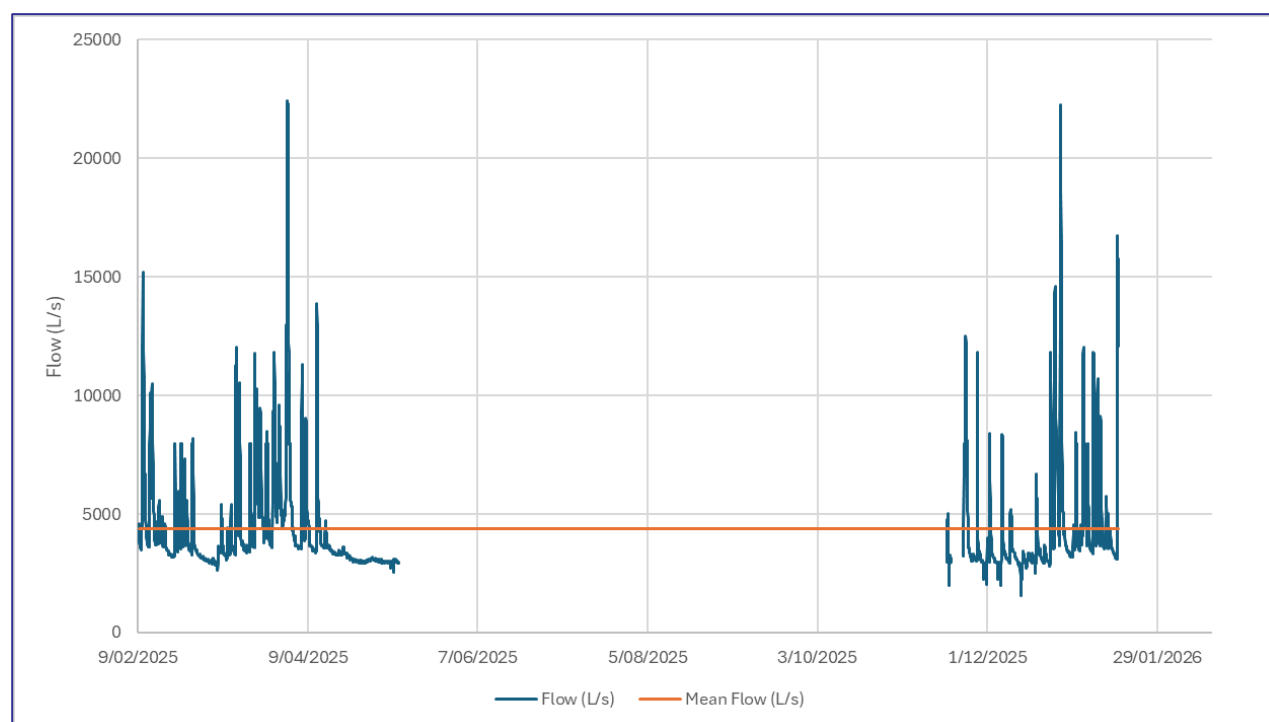


Figure 4.1. Flow (L/s) at WDL253 *in situ* Compliance Point (BPDS SW6) – 9 Feb 2025 to 15 Jan 2026.

4.1.3 Water Quality

A summary of the field data is provided in Table 4-3. Data presented in bold are above the respective WDL253 Trigger Values (TVs). Where a TV exceedance was recorded at compliance site BPDS SW6, the data is shaded green.

According to WDL253 schedule 1 item 14, trigger values shall be regarded as being complied with if the median value of measurements for physico-chemical parameters (including dissolved oxygen (DO), pH, electrical conductivity (EC), and turbidity (measured as NTU)), and nutrients, meets the TV or is within the acceptable range.

To assist with interpretation of Box and Whisker plots, it is noted that the box represents the interquartile range, whiskers typically extend to minimum and maximum values except in the case of outliers, which are represented by dots.

Table 4.3. Field parameter summary data – measurements are median values

Site/ Parameter	pH	EC (µS/cm)	Turbidity (NTU)	DO (% sat)
Boxcut	7.3	43	14	93
BPUS SW1	6.1	19	30	72
BPDS SW2	6.2	19	40	68
BPDS SW3	5.1	-	12	36
BPUS SW4	7.2	16	13	93
BPUS SW5	6.2	17	11	62
BPDS SW6	6.1	23	12	66
BPUS SW7	5.7	21	17	95
BP SB1	7.4	32	210	96
BP SB2	7.0	29	63	94
BP MWDC1	6.4	9	159	89
BP MWDC2	7.4	8	167	89
WDL SSTV	5.2 to 6.6	250	14	50 to 100

pH

Monitoring results show the median pH value (6.1) recorded for compliance site SW6 was within the TV range (5.2 to 6.6). The distribution of pH data for various monitoring locations is illustrated via Box and Whisker plot in Figure 4.2.

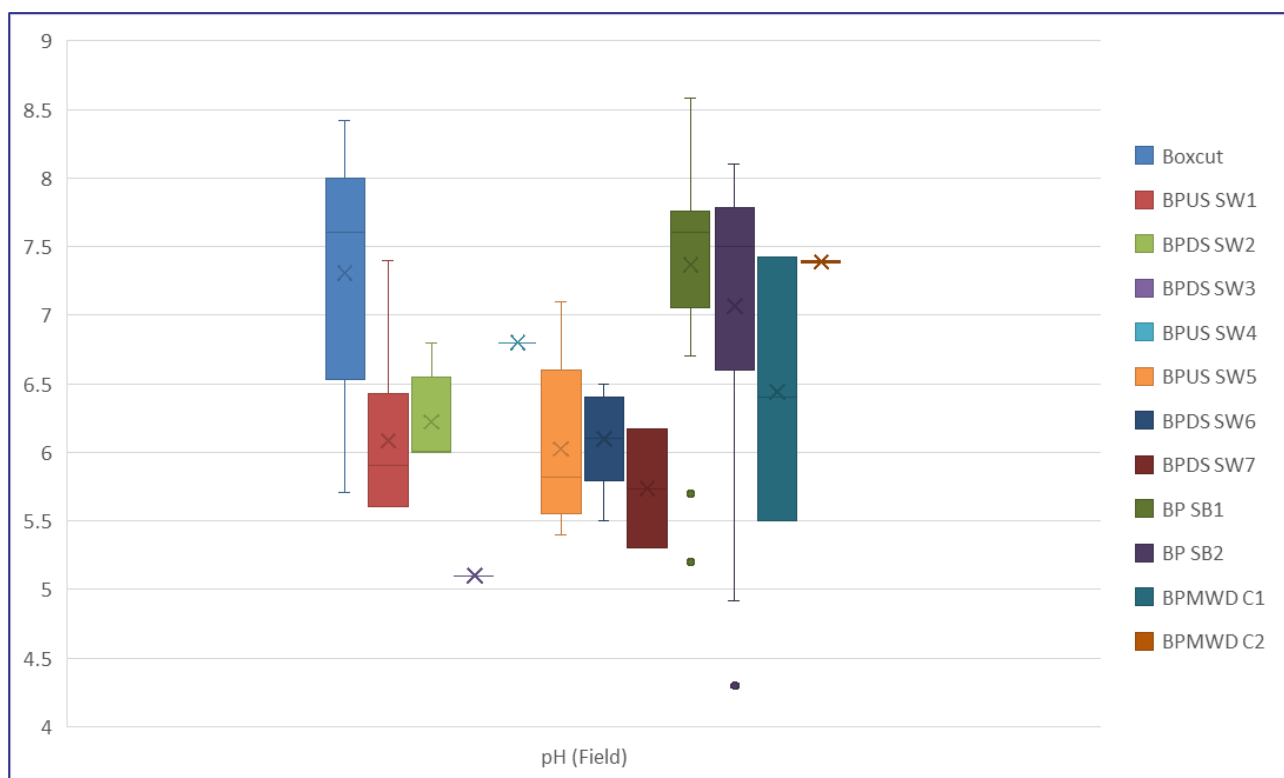


Figure 4.2. pH levels.

Electrical Conductivity (EC)

Figure 4.3 shows the distribution of EC across the monitoring sites. The median EC (23 $\mu\text{S}/\text{cm}$) recorded for the SW 6 compliance site was below the WDL253 TV of 250 $\mu\text{S}/\text{cm}$.

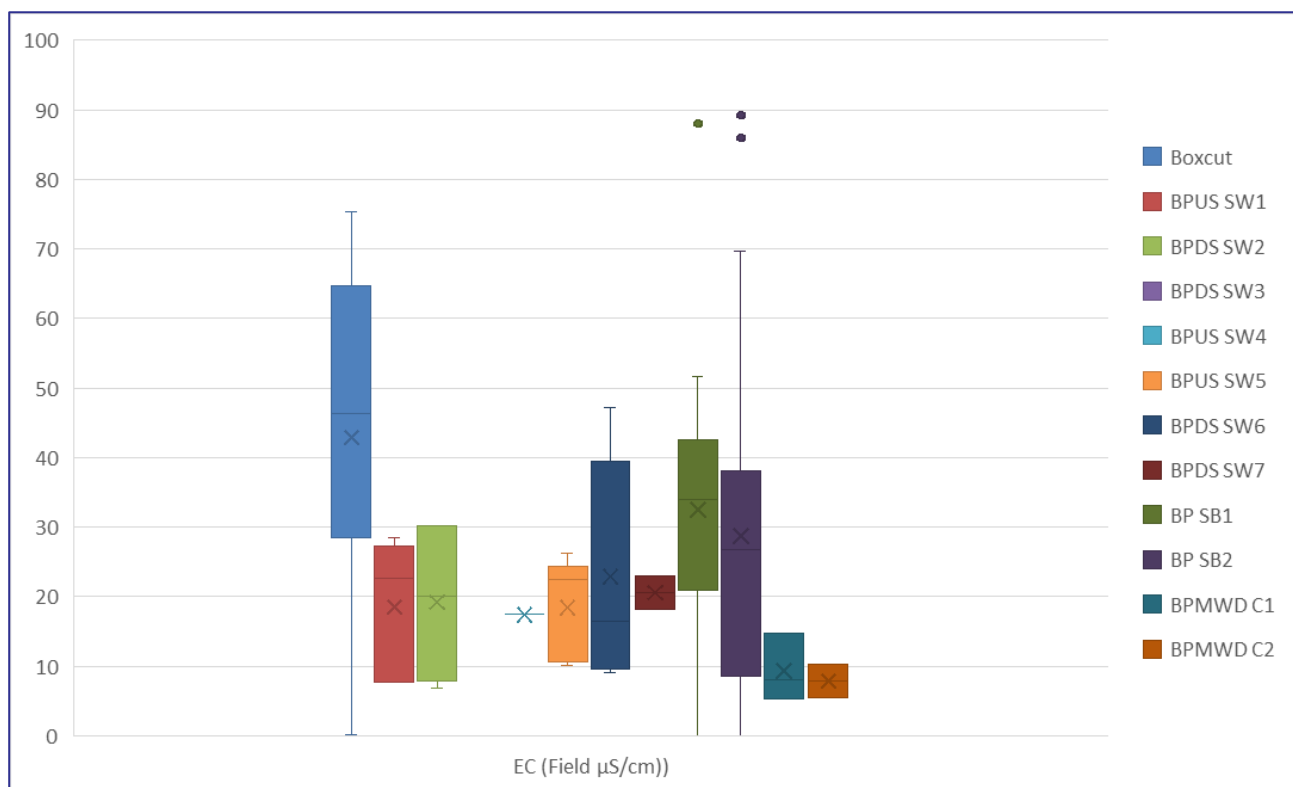


Figure 4.3. Electrical Conductivity.

Turbidity

Table 4.3 and Figure 4.4 show the distribution of turbidity at each monitoring site. The turbidity median (12 NTU) at compliance site SW6 complied with the TV (14 NTU).

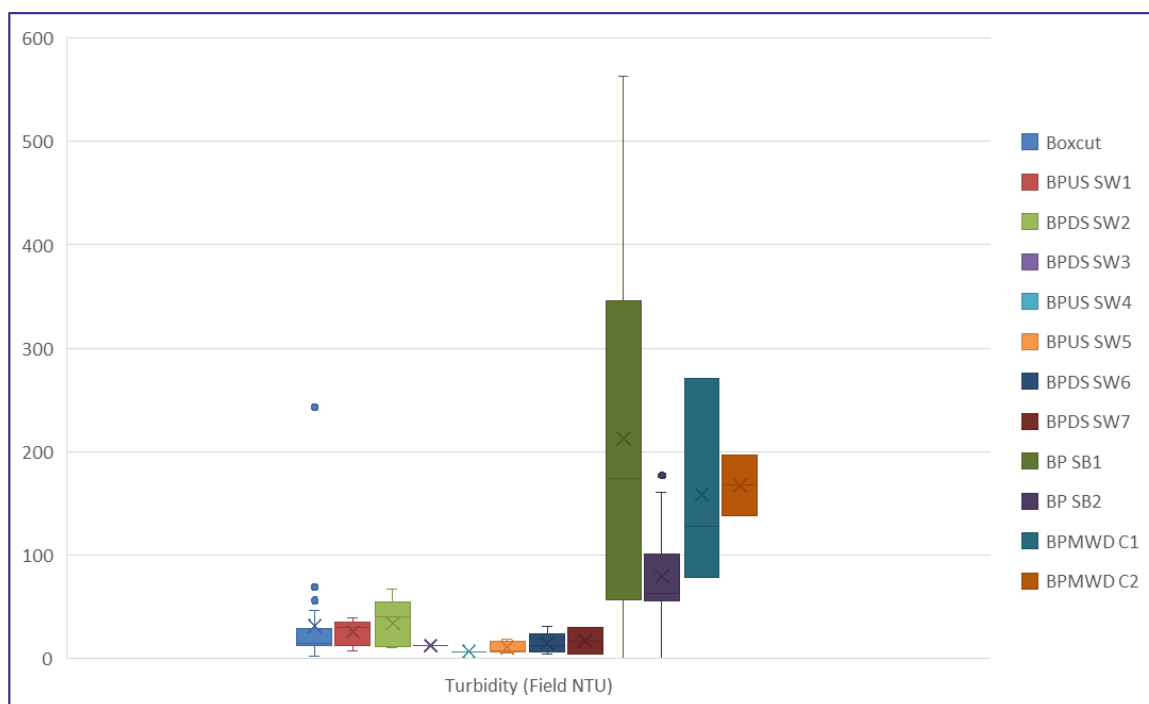


Figure 4.4. Turbidity.

Dissolved Oxygen (DO)

Table 4.3 and Figure 4.5 show the distribution of measured DO saturation at each site. The median DO saturation (66%) recorded for compliance site SW6 was within the TV range of 50 to 100 % saturation.

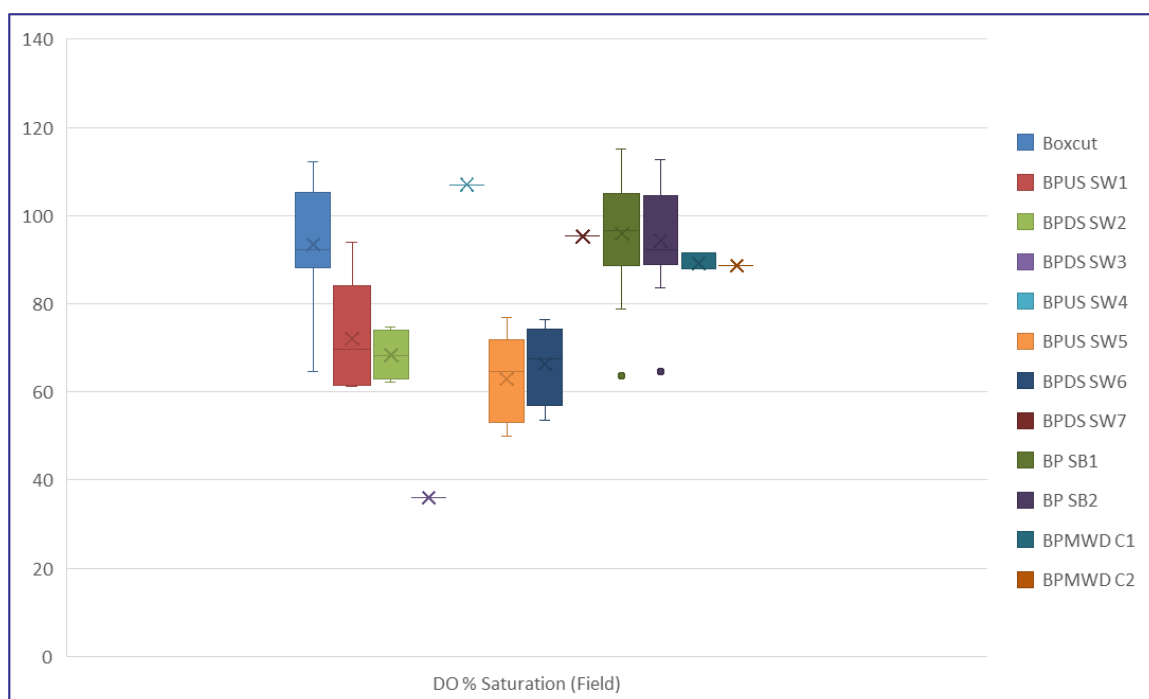


Figure 4.5. Dissolved Oxygen.

4.1.4 Nutrients

The median and 80th percentile values for nutrients are provided in Table 4.4. The numbers presented in bold are above the respective WDL253 Trigger Value (TV) and any exceedance at the compliance point (SW6) is shaded green.

Table 4.4. Nutrient concentrations (in mg/L).

Site/ Parameter	Total Phosphorus	Filtered Reactive Phosphorus	Total Nitrogen
	Median values 0.0in mg/L		
Boxcut	0.030	0.005	0.12
BPUS SW1	0.030	0.004	0.24
BPDS SW2	0.040	0.005	0.26
BPDS SW3	0.080	0.03	1.90
BPUS SW4	0.005	0.003	0.30
BPUS SW5	0.030	0.004	0.28
BPDS SW6	0.030	0.004	0.30
BPUS SW7	0.040	0.003	0.36
BP SB1	0.040	0.005	0.33
BP SB2	0.045	0.002	0.40
BP MWDC1	0.015	0.005	0.20
BP MWDC2	0.030	0.005	0.10
WDL SSTV	0.020	-	0.30

Total Nitrogen (TN)

The median TN concentration (0.3mg/L) recorded at compliance site SW6 met the TV of 0.3mg/L – refer Table 4.4.

Total Phosphorus (TP)

TP median concentrations exceeded the TV of 0.02mg/L at all catchment monitoring sites, including compliance site SW6 (0.03mg/L). As per Figure 4.7, the highest TP concentrations were observed at SW1.

The SW6 TP outlier of 0.4mg/L recorded on 20 May 2025 occurred in the early dry season during recession flow. Flow at SW6 ceased approximately 10 May 2025. Additionally, no boxcut or sediment basin discharges were occurring at the time. Given no operational discharges concurrent at the time of this measurement, it is appropriate to treat the data point as an outlier and recalculate the SW6 median. The recalculated median, which is representative of the periods of time when mine affected water and sediment basin discharges occurred, for SW6 is 0.02mg/L, which complies with the TV.

It is noted that unimpacted upstream monitoring sites SW5 and SW7, which do not have outlying TP concentrations, both recorded TP medians greater than the TV, illustrating that background TP concentrations above the TV commonly occur in the broader catchment.

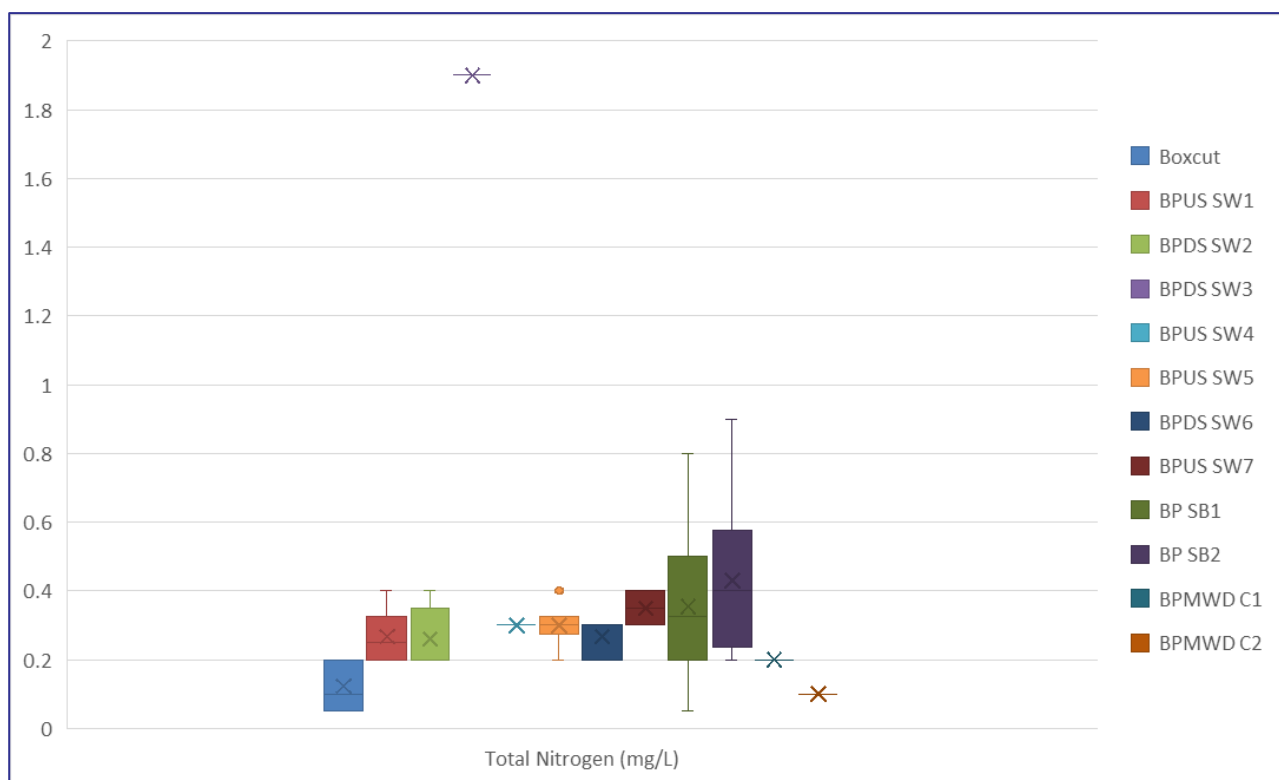


Figure 4.6. Total Nitrogen.

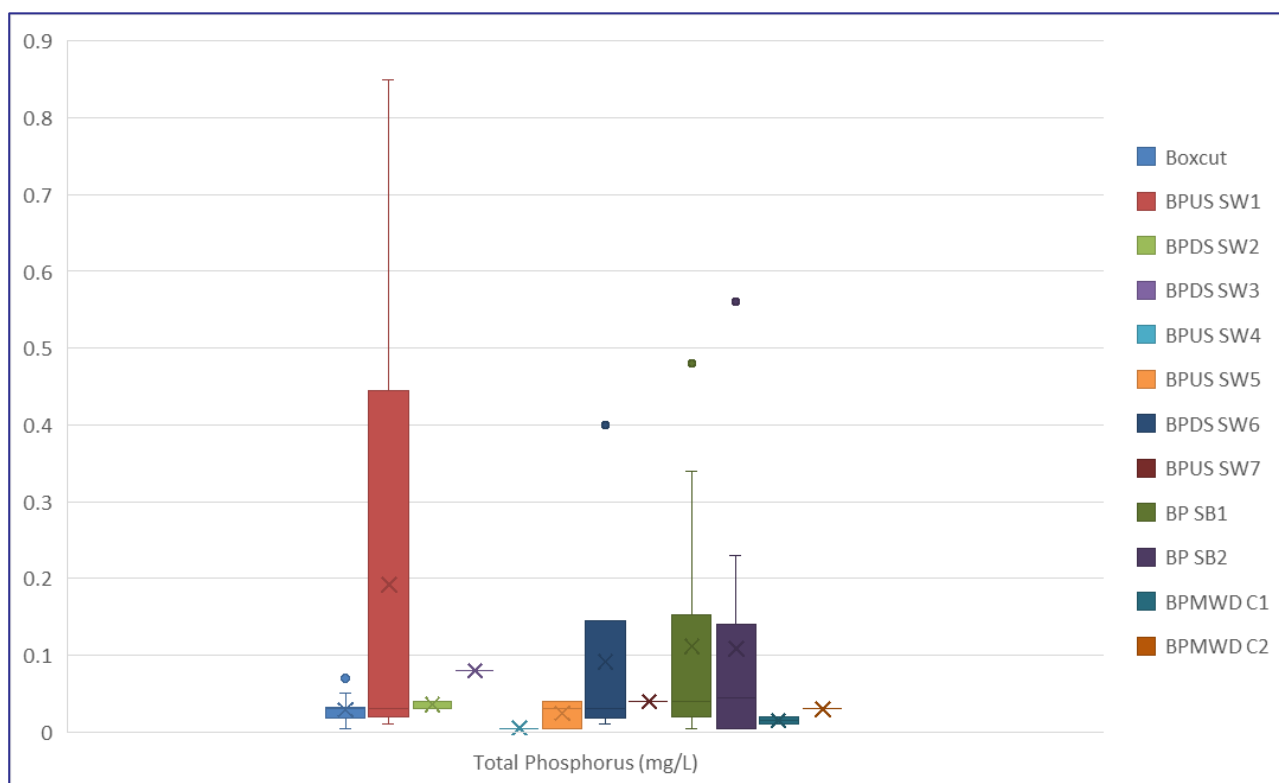


Figure 4.7. Total Phosphorus.

4.1.5 Metals and metalloids

The median and 80th percentile values for filtered metal and metalloids are provided in Table 4.5.

All filtered cadmium, chromium (III & VI), cobalt, copper and lead concentrations at all sampling sites were less than the respective LOR and hence are not presented in Table 4.5 nor discussed further.

According to WDL253 schedule 1 item 14, compliance for metals is considered achieved if not more than one measurement, or, if more than 20 samples have been collected, 5% of measured values, exceeded the trigger values.

Provided here is a summary of compliance results for site SW6 with respect to metals, and additional information specific to the parameters above LOR concentrations is provided in the sub-sections below:

- All filtered arsenic, cadmium, chromium (Cr VI), cobalt, copper, lead, lithium and nickel monitoring results complied with the respective TVs at compliance site SW6.
- One exceedance of filtered aluminium (0.08mg/L) was recorded for 26 November 2025 against the TV (0.07mg/L). This exceedance is attributed to natural variation associated with first flush of the catchment when high rainfall from Cyclone Fina was experienced. Sediment Basins 1 and 2 were passively discharging on 26 November 2025 and sampling on 26 November 2025 recorded filtered aluminium concentrations of 0.02mg/L below the TV in both basins (i.e. 0.06mg/L). Sediment basin discharge is not considered to have been a source of filtered aluminium at the compliance site SW6 on this occasion. Additionally, no discharge from the boxcut occurred at that time. The observed filtered aluminium exceedance is independent of the BP33 site operations.
- One exceedance of filtered iron (0.68mg/L) on 20 May 2025 against the TV (0.38mg/L). The measured filtered iron concentration is attributed to natural variation associated with early dry season recessional flow. Stream flow at SW6 is assumed to have ceased on or about 10 May 2025. Additionally, no discharges from the boxcut or sediment basins were occurring at the time. The observed filtered iron exceedance is independent of the BP33 site operations.
- One exceedance of filtered zinc (0.014mg/L) on 20 May 2025 against the TV (0.008mg/L) was recorded. Like filtered iron, the observed elevation in filtered zinc is attributed to natural variation associated with early dry season recessional flow and independent of the BP33 site operations.

Other than these measurements, metal and metalloid concentrations at site SW6 complied with the TVs.

Table 4.5. Metal and metalloid concentrations (in mg/L).

Site/ Parameter	Aluminium	Arsenic	Iron	Lithium	Nickel	Zinc
	Median values for filtered concentrations in mg/L					
Boxcut	0.07	0.003	0.025	0.036	0.0005	0.0025
BPUS SW1	0.023	0.002	0.278	0.004	0.0005	0.0025
BPDS SW2	0.034	0.002	0.274	0.003	0.0005	0.0025
BPDS SW3	0.050	0.001	0.360	0.002	0.0005	0.0025
BPUS SW4	0.020	0.001	0.060	0.001	0.0005	0.0025
BPUS SW5	0.024	0.001	0.212	0.003	0.0006	0.0025
BPDS SW6	0.030	0.001	0.195	0.002	0.0006	0.0025
BPUS SW7	0.055	0.001	0.180	0.001	0.0005	0.0025
BP SB1	0.020	0.001	0.030	0.006	0.0005	0.0025
BP SB2	0.020	0.001	0.030	0.005	0.0005	0.0025
BP MWDC1	0.120	0.001	0.025	0.001	0.0005	0.0025
BP MWDC2	0.360	0.001	0.025	0.001	0.0005	0.0025
WDL SSTV	0.07	0.013	0.38	0.43	0.010	0.0080

Aluminium (Al)

Figure 4.8 shows the distribution of filtered aluminium across the sampling sites. On some occasions filtered aluminium was recorded at concentrations above the TV at operational monitoring sites Sediment Basin 1 and 2 and MWD Cells 1 and 2. Notwithstanding this, as per Table 4.5, the median and 80 percentiles at all upstream and downstream monitoring sites recorded filtered aluminium concentrations below the TV including compliance site SW6.

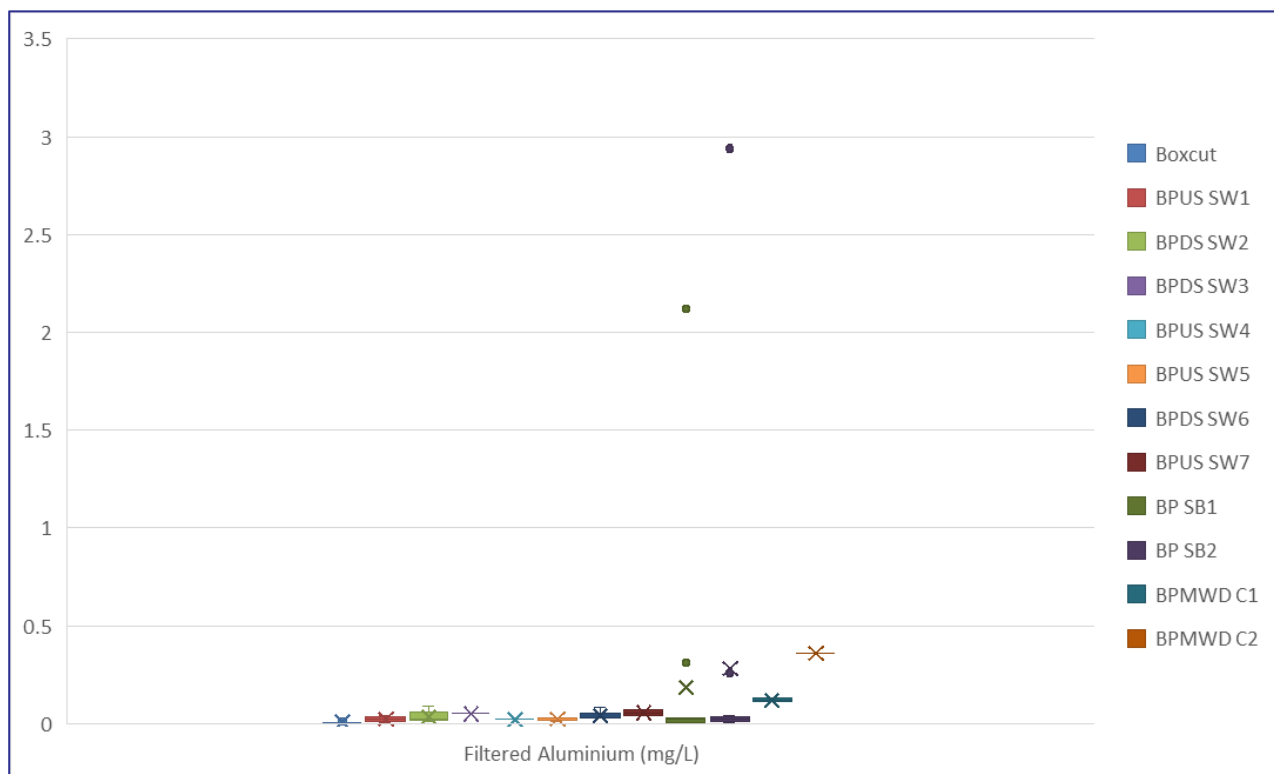


Figure 4.8. Filtered Aluminium.

Arsenic (As)

All filtered arsenic concentrations were below the relevant TV (0.013mg/L). Figure 4.9 shows the highest concentrations were recorded at operational sites boxcut and Sediment Basin 1, upstream sites SW1 and SW5, and downstream site SW2. The filtered arsenic concentrations are likely related to local natural mineralisation.

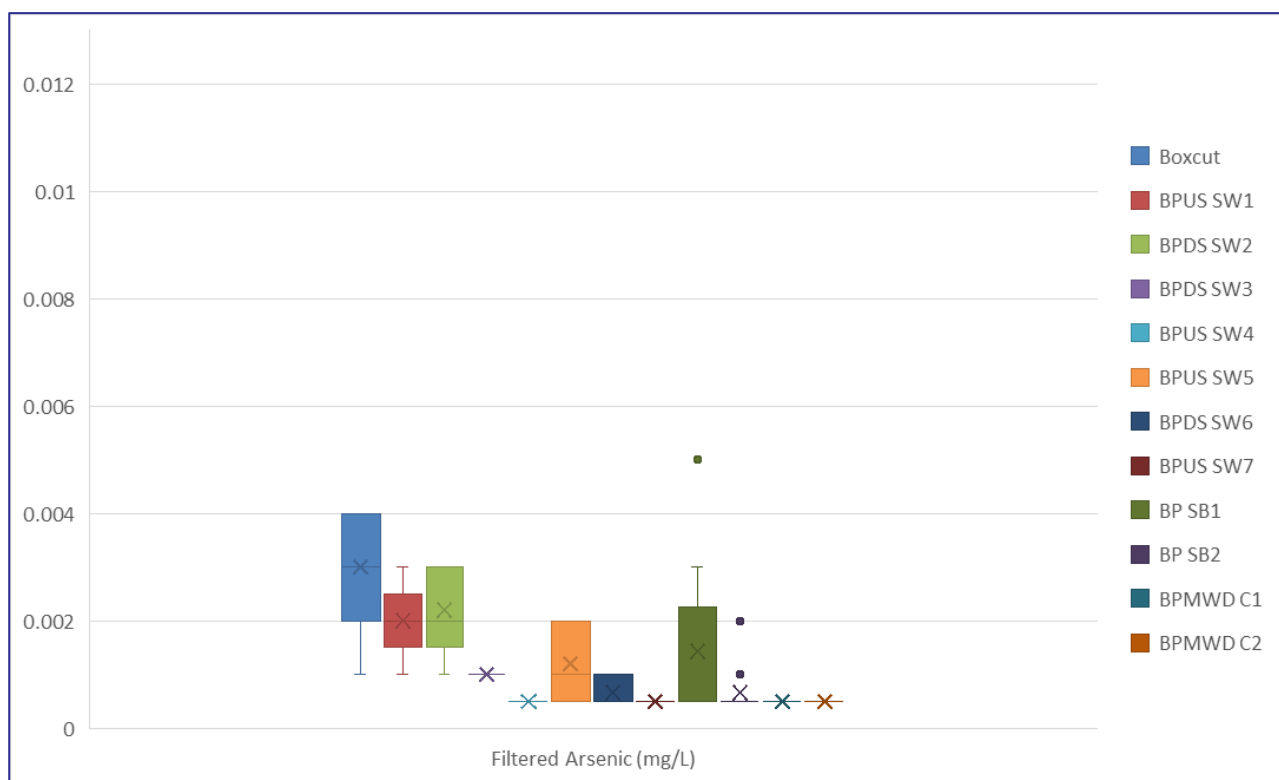


Figure 4.9. Filtered Arsenic.

Iron (Fe)

Figure 4.10 Filtered Iron shows that concentrations were lower at operational sites boxcut, Sediment Basins 1 and 2 and MWD Cells 1 and 2 compared to the surrounding upstream and downstream monitoring sites. As per Table 4.5, at all monitoring sites the median and 80 percentile values for filtered iron complied with the TV of 0.38mg/L.

Review of monitoring data shows two instances of filtered iron above the TV. Filtered iron was measured at 0.57mg/L at downstream monitoring site SW1 and 0.68mg/L at compliance site SW6 above the TV on 20 May 2025. The observed elevations in filtered iron are anticipated to be related to natural variation associated with the timing of sampling during recession flow in the early dry season. It is noted that stream flow at SW6 is assumed to have ceased on or about 10 May 2025. Additionally, no discharges from the boxcut or sediment basins were occurring at the time. The observed elevation of filtered iron at SW6 is independent of the BP33 site.

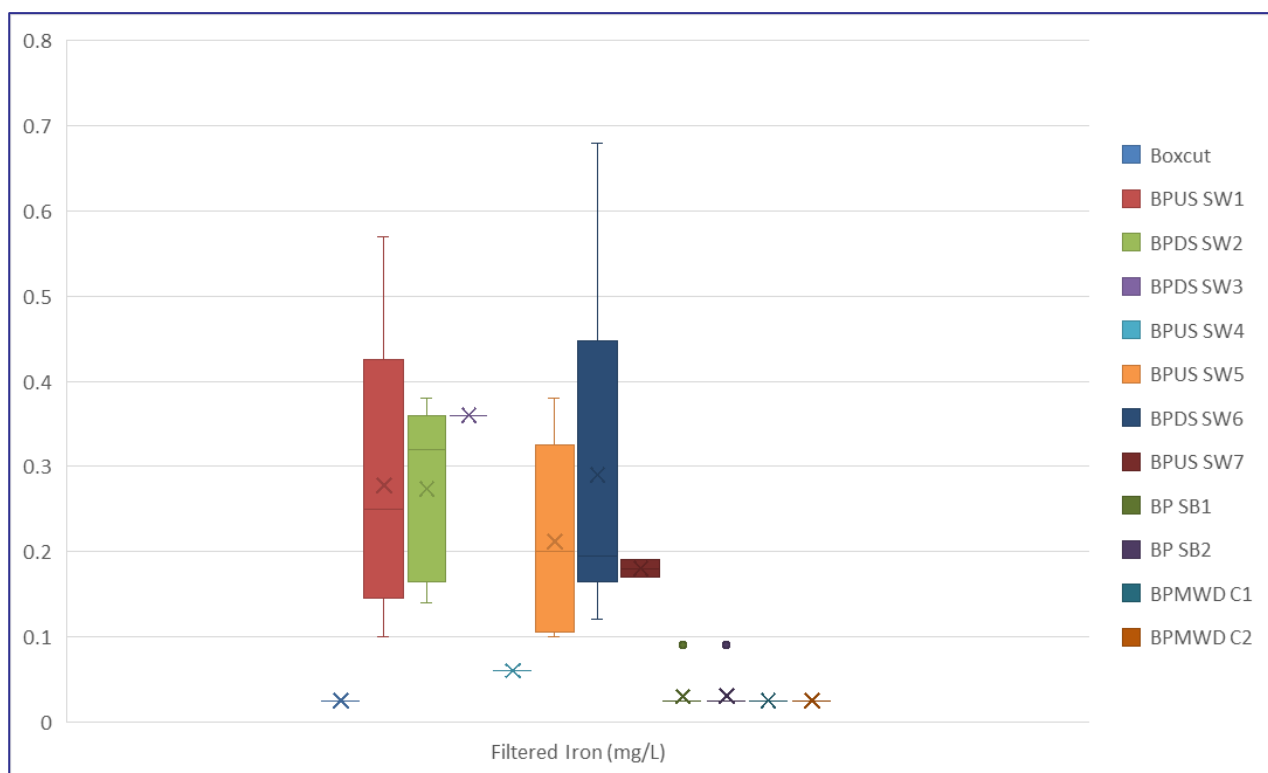


Figure 4.10. Filtered Iron.

Lithium (Li)

Figure 4.11 shows that while the highest filtered lithium concentrations were recorded in the boxcut, all samples were below the TV (0.43mg/L) except one (22 October 2025, 0.44mg/L). Also from Figure 4.14, the effect of boxcut discharge for the period 21 March to 22 April 2025 on Sediment Basin 1 water quality can be observed. Samples taken on 2, 7 and 14 April 2025 showed an increase in filtered lithium ranging from 0.16 to 0.23mg/L, below TV, compared to samples taken before and after boxcut discharge via Sediment Basin 1.

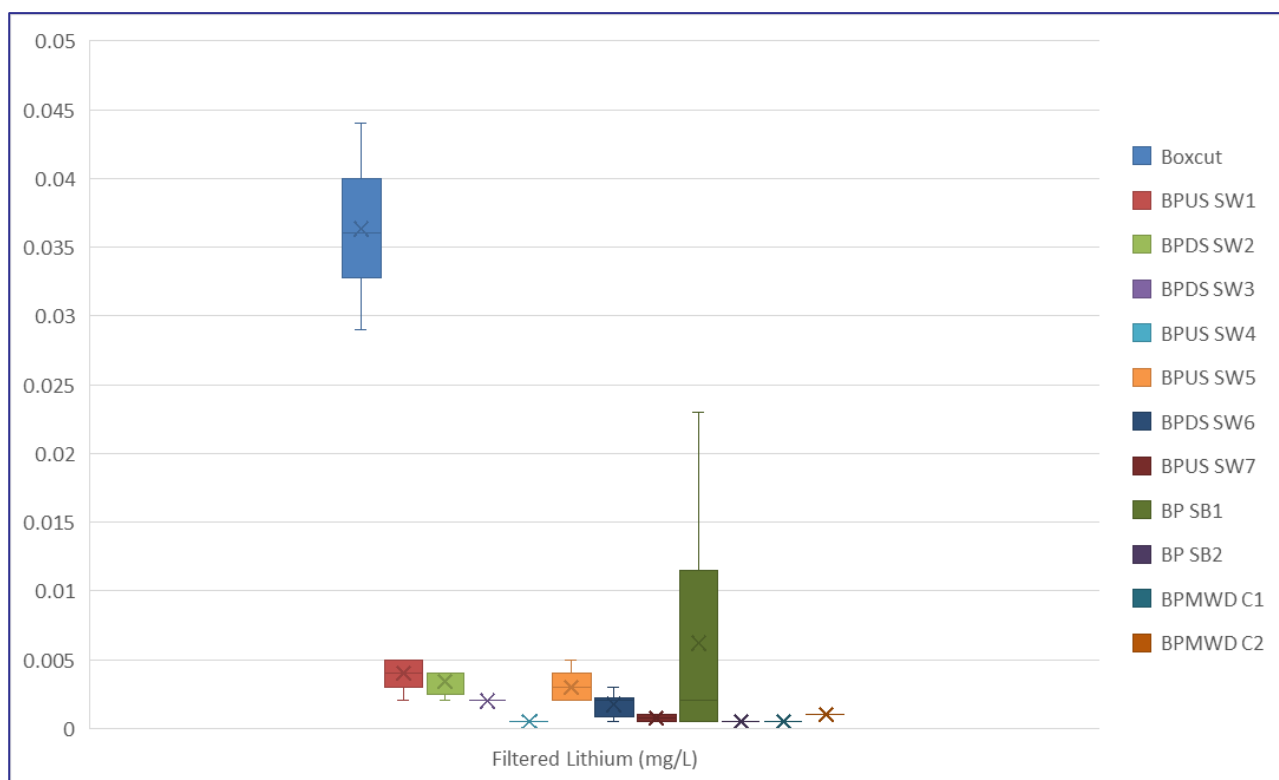


Figure 4.11 Filtered Lithium.

Nickel (Ni)

Figure 4.12 shows filtered nickel concentrations recorded during the reporting period across monitoring sites. All filtered nickel monitoring results at all sites complied with the TV (0.011mg/L).

Filtered nickel was detected above the LOR in two samples: at upstream monitoring site SW5, and at downstream compliance point SW6, both on 20 May 2025. The timing of sampling on 20 May 2025 was in the early dry season during recession flow.

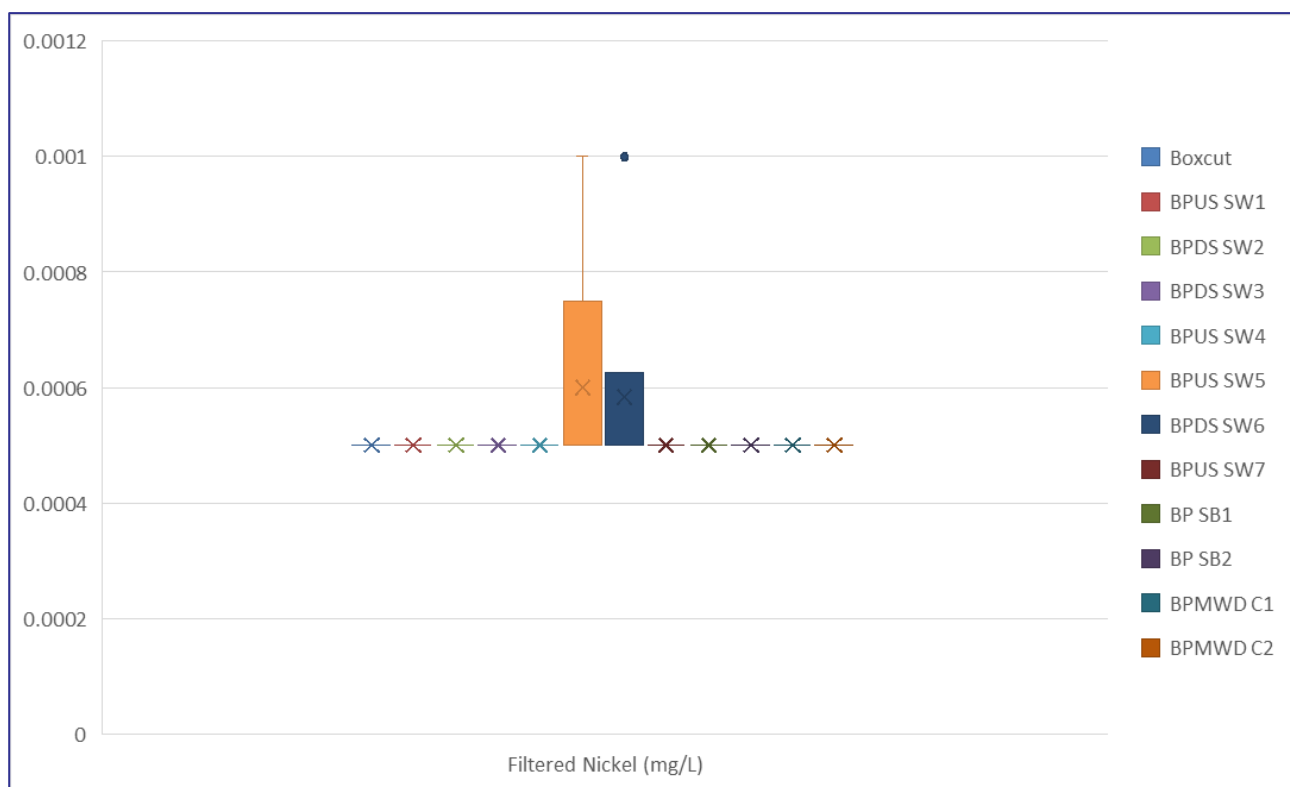


Figure 4.12. Filtered Nickel.

Zinc (Zn)

As illustrated by Figure 4.13, all samples collected from all sites were below laboratory reporting limits for filtered zinc with exception of two samples collected from compliance site SW6 (0.006mg/L 28 April 2025; and 0.014mg/L 20 May 2025).

The sample dated 20 May 2025 exceeded the TV (0.008mg/L) and the data point is considered to be related to the timing of sampling during recession flow in the early dry season.

It is noted that stream flow at SW6 is assumed to have ceased on or about 10 May 2025. Additionally, no discharges from the boxcut or sediment basins were occurring at the time. The incidence of filtered zinc at compliance site SW6 above the TV on 20 May 2025 is independent of the BP33 site operations.

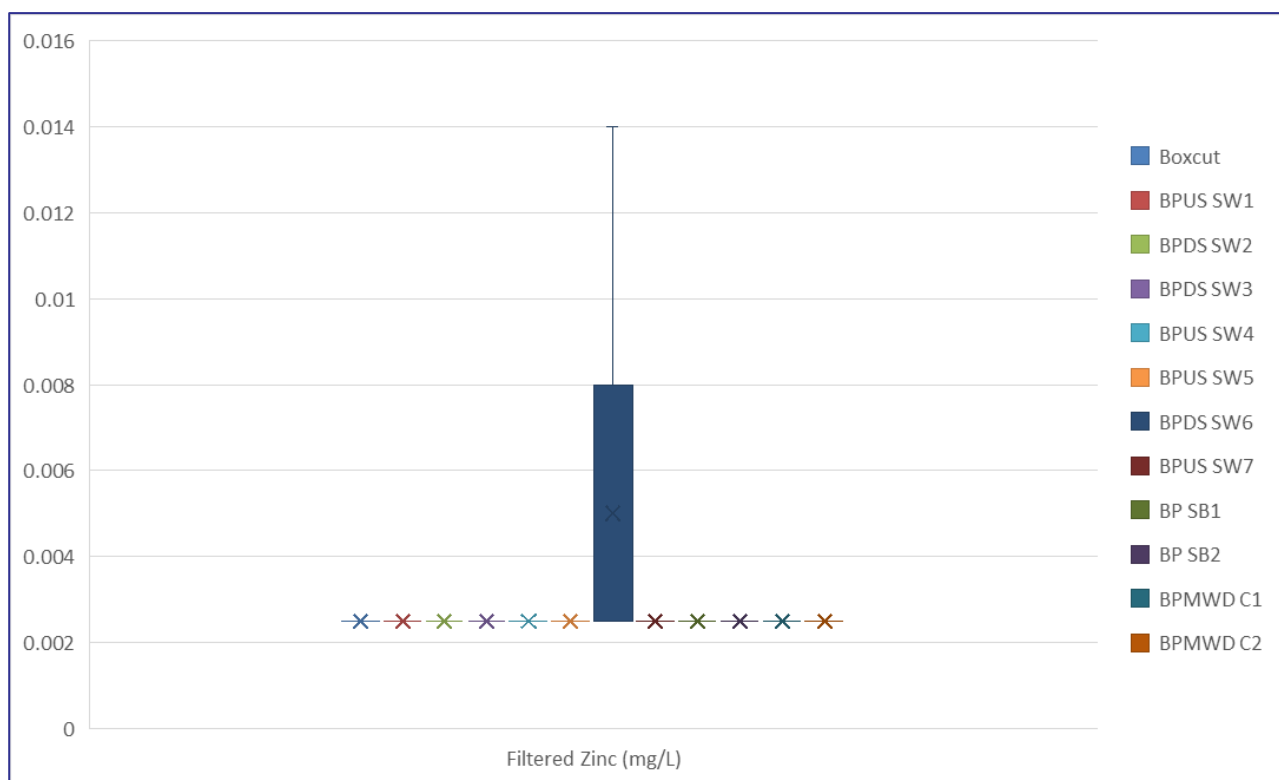


Figure 4.13. Filtered Zinc.

4.1.6 Treatment Reagents

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

4.1.7 Hydrocarbons

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

4.1.8 Other

The median and 80th percentile values for major ions, alkalinity and solids are provided in Table 4. There are no WDL253 TVs applicable to these parameters.

Table 4.6. Major ions, alkalinity and solids.

Site/Parameter		Sulfate (mg/L)	Chloride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Carbonate (mg/L)	Bicarbonate (mg/L)	TDS (mg/L)	TSS (Lab mg/L)
Boxcut	Median	0.8	5.9	9.6	0.9	2.0	4.7	0.5	34.4	65.2	3.1
	80th %ile	0.5	6.8	10.0	1.0	2.0	5.0	0.5	35.0	78.8	2.5
BPUS SW1	Median	0.5	3.6	0.5	0.5	0.5	3.2	0.5	4.4	31.5	4.9
	80th %ile	0.5	4.0	0.5	0.5	0.5	3.0	0.5	4.4	40.0	6.0
BPDS SW2	Median	0.8	3.2	0.6	0.5	0.5	3.0	0.5	5.2	42.6	5.9
	80th %ile	0.8	4.0	0.6	0.5	0.5	3.2	0.5	6.2	53.4	8.0
BPDS SW3	Median	0.5	3.0	0.5	0.5	0.5	2.0	0.5	1.0	0.5	107.0
	80th %ile	0.5	3.0	0.5	0.5	0.5	2.0	0.5	1.0	0.5	107.0
BPUS SW4	Median	0.5	3.0	0.5	0.5	0.5	2.0	0.5	1.0	0.5	2.5
	80th %ile	0.5	3.0	0.5	0.5	0.5	2.0	0.5	1.0	0.5	2.5
BPUS SW5	Median	0.8	3.6	0.5	0.6	0.5	2.8	0.5	3.6	24.9	4.0
	80th %ile	0.8	4.0	0.5	0.5	0.5	3.0	0.5	4.4	33.0	6.0
BPDS SW6	Median	0.5	3.5	0.5	0.5	0.5	2.8	0.5	3.2	39.5	2.5
	80th %ile	0.5	4.0	0.5	0.5	0.5	3.0	0.5	4.0	42.0	8.0
BPUS SW7	Median	0.5	3.0	0.5	0.5	0.5	2.0	0.5	2.0	32.0	19.5
	80th %ile	0.5	3.0	0.5	0.5	0.5	2.0	0.5	2.0	38.0	22.2
BP SB1	Median	5.5	2.7	6.4	0.8	1.3	2.1	0.5	18.6	53.0	21.5
	80th %ile	8.4	4.0	9.4	1.0	2.0	3.0	0.5	29.4	61.2	91.0
BP SB2	Median	4.4	1.3	3.1	0.5	0.6	1.0	0.5	6.6	35.0	10.5
	80th %ile	4.4	1.2	4.0	0.5	0.5	2.0	0.5	7.2	50.6	30.8
BP MWDC1	Median	3.5	5.5	0.5	0.5	0.5	2.5	0.5	0.5	62.5	44.5
	80th %ile	3.8	8.2	0.5	0.5	0.5	2.8	0.5	0.5	68.8	49.6
BP MWDC2	Median	6.0	0.5	0.5	0.5	0.5	1.0	0.5	0.5	38.0	34.0
	80th %ile	6.0	0.5	0.5	0.5	0.5	1.0	0.5	0.5	38.0	34.0
WDL SSTV											
Lab EQL		1	1	1	1	1	1	1	1	10	5

Figure 4.14 shows that Total Suspended Solids (TSS) concentrations were highest at Sediment Basins 1 and 2 as well as MWD Cells 1 and 2.

TSS concentrations were relatively elevated at SW3. As discussed in Section 4, one sample collected from SW3 was collected using a syringe due to shallow water of depth approximately 0.02m. The higher TSS results at SW3 are attributed to the sampling conditions and the data point is not considered representative background.

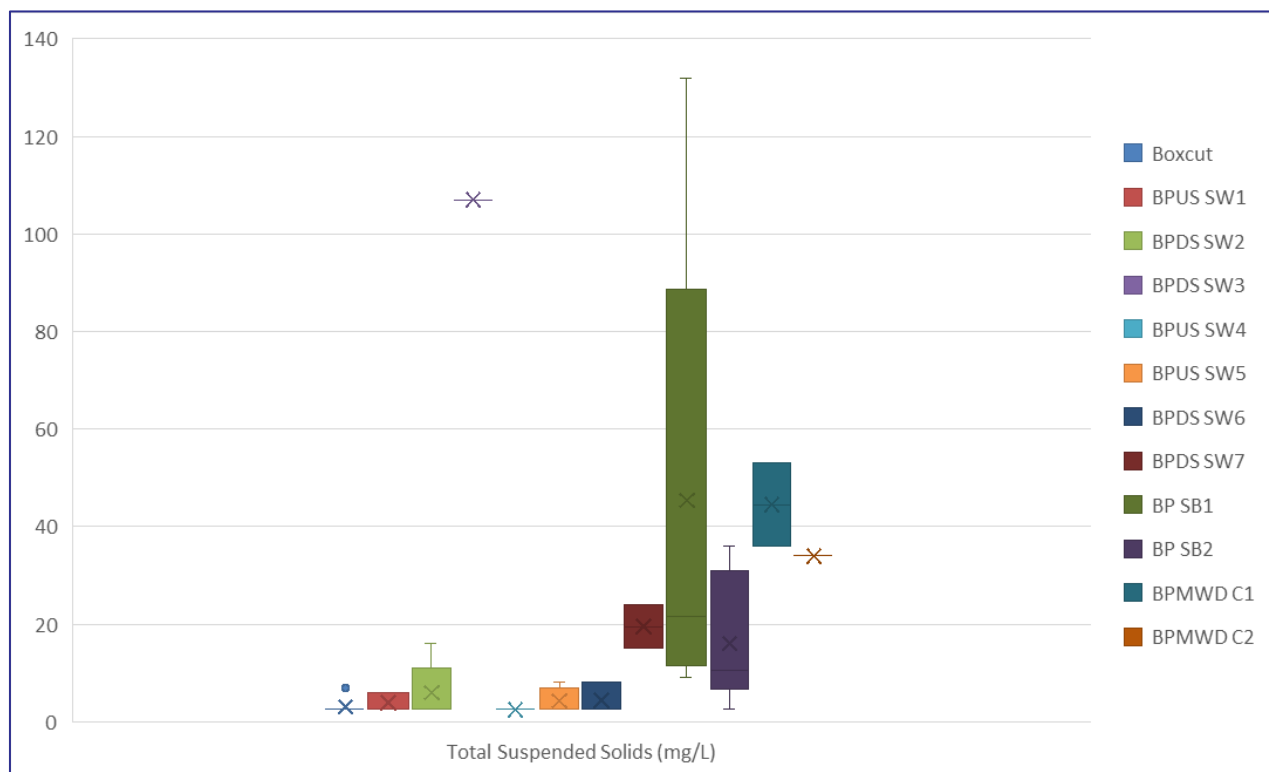


Figure 4.14. Total Suspended Solids.

4.2 Macroinvertebrate and Sediment Monitoring

Macroinvertebrate sampling was completed in early June 2025 during recessionary flows and represented the first comparative year of monitoring after commencement of active discharge from BP33.

The sampling design for this monitoring program cannot strictly follow the before, after, control impact (BACI) design, due to the location of prior mining infrastructure at the headwaters of the catchment. Despite this, data collected from 2022-2024 depicts a period before active discharge from the site at the most practical sampling locations, which have allowed for comparison between baseline and monitoring period.

Sediment quality results for samples collected from sites surrounding BP33 are presented in Table 4.7.

Table 4.7. BP33 Sediment Quality Results (mg/kg).

Analyte	LOR	BP4	BPUS SW1	BPDS SW2	BPDS SW6	DGV	DGV-high
Aluminium	50	5290	6120	780	1220	-	-
Arsenic	1	1.4	23	2.49	1.8	20	70
Cadmium	0.1	<0.1	<0.1	<0.1	<0.1	1.5	10
Chromium	1	4.9	10	1.8	2.3	80	370
Cobalt	0.5	<0.1	<0.1	<0.1	<0.1	-	-
Copper	1	0.9	5.6	<0.1	1.3	65	270
Iron	50	2850	17000	1360	1920	-	-
Lead	1	9.6	8.4	1.2	2.8	50	220
Lithium	0.1	5.1	13.6	1.6	2	-	-
Mercury	0.01	0.04	0.02	<0.01	<0.01	0.15	1
Nickel	1	2.8	4	<1.0	1.2	21	52
Zinc	1	6.2	10.4	2	5	200	410

Sediment results close to BP33 reflect the naturally mineralised area, with several metals present at low concentrations, and higher concentrations of several metals at upstream tributary site BPUS SW1.

Macroinvertebrate and sediment monitoring in 2024 noted that localised surface disturbance had occurred in 2023, and the high rainfall in the 2023–2024 wet season was likely to have resulted in mobilisation and deposition of sediment containing arsenic and other metals to the unnamed creek through transport from sediment basins (BP33 Biological and Sediment Monitoring Report 2025). Downstream sediment metal concentrations were low however, indicating no measurable influence of sediment basin discharges on downstream sediment quality.

There were no exceedances of Default Guideline Values (DGV) for any metal measured in sediment samples collected in 2025. Where higher concentrations were observed, these results are attributed to background prevailing conditions.

Macroinvertebrate sampling was completed in early June 2025 during recessionary flows and is considered to represent the first round of post-discharge monitoring at BP33. A summary of macroinvertebrate results for the sites surrounding BP33 in 2025 and in the historical context of baseline monitoring is provided below.

- Relative abundance results were comparable with findings made in 2024 and remained higher than those recorded in 2022 and 2023. The lowest relative abundance results were found at BPDS SW2, and the highest at reference site BP4.
- The number of families recorded in each sample was higher in 2025 at downstream sites. Similar numbers of PET taxa were found at most sites in 2024 and 2025, except for BPDS SW6, where a higher number were recorded this year.
- SIGNAL-2 results were comparable with previous years at each site, with the lowest result being found at BPUS SW1. There were fewer sensitive taxa found at BPUS SW1, but all results demonstrated a pollution tolerant macroinvertebrate community.
- The proportion of tolerant taxa followed an inverse trend to SIGNAL-2. The highest proportion of tolerant taxa were found at BPUS SW1, which tracks with other metrics related to pollution sensitivity (PET and SIGNAL-2) of the macroinvertebrates collected at the site. The proportion of tolerant taxa

followed an inverse trend to SIGNAL-2. The highest proportion of tolerant taxa has increased notably in the past two sampling periods.

- There were no significant differences ($p > 0.05$) between monitoring and baseline data for any community metric.
- For macroinvertebrate community composition, all sites had a minimum of 60% similarity to each other.
- Review of macroinvertebrate community composition for all years of monitoring found no pattern separating the community composition of samples collected in 2025 (monitoring) from previous data (baseline).

Further, the report noted that although all sites saw a significant increase in an abundance of macroinvertebrates collected in 2025, other metrics did not conform to the same trend. Primarily, there was a decrease in ecosystem health metric values at BPUS SW1. This is likely due to sedimentation at the site. The impact of sediment basin discharge is spatially limited, as the site downstream on the tributary (BPDS SW2) showed either improved or similarity in metrics to previous sampling. Differences in community composition between years are likely related to influences at a regional level. As annual wet season variability is a known climate feature in the NT, the capture of data under different baseline conditions has been helpful in the comparison of data over time to results from 2025.

In personal conversation with Tara Steele in February 2026, author of the BP33 Biological and Sediment Monitoring Reports for the period 2022 to 2026, in relation to sedimentation at SW1, it was clarified that the observed sediment deposition was predominantly related to localised surface disturbance that had occurred in 2023 and high rainfall of the 2023–2024 wet season that was likely to have resulted in mobilisation and deposition of sediment to the unnamed creek through transport from sediment basins. Additionally, it was clarified that further accumulation of sediment was not occurring and that sediment dispersal or migration processes through the drainage line are slow given the relatively low velocities in the upstream catchment. Native vegetation has begun to establish in the sediment, and it is becoming an integrated feature within a confined section of the upper catchment morphology.

In closing, the BP33 Biological and Sediment Monitoring Report found no significant differences between baseline and monitoring treatments, indicating dewatering did not affect downstream aquatic health during the 2024–2025 wet season. Additionally, the results of sampling do not suggest any impact associated with active discharge were present in the downstream aquatic ecosystems of the BP33 mine in 2025.

The BP33 Biological and Sediment Monitoring Report is presented in **Appendix D** and shall be referred to for a more detailed description of the study methods, results and discussion.

4.3 Monitoring Result Quality Assurance / Quality Control

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

4.3.1 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 parameters results 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 encountered the sample (e.g., trowels, auger, water quality meter, jugs, grab samplers) was cleaned before 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, so the effect of any potential degradation is not expected have a large effect on the assessment of the results obtained.
- Chain of Custody (CoC) procedures were adhered to for all sample transfers. CoC's 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.

4.3.2 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 trained in sampling methodology to ensure sampling processes are robust, standardised and repeatable.

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

4.3.3 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.
- Relative Percent Differences (RPDs).
- Parameter frequencies and summary of QA/QC outliers.

4.3.4 Laboratory Documentation

Care was taken by the field team leader to ensure all samples were collected and submitted to the laboratory within sampling holding times and laboratory chain of custodies were maintained.

4.3.5 Sample Completeness

A review done for sample completeness found the following deficiencies:

- No samples were collected from SW7 between February and April 2025 due to access constraints associated with wet boggy ground conditions. Improved access to SW7 was completed during 2025 dry season via establishment of a new track. Sample completeness at SW7 has been maintained since sustained flow commenced on 18 November 2025.
- No water samples were collected in March 2025 at sites SW4, SW5, SW7, SW1, SW2, SW3, SW6 and SW8. Improved processes for implementing and tracking scheduled samples including field observations, such as the recording the presence or absence of water for sample collection, have been implemented.
- No samples were collected at SW8 and one sample was collected from SW3. These sites are located in the upper catchment and are predominantly dry. Going forward field observation records will evidence site attendance and dry conditions.

5 Contaminant Loads

Monthly and annual contaminant loads for boxcut water discharge over the reporting period are presented in Table 5.1.

Contaminant load calculations are derived from daily discharge volumes 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. Where parameters were reported at laboratory reporting limits, values half of the laboratory reporting limits have been used to calculate loads.

Table 5-1. Monthly and Annual Contaminant Loads.

Parameter	March 2025	April 2025	Total 2025 (kg)
Tot. Al Load (kg)	0.556	4.583	5.139
Filtered Al Load (kg)	0.125	0.215	0.340
Tot. As Load (kg)	0.030	0.083	0.113
Filtered As Load (kg)	0.025	0.067	0.092
Tot. Cd Load (kg)	0.002	0.001	0.003
Filtered Cd Load (kg)	0.002	0.001	0.003
Tot. Cr (III+VI) Load (kg)	0.007	0.014	0.021
Filtered Cr (III+VI) Load (kg)	0.007	0.014	0.021
Tot. Co Load (kg)	0.007	0.014	0.021
Filtered Co Load (kg)	0.007	0.014	0.021
Tot. Cu Load (kg)	0.007	0.014	0.021
Filtered Cu Load (kg)	0.007	0.014	0.021
Tot. Fe Load (kg)	0.347	1.594	1.940
Filtered Fe Load (kg)	0.347	0.693	1.040
Tot. Pb Load (kg)	0.007	0.014	0.021
Filtered Pb Load (kg)	0.007	0.014	0.021
Tot. Li Load (kg)	0.465	0.912	1.377
Filtered Li Load (kg)	0.451	0.995	1.446
Tot. Ni Load (kg)	0.007	0.014	0.021
Filtered Ni Load (kg)	0.007	0.014	0.021
Tot. Zn Load (kg)	0.041	0.081	0.123
Filtered Zn Load (kg)	0.035	0.069	0.104
TP (kg)	0.139	0.756	0.895
TN (kg)	1.251	2.088	3.339

6 Long Term Trend Analysis

This report is the second annual monitoring report for WDL253 and on this basis no long-term trend analysis has been undertaken.

7 Trigger Value Exceedances and Investigations

A summary of TV exceedances at compliance site SW6 and investigation findings during the reporting period are presented below. None of the TV exceedances occurred at a time when mine water discharges were occurring. Additionally, none of the 8 TV exceedances merited reporting of a notifiable incident under WDL253 Item 12 (Conditions 41-43).

Table 7-1. Trigger Value Exceedances and Investigations

Date	Details of TV Exceedance	Investigation Details
20 May 2025	Turbidity 15.8NTU	Attributed to early dry season recessional flow. The observed turbidity is independent of BP33 site. No mine water discharge or sediment basin passive discharges were occurring.
20 May 2025	Filtered iron 0.68mg/L	The measured filtered iron concentration is attributed to natural variation associated with early dry season recessional flow. Stream flow at SW6 is assumed to have ceased on or about 10 May 2025. No mine water discharge or sediment basin passive discharges were

Date	Details of TV Exceedance	Investigation Details
		occurring. The observed filtered iron exceedance is independent of the BP33 site operations.
20 May 2025	Filtered zinc 0.014mg/L	The measured filtered zinc concentration is attributed to natural variation associated with early dry season recessional flow. No mine water discharge or sediment basin passive discharges were occurring. The observed filtered zinc exceedance is independent of the BP33 site operations.
20 May 2025	Total Phosphorus 0.4mg/L	The measured Total Phosphorus concentration has been identified as an outlier and occurred in the early dry season during recessional flow. No mine water discharge or sediment basin passive discharges were occurring. The observed Total Phosphorus exceedance is independent of the BP33 site operations.
26 Nov 2025	Turbidity 31NTU	The measured turbidity is attributed to first flush runoff associated with first flush of the catchment when high rainfall from Cyclone Fina was experienced. The finding is supported by the measurement of turbidity of 29.6 NTU at upstream site SW7.
26 Nov 2025	Filtered Aluminium 0.08mg/L	The measured filtered aluminium is attributed to natural variation associated with first flush of the catchment when high intensity rainfall from Cyclone Fina was experienced. SB 1 and 2 were passively discharging on 26 November 2025. Sampling on 26 November 2025 recorded filtered aluminium concentrations of 0.02mg/L below the TV in both basins. Additionally, no mine water discharge occurred at that time. The observed filtered aluminium exceedance is independent of the BP33 site operations.
26 Nov 2025	Total Phosphorus 0.04mg/L	The measured total phosphorus is attributed to natural variation associated with first flush of the catchment when high intensity rainfall from Cyclone Fina was experienced. At the time of sampling SB1 and 2 were passively discharging but no mine water discharge was occurring. Total Phosphorus concentrations in SB1 and 2 were 0.03mg/L and 0.06mg/L respectively. Total Phosphorus concentrations at upstream monitoring sites SW5 and SW7 were <0.01mg/L and 0.04mg/L respectively.
16 Dec 2025	Total Phosphorus 0.06mg/L	The measured total phosphorus is attributed to natural mobilisation and weathering processes during high-intensity wet season rainfall contributing to natural elevation of Total Phosphorus in the catchment. At the time of sampling SB1 and 2 were passively discharging but no mine water discharge was occurring.

Date	Details of TV Exceedance	Investigation Details
		Total Phosphorus concentrations in SB1 and 2 were both <0.01mg/L. Total Phosphorus concentrations at upstream monitoring sites SW5 and SW7 were both 0.04mg/L.

8 Compliance with Trigger Values

An assessment of compliance with respective TVs at compliance site SW6 is required to be undertaken in accordance with the requirements of Item 14 of WDL253. For ease of reference, Item 14 of WDL253 is reproduced below.

Item	Detail
14. 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 respective TVs at compliance site SW6 has been undertaken in accordance with Item 14a and found:

Item 16 (a) Metals:

- All filtered arsenic, cadmium, chromium (CrVI), cobalt, copper, lead, lithium and nickel monitoring results complied with the respective TVs at compliance site SW6.
- One exceedance of filtered aluminium at 0.08mg/L on 26 November 2025 above the TV of 0.07mg/L. The filtered aluminium exceedance is attributed to natural variation associated first flushing of the catchment consequent to high rainfall from Cyclone Fina. Sediment Basins 1 and 2 were passively discharging on 26 November 2025 and sampling on 26 November 2025 recorded filtered aluminium concentrations of 0.02mg/L below the TV in each basin respectively. Sediment basin discharge is not considered to be a source of filtered aluminium at that time. Additionally, no discharge from the boxcut occurred at that time. The observed filtered aluminium exceedance is independent of the BP33 site.
- One exceedance of filtered iron at 0.68mg/L on 20 May 2025 above the TV of 0.38mg/L. The observed elevation in filtered iron is attributed to natural variation associated with early dry season recession flow. Stream flow at SW6 is assumed to have ceased on or about 10 May 2025.

Additionally, no discharges from the boxcut or sediment basins were occurring at the time. The observed filtered iron exceedance is independent of the BP33 site.

- One exceedance of filtered zinc at 0.014mg/L on 20 May 2025 above the TV of 0.008mg/L. Like filtered iron, the observed elevation in filtered zinc is anticipated to be related to natural variation associated with early dry season recessional flow and independent of the BP33 site.

Item 16 (b) Nutrient and physical-chemical parameters:

- The median values for pH, EC, turbidity, DO and total nitrogen complied with the respective TVs at compliance site SW6.
- The median value for total phosphorus was 0.03mg/L which exceeded the TV of 0.02mg/L at compliance site SW6.
- Total Phosphorus monitoring results are discussed in detail in Section 4.1.4. Three exceedances of Total Phosphorus at SW6 were recorded comprising 0.4mg/L, 0.04mg/L and 0.06mg/L on 20 May 2025, 26 November 2025 and 16 December 2025 respectively.
- The Total Phosphorus result of 0.4 mg/L on 20 May 2025 is an outlier and was recorded in the early dry season during recessional flow. Flow at SW6 ceased approximately 10 May 2025. No discharges of boxcut or sediment basin water were occurring at the time the sample was collected and the Total Phosphorus result from 20 May 2025 is independent of the BP33 site.
- Excluding the Total Phosphorus outlier of 20 May 2025, which is an outlier independent of the BP33 site and mine water discharge, the Total Phosphorus median value is recalculated at 0.02mg/L which complies with the TV of 0.02mg/L.
- It is considered noteworthy that upstream monitoring sites SW4, SW5 and SW7, which have not been affected by sediment basin discharge, do not have outliers and are appropriate reference sites representative of natural baseline conditions, recorded total phosphorus medians of 0.005mg/L, 0.024mg/L and 0.04mg/L respectively. These medians illustrate background sources of total phosphorus are present in the broader catchment.

9 Impacts of Wastewater Discharge

Macroinvertebrate and sediment monitoring for the 2024–2025 period found no significant differences between baseline and monitoring site data, indicating discharges did not influence downstream aquatic health during the 2024–2025 wet season.

10 Conclusion

This Annual Monitoring report for the 2024–2025 period was prepared in accordance with WDL253 Conditions 45 and 46.

Monitoring program objectives were achieved (Section 3.1). Two sample completeness issues, relating to access and sample scheduling, were identified and corrective actions implemented to prevent recurrence. It is also noted that monitoring sites SW3 and SW8 are in the upper catchment where ground conditions are predominantly dry and seldom host water to enable sample collection.

A total of 94.25ML of water was discharged over the period 21 March 2025 to 22 April 2025. A further 114.6ML of water was discharged over the period 20 January to 9 February 2026 that will be reported on in the 2025-2026 report, allowing for laboratory analyses, reporting and data handling.

An assessment of compliance with TVs at compliance site SW6 has been provided in accordance with Item 14 of WDL253. During the reporting period 8 TV exceedances were recorded. None of the TV exceedances occurred at the time mine water discharges were occurring. Four of the exceedances, turbidity, filtered iron, filtered zinc and TP occurred on the 20 May 2025 and were found to be independent of the BP33 site and attributed to seasonal variation (sample timing in the early dry season during recession flow). Three of the exceedances, turbidity, filtered aluminium and TP, occurred on 26 November 2025 and were found to be related to a natural event (first flush runoff due to intense rainfall associated with Cyclone Fina). One exceedance on 16 December 2025, TP, was found to be independent of BP33 site and attributed to natural mobilisation of TP associated with weathering processes during high-intensity wet season rainfall. One of the exceedances related to Total Phosphorus upon further investigation found that the median value included an outlier considered to be an artifact of early dry season recession flow and occurred at a time when no discharge of boxcut or sediment basin water was occurring. Exclusion of the outlier from the median calculation revised the status of TP at SW6 to comply with the TV.

Macroinvertebrate and sediment monitoring found no significant differences between baseline and treatment sites, indicating discharges did not influence downstream aquatic health during the 2024–2025 wet season.

Tabulated monthly and annual contaminant loads for discharges have been reported.

Analysis of long-term trends was not undertaken as a minimum period of 3 years of data required is not available.

11 References

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WRM (2025). *BP33 Erosion and Sediment Control Plan*.

APPENDIX A

Waste Discharge Licence 253



Northern
Territory
Government

WASTE DISCHARGE LICENCE

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

Licensee Lithium Developments (Grants NT) Pty Ltd

Licence Number: **WDL253**

Registered Business Address: Level 9, 2 Mill Street
Perth WA 6000

ACN: 622 047 232

ABN: 70 622 047 232

Commencement Date: February 2024

Expiry Date: February 2029

Licensed Action: Controlled discharge of treated, mine-influenced water from the Finnis Lithium Project BP33 Underground Mine, Mine Water Dam (MWD) Cell 1 into Drainage Line BP1 that feeds into the Charlotte River and then into Bynoe Harbour, via the authorised discharge point (DP1) and subject to the conditions of this licence.

Premises 2873 Cox Peninsula Rd, Cox Peninsula
Section 00001 Hundred of Parsons
Mineral Licence ML32346 and MLN16
(Appendix 1)

WASTE DISCHARGE LICENCE (WDL253)

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WASTE DISCHARGE LICENCE (WDL253)

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.

WASTE DISCHARGE LICENCE (WDL253)

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. 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 s 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.

WASTE DISCHARGE LICENCE (WDL253)

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

nil

WASTE DISCHARGE LICENCE (WDL253)

SCHEDULE 1 - ITEMS

Item	Detail	
1. Beneficial uses (condition 20)	Declaration of Beneficial Uses Fog Bay Area (Gazette No. 9, 27/02/1998) – Aquatic Ecosystem Protection. Declaration of Beneficial Uses for the Daly Roper Beetaloo Water Control District (Gazette No. 25, 11/06/2019).	
2. Sites of conservation significance (condition 20)	Not Applicable.	
3. Ramsar wetlands (condition 20)	Not applicable.	
4. Licence Documents (condition 13)	(a) Water Management Plan; and (b) Water Balance Modelling Report.	
5. Authorised Discharge Point (condition 23)	Discharge Point 1 (DP1) from Mine Water Dam (MWD) Cell 1 as shown on the map at Appendix 2.	Latitude: -12.7128115 Longitude: 130.7912214
6. Source(s) of waste (condition 26)	Direct rainfall and mine-influenced water collected from Mineral Leases ML32346 and MLN16 that are captured and stored in Mine Water Dam (MWD) Cells 1 and 2. Water is discharged from MWD Cell 1 through DP1 and is released into Drainage Line BP1 (Appendix 3).	
7. Trigger values (condition 26)	The limits for parameters listed in Appendix 4.	
8. Compliance point (condition 26)	Downstream surface water sampling point BPDS SW6 as shown on the map (Appendix 2).	Latitude: -12.7253773 Longitude: 130.7860708
9. Conditions on discharge (condition 26)	Any authorised discharge must: (a) Not include wastewater generated outside of ML32346 and MLN16; (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 data at the Compliance Point BPDS SW6 shows there is a sufficient flow to achieve trigger values at the compliance point at Item 8; (d) Occur only when there is flow in Drainage Line BP1; and (e) In the event wastewater is treated, occur 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 5; and (b) Macroinvertebrate and Sediment Monitoring Program in accordance with Appendix 6.	
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).	

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Item	Detail
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 (pH, EC, turbidity, DO), 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: (c) The Licence Documents at Item 4. (d) The Monitoring Report provided in accordance with condition 45. (e) 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, turbidity,), 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 43)	NA

WASTE DISCHARGE LICENCE (WDL253)

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;

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- 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 complaint 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.

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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;

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- 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:

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- 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 12, 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 standard condition has been removed*
- 41. The licensee must notify the Administering Agency of any notifiable incident listed at Item 12 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 12 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 12 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;

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- 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.

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END OF LICENCE CONDITIONS

This licence is not valid unless signed below:

A handwritten signature in blue ink that reads "Andrew Johnson". The signature is written in a cursive style with a trailing flourish.

ANDREW JOHNSON
Controller of Water Resources

Date: 9 February 2024

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DEFINITIONS

In this licence, unless a contrary intention appears:

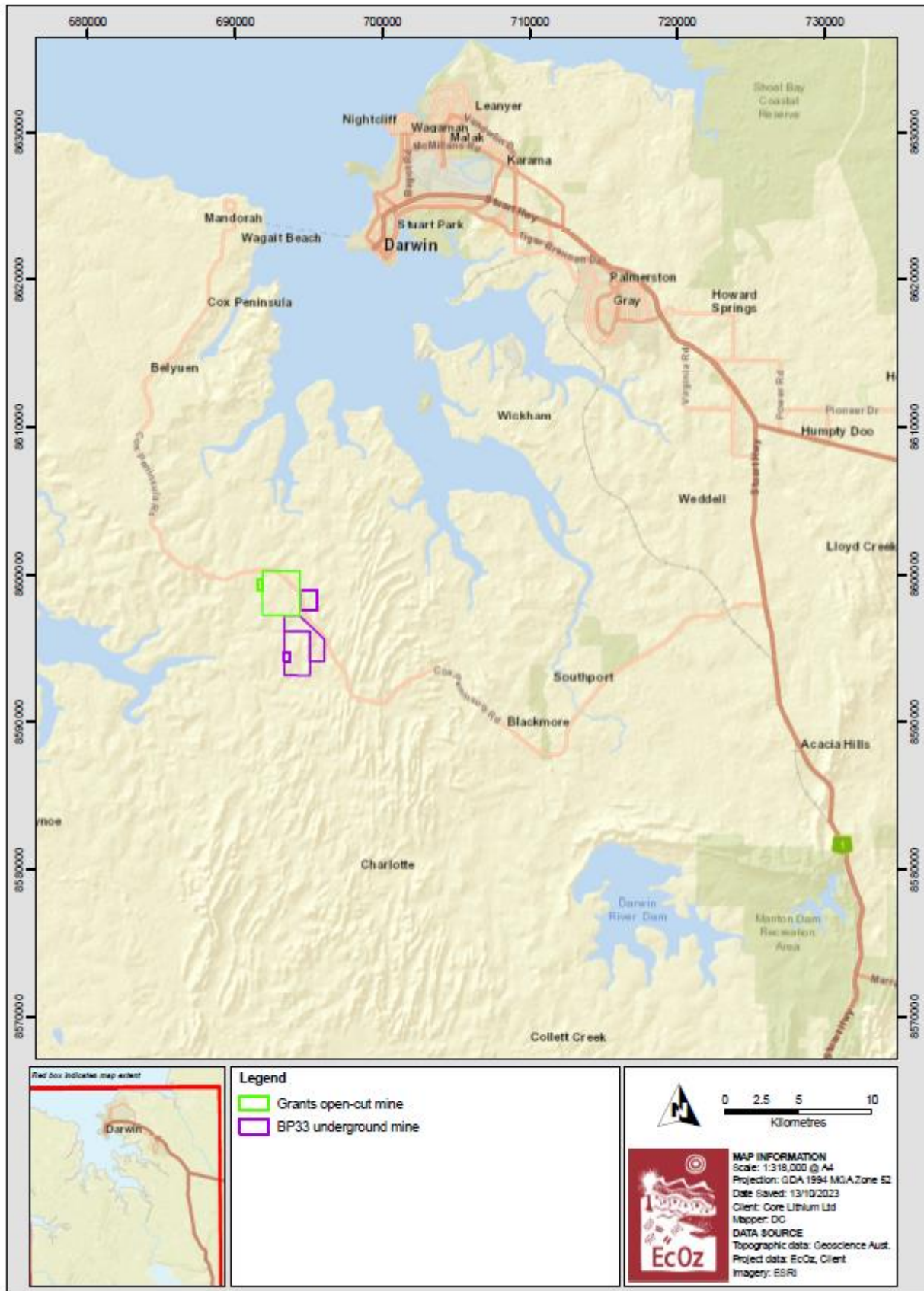
Term	Definition
24-hour emergency contact	the phone number of a person who can be contacted at any time and be capable of responding to and providing information about any incident associated with the Licensed Action.
Administering Agency	means the NT Government Department with responsibility for administering 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.

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Term	Definition
pollution	has the same meaning as <i>pollute</i> 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	<i>Water Act 1992</i> (NT).
Wet season	means 1 November to 30 April.

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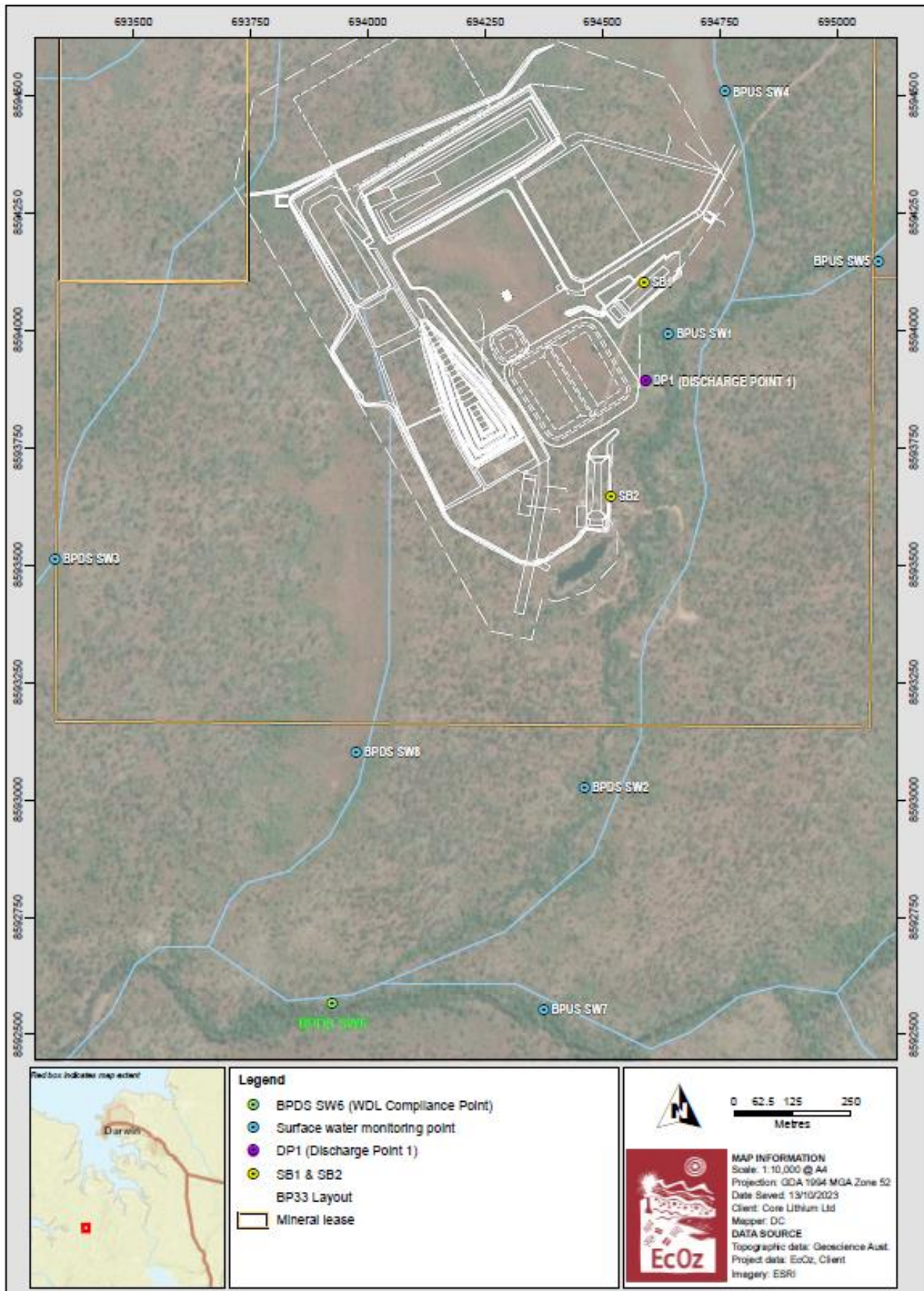
APPENDIX 1: Location of Finniss Lithium Project



Path: Z:\01 EcOz_Document\04 EcOz_Verbage GIS\223107 - BP33 WDL Application\1 - Project Files\2 - Report Maps\General location.mxd

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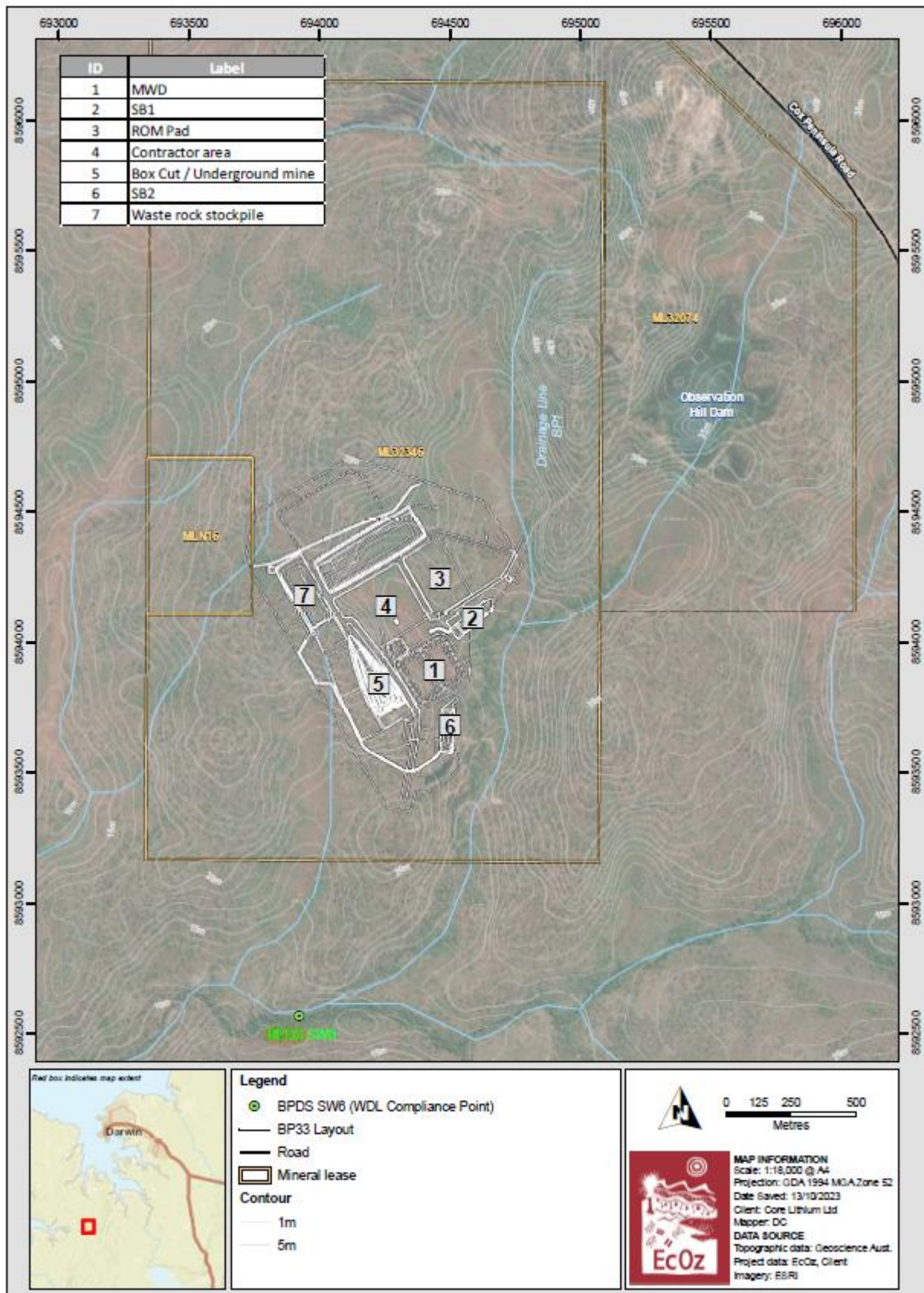
APPENDIX 2: Compliance Point, Discharge Point, and Surface Water Monitoring Points



Path: Z:\01 EcOz_Documents\04 EcOz Heritage GIS\0223\07 - BP33 WDL Application\1. Project Files\2. Report Maps\Map of discharge and compliance points.mxd

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APPENDIX 3 : BP33 Underground Mine Infrastructure and layout



Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\223107 - BP33 WDL Application\1. Project Files\2. Report Maps\Location of BP33 and surrounding land uses.mxd

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APPENDIX 4: Discharge Trigger Values/SSTV

Sampling Point				Compliance Point
Site Code				BPDS SW6
Latitude				-12.7253773
Longitude				130.7860708
PARAMETER	Abbrev.	Units	Analysis	Trigger Values ¹
pH	pH	pH	In situ	5.4 ² – 6.7 ³
Electrical Conductivity	EC	µS/cm		250
Turbidity	NTU	NTU		14 ³
Dissolved Oxygen	DO	mg/L		50-100
Total Nitrogen	TN	µg/L	Unfiltered	300 ³
Total Phosphorus	TP			20 ³
Aluminium	Al	µg/L	Filtered (0.45 µm)	70 ³
Arsenic	As			13
Cadmium	Cd			0.2
Chromium (CrVI)	Cr			1
Cobalt	Co			1.4
Copper	Cu			1.4
Iron	Fe			380 ³
Lead	Pb			3.4
Lithium	Li			430 ⁴
Nickel	Ni			11
Zinc	Zn			8

¹ ANGZ (2018) 95% species protection, freshwater, unless otherwise specified.

² 20th percentile of background data for surface water quality.

³ 80th percentile of background data for surface water quality.

⁴ Ecotoxicological Assessment – see Grant's Water Management Plan (WRM, 2023).

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APPENDIX 5: Surface Water Monitoring Program

Parameter/Site			Operational			Upstream			Downstream				
			MWD Discharge ¹	SB1	SB2	BPUS SW4	BPUS SW5	BPUS SW7	BPUS SW1	BPDS SW2	BPDS SW3	BPDS SW6 Compliance	BPDS SW8
GPS Coordinates (latitude and longitude)			-12.7128115 130.7912214	-12.71146623 130.7920958	-12.71558608 130.7914748	-12.70776534 130.7936642	-12.71102426 130.796696	-12.72547491 130.7902228	-12.71243714 130.7925837	-12.7212 130.791	-12.716872 130.780576	-12.72537727 130.7860708	-12.72054092 130.7865124
Parameter	Abbrev	Unit	Frequency										
Field													
Flow	-	kL/day	C*	N/A	N/A	W	W	W	W	W	W	C	W
Water level	-	M	P, D	N/A	N/A	W	W	W	W	W	W	C	W
pH	-	Unit	P, D	WD	WD	W	W	W	W	W	W	D	W
Electrical Conductivity	EC	µS/cm	P, D	WD	WD	W	W	W	W	W	W	D	W
Turbidity	-	NTU	P, D	D	D	W	W	W	W	W	W	D	W
Temperature	-	C	P, D	WD	WD	W	W	W	W	W	W	D	W
Oxidation Reduction Potential	ORP	mV	P, D	WD	WD	W	W	W	W	W	W	D	W
Dissolved Oxygen	DO	% sat	P, D	WD	WD	W	W	W	W	W	W	D	W
Nutrients (unfiltered excluding FRP) and chlorophyll-a													
Ammonia	NH ₄ ⁺	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Oxides of Nitrogen	NOx	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Nitrate	NO ₃	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Total Nitrogen	TN	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W

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Parameter/Site			Operational			Upstream			Downstream				
			MWD Discharge ¹	SB1	SB2	BPUS SW4	BPUS SW5	BPUS SW7	BPUS SW1	BPDS SW2	BPDS SW3	BPDS SW6 Compliance	BPDS SW8
Total Phosphorus	TP	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Filterable Reactive Phosphate	FRP	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Chlorophyll-a	Chl-a	µg/L	-	N/A	N/A	W	W	W	W	W	W	W	W
Metals and Metalloids – total and filtered (0.45 µm)													
Aluminium	Al	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Arsenic	As	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Cobalt	Co	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Copper	Cu	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Iron	Fe	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Lead	Pb	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Lithium	Li	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Nickel	Ni	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Zinc	Zn	µg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Full elemental scan		µg/L	A	A	A	A	A	A	A	A	A	A	A
Other – filtered (0.45 µm) excluding TSS													
Sulphate	SO ₄	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Chloride	Cl	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Calcium	Ca	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Magnesium	Mg	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Potassium	K	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Sodium	Na	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Carbonate	CO ₃ ²⁻	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Bicarbonate	HCO ₃	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W

WASTE DISCHARGE LICENCE (WDL253)

Parameter/Site			Operational			Upstream			Downstream				
			MWD Discharge ¹	SB1	SB2	BPUS SW4	BPUS SW5	BPUS SW7	BPUS SW1	BPDS SW2	BPDS SW3	BPDS SW6 Compliance	BPDS SW8
Total Dissolved Solids	TDS	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W
Total Suspended Solids	TSS	mg/L	P, WD	WD	WD	W	W	W	W	W	W	W	W

P = prior to discharge.

C = continuous

D = within 24 hours of commencement of discharge and daily during discharge. Weekly when no discharge is occurring.

WD = weekly during discharge (from sediment basins or MWD respectively)

W = within 24 h of discharge from MWD and weekly during discharge and for 2 weeks post discharge. Otherwise monthly when water is present, regardless of flow.

A = annually, at end of wet season on recession flows.

¹ The sampling point in the MWD will be located close to BP DP1 to ensure it is representative of discharge water quality.

* Continuous flow monitoring must be representative of discharge flows at BP DP1

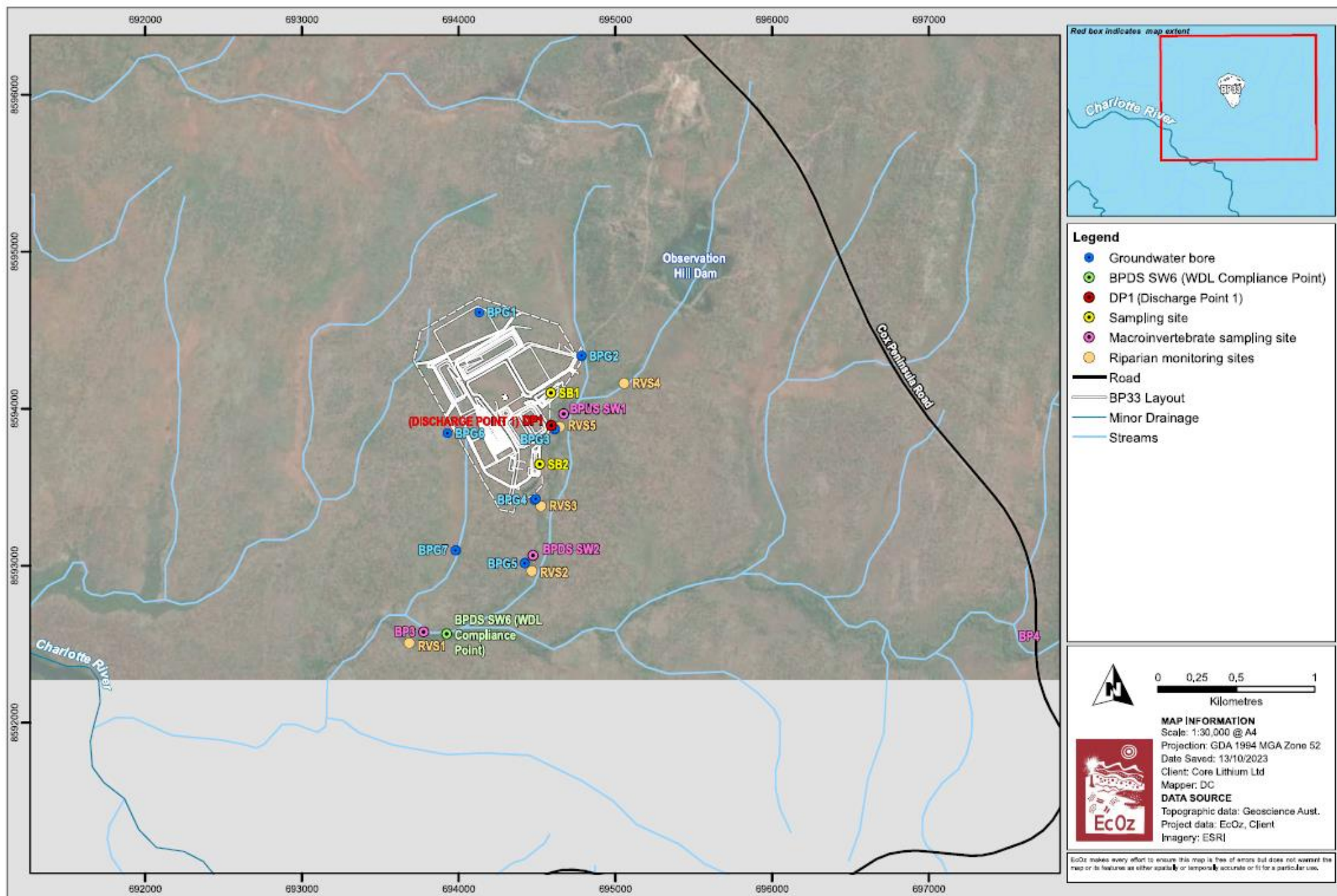
WASTE DISCHARGE LICENCE (WDL253)

APPENDIX 6: Macroinvertebrate and Sediment Monitoring Program

Site			BP4	BPUS SW1	BPDS SW2	BP3	GDS SW5	UC1	UC2
GPS Coordinates (latitude and longitude)			-12.7255462 130.8216379	-12.71243714 130.7925837	-12.7212 130.791	-12.7253908 130.7847151	-12.6518245 130.7804192	-12.6495807 130.7820973	-12.6567103 130.7783543
Macroinvertebrate Sampling			A	A	A	A	A	A	A
Sediments									
Metals and metalloids - <63 µm sediment fraction analysed									
Aluminium	Al	mg/kg	A	A	A	A	A	A	A
Arsenic	As	mg/kg	A	A	A	A	A	A	A
Cadmium	Cd	mg/kg	A	A	A	A	A	A	A
Chromium	Cr	mg/kg	A	A	A	A	A	A	A
Cobalt	Co	mg/kg	A	A	A	A	A	A	A
Copper	Cu	mg/kg	A	A	A	A	A	A	A
Iron	Fe	mg/kg	A	A	A	A	A	A	A
Lead	Pb	mg/kg	A	A	A	A	A	A	A
Lithium	Li	mg/kg	A	A	A	A	A	A	A
Mercury	Hg	mg/kg	A	A	A	A	A	A	A
Nickel	Ni	mg/kg	A	A	A	A	A	A	A
Zinc	Zn	mg/kg	A	A	A	A	A	A	A
Nutrients									
Total Nitrogen	TN	µg/L	A	A	A	A	A	A	A
Total Phosphorus	TP	µg/L	A	A	A	A	A	A	A
Other									
Particle Size Distribution			A	A	A	A	A	A	A
Total Organic Carbon	Mg/L		A	A	A	A	A	A	A
Moisture Content	%		A	A	A	A	A	A	A

A = annually, at end of wet season on recessional flows. Sediment and biological sampling to be undertaken concurrently.

WASTE DISCHARGE LICENCE (WDL253)



APPENDIX B

Tabulated Water Quality Monitoring Data

[illegible]

[illegible]

			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	Ammonia as N	Anions Total	Cations Total	Chloride	Dissolved Oxygen (Lab)	Electrical Conductivity (Lab)	Ionic Balance	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	pH (Lab)	Reactive Phosphorus as P (Orthophosphate as P)	Reactive Phosphorus as P (Orthophosphate as P) (filtered)	Sodium (filtered)	Total Dissolved Solids (Lab)	Total Suspended Solids (Lab)	Turbidity (Lab)			
EQL			°C	mg/L	mV	%	µS/cm	-	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	mg/L	µS/cm	%	mg/L	mg/L	mg/L	mg/L	-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU
										0.01	1	0.01	1	1	1	1	0.01	0.01	0.01	1	0.1	1	0.01	0.1	0.01	0.01	0.1	0.01				1	10	5	0.1		
Location Code	Date	Comments																																			
BPSed2	17 Feb 2025	EC Error	33.6	11,772.6	126.5	88.7	18,255.2	7.2	157.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
BPSed2	19 Feb 2025		29.8	45.3	222.1	84.4	69.7	4.3	57	0.56	24	0.16	<1	<1	<1	<1	0.09	0.53	0.19	1	9.2	74		0.3	0.16	<0.01	0.5	4.52	-	<0.001	1	50	15	37.1			
BPSed2	22 Feb 2025		34	53.45	191.63	89.43	89.3	4.92	39.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSed2	28 Feb 2025		31	24.2	180.96	83.51	37.27	7.46	54.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSed2	03 Mar 2025		33.7	26.53	146.32	92.7	40.82	7.66	47.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSed2	10 Mar 2025	No Field readings	-	-	-	-	-	-	-	0.05	6	0.24	3	<1	<1	3	0.02	0.21	0.29	1	8.7	32		<0.1	0.24	<0.01	0.2	6.51	-	0.001	2	29	<5	31.6			
BPSed2	26 Mar 2025	EC error	27	7.02	178	89.3	0	5.84	177	0.02	4	0.17	5	<1	<1	5	0.03	0.30	0.10	4	9.1	20		0.2	0.17	<0.01	0.4	6.35	-	0.002	<1	53	34	120			
BPSed2	02 Apr 2025	EC error	28.95	0	160	64.6	1	6.39	160	0.23	<1	0.12	6	<1	<1	6	<0.01	0.12	0.10	<1	9.8	17		<0.5	0.12	<0.01	<0.5	6.48	-	<0.001	<1	12	36	112			
BPSed2	07 Apr 2025	DO, EC error	31	12.86	147		0	6.62	93	0.11	<1	0.13	6	<1	<1	6	0.04	0.15	0.10	1	9.4	19		<0.5	0.13	<0.01	<0.5	6.56	-	<0.001	<1	10	7	63.2			
BPSed2	10 Apr 2025		30	6.96	135.06	107.7	10.71	7.6	63.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSed2	11 Apr 2025		28	6.26	122.16	105.66	9.63	7.97	69.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSed2	12 Apr 2025		27	5.15	88.52	103.58	7.93	7.76	97.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSed2	13 Apr 2025		28	5.76	100.89	112.58	8.86	7.97	60.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSed2	14 Apr 2025		30	16.39	111.65	107.11	25.22	7.83	72.2	0.04	<1	0.19	5	<1	<1	5	0.01	0.13	0.19	1	9.6	22		0.2	0.19	<0.01	0.4	6.46	-	0.002	2	12	6	34.2			
BPSed2	15 Apr 2025		29	5.65	95.7	91.78	8.69	7.78	58.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSed2	10 Nov 2025		32.63	0.02	112.70	89.24	30.50	8.10	56.16	<0.01	4	0.01	19	<1	<1	19	0.02	0.52	0.46	2	8.9	53		0.2	0.01	<0.01	0.2	7.19	-	0.003	2	35	9	40.6			
BPSed2	26 Nov 2025	No DO% reading	35.5	4.2	69.1		86	6.6	107.3	0.06	<1	0.20	7	<1	<1	7	<0.01	0.17	0.10	1	9.6	21		0.2	0.20	<0.01	0.4	6.38	-	0.002	<1	36	12	64.7			
BPSed2	10 Dec 2025	No Field readings								<0.01	2	0.61	6	<1	<1	6	<0.01	0.16	0.15	<1	9.3	29		0.3	0.59	0.02	0.9	6.75	-	0.009	<1	35	30	138			
BPSed2	16 Dec 2025		32	22	135.9	102.1	33.4	7.06	57.14	<0.01	2	0.55	8	<1	<1	8	<0.01	0.23	0.20	1	9.6	33		0.2	0.54	0.01	0.8	6.82	-	0.002	<1	58	9	60.5			
BPSED1	17 Feb 2025	EC Error	36.7	9,313.7	135	98	13,602.8	7.6	293.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
BPSED1	19 Feb 2025		29.3	29.2	179.8	88.7	45	5.2	281.3	0.48	24	0.10	1	<1	<1	1	0.11	0.58	0.29	2	9.1	73		<1.0	0.10	<0.01	<1.0	4.58	-	<0.001	2	54	100	198			
BPSED1	22 Feb 2025		36	30.46	179.98	89.63	46.87	6.82	441.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSED1	28 Feb 2025		32	25.75	178.08	86.78	39.64	7.36	440.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSED1	03 Mar 2025		36.24	25.7	131.26	98.08	39.54	7.44	232.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSED1	10 Mar 2025	No Field readings	-	-	-	-	-	-	-	0.07	2	0.19	11	<1	<1	11	0.22	0.32	0.29	2	9.8	38		0.3	0.19	<0.01	0.5	6.79	-	0.003	1	53	55	215			
BPSED1	26 Mar 2025		27	8.98	183	115.1	0.03	5.7	110	0.05	<1	0.05	20	<1	<1	20	<0.01	0.48	0.53	3	9.2	56		0.1	0.05	<0.01	0.2	6.96	-	0.004	3	68	21	75.6			
BPSED1	02 Apr 2025		29.06	9	155	63.7	14	6.7	419	0.34	3	0.04	10	<1	<1	10	0.04	0.32	0.15	2	9.7	31		<1.0	0.04	<0.01	<1.0	6.66	-	0.002	<1	17	110	261			
BPSED1	07 Apr 2025		31	5.81	147	78.8	0.04	6.87	138	0.13	2	0.06	30	<1	<1	30	<0.01	0.72	0.49	3	9.5	60		<0.5	0.06	<0.01	<0.5	7.08	-	0.006	2	30	20	89.6			
BPSED1	10 Apr 2025		32	16.94	145.62	113.93	26.06	7.6	209.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSED1	11 Apr 2025		29	17.18	130.42	107.5	26.44	7.76	45.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSED1	12 Apr 2025		27	10.26	100.87	103.58	15.79	7.24	362.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSED1	13 Apr 2025		29	13.61	123.86	110.76	20.94	7.79	138.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSED1	14 Apr 2025		30	19.7	104.41	104.41	30.3	7.32	40.03	0.03	<1	0.01	26	<1	<1	26	<0.01	0.63	0.61	4	9.8	66		0.2	0.01	<0.01	0.2	7.04	-	0.008	4	48	10	32.0			
BPSED1	15 Apr 2025		29.28	16.13	107.57	91.97	24.81	7.64	47.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BPSED1	05 Nov 2025		30.2	33.6	127.1	86.4	51.7	8.3	123.2	0.02	9	0.13	30	<1	<1	30	0.04	0.90	0.95	4	8.8	94		0.3	0.13	<0.01	0.4	7.31	-	0.01	3	63	22	62.5			
BPSED1	10 Nov 2025		33.83	11.04	92.50	91.72	16269.10	8.58	82.37	<0.01	10	0.16	27	<1	<1	27	0.30	0.86	0.76	4	9.1	87		0.4	0.16	<0.01	0.6	7.35	-	0.008	3	53	16	57.4			
BPSED1	15 Oct 2025		28.6	2.7	185.9	88.9	42.5	8.4	563.1	0.16	2	0.22	43	<1	<1	43	0.03	1.07	1.03	6	9.1	100		0.6	0.22	<0.01	0.8	7.78	-	0.007	5	99	132	360			
BPSED1	26 Nov 2025	No DO% reading	36.1	2	63.2		88	7.6	245.1	0.03	2	0.02	10	<1	<1	10	<0.01	0.24	0.15	<1	9.2	26		0.2	0.02	<0.01	0.2	6.49	-	0.001	<1	53	41	142			
BPSED1	10 Dec 2025	No Field readings								0.02	6	0.05	7	<1	<1	7	<0.01	0.26	0.20	<1	9.7	34		<0.1	0.04	0.01	<0.1	6.81	-	0.009	<1	18	9	39.7			
BPSED1	16 Dec 2025		32	24	121.6	105.1	36.2	7.76	37.88	<0.01	5	0.05	8	<1	<1	8	<0.01	0.29	0.20	1	9.6	35		<0.1	0.05	<0.01	<0.1	6.86	-	0.003	<1	47	9	34.8			
MWD C1	28 Feb 2025		30	9.55	186.15	88.03	14.7	7.42	270.74																												
MWD C1	10 Mar 2025	No sample																																			
MWD C1	28 Apr 2025		28.1	0.05	128.7	87.9	8.1	5.5	78.1	0.02	3	<0.01	<1	<1	<1	<1	0.02	0.09	0.09	1	9.3	14		0.2	<0.01	<0.01	0.2	5.84	-	<0.01		52		118			
MWD C1	20 May 2025		22.9	1	114.6	91.6	5.2	6.4	127.1	0.01	4	<0.01	<1	<1	<1	<1	<0.01	0.36	0.13	10	9.4	15		0.2	<0.01	<0.01	0.2	5.52	-		3	73	36	95.2			
MWD C2	28 Feb 2025		30	6.61	172.14	88.65	10.19	7.38	196.58	</																											

		Metals																			Biological										BTEX										TRH										TPH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		Aluminum	Aluminum (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Calcium (filtered)	Chromium (II+VI)	Chromium (II+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)	Nickel	Nickel (filtered)	Potassium (filtered)	Selenium	Selenium (filtered)	Chlorophyll a	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)	C10-C16 Fraction (F3)	C10-C16 Fraction (F4)	C10-C16 Fraction (Sum)	C6-C9 fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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APPENDIX C

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	
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
Cobalt	7440-48-4	mg/kg	0.5		9.1	0.8	3.0	2.0	<0.5	0.8	1.2
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

APPENDIX D

BP33 Biological and Sediment Monitoring Report

Core Lithium

BP33 Biological and Sediment Monitoring 2025

Final Report



This report has been prepared for Lithium Developments 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 data was obtained from the Bureau of Meteorology, Aquatic Ecology Services has made the assumption that all data has been validated and is correct.

Version	Prepared by	Issue Date	Reviewed by	Review Date
Draft 1.0	T Steele	18/11/2025	C Pietsch	21/11/2025
Draft 1.1	T Steele	25/11/2025	P Lander	16/01/2026
Final 2.0	T Steele			



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1. Background

1.1 Project Description

The Finniss Lithium Project is the flagship mining project for Core Lithium Ltd (Core Lithium), located on the Cox Peninsula approximately 25km from Darwin. Core Lithium has received environmental approval for two mines: the Grants open cut mine and the BP33 underground mine (BP33). The BP33 site is located approximately 7.5 km by road, southeast of Grants and is situated on mineral titles ML32346 and ML32074. Mining has not commenced at BP33, but works began in 2023 at the site, including a box cut and sediment basins, and further works are currently on hold.

1.2 Catchment

The BP33 site is located in the Bynoe Harbour catchment. The catchment consists of several low order streams that are predominately unnamed. To the south, unnamed tributaries flow to the Charlotte River, which then drains west to Bynoe Harbour. The freshwater section of the catchment is short, and the BP33 mine site is located at the headwaters of the catchment. An existing water body (Observation Hill Dam) is currently utilised as a raw water source for both the Grants and BP33 sites. A historical mining pit is located on the BP33 site.

1.3 Monitoring Program

In 2017, GHD conducted aquatic ecology surveys as part of the approvals process for the Finniss Lithium Project. This was the first aquatic ecology survey to be completed in the area. The surveys included collection of data on fish, macroinvertebrate and *in situ* water quality. The sampling design for monitoring in 2022 and 2023 adopted one of the sampling locations from 2017 monitoring, with additional sites included that represent upstream and downstream sites relative to proposed mining and infrastructure at BP33.

A WDL was granted for BP33 in early 2024 (WDL253), and the first active discharge took place from the site in the 2024-2025 wet season. Dewatering from the box cut and discharge via a sediment basin constituted active discharge and therefore, data from 2025 will be compared to all previously collected baseline data.

1.4 Scope

Aquatic Ecology Services was engaged by Lithium Developments to complete sample processing, data analysis and reporting for the biological and sediment monitoring component of the macroinvertebrate monitoring program. This report details the outcome of macroinvertebrate sampling completed in the dry season, 2025.

2. Study Design

2.1 Sampling sites and timing

Four sites were visited during macroinvertebrate and sediment sampling in 2025 (Table 1). This included three downstream sites in the Charlotte River (Bynoe Harbour) catchment and one Reference site located upstream of all proposed mining activity. Sites BPUS SW1 and BPDS SW2 are existing surface water monitoring points at the BP33 site. Site BP3 was renamed to align with other site sampling nomenclature to BPDS SW6. Sampling was undertaken in early May.

Sites UC1, UC2 and GDS SW5 are located in the Darwin Harbour catchment and are not downstream of any active discharge from the BP33 site. Results associated with these sites are detailed in a report for the Grants Project Site (AES 2025).

Table 1 – Sampling sites for the BP33 Project Area. All coordinates in Zone 52L

Site Code	Site type	Description	Easting	Northing
BP4	Upstream	East Charlotte River at Cox Peninsula Road	697786	8592522
BPDS SW1	Upstream	Unnamed Creek upstream of historical BP Pit	694639	8593821
BPDS SW2	Downstream	Unnamed Creek downstream of historical BP Pit	694473	8593044
BPDS SW6	Downstream	East Charlotte River downstream of Unnamed Creek, previously BP3	693776	8592567
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

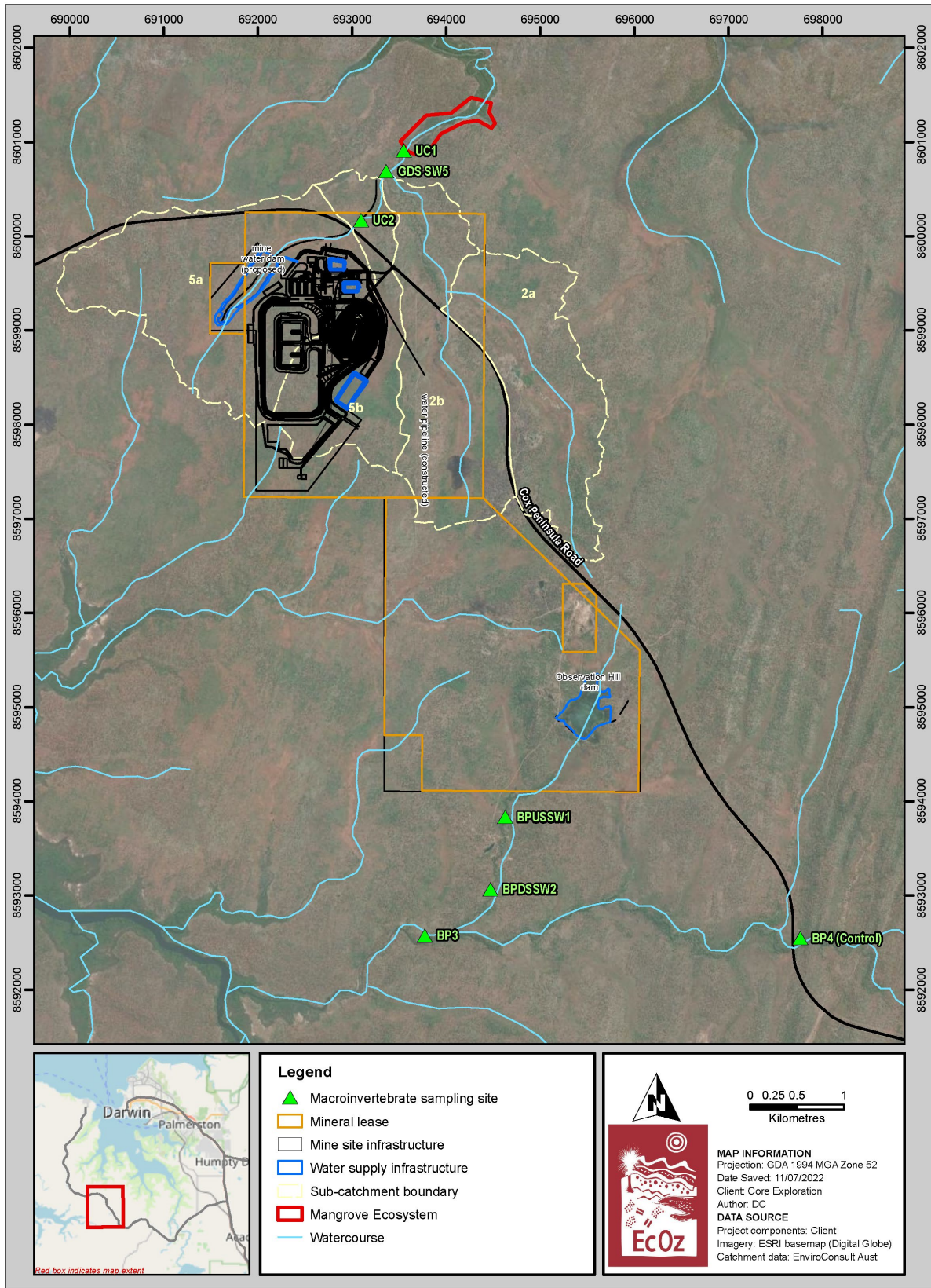


Figure 1 – Macroinvertebrate sampling site locations

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 is 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 to site specific guideline values (SSGVs) provided in the BP33 Underground Mine - Water Management Plan.

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 BP33

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

Water quality results were compared against SSGVs and sediments against the toxicant default guidelines values (DGVs) for sediment quality (ANZECC & ARMCANZ 2000). 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, while a dip net is swept 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 the labelled sample container. The sample collected in the fine mesh sieve was also placed in the same 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

As per AUSRIVAS laboratory processing procedures, samples were washed through a series of sieves (10mm, 500µm and 250µm mesh sizes). Any large, conspicuous taxa found in the 10 mm mesh sieve were placed in a separate vial for identification. 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 from the course mesh sieve were identified and added to the overall

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, comparing metric results from each sampling period (baseline and monitoring) at compliance point BPDS SW6. Where a significant difference was found, the same test was

performed for the reference site BP4. This was performed to further interrogate if results were attributed to the position of the site in the catchment relative to BP33, or an overall trend in macroinvertebrate the macroinvertebrate community across the catchment. Where a significant difference was detected in the metrics, the same statistical test would be applied to the reference site, BP4. This approach is used to further examine whether observed differences in macroinvertebrate metrics were attributable to the site's position within the catchment, particularly in relation to discharges from BP33, or if they reflected a broader trend affecting the macroinvertebrate community across the entire catchment. Results collected from 2017 sampling were excluded from further analysis as the reference site was not sampled in the same year, which prevented meaningful comparisons and catchment-wide interpretations for that period. Analyses were conducted in Statistica v12.

A summary of the univariate macroinvertebrate indices assessed as part of this study are 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 BP33 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 been published (ANZG, 2021). 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 the use of AUSRIVAS modelling has not been undertaken on the data collected in 2025.

In addition to univariate analysis of metrics, an assessment of differences in the macroinvertebrate community composition was undertaken. 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. Results

4.1 Site Conditions

Rainfall recorded at Darwin Airport is presented in Figure 2 and compared with the historical average. 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. Flow occurred in the East Charlotte River from November (Figure 3) and reflected rainfall recorded in Darwin, but showed an episodic pattern of high flows that is likely resultant from storm activity. Flows were stable for at least four weeks prior to sampling in June 2025.

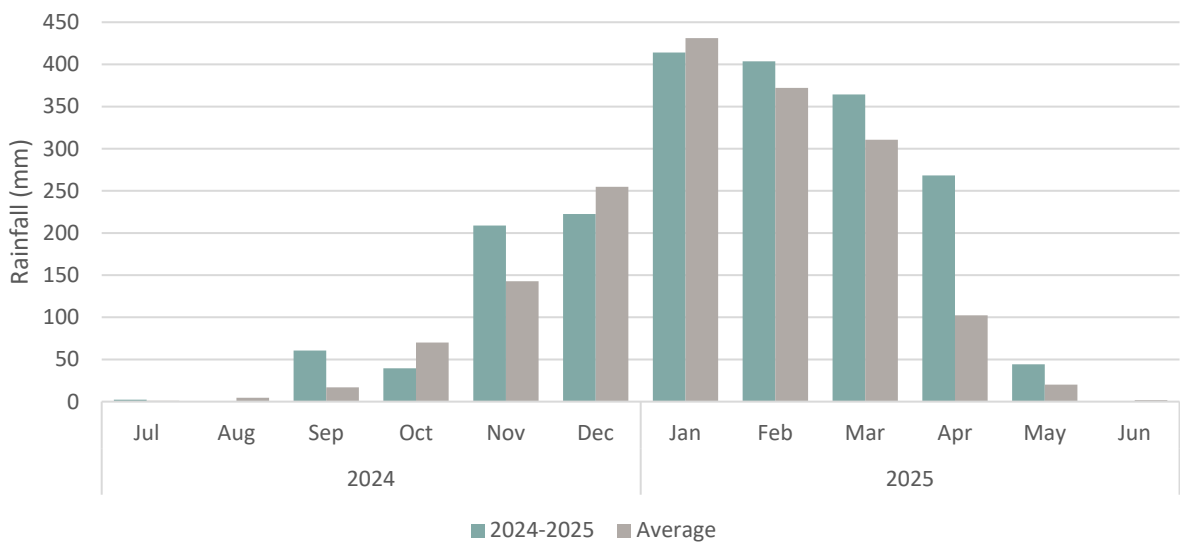


Figure 2 – Monthly Rainfall recorded at Darwin Airport (Station: 014015) July 2024-June 2025 compared with average rainfall

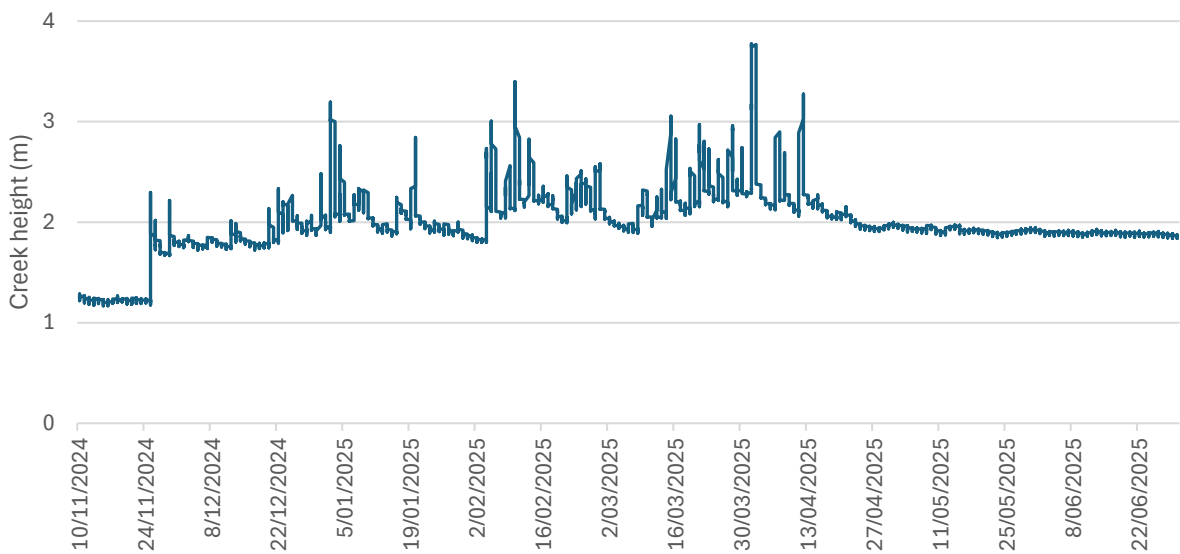


Figure 3 – Creek height at BPDS SW6 November 2024-July 2025

4.2 Habitat characteristics

Habitat characteristics of each site are detailed below in Table 3.

Table 3 – BP33 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 macrophytes and submerged were observed in deeper pools.	
BPUS SW1 – Downstream The site is located upstream of sediment basin overflow and downstream of Observation Hill Dam. The site consisted of runs connecting deeper pools. High shading was created by a dense riparian zone. The substrate was a mix of sand and silt and contained a dense cover of detritus.	
BPDS SW2 – Downstream The site was characterised by flowing pool habitat. The riparian zone was a mix of small native trees and pandanus, and the pool was fringed by grasses and herbs. The narrow pool was heavily shaded and contained a thick layer of detritus over a substrate of silt with a small fraction of sand. Trailing vegetation and exposed roots were common along banks.	
BPDS SW6 – Downstream The site was wider than those upstream. Pools were lined by overhanging native riparian vegetation that provided shade, detritus and large woody debris as macroinvertebrate habitat. Exposed and trailing roots were found throughout the pool, mainly from pandanus. The substrate was majority silt with some sand.	

4.3 Water quality

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 BP33:

- Water temperatures were similar at all sites, varying by less than one degree Celsius.
- Dissolved oxygen was recorded within the SSGV range at all sites.
- Conductivity was below the SSGV at all sites, and water was considered fresh.
- pH values were within the guideline range at all sites but varied spatially.
- Turbidity was below the SSGV at all sites, and water clarity was considered high.

Table 4 - *In situ* water quality results from BP33 sites visited in June 2025. Exceedances highlighted in grey

Site Code	Time	Temp (°C)	DO (%)	EC (µS/cm)	pH	Turbidity (NTU)
SSGV		-	66-83	250	5.4-6.7	17
BP4	15:15	26.76	71.8	31.00	7.22	2.35
BPUS SW1	9:00	25.44	71.9	50.50	5.91	9.90
BPDS SW2	12:00	25.19	69.8	40.15	6.45	4.01
BPDS SW6	13:10	25.96	73.2	32.06	6.16	2.21

4.4 Sediment quality

Sediment quality results for samples collected at BP33 sites are presented in Table 5. The majority of metal concentrations were low at all sites, Arsenic, Chromium, Copper, Lithium, Nickel and Zinc were all highest at the upstream site BPUS SW1. There were no exceedances of the DGV for any metal.

Table 5 - *Sediment quality results for samples collected at BP33. All results are mg/kg*

Analyte	LOR	BP4	BPUS SW1	BPDS SW2	BPDS SW6	DGV	DGV-high
Aluminium	50	5290	6120	780	1220	-	-
Arsenic	1	1.40	23.0	2.49	1.80	20	70
Cadmium	0.1	<0.1	<0.1	<0.1	<0.1	1.5	10
Chromium	1	4.9	10.0	1.8	2.3	80	370
Copper	1	4.9	5.6	<1.0	1.3	65	270
Iron	50	2850	17000	1360	1920	-	-
Lead	1	9.6	8.4	1.2	2.8	50	220
Lithium	0.1	5.1	13.6	1.6	2.0	-	-
Mercury	0.01	0.04	0.02	<0.01	<0.01	0.15	1.00
Nickel	1	2.8	4.0	<1.0	1.2	21	52
Zinc	1	6.2	10.4	2.0	5.0	200	410

4.5 Macroinvertebrates

4.5.1 Metrics

Macroinvertebrate sampling was completed in June 2025, representing the first round of post-discharge monitoring at BP33. Raw data is attached in Appendix B and QA results in Appendix C. The following section summarises results from sites surrounding BP33 in 2025 and in the historical context of baseline monitoring:

- Relative abundance results were similar to values recorded in 2024 (Figure 5), and remained higher than those recorded in 2022 and 2023. The lowest relative abundance results were found at BPDS SW2, and the highest at the reference site BP4.
- The number of families recorded in each sample was higher in 2025 compared with previous years (Figure 5). The highest taxa richness results were recorded at downstream sites.
- PET richness results were higher in 2025 at downstream sites (Figure 6). Similar numbers of PET taxa were found at most sites in 2024 and 2025, except for BPDS SW6, where a higher number were collected this year.
- SIGNAL-2 results were similar to previous years at each site (Figure 7), with the lowest result being found at BPUS SW1. There were fewer sensitive taxa found at BPUS SW1, but all results demonstrated a pollution tolerant macroinvertebrate community.
- The proportion of tolerant taxa (Figure 8) followed an inverse trend to SIGNAL-2. The highest proportion of tolerant taxa were found at BPUS SW1, which tracks with other metrics related to pollution sensitivity (PET and SIGNAL-2) of the macroinvertebrates collected at the site. The proportion of tolerant taxa has increased notably in the past two sampling periods.
- There were no significant differences ($p > 0.05$) between monitoring and baseline data for any metric (Appendix D).

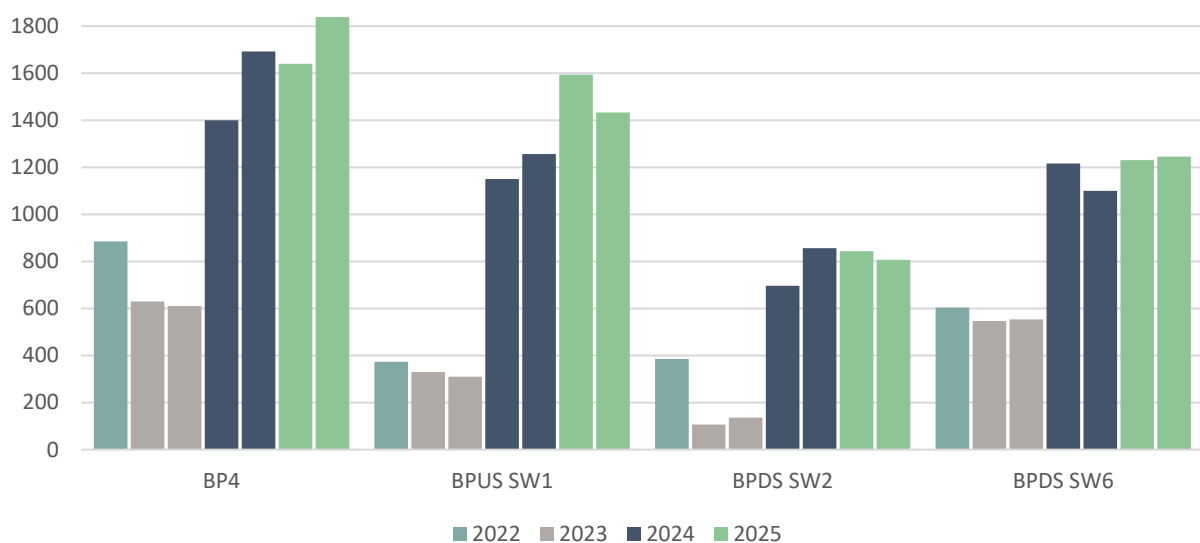


Figure 4 – Relative abundance of samples collected at BP33, 2022-2025

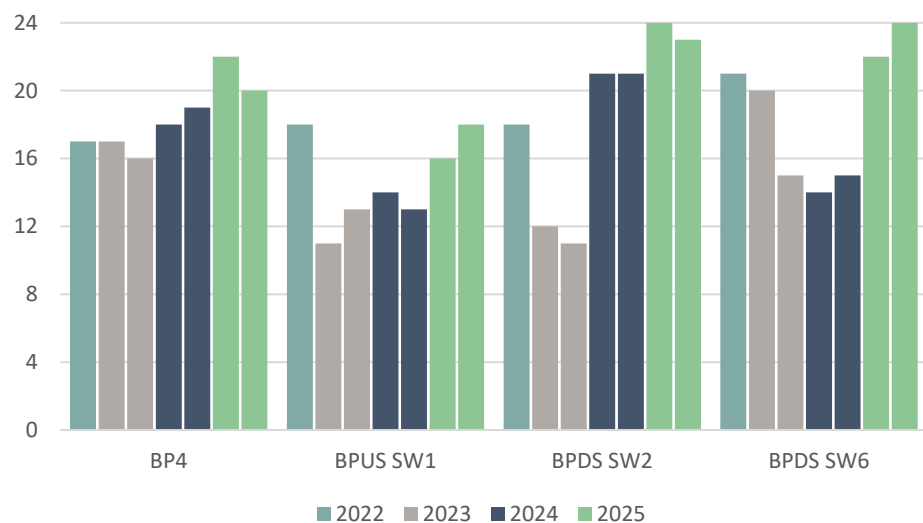


Figure 5 – Taxa richness of samples collected at BP33, 2022-2025

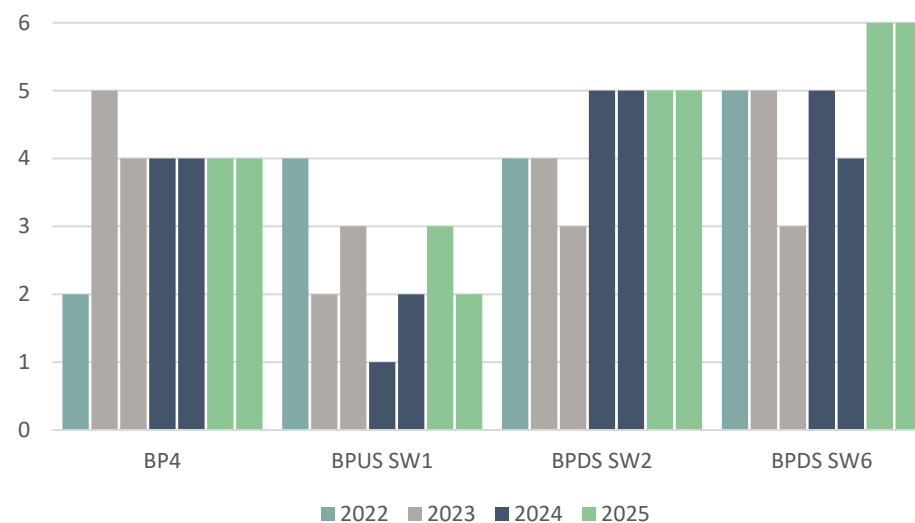


Figure 6 – PET richness of samples collected at BP33, 2022-2025

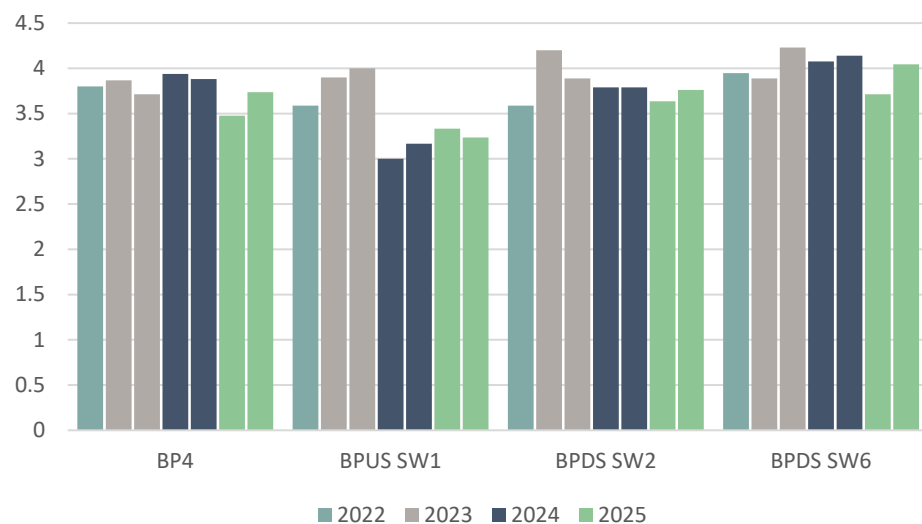


Figure 7 – SIGNAL-2 scores for samples collected at BP33, 2022-2025

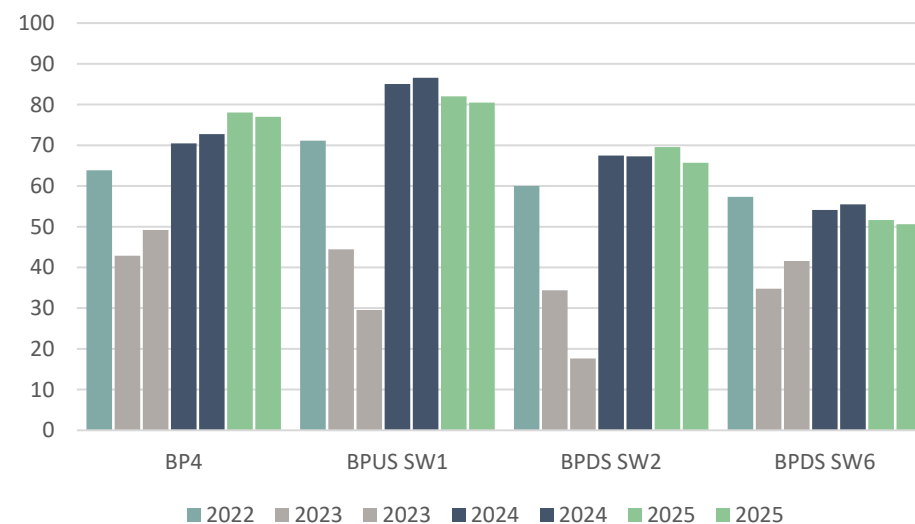


Figure 8 – Percentage of tolerant taxa collected at BP33, 2022-2025

4.5.2 Macroinvertebrate community composition

Approximately 10,630 individuals were collected at four sites at BP33, comprising of 34 families from 10 orders. The proportion of each macroinvertebrate order in each sample is presented in Figure 9. Samples were dominated by true flies (Diptera), freshwater crustaceans (Decapoda) and mayflies (Ephemeroptera). The upstream site BPUS SW1 contained a higher proportion of beetles (Coleoptera) and true flies.

The community composition of samples is further explored in Figure 10. All sites had a minimum of 60% similarity to each other, and there was the greatest similarity between samples collected at each site, but sites BPDS SW2 and BPDS SW6 were also considered to be relatively similar to each other.

When viewing community composition data from all years of monitoring (Figure 11), there was no pattern separating the community composition of samples collected in 2025 (monitoring) from previous data (baseline).

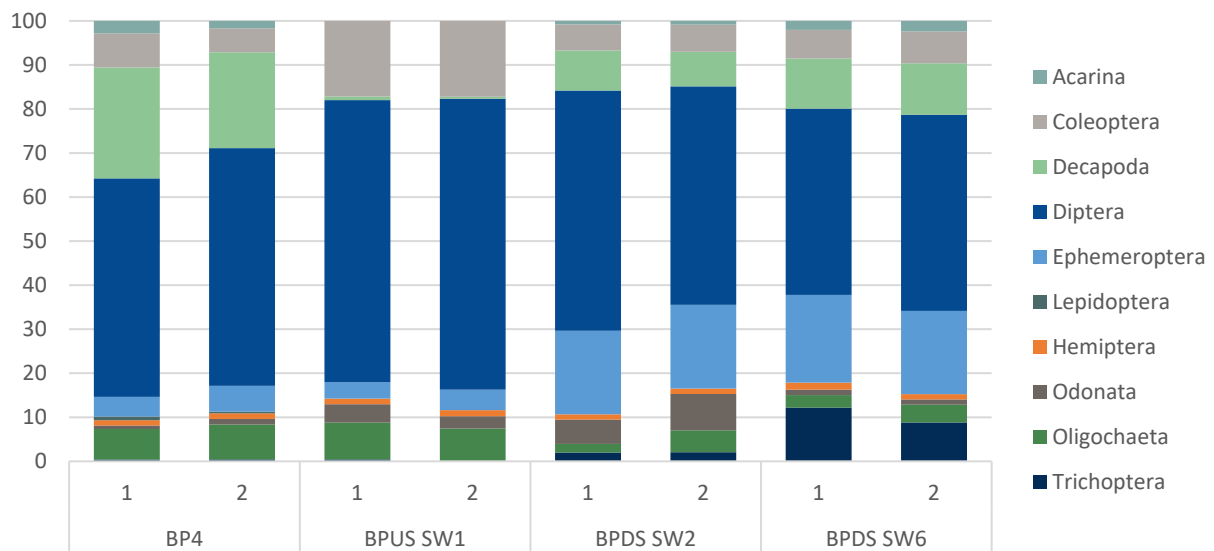


Figure 9 – Proportional abundance of macroinvertebrate orders collected in 2025

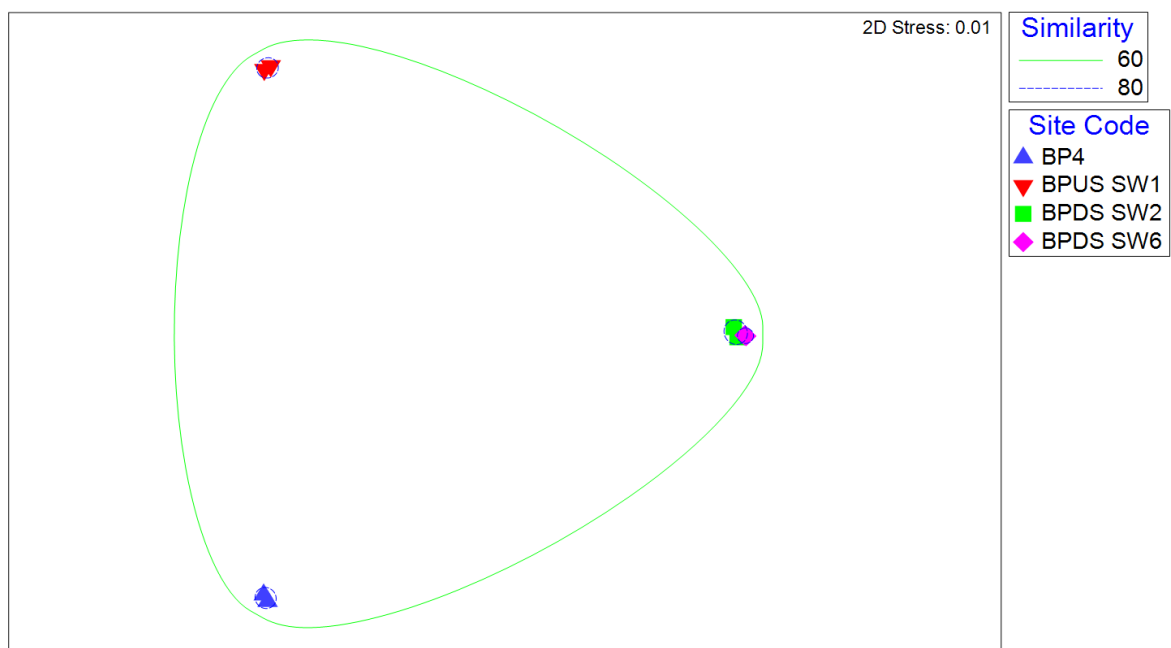


Figure 10 - NMDS plot showing variation in community composition between BP33 sites

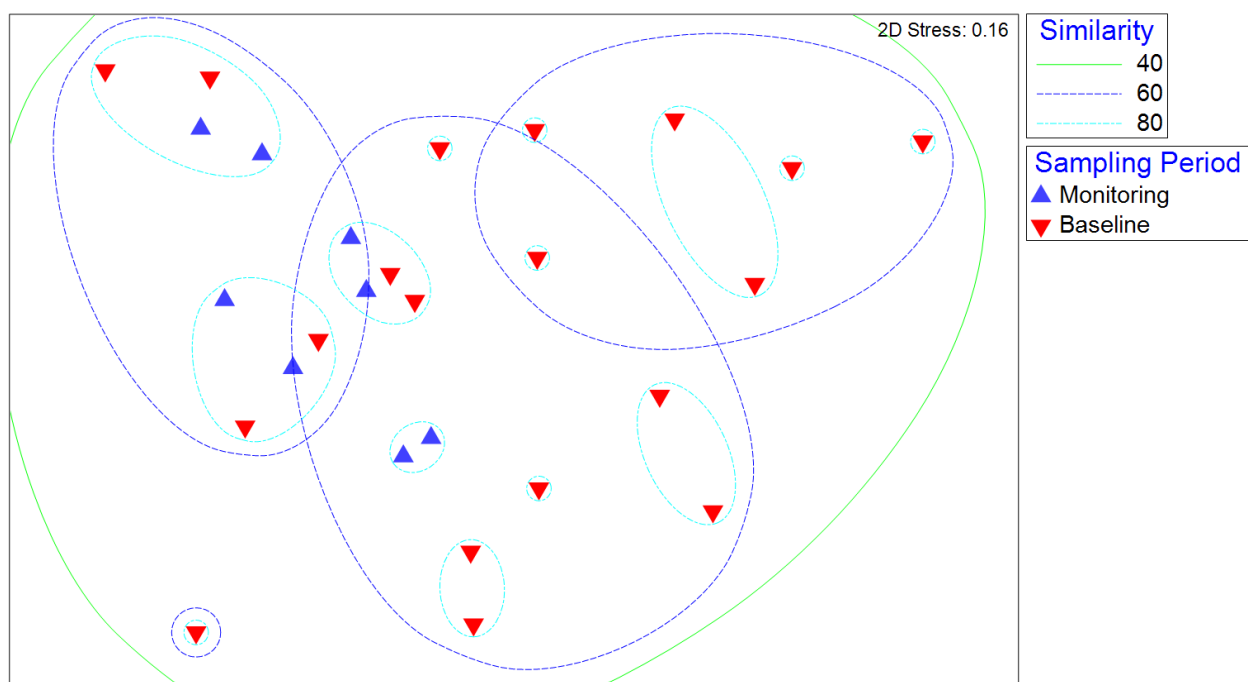


Figure 11 – NMDS plot demonstrating similarities in the macroinvertebrate community between sampling periods at BP33

4.6 Discussion

In 2025, sediment and biological sampling represented the first comparative year of monitoring after active discharge from BP33. The sampling design for this monitoring program cannot strictly follow the before, after, control impact (BACI) design, due to the location of prior mining infrastructure at the headwaters of the catchment. Despite this, data collected from 2022-2024 depicts a period prior to active discharge from the site at the most practical sampling locations, which have allowed for comparison between baseline and monitoring period.

Sediment results close to BP33 reflect the naturally mineralised area, with a number of metals being present at low levels, including elevated concentrations of a number of metals at the upstream tributary site BPUS SW1. It was noted in 2024 that localised surface disturbance had occurred in 2023, and the high rainfall in the 2023-2024 wet season is likely to have resulted in mobilisation and deposition of sediment containing arsenic and other metals to the unnamed creek through transport from sediment basins (AES 2024). Downstream sediments metal concentrations were low, indicating that there is little transport and deposition of sediments from upstream to the receiving environment to date. There were no exceedances for any metal in sediments in 2025, and so the elevated results are background prevailing conditions to be considered for historical context when mining activities begin at BP33.

Although all sites saw a significant increase in an abundance of macroinvertebrates collected in 2025, other metrics did not conform to the same trend. Primarily, there was a decrease in ecosystem health metric values at site BPUS SW1. This is likely due to sedimentation at the site. The impact of sediment basin discharge is spatially limited, as the site downstream on the tributary (BPDS SW2) showed either improved or similarity in metrics to previous sampling. Differences in community composition between years are likely related to influences at a regional level. As annual wet season rainfall variability is a known climate feature in the NT, the capture of data under different baseline conditions has been helpful in the comparison of data over time to results from 2025.

No significant differences were found between baseline and monitoring treatments, indicating dewatering did not affect downstream aquatic health during the 2024-2025 wet season. Community composition results also showed between-sample variability exceeded any dissimilarities between 2025 and baseline data. The results of sampling do not suggest any impact associated with active discharge were present in the downstream aquatic ecosystems of the BP33 Mine in 2025.

4.7 Recommendations

An uninterrupted data set is the most robust way to analyse conditions in the receiving environment surrounding BP33 Mine. Sampling at sites visited in 2025 should continue to meet WDL requirements, but also to provide future impact assessment data should mining commence.

5. References

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Appendix A. Sediment quality data

Parameter		LOR	BP4	BPDS SW1	BPDS SW2	BDS SW6
Sulfate as SO ₄	mg/kg	10	<10	<10	<10	<10
Chloride	mg/kg	10	<10	10	<10	<10
Calcium	mg/kg	10	<10	<10	<10	<10
Magnesium	mg/kg	10	<10	<10	<10	<10
Sodium	mg/kg	10	<10	<10	<10	<10
Potassium	mg/kg	10	<10	<10	<10	<10
Aluminium	mg/kg	50	5290	6120	780	1220
Iron	mg/kg	50	2850	17000	1360	1920
Arsenic	mg/kg	1	1.40	23.0	2.49	1.80
Cadmium	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chromium	mg/kg	1	4.9	10.0	1.8	2.3
Copper	mg/kg	1	4.9	5.6	<1.0	1.3
Lead	mg/kg	1	9.6	8.4	1.2	2.8
Nickel	mg/kg	1	2.8	4.0	<1.0	1.2
Zinc	mg/kg	1	6.2	10.4	2.0	5.0
Lithium	mg/kg	0.1	5.1	13.6	1.6	2.0
Mercury	mg/kg	0.02	0.04	0.02	<0.01	<0.01
Vanadium	mg/kg	2	5	13	2	2
Total Organic Carbon	%	4.22	0.02	2.02	0.29	2.09

Appendix B. Raw Macroinvertebrate Data

Order	Family/Sub-family	BP4	BP4	BPUS SW1	BPUS SW1	BPDS SW2	BPDS SW2	BPDS SW6	BPDS SW6
Replicate		1	2	1	2	1	2	1	2
Acarina	Acarina	47	31	0	0	7	7	25	30
Coleoptera	Dytiscidae	53	8	200	147	27	20	30	30
Coleoptera	Elmidae	0	0	0	0	0	0	50	50
Coleoptera	Hydraenidae	40	69	7	7	3	7	0	0
Coleoptera	Hydrochidae	27	15	53	73	13	17	0	10
Coleoptera	Hydrophilidae	7	8	13	20	7	7	0	0
Decapoda	Atyidae	400	346	0	0	60	47	125	115
Decapoda	Palaemonidae	7	46	13	7	17	17	15	30
Decapoda	Parathelphusidae	7	8	0	0	0	0	0	0
Diptera	Ceratopogonidae	67	38	7	7	7	3	15	15
Diptera	Chironominae	587	738	660	700	330	270	250	275
Diptera	Culicidae	7	0	53	27	27	40	5	10
Diptera	Empididae	0	0	0	13	0	3	0	5
Diptera	Orthoclaadiinae	0	0	0	0	13	13	45	60
Diptera	Tabanidae	7	0	0	0	0	0	0	0
Diptera	Tanypodinae	147	215	300	200	83	70	205	190
Ephemeroptera	Baetidae	20	38	27	33	83	63	30	50
Ephemeroptera	Caenidae	53	69	33	33	50	67	190	160
Ephemeroptera	Leptophlebiidae	0	0	0	0	27	23	25	25
Hemiptera	Gerridae	7	8	13	7	3	3	10	10
Hemiptera	Mesoveliidae	7	0	7	7	3	0	5	0
Hemiptera	Micronectidae (Corixidae)	7	15	0	0	0	0	0	0

Order	Family/Sub-family	BP4	BP4	BPUS SW1	BPUS SW1	BPDS SW2	BPDS SW2	BPDS SW6	BPDS SW6
Hemiptera	Veliidae	0	0	0	7	3	7	5	5
Lepidoptera	Crambidae	13	8	0	0	0	0	0	0
Odonata	Aeshnidae	0	0	0	0	0	3	0	5
Odonata	Coenagrionidae	0	0	67	33	40	63	10	5
Odonata	Corduliidae	0	8	0	0	3	0	0	5
Odonata	Libellulidae	13	15	0	0	0	0	5	0
Odonata	Lindeniidae	0	0	0	7	3	0	0	0
Oligochaeta	Oligochaeta	113	146	133	107	17	40	35	50
Trichoptera	Calamoceratidae	7	0	0	0	0	0	0	5
Trichoptera	Ecnomidae	0	0	0	0	7	10	5	0
Trichoptera	Hydroptilidae	0	0	0	0	0	0	5	5
Trichoptera	Leptoceridae	0	8	7	0	10	7	140	100

Appendix C. Macroinvertebrate QA

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	

Appendix D. One way ANOVA Results

Table 6 – One-Way ANOVA results comparing relative abundance data from baseline and monitoring at BPDS SW6

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Groups (between groups)	1	268550.6244	268550.6244	3.149	0.1362
Error (within groups)	5	426410.6069	85282.1214		
Total	6	694961.2313	115826.8719		

Table 7 - One-Way ANOVA results comparing taxa richness data from baseline and monitoring at BPDS SW6

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Groups (between groups)	1	51.4286	51.4286	5.8442	0.06031
Error (within groups)	5	44	8.8		
Total	6	95.4286	15.9048		

Table 8 - One-Way ANOVA results comparing PET richness data from baseline and monitoring at BPDS SW6

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Groups (between groups)	1	3.6571	3.6571	5.7143	0.06235
Error (within groups)	5	3.2	0.64		
Total	6	6.8571	1.1429		

Table 9 - One-Way ANOVA results comparing SIGNAL-2 data from baseline and monitoring at BPDS SW6

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Groups (between groups)	1	0.04556	0.04556	1.7333	0.2451
Error (within groups)	5	0.1314	0.02629		
Total	6	0.177	0.0295		

Table 10 - One-Way ANOVA results comparing tolerant taxa data from baseline and monitoring at BPDS SW6

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Groups (between groups)	1	8.6577	8.6577	0.1094	0.7543
Error (within groups)	5	395.7913	79.1583		
Total	6	404.449	67.4082		



Good science at a fair price