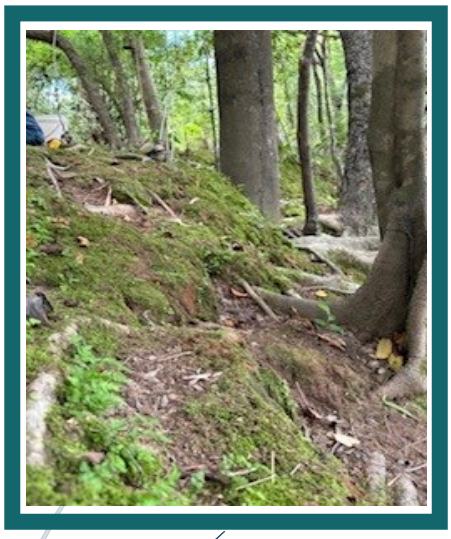
23 December 2025

WDL 249 Environmental Monitoring Report

22 December 2024- 22 December 2025

Toms Gully Mine Project Area



Endorsement

Prepared by Sally Horsnell on behalf of Hanking Australia Investment Pty Ltd

MLN1058	Waste Discharge Licence No. 249
Sally Horsnell ABN: 22 343 389 310 E: sallyhorsnell@outlook.com M: 0455 669 600	Savannah Roots; Jaime Marr ABN: 11 466 070 796 E: savannahrootsnt@outlook.com M: 0484 785 940
SALLY HORSNELL	Savannah Roots

Endorsement

	Version	Sally Horsnell	Jaime Marr	Reviewed by	Approved by
Date	1	23/12/2025	23/12/2025	23/12/2025	23/12/2025
Date	2 Updated Appendix D to final document	22/04/2025			
Signature					

I Charles Hastie, PGO General Manager- Mining and Permitting, have reviewed this report and I confirm that to the best of my knowledge and ability, all information provided in the report is true and accurate.

SIGNATURE:  .....

DATE: Tuesday 23 December 2025

Environmental Monitoring Report Checklist

Y/N	Page	Requirement	Department's Comment
Y	0	Title Page -Does it include report name, reporting period, submission date, version number, Licence number, Report author, and business details	
Y	0	Certification	
Y	1	Executive summary	
Y	3	Monitoring Objective	
Y	10	Monitoring Method	
N/A	-	Where there is an approved monitoring plan – details of approved plan title, version number, date of submission)	
Y	23-26	Where there is no approved monitoring plan – details map, sample locations, site layout, description of receiving environment, description of sampling and analysis methods, factors affecting variability in monitoring results	
Y	30	Monitoring Results	
Y	App A	Has all monitoring data been included?	
Y	52	Calculations/exceedance of assessment criteria	
Y	28	QAQC	
Y	37, 38, 41, 44, 45	Presentation including graphs against trigger levels/benchmarks.	
Y	34	Discussion analysis and data interpretation against trends included?	
Y	59	Conclusions and proposed actions,	
Y	52	Have non-conformances been identified?	
Y	59	Have changes made to monitoring programs been identified and detailed?	
Y	63	Have corrective actions taken and improvements made been detailed?	
Y	65	Incident Reporting: Have environmental incidents been detailed?	
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Executive Summary

Primary Gold Limited (PGO) is the Licence holder of Waste Discharge Licence 249, for the controlled discharge of treated wastewater by reverse osmosis from mine influenced water collected on MLN 1058, Toms Gully Mine into Mount Bundey Creek via the Authorised Discharge Point (ADP1).

This Environmental Monitoring Report is a requirement under Condition 39 of WDL and includes data and information obtained through implementation and performance as prescribed by the Licence during the period from 22 December 2024 to 21 December 2025 at the Toms Gully Mine.

Treated water discharge commenced in mid-January 2025 and ceased at the end of March 2025 covering fifteen weekly sample events. A total of 33,523 KL of good quality treated water was discharged from Authorised Point (ADP1) to Mount Bundey Creek. Discharge occurred when there was a natural, continuous and sufficient flow of water through the Compliance Point (SWTG2). Total volume of treated water discharged during the reporting period accounted for between 0.1-1.5 % of average volume of creek flow measured at SWTG2.

SWTG2 recorded several reportable exceedances that triggered Item 10 (a), Item 10 (b), and/ or Item 10 (c) for total suspended solids, dissolved oxygen and dissolved metals. All were reported to NT EPA.

Aquatic Ecology Services conducted biological monitoring in accordance with Item 11 (Condition 27) of the WDL 249 in April 2025 involving sediment and macroinvertebrate sample, analysis and reporting.

The licensed activity involving discharge of treated water to Mount Bundey Creek via ADP1, during the reporting period, was evaluated as to whether the licensed activity is having an adverse effect on, or potential harm to the environment. Based on an assessment of information gathered during the reporting period, the overall risk to Mount Bundey Creek is considered low. The risk rating decision was determined based on overall success of the monitoring programmes (conditions 27-36) and discharge water quality (conditions 20-23) during the reporting period.

PGO has proposed amendments to WDL 249 in line with PGO's management goals and focusing on the licensed activity involving the discharge of RO treated water. These amendments will continue to meet PGO's objectives by ensuring prevention for pit water overtopping Toms Gully pit and reduction of the overall poor water quality inventory at the Toms Gully mine.

In the course of remining Toms Gully mine, PGO has commitment to significant remediation activities to repair old and technically complex mined domains with the objective to stabilise and prevent offsite pollution. This is the second year of water treatment and release, and further monitoring will continue in 2025-26 to better understand conditions, and refinement of treatment processes.

1 Introduction

In accordance with Conditions 39 and 40 of Waste Discharge Licence 249 (the Licence), this Environmental Monitoring Report (EMR) addresses Primary Gold Ltd (PGO) performance monitoring and management activities at Toms Gully Project Area (TGPA) during the 2024/2025 reporting period.

Treated wastewater discharge via ADP1 commenced on the 21/01/2025 and ceased on the 28/03/2025. This is the second year of active discharge of 33,523 KL released via ADP1.

Communications between the Department of Lands, Planning and Environment (DLPE) and PGO is recorded in the communications register provided in Appendix B.

1.1 Monitoring Objectives

WDL 249 Conditions 39 and 40 outline the monitoring objectives PGO will address in this EMR during the period from 22 December 2024 to 22 December 2025 (12-month reporting period).

As a minimum, this EMR will:

- Be drafted in accordance with the 'Guideline for Reporting on Environmental Monitoring';
- Include a tabulation of all surface water, sediment, macroinvertebrate monitoring data collected in accordance with WDL 249 (Provided electronically in Microsoft Excel format);
- Include a tabulation of contaminant loads discharged from ADP1 and calculated for metals, metalloids and general chemistry (excluding physical parameters). Calculations on daily discharge volumes and concentrations of contaminants present and use Linear Interpolation methodology used on days when a sample was not taken.
- Include long term trend analysis of monitoring data to demonstrate any environmental impact associated with discharge of RO treated water to Mount Bundey Creek (over a minimum of three years or part thereof);
- Include all exceedances and investigations; and
- Include an assessment of environmental impact.

1.2 Operator Details

The Project proponent is PGO, a Company formed through the union of the listed entity Hydrotech International and the privately-owned Primary Minerals PGL acquisition of several gold assets from Crocodile Gold in early 2013. The Company was delisted on the Australian Stock Exchange (ASX) in 2018 after HGM Resources Pty Ltd bought 100% of the shares in April 2018. PGO is now a privately-owned company and since 11 October 2018 the entity's name changed (no change to ABN number) from Primary Gold Limited to Primary Gold Pty Ltd. PGO's assets are focused on the Northern Territory, which in addition to TGPA, include Rustlers Roost and Quest 29 Project Areas and ~2,000 km^2 of exploration tenure.

A Summary of operator details is included in Table 1-1.

Table 1-1 Operator Details

Operator Information			
Business Name	Primary Gold Pty Ltd (PGO)		
ACN/ABN	ACN: 122 726 283		
Street and Postal Address	Level 26, 140 St Georges Terrace, Perth WA 6000		
Key Contact(s)	Name:	Dr Mark Qiu	Charles Hastie
	Position:	Managing Director	General Manager- Mining and Permitting
	Phone number:	0424 288 016	0419 963 250
	Email:	Mark.Qiu@hanking.com.au	Charles.Hastie@hanking.com.au

1.2.1 Organisational Structure and Responsibility

PGO's overall management/organisational structure is illustrated in Figure 1-1. The organisational structure reflects the relatively new nature of the Company. As operations and development of PGO's assets expand, the organisational structure will develop and be updated to reflect this.

Managing Director and Departmental Managers are responsible for:

- Ensuring compliance with all relevant Statutory Acts and Regulations;
- Ensuring compliance with Safety Management and Emergency Response Plans;
- Ensuring regulatory documents (MMP/EMR; WDL) are adhered to;
- Establishing and maintaining environmental and safety performance monitoring; and
- Overall environmental management and compliance at TGPA lies with the Managing Director for PGO, the General Manager- Mining and Permitting and delegated personnel.

Managing Director is responsible for:

- Accountable for overall environmental management and compliance

General Manager and delegated personnel are responsible for:

- Responsible for resourcing and maintaining environmental management as per the Care and Maintenance MMP;
- Responsible for defining and communicating relevant environmental responsibilities and accountabilities to employees, consultants, and contractors within their area of responsibility; and
- All contractors/consultants contract obligations outline clear environmental and safety performance standards that are regularly assessed by PGO prior to and during their contract work at TGPA.

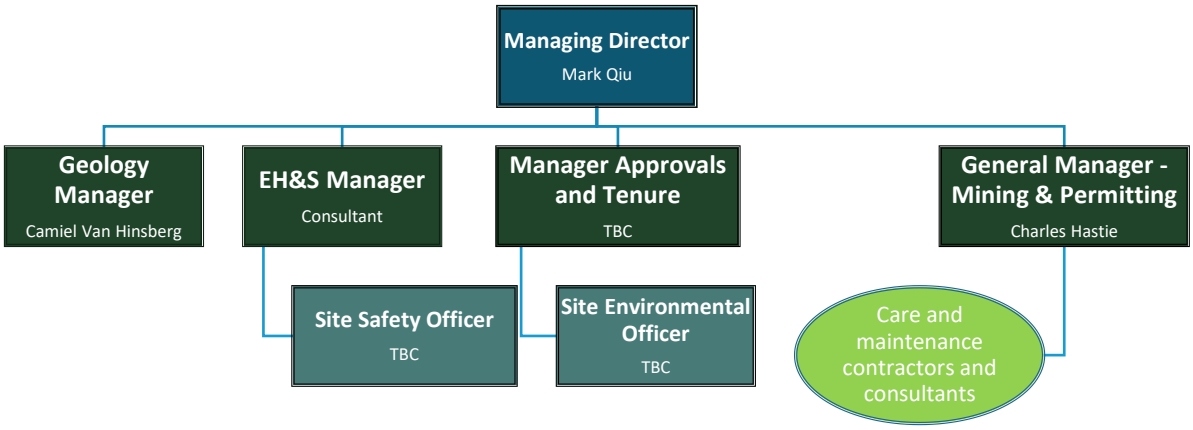


Figure 1-1 Organisation structure (Care and Maintenance)

1.2.2 Workforce

PGO employees operate the Reverse Osmosis (RO) treatment plant. Contractor/consultant workforce is summarised in Table 1-2.

Table 1-2 TGPA Workforce and Responsibility

Care and Maintenance	
PGO employees/Contractor/Consultant	**Task**
Sally Horsnell/Savannah Roots	MMP management, monitoring and reporting
	WDL management, monitoring and reporting
	Inspections: Dam/pit water heights
	Surface and groundwater sampling and data analysis and reporting
	Quarterly Inspection (weeds, erosion and sediment controls, security, access, fire mapping and reporting)
Envirolab Pty Ltd	Analytical lab services
Mount Bundey Pastoral Lease Holder	Weed spraying
	Fire mitigation
	Water management/transfer – pipe and pump set-up, maintenance
	Access roads/bund maintenance
	Fencing and gate maintenance
	Tenement access and point of contact for safety and security
RO Plant operations	Day to day operations of plant
Cross Solutions	Survey

1.3 Title Details

All licences for TGPA are held in the name of Primary Minerals Pty Ltd, a wholly owned subsidiary of Primary Gold Pty Ltd. Tenement information has been provided Table 1-3.

Table 1-3 TGPA Tenement Information

Title Number	Title Holder	%	Expiry Date	Land Tenure
MLN 1058	Primary Minerals Pty Ltd	100	02/08/2039	PPL 1163, NT Portion 4937
MLN 29812	Primary Minerals Pty Ltd	100	05/02/2033	PPL 1163, NT Portion 4937
MLN 29814	Primary Minerals Pty Ltd	100	05/02/2033	PPL 1163, NT Portion 4937

1.4 Location

TGPA is located approximately 90 km south-east of Darwin (131°34'E and 12°50'S). Toms Gully Mine workings including the RO Plant is situated on MLN 1058, within Old Mount Bundey Station (PPL 1163, NT Portion 4937), which is an active station used for cattle grazing. Access is restricted by closed and locked gates.

The mine site is directly accessed off the Arnhem Highway via a 2km access track. The turnoff is approximately 10 km from the rural subdivision of Marrakai and the Corroboree Park Inn and 63 km from services at Humpty Doo.

1.5 Site Activities

1.5.1 Care and Maintenance

TGPA remained in care and maintenance during 2024-2025 reporting period and has been since PGO's purchase of tenements in 2013. No exploration activities occurred at TGPA during this reporting period. The Environmental Impact Statement (EIS) for TGPA was formally approved in 2020 under the *NT Environmental Protection Act* 2019. The Reverse Osmosis (RO) water Treatment Plant received approval from the Department of Infrastructure, Tourism and Trade (DITT) in December 2022 under the *Mining Management Act* 2001. Construction of the plant and auxiliary infrastructure (including reconnection of mains power) occurred during 2023 with commissioning of the RO Plant in October 2023 (Photo 1-1).

TGPA RO Plant (September 2023)

RO Pontoon in TGM Pit (September 2023)

Photo 1-1 TGPA Reverse Osmosis Plant and Pump Pontoon

1.5.2 Waste Discharge Licence

PGO was issued a ten-year WDL on 22 December 2022 (22/12/2022- 22/12/2032) under section 74 of the *Water Act 1992* that authorises for the controlled discharge of treated wastewater from mine influenced water collected on MLN 1058 into Mount Bundey Creek via ADP1 as per the conditions of the Licence. PGO obtained the License to manage on site water inventories and maintain Toms Gully Main Pit (TGM Pit) water levels to a safe freeboard eliminating the risk of uncontrolled flows off tenement.

As part of the approved TGPA water management programme, the Main Pit is used as the repository for all pumped water received from onsite dams/pits during the wet season months. Pit water is treated through the RO Treatment Plant and released via ADP1 when there is a natural, continuous, and sufficient flow of water at SWTG2 and only includes wastewater treated by the RO Plant via ADP1.

PGO has proposed amendments to WDL 249 in line with PGO's management goals to focus on the licensed activity involving the discharge of RO treated water. Refer to Section 5.45.4.

1.5.2.1 Authorised Discharge Point and Compliance Point

As per Conditions 20 and 21 of The Licence, there is one ADP1 situated on tenement located at the entry to the Oxbow Wetlands. SWTG2 is situated approximately 0.8km downstream of the Oxbow wetlands and ADP1 in Mount Bundey Creek. Coordinates are included in Table 1-4 and locations of all WDL249 monitoring Points are included in Figure 2-5.

Table 1-4 WDL 249 Authorised Discharge Point and Compliance Point Coordinates

Creek	Point	Type	Latitude	Longitude
			GDA94	
Mt Bundey Creek	SWTG2	Compliance point/ Telemetry Station	-12.8287	131.5742
	ADP1	Authorised Discharge Point	-12.8292	131.5639

Photos include ADP1 and the telemetry station setup at the SWTG2 (Photo 1-2).

TGPA ADP1 (January 2024)

SWTG2 WDL 249 Compliance Point, telemetry station

Photo 1-2 Authorised Discharge Point and Compliance Point Telemetry Station

Active discharge of treated water to ADP1 occurred from mid-January 2025 to end of March 2025. During discharge, flow data is recorded continuously at the at the RO plant ADP1 where data can be retrieved as required. Height levels were taken regularly at the TGM Pit. The RO Plant and pumps are connected to mains power. Flow data is included in Appendix A.

A solar powered telemetry station is situated at SWTG2 to continuously monitor physical water quality during creek flow and wastewater discharge as per License conditions. Information provided by the logger is invaluable during controlled/no controlled site discharge events to gain a clearer understanding of creek flows and water quality fluctuations particularly when site access was limited.

1.5.2.2 Authorised Discharge from Toms Gully Mine Pit (TGPA PIT)

TGM Pit water levels were recorded monthly, as per Licence requirements. Water levels were measured by laser level from a surveyed marker. Pit water levels increased by 12cm from last measurement recorded in mid-November 2025. The increase is a result of the high recorded rainfall of 256mm from Toms Gully rain gauge for the period 12/11/2025-11/12/2025 from Cyclone Fina; water transfer of 6000 m3 (which equates to an increase of 0.05m in pit water level); and three-week water treatment stoppage for cleaning and repairs. Current water level recorded as of as of 12 November 2025 is 19.14 mRL. Figure 1-2.

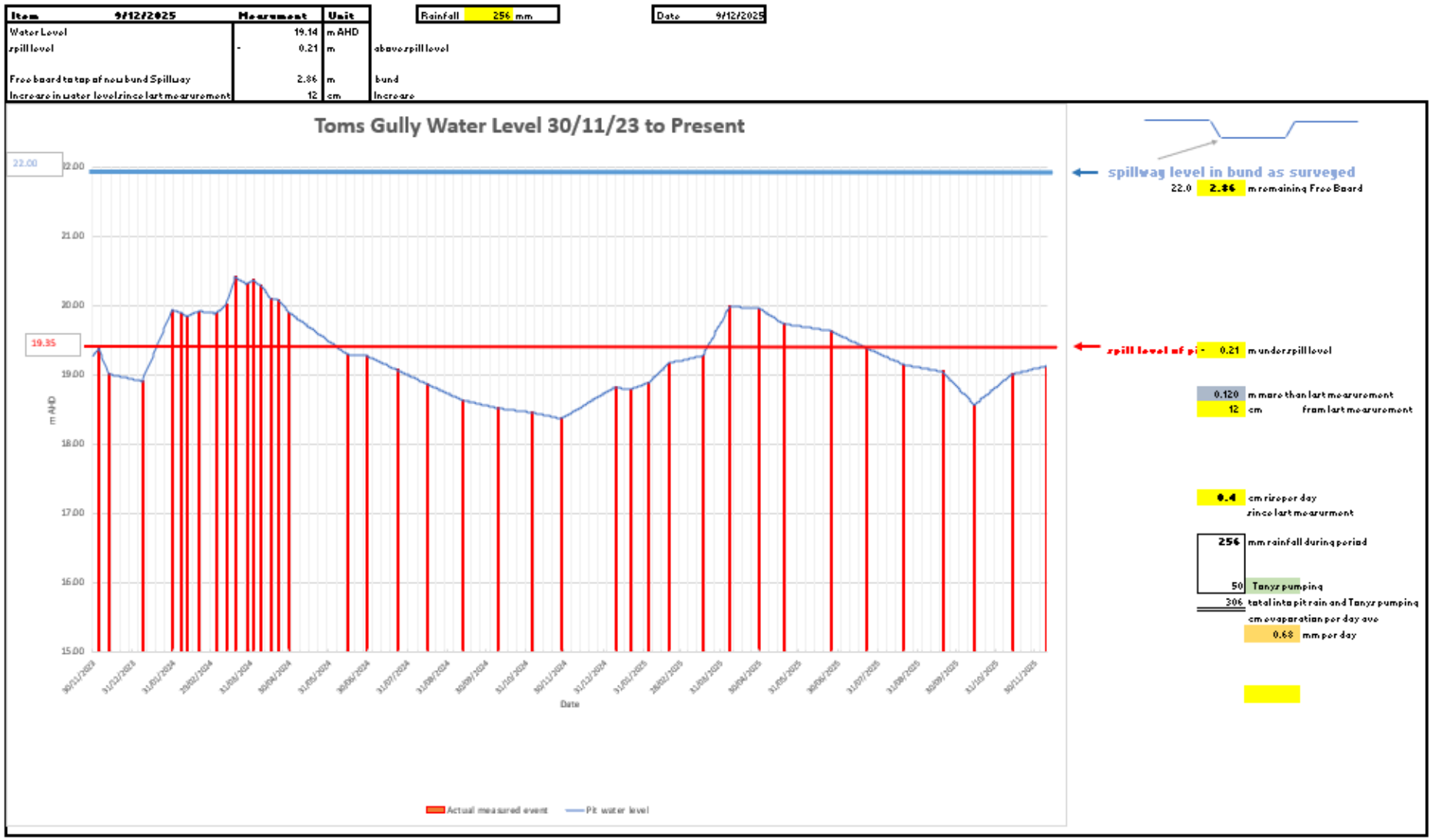


Figure 1-2 Toms Gully Mine Pit Water Level November 2023 to December 2025

2 Monitoring Method

2.1 Receiving Environment

2.1.1 Catchment

The TGPA is positioned primarily over the Mary River Basin with the Mount Bundey Creek draining through the mineral leases from west to east (Figure 2-1). The mineral leases cover an area of 924 ha.

The two other projects owned and managed by PGO upstream of the TGPA are the Rustlers Roost Project Area (RRPA) and the Quest 29 project Area (Q29PA). Both sites are held in a care and maintenance phase and are situated partially in the Mount Bundey Creek sub catchment area where surface water flows report to head waters of the Mount Bundey Creek contributing to its water quality. Both sites currently do not hold a current Waste Discharge License.

Toms Gully's existing mining domains are located on MLN 1058 which include a Run of Mine pad, processing infrastructure and office areas, two waste rock dumps, open pit, two evaporation ponds, two tailings dams, process water dams and wetlands.

The RO plant is located on an existing hard stand adjacent to the old process area. Wet seasonal surface water captured in the evaporation ponds, tailings dams, decant pond and process pond is pumped to the open pit during wet season months to manage the potential for uncontrolled discharges. Surface flows report to the oxbow wetlands before entering Mount Bundey Creek, before ultimately reporting to the major creek system. Mount Bundey creek surface flows report to the Mary River ~5 km downstream of the TGPA.

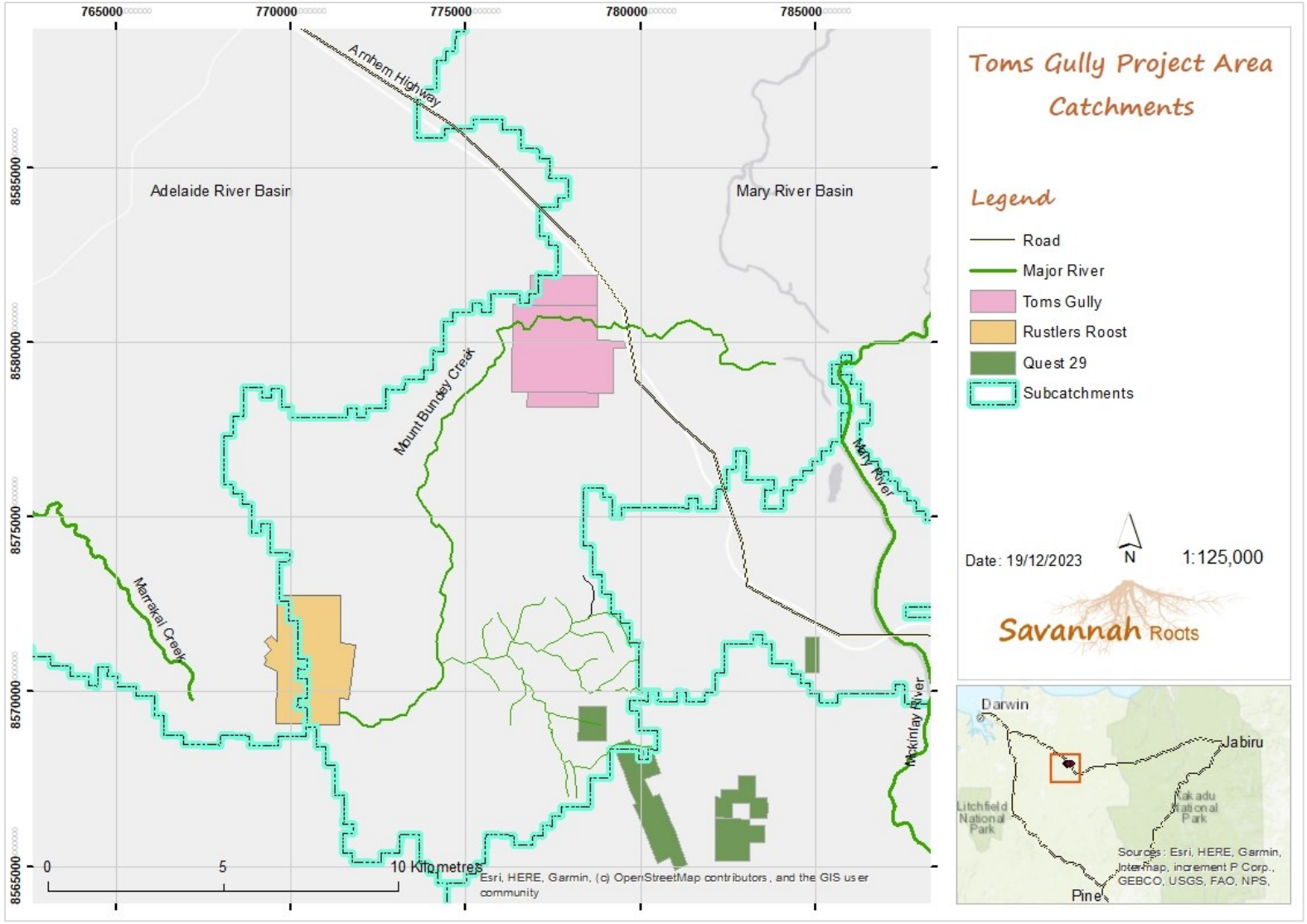


Figure 2-1 Toms Gully Project Area Sub Catchments

2.1.2 Sensitive Receptors

Site runoff and subsurface seepage from the TGPA reports to the Mary River Basin, along the Mount Bundey Creek. The Mary River has beneficial uses for its surface and ground waters. The sub catchment of the Mary River Basin drains through various drains and ephemeral creeks and ultimately enters the Mary River system. TGPA is one of many mines situated in Mary River Basin along with quarries, pastoral properties and horticultural activities and recreational areas. Mary River National Park is also situated in its catchment area downstream of TGPA.

The Mary River system includes the Mary River, all its tributaries, lagoons, lakes, swamps, and marshes situated in the catchment of that waterway (Department of Infrastructure, Planning and Environment [DIPE], 2002).

The surface waters of Mary River catchment declared beneficial use (BUD) are for environmental, riparian, and cultural values.

- Mount Bundey Creek - Middle section (stock water supply) (Gazette No. G23, 11 June 1997); and
- Mount Bundey Creek - Upper and Lower sections (Aquatic ecosystem protection) (Gazette No. G23, 11 June 1997).

The ground water of Mary River catchment declared beneficial use (BUD) is for environmental, riparian, and agricultural values (DIPE, 2002).

- Mary River - Groundwater (Gazette No. G6, 31 February 2002).

As well as the BUDs, there are several identified conservation areas or national parks in the region or downstream of the site (Figure 2-2).

These include:

- Mary River Floodplain System Directory of Important Wetlands (NR Maps, 2023);
- Mar River Coastal Floodplain Sites of Conservations Significance (SoCS 13) located ~2 km east (Department of Natural Resources, Environment, The Arts and Sport [DNRETAS], 2009; Figure 2-2);
- Mary River National Park is located 4 km east via Mount Bundey Creek (NR Maps, 2023; Figure 2-2); and
- Djukdinj National Park is located 15 km to the north (NR Maps, 2023).

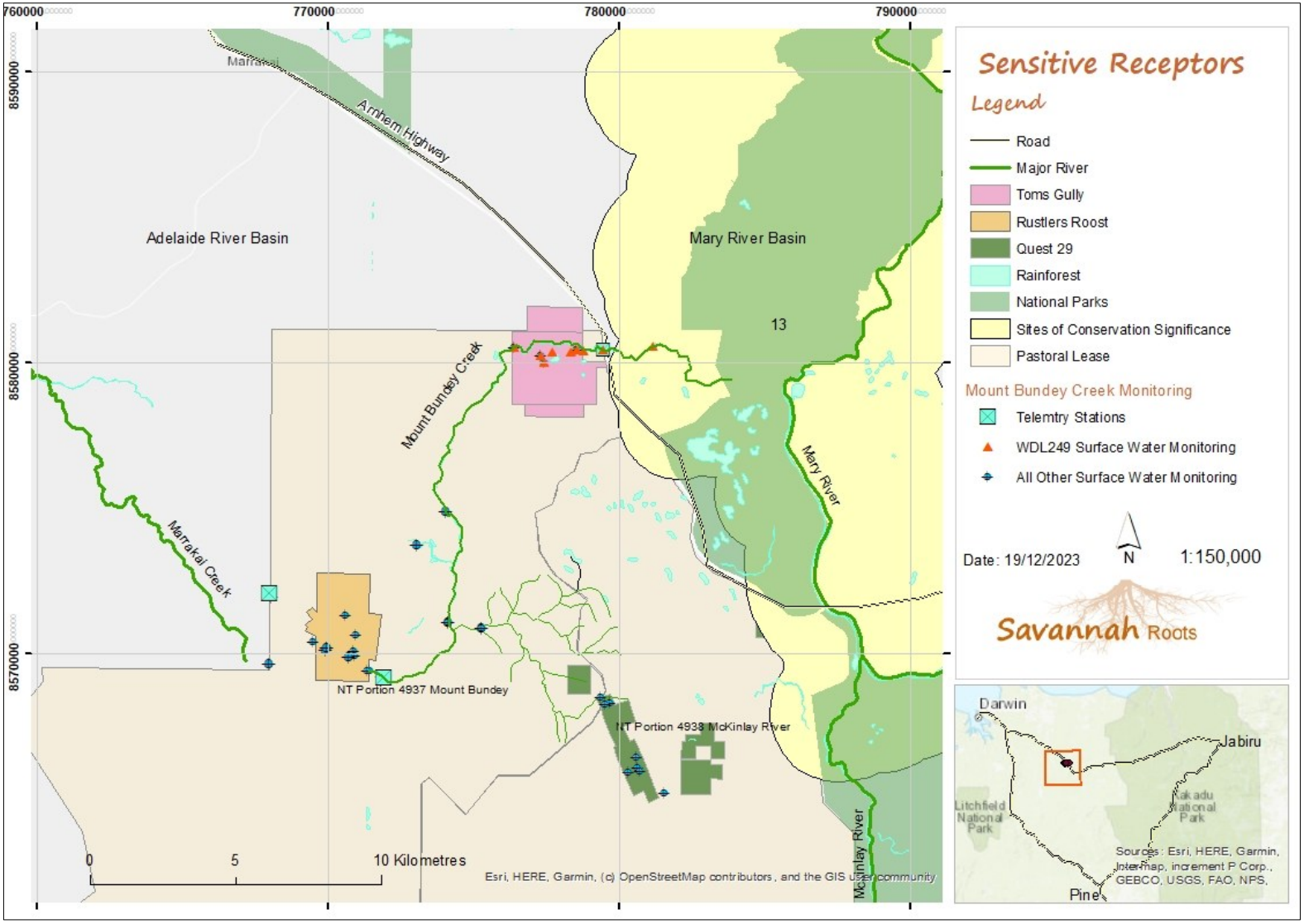


Figure 2-2 Toms Gully Project Area Sensitive Receptors

2.1.3 Rainfall and Mount Bundey Creek flow.

Three rain gauges have been installed across the Adelaide River and Mary River catchment areas in each mining area. One is located in a cleared area on Toms Gully main WRD and the others are located at Quest 29 and Rustlers Roost. Toms Gully rain gauge is located 10.2 km from Quest 29 rain gauge and 11.5 km from Rustlers Roost rain gauge. Rain gauges were monitored weekly and fortnightly during the reporting period. (Figure 2-1).

TGPA 2024/25 rainfall received a total of 1544.5 mm with recorded monthly totals from December 2024 to December 2025. Greatest monthly rainfall totals were in January, February and November, recording above 300 mm, 270 mm, and 256mm (Figure 2-3). Total rainfall was higher compared to previous years 2024/25 wet season recording 1171mm and the 2022/23 wet season recording 1132mm.

High monthly totals generally fall during the months from January to March each year, however the contribution to this year's high rainfall was the unseasonal short and intense rainfall period from Cyclone Fina which crossed the NT coast in November, ultimately increasing the monthly total well above October and December average totals.

In the upper Mount Bundey catchment, total rainfall at the Quest 29 Project Area recorded 956 mm, while the Rustlers Roost Project Area recorded 1141 mm. Peak rainfall for both sites occurred in February 2025.

The Mount Bundey Creek 2025 wet season water levels and stream flow were recorded at SWTG2 Telemetry Station and presented in Figure 2-4. Peak rainfall events in the upper catchment can produce high velocity flows in the lower Mount Bundey creek and its channels, often resulting in localised flooding. Creek flows were recorded by photo monitoring, creek water levels recorded and streamflow calculated at SWTG2 compliance telemetry station during weekly/monthly monitoring events. No creek flow in Mount Budney Creek was recorded or observed during November as a result of Cyclone Fina.

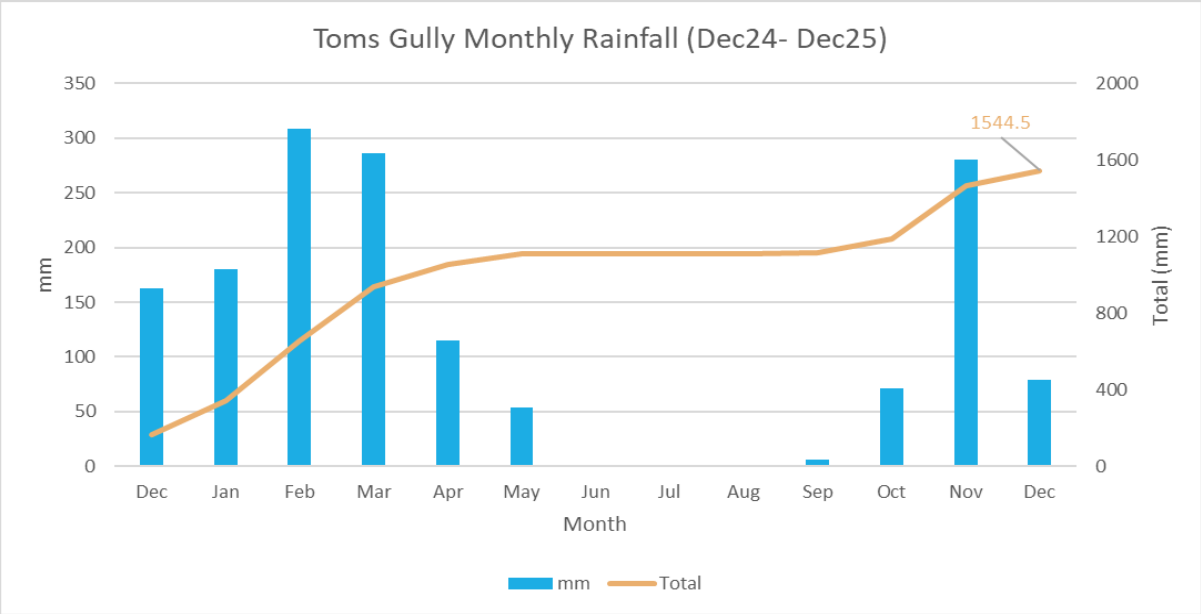
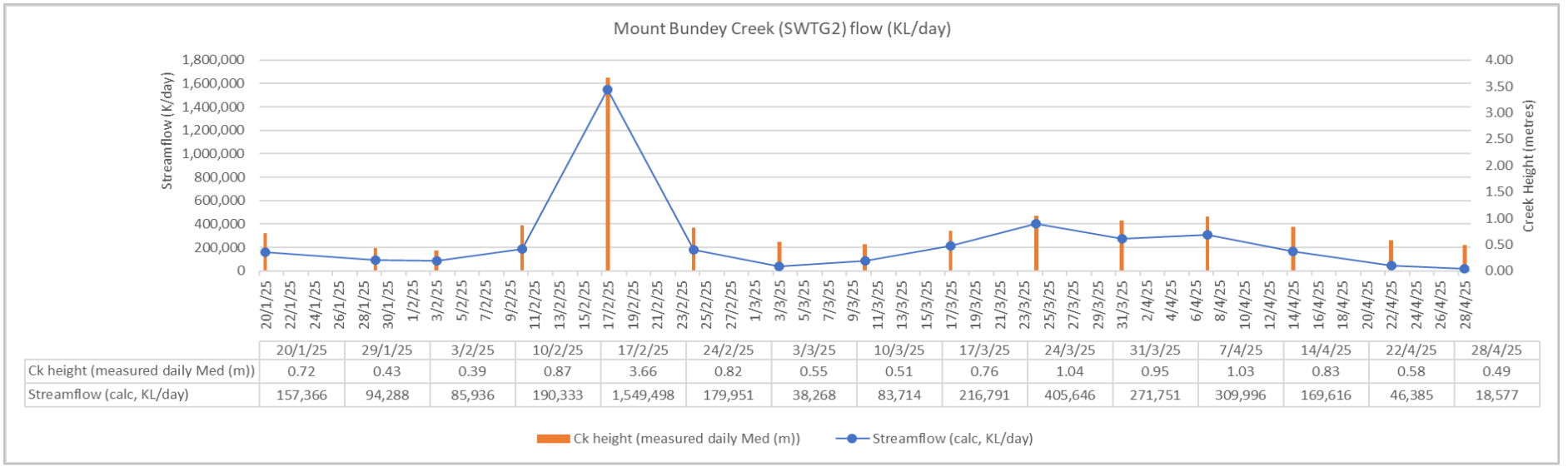


Figure 2-3 Toms Gully Rainfall (mm) for 2024- 25 Wet Season



	20/1/25	29/1/25	3/2/25	10/2/25	17/2/25	24/2/25	3/3/25	10/3/25	17/3/25	24/3/25	31/3/25	7/4/25	14/4/25	22/4/25	28/4/25
Ck height (measured daily Med (m))	0.72	0.43	0.39	0.87	3.66	0.82	0.55	0.51	0.76	1.04	0.95	1.03	0.83	0.58	0.49
Streamflow (calc, KL/day)	157,366	94,288	85,936	190,333	1,549,498	179,951	38,268	83,714	216,791	405,646	271,751	309,996	169,616	46,385	18,577

Figure 2-4 SWTG2 2025 Wet Season Streamflow (KL/day/water levels(m)

2.2 Sampling and Analysis Method

All field sampling was performed as per PGO's water quality monitoring procedure (Appendix C). Various methods were used to capture water movement, levels and quality across the site. Handheld meters were used to record field parameters at all Monitoring Points, whilst PGO invested in a permanent solar powered telemetry station, recording continuous creek water quality at SWTG2.

A hired Aquaread AP-2000 Handheld meter was used to measure insitu field measurements. Measurements include pH, electrical conductivity, dissolved oxygen, temperature and turbidity with all data recorded into an electronic field sheet. This is then transferred into an excel spreadsheet database. Calibrations using a Quick Cal Solution was performed weekly prior to field activities.

SWTG2 solar powered telemetry station was installed in late November 2022 to provide real time and continuous data during creek flow and wastewater discharge as per licence conditions. Monitoring parameters include water level, pH, electrical conductivity, dissolved oxygen, turbidity, and temperature. Data is captured via the Xylem Eagle internet portal and analysed over a 7-day rolling average which is presented in the results (Section 4.1). The data logger for the telemetry station is deployed at the beginning of the wet season, when there is sufficient depth in the Mount Bundey Creek to submerge the probes. A quick calibration is performed to ensure logger performs accurate readings, with further details provided in Section 3.2.1.

TGM Pit water levels are measured monthly using a laser level and using a surveyed relative level marker.

During each monitoring event, a record of general observations is maintained in the field handbook and included, accessibility, fauna siting's, invasive and pest species presence, fish, bird life, recent fires, other observed disturbances including anthropological activities (vehicles tracks, rubbish):

All metals/metalloids, and general chemistry are sampled in the field as per the routine sampling method in pre labelled and preserved bottles provided by the analytical laboratory (Envirolab NATA accredited for the related analysis). Samples are stored in eskies and kept cool using ice bricks. At the end of each day samples were either moved to a fridge/freezer for overnight holding if field sampling finished after 3pm or delivered to the Darwin Envirolab before 3 pm. They were then repacked with new ice bricks and delivered to the courier for transport, by air, to Perth Envirolab laboratory for analysis. To ensure samples were delivered to the lab within the respective holding times and temperature, sampling was performed Monday to Wednesday each week and dispatched the same day or next day at the latest. This would allow for a quick turnaround for results for SWTG2.

2.3 Monitoring Locations

PGO has conducted surface water quality monitoring at TGPA since 2013. Water quality data is maintained electronically is excel format spreadsheet.

Surface water sampling locations are presented in Figure 2-5 which includes seven sampling locations, ADP1 and SWTG2. The monitoring program sample locations are in Table 2-1 and water quality parameters and monitoring frequencies in Table 2-2 and Table 2-3. Appendix E provides a photo record for each event.

Figure 2-5 WDL 249 monitoring locations

Table 2-1 Monitoring Program as per Appendix 2 of the Licence

Catchment	Monitoring Points	Lat°	Long°	Sampling Point Description	Analyte Type					
		GDA94			0	1	2	3	4	5
Mount Bundey Creek	ADP1	-12.8292	131.5639	Authorised Discharge Point located to the northeast of the TGM PIT and at the entrance to Oxbow Wetlands	C	-	M	M	M	M
	SWTG2	-12.8287	131.5742	Compliance Point located on the Mount Bundey Creek, 0.8 km east of ADP1	W	C	C	W	W	W
	SWTG1A	-12.8279	131.5464	Upstream of the Toms Gully Project Area and downstream of Quest 29 and Rustlers Roost Project Areas. Control Point located near tenement boundary for Toms Gully.	-	-	M	M	M	M
	SWTG3A	-12.8253	131.5903	Located ~2.5km downstream of the Toms Gully Project Area on the Mount Bundey Creek. This is the last Monitoring Point.	-	-	M	M	M	M
	SWTG12	-12.8283	131.5661	Located at an existing constructed weir at the end of the Oxbow Wetlands. Water from the wetlands reports to Mound Bundey Creek, upstream of MBC01A	-	-	W	W	W	W
	MBC01A	-12.8285	131.5683	Located downstream of the Toms Gully Project Area and directly downstream of the Oxbow wetlands.	-	-	W	W	W	W
	TGM PIT	-12.8306	131.5621	Main Pit located on tenement MLN1058. Mine water from the Pit is treated through an RO Plant and discharged through ADP1.	-	M	M	M	M	M
	EP1	-12.8326	131.5558	Evaporation Pond 1 is located on tenement MLN 1058 and to the west of TGM PIT. It is located upstream of MBC01A	-	Q	Q	Q	Q	Q
	EP2	-12.8303	131.5546	Evaporation Pond 1 is located on tenement MLN 1058 and to the west of TGM PIT. It is located upstream of MBC01A	-	Q	Q	Q	Q	Q

Table 2-2 Monitoring Parameters

Type	Analysis	Analysis	Parameter
0	Discharge Monitoring	Flow	Flow kiloliters per day
1	Water Level	SWL	Metres, RL for TGM PIT
2	In field parameters	Field	pH, Electro Conductivity (EC), Dissolved Oxygen (DO), Temperature, Turbidity
3	Total and dissolved metals	Total and dissolved	Aluminum (Al), Antimony (Sb), Arsenic (As), Cadmium (Cd), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Manganese (Mn), Mercury (Hg), Nickel (Ni), Silver (Ag), Zinc (Zn).
4	Dissolved major cations and anions	Dissolved	Calcium (Ca), Manganese (Mg), Potassium (K), Sodium (Na), Sulphate (SO_4^{2-}), Chloride (Cl^-)
5	Inorganics	Total and dissolved	Carbonate (CO_3), Bicarbonate (HCO_3), Total Suspended Solids (TSS), Total Dissolved Solids (TDS).

Table 2-3 Monitoring Frequency Descriptions

Key	Frequency	Description
C	Continuous	Continuous during discharge events
W	Weekly	Weekly monitoring
M	Monthly	Monthly monitoring
	Weekly during discharge and at least once per discharge event	
	During Discharge event	

2.4 Variability of Results

Other factors (natural and anthropogenic) other than mining in the catchment area affecting variability in water quality results are described in Table 2-4.

Table 2-4 Factors possibly affecting variability in results

Factors	Activities Affecting Monitoring Results
Track and creek crossing upgrades	Improvements to tracks and creek crossing access resulting in vegetation loss, soil erosion and sedimentation to creeks.
Land clearing	Pastoral land clearing particularly in the upper catchment areas resulting in vegetation loss, soil erosion and sedimentation to creeks
Stock movements	Day to day activities, stock movements over land and through creek lines resulting in, vegetation loss, soil erosion and sedimentation to creeks.
Invasive species	Feral animals i.e. pigs, buffalo wallowing near Monitoring Points

3 QA/QC Evaluation

3.1 Completeness

All monitoring occasions were met. This is the second year of monitoring and improvements to site access have been made to ensure all sample events were met. Compliance against monitoring performance is detailed in Table 5-1.

3.2 Quality Control

3.2.1 Discharges

Proper controls are in place to meet Conditions 21-23 of WDL 249.

- A flow meter recording real time flow from the permeate tank in (m3/second) is located at the RO Plant.
- A 600-metre pipeline is connected from the permeate tank to ADP1. Treated RO water is the only source to this pipeline.

3.2.2 Calibration of Probe Equipment

Calibration of field equipment was undertaken for both telemetry data logger and the handheld probe as per the manufacturer's recommendations. A quick calibration is performed, prior to deployment, on the data logger located at SWTG2 telemetry station to ensure data logged is accurate. The data logger is deployed at the beginning of the wet season, when there are sufficient water depth and flow in the Mount Bundey Creek to submerge the probes. The Loggers remain insitu until the end of the wet season where they are sent away for routine servicing. Field readings are performed at SWTG2 each week to compare telemetered data and ensure accuracy.

Field handheld equipment (Aquaread Handheld meter) was calibrated prior to each weekly sampling event for pH, EC, DO and turbidity using buffer, quick Cal solutions and mineralised water. Calibration results were entered into the weekly field monitoring sheet before being stored in a master database (example included in Appendix F). Following the end of the wet season, the handheld meter is sent back to the supplier for annual maintenance.

3.2.3 Sampling Method

Sampling method was consistent for all water sampling events in accordance with the sampling method detailed in Section 2.2. Qualified and experienced environmental consultants undertook the field monitoring since commencement of the Licence. Sampling equipment such as bucket is cleaned and triple rinsed prior to use at each Monitoring Point. Single use gloves, 50 ml syringe and 0.45 µm filters are used for each sampling event.

Duplicate samples have been incorporated into the monitoring programme for additional QA/QC measures. A total of 10 duplicate samples were taken of the 80 sampling events for the reporting period. This accounts for 10% of samples. All duplicate samples showed similar result to the parent sample, with the exception of TDS and dissolved anions at TGM PIT on several occasions. This may be a result of TDS being sampled outside of its 7-day holding time. Dissolved metal results in particular are within 10% range of the parent sample or doesn't vary greatly from the parent sample.

3.2.4 Laboratory Analysis

All metals/metalloids and general chemistry were sampled as per the routine sampling method in pre labelled and acidified/non acidified bottles provided by the analytical laboratory (Envirolab NATA accredited). All field monitoring is undertaken on days where delivery to the interstate lab does not delay analysis of sent samples or holding times of some analytes. All samples are kept cool, as soon as bottles are filled in the field and during transport to the laboratory.

All analytes are tested by the laboratory (NATA accredited for the analysis) at levels indicated in Appendix 3 of the Licence. Analytes such as silver, do require additional analysis to trace levels to meet the 0.05 µg/L TV. The laboratory performs inhouse quality and compliance checks for each lot of samples or lab report created. The laboratory Certificate of Analysis details random duplicates of select analytes, matrix spikes and also compliance for holding times of some parameters. These results and laboratory comments are checked when entering data. A copy of a CoC and Lab certificate analysis is included in Appendix F.

3.2.5 Data Management

A master excel spreadsheet is used to store analytical results and progress updates from the laboratory. Information from the laboratory includes a copy of the Chain of Custody (CoC) receipt and job number once the laboratory receives the samples, the date results are expected to be issued and ultimately the results. Quality checks of data entered into the database against lab reports is performed.

4 Monitoring Results

4.1 Presentation

Water quality results are included in the following tables. Water quality data has been divided into two tables for field physical parameters and general chemistry (Table 4-1) and dissolved metals (Appendix A includes all raw water quality monitoring data.

Table 4-2). All raw water quality data has been presented in Appendix A.

Each table includes:

- Unit of measure;
- WDL249 Discharge Trigger Value (TV) for SWTG2;
- Short- and long-term medians for all monitoring Points including ADP1 and SWTG2 where available.

As per Item 7 of the Licence, Discharge TVs have been used for each monitoring event at SWTG2 and assessed. Values outside of Discharge TV have been highlighted.

All other data has been included for comparison purposes and to report water quality at each of the Sample Locations listed in the Licence. For all other Monitoring Points, short term (2022- 25) and long term (2016- 25) median values were used, instead of averages, to assess water quality trends. Using medians values avoids data outliers which would otherwise skew average values. Median values were calculated using three or more data points. If insufficient data was available, the median cell was left blank (-). Median values with parameters below Laboratory Limits of Reporting (LoR) have been represented as 'N/A'. Minimum and Maximums were also included for the reporting period (2016- 24) to identify anomalies.

Some Monitoring Points are monitored as part of the TGPA MMP which has provided an accumulation of long-term data (eight years of data). New Monitoring Points introduced with the Licence have been monitored since the commencement of the Licence in 2022 or less in which only three to six monitoring events may have been captured.

Dissolved oxygen, antimony, mercury and silver values have short term data trends had not been previous monitoring under the MMP water quality programme. pH, Electrical conductivity, dissolved oxygen and turbidity long term trends have been obtained from the laboratory and short-term trends have been taken from the telemetry data 7-day rolling average and presented in the results section.

Total loading calculations has been done for each of the discharge trigger values (general chemistry and metals and metalloids). Field data was not included, as per WDL 249 monitoring schedule. Data sourced for calculations are based on surface water samples (N=4) collected during the reporting period at ADP1 and continuous flow data. Data was then calculated into monthly and grand totals. All <LOR values were taken as half of the LOR.

Location calculations are in kg and presented in graphs displaying each analyte monthly loads and total loads (refer to 4.2.4 and Appendix A).

4.1.1 Field Physical Parameters and Major Chemistry

Table 4-1 summaries the field parameter and major chemistry water quality monitoring results showing calculated short-term median (2024-25) and long-term median (2017-2025). SWTG2 water quality data details the calculated short- and long-term medians and telemetry 7 day rolling average median taken from 2451 data points for the 2025 season. Spatial and temporal trend analysis for the field parameters and major chemical results are covered in Section 4.2.1 and 4.2.24.2. Appendix A includes all raw water quality monitoring data.

Table 4-1 Surface Water Field Parameters and Major Chemistry Results

Point	Date/ Range	DO	EC	pH	Turbidity	TSS	SO_4^{2-}
		%	µS/cm	Units	NTU	mg/L	mg/L
WDL249 Discharge TV **for SWTG2**		**85-120**	**250**	**5.8-8.0**	**87**	**54**	**295**
Authorized Discharge Point							
ADP1	Short term median (2024- 25)	67	76	8.4	2	<5	9
Compliance Point							
SWTG2	Short term median (2024- 25) Analytical Lab results	88	48	6.7	25	21	12
SWTG2	Long term median (2017- 25) Analytical Lab results	88	52	6.0	28	20	8
SWTG2	Telemetry 7 day rolling average median (N=2451 data points)	89	54	6.2	30	-	-
All Other Monitoring Points							
EP1	Short term median (2024- 25)	52	4910	3.3	6	7	7050
EP1	Long term median (2017- 25)	56	5390	3.3	5	9	5800
EP2	Short term median (2024- 25)	55	5749	3.3	4	8	5300
EP2	Long term median (2017- 25)	58	5298	3.2	4	10	5600
TGM PIT	Short term median (2024- 25)	93	2232	3.6	2	6	1350
TGM PIT	Long term median (2017- 25)	75	2188	3.5	2	10	1300
SWTG12	Short term median (2024- 25)	43	566	3.7	2	7	240
SWTG12	Long term median (2017- 25)	50	536	3.8	1	7	220
MBC01A	Short term median (2024- 25)	83	99	6.5	35	27	22
MBC01A	Long term median (2023- 25)	75	77	6.2	25	23	12
SWTG3A	Short term median (2024- 25)	77	45	6.6	48	32	9.5
SWTG3A	Long term median (2023- 25)	76	45	6.4	40	32	9.5
SWTG1A	Short term median (2024- 25)	110	24	7.1	37	84	2
SWTG1A	Long term median (2017- 25)	107	34	6.6	35	51	2

4.1.2 Dissolved Metals

Appendix A includes all raw water quality monitoring data.

Table 4-2 summarizes the dissolved metal water quality results for all Monitoring Points showing the calculated short-term median (2024-25) and long-term median (2017-2025). Spatial and temporal trend analysis for dissolved metal results is covered in Section 4.2.3. Appendix A includes all raw water quality monitoring data.

Table 4-2 Surface Water Dissolved Metals Results

Point	Date	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn
		µg/L													
WDL249 Discharge TV for SWTG2		**295**	**9**	**13**	**0.2**	**1**	**1.4**	**1.4**	**2700**	**3.4**	**1900**	**0.6**	**11**	**0.05**	**8**
Authorized Discharge Point															
ADP1	Short term median (2024-25)	20	N/A	N/A	0.2	N/A	1.2	N/A	N/A	N/A	23.95	N/A	4.3	N/A	15.5
Compliance Point															
SWTG2	Short term median (2024- 25)	50	<1	1.7	0.4	<1	4.2	2.2	190	<1	120	<0.05	9.9	<0.05	35
SWTG2	Long term median (2017- 25)	50	<1	1.7	0.3	<1	3.4	2.5	190	<1	100	<0.05	5.0	<0.05	22
All other monitoring locations															
EP1	Short term median (2024- 25)	600000	<1	28	495	65	3800	4200	10800	9.4	43500	<0.05	15500	<0.05	32500
EP1	Long term median (2017- 25)	500000	1.1	19	480	43	3100	3700	6000	2.4	40000	<0.05	14000	<0.05	35000
EP2	Short term median (2024- 25)	480000	<1	22	360	53	3100	3750	8350	9.1	36500	<0.05	13000	<0.05	33000
EP2	Long term median (2017- 25)	490000	<1	21	385	73	3050	5750	8650	5.2	35500	<0.05	13500	<0.05	31000
TGM PIT	Short term median (2024- 25)	28500	<1	4.8	53	2	340	285	800	7.2	11000	<0.05	1300	<0.05	6300
TGM PIT	Long term median (2017- 25)	24000	<1	6.0	51	2	310	270	1100	7.3	11000	<0.05	1200	<0.05	6200
SWTG12	Short term median (2024- 25)	3250	<1	4.6	4.0	<1	88	43	660	1.9	2600	<0.05	225	<0.05	725
SWTG12	Long term median (2017- 25)	2550	<1	5.0	5.4	<1	94	42	560	2.3	2500	<0.05	225	<0.05	795
MBC01A	Short term median (2024- 25)	92	<1	1.5	0.4	<1	3.8	2.4	300	<1	140	<0.05	8.5	<0.05	29
MBC01A	Long term median (2023- 25)	74	<1	1.7	0.4	<1	4.0	2.5	240	<1	140	<0.05	8.4	<0.05	32
SWTG3A	Short term median (2024- 25)	71	<1	2	0.2	<1	2.0	2.1	220	<1	86	<0.05	6.3	<0.05	27
SWTG3A	Long term median (2023- 25)	58	<1	1.6	0.2	<1	2.7	2.0	210	<1	86	<0.05	6.3	<0.05	27
SWTG1A	Short term median (2024- 25)	105	<1	1.3	<0.1	<1	<1	<1	335	<1	8	<0.05	<1	<0.05	2.8
SWTG1A	Long term median (2017- 25)	93	<1	1.8	<0.1	<1	<1	<1	295	<1	10	<0.05	<1	<0.05	3

4.1.1 Loading Calculations

Tabulated annual and monthly total loads at ADP1 for the 2024-25 monitoring period are shown in Table 4-3 and Table 4-4. Appendix A includes all raw water quality monitoring data.For the monthly and annual loads calculations, the following assumptions were made: Water quality for 21/02/2025 was assumed to be the same as observed on 22/1; similarly, results for 25-28/03 were assumed to be the same as observed on 24/03; and all <LOR values were taken as half of the LOR.

Table 4-3 Loading Calculations for General Chemistry at ADP1 2024-25 Reporting Period

Month	Lab Inorganics		Alkalinity as CaC03			Anions Dissolved		Cations Dissolved			
	TDS	TSS	Bicarbonate (HCO_3)	Carbonate (CO_3)	Total	Chloride	Sulfate (SO_4^{2-})	Calcium	Magnesium	Potassium	Sodium
	kg										
January	204.477	16.632	19.848	60.343	63.559	46.273	6.378	1.968	1.902	1.663	50.715
February	633.032	39.960	84.881	76.444	121.365	173.794	54.663	8.836	7.765	3.996	139.506
March	699.457	27.216	92.401	27.216	92.401	146.936	141.484	18.470	14.537	2.722	123.109
Total	**1536.967**	**83.808**	**197.130**	**164.003**	**277.325**	**367.003**	**202.526**	**29.274**	**24.204**	**8.381**	**313.330**

Table 4-4 Loading Calculations for Dissolved Metals at ADP1 2024-25 Reporting Period

Month	Metals Dissolved													
	Ag	Al	As (total)	Cd	Cr	Co	Cu	Fe	Hg	Pb	Sb	Mn	Ni	Zn
	kg													
January	0.000	0.170	0.003	0.000	0.003	0.003	0.003	0.033	0.000	0.003	0.005054	0.038	0.005	0.010
February	0.000	0.466	0.008	0.001	0.008	0.008	0.008	0.080	0.000	0.008	0.00635	0.262	0.025	0.051
March	0.000	0.446	0.005	0.001	0.005	0.005	0.005	0.054	0.000	0.005	0.006696	0.122	0.019	0.024
Total	**0.001**	**1.083**	**0.017**	**0.002**	**0.017**	**0.017**	**0.017**	**0.168**	**0.001**	**0.017**	**0.017**	**0.422**	**0.049**	**0.085**

4.2 Spatial and Temporal Trends and Analysis

4.2.1 Field Parameters

Physical water quality analysis results from field sampling and telemetry data are discussed below including data points (from 2017-2025) presented in the Figure 4-1. Short- and long-term median trends shown in Figure 4-2 . ADP1 data presented separately to the other Monitoring Points and compared to the respective WDL 249 SWTG2 TV. Appendix A includes all monitoring data and load calculations.

ADP1

Physical parameters generally did not exceed trigger value limits with exception of pH and dissolved oxygen during the reporting period.

- Dissolved oxygen short-term median trend of 67.1 % saturation was below the lower level respective WDL 249 TV's of between 85-120 % saturation, with three sampling occasions exceeding the lower-level trigger value during the reporting period.
- pH short- term median trends of 8.35pH were above the upper level respective WDL 249 TV's of between 8.0-10.0 pH units with three sampling occasions exceeding the upper-level trigger value during the reporting period.
- Electrical Conductivity short-term median trends of 76 µS/cm were within respective WDL 249 TVs of 250 µS/cm with all sampling occasions with trigger values during the reporting period.
- Turbidity short-term median trends of 2 NTU were within respective WDL 249 TV's 87 with all sampling occasions with trigger values during the reporting period.
- Continuous flows recorded daily flows at the flow meter located in the permeate container RO plant from a total number of records (N=69) ranged from 0-950 kL/day and a total amount discharged during the reporting period of 33,523 kL.

SWTG2

SWTG2 physical parameters did not exceed trigger value limits during the reporting period.

- Dissolved oxygen (%) short- and long-term median trends of 83 and 88 respectively were within respective WDL 249 TV's. DO analytical results (N=15) were within WDL 249 TV range of 85-120 % at SWTG2. Continuous water quality results recorded at the telemetry station indicated that DO fluctuate between 70.11-91.78 % (based on the 7-day rolling average) during the reporting period.
  Of the total number of data points (N=1764) DO lowest reading of 54.89 % was recorded on 28/01/2025 and highest reading recorded 94.876 % on the 28/03/2025. The overall median is 85.6 %.
- pH (units) short- and long-term median trends of 6.7 and 6.2 respectively were within respective WDL 249 TVs. pH analytical results (N=15) were within WDL 249 TV range of 5.8- 8.0 pH units at SWTG2.

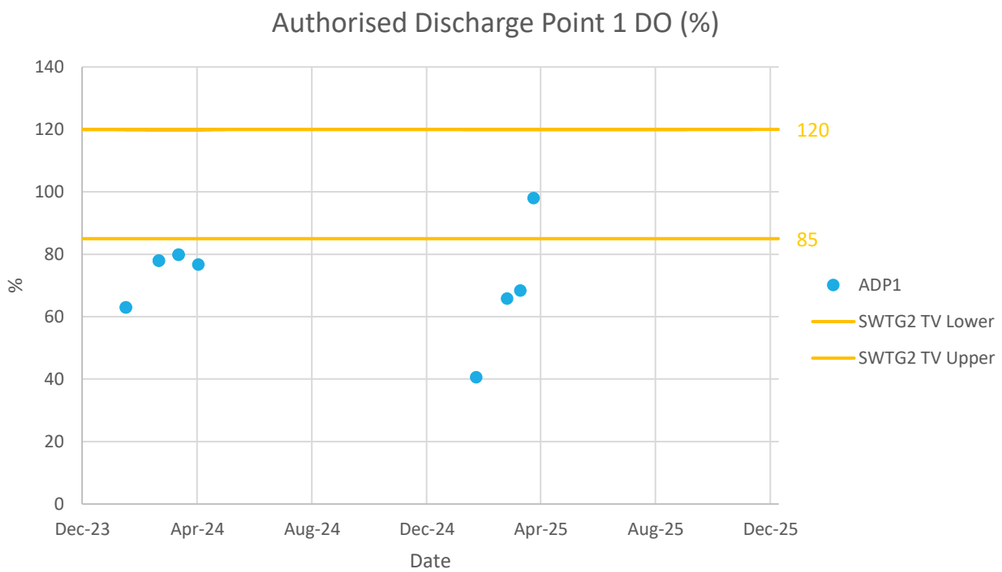
Continuous water quality results recorded at the telemetry station indicated that pH fluctuated between 4.67 -7.01 pH (based on the 7-day rolling average).

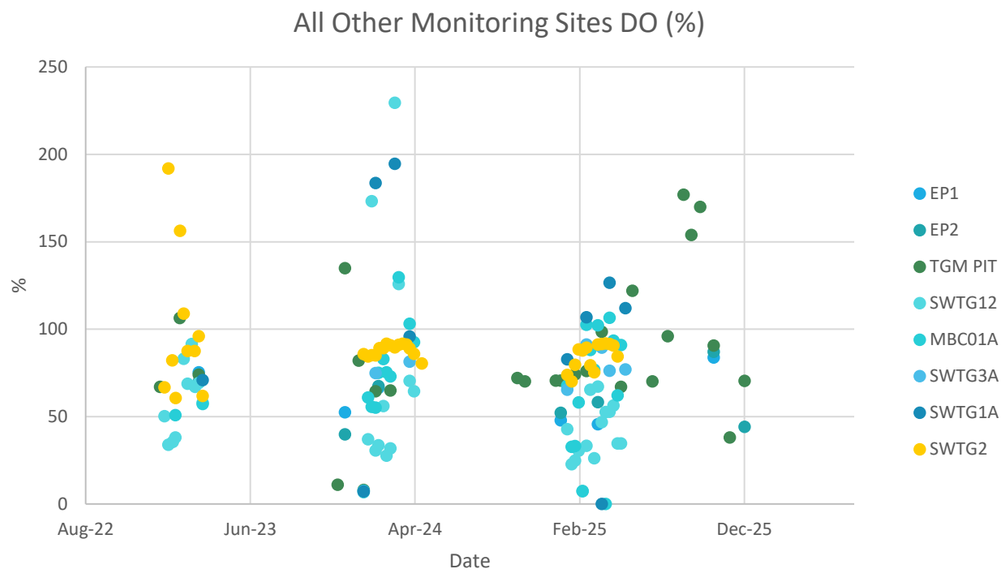
Of the total number of data points (N=1764), lowest reading of 4.67 pH recorded on the 20/01/2025 and highest reading recorded 7.01 pH on the 11/03/2025. The overall median is pH of 6.69.

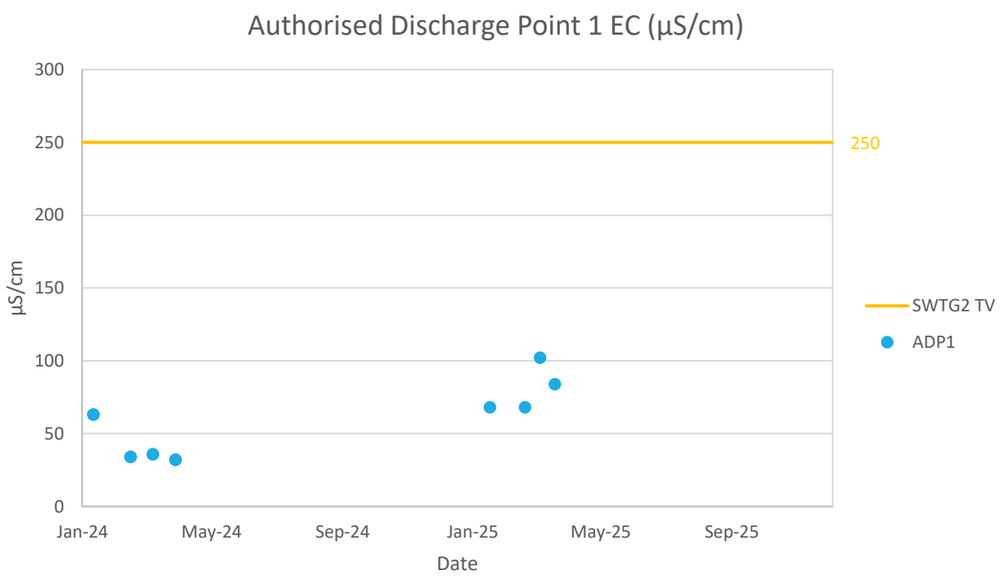
- Electrical Conductivity (µS/cm) short- and long-term median trends of 48 and 50 (µS/cm) were within respective WDL 249 TVs. EC analytical results (N=15) were within WDL 249 TV range of 250 µS/cm at SWTG2. Continuous water quality results recorded at the telemetry station indicate that EC fluctuated between 12- 283 µS/cm (based on the 7-day rolling average). Of the total number of data points (N=1764) lowest reading of 12µS/cm recorded on the 17/02/2025 and highest reading recorded 283 µS/cm on the 20/01/2025. The overall median is 54 µS/cm.
- Turbidity (NTU) short- and long-term median trends and analytical results (n=15) were within respective WDL 249 TV of 87 NTU at SWTG2. Continuous water quality results recorded at the telemetry station indicated that turbidity fluctuated between 7.65- 47 NTU (based on the 7-day rolling average). Of the total number of data points (N=1764) lowest reading of 7 NTU recorded on the 08/03/2025 and highest reading recorded 192.56 NTU recorded on the 15/01/2025. The overall median is 39.69 NTU.
- Temperature (^{o}C) continuous water quality results recorded at the telemetry station from a total number of data points (N=1764) lowest reading of 25.77 ^{o}C recorded on the 04/02/2025 and highest reading recorded 31.30 ^{o}C on the 19/02/2025. Overall median is 28.87 ^{o}C.
- Water level (m) continuous water level results (hourly) recorded at the telemetry station from a total number of data points (N=1764) levels lowest reading of 0.35 m recorded on 03/02/2025 and highest reading recorded 4.12 m recorded on the 17/02/2025. Overall median is 0.69 m.
- Continuous flows (KL/day) calculated from the telemetry station recorded (N=15) events ranging from 18,577 KL/day with a creek depth of 0.49metres recorded on the 28/03/2025 to 1,549,498 KL/day with a creek depth of 3.66 m recorded on the 17/02/2025.

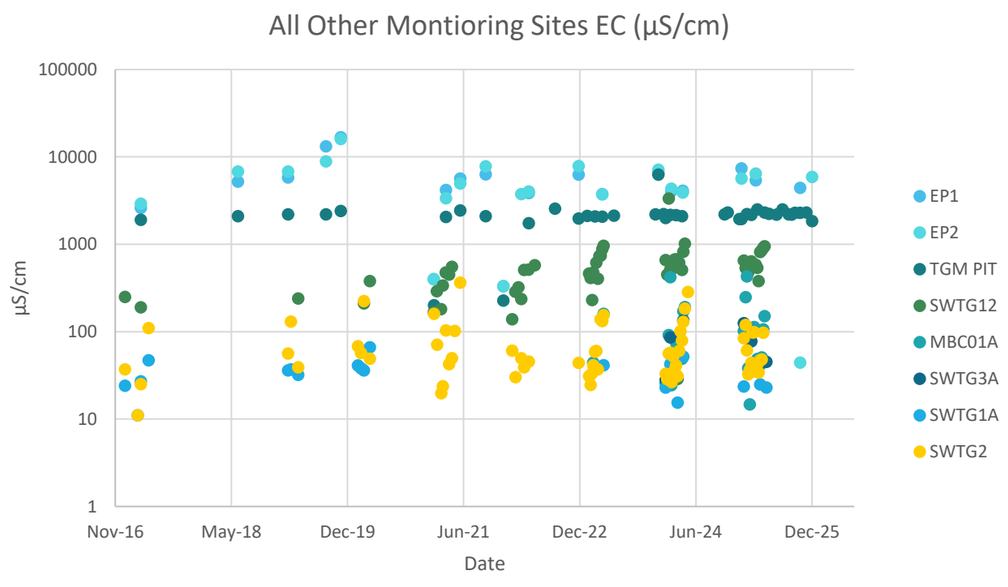
Other Monitoring Points

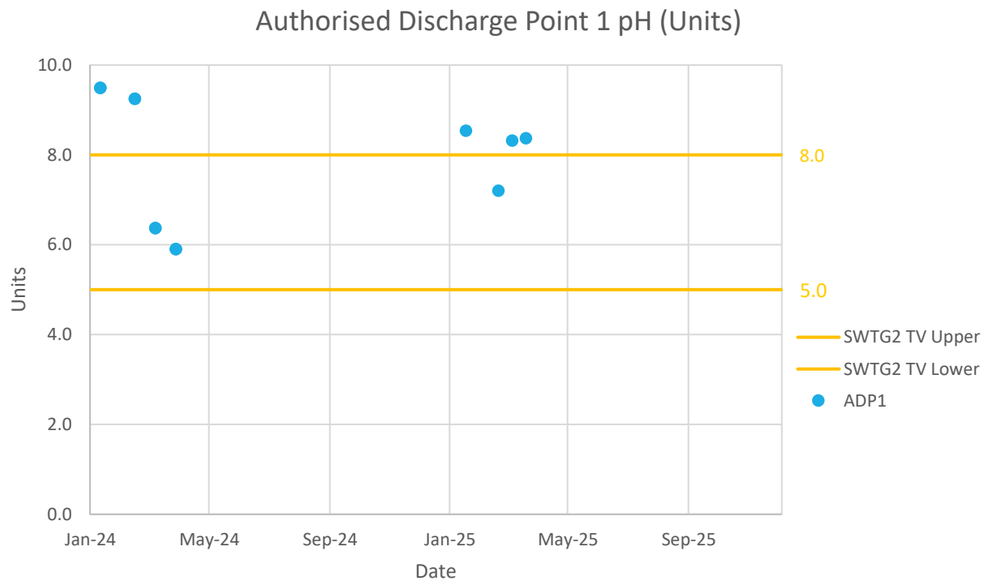
- Physical parameters short and long median trends for dissolved oxygen were highest at the Mount Bundey Creek Monitoring Points and lowest in the Evaporation Ponds and Toms Gully Pit. Short and long median trends for pH were highest at the Mount Bundey Creek Monitoring Points and lowest in the Evaporation ponds, Toms Gully Pit and SWTG12. Short and long median trends for electrical conductivity (µS/cm) were highest at the Evaporation Ponds, Toms Gully Pit and SWTG12 and lowest at the upstream Mount Bundey Monitoring Point (SWTG1a).

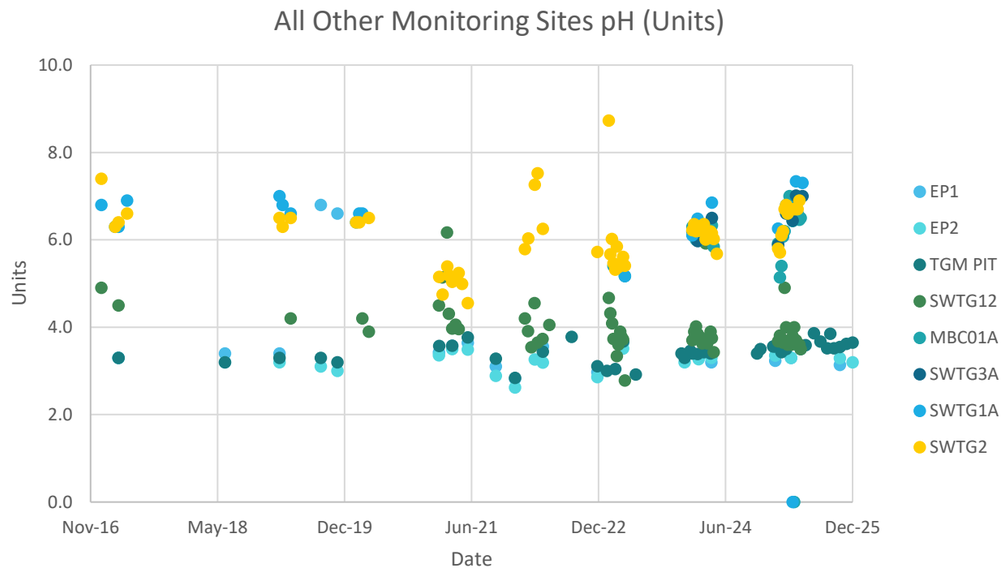

Authorised Discharge Point 1 DO (%)
140
120
100
80
60
40
20
0
%
120
85
Dec-23
Apr-24
Aug-24
Dec-24
Apr-25
Aug-25
Dec-25
Date
ADP1
SWTG2 TV Lower
SWTG2 TV Upper

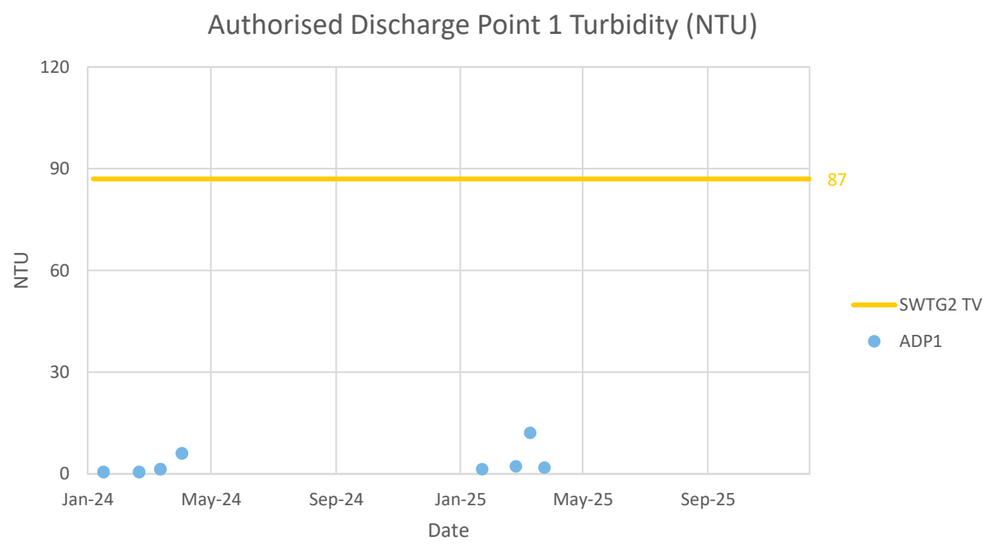

All Other Monitoring Sites DO (%)
250
200
150
100
50
0
%
Aug-22
Jun-23
Apr-24
Feb-25
Dec-25
Date
EP1
EP2
TGM PIT
SWTG12
MBC01A
SWTG3A
SWTG1A
SWTG2


Authorised Discharge Point 1 EC (µS/cm)
300
250
200
150
100
50
0
µS/cm
250
Jan-24
May-24
Sep-24
Jan-25
May-25
Sep-25
Date
SWTG2 TV
ADP1


All Other Montioring Sites EC (µS/cm)
100000
10000
1000
100
10
1
µS/cm
Nov-16
May-18
Dec-19
Jun-21
Dec-22
Jun-24
Dec-25
Date
EP1
EP2
TGM PIT
SWTG12
MBC01A
SWTG3A
SWTG1A
SWTG2







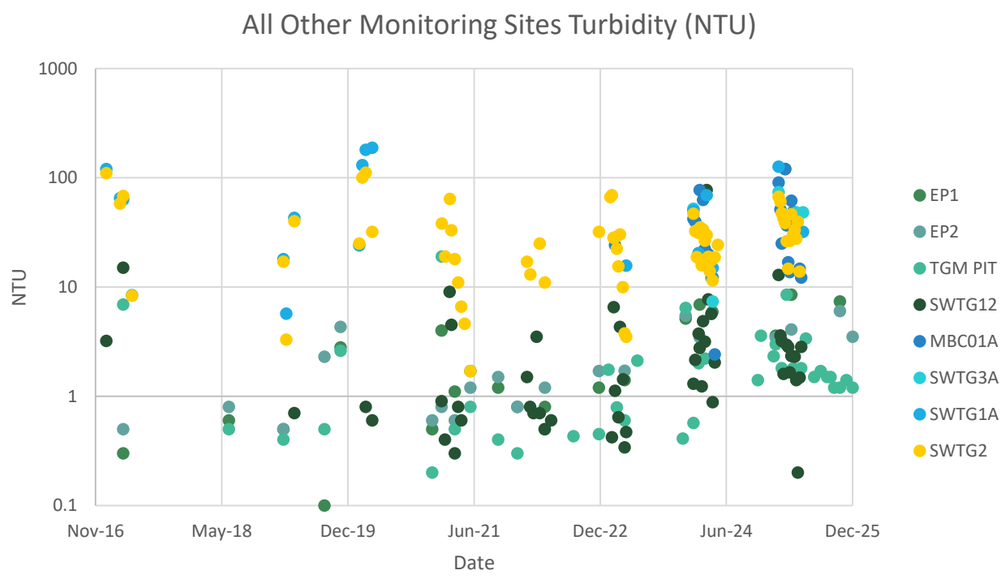


Figure 4-1 Authorised Discharge Point and Other Monitoring Points Trend Analysis for Physical Parameters

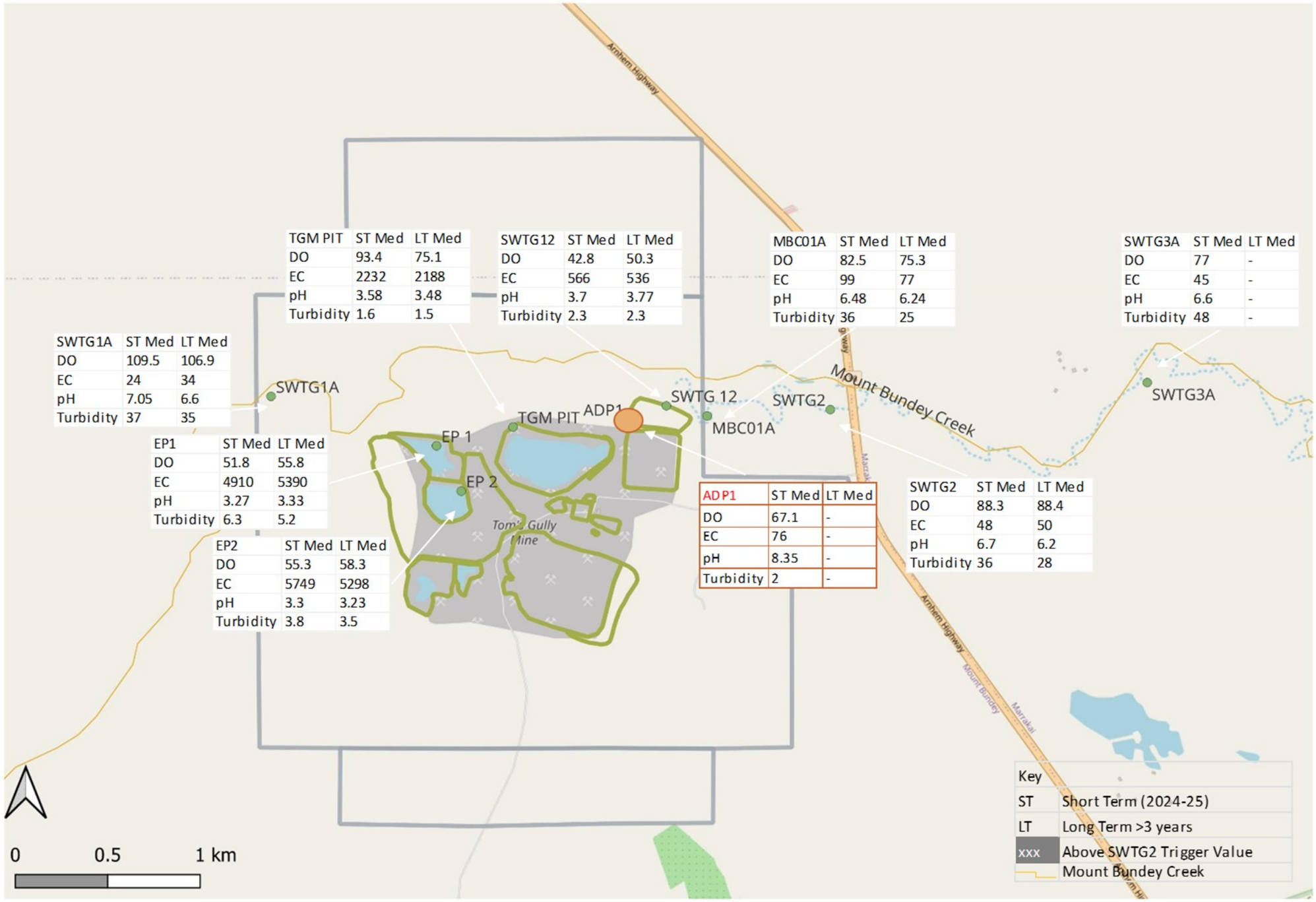


Figure 4-2 Spatial Trend for Physical Parameters

4.2.2 General Chemistry

Analysis of general chemistry water quality results (from 2017-2025) are presented below in Figure 4-3 with ADP1 water quality data compared to the respective WDL 249 SWTG2 TVs. TSS was not included in the spatial analysis as levels for the reporting period were below laboratory LOR at ADP1. Appendix A includes all monitoring data and loading calculations.

ADP1

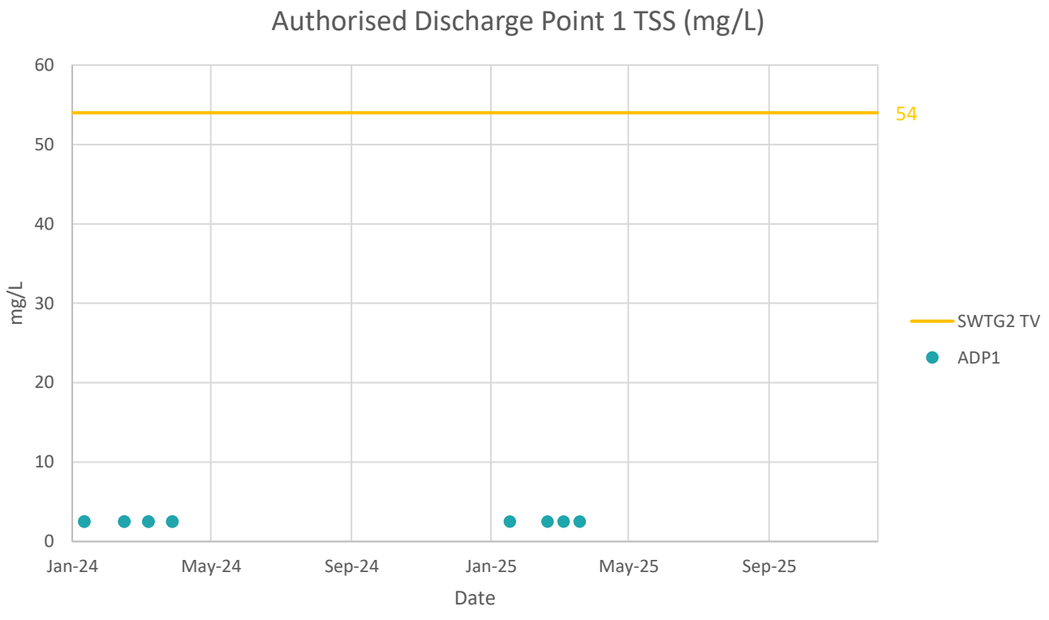
- General chemistry concentrations for TSS were below laboratory LoR during the reporting period and short median trends.
- General chemistry concentrations for sulphate (SO_4^2) did not exceed trigger value limits on any sampling occasion during the reporting period, with short term medians (2024-25) below WDL249 TVs.

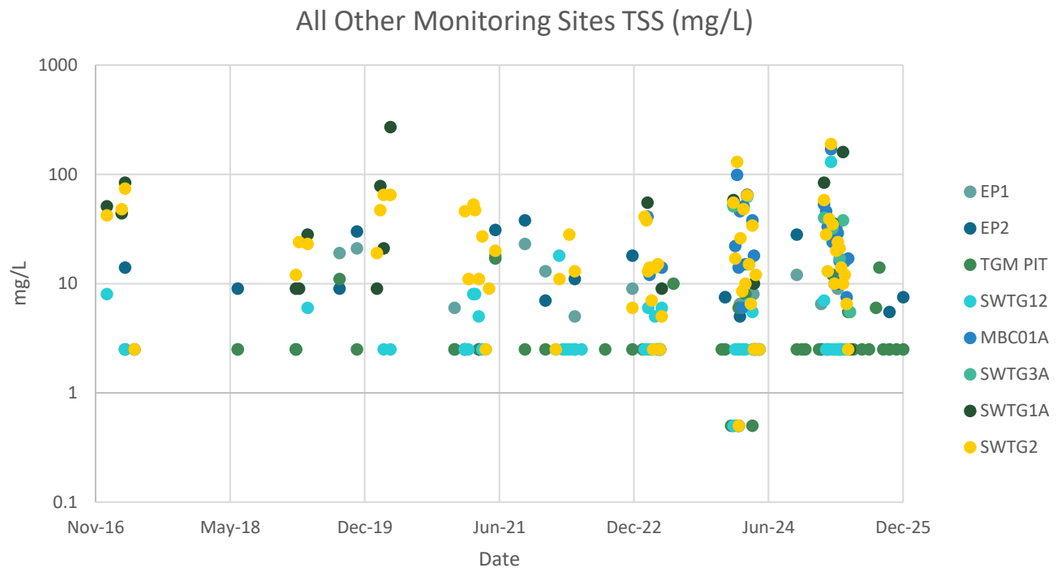
SWTG2

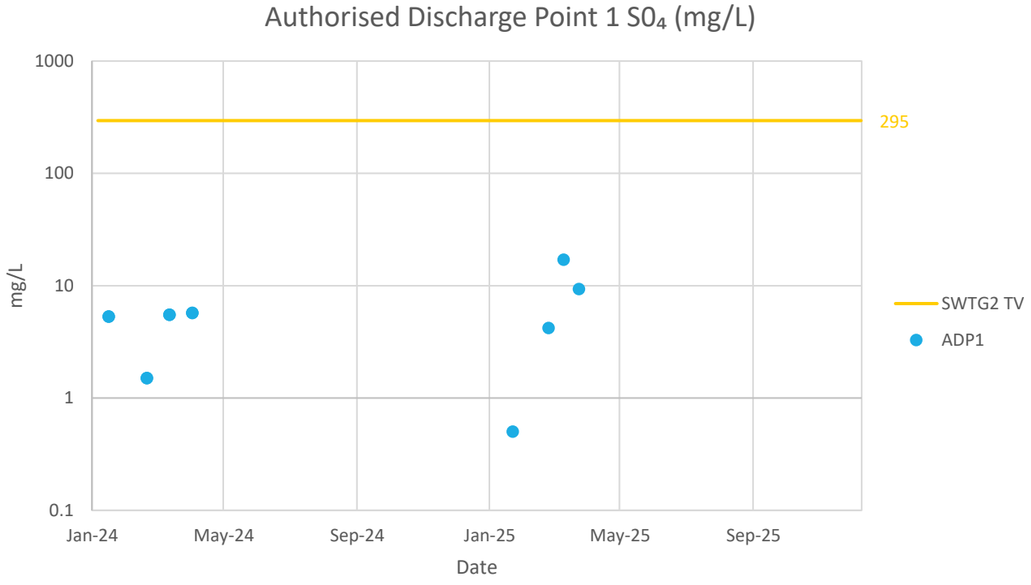
- General chemistry concentrations exceeded WDL249 TV for TSS on one occasion of 190mg/L in mid-February during the reporting period. Short- and long-term median trends for TSS remained below WDL249 TVs.
- General chemistry concentrations did not exceed WDL249 TV for sulphate (SO_4^2) during the reporting period or short- and long-term median trends.

Other Monitoring Points

- General chemistry short and long median trends for TSS were highest at the Mount Bundey Creek Monitoring Points with the upstream Monitoring Point (SWTG1A) of 84 and 51 mg/L respectively, MBC01A of 27 and 23 mg/L respectively and downstream Monitoring Point (SWTG3a) of 32mg/L. Lowest TSS short and long median trends for TSS were within the Toms Gully ponds and pits ranging from 6-10mg/L.







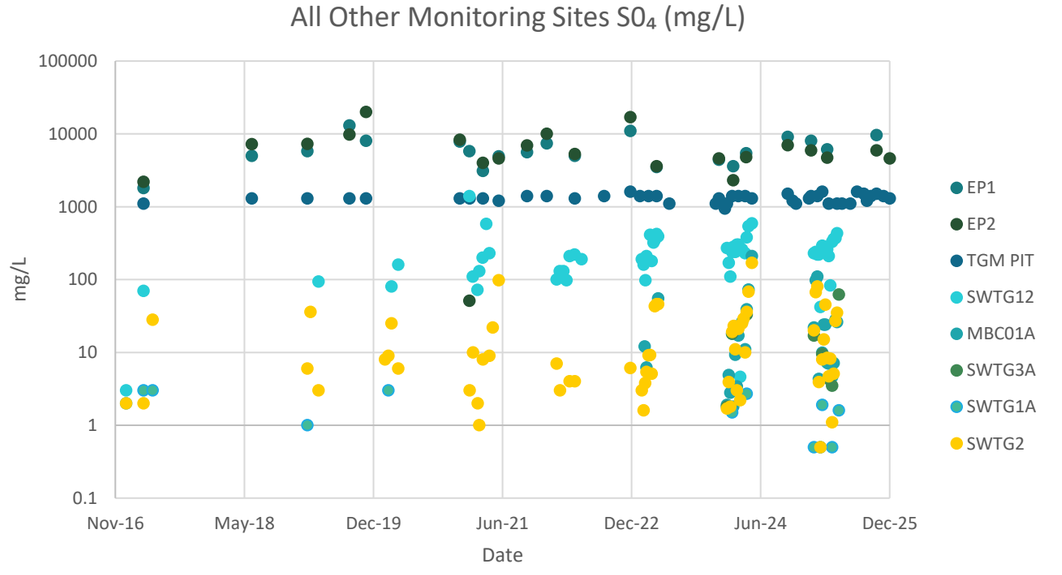


Figure 4-3 Authorised Discharge Point and Other Monitoring Points Trend Analysis for General Chemistry

4.2.3 Dissolved Metals

Dissolved metal (total for arsenic) analysis for water quality results from 2017-2025 are presented in Figure 4-4 with ADP1 water quality data compared to the respective WDL 249 SWTG2 TV's. Short-and long-term median trends for all Monitoring Points are shown in Figure 4-4. Appendix A includes all monitoring data and loading calculations.

ADP1

Dissolved metal concentrations did not exceed trigger value limits with most analytes reporting below laboratory LoR.

SWTG2

Dissolved metals concentrations for Aluminium, Iron, Arsenic (total) and Manganese did not exceed trigger value limits. Antimony, Lead, Silver, Chromium, Mercury were below laboratory LoR. Cadmium, Copper, Nickel and Zinc exceeded trigger values on several occasions which were all recorded and investigated.

Other Monitoring Points

Dissolved metal concentrations short- and long median trends for Cadmium, Copper, Nickel and Zinc were highest at the Evaporation Ponds followed by Toms Gully Pit and SWTG12. Lowest concentrations were recorded at the Mount Bundey Creek Monitoring Points with the upstream SWTG1A recording LOR for dissolved Cadmium, Copper, Nickel except for Zinc short term median of 2.8 µg/L).

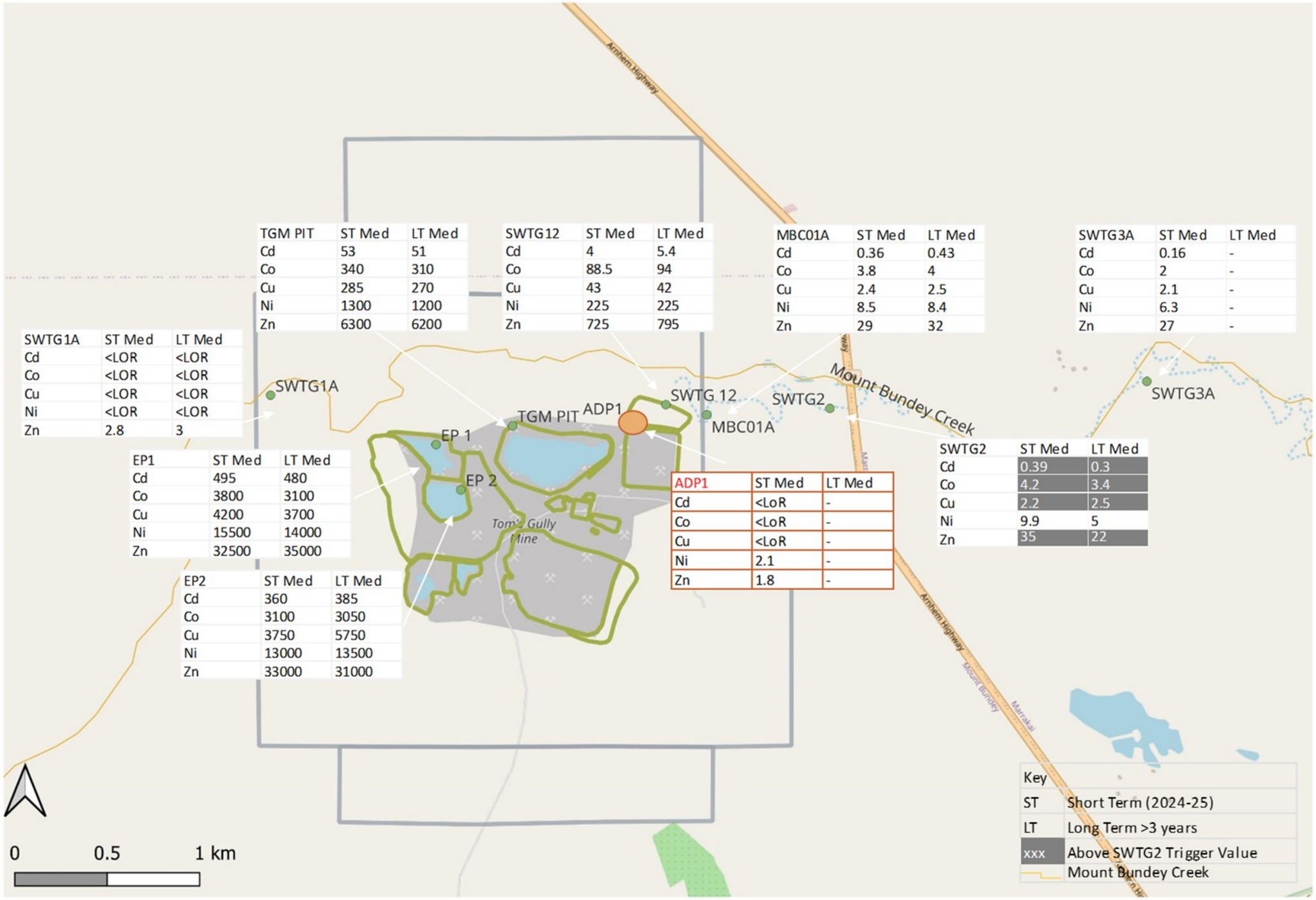
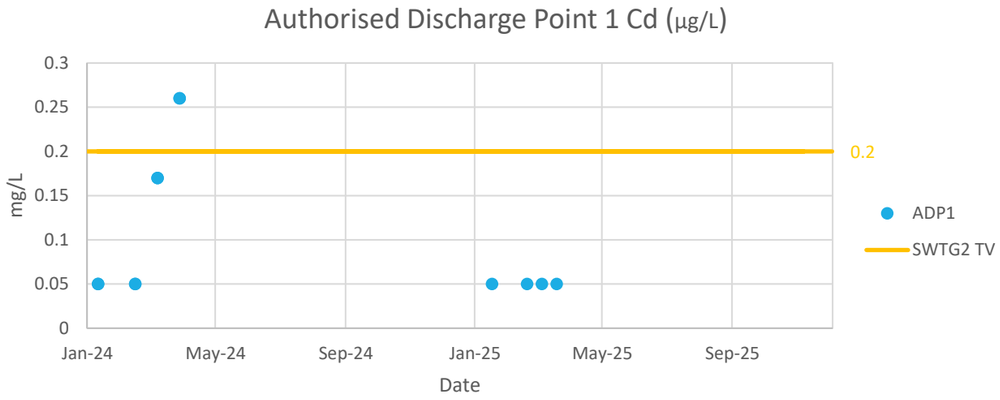
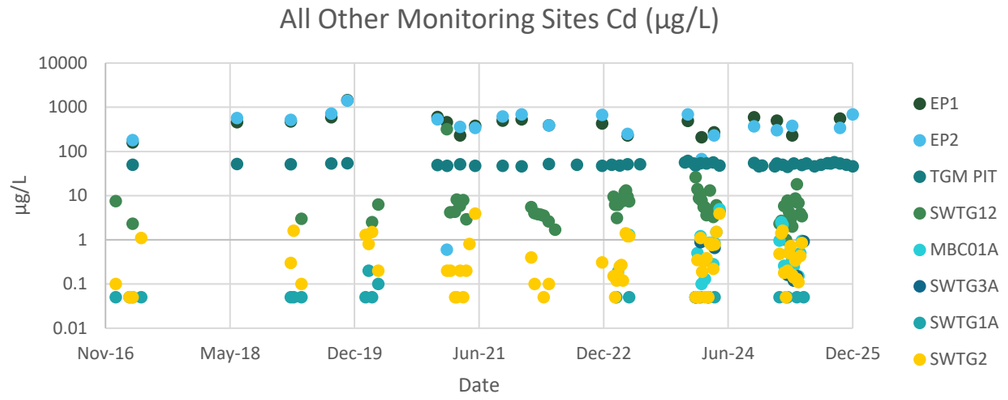
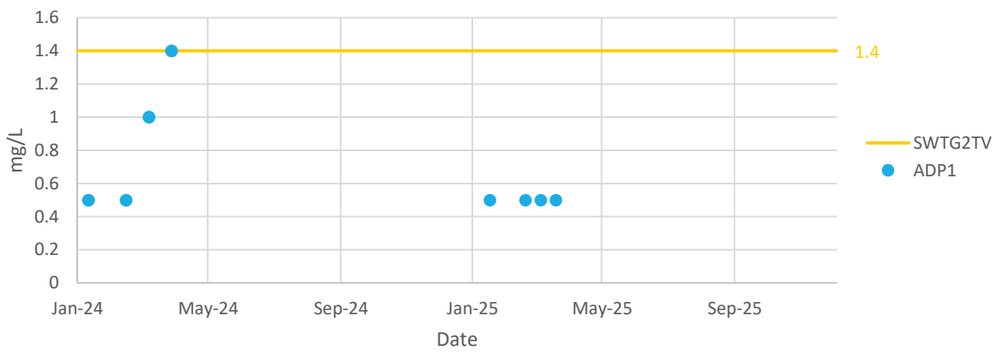
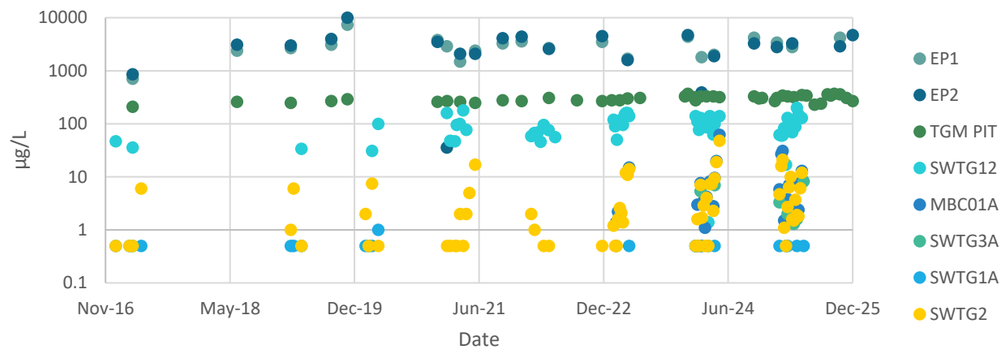


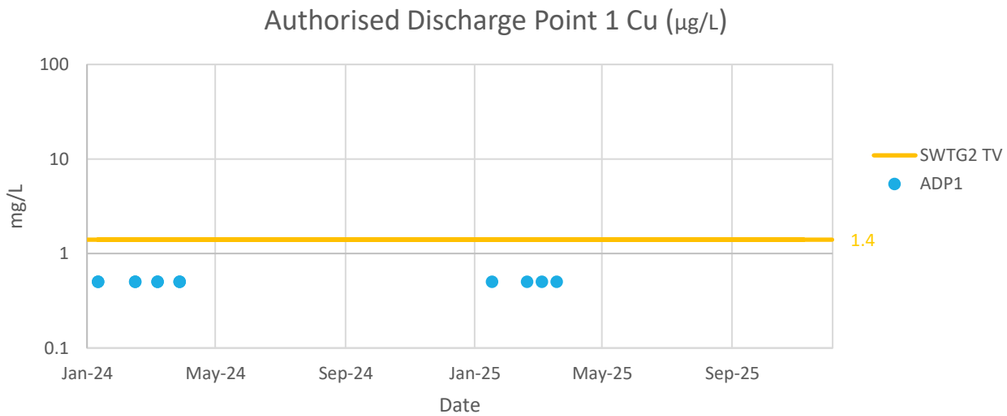
Figure 4-4 Spatial Trend for Dissolved Metals

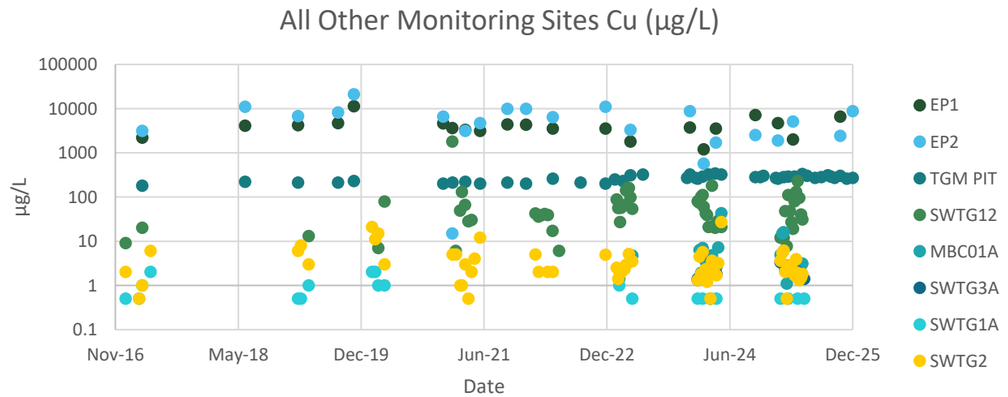

Authorised Discharge Point 1 Cd (µg/L)
mg/L
0.3
0.25
0.2
0.15
0.1
0.05
0
Jan-24
May-24
Sep-24
Jan-25
May-25
Sep-25
Date
0.2
ADP1
SWTG2 TV

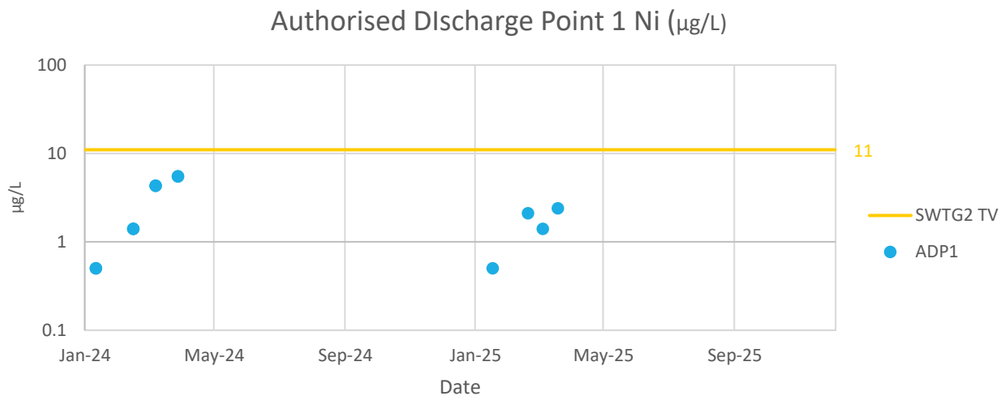

All Other Monitoring Sites Cd (µg/L)
µg/L
10000
1000
100
10
1
0.1
0.01
Nov-16
May-18
Dec-19
Jun-21
Dec-22
Jun-24
Dec-25
Date
EP1
EP2
TGM PIT
SWTG12
MBC01A
SWTG3A
SWTG1A
SWTG2

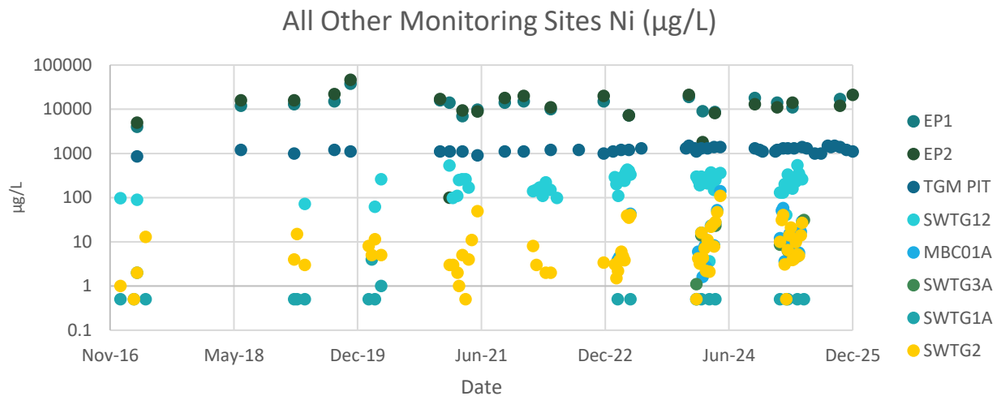

Authorised Discharge Point 1 Co (µg/L)
mg/L
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Jan-24
May-24
Sep-24
Jan-25
May-25
Sep-25
Date
1.4
SWTG2TV
ADP1

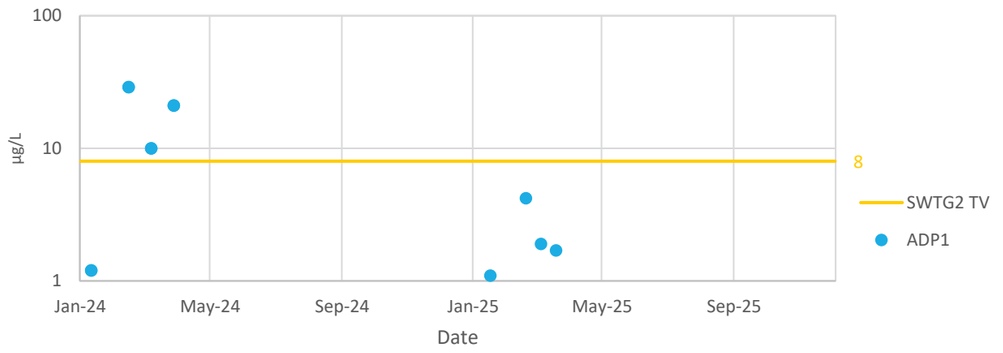

All Other Monitoring Sites Co (µg/L)
µg/L
10000
1000
100
10
1
0.1
Nov-16
May-18
Dec-19
Jun-21
Dec-22
Jun-24
Dec-25
Date
EP1
EP2
TGM PIT
SWTG12
MBC01A
SWTG3A
SWTG1A
SWTG2


Authorised Discharge Point 1 Cu (µg/L)
mg/L
100
10
1
0.1
Jan-24
May-24
Sep-24
Jan-25
May-25
Sep-25
Date
1.4
SWTG2 TV
ADP1


All Other Monitoring Sites Cu (µg/L)
µg/L
100000
10000
1000
100
10
1
0.1
Nov-16
May-18
Dec-19
Jun-21
Dec-22
Jun-24
Dec-25
Date
EP1
EP2
TGM PIT
SWTG12
MBC01A
SWTG3A
SWTG1A
SWTG2







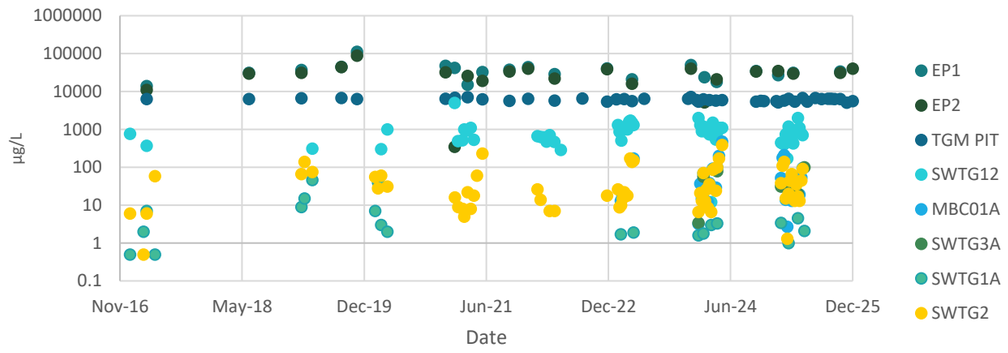


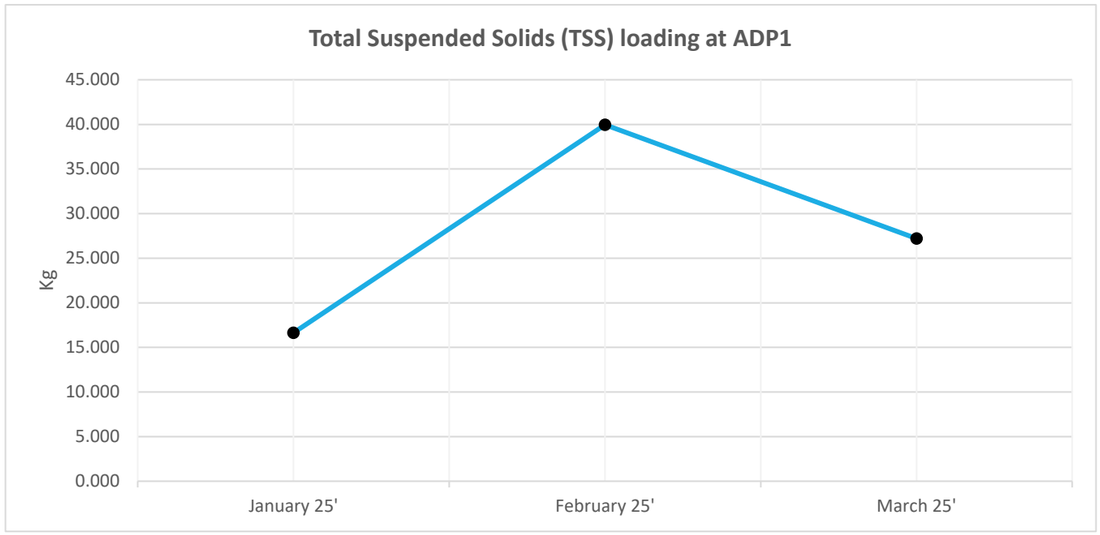
Figure 4-5 Authorised Discharge Point and Other Monitoring Points Trend Analysis for Reported Dissolved Metals Dissolved

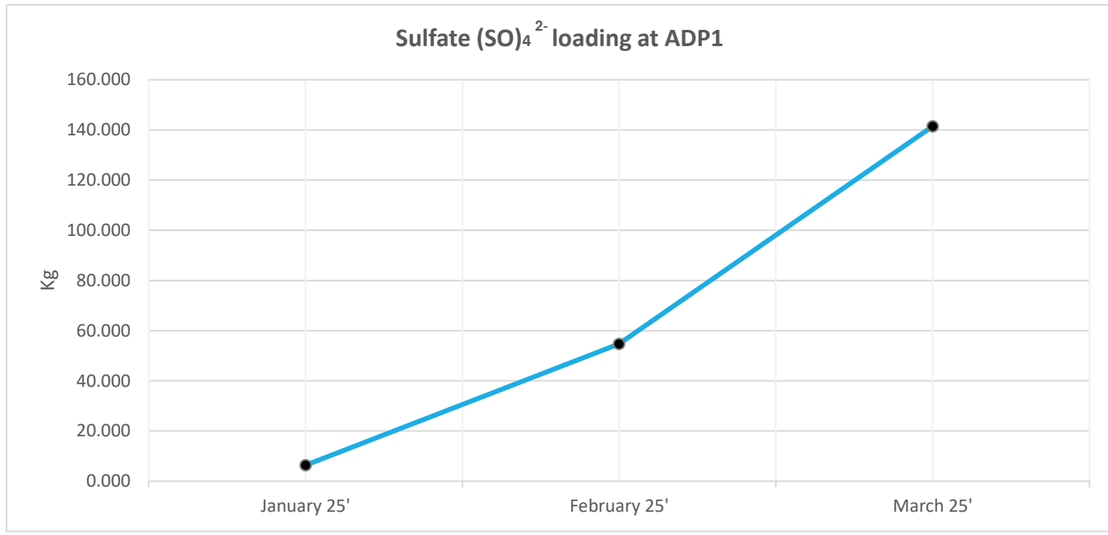
4.2.4 Total Loading

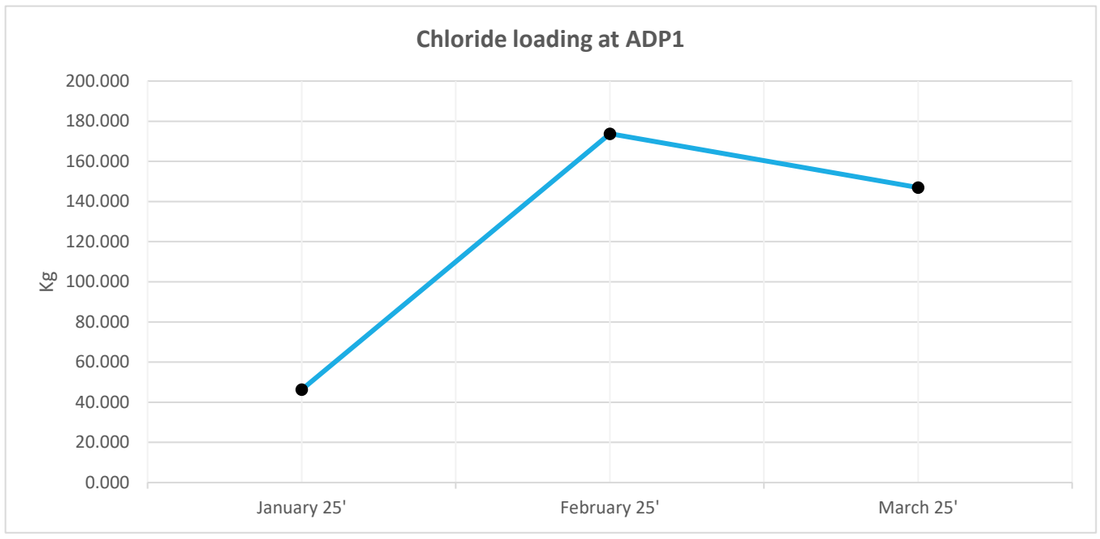
ADP1 discharge water monthly total loads are graphically presented for general chemistry and dissolved metals/metalloids in Figure 4-6 and Figure 4-7, respectively. The NSW EPA 'Load Calculation Protocol' (2008) was applied to measure the mass load of a specified analyte from controlled discharge activities. Continuous flow allowed for an accurate load calculation with a total of 33,523 KL of treated water discharged from ADP1 during the 2025 wet season. Total load calculations were assessed, and the following analysis was made.

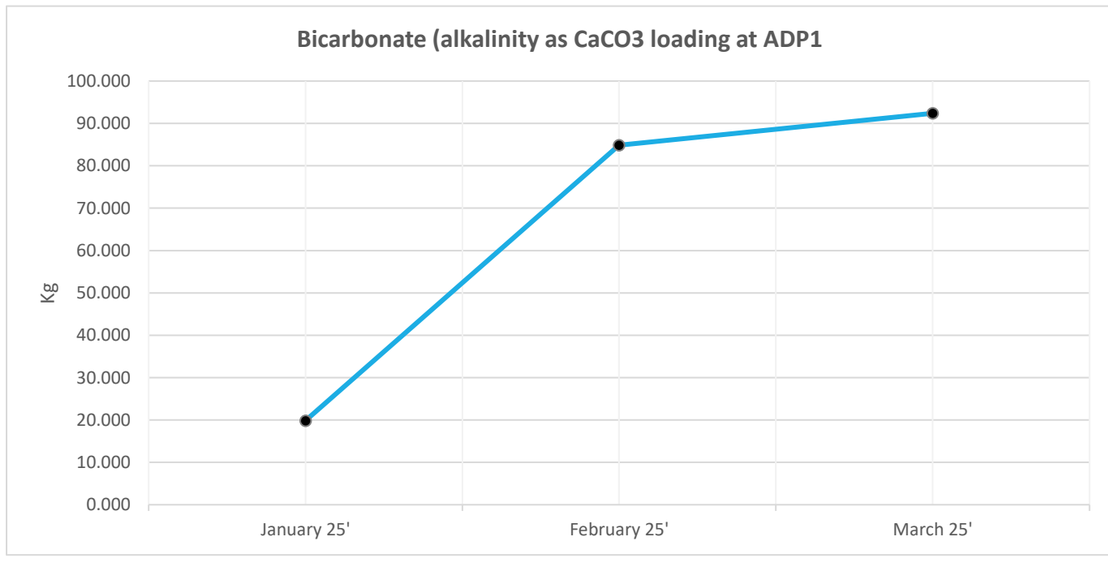
- Total loads concentrations at ADP1 with the highest concentration of bicarbonates (197kg), with cation loads dominated by sodium (313kg) followed by calcium (29kg);
- Chloride loading of 367g was slightly higher than sulphate loading of 202kg; and
- Total load concentrations at ADP1 for dissolved metals had the highest dissolved concentration loads of Aluminium of 1.08kg, followed by Manganese of 0.42kg and Iron (0.17kg).

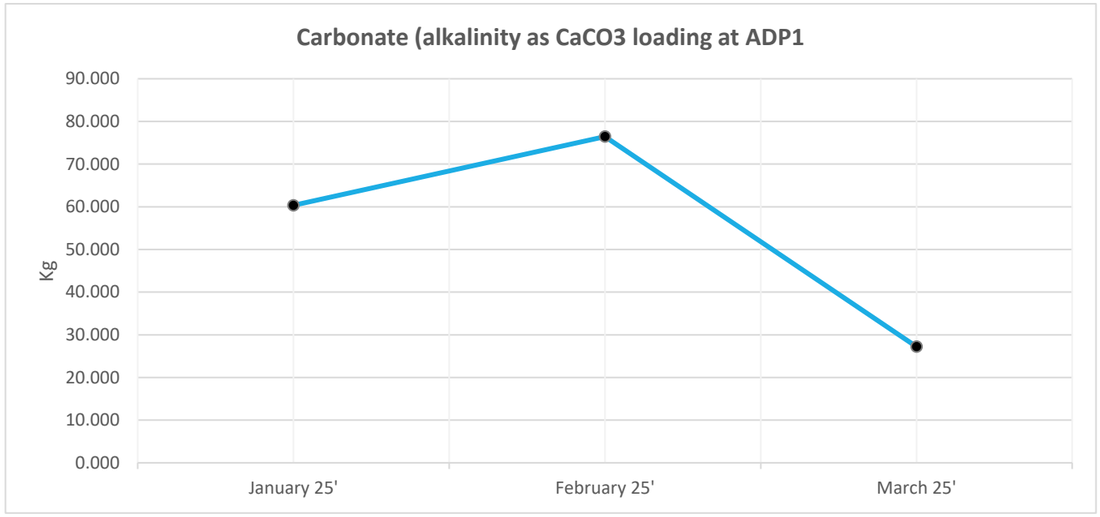
As there were no exceedances of the WDL249 discharge trigger values for dissolved metals, it is unlikely that there were any adverse impacts of the discharge associated with metal toxicity. Considering the dilute nature of the water discharged, it is unlikely that the contaminant loads detailed in Table 4-3 and Table 4-4 would have resulted in any contaminant accumulation in the sediments of the oxbow wetland or downstream environments.

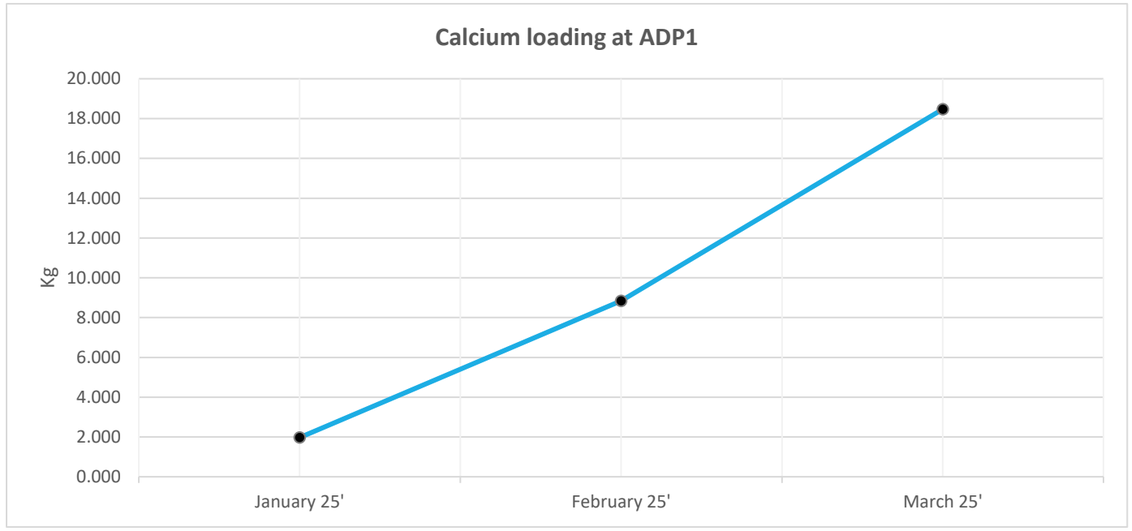

Total Suspended Solids (TSS) loading at ADP1
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Kg
January 25'
February 25'
March 25'

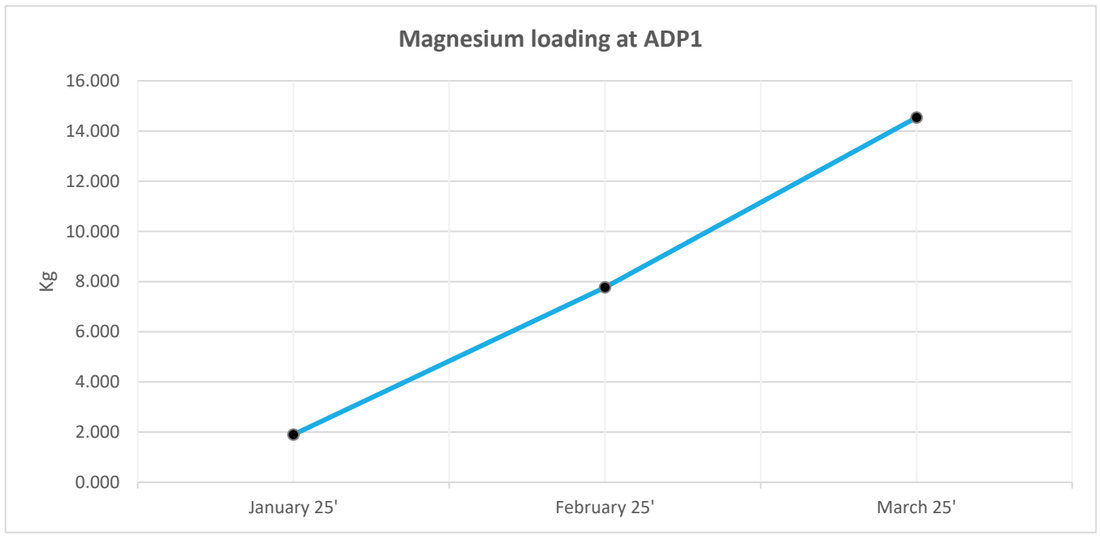

Sulfate (SO)4 2- loading at ADP1
160.000
140.000
120.000
100.000
80.000
60.000
40.000
20.000
0.000
Kg
January 25'
February 25'
March 25'

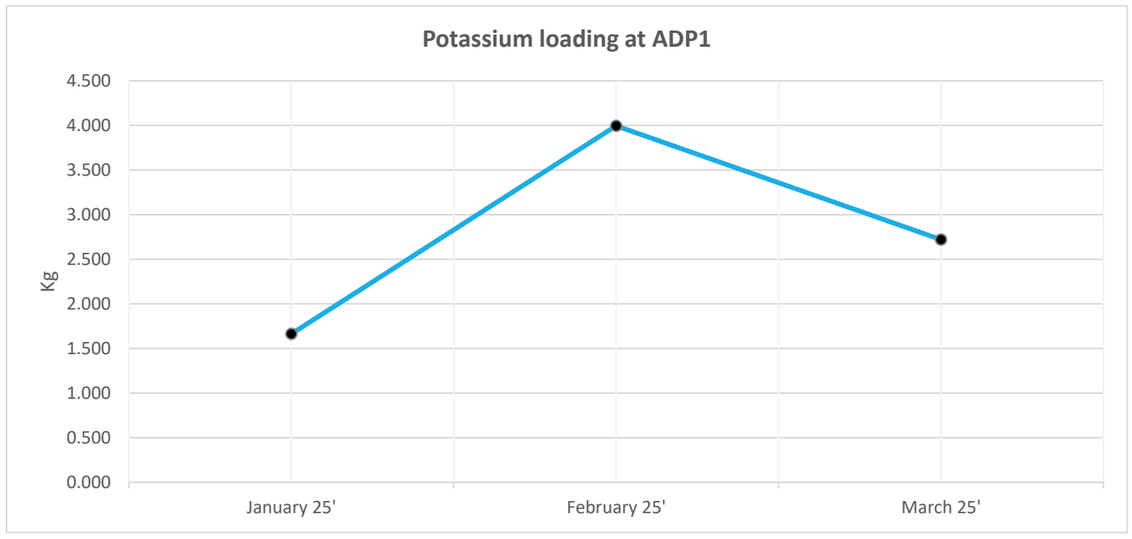

Chloride loading at ADP1
200.000
180.000
160.000
140.000
120.000
100.000
80.000
60.000
40.000
20.000
0.000
Kg
January 25'
February 25'
March 25'

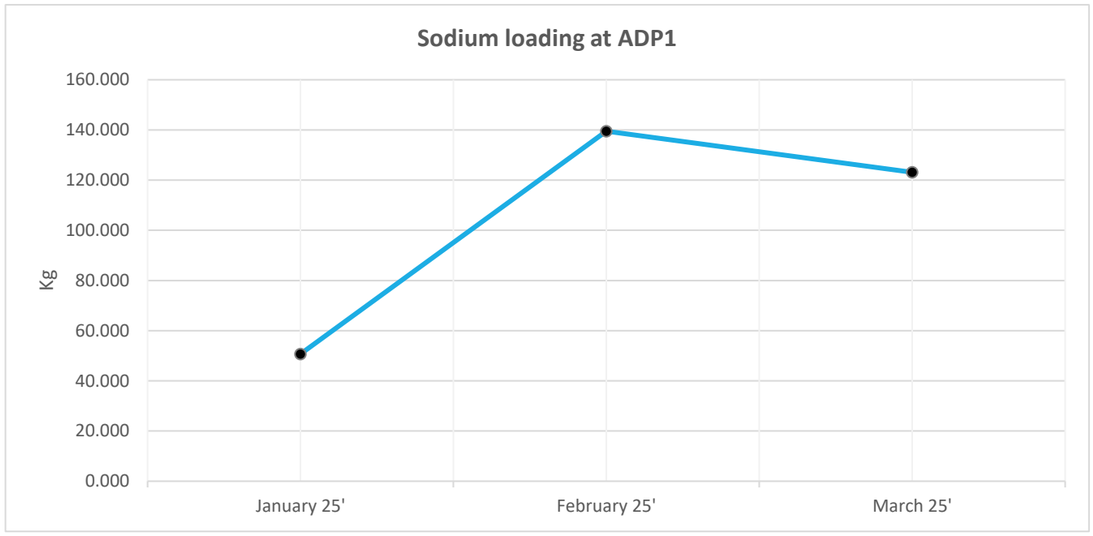

Bicarbonate (alkalinity as CaCO3 loading at ADP1
100.000
90.000
80.000
70.000
60.000
50.000
40.000
30.000
20.000
10.000
0.000
Kg
January 25'
February 25'
March 25'


Carbonate (alkalinity as CaCO3 loading at ADP1
Kg
90.000
80.000
70.000
60.000
50.000
40.000
30.000
20.000
10.000
0.000
January 25'
February 25'
March 25'


Calcium loading at ADP1
Kg
20.000
18.000
16.000
14.000
12.000
10.000
8.000
6.000
4.000
2.000
0.000
January 25'
February 25'
March 25'


Magnesium loading at ADP1
Kg
16.000
14.000
12.000
10.000
8.000
6.000
4.000
2.000
0.000
January 25'
February 25'
March 25'


Potassium loading at ADP1
Kg
4.500
4.000
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000
January 25'
February 25'
March 25'



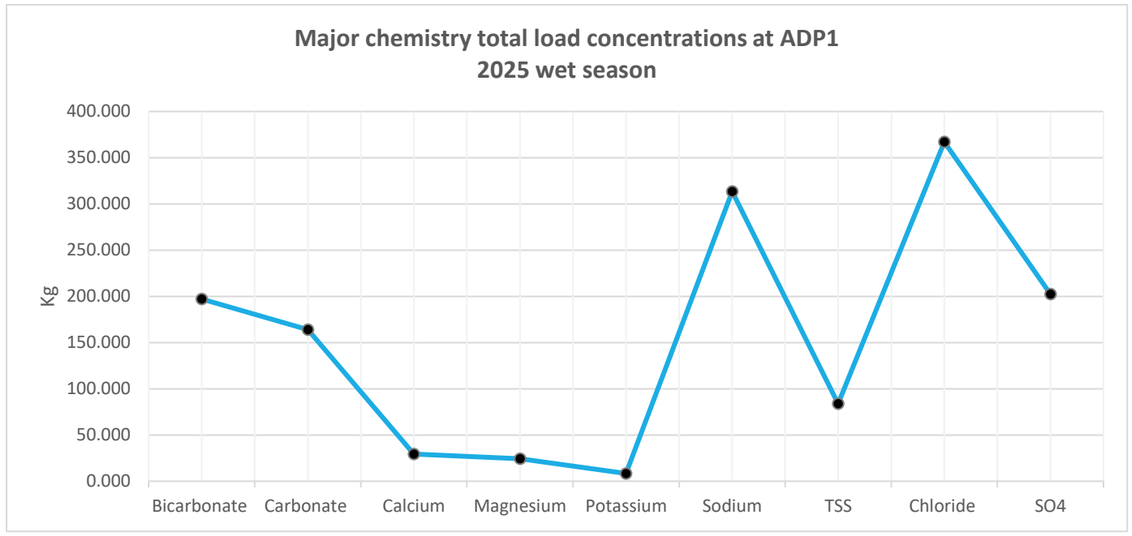
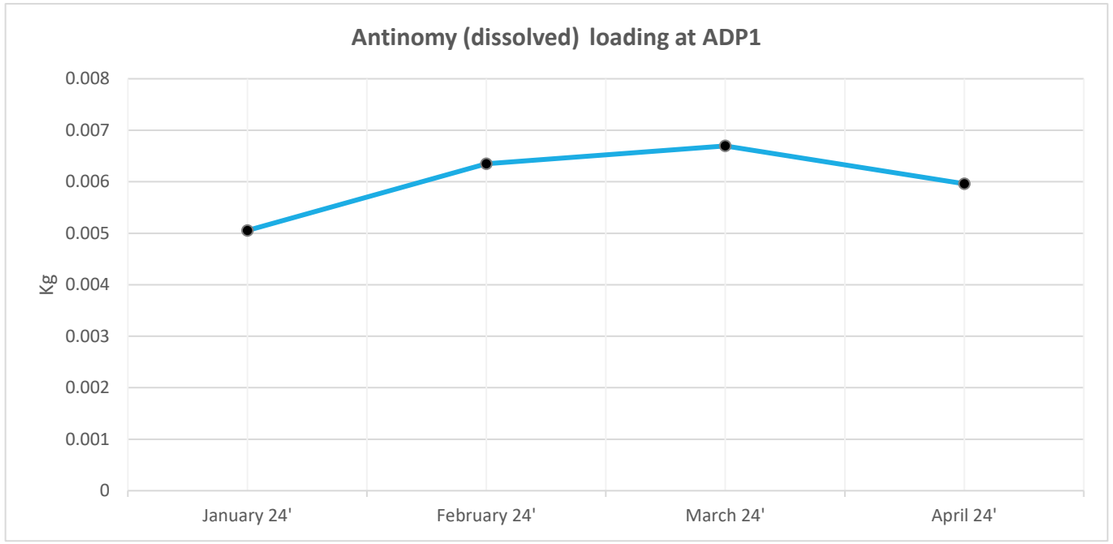
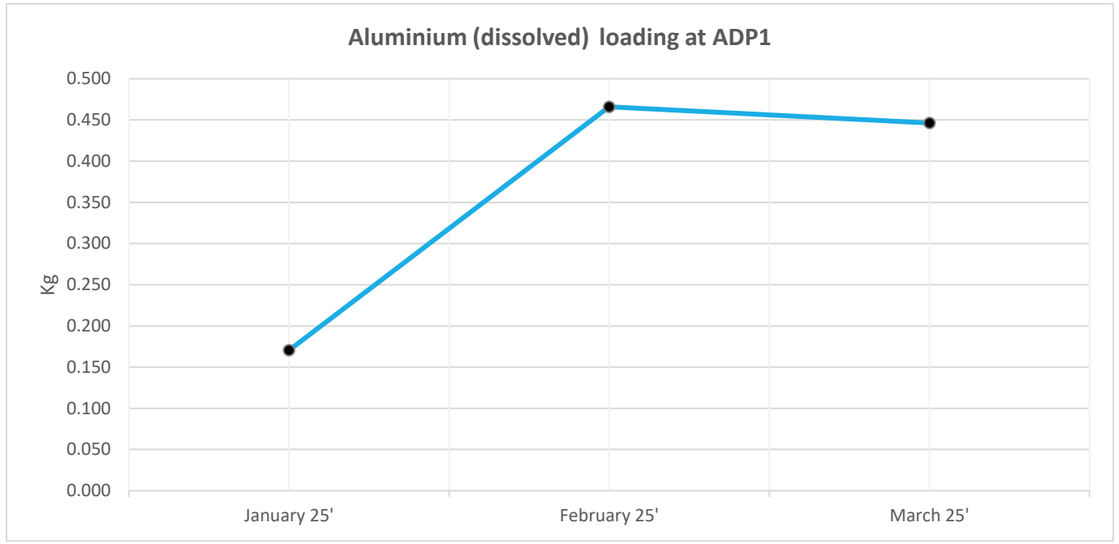
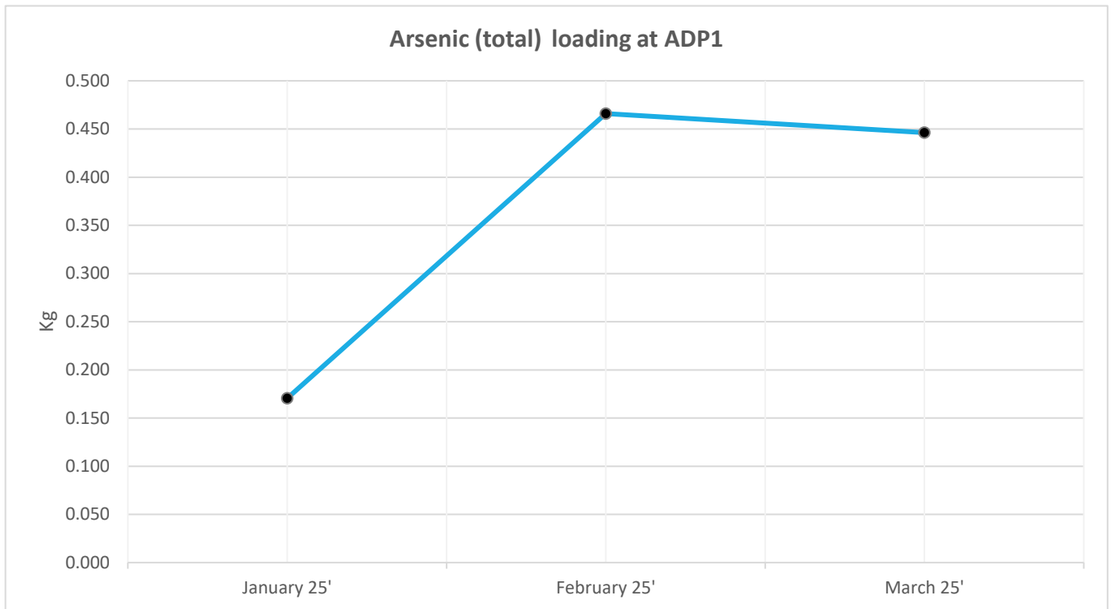
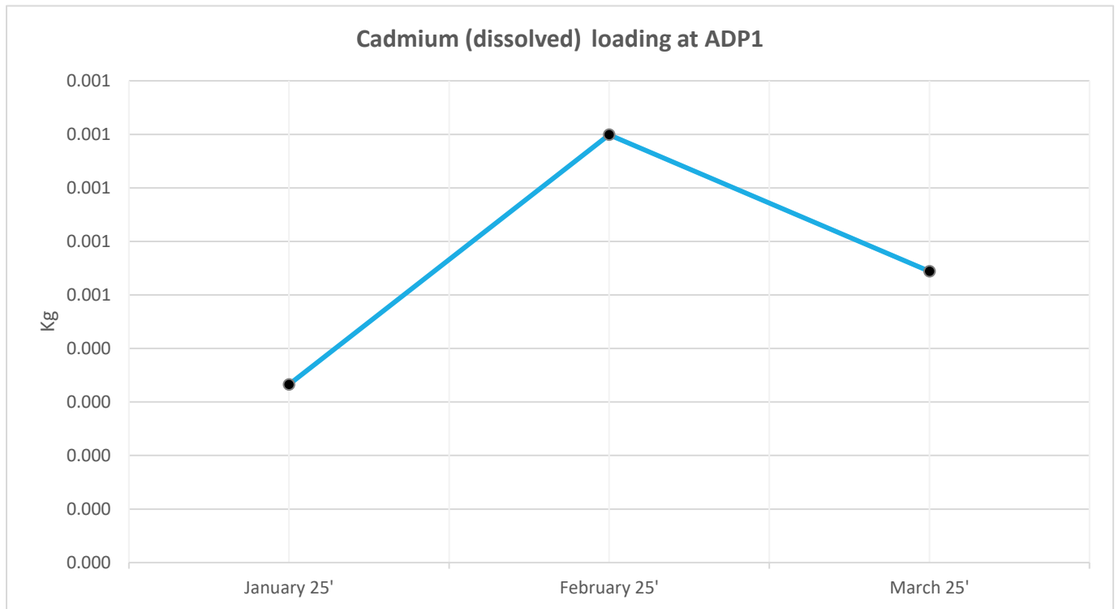


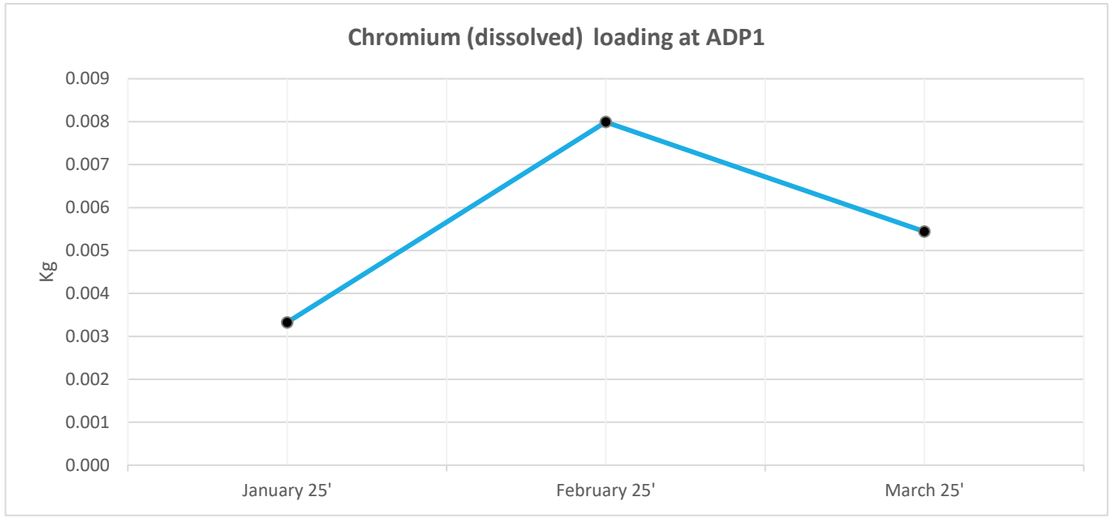
Figure 4-6 ADP1 General Chemistry Loads (kg)

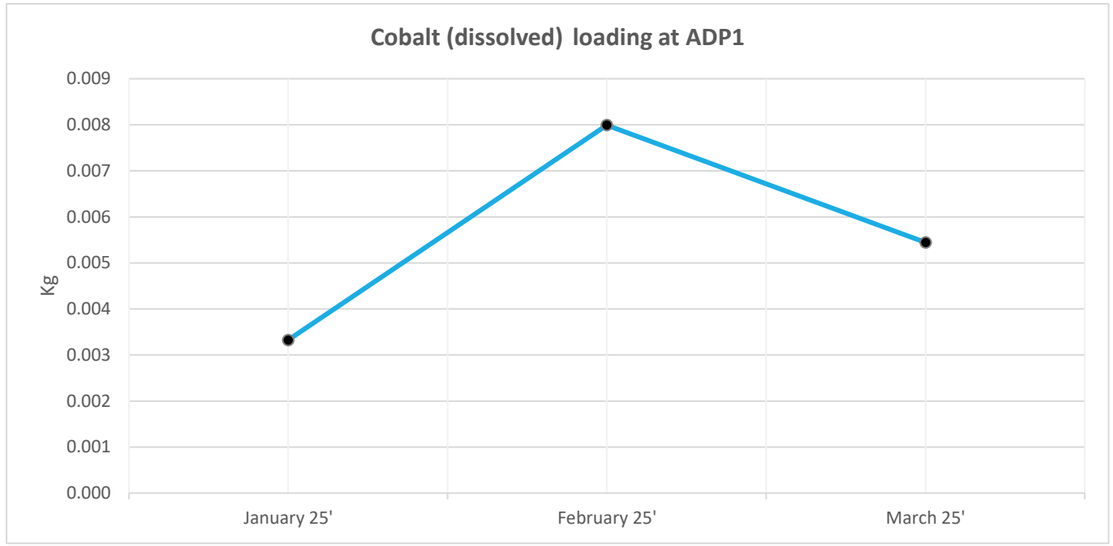

Antinomy (dissolved) loading at ADP1
Kg
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
January 24'
February 24'
March 24'
April 24'

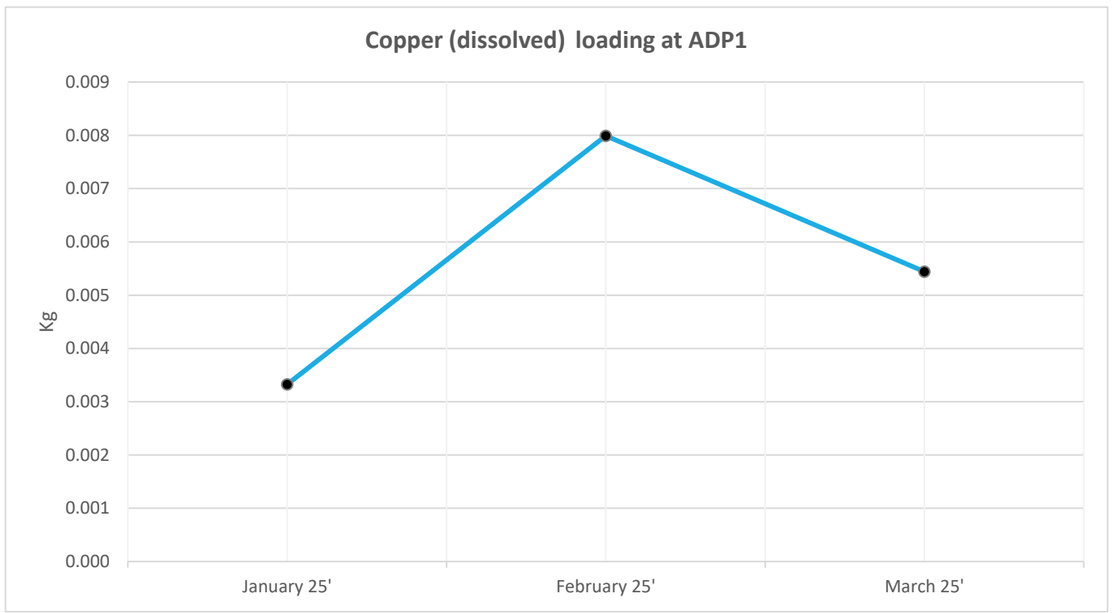

Aluminium (dissolved) loading at ADP1
Kg
0.500
0.450
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
January 25'
February 25'
March 25'

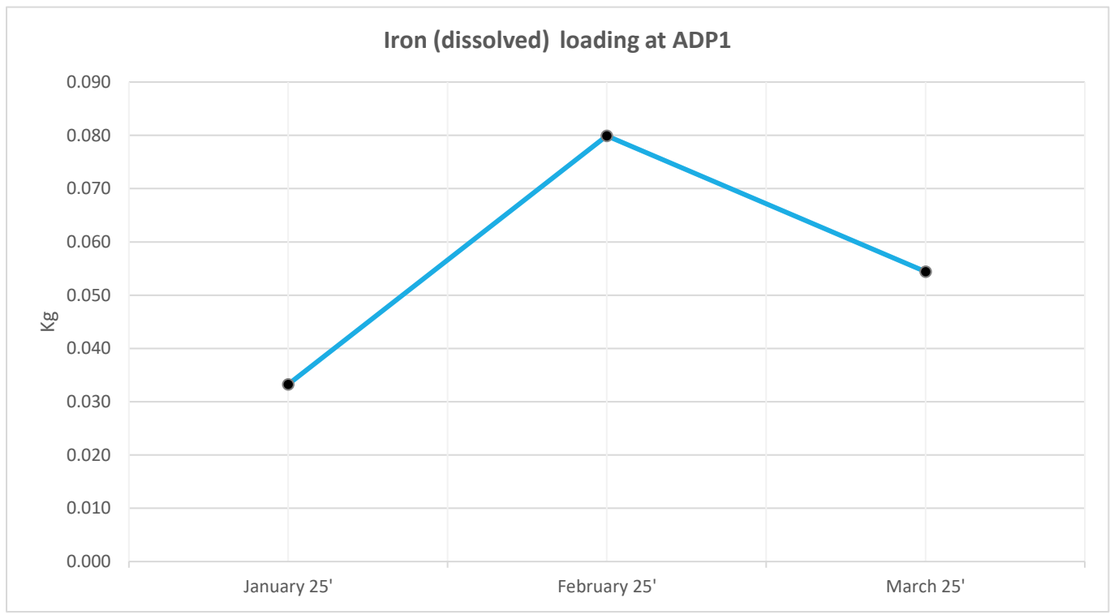

Arsenic (total) loading at ADP1
Kg
0.500
0.450
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
January 25'
February 25'
March 25'

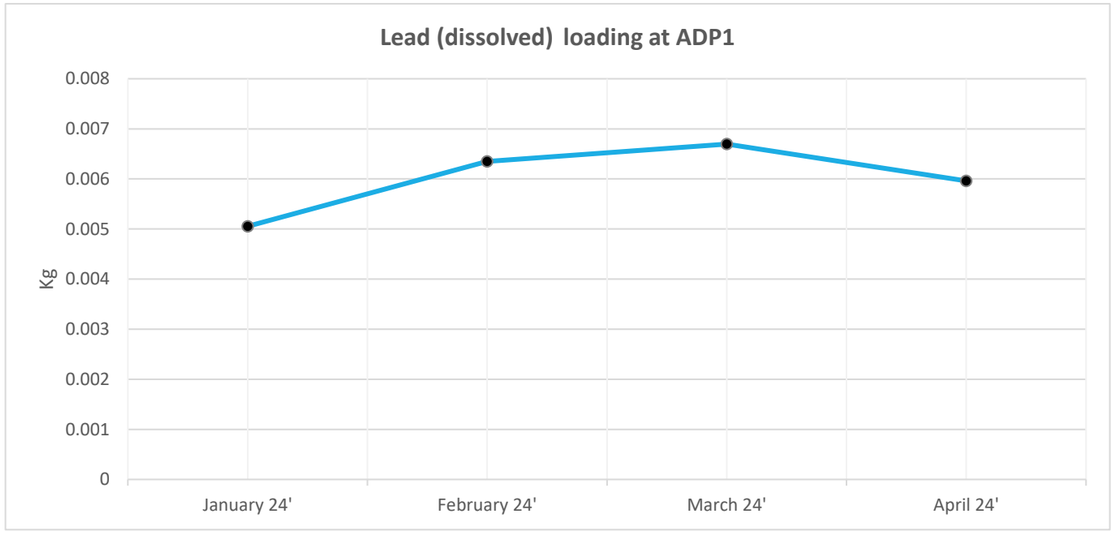

Cadmium (dissolved) loading at ADP1
Kg
0.001
0.001
0.001
0.001
0.000
0.000
0.000
0.000
January 25'
February 25'
March 25'

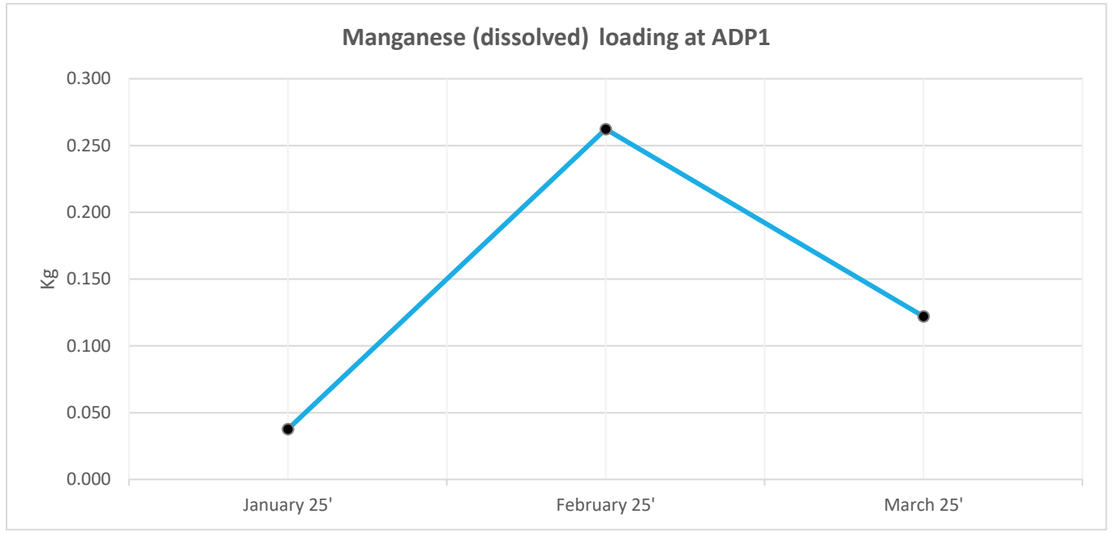

Chromium (dissolved) loading at ADP1
Kg
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
January 25'
February 25'
March 25'

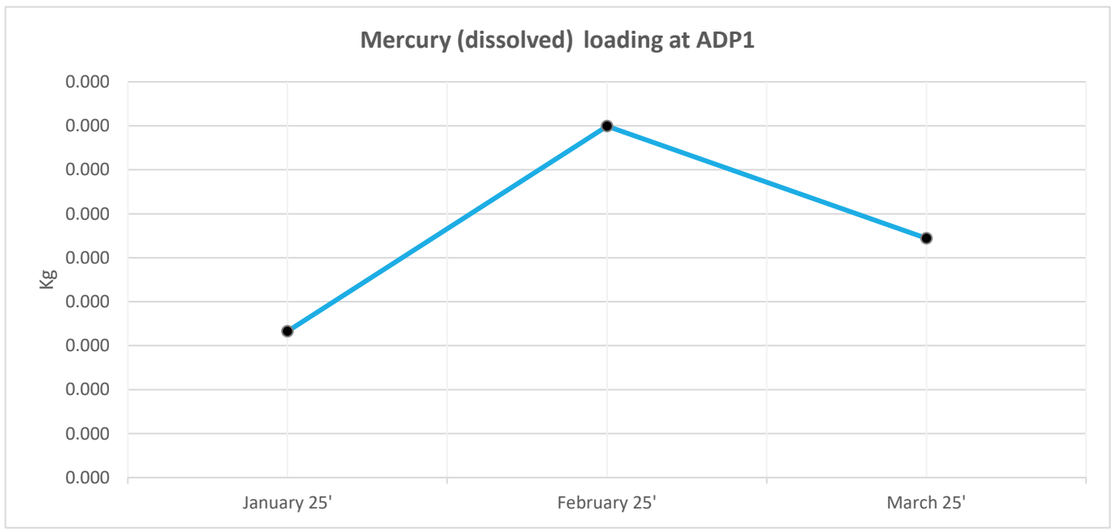

Cobalt (dissolved) loading at ADP1
Kg
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
January 25'
February 25'
March 25'

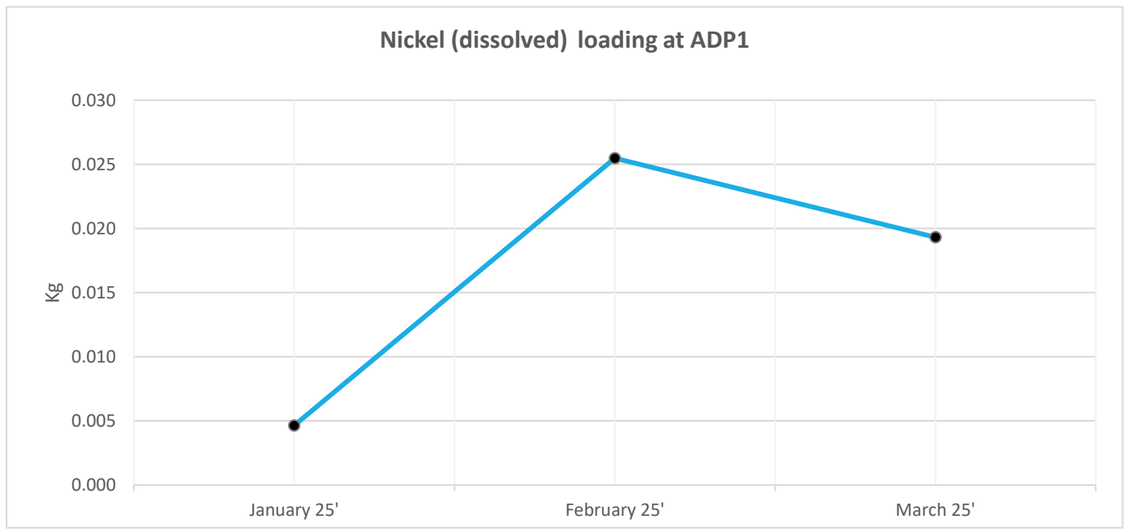

Copper (dissolved) loading at ADP1
Kg
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
January 25'
February 25'
March 25'


Iron (dissolved) loading at ADP1
Kg
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
January 25'
February 25'
March 25'


Lead (dissolved) loading at ADP1
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
Kg
January 24'
February 24'
March 24'
April 24'


Manganese (dissolved) loading at ADP1
0.300
0.250
0.200
0.150
0.100
0.050
0.000
Kg
January 25'
February 25'
March 25'


Mercury (dissolved) loading at ADP1
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
Kg
January 25'
February 25'
March 25'


Nickel (dissolved) loading at ADP1
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Kg
January 25'
February 25'
March 25'

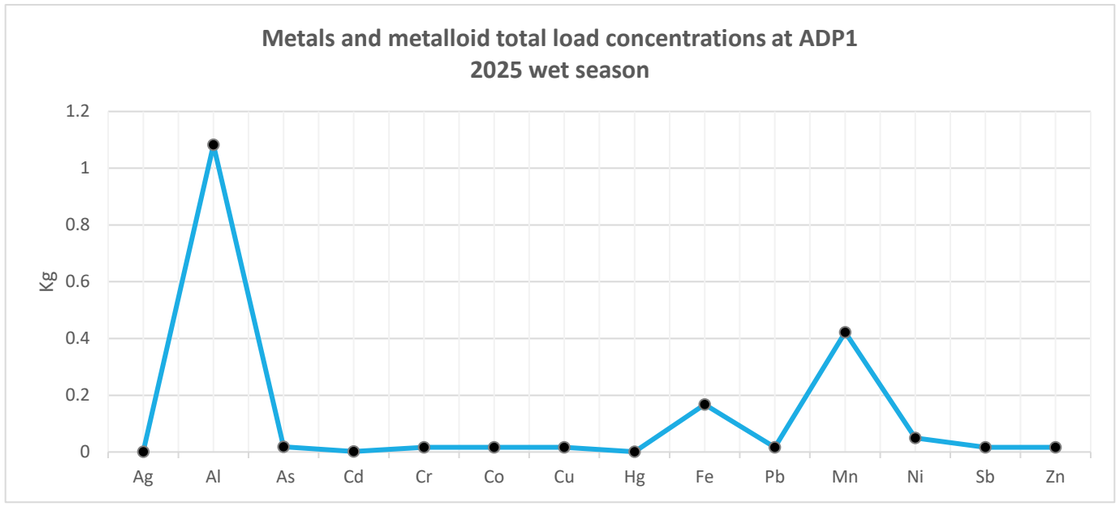


Figure 4-7 ADP1 Dissolved Metals Loads (kg)

4.3 Summary of Exceedances

As Condition 24 of the Licence, all exceedances at SWTG2 were recorded, investigated and corrective actions were performed when required. Water quality data for the reporting period are highlighted in Appendix A. Investigations for all exceedances included a checklist of potential factors such as quality of authorised discharged water, creek flow, depth, real time field parameters at SWTG2, rainfall, upstream field parameters and comparison of water quality to Monitoring Points.

Corrective actions during the period included servicing of the RO Plant to replace screens used during the water treatment process when zinc was recorded elevated at ADP1. Other corrective measures include continuous monitoring of field results and fast turnaround of laboratory analyzed samples from SWTG2.

Notifiable incidents as per Item 10 of the Licence are explained below. Water quality parameters exceedances above SWTG2 TV that were notifiable for the reporting period are listed in Table 5-1. In accordance with the Licence, a notifiable incident (Condition 25 and 26) is if one or both of the following items occurs:

- 10 (a) An exceedance of a trigger value specified in Item 7 at SWTG2, on three consecutive sampling occasions; and or
- 10 (b) A measurement outside the range for pH or DO specified in Item 7 at SWTG2 in Item 8, on three consecutive sampling occasions; and or
- 10 (c) An exceedance of three or more times a trigger value specified in Item 7 at SWTG2 of the Licence; and/or
- A discharge at a Monitoring Point not specified in Item 5 (ADP1); and/or
- A discharge from a source not specified in Item 6 (Treated (RO) Toms Gully pit water); and/or
- A failure to comply with condition 23 (ADP1).

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Table 4-5 Summary of Notifiable Incidents/Exceedances at SWTG2

Sample Date	Analyte	Trigger Value	Result	Detected	Item	Date Notified	Method of Notification
28/01/2025	Cadmium	0.2 µg/L	1.4 µg/L	4/02/2025	10 (c)	4/02/2025	Email
3/02/2025			1.6 µg/L	12/02/2025	10 (a),10(c)	12/02/2025	Email
10/03/2025			0.72 µg/L	19/03/2025	10 (a),10(c)	19/03/2025	Email
20/01/2025	Cobalt	1.4 µg/L	4.7 µg/L	31/01/2025	10 (c)	31/01/2025	Email
28/01/2025			16 µg/L	4/02/2025	10 (c)	4/02/2025	Email
3/02/2025			21 µg/L	12/02/2025	10 (a),10(c)	12/02/2025	Email
3/03/2025			6.4 µg/L	11/03/2025	10 (c)	11/03/2025	Email
10/03/2025			10 µg/L	19/03/2025	10 (a),10(c)	19/03/2025	Email
17/03/2025			1.6 µg/L	25/03/2025	10 (a)	25/03/2025	Email
24/03/2025			1.5 µg/L	1/04/2025	10 (a)	1/04/2025	Email
31/03/2025			3.7 µg/L	9/04/2025	10 (a)	9/04/2025	Email
7/04/2025			1.9 µg/L	15/04/2025	10 (a)	15/04/2025	Email
14/04/2025			1.8 µg/L	23/04/2025	10 (a)	23/04/2025	Email
22/04/2025			6.1 µg/L	1/05/2025	10 (a),10(c)	1/05/2025	Email
10/02/2025	Copper	1.4 µg/L	2 µg/L	18/02/2025	10 (a)	18/02/2025	Email
28/01/2025			5.5 µg/L	4/02/2025	10 (c)	4/02/2025	Email
3/02/2025			6.1 µg/L	12/02/2025	10 (a),10(c)	12/02/2025	Email
10/03/2025			2.9 µg/L	19/03/2025	10 (a)	19/03/2025	Email
17/03/2025			2 µg/L	25/03/2025	10 (a)	25/03/2025	Email
24/03/2025			1.7 µg/L	1/04/2025	10 (a)	1/04/2025	Email

Sample Date	Analyte	Trigger Value	Result	Detected	Item	Date Notified	Method of Notification
31/03/2025			3.9 µg/L	9/04/2025	10 (a)	9/04/2025	Email
7/04/2025			1.9 µg/L	15/04/2025	10 (a)	15/04/2025	Email
3/02/2025	Dissolved Oxygen	85-120 %	79.64%	7/02/2025	10 (b)	11/02/2025	Email
3/02/2025	Nickel	11 µg/L	40 µg/L	12/02/2025	10 (c)	12/02/2025	Email
17/02/2025	Total Suspended Solids	54 mg/L	190 mg/L	28/02/2025	10 (c)	25/02/2025	Email
20/01/2025	Zinc	8 µg/L	38 µg/L	31/01/2025	10 (c)	31/01/2025	Email
28/01/2025			110 µg/L	4/02/2025	10 (c)	4/02/2025	Email
3/02/2025			140 µg/L	12/02/2025	10 (a),10(c)	12/02/2025	Email
10/02/2025			15 µg/L	18/02/2025	10 (a)	18/02/2025	Email
3/03/2025			44 µg/L	11/03/2025	10 (c)	11/03/2025	Email
10/03/2025			66 µg/L	19/03/2025	10 (a),10(c)	19/03/2025	Email
17/03/2025			15 µg/L	25/03/2025	10 (a)	25/03/2025	Email
24/03/2025			13 µg/L	1/04/2025	10 (a)	1/04/2025	Email
31/03/2025			35 µg/L	9/04/2025	10 (a)	9/04/2025	Email
7/04/2025			17 µg/L	15/04/2025	10 (a)	15/04/2025	Email
14/04/2025			13 µg/L	23/04/2025	10 (a)	23/04/2025	Email
22/04/2025			45 µg/L	1/05/2025	10 (a),10(c)	1/05/2025	Email

4.4 Discussion of Anomalies

Anomalous have been detected in data results at several Monitoring Points from early monitoring events, prior to PGO obtaining the Licence. SWTG2 in particular shows anomalies in laboratory results for the entire 2016 monitoring period. The inclusion of this data would skew temporal data trends in water quality. All data during this period has been excluded from analysis due to lack of certainty of field sampling protocols and data quality. The 2016 data will remain in the database though greyed to highlight the uncertain dataset.

Other anomalies that include large variations in water quality data sampled from Monitoring Points in Mount Bundey Creek resulting from large flood events that breach Mount Bundey Creek, resulting in dilution to water quality. Conversely, low flows contributed to higher concentrations of analytes particularly during the last round of sampling in April. While these events are important to capture to recognize variations in water quality within seasons, data calculations and assessment using averages can skew overall results, hence median values are used to determine data trends.

4.5 Discussion of Results and Conclusions

This is the second year for water treatment and discharge under WDL 249. Controlled discharge of treated RO water from the Toms Gully Mine Pit commenced from January to March 2025 with a total of 33,523 KL of treated water discharged from ADP1. A total of 1544.5 mm of rainfall was recorded during the reporting period at Tom Gully which is slightly higher compared to the previous 2 years of rainfall data collection.

Creek flow in the upper catchment commenced in early January 2025 with creek heights and flows recorded at SWTG2. Cessation of creek flows were recorded at the end of April 2025. Creek flows and water depths aligned with rainfall events in the Mount Bundey Creek catchment. Creek heights varied from 0.39m with an average height of 0.91m. The largest flood events were in late February and mid-March (3.66 metres and 1.04 metres respectively).

During controlled discharge from January to March, there were 15 weekly water sampling events.

4.5.1 Authorised Discharge Point (ADP1)

ADP1 water quality short term median trends (n=4) were within WDL 249 GV's or below limits of LoR for all analytes except for dissolved oxygen and pH. Dissolved oxygen saturation at ADP1 was consistently low and is unlikely to ever meet limits set under WDL 249. This is because dissolved oxygen is generally consumed during the chemical treatment process and treated water is pumped directly from the RO plant permeate tank along a 600-metre pipeline and sampled at end of pipe at ADP1. Dissolved oxygen TVs were sourced from the ANZECC (2000) default trigger values for slightly disturbed ecosystems in lowland rivers within tropical Australia which is not fit for purpose for end of pipe thresholds. A review of dissolved oxygen limits at ADP1 location for acceptable levels is currently under investigation.

pH values at ADP1 were above the upper trigger value of 8.0, three out of the four monthly sampling events (75% of the time). The high pH values are attributed to the amount of sodium hydroxide injected into the permeate prior to discharge. This procedure has been revised resulting in less (NaOH) quantities injected at the final stage of treatment. Probe pH calibration procedures have also been revised. Based on the data provided (2024/25), the dilute nature of the treated discharge water accounts for less than 0.1% of average creek volumes. Combined with the stable pH levels observed at SWTG2 (median 6.2 pH, range 5.68-6.9) support the conclusion that elevated pH values at the ADP are unlikely to affect downstream water quality or cause contaminant accumulation in the sediments of the oxbow wetland or downstream environments.

During sampling events at ADP1, there was no observed floating debris, oil, greases, petroleum hydrocarbon sheen, scum, littler or other objectionable matter, caused no odours which would adversely affect the use and amenity of surrounding waters, or no algal blooms in the receiving water. There was no erosion or degradation to the beds and banks of a watercourse that would cause adverse impacts on plants and animals. There was no visible change in the behaviour of fish of other aquatic organisms in the receiving water. During sampling events there was observed small fish and aquatic insects in ADP1 pond.

Photo 4-1 Authorised Discharge Point pond and flow meter

4.5.2 Compliance Point (SWTG2)

SWTG2 is located downstream of Toms Gully Mine. SWTG2 captures water from the upper catchments, TGPA and authorised discharge water. Surface water physical and general chemistry median trends were within respective WDL 249 GV's. Dissolved metals were generally similar to their long-term trends with some analytes (cadmium, cobalt, copper, nickel and zinc) elevated above their respective discharge Trigger Values (TV's), and consistent with long term trends (2016-2025). When comparing water quality at SWTG2 and ADP1, it is clear that other causes are impacting concentrations at SWTG2 rather than the authorised discharged water. Particularly, the Oxbow Wetland (SWTG12) water quality which is a main contributor to the exceedances found at SWTG2. The wetlands were constructed as part of rehabilitation in the 2000's to capture, partially retain and ameliorate the surface water flows from the TGM disturbances areas (waste rock dump seepage, old mill site surface flows and TSF 1 and 2 seepage).

There were several reportable exceedances of TV's for metals triggering Item 10 (a) An exceedance of a trigger value, on three consecutive sampling occasions; and/ or Item 10(b) A measurement outside the range for pH or DO specified in Item 7 at SWTG2 in Item 8, on three consecutive sampling occasions; and/or Item 10 (c) An exceedance of three or more times a trigger value. All were reported to NT EPA.

PGO has submitted an amendment to WDL 249 in November 2025 to change SWTG2 location and surface water sampling programme. These amendments reflect a shift in compliance monitoring from the downstream creek SWTG2 to the end-of-pipe location ADP1. This amendment would allow the trigger values to be used specifically to measure the actual performance of the RO plant, rather than the confounding influence of legacy AMD inputs. The proposed amendment incentivises ongoing treatment performance and supports the beneficial uses of Mount Bundey Creek.

4.5.3 Other Monitoring Points

Surface water quality short- and long-term trends comparisons between upstream and downstream of TGPA reflect the impacts of existing historical mine disturbances.

The upstream water Monitoring Point, SWTG1A, physical and chemical short term median trends were representative of no impact from mining activities and recorded dissolved metals concentrations below laboratory LoR except for dissolved Aluminium, Iron, Manganese and Zinc.

The downstream water Monitoring Point, SWTG3A, physical and chemical water quality short term median trends were elevated for cadmium, cobalt, copper, nickel, and zinc or below laboratory LoR. A review of the downstream location will be conducted, as this may still be in a downstream impact area of Mount Bundey creek or affected by the nearby pastoral activities.

SWTG12 (Oxbow wetlands) water quality long term median trends were elevated for cadmium, cobalt, copper, nickel and zinc or below laboratory LoR. Water quality is indicative of influences from TGM disturbances and surface flows and seepage.

The downstream water Monitoring Point of TGM and upstream Monitoring Point of SWTG2, MBC01A, water quality short term median trends were elevated for cadmium, cobalt, copper, nickel, and zinc or below Laboratory LoR. Water quality is indicative of influences from TGM surface flows and dilution in Mount Bundey Creek.

TGM Pit and the Evaporation Ponds 1 and 2 (onsite poor water quality impoundments are representative of the existing disturbances at the TGM. Water from all the impoundments is pumped to the water treatment plant. These Ponds and Pits form part of PGO's commitment to reduce poor water inventory onsite.

This is the second year of water treatment and release. PGO have invested significant financial commitments to managing water at the TGM with the objective to reduce water inventory and prevent the potential for pit overtopping resulting in discharge off tenement. Further, in the course of re- mining Toms Gully Mine, PGO has committed to significant remediation activities to repair old and technically complex mined domains with the objective to stabilize and prevent offsite pollution during mining and ultimately reduce cumulative impacts.

5 Conclusions and Proposed Actions

5.1 Compliance with Assessment Criteria

All monitoring requirements (as per conditions C27-C36) were met during the reporting period and detailed in Table 5-1. Treated water at ADP1 has met the conditions of the WDL 249. SWTG2 was triggered several times including other surface water Monitoring Points at TGPA and downstream during the reporting period due to the influence of poor water quality passively discharging from degraded mined domains. In the course of remining Toms Gully mine, PGO has commitment to significant remediation activities to repair old, mined domains with the objective to stabilise and prevent offsite pollution.

Whilst access to Monitoring Points was not an issue during this reporting period, SWTG1A, MBC01A will continue to be a challenge particularly after heavy rain events and flooding.

PGO has submitted an amendment to WDL 249 in November 2025 to change SWTG2 location and surface water sampling programme. These amendments reflect a shift in compliance monitoring from the downstream creek SWTG2 to the end-of-pipe location ADP1. This amendment would allow the trigger values to be used specifically to measure the actual performance of the RO plant, rather than the confounding influence of legacy AMD inputs. The proposed amendment incentivises ongoing treatment performance and supports the beneficial uses of Mount Bundey Creek.

Table 5-1 Compliance Against Assessment Criteria

Green coloured dots indicate the specified Condition of the Licence has been met, yellow-coloured dots indicate the Condition was partially met with explanatory notes, and red coloured dots indicate the Condition has not been met.

WDL 249 Monitoring Conditions													
	Monitoring locations		C27	C28	C29 (29.1-29.2)	C30	C31	C32	C33	C34 (34.1- 34.3	C35 (35.1-35.6)	C36 (36.1)	C36 (36.2)
Mount Bundey Creek monitoring Points	SWTG1A	Upstream	●	●	●	●	●	●	●	●	●	●	●
	MBC01A	Upstream (Downstream of Oxbow Wetlands)	●	●	●	●	●	●	●	●	●	●	●
	SWTG2	Compliance	●	●	●	●	●	●	●	●	●	●	●
	SWTG3A	Downstream	●	●	●	●	●	●	●	●	●	●	●
Other Monitoring Points on tenement	ADP1	Authorised Discharge Point	●	●	●	●	●	●	●	●	●	●	●
	SWTG12	Oxbow Wetlands	●	●	●	●	●	●	●	●	●	●	●
	EP1	Evaporation Pond 1	●	●	●	●	●	●	●	●	●	●	●
	EP2	Evaporation Pond 2	●	●	●	●	●	●	●	●	●	●	●
	TGM PIT	Toms Gully Pit	●	●	●	●	●	●	●	●	●	●	●
Explanatory Notes			Samples were collected as per the monitoring programme timeframe when access was permissible and flow occurring.										

5.2 Potential Environmental Harm

Under the *Water Act* 1992, Environmental harm as defined in the as:

' Any harm to or adverse effect on, or potential harm to or adverse effect on, the environment'.

Based on the information and assessment of information gathered during the reporting period, the licenced activity involving discharge of treated water to Mount Bundey creek via ADP1 during the 2025 reporting period was assessed as to whether the Licensed Action is having an adverse effect on, or potential harm to or adverse effect on, the environment. The overall risk to Mount Bundey Creek is considered low.

The risk rating decision was determined based on the following.

- Discharge treated water consisted only of RO water and there were no exceedances of the WDL249 discharge trigger values for dissolved metals. Therefore it is unlikely that there were any adverse impacts of the discharge associated with metal toxicity. Considering the dilute nature of the water discharged, (accounting for less than 0.1% of the average volumes flowing through Mount Bundey creek), it is unlikely that the contaminant loads would have resulted in any contaminant accumulation in the sediments of the oxbow wetland or downstream environments.
- There was appropriate measurement devices installed to measure and record each discharge event;
- During sampling events at ADP1, there was no observed floating debris, oil, greases, petroleum hydrocarbon sheen, scum, littler or other objectionable matter, caused no odours which would adversely affect the use and amenity of surrounding waters, or no algal blooms in the receiving water. There was no erosion or degradation to the beds and banks of a watercourse that would cause adverse impacts on plants and animals. There was no visible change in the behaviour of fish of other aquatic organisms in the receiving water. There was observed small fish and aquatic insects in ADP1 pond.
- Confidence of data robustness with the adherence to the WDL 249 field monitoring programme to ensure appropriate QA/QC, data gathering, analysis and interpretation.

PGO water management goals at TGPA whilst under care and maintenance are to reduce the overall poor water quality inventory and prevent the potential for pit water overtopping off MLN 1058. Whilst pit water levels increased by 12cm in late November as a result of Cyclone Fina, water transfer of 6000 m3 and treatment plant offline for 3 weeks due to repairs and equipment hold ups, PGO are committed to ensuring no uncontrolled pit water overtopping. In the course of remining Toms Gully mine, PGO has commitment to significant remediation activities to repair old and technically complex mined domains with the objective to stabilise and prevent offsite pollution. This is the second year of water treatment and release, and further monitoring will continue in 2025-26 to better understand conditions, and refinement of treatment processes.

5.3 Major assumptions or uncertainties

5.3.1 Assumptions

In order to meet the WDL 249 monitoring objectives the following set of assumptions were followed:

- Sample method bias was minimised by having the same consultants conducting the field programme throughout the entire season.
- Field meters and other equipment maintained and calibrated to PGO water sampling programme procedure.
- Field instrumentation (including handheld meters, telemetry equipment and in situ probes) and maintained in accordance with retailers' instrumentation specification and maintenance documents.
- Sampling techniques, as per PGO water sampling programme and guidance with the AS/NZS 5667 and ANZECC/ARMCANZ.
- Sample containers, preservation techniques, holding times compliant with lab specifications.
- The statistical analysis method applied was median values short- and long-term trend analysis.
- To obtain a representative surface water sample to compare against guideline values and avoid high variability, creek sampling occurred only when creeks at the first flush, in full and recessional flows (not pooled areas), during daylight hours and in the same location where safe to do so.

5.3.2 Uncertainties

Uncertainties for the TGPA is weather conditions with unpredicted rainfall in upper or lower catchments impacting fluctuations in the Mount Bundey Creek system. This ultimately prevents opportunities for discharge or conversely constrains onsite inventory.

5.4 Proposed Changes and Actions

PGO has proposed amendments to WDL 249 in line with PGO's management goals to focus on the licensed activity involving the discharge of RO treated water. An amendment application to the Licence was submitted to the NT EPA on the 10 October 2025 to include changes to the location of SWTG2 to end of pipe compliance and sampling programme; and variation to trigger values for pH, dissolved oxygen, dissolved cadmium and zinc. A revised version was resubmitted on the 26 November 2025 that included a redaction of the proposed changes to trigger values for pH, dissolved oxygen, dissolved cadmium and zinc. PGL received a draft License for review on the 19th December 2025 and is yet to respond to the Department.

6 Sediment and Macroinvertebrate Monitoring

Aquatic Ecology Services conducted biological monitoring in accordance with Item 11 (Condition 27) of the WDL 249 in April 2025 involving sediment and macroinvertebrate sample, analysis and reporting. The Biological Monitoring Report is provided in Appendix D.

Future monitoring should focus on upstream and downstream of the ADP on Mount Bundey Creek, where the downstream Monitoring Point is further from the mine. Doing this will enable the biological monitoring programme to be in line the Licensed activity rather than the broader TGM and old mine disturbances and Monitoring Point MBC03, SWTG3A or SWTG3 could be utilised as a downstream monitoring point.

Aquatic ecology surveys were successfully completed at Toms Gully Mine in 2025 where access, sufficient water and safety allowed. The monitoring, which involved sediment and macroinvertebrate sampling, captured broader site activities rather than just the Licensed activity. Key findings included:

- Exceedances of metal guideline values in water and sediment, particularly arsenic at SWTG2, with some metals potentially becoming ecotoxic at low pH levels. Impaired aquatic health was evident in macroinvertebrate metrics downstream of the mine, with a notable absence of fish at SWTG2 in 2025, indicating the negative impact of poor water quality.
- Surface water sampling pointed to possible point-source pollution from the mine’s infrastructure. The monitoring suggests that while wet season discharges in 2025 haven't significantly affected aquatic ecosystems, future discharge may improve water quality.
- Continued monitoring, including at additional downstream Points, is recommended to fully assess the spatial extent of the impacts. A shorter than average wet season hindered sampling at Coulter Creek due to insufficient water, but similar habitat sites on Mount Bundey Creek provided valuable comparisons.

7 Incident Reporting

7.1 Incident Response

Anyone working at the TGPA must report an incident that causes or threatens material or significant environmental harm. This is known as a notifiable incident and the DLPE Mining Division must be notified within 24 hours of the incident occurring. This is required under Section 225 of the EP Act.

Under a care and maintenance regime, typical environmental incidents that may occur at TGPA include:

- Waste Discharge Licence noncompliance;
- Uncontrolled discharge of wastewater from pipe;
- Hydrocarbon spills and leaks from vehicles/machinery/pumps/generators;
- Disturbance/destruction to or contravene the AAPA Certificate, heritage site;
- Destruction to Pastoral Lease holder property (i.e., cattle, fencing, gates, designated access tracks);
- Unauthorised access;
- Wildfires destroying assets (property, pumps, fencing, cattle);
- Breach of Pit water; and
- Noise and dust complaints.

7.2 Incidents Recorded/ Reported During the Reporting Period

Nil environmental incidents related to activities under WDL 249 occurred at the TGPA during 2024/2025 reporting period. The environment incident reporting contacts are detailed in Table 7-1.

Table 7-1 Incident Reporting Contact Details

Cause/incident event	Department	Notification/ Inform	Timeline	Contact
Environmental/ community relations and cultural heritage incidents occurring on and off tenement. An Incident which causes or is threatening or may threaten to cause pollution resulting in material environmental harm or serious harm.	NT Department of Lands Planning and Environment (DLPE)	*From 1 July 2024, activities will be regulated under the Environment Protection Act (EP) 2019* Waste Discharge Licenses -Notifiable Incidents are to be reported to Environmentregulation@NT.gov.au and notifications and Investigations cc'd to DLPE Mining Division as per Condition 17 of TGM Authorisation. All other Notifiable Incidents are to be reported to DLPE Mining Division MineralInfo.DLPE@nt.gov.au and Environment Regulation Division and DLPE Environment Regulation Team. Environmentregulation@NT.gov.au (In accordance with Section 225 *Environment Protection Act 2019).* *https://nt.gov.au/__data/assets/pdf_file/0012/203412/notification-of-environmental-incident-form.pdf*	Notification within 24 hours.	*From the 1 July 2024 the new contact is:* **08) 8999 5324** Emergency outside business hours (8am-7pm ACST)- **0419 036 035** DLPE , Mining Division Email: MineralInfo.DLPE@nt.gov.au GPO Box 4550 Darwin NT 0801 Waste Discharge Licences – Notifiable Incidents are to be reported to Environment Regulation Team, division of DLPE Environmentregulation@NT.gov.au GPO Box 3675, Darwin NT 0801

Cause/incident event	Department	Notification/ Inform	Timeline	Contact
Interference, damage, /destruction of a sacred site or unauthorised activity/entry in a restricted work area/ sacred site	Aboriginal Areas Protection Authority	Provide the following information (site name, location, type of damage, who discovered damage, who caused damage, witnesses, actions taken to prevent damage, ongoing threats to site) *NT Aboriginal Sacred Sites Act* 1989 *https://www.aapant.org.au/our-services/register-sacred-site#reporting*	Notification as soon as possible after first becoming aware of incident.	**(08) 8999 4365** or **08 8951 5023** e-mail to: enquiries.aapa@nt.gov.au GPO Box 1890, Darwin NT 0801
Interference, damage, removal, destruction, not inform of discovery of Aboriginal or Macassan archaeological objects/places with heritage value.	NT Dept of Territory Families, Housing and Communities (TFHC), Heritage Branch	Provide the following information to the Heritage Council CEO including the description, location of the Aboriginal or Macassan archaeological object/place, person name and address, owner or occupier of the place, if known. *NT Heritage Act* 2011 *https://tfhc.nt.gov.au/heritage,-libraries-and-archives/heritage-council-members*	A report to the CEO within 7 days of the discovery of Aboriginal or Macassan archaeological objects/places.	**(08) 8999 5039** e-mail to: heritagecouncil@nt.gov.au PO Box 4198 Darwin NT 0801

Cause/incident event	Department	Notification/ Inform	Timeline	Contact
For all mining work- related injury, illness or dangerous incident occurring on and off tenement. Incidents including: - Serious injury or illness; - dangerous incident; - death of a person	NT Work Safe on **1800 019 115** **fax (08) 8999 5141** and report a notifiable incident/event. Contact NT police, fire, and emergency services for life-threatening situation on **000**.	Section 35 to 39 Incident Notification form (in accordance with the *Work Health and Safety (National Uniform Act 2011*) of a 'notifiable incident. *https://worksafe.nt.gov.au/forms-and-resources/bulletins/work-health-and-safety-incident-notification*	Notification as soon as reasonably practical. And if required by the regulator provide a written notice of the incident within 48 hours of that requirement being made.	e-mail to: NTWorkSafe@nt.gov.au GPO Box 1722 Darwin NT 0801

8 Glossary

Abbreviations	Definitions
ADP	Authorised Discharge Point
BUD	Beneficial Use Declaration
CoC	Chain of Custody
DLPE	Department of Lands Planning and Environment
DITT	Department of Industry, Tourism and Trade
DNRETAS	Department of Natural Resources, Environment, The Arts and Sport
EA Act	*Environmental Assessment Act 1982 (NT)* Please note - This instrument has been Repealed by the Environment Protection Act 2019, NO. 31 which commenced on the 28/06/2020.
EP Act	*Environment Protection Act 2019 (NT)*
EMP	Environmental Management Plan
EMR	Environmental Monitoring Report
KL	Kilolitre
KL/Sec	Kilolitre per second
Km	Kilometre
LoR	Laboratory Limits of Reporting
ML	Megalitre
mm	Millimetre
N/A	Not Applicable
NATA	National Association of Testing Authorities
NT EPA	Northern Territory Environment Protection Authority
PL	Pastoral Lease
PGO	Primary Gold Limited
PPL	Perpetual Pastoral Lease
RoM	Run of Mine
RRPA	Rustlers Roost Project Area
SoCs	Sites of Conservations Significance
TGPA	Toms Gully Mine
TGPA	Toms Gully Project Area
TV	Trigger Values
WA	*Water Act 1999*
WRD	Waste Rock Dump
QA/QC	Quality Assurance and Quality Control

9 References

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5. Northern Territory Environment Protection Authority. 2022. *Waste Discharge Licence; WDL249*. Northern Territory Government, Issued to Primary Gold Limited.
6. Northern Territory Environment Protection Authority. 2016. *Guideline for Reporting on Environmental Monitoring; Version 1.0.* Northern Territory Government, Darwin.
7. Schultz, T. D. (2002). Water quality monitoring in the Mary River Catchment, Technical Report 42/2002. Department of Infrastructure, Planning and Environment.

10 Appendices

Appendix A. Water Quality Data and Loading calculations

To be provided in excel under a separate cover.

Appendix B. Regulatory Communication's Register

Communication Type/Date/ref	Direction	Feedback	Action/response and reference in EMR
23/12/2024 Email Communications	NT EPA to PGO	Request FTP Site	23/12/2024 response from Sally Horsnell
22/01/2025 Email Communications	PGO to NT EPA	Notification of commencement of RO treated wastewater discharge as per WDL 249	23/01/2025 response from Mia Sandgren
30/01/2025 Email Communications	NT EPA to PGO	WDL249 Toms Gully request for Excel data for WQ	05/01/2025 response from Sally Horsnell
31/01/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of copper and zinc more than 3 times the trigger value (Item 10c) at SWTG2 on the 20/01/25.	07/02/2025 response from Ranid May
05/01/2025 Email Communications	PGO to NT EPA	RE: WDL249 Toms Gully Excel data for WQ	6/01/2025 response form Ranid May
05/02/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of cadmium, copper, cobalt and zinc more than 3 times the trigger value (Item 10c) at SWTG2 on the 28/01/25.	05/02/2025 response from Ranid May
07/02/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of cobalt and zinc more than 3 times the trigger value (Item 10c) at SWTG2 on the 20/01/25.	10/02/2025 response from Ranid May
11/02/2025 Email Communications	NT EPA to PGO	Review of WDL 249 Investigation Report for an exceedance of the cobalt and zinc	19/02/2025 response from Sally Horsnell
11/02/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of dissolved oxygen outside the range on 3 consecutive sampling occasions (Item 10b) at SWTG2 on the 03/02/25.	12/02/2025 response from Ranid May
19/02/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of cobalt and zinc over 3 consecutive sampling occasions (Item 10a) at SWTG2 on the 20/01/25.	20/02/2025 response from Ranid May
19/02/2025 Email Communications	NT EPA to PGO	RE: Tom's Gully Monitoring Report - Request for revised submission and further information	-
20/02/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of cadmium, cobalt, copper and zinc more than 3 times the trigger value (Item 10c) at SWTG2 on the 28/01/25.	20/02/2025 response from Mia Sandgren
25/02/2025 Meeting	PGO to NT EPA	WDL249 - Tom's Gully. Meeting at EPA office, amendment and TG monitoring Report	-
26/02/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of dissolved oxygen outside the range on 3 consecutive sampling occasions (Item 10b) at SWTG2 on the 03/02/25.	27/02/2025 response from Ranid May
26/02/2025 Email Communications	PGO to NT EPA	raw data attached -WDL 249 Investigation Report for an exceedance of TV's for dissolved oxygen (over 3 consecutive sampling occasions) (Item 10b) at SWTG2.	27/02/2025 response from Ranid May
28/02/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of Total Suspended Solids more than 3 times the trigger value (Item 10c) at SWTG2 on the 17/02/25.	28/02/2025 response from Ranid May
28/02/2025 Email Communications	NT EPA to PGO	Toms Gully Inspection 26 March	-
04/03/2025 Email Communications	PGO to NT EPA	RE: Tom's Gully Monitoring Report - Request for revised submission and further information – extension request	04/03/2025 response from Ranid May
13/03/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance TSS more than 3 times the trigger value (Item 10c) at SWTG2.	14/03/2025 response from Ranid May
18/03/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of cobalt and zinc more than 3 times the trigger value (Item 10c) at SWTG2 on the 03/03/25.	19/03/2025 response from Ranid May

Communication Type/Date/ref	Direction	Feedback	Action/response and reference in EMR
19/03/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of cobalt and zinc over 3 consecutive sampling occasions and more than 3 times the trigger value (Item 10a and 10c) at SWTG2 on the 24/02/25, 03/03/2025, 10/03/25.	19/03/2025 response from Ranid May
19/03/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of copper and zinc more than 3 times the trigger value (Item 10c) at SWTG2 on the 28/01/25, 03/02/25 and 10/02/2025.	20/03/2025 response from Ranid May
21/03/2025 Email Communications	PGO to NT EPA	Resubmission of WDL 249 Report 2023/24 for Toms Gully Project Area	24/03/2025 response from Ranid May
25/03/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of copper and zinc more than 3 times the trigger value (Item 10c) at SWTG2 on the 03/03/2025.	26/03/2025 response from Ranid May
26/03/2025 Site visit to Toms Gully	PGO to NT EPA	Site Inspection Toms Gully	-
02/04/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of copper, cobalt and zinc over 3 consecutive sampling occasions (Item 10a) at SWTG2 on the 10/03/25, 17/03/2025, 24/03/25.	02/04/2025 response from Ranid May
02/04/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of cadmium, cobalt, copper and zinc over 3 consecutive sampling occasions and more than 3 times the trigger value (Item 10a and 10c) at SWTG2 on the 24/02/2025, 03/03/2025, 10/03/2025.	03/04/2025 response from Ranid May
08/04/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of cobalt, copper and zinc over 3 consecutive sampling occasions (Item 10a) at SWTG2 on the, 03/03/2025, 10/03/2025, 17/03/2025.	09/04/2025 response from Ranid May
09/04/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of copper, cobalt and zinc over 3 consecutive sampling occasions (Item 10a) at SWTG2 on the 17/03/2025, 24/03/2025, 31/03/2025.	10/04/2025 response from Ranid May
11/04/2025 Email Communications	PGO to NT EPA	Toms Gully WDL 249 EMR Final with updated monitoring locations map	11/04/2025 response from Ranid May
15/04/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of copper, cobalt and zinc over 3 consecutive sampling occasions (Item 10a) at SWTG2 on the 24/03/2025, 31/03/2025, 07/04/2025.	
15/04/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of copper, cobalt and zinc over 3 consecutive sampling occasions (Item 10a) at SWTG2 on the 10/03/25, 17/03/2025, 24/03/25.	16/04/2025 response from Ranid May
23/04/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of copper, cobalt and zinc over 3 consecutive sampling occasions (Item 10a) at SWTG2 on the 17/03/2025, 24/03/2025, 31/03/2025.	29/04/2025 response from Ranid May
23/04/2025 Email Communications	PGO to NT EPA	Notification for the exceedance of cobalt and zinc over 3 consecutive sampling occasions (Item 10a) at SWTG2 on the 31/03/2025, 07/04/2025, 14/04/25.	29/04/2025 response from Ranid May
01/05/2025 Email Communications	PGO to NT EPA	Investigation Report for the exceedance of copper, cobalt and zinc over 3 consecutive sampling occasions (Item 10a) at SWTG2 on the 24/03/2025, 31/03/2025, 07/04/2025.	01/05/2025 response from Ranid May
02/05/2025 Email Communications	PGO to NT EPA	Notification of cease of RO treated wastewater discharge as per WDL 249	02/05/2025 response form Ranid May
01/05/2025 Email Communications	PGO to NT EPA	RE: WDL249 Toms Gully Excel data for WQ	23/12/2025 response from Ranid May
24/06/2025 Email Communications	NT EPA to PGO	PG - Tom's Gully Compliance Assessment Queries	07/07/2025 response to queries from Sally Horsnell
07/07/2025 Email Communications	PGO to NT EPA	PG - Tom's Gully Compliance Assessment Queries	07/07/2025 response to queries from Sally Horsnell
26/08/2025 Email Communications	PGO to NT EPA	Waste discharge licences. Regarding existing and new waste discharge licences and inclusion into the Mining Licenses (deemed and new mining licence), does Primary Gold need to be issued with a new/amended WDL? If DLPE has an information sheet on this, please send through.	26/08/2025 response from Mia Sandgren
05/09/2025 Email Communications	PGO to NT EPA	WDL 249 Licensee name change and amendments to WDL 249	10/10/2025 response from Ranid May and Mia Sandgren

Communication Type/Date/ref	Direction	Feedback	Action/response and reference in EMR
07/10/2025 Email Communications	NT EPA to PGO	Warning letter re WDL249 non-compliances	22/02/2025 response from Mia Sandgren
10/10/2025 Email Communications	PGO to NT EPA	Primary Gold Pty application for an amendment to 249 WDL	10/10/2025 response from Ranid May
24/10/2025 Email Communications	NT EPA to PGO	Tom's Gully WDL249 amendment application and the Rustlers Roost and Quest EA	24/10/2025 response from Charles Hastie
mia12/11/2025 Email Communications	NT EPA to PGO	RFI letter re WDL249 amendment application	
26/11/2025 Email Communications	PGO to NT EPA	RE: PGO response to the RFI letter re WDL249 amendment application	26/11/2025 response from Ranid May

Appendix C. PGO Water Monitoring Procedure

PRIMARY GOLD PROJECTS WATER QUALITY PRIMARY GOLD PROJECTS WATER MONITORING PROCEDURE

1.1 Purpose

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

1.2 Scope

This procedure applies to all surface water sampling undertaken at the Primary Gold mining leases located on the Arnhem Highway, approximately 100 km south-east of Darwin. Primary Gold undertake routine water monitoring of surface water bodies upstream, within and downstream of their mining leases. This procedure applies to all water monitoring including the measurement of water quality parameters in the field, and the collection of water samples for subsequent laboratory analysis.

1.3 Standards and other requirements

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

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

1.4 Equipment

The following equipment is required when undertaking surface water sampling at all Primary Gold mine leases:

- **Map** showing monitoring sites
- **GPS** with coordinates uploaded for locating sites
- **Folder/clipboard** and waterproof notebook
- **Stationary:** Pens / pencils, permanent markers for completing sample bottle labelling

- **Sample bottles** obtained from Envirolab, ensuring that specific bottles are obtained for each parameter to be tested and appropriate pre-treatment is undertaken (e.g. preservatives). Remember also to prepare a full set of sample bottles for duplicate samples. Also take some spares, especially the glass bottle types.
- **Eskies** with ice or frozen ice bricks
- **Field meters** (pH, temperature, EC, DO, ORP); calibrated on the day of sampling
- **Calibration solutions** in case of issue with field meters (refer to manufacturers calibration instructions)
- **Camera**
- **Sample pole and jug**
- **Deionised water** to clean equipment between sample sites
- **Syringes and filters** (for dissolved metals)
- **Powder-free gloves**
- **Spare batteries** for camera, GPS and field test meters
- **Chain of Custody (COC)** forms for Envirolab
- **Plastic sleeves** (snap-lock bags) to protect COC forms inside the eskies
- **Consignment (Con) Notes** for freighting samples to Envirolab
- **Tape and security seal** for eskies; also stickers such as address label, fragile, keep chilled etc.
- **Communications equipment** (e.g. mobile/satellite phone, radio, EPIRB)
- **Personal Protective Equipment (PPE)**
- **Garbage bag** for used filters, syringes, gloves and any other waste generated during sampling.

1.5 Procedure

Preparation

1. Gather all equipment listed in Section 0.
2. Bottles may need to be ordered from Envirolab. Contact the laboratory for advice on what bottles are required (certain analytes require particular bottles and preservatives).
3. Put together a package of sample bottles for each site (i.e. in a large snap-lock bag), including bottles for duplicates.
4. Label each bottle with the site name (or duplicate).
5. For metals, tick the box on the bottle label for either filtered or total, depending on whether samples for metals analysis will be filtered in the field.
6. Calibrate the field test meters (e.g. pH, EC, DO, ORP) according to the manufacturer's instructions.
7. Ensure camera and GPS (if required) are fully charged and have sufficient memory.
8. Depending on the number of sites being sampled, prepare a sufficient volume de-ionised water to use for cleaning sampling equipment in the field.
9. Print out required number of blank Field Data Sheets, COC forms and maps.
10. Ensure that ice bricks have been put in the freezer, or sufficient ice is available to chill samples as they are collected.

Field observations and in-situ parameters

1. Record on field sheets the date, time, site name/number, sampler's name, and field observations such as weather conditions, water colour, clarity, water depth, flow rate, any obvious pollution (e.g. rubbish, odours, surface films etc.), flora/fauna, and any other issues that may affect the samples.
2. Put on gloves.

3. Ideally, in-situ readings (e.g. pH, EC, DO, temperature and ORP) are collected directly from the water body being sampled by immersing the meters in the area to be sampled. However, if safety and/or logistical issues preclude this, field readings may need to be taken from the sampling jug.
4. Record the in-situ parameters just below the water surface (between 0.2 and 0.5 m depth), depending on water depth. Alternatively, if collecting samples from various depths (e.g. depth profiling), ensure the field meter is lowered to the desired depth.
5. If collecting field readings from the sampling jug, collect a representative water sample using the jug mounted on a sampling pole. Ensure that the jug/sampler is fully immersed and rinsed at least three times, tipping the rinse water away from (e.g. on the bank), or downstream of, where the sample is to be collected.
6. If sampling flowing waters, ensure that you are standing downstream of where you are sampling so as not to contaminate the sample.
7. Record all the readings on the Field Data Sheet; one sheet to be filled out per site.

Laboratory sample collection

1. Ensure gloves are on.
2. Take out the snap-lock bag full of sample bottles for the site and fill in any remaining information on the labels with the permanent marker (e.g. time, date, and name of sampler.)
3. Unscrew the cap, making sure not to touch the opening of the bottle with your fingers to avoid contaminating the sample. Put the cap upside-down on a clean surface where it won't pick up any contaminants.
4. If safe to do so (i.e. crocodiles), fill the bottles directly from the water body being sampled; otherwise use the jug on the end of the pole to collect a water sample representative of the site.
5. Fully immerse the sample bottle or jug in the water and rinse at least three times before filling. For sample bottles containing preservatives (e.g. nutrients), do not rinse before filling, use the jug to fill these sample bottles. Bottles should be filled from below the water surface (10-20 cm depending on water depth).
6. Make sure that you are standing downstream of where you are sampling so as not to contaminate the sample.
7. If using the jug, pour the water into each sample bottle.
8. Fill each bottle to the top leaving no headspace and screw on the cap.
9. For samples requiring field filtering (e.g. dissolved metals), draw some water into a syringe, put a filter on the end of the syringe, rinse the filter by pushing a few drops of the sample through onto the ground, then fill the bottle leaving no headspace. Depending on the size of the syringe, it may be necessary to draw several syringes-full of water to fill the sample bottle.
10. Put all the sample bottles back in the snap-lock bag and immediately place them in the esky on ice.

Collection of duplicates

1. For duplicate samples, repeat all the above steps outlined above at the site(s) chosen for these samples (generally at least 1 in 10 sample sites, or one per monitoring event). Label the bottles 'Duplicate' as appropriate. Ensure to note which site these samples were collected at on the Field Data Sheet.

Cleaning of field equipment

1. After sampling each site, rinse all sampling equipment (e.g. jugs) with the deionised water.

2. Dispose of used filters, syringes, and gloves appropriately. Consumables are one use only and fresh gloves, syringes and filters are required at each site.

Sample dispatch

1. Once sampling is completed, pack the samples securely in an esky with ice bricks – note that freight companies generally will not allow ice. Ensure that samples have sufficient contact with the ice bricks to stay as cool as possible.
2. Fill out the COC, put in a plastic sleeve (snap-lock bag) and place inside the esky.
3. Tape up the esky and put on address label and stickers as appropriate (e.g. fragile, keep chilled).
4. Fill out consignment note and stick on esky.
5. Deliver samples direct to freight company or organise pick-up, ensuring that samples will be dispatched in time to meet laboratory holding times (usually by 16:00 on day of sampling for overnight priority service).
6. Note that sample dispatch on Friday and Saturday is not acceptable as samples will not be delivered to labs until Monday morning. Therefore, samples with short holding times (i.e. nutrients) cannot be collected on Friday or Saturday. Other parameters with longer holding times can be kept in fridge until dispatch on Sunday or Monday.

Data management

7. All field sheets should be scanned and saved for future reference, and all photographs are to be saved and labelled according to the relevant site name.

1. Field data and site observations are to be recorded in the Water Quality Database immediately following monitoring.
2. Upon receipt of laboratory results, enter data into the Water Quality Database. All laboratory documents (e.g. results, sample receipt notices, certificate of analysis and QA/QC information) should be grouped and saved in the same folder as the database.
3. Data should be compared to guideline values are in the database. Any exceedances of guideline values are to be highlighted in red.
4. Data is analysed annually for reporting in the MMP.

1.6 Monitoring program

All Primary Gold mining leases use the following key for water quality analysis.

Appendix D. Macroinvertebrate and Sediment Sampling Report (AES, 2025)

Toms Gully Biological and Sediment Monitoring

Final Report

Aquatic Ecology Services

This report has been prepared for Hanking as a technical document to inform waste discharge licence monitoring and to assist with future impact assessment.

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 were obtained from external sources. Aquatic Ecology Services has made the assumption that all data has been validated and is correct.

Version	Prepared by	Reviewed by	Review Date
Draft 1.0	T Steele	S Horsnell	21/04/2026
Final 2.0	T Steele	S. Horsnell	22/04/2026

Executive Summary

Aquatic ecology surveys were carried out at Toms Gully Mine in the post-wet season 2025, focusing on Mount Bundey Creek. The downstream site SWTG2 was not sampled this year; instead, sampling was conducted at SWTG3A in accordance with recommendations to enhance understanding of spatial impacts of active discharge.

Analysis revealed some accumulation of metals in sediments downstream of the Toms Gully Project Area (TGPA); however, no sediment metal concentrations exceeded guideline values. While metals in sediments could potentially be released at ecotoxic concentrations under low pH conditions, such pH levels were not observed during the May 2025 survey.

Habitat characteristics were consistent across all surveyed sites, and no differences in aquatic ecosystem health were observed between sites, suggesting that active discharges from the TGPA have not resulted in detectable impacts on the aquatic ecosystem of Mount Bundey Creek.

A review of historical macroinvertebrate data shows no significant changes in community composition at downstream site SWTG3/3A from baseline sampling through to 2025. Previous monitoring had identified localised impacts from point source pollution linked to interactions between mine infrastructure and the creek. Notably, these impacts were not observed at downstream site SWTG3, suggesting that effects from passive discharge are spatially limited.

Ongoing treatment and controlled discharge of water from the Toms Gully Pit are expected to further reduce passive discharge of poor-quality water to Mount Bundey Creek. Continued work to lower seepage potential is anticipated to improve water quality during the recessional flow period, and in turn, improve ecosystem health directly downstream of the mine.

Recommendations include continued suspension of monitoring at site SWTG2, which is heavily influenced by passive discharge, until after remediation tasks like pit-lowering are completed. Consistent, uninterrupted data collection remains essential for robust environmental assessment and compliance with Water Discharge Licence (WDL) requirements. It is advised that monitoring continues at the 2025 sites to support ongoing environmental management and future impact assessments should mining operations recommence. The sites chosen for monitoring in 2025 were sufficient to assess any impact from active discharges and should be repeated in the next round of monitoring.

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1. Introduction

1.1 Background

Toms Gully Mine, located near Marrakai in the Northern Territory, has been in operation intermittently since 1988. The project area has operated under the ownership of several different operators, most recently Crocodile Gold until 2013; then after a period of Care and Maintenance, it was divested to Primary Gold. Primary Gold was acquired by Hanking and gained environmental approvals for an underground mining operation at the site in 2020.

Aquatic ecology monitoring has been undertaken at Toms Gully Mine in 2015, and 2017-2024. The surveys to date have gathered data on fish and macroinvertebrate communities as well as habitat information and water quality for Mount Bundey and Coulter Creeks. This resulted in a body of data that was used for the assessment of the impact of a proposed treated mine water release regime. Data gathered during the baseline monitoring phase has assisted in understanding aquatic ecosystem health changes that may result from operations at the Toms Gully Mine Site.

In 2022, a Waste Discharge Licence (WDL-249) was granted for the site to discharge treated water to Mount Bundey Creek from an authorised discharge point (ADP).

1.2 Catchment

The Toms Gully Mine is located adjacent to Mount Bundey Creek, which flows into Hardies Creek, a tributary of the Mary River Floodplain. The Mary River Coastal Floodplain is unusual in Northern Australia as it is lacking a single major river channel through the floodplain to the ocean. As a result, the floodplain is poorly drained and the inflow channel diffuses into vast seasonal swamps before reaching the sea through a number of tidal channels. The Mary River crossing at the Arnhem Highway is a convenient delineation between the upper (southern) catchment and the floodplains of the lower (northern) catchment. The crossing marks the approximate change in patterns of wet season river flow from channel to sheet flow (Schultz *et al.* 2002).

Coulter Creek is a low order stream, and a tributary of Mount Bundey Creek. The confluence of the two creeks is located approximately 4km downstream of the Arnhem Highway. The Creek originates upstream on the Old Mount Bundey Station, and previous studies have observed impacts at sites on Coulter Creek as a result of cattle access. The riparian zone along Coulter Creek is not continuous, and the greater catchment area has also been cleared for grazing. Mount Bundey Creek is a higher order stream, draining north to Hardies Creek and on to the Mary River. The Riparian zone of Mount Bundey Creek is more intact than Coulter Creek, and clearing of land beyond the riparian zone is more intensive surrounding Toms Gully Mine and downstream than in the upstream area that has been monitored. Although during sampling events there were observable breaks in surface water, where dry sand was present in the creek bed, surface water flow was recorded at most sites. Alluvial groundwater and surface water interact along Mount Bundey

Creek, and there is likely an extended period of sub-surface flow in the dry season through the sandy substrates.

1.3 Scope

Aquatic Ecology Services was engaged by Hanking to undertake biological and sediment sampling at Toms Gully Mine to compare aquatic ecosystem health of the receiving environment compared with baseline data. The survey included:

- A study design that incorporates locations upstream and downstream of the Toms Gully Mine Lease (ML), and as a minimum, assessment of Primary sites SWTG1A (control site) and SWTG3A (potential impact site downstream of Toms Gully Mine).
- Macroinvertebrate sampling and aquatic habitat assessment carried out in accordance with the NT AUSRIVAS Darwin-Daly Region Manual (Lamche 2007)
- Water and sediment quality sampling

This report presents the results of the above monitoring conducted in May 2025.

2. Study design

2.1 Sampling Sites

Aquatic ecology monitoring was undertaken at three sites in May 2025 (Table 1, Figure 1). All three sites were sampled on Mount Bundey Creek, consisting of one site upstream of the mine, one site adjacent (downstream of potential waste rock dump influence, but upstream of the ADP), and one site downstream of the ADP. Historically, site SWTG2 has been monitored downstream of Toms Gully Mine, but over time, other mine influences (seepage) have created a greater influence on the site, and made any impacts associated with active discharge difficult. For this reason, site SWTG3A, which is monitored through the wet season (Sally Horsnell *pers comm*) was chosen to sample in 2025. Historical biological and sediment data for sites downstream of the Arnhem Highway (within 300m of SWTG3A) exists, which will be used for comparison to the site this year.

Table 1 – Sample site locations visited in May 2025

Site	Site Type	Location	Easting	Northing
SWTG1A	Upstream	Mount Bundey Creek upstream of mine at lease boundary	776351	8580503
SWTG1	Adjacent	Mount Bundey Creek downstream of waste rock dump	776825	8580290
SWTG3A	Downstream	Mount Bundey Creek downstream Arnhem Highway Crossing	779453	8580428

2.2 Survey timing

Sampling has routinely been conducted in the post-wet season during the recessional flow period, to capture data representative of the time of year when compliance monitoring would be undertaken. In 2025, sampling was undertaken in early May to target adequate water availability at all sites.

Figure 1 – Location of aquatic ecology sampling

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 and to provide input data for the Northern Territory AUSRIVAS model. 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 sampling

3.2.1 In situ water quality

The physico-chemical parameters of the water at each site was 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

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 multiple sub-samples of sediment using a spade of inert material and sieving of samples to collect the ≤2mm fraction.
- Compositing the sediment sub-samples into a receptacle (also composed of inert material) and mixing the contents.
- Collecting a sediment sub-sample from the mixture and placing it 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.

Bioavailable metals data (from 1M HCl dilute acid digestion analysis) were analysed for the parameters shown in Table 2.

Table 2 – Testing parameters for sediments collected at Toms Gully

Lab Analyses	Analytes
1M HCl extractable metals	Aluminium, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, uranium, zinc.
Total recoverable metals	Mercury
Cyanide	Free cyanide, weak acid dissociable (WAD) cyanide, total cyanide
Other parameters	Particle size distribution (PSD), total organic carbon (TOC), moisture content.

3.3 Macroinvertebrates

3.3.1 Field sampling

Macroinvertebrate sampling and processing followed procedures outlined in the Northern Territory AUSRIVAS Manual for the Darwin-Daly Region (Lamche, 2007). Sampling involved one field team member scraping submerged root matter associated with the lower bank to agitate and remove macroinvertebrates into the water column, while the other field team member swept a dip net through the water column downstream of the edge habitat, to collect the dislodged animals. Areas of riffle or fast flowing habitat, Pandanus roots and severe bank undercuts were avoided when collecting edge habitat samples.

Once collected, the samples were washed through 10 mm and 250 µm 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 labelled sample container and filled with 70% ethanol. All samples were sent to the macroinvertebrate laboratory for further processing and identification.

3.3.2 Laboratory processing

Samples were washed through a series of sieves (10 mm, 500 µm and 250 µm mesh sizes). Any large, conspicuous taxa identified in the 10 mm mesh sieve were added to the contents of the large mesh fraction retained in the field. The contents of the 500 µm mesh sieve were retained for macroinvertebrate identification and enumeration, while the 250 µm fraction was retained as sample residue for quality assurance purposes. The contents of the 500 µm 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 abundance. A Leica stereo-dissection microscope was used to examine specimens.

Taxa were identified to family level where possible, with the exception of key taxa identified in Lamche (2007), requiring identification to order level (e.g. Conchostraca). 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.

3.3.3 Data presentation

Prior to 2021, biological monitoring programs commonly utilised the NT AUSRIVAS Darwin-Daly 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 taken place on the data collected from 2021.

Macroinvertebrate community indices were calculated for each sample at each site. A summary of the univariate macroinvertebrate indices assessed as part of this study are provided below:

- Taxa richness – Total number of taxa present at the site used as a measure of diversity.
- 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.

In addition to univariate analysis of metrics, an assessment of differences in the macroinvertebrate community composition will be undertaken. 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. This process was completed for samples collected on Mount Bundey Creek in 2025.

4. Results and Discussion

4.1 Site Conditions

4.1.1 Catchment flow

The water height of Mount Bundey Creek at telemetry site SWTG2 is presented below in Figure 2. Spikes in creek height were short and sharp, suggesting episodic rainfall across the catchment. Peak flows were recorded in February and April, with creek flow present throughout a five-month period, tailing off to no flow by the end of May. It is acknowledged that the TGPA is located low in the Mount Bundey Creek catchment, and is subject to rainfall from a large catchment upstream. Flow was steady at SWTG2 from mid-April onwards, leading up to sampling in mid-May.

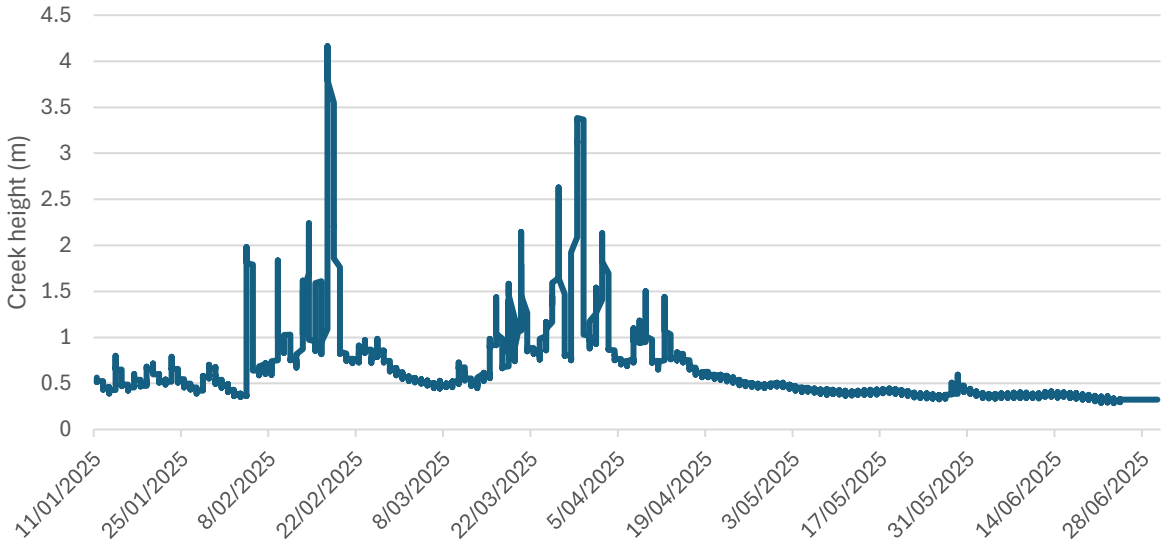

Figure 2 – Creek height at SWTG2 January - June 2025

4.1.2 Site descriptions

A description of habitat characteristics associated with monitoring sites sampled in May 2025 are presented in Table 3, along with site photographs taken at the time of sampling. All three sites contained similar habitat, making them ideal for comparisons of point-source pollution impacts.

Table 3 – Aquatic ecology sampling site descriptions on Mount Bundey Creek, May 2025

Site description	Site photo
SWTG1A - Upstream The site was made up of two large pools connected by a shallow run. The creek was lined by a closed canopy of riparian vegetation and shading was high. The left bank was steep, and a mixture of consolidated clay and gravel with sections of bedrock, while the right bank was a gentle slope and consisted of cobbles and pebbles. Bed material was majority pebbles and sand.	
SWTG1 – Upstream The site is made up of two large, deep pools, connected by a run. The substrate of both pools was made up of sand and gravel, and the connecting run has substrate made up of pebbles, cobbles and sand. Both banks of the pool are lined by continuous riparian vegetation providing shade and exposed roots. Undercut banks were prevalent, along with leaf packs and small log jams.	
SWTG3A - Downstream The site is made up of a large pool with a large log-jam and run inflow to the pool. The pool was wide and shallow, with high, steep banks on both sides. The site was heavily shaded by a mixture of paperbark trees and bamboo. Substrate along the entire reach was majority sand and pebbles with some bedrock. There were some pockets of leaf litter that were very deep and anoxic, made up mostly of bamboo leaves.	

4.2 Water and sediment quality

4.2.1 *In situ water quality*

In situ water quality data is compiled and presented in Table 4, with comparisons made to ANZECC (2000) guideline values. The following observations about the results can be made:

- Temperatures were very similar between sites and appeared to be related to time of day.
- Sites on Mount Bundey Creek contained water that was circumneutral. The lowest pH was found downstream of the TGPA at SWTG3A, but all results were within the guideline values.
- Dissolved oxygen varied, but was mostly low. High shading within both creeks is likely the cause of lower dissolved oxygen than the guideline range at sites on both creeks.
- Electrical conductivity was above the guideline value downstream of the TGPA. And was more than five times the results recorded upstream.
- Water clarity was high at all sites, and turbidity was below the guideline value at all sites.

Table 4 – In situ water quality data collected at sampling sites in 2025. Guideline exceedances shaded grey

Site Code	Time	Temp (°C)	pH	DO (%)	DO (mg/L)	EC (µS/cm)	Turbidity (NTU)
Guideline Value (ANZECC 2000)		-	6 – 8	85 – 110		20 – 250	50
SWTG1A	9:30	25.90	7.21	66.15	7.01	40.46	1.01
SWTG1	12:00	26.42	6.83	71.25	5.33	39.47	2.64
SWTG3A	14:22	28.25	6.01	73.24	5.80	278	1.51

4.2.2 *Sediment quality*

Laboratory derived sediment quality results are presented in Table 5. Although there were no exceedances of the trigger values at any site, all metals besides arsenic were slightly elevated downstream at SWTG3A. the greatest difference between values from upstream and downstream of the ADP was zinc, but the value fell well below the SQGV-low.

The position of SWTG1 downstream of a waste rock dump did show some accumulation of metals that may be related to seepage. Aluminium, manganese, and iron were particularly high in comparison to the site upstream of all influences of the TGPA.

Table 5 – Sediment quality results from aquatic ecology monitoring sites, May 2025 All results presented in mg/kg

Sample	LOR	SWTG1A	SWTG1	SWTG3A	GV-low	GV-high
Aluminium	2	290	520	830	-	-
Arsenic	4	<4	<4	<4	20	70
Cadmium	0.5	<0.5	<0.5	0.6	1.5	10
Cobalt	1	<1	1.9	7.6	-	-
Chromium	1	<1	<1	2	80	370
Copper	1	2	3	14	65	270
Iron	2	1200	2200	2500	-	-
Lead	2	6	8	12	50	220
Manganese	1	58	170	290	-	-
Nickel	1	<1	<1	7	21	52
Zinc	1	2	3	32	200	410

4.3 Macroinvertebrates

Although the site SWTG3A has moved upstream from the original location, there was very similar available habitat and so the sites are considered to be comparable. All historical comparisons have merged data from the sites prior to 2025 (SWTG3) with 2025 data (SWTG3A).

4.3.1 Relative abundance

Relative abundance results for all sites sampled in May 2025 are presented below in Figure 3. A similar number of animals were collected at all three sites, with the highest number found in one sample downstream. The most consistent number were found at SWTG1.

When reviewing available relative abundance data in a historical context (Figure 4) lower macroinvertebrate numbers have been found at SWTG3 compared with the upstream site, but this was not the case in 2025. Although the site has moved upstream from the original location, there was very similar available habitat and so the sites are considered to be comparable.

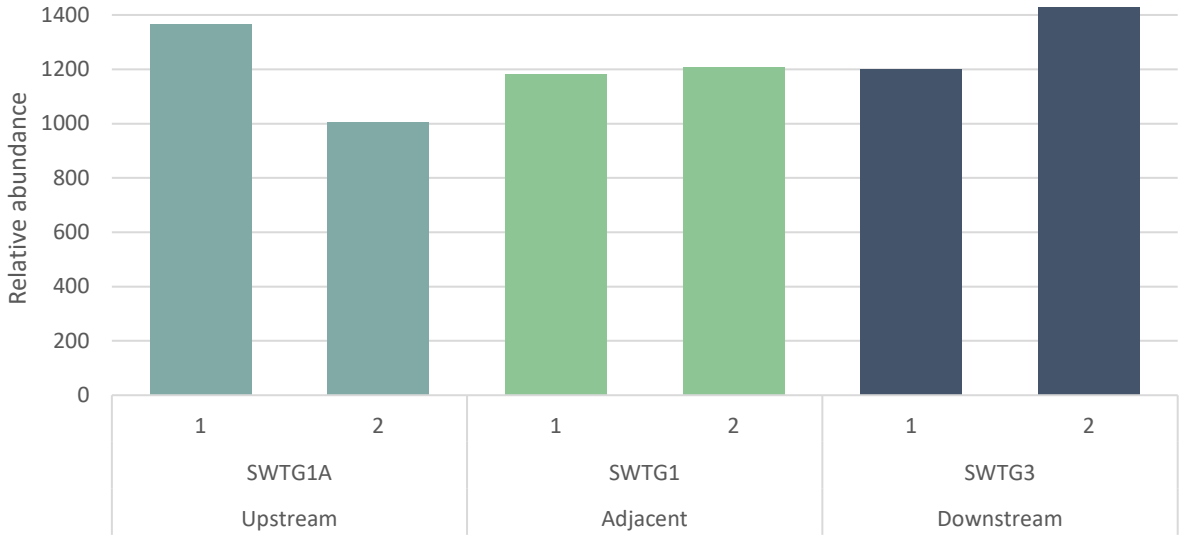

Figure 3 – Relative abundance at sites sampled in May 2025

Figure 4 – Relative abundance of samples collected at SWTG1A (upstream) and SWTG3/3A (downstream) 2018 - 2025

4.3.2 Taxa richness

Taxa richness results from all sites sampled are presented in Figure 5. Family diversity was highest at SWTG1. Taxa numbers were highest in 2025 compared to previous years of baseline sampling (Figure 6), but has had a variable relationship with the upstream site (SWTG1A) in previous years. In general there has been a trend of increasing taxa richness upstream of the TGPA, which appears to be matched by SWTG3A in 2025 when looking at previous data collected at the site.

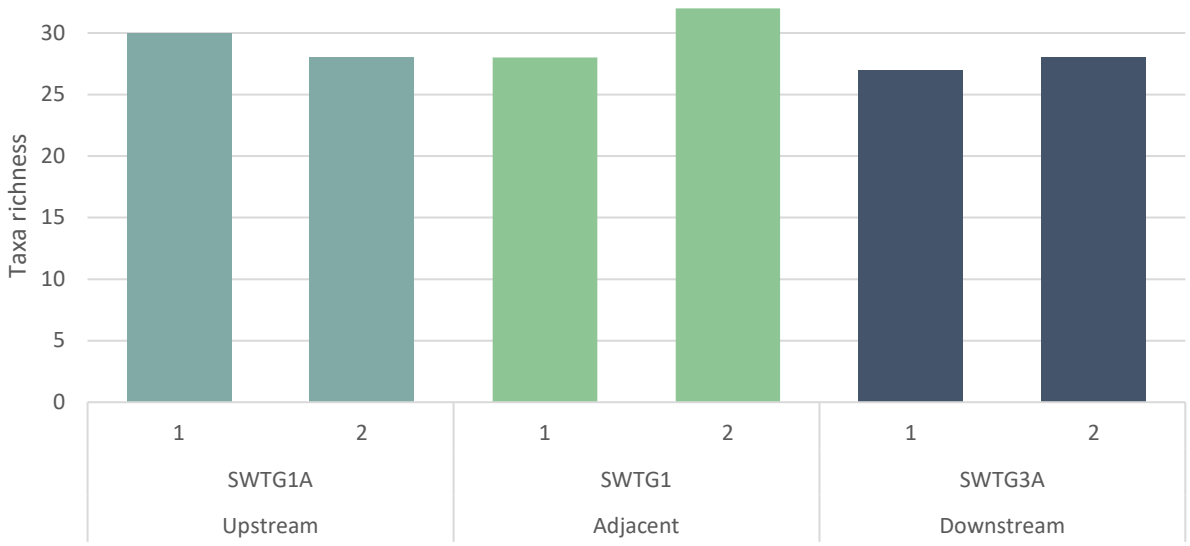

Figure 5 – Taxa richness results at sites sampled in May 2025

Figure 6 – Taxa richness of samples collected at SWTG1A (upstream) and SWTG3/3A (downstream) 2018 - 2025

4.3.3 PET richness

The PET richness results for all sites sampled in May 2025 are presented below in Figure 7. PET richness was similar upstream and downstream, and highest adjacent on Mount Bundey Creek. Historically, PET richness has been similar downstream to numbers recorded at the upstream site, and 2025 followed the same trend.

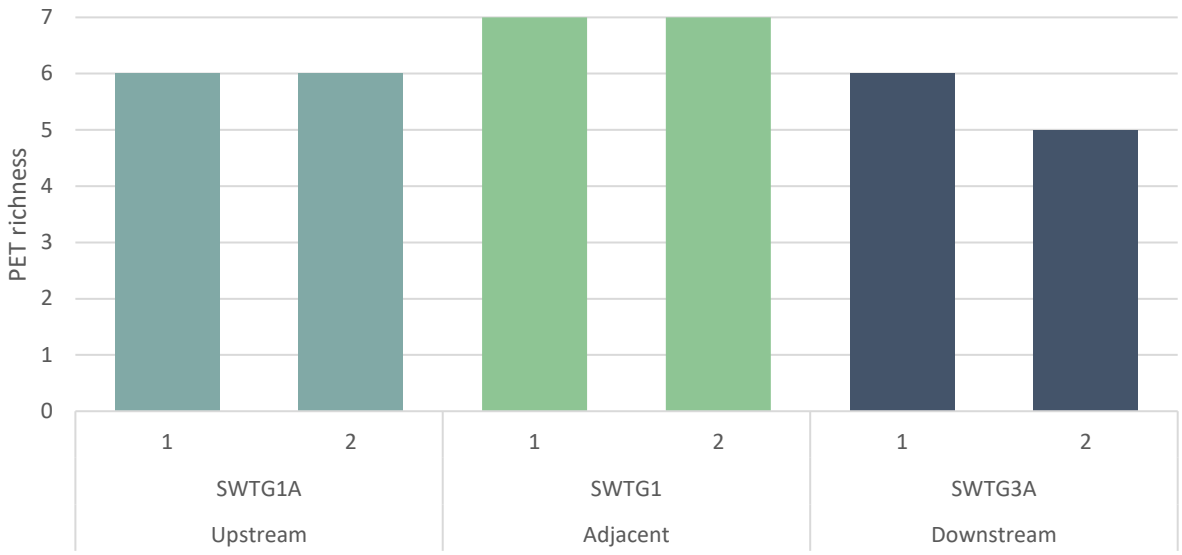

Figure 7 – PET richness at sites sampled in May 2025

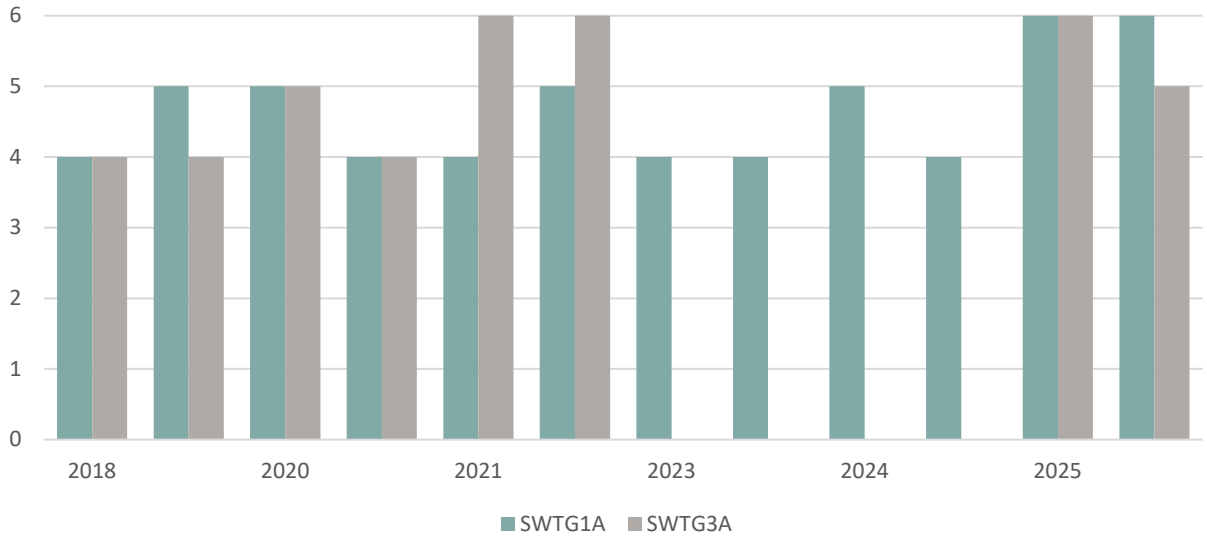

Figure 8 - PET richness of samples collected at SWTG1A (upstream) and SWTG3/3AA (downstream) 2018 - 2025

4.3.4 SIGNAL-2

SIGNAL-2 scores for all samples collected in May 2025 are presented in Figure 9. There was very little variation in SIGNAL-2 scores between site types on Mount Bundey Creek (3.51-4.03). The SIGNAL score range at the sites are well within the pollution tolerant end of the scale (Marshall *et al.* 2001). Historical results showed similar pollution sensitivity at both upstream and downstream sites over time. The macroinvertebrate community surrounding Toms Gully Mine is made up of a community tolerant of intermittent flows and poorer water quality, which is in line with previous findings (AES 2024).

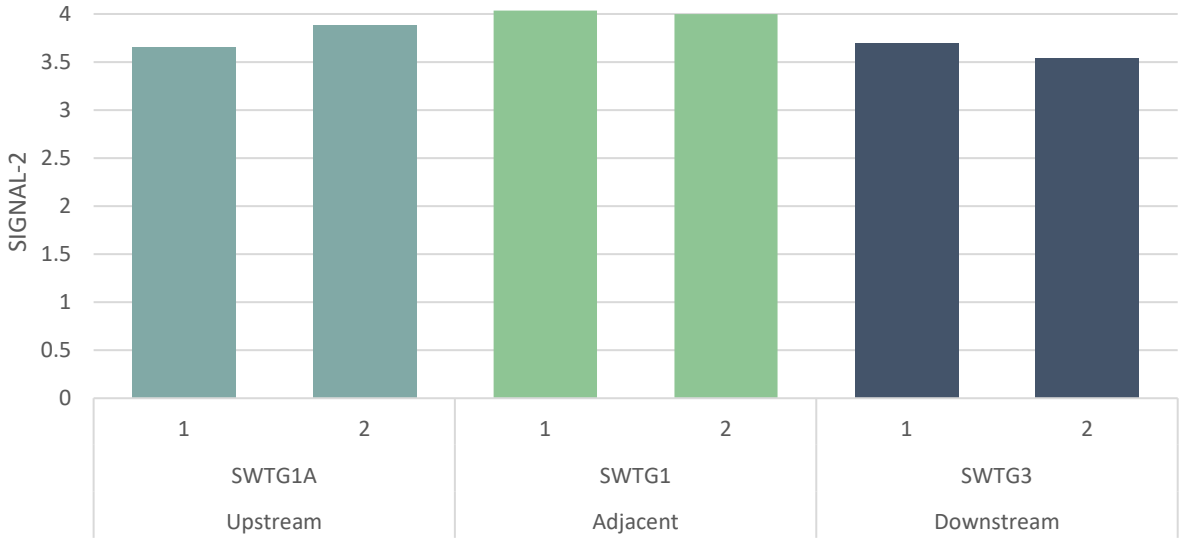

Figure 9 – SIGNAL-2 scores at all aquatic ecology sites visited in May 2025

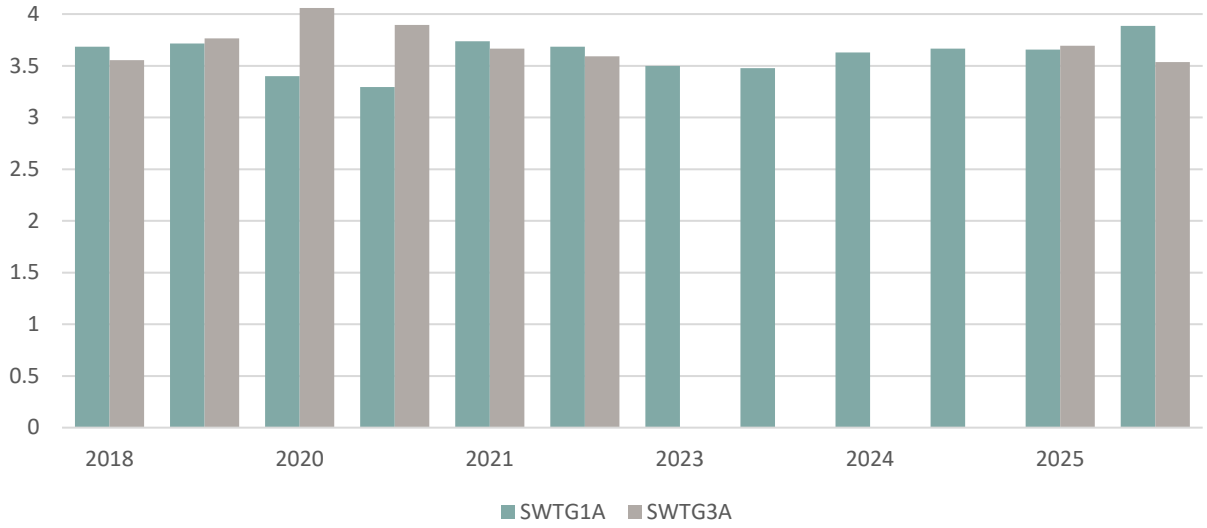

Figure 10 – SIGNAL-2 results from samples collected at SWTG1A (upstream) and SWTG3/3A (downstream) 2018 - 2025

4.3.5 Community composition

The non-metric MDS plot displayed in Figure 11 provides an indication of the relative similarity in the macroinvertebrate community composition between samples collected on Mount Bundey Creek. Similarity was low between all sites on Mount Bundey Creek in 2025, and at least 80% similarity between sites downstream and adjacent to the TGPA.

Historical results show that samples collected in 2025 were more similar to each other than all other years. This indicates a catchment-wide influence that determined the presence, absence and abundance of macroinvertebrate taxa.

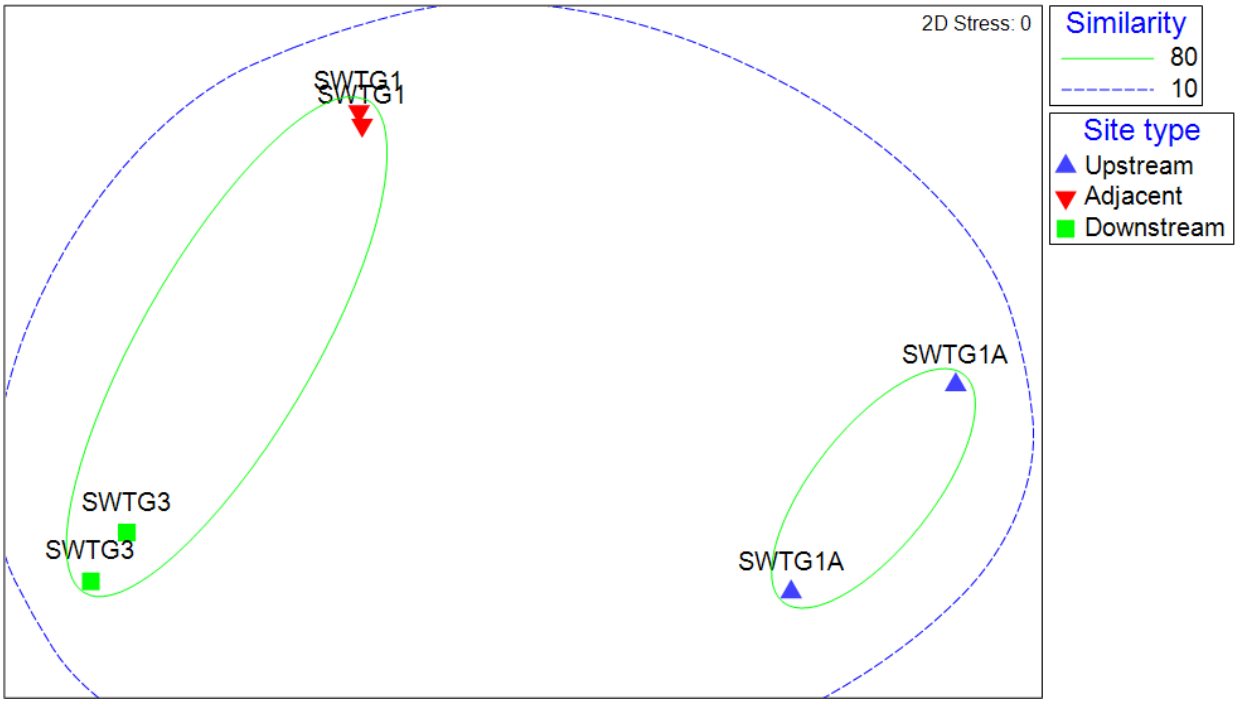

Figure 11 - NMDS demonstrating relative similarity of macroinvertebrate communities in samples collected on Mount Bundey Creek in May 2025

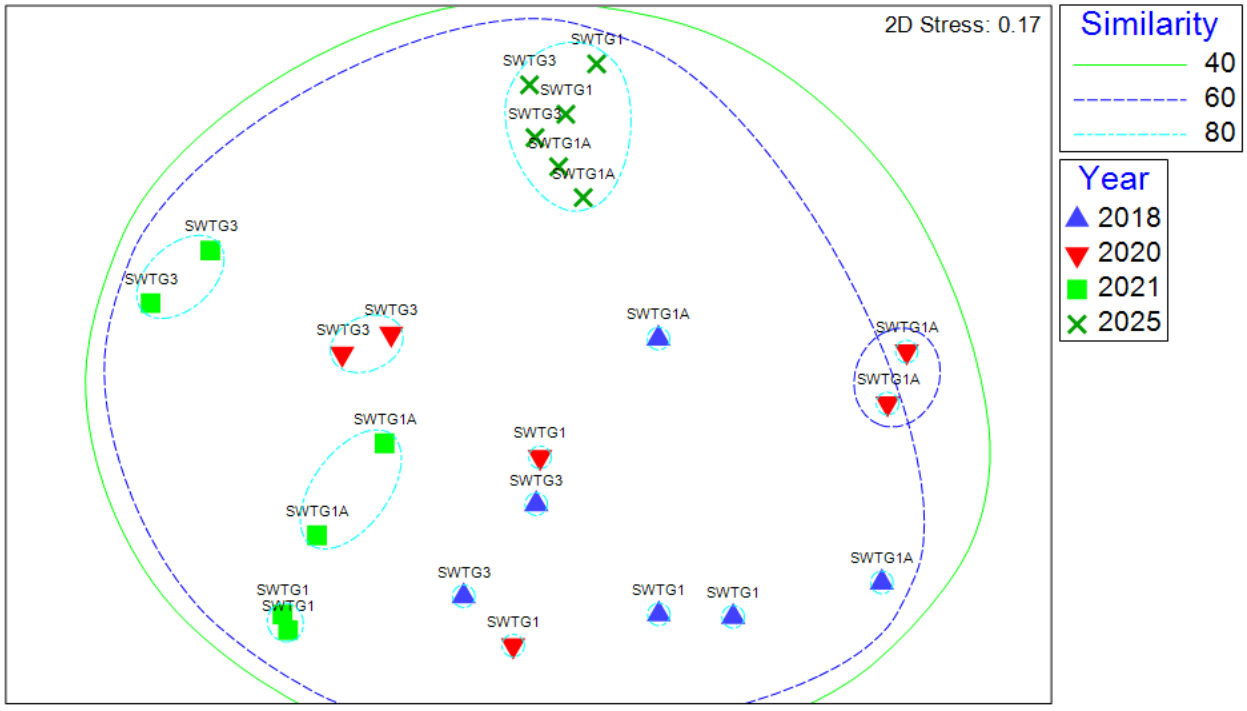

Figure 12 - NMDS demonstrating relative similarity of macroinvertebrate communities in samples collected on Mount Bundey Creek 2018-2025

5. Conclusions

5.1 Overview

Aquatic ecology surveys were successfully completed at Toms Gully Mine in 2025. All components were completed at sites on Mount Bundey Creek where access, sufficient water and safety allowed. The 2025 monitoring conclusions are as follows:

- The downstream site SWTG2 was not sampled in 2025, instead SWTG3A was sampled to allow for a better understanding of spatial impacts of active discharges. This was in line with recommendations made by Aquatic Ecology Services in 2024.
- There was some accumulation of metals in sediments downstream of the TGPA, but there were no exceedances of any guideline value. Metals in sediments are considered to have the potential to be released in concentrations which could be ecotoxic, when waters return low pH values, but low pH was not observed in May 2025.
- Given that similar habitat characteristics were found across all sites, differences in macroinvertebrate metrics indicate impairment of aquatic ecosystem health in Mount Bundey Creek downstream of Toms Gully. There were no visible differences between sites, regardless of their position in the catchment, indicating no impact associated with active discharge from the TGPA.
- All macroinvertebrate community data should be viewed in the context of historical data, and for most metrics, there has been no significant change downstream at SWTG3 from baseline data to 2025.
- Previous years of aquatic ecology monitoring identified impacts from point source pollution related to surface/groundwater interactions between infrastructure at Toms Gully and Mount Bundey Creek. when sampling further downstream at SWTG3, the same impacts were not observed, indicating that the impacts associated with passive discharge are spatially limited.
- The continued treatment and discharge of water from the Toms Gully Pit is highly likely to reduce passive discharge of poor quality water to Mount Bundey Creek. It is unlikely that discharges to date have had an impact on aquatic ecosystem health, but future discharge is likely to improve water quality during the recessional flow period, by reducing pit levels and subsequent passive discharge.

5.2 Recommendations

- Site SWTG2 is heavily influenced by passive discharge, and so the site should not be monitored until other remediation tasks, such as pit-lowering have been completed.
- An uninterrupted data set is the most robust way to analyse conditions in the receiving environment surrounding Toms Gully Mine should operations commence. Sampling at sites visited in 2025 should continue to meet WDL requirements, but also to provide future impact assessment data should mining recommence.

References

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Lamche, G (2007) The Darwin-Daly Regional AUSRIVAS Models –Northern Territory: User Manual. Aquatic Health Unit –Department of Natural Resources, Environment and the Arts. Report 06/2007D.

Marshall, C, Harch, BD, Choy, SC and Smith, MJ (2001), Aquatic macroinvertebrates as indicators of ecosystem health in Design and Implementation of Baseline Monitoring (DIBM3) Final Report.

Northern Territory Environment Protection Authority (2020). Assessment Report 91: Toms Gully Underground Project. Released February, 2020.

Schultz T. J., Townsend S. A., Edwards, C. A. and Dostine, P. L. (2002). Water quality monitoring in the Mary River catchment. Technical Report 42/2002. Department of Infrastructure, Planning and Environment. Darwin.

Appendix A. Certificates of Analysis

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 379970

Client Details

Client	Primary Gold Limited
Attention	Charles Hastie
Address	Level 26 140 St George Terrace, Perth, WA

Sample Details

Your Reference	**Toms Gully - Primary Gold**
Number of Samples	12 Sediment
Date samples received	08/05/2025
Date completed instructions received	08/05/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	15/05/2025
Date of Issue	16/05/2025

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Inorganics Supervisor
Giovanni Agosti, Group Technical Manager

Authorised By
Nancy Zhang, Laboratory Manager

Misc Soil - Inorg						
Our Reference		379970-1	379970-2	379970-3	379970-4	379970-5
Your Reference	UNITS	RRSW23	RRMCUS	Q29SW2	Q29SW11	Q29SW1
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Date Sampled		5/05/2025	5/05/2025	5/05/2025	5/05/2025	5/05/2025
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Date prepared	-	09/05/2025	09/05/2025	09/05/2025	09/05/2025	09/05/2025
Date analysed	-	09/05/2025	9/05/2025	9/05/2025	9/05/2025	9/05/2025
Total Cyanide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Weak Acid Dissociable Cyanide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Free Cyanide in soil	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Misc Soil - Inorg						
Our Reference		379970-6	379970-7	379970-8	379970-9	379970-10
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Type of sample		Sediment	Sediment	Sediment	Sediment	Sediment
Date prepared	-	09/05/2025	09/05/2025	09/05/2025	09/05/2025	09/05/2025
Date analysed	-	9/05/2025	9/05/2025	9/05/2025	9/05/2025	9/05/2025
Total Cyanide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Weak Acid Dissociable Cyanide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Free Cyanide in soil	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Misc Soil - Inorg			
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Type of sample		Sediment	Sediment
Date prepared	-	09/05/2025	09/05/2025
Date analysed	-	9/05/2025	9/05/2025
Total Cyanide	mg/kg	<0.5	<0.5
Weak Acid Dissociable Cyanide	mg/kg	<0.5	<0.5
Free Cyanide in soil	mg/kg	<0.5	<0.5

Metals 1M HCl extractable						
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Type of sample		Sediment	Sediment	Sediment	Sediment	Sediment
Date prepared	-	13/05/2025	13/05/2025	13/05/2025	13/05/2025	13/05/2025
Date analysed	-	13/05/2025	13/05/2025	13/05/2025	13/05/2025	13/05/2025
Aluminium 1M HCl extract	mg/kg	390	210	260	97	170
Arsenic 1M HCl extract	mg/kg	20	<4	<4	<4	10
Cadmium 1M HCl extract	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt 1M HCl extract	mg/kg	7.5	2.9	1.1	<1	1.3
Chromium 1M HCl extract	mg/kg	1	<1	<1	<1	<1
Copper 1M HCl extract	mg/kg	11	<1	<1	<1	2
Iron 1M HCl extract	mg/kg	4,300	1,400	1,400	490	2,000
Lead 1M HCl extract	mg/kg	13	8	7	6	100
Manganese 1M HCl extract	mg/kg	460	190	77	28	80
Nickel 1M HCl extract	mg/kg	2	<1	<1	<1	<1
Zinc 1M HCl extract	mg/kg	4	<1	<1	<1	8

Metals 1M HCl extractable						
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Type of sample		Sediment	Sediment	Sediment	Sediment	Sediment
Date prepared	-	13/05/2025	13/05/2025	13/05/2025	13/05/2025	13/05/2025
Date analysed	-	13/05/2025	13/05/2025	13/05/2025	13/05/2025	13/05/2025
Aluminium 1M HCl extract	mg/kg	550	690	290	520	440
Arsenic 1M HCl extract	mg/kg	6	8	<4	<4	<4
Cadmium 1M HCl extract	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt 1M HCl extract	mg/kg	3.4	5.5	<1	1.9	4.1
Chromium 1M HCl extract	mg/kg	<1	1	<1	<1	<1
Copper 1M HCl extract	mg/kg	9	10	2	3	<1
Iron 1M HCl extract	mg/kg	1,700	1,700	1,200	2,200	1,600
Lead 1M HCl extract	mg/kg	47	55	6	8	9
Manganese 1M HCl extract	mg/kg	180	450	58	170	280
Nickel 1M HCl extract	mg/kg	3	1	<1	<1	<1
Zinc 1M HCl extract	mg/kg	10	7	2	3	1

Metals 1M HCl extractable				
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Type of sample		Sediment	Sediment	Sediment
Date prepared	-	13/05/2025	13/05/2025	13/05/2025
Date analysed	-	13/05/2025	13/05/2025	13/05/2025
Aluminium 1M HCl extract	mg/kg	200	830	420
Arsenic 1M HCl extract	mg/kg	<4	<4	16
Cadmium 1M HCl extract	mg/kg	<0.5	0.6	<0.5
Cobalt 1M HCl extract	mg/kg	2.7	7.6	5.4
Chromium 1M HCl extract	mg/kg	<1	2	1
Copper 1M HCl extract	mg/kg	<1	14	10
Iron 1M HCl extract	mg/kg	1,400	2,500	3,900
Lead 1M HCl extract	mg/kg	2	12	10
Manganese 1M HCl extract	mg/kg	390	290	270
Nickel 1M HCl extract	mg/kg	<1	7	2
Zinc 1M HCl extract	mg/kg	<1	32	3

Misc Inorg - Soil						
Our Reference		379970-1	379970-2	379970-3	379970-4	379970-5
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Date Sampled		5/05/2025	5/05/2025	5/05/2025	5/05/2025	5/05/2025
Type of sample		Sediment	Sediment	Sediment	Sediment	Sediment
Date prepared	-	15/05/2025	15/05/2025	15/05/2025	15/05/2025	15/05/2025
Date analysed	-	15/05/2025	15/05/2025	15/05/2025	15/05/2025	15/05/2025
Total Organic Carbon in soil/solids	mg/kg	5,200	10,000	5,800	2,600	5,300

Misc Inorg - Soil						
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Date Sampled		5/05/2025	06/05/2025	06/05/2025	06/05/2025	06/05/2025
Type of sample		Sediment	Sediment	Sediment	Sediment	Sediment
Date prepared	-	15/05/2025	15/05/2025	15/05/2025	15/05/2025	15/05/2025
Date analysed	-	15/05/2025	15/05/2025	15/05/2025	15/05/2025	15/05/2025
Total Organic Carbon in soil/solids	mg/kg	8,700	13,000	8,600	14,000	4,700

Misc Inorg - Soil			
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Depth		0.2	0.2
Date Sampled		06/05/2025	06/05/2025
Type of sample		Sediment	Sediment
Date prepared	-	15/05/2025	15/05/2025
Date analysed	-	15/05/2025	15/05/2025
Total Organic Carbon in soil/solids	mg/kg	6,800	9,400

Moisture						
Our Reference		379970-1	379970-2	379970-3	379970-4	379970-5
Your Reference	UNITS	RRSW23	RRMCUS	Q29SW2	Q29SW11	Q29SW1
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		5/05/2025	5/05/2025	5/05/2025	5/05/2025	5/05/2025
Type of sample		Sediment	Sediment	Sediment	Sediment	Sediment
Date prepared	-	09/05/2025	09/05/2025	09/05/2025	09/05/2025	09/05/2025
Date analysed	-	12/05/2025	12/05/2025	12/05/2025	12/05/2025	12/05/2025
Moisture	%	27	15	18	13	18

Moisture						
Our Reference		379970-6	379970-7	379970-8	379970-9	379970-10
Your Reference	UNITS	Q29SW6	Q29SW8	SWTG1A	SWTG1	RRSW10
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		5/05/2025	06/05/2025	06/05/2025	06/05/2025	06/05/2025
Type of sample		Sediment	Sediment	Sediment	Sediment	Sediment
Date prepared	-	09/05/2025	09/05/2025	09/05/2025	09/05/2025	09/05/2025
Date analysed	-	12/05/2025	12/05/2025	12/05/2025	12/05/2025	12/05/2025
Moisture	%	17	30	20	26	18

Moisture			
Our Reference		379970-11	379970-12
Your Reference	UNITS	RRSW24	SWTG3A
Depth		0.2	0.2
Date Sampled		06/05/2025	06/05/2025
Type of sample		Sediment	Sediment
Date prepared	-	09/05/2025	09/05/2025
Date analysed	-	12/05/2025	12/05/2025
Moisture	%	15	30

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-014	Cyanide - free, total, weak acid dissociable by segmented flow analyser (in line dialysis with colourimetric finish). Solids/Filters and sorbents are extracted in a caustic media prior to analysis. Impingers are pH adjusted as required prior to analysis. Cyanides amenable to Chlorination - samples are analysed untreated and treated with hypochlorite to assess the potential for chlorination of cyanide forms. Based on APHA latest edition, 4500-CN_G,H.
INORG-137	Total Carbon Nitrogen Sulfur by high temperature catalytic combustion with IR detection. Total Nitrogen may also be determine from TKN+NOx by calculation.
Metals-020/021	1M HCl extractable (Bioavailable) metals - The sample is extracted with 1M HCl for one hour at room temperature. The extract is analysed by ICP-OES for all metals except Mercury which is tested by CV-AAS.

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			09/05/2025	1	09/05/2025	09/05/2025		09/05/2025	[NT]
Date analysed	-			09/05/2025	1	09/05/2025	09/05/2025		09/05/2025	[NT]
Total Cyanide	mg/kg	0.5	Inorg-014	<0.5	1	<0.5	<0.5	0	102	[NT]
Weak Acid Dissociable Cyanide	mg/kg	0.5	Inorg-014	<0.5	1	<0.5	<0.5	0	96	[NT]
Free Cyanide in soil	mg/kg	0.5	Inorg-014	<0.5	1	<0.5	<0.5	0	100	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	09/05/2025	09/05/2025		[NT]	[NT]
Date analysed	-			[NT]	11	9/05/2025	09/05/2025		[NT]	[NT]
Total Cyanide	mg/kg	0.5	Inorg-014	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Weak Acid Dissociable Cyanide	mg/kg	0.5	Inorg-014	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Free Cyanide in soil	mg/kg	0.5	Inorg-014	[NT]	11	<0.5	<0.5	0	[NT]	[NT]

QUALITY CONTROL: Metals 1M HCl extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	379970-2
Date prepared	-			13/05/2025	1	13/05/2025	13/05/2025		13/05/2025	13/05/2025
Date analysed	-			13/05/2025	1	13/05/2025	13/05/2025		13/05/2025	13/05/2025
Aluminium 1M HCl extract	mg/kg	1	Metals-020/021	<1	1	390	380	3	103	104
Arsenic 1M HCl extract	mg/kg	4	Metals-020/021	<4	1	20	17	16	109	111
Cadmium 1M HCl extract	mg/kg	0.5	Metals-020/021	<0.5	1	<0.5	<0.5	0	102	120
Cobalt 1M HCl extract	mg/kg	1	Metals-020/021	<1	1	7.5	5.4	33	104	124
Chromium 1M HCl extract	mg/kg	1	Metals-020/021	<1	1	1	1	0	103	123
Copper 1M HCl extract	mg/kg	1	Metals-020/021	<1	1	11	8	32	104	127
Iron 1M HCl extract	mg/kg	1	Metals-020/021	<1	1	4300	3800	12	118	##
Lead 1M HCl extract	mg/kg	1	Metals-020/021	<1	1	13	11	17	109	#
Manganese 1M HCl extract	mg/kg	1	Metals-020/021	<1	1	460	280	49	116	108
Nickel 1M HCl extract	mg/kg	1	Metals-020/021	<1	1	2	2	0	115	#
Zinc 1M HCl extract	mg/kg	1	Metals-020/021	<1	1	4	3	29	116	126

QUALITY CONTROL: Metals 1M HCl extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	13/05/2025	13/05/2025		[NT]	[NT]
Date analysed	-			[NT]	11	13/05/2025	13/05/2025		[NT]	[NT]
Aluminium 1M HCl extract	mg/kg	1	Metals-020/021	[NT]	11	200	170	16	[NT]	[NT]
Arsenic 1M HCl extract	mg/kg	4	Metals-020/021	[NT]	11	<4	<4	0	[NT]	[NT]
Cadmium 1M HCl extract	mg/kg	0.5	Metals-020/021	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Cobalt 1M HCl extract	mg/kg	1	Metals-020/021	[NT]	11	2.7	2.6	4	[NT]	[NT]
Chromium 1M HCl extract	mg/kg	1	Metals-020/021	[NT]	11	<1	<1	0	[NT]	[NT]
Copper 1M HCl extract	mg/kg	1	Metals-020/021	[NT]	11	<1	<1	0	[NT]	[NT]
Iron 1M HCl extract	mg/kg	1	Metals-020/021	[NT]	11	1400	1400	0	[NT]	[NT]
Lead 1M HCl extract	mg/kg	1	Metals-020/021	[NT]	11	2	2	0	[NT]	[NT]
Manganese 1M HCl extract	mg/kg	1	Metals-020/021	[NT]	11	390	350	11	[NT]	[NT]
Nickel 1M HCl extract	mg/kg	1	Metals-020/021	[NT]	11	<1	<1	0	[NT]	[NT]
Zinc 1M HCl extract	mg/kg	1	Metals-020/021	[NT]	11	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			15/05/2025	1	15/05/2025	15/05/2025		15/05/2025	[NT]
Date analysed	-			15/05/2025	1	15/05/2025	15/05/2025		15/05/2025	[NT]
Total Organic Carbon in soil/solids	mg/kg	100	INORG-137	<100	1	5200	5300	2	99	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	15/05/2025	15/05/2025		[NT]	[NT]
Date analysed	-			[NT]	11	15/05/2025	15/05/2025		[NT]	[NT]
Total Organic Carbon in soil/solids	mg/kg	100	INORG-137	[NT]	11	6800	6500	5	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

Report Comments

Metals 1M HCl extractable :
- The laboratory RPD acceptance criteria has been exceeded for 379970-1 for Mn. Therefore a triplicate result has been issued as laboratory sample number 379970-13.
-# Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
-## Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Appendix B. Raw Macroinvertebrate Data

Order	Lowest Taxon	SWTG2	SWTG2	SWTG1C	SWTG1C	MBC0	MBC0	SWTG1	SWTG1
Replicate		1	2	1	2	1	2	1	2
Acarina	Acarina	73.3	41.7	180	140	100	180	7.1	17
Bivalvia	Hyriidae	6.67	0	0	0	0	0	0	0
Coleoptera	Dytiscidae	13.3	33.3	30	20	40	90	21	6.7
Coleoptera	Elmidae	0	8.33	0	10	20	10	0	0
Coleoptera	Hydraenidae	20	58.3	10	20	10	10	0	0
Coleoptera	Hydrochidae	0	0	0	20	0	10	0	0
Coleoptera	Hydrophilidae	33.3	16.7	10	10	10	10	0	3.3
Decapoda	Atyidae	73.3	75	30	20	10	10	0	0
Decapoda	Palaemonidae	20	8.33	0	0	20	10	0	0
Decapoda	Parathelphusidae	13.3	8.33	10	10	10	10	0	0
Diptera	Ceratopogonidae	120	242	110	230	180	220	7.1	6.7
Diptera	Chironominae	440	675	550	720	380	450	339	337
Diptera	Culicidae	6.67	8.33	0	0	20	20	0	0
Diptera	Orthocladiinae	33.3	58.3	90	40	120	150	0	0
Diptera	Tabanidae	0	0	0	0	0	10	0	0
Diptera	Tanypodinae	260	258	210	270	150	180	118	50
Diptera	Tipulidae	6.67	0	0	0	10	0	0	0
Ephemeroptera	Baetidae	73.3	233	90	30	200	220	18	50
Ephemeroptera	Caenidae	327	325	660	490	870	890	100	73
Ephemeroptera	Leptophlebiidae	0	0	0	0	20	10	0	0
Gastropoda	Ancylidae (Planorbidae)	13.3	8.33	10	20	10	30	0	0
Hemiptera	Corixidae	0	0	0	10	0	0	0	0
Hemiptera	Gerridae	20	0	30	20	30	50	3.6	0
Hemiptera	Mesoveliidae	0	0	0	20	10	20	0	0
Hemiptera	Micronectidae (Corixidae)	46.7	16.7	30	50	70	50	0	3.3
Hemiptera	Nepidae	0	8.33	10	10	0	10	0	0
Hemiptera	Veliidae	13.3	8.33	20	0	10	30	0	0
Hirudinea	Arhynchobdellida	0	0	0	0	10	0	0	0
Nematoda	Nematoda	0	0	0	0	10	10	0	0
Odonata	Coenagrionidae	6.67	0	10	0	10	10	0	0
Odonata	Gomphidae	6.67	16.7	0	10	10	0	0	0
Odonata	Libellulidae	13.3	8.33	20	10	10	20	3.6	0
Oligochaeta	Oligochaeta	120	175	90	240	30	50	104	110
Trichoptera	Calamoceratidae	0	0	0	0	10	0	0	0
Trichoptera	Ecnomidae	6.67	0	0	10	0	10	0	0
Trichoptera	Hydroptilidae	6.67	16.7	10	40	10	20	0	0
Trichoptera	Leptoceridae	26.7	58.3	70	20	90	80	0	0
Turbellaria	Dugesiidae	13.3	8.33	10	10	0	0	3.6	3.3

Good science at a fair price

Appendix E. WDL249 Surface Water Monitoring Locations 2025

ADP1	 January 2025	 February 2025	 March 2025	 April, 2025
SWTG1A	 January 2025	 February 2025	 March 2025	 April 2025
SWTG2	 January 2025	 February 2025	 March 2025	 April 2025

MBC01A	 January 2025	 February 2025	 March 2025	 April 2025
SWTG12	 January 2025	 February 2025	 March 2025	 April 2025
SWTG3A	 January 2025	 February 2025	 March 2025	 April 2025

EP1	 January 2025	 April 2025	 July 2024	 October 2025
EP2	 January 2025	 April 2025	 July 2024	 October 2025
TGM Pit	 January 2025	 February 2025	 March 2025	 April 2025

May 2025

June 2025

July 2025

August 2025

September 2025

October 2025

November 2025

December 2025

Appendix F. QAQC Documentation

Field Sheets

Lab CoC

Lab QAQC

Monitoring schedule QAQC

CHAIN OF CUSTODY FORM - Client

ENVIROLAB GROUP
National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
02 9910 6200 | sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
08 9317 2505 | lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
08 7087 6800 | adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
07 3266 9532 | brisbane@envirolab.com.au

Darwin Office - Envirolab Services
Unit 20/119 Reichardt Road, Winnellie, NT 0820
08 8967 1201 | darwin@envirolab.com.au

Company:	Primary Gold	**Client Project Name/Number/Site etc (ie report title):**	Toms Gully
Contact Person:	Sally Horsnell/Jaime Marr	**PO No. (if applicable):**	
Project Mgr:	Sally Horsnell	**Envirolab Quote No. :**	24NT014v1
Sampler:	Sally Horsnell	**Date results required:**	Standard / Same Day / 1 day / 2 day / 3 day (3 day ☒)
Address:	Level 26, 140 St Georges Terrance Perth WA	**Or choose:**	
Phone:	Mob: 04 5566 9600	*Note: Inform lab in advance if urgent turnaround is required - surcharges apply*	
Email Results to:	savannahrootsnt@outlook.com sallyhorsnell@outlook.com	**Additional report format:**	☐ Esdat ☐ Equis
Email Invoice to:	charles.hastie@hanking.com.au	**Lab Comments:**	Lab please report metals, TN, TP in ug/L, nb acidity report to both pH PN has approved this TAT cm 19/3

Sample information					Tests Required																		Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	13 Total metals (Low level) (Al, As, Cd, Co, Cr, Cu, Fe, Hg, Pb, Mn, Ni, Sb, Zn)	13 Filtered metals (Low level) (Al, As, Cd, Co, Cr, Cu, Fe, Hg, Pb, Mn, Ni, Sb, Zn)	2 Total Trace level Metals (Ag, U)	2 Filtered Trace level metals (Ag, U)	Ionic Balance Ca, K, Mg, Na, Hardness - Calc., OH, CO3, HCO3, Total Alkalinity, Cl, SO4 SUM ANION & SUM_CATIONS	TSS	TDS	Titratable acidity	Acidity as CaCO3	Acidity as CaCO3 (pH 3.7)	Acidity as CaCO3 (pH 8.3)	Acidity as H2SO4	Total Cyanide	Nutrient suite	pH	EC	Turbidity	DO	Provide as much information about the sample as you can
1	SWTG2		17/3/25	S/water																			Quick TAT cm 19/3

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

Relinquished by	Primary Gold	Envirolab Darwin	Laboratory MYL
Print Name:	Sally Horsnell	Gwenda Hayes	
Date & Time:	Sally Horsnell 12/3/25	Gwenda Hayes 12.30	19 MAR 2025
Signature:			

Lab Use Only	
Job number: PGC1155	Office Cooling: Ice / Ice pack / None
Temp Office: 10°C Temp Lab: 13.5	Lab Cooling: Ice / Ice pack / None
TAT: SAME day / 1 / 2 / 3 / 4 / STD	Security seal: Intact / Broken / None

Frozen + Filtered nutrient bottles supplied 7/18

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
ABN 53 140 099 207
16-18 Hayden Court Myaree WA 6154
ph +61 8 9317 2505
lab@mpl.com.au
www.mpl.com.au

Certificate of Analysis PGC1155

Client Details

Client	Primary Gold Ltd
Contact	Sally Horsnell
Address	PO Box 1311, SUBIACO PO, WA, 6904

Sample Details

Your Reference	Toms Gully
Number of Samples	1 Surface Water
Date Samples Received	19/03/2025
Date Instructions Received	19/03/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

Report Details

Date Results Requested by	24/03/2025
Date of Issue	24/03/2025

Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with *.

Authorisation Details

Results Approved By	Ben Carpenter, Metals Technician Lien Tang, Assistant Operations Manager Lucas Yii, Inorganics Team Leader Michael Mowle, Development Chemist - Inorganics and Metals Varsha Ho Wing, Inorganics and Metals Supervisor
Laboratory Manager	Michael Kubiak

Certificate of Analysis PGC1155

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
PGC1155-01	SWTG2	Surface Water	17/03/2025	19/03/2025

Acid Extractable Low Level Metals (Surface Water)

Envirolab ID	Units	PQL	PGC1155-01
Your Reference			SWTG2
Date Sampled			17/03/2025
Aluminium	µg/L	10	620
Arsenic	µg/L	1.0	1.1
Cadmium	µg/L	0.10	0.20
Cobalt	µg/L	1.0	2.1
Chromium	µg/L	1.0	1.0
Copper	µg/L	1.0	3.1
Iron	µg/L	10	1100
Mercury	µg/L	0.050	<0.050
Manganese	µg/L	1.0	91
Nickel	µg/L	1.0	4.9
Lead	µg/L	1.0	1.2
Antimony	µg/L	1.0	<1.0
Zinc	µg/L	1.0	18

Acid Extractable Trace Level Metals (Surface Water)

Envirolab ID	Units	PQL	PGC1155-01
Your Reference			SWTG2
Date Sampled			17/03/2025
Silver	µg/L	0.050	<0.050
Uranium	µg/L	0.10	0.32

Dissolved Low Level Metals (Surface Water)

Envirolab ID	Units	PQL	PGC1155-01
Your Reference			SWTG2
Date Sampled			17/03/2025
Aluminium	µg/L	10	140
Arsenic	µg/L	1.0	<1.0
Cadmium	µg/L	0.10	0.16
Cobalt	µg/L	1.0	1.6
Chromium	µg/L	1.0	<1.0
Copper	µg/L	1.0	2.0
Iron	µg/L	10	300
Mercury	µg/L	0.050	<0.050
Manganese	µg/L	1.0	77
Nickel	µg/L	1.0	3.9
Lead	µg/L	1.0	<1.0
Antimony	µg/L	1.0	<1.0
Zinc	µg/L	1.0	15

Dissolved Trace Level Metals (Surface Water)

Envirolab ID	Units	PQL	PGC1155-01
Your Reference			SWTG2
Date Sampled			17/03/2025
Silver	µg/L	0.050	<0.050
Uranium	µg/L	0.10	0.16

Inorganics - Physical Parameters (Surface Water)

Envirolab ID	Units	PQL	PGC1155-01
Your Reference			SWTG2
Date Sampled			17/03/2025
pH	pH units		6.7
Electrical Conductivity	µS/cm	2.0	45
Total Dissolved Solids	mg/L	5.0	27
Total Suspended Solids	mg/L	5.0	24
Turbidity	NTU	0.10	40 [4]
Dissolved Oxygen*	mg/L	0.10	9.3

Inorganics - Ionic Balance and Indexes (Surface Water)

Envirolab ID	Units	PQL	PGC1155-01
Your Reference			SWTG2
Date Sampled			17/03/2025
Bicarbonate Alkalinity as CaCO3	mg/L as CaCO3	5.0	6.8
Carbonate Alkalinity as CaCO3	mg/L as CaCO3	5.0	<5.0
Hydroxide OH- as CaCO3	mg/L as CaCO3	5.0	<5.0
Total Alkalinity as CaCO3	mg/L as CaCO3	5.0	6.8
Chloride	mg/L	1.0	7.2
Sulfate	mg/L	1.0	8.4
Calcium	mg/L	0.50	1.7
Magnesium	mg/L	0.50	1.6
Potassium	mg/L	0.50	0.79
Sodium	mg/L	0.50	2.4
Hardness (calc) equivalent CaCO3	mg/L	3.0	11
Ionic Balance	%		-20 [1]
Total Anions	mg/L	7.0	22
Anions as meq	meq/L	0.59	<0.59
Total Cations	mg/L	2.0	6.5
Cations as meq	meq/L	0.10	0.34

Inorganics - Miscellaneous and Common Anions (Surface Water)

Envirolab ID	Units	PQL	PGC1155-01
Your Reference			SWTG2
Date Sampled			17/03/2025
Acidity as CaCO3	mg/L	5.0	<5.0
Acidity as CaCO3 (pH 3.7)	mg/L	5.0	<5.0
Acidity as CaCO3 (pH 8.3)	mg/L	5.0	<5.0
Acidity as H2SO4	mg/L	5.0	<5.0

Inorganics - Nutrients (Surface Water)

Envirolab ID	Units	PQL	PGC1155-01
Your Reference			SWTG2
Date Sampled			17/03/2025
Ammonia as N	mg/L	0.0050	0.011
Nitrate as N	mg/L	0.0050	0.020
Nitrate as NO3 by calculation	mg/L	0.020	0.088
Nitrite as N	mg/L	0.0050	<0.0050
Nitrite as NO2 by calculation	mg/L	0.020	<0.020
NOx as N	mg/L	0.0050	0.020
TKN as N by calculation	mg/L	0.10	0.56
Organic Nitrogen by calc.	mg/L	0.10	0.55
Total Nitrogen	mg/L	0.10	0.58
Phosphate as P	mg/L	0.0050	<0.0050
Total Phosphorus	mg/L	0.010	<0.010

Result Comments

Identifier	Description
[1]	Ion balance is outside of acceptance criteria, however, the major cations/anions are near or below the PQL and hence the analytical error may be more significant resulting in a poor cation-anion balance.
[4]	cloudy

Method Summary

Method ID	Methodology Summary
Calc	Calculation
Calc - ION	Calculation
Calc - TKN	TKN determined by calculation (Total Nitrogen - NOx).
INORG-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis can be completed outside of the recommended holding times. Solids are reported from a 1:5 water extract unless otherwise specified. Alternatively, pH is determined in a 1:5 extract using 0.01M calcium chloride or a solid is extracted at a ratio of 1:2.5 (AS1289.4.3.1), pH is measured in the extract.
INORG-002	Conductivity and Salinity - measured using a conductivity cell at 25°C. Soil results reported from a 1:5 Soil:Water extract unless otherwise specified. Please note Resistivity is estimated by calculation and may not correlate with results otherwise obtained using the Resistivity current method (based on AS 1289.4.4.1), depending on the nature of the soil being analysed.
INORG-005	Acidity - determined by titration based on APHA latest edition 2310 B. Solids reported from a 1:5 water extract unless otherwise specified. Free Carbon Dioxide - determined titrimetrically in accordance with APHA latest edition,4500-CO2 C.
INORG-006	Alkalinity - determined titrimetrically based on APHA latest edition 2320-B. Solids reported from a 1:5 water extract unless otherwise specified. Total Carbon Dioxide - determined by calculation in accordance with APHA latest edition,4500-CO2 D.
INORG-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180±10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation: TDS = EC*0.6
INORG-019	Suspended Solids - determined gravimetrically by filtration of the sample. The solids are dried at 104±5°C
INORG-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B.
INORG-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% i.e. total anions = total cations +/-15%.
INORG-055	Nitrate/Nitrite/NOx/TKN - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils/solids are analysed following a water extraction.
INORG-057	Ammonia - determined colourimetrically. Water samples are filtered on receipt prior to analysis. Soils and OHS media are analysed following a water extraction. Alternatively, Ammonia can be extracted from soil using 1M KCl.
INORG-060	Phosphate - determined colourimetrically using APHA latest edition 4500 P E. Water samples are filtered on receipt prior to analysis. Soils are analysed from a water extract.
INORG-060_TP	Total Phosphorus - determined colourimetrically using APHA latest edition 4500-P J. Water samples are filtered on receipt prior to analysis. Soils are analysed from a water extract.
INORG-081	Anions determined by Ion Chromatography. Waters samples are filtered on receipt prior to analysis. Solids are analysed from a water extract. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
INORG-112	Dissolved Oxygen determined using a membrane electrode. Note this analysis should ideally be carried out immediately after sampling.
INORG-127	Total Nitrogen by high temperature catalytic combustion with chemiluminescence detection. Organic Carbon forms (inorganic, organic, total) determined using a TOC/NDIR analyser via combustion. Dissolved forms require filtering prior to determination.
METALS-020	Determination of various metals by ICP-OES. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
METALS-021	Determination of Mercury by Cold Vapour AAS.
METALS-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary PGC1155

Client Details

Client	Primary Gold Ltd
Your Reference	Toms Gully
Date Issued	24/03/2025

Recommended Holding Time Compliance

Recommended holding time exceedances exist - See detailed list below

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	No	Duplicate Outliers Exist - See detailed list below
Matrix Spike	Yes	No Outliers
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	No	QC Frequency Outliers Exist - See detailed list below

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary PGC1155

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
Total Metals (LL) | Water	1	17/03/2025	20/03/2025	21/03/2025	Yes
Total Metals (LL)-Hg | Water	1	17/03/2025	21/03/2025	24/03/2025	Yes
Total Metals (TR) | Water	1	17/03/2025	20/03/2025	21/03/2025	Yes
Dissolved Metals (LL) | Water	1	17/03/2025	20/03/2025	21/03/2025	Yes
Dissolved Metals (LL)-Hg | Water	1	17/03/2025	21/03/2025	24/03/2025	Yes
Dissolved Metals (TR) | Water	1	17/03/2025	20/03/2025	21/03/2025	Yes
Dissolved O2 | Water	1	17/03/2025	19/03/2025	19/03/2025	No
EC | Water	1	17/03/2025	19/03/2025	19/03/2025	Yes
pH | Water	1	17/03/2025	19/03/2025	19/03/2025	No
TDS | Water	1	17/03/2025	20/03/2025	20/03/2025	Yes
TSS | Water	1	17/03/2025	20/03/2025	20/03/2025	Yes
Turbidity | Water	1	17/03/2025	20/03/2025	20/03/2025	No
Alkalinity Suite | Water	1	17/03/2025	19/03/2025	19/03/2025	Yes
Chloride | Water	1	17/03/2025	19/03/2025	20/03/2025	Yes
Dissolved Cations | Water	1	17/03/2025	20/03/2025	21/03/2025	Yes
Ion Balance | Water	1	17/03/2025	19/03/2025	24/03/2025	Yes
	1	17/03/2025	20/03/2025	21/03/2025	Yes
Sulfate | Water	1	17/03/2025	19/03/2025	20/03/2025	Yes
Acidity (pH 3.7) | Water	1	17/03/2025	19/03/2025	20/03/2025	Yes
Acidity (pH 8.3) | Water	1	17/03/2025	19/03/2025	19/03/2025	Yes
Acidity as CaCO3 | Water	1	17/03/2025	19/03/2025	19/03/2025	Yes
Acidity as H2SO4 | Water	1	17/03/2025	19/03/2025	20/03/2025	Yes
Nitrogen - Ammonia | Water	1	17/03/2025	21/03/2025	21/03/2025	Yes
Nitrogen - Nitrate | Water	1	17/03/2025	21/03/2025	21/03/2025	Yes
Nitrogen - Nitrite | Water	1	17/03/2025	21/03/2025	21/03/2025	Yes
Nitrogen - NOx | Water	1	17/03/2025	21/03/2025	21/03/2025	Yes
Nitrogen - Total N | Water	1	17/03/2025	18/03/2025	20/03/2025	Yes
Phosphate as P | Water	1	17/03/2025	21/03/2025	21/03/2025	Yes
TKN as N calc | Water	1	17/03/2025	19/03/2025	24/03/2025	Yes
Total Phosphorus | Water	1	17/03/2025	20/03/2025	20/03/2025	Yes

Data Quality Assessment Summary PGC1155

Outliers: Duplicates

INORG-005|Inorganics - Miscellaneous and Common Anions (Water)| Batch BGC3170

Sample ID	Duplicate ID	Analyte	% Limits	RPD
BGC3170-DUP2#	DUP2	Acidity as CaCO3	20.00	200[2]
BGC3170-DUP2#	DUP2	Acidity as CaCO3 (pH 3.7)	20.00	200[2]
BGC3170-DUP2#	DUP2	Acidity as CaCO3 (pH 8.3)	20.00	200[2]
BGC3170-DUP2#	DUP2	Acidity as H2SO4	20.00	200[2]

METALS-022|Dissolved Low Level Metals (Water)| Batch BGC3386

Sample ID	Duplicate ID	Analyte	% Limits	RPD
BGC3386-DUP2#	DUP2	Zinc	20.00	25.3[3]

Outliers: QC Frequency

INORG-112|Inorganics - Physical Parameters (Water)| Batch BGC3876

Analysis	QC Type	Expected	Reported
Dissolved O2	Duplicate	1	0

Quality Control PGC1155

METALS-022|Acid Extractable Low Level Metals (Water) | Batch BGC3383

Analyte	Units	PQL	Blank	DUP1 BGC3383-DUP1# Samp | QC | RPD %	DUP2 BGC3383-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3383-MS1#
Aluminium	µg/L	10	<10	526 | 519 | 1.18	13.4 | <10 | [NA] [3]	108	94.1
Antimony	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	108	108
Arsenic	µg/L	1.0	<1.0	2.40 | 2.34 | [NA]	<1.0 | <1.0 | [NA]	103	101
Cadmium	µg/L	0.10	<0.10	<0.10 | <0.10 | [NA]	<0.10 | <0.10 | [NA]	108	107
Chromium	µg/L	1.0	<1.0	1.92 | 1.92 | [NA]	<1.0 | <1.0 | [NA]	106	103
Cobalt	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	107	102
Copper	µg/L	1.0	<1.0	274 | 271 | 0.887	213 | 202 | 5.32	110	109
Iron	µg/L	10	<10	2920 | 2950 | 0.953	17.7 | <10 | [NA] [3]	108	100
Lead	µg/L	1.0	<1.0	3.60 | 3.54 | [NA]	1.62 | 1.63 | [NA]	106	104
Manganese	µg/L	1.0	<1.0	112 | 112 | 0.136	<1.0 | <1.0 | [NA]	102	97.9
Nickel	µg/L	1.0	<1.0	3.47 | 3.23 | [NA]	3.60 | 1.53 | [NA] [3]	108	106
Zinc	µg/L	1.0	<1.0	283 | 279 | 1.67	51.7 | 45.7 | 12.4	100	101

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-021|Acid Extractable Low Level Metals (Water) | Batch BGC3529

Analyte	Units	PQL	Blank	DUP1 BGC3529-DUP1# Samp | QC | RPD %	DUP2 BGC3529-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3529-MS1#
Mercury	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	113	111

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-022|Acid Extractable Trace Level Metals (Water) | Batch BGC3383

Analyte	Units	PQL	Blank	DUP1 BGC3383-DUP1# Samp | QC | RPD %	DUP2 BGC3383-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3383-MS1#
Silver	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	104	103
Uranium	µg/L	0.10	<0.10	3.33 | 3.30 | 0.754	<0.10 | <0.10 | [NA]	109	107

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-022|Dissolved Low Level Metals (Water) | Batch BGC3386

Analyte	Units	PQL	Blank	DUP1 BGC3386-DUP1# Samp | QC | RPD %	DUP2 BGC3386-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3386-MS1#
Aluminium	µg/L	10	<10	49.1 | 48.2 | [NA]	190 | 193 | 1.40	109	97.6
Antimony	µg/L	1.0	<1.0	1.42 | 1.42 | [NA]	<1.0 | <1.0 | [NA]	107	106
Arsenic	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	1.82 | 1.85 | [NA]	107	108
Cadmium	µg/L	0.10	<0.10	<0.10 | <0.10 | [NA]	<0.10 | <0.10 | [NA]	108	110
Chromium	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	108	107
Cobalt	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	109	108
Copper	µg/L	1.0	<1.0	9.09 | 9.06 | 0.320	<1.0 | <1.0 | [NA]	109	107
Iron	µg/L	10	<10	51.8 | 51.6 | 0.422	946 | 956 | 1.00	109	94.7
Lead	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	<1.0 | <1.0 | [NA]	106	106
Manganese	µg/L	1.0	<1.0	22.0 | 22.0 | 0.0319	36.8 | 36.6 | 0.496	105	100
Nickel	µg/L	1.0	<1.0	1.19 | 1.19 | [NA]	<1.0 | <1.0 | [NA]	108	107
Zinc	µg/L	1.0	<1.0	55.1 | 53.4 | 3.13	4.70 | 6.06 | 25.3 [3]	107	103

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-021|Dissolved Low Level Metals (Water) | Batch BGC3528

Analyte	Units	PQL	Blank	DUP1 BGC3528-DUP1# Samp | QC | RPD %	DUP2 BGC3528-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3528-MS1#
Mercury	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	112	111

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PGC1155

METALS-022|Dissolved Trace Level Metals (Water) | Batch BGC3386

Analyte	Units	PQL	Blank	DUP1 BGC3386-DUP1# Samp | QC | RPD %	DUP2 BGC3386-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3386-MS1#
Silver	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	104	95.9
Uranium	µg/L	0.10	<0.10	0.214 | 0.211 | [NA]	0.110 | 0.109 | [NA]	107	106

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-001|Inorganics - Physical Parameters (Water) | Batch BGC3127

Analyte	Units	PQL	Blank	DUP1 BGC3127-DUP1# Samp | QC | RPD %	DUP2 BGC3127-DUP2# Samp | QC | RPD %	LCS %
pH	pH units		5.1	7.9 | 7.9 | 0.380	7.5 | 7.5 | 0.00	102
Electrical Conductivity	µS/cm	2.0	2.30	143000 | 143000 | 0.432	7420 | 7420 | 0.0162	105

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-022|Inorganics - Physical Parameters (Water) | Batch BGC3255

Analyte	Units	PQL	Blank	DUP1 BGC3255-DUP1# Samp | QC | RPD %	DUP2 BGC3255-DUP2# Samp | QC | RPD %	LCS %
Turbidity	NTU	0.10	<0.10	0.350 | 0.330 | [NA]	0.400 | 0.360 | [NA]	94.0

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-018|Inorganics - Physical Parameters (Water) | Batch BGC3434

Analyte	Units	PQL	Blank	DUP1 BGC3434-DUP1# Samp | QC | RPD %	DUP2 BGC3434-DUP2# Samp | QC | RPD %	LCS %
Total Dissolved Solids	mg/L	5.0	<5.0	413 | 404 | 2.20	119 | 113 | 5.17	102

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-019|Inorganics - Physical Parameters (Water) | Batch BGC3435

Analyte	Units	PQL	Blank	DUP1 BGC3435-DUP1# Samp | QC | RPD %	DUP2 BGC3435-DUP2# Samp | QC | RPD %	LCS %
Total Suspended Solids	mg/L	5.0	<5.0	INS | INS | [NA] [2]	INS | INS | [NA] [2]	119

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-112|Inorganics - Physical Parameters (Water) | Batch BGC3876

Analyte	Units	PQL	Blank	LCS %
Dissolved Oxygen	mg/L	0.10	<0.10	[NA]

INORG-006|Inorganics - Ionic Balance and Indexes (Water) | Batch BGC3127

Analyte	Units	PQL	Blank	DUP1 BGC3127-DUP1# Samp | QC | RPD %	DUP2 BGC3127-DUP2# Samp | QC | RPD %	LCS %
Bicarbonate Alkalinity as CaCO3	mg/L as CaCO3	5.0	<5.0	150 | 143 | 4.47	295 | 298 | 1.29	[NA]
Carbonate Alkalinity as CaCO3	mg/L as CaCO3	5.0	<5.0	<5.0 | <5.0 | [NA]	<5.0 | <5.0 | [NA]	[NA]
Hydroxide OH- as CaCO3	mg/L as CaCO3	5.0	<5.0	<5.0 | <5.0 | [NA]	<5.0 | <5.0 | [NA]	[NA]
Total Alkalinity as CaCO3	mg/L as CaCO3	5.0	<5.0	150 | 143 | 4.47	295 | 298 | 1.29	90.1

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PGC1155

INORG-081 | Inorganics - Ionic Balance and Indexes (Water) | Batch BGC3195

Analyte	Units	PQL	Blank	DUP1 BGC3195-DUP1# Samp | QC | RPD %	DUP2 BGC3195-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3195-MS1#
Chloride	mg/L	1.0	<1.0	230 | 231 | 0.0780	88100 | 88000 | 0.199	106	111
Sulfate	mg/L	1.0	<1.0	115 | 115 | 0.0340	13000 | 12800 | 1.72	105	124

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-020 | Inorganics - Ionic Balance and Indexes (Water) | Batch BGC3388

Analyte	Units	PQL	Blank	DUP1 BGC3388-DUP1# Samp | QC | RPD %	DUP2 BGC3388-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3388-MS1#
Calcium	mg/L	0.50	<0.50	14.1 | 14.1 | 0.163	44.7 | 50.0 | 11.1	106	102
Magnesium	mg/L	0.50	<0.50	1.64 | 1.63 | [NA]	15.8 | 16.3 | 2.80	109	109
Potassium	mg/L	0.50	<0.50	3.68 | 3.69 | 0.342	10.3 | 11.4 | 10.1	97.8	101
Sodium	mg/L	0.50	<0.50	7.60 | 7.60 | 0.00921	97.2 | 99.1 | 1.92	104	107
Hardness (calc) equivalent CaCO3	mg/L	3.0	<3.0	42.0 | 42.0 | 0.0465	177 | 192 | 8.13	[NA]	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-005 | Inorganics - Miscellaneous and Common Anions (Water) | Batch BGC3170

Analyte	Units	PQL	Blank	DUP1 BGC3170-DUP1# Samp | QC | RPD %	DUP2 BGC3170-DUP2# Samp | QC | RPD %	LCS %
Acidity as CaCO3	mg/L	5.0	<5.0	INS | INS | [NA] [2]	INS | INS | 200 [2]	105
Acidity as CaCO3 (pH 3.7)	mg/L	5.0	<5.0	INS | INS | [NA] [2]	INS | INS | 200 [2]	105
Acidity as CaCO3 (pH 8.3)	mg/L	5.0	<5.0	INS | INS | [NA] [2]	INS | INS | 200 [2]	105
Acidity as H2SO4	mg/L	5.0	<5.0	INS | INS | [NA] [2]	INS | INS | 200 [2]	105

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-127 | Inorganics - Nutrients (Water) | Batch BGC0342

Analyte	Units	PQL	Blank	DUP1 BGC0342-DUP1# Samp | QC | RPD %	DUP2 BGC0342-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC0342-MS1#
Total Nitrogen	mg/L	0.10	<0.10	1.06 | 1.06 | 0.335	0.334 | 0.326 | [NA]	101	105

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-060_TP | Inorganics - Nutrients (Water) | Batch BGC3260

Analyte	Units	PQL	Blank	DUP1 BGC3260-DUP1# Samp | QC | RPD %	DUP2 BGC3260-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3260-MS1#
Total Phosphorus	mg/L	0.010	<0.010	0.0232 | 0.0250 | [NA]	0.275 | 0.271 | 1.76	115	113

Analyte	Units	PQL	Blank	LCS %
Total Phosphorus	mg/L	0.010	<0.010	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

Quality Control PGC1155

INORG-057 | Inorganics - Nutrients (Water) | Batch BGC3518

Analyte	Units	PQL	Blank	DUP1 BGC3518-DUP1# Samp | QC | RPD %	DUP2 BGC3518-DUP2# Samp | QC | RPD %	LCS %	Spike % BGC3518-MS1#
Ammonia as N	mg/L	0.0050	<0.0050	9.06 | 8.99 | 0.866	0.108 | 0.104 | 4.10	100	116
Nitrate as N	mg/L	0.0050	<0.0050	6.42 | 6.49 | 1.11	0.0188 | 0.0217 | [NA]	101	121
Nitrate as NO3 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
Nitrite as N	mg/L	0.0050	<0.0050	0.152 | 0.153 | 0.450	<0.0050 | <0.0050 | [NA]	95.0	126
Nitrite as NO2 by calculation	mg/L	0.020	<0.020			[NA]	[NA]
NOx as N	mg/L	0.0050	<0.0050	6.57 | 6.64 | 1.10	0.0194 | 0.0223 | [NA]	101	121
Phosphate as P	mg/L	0.0050	<0.0050	<0.0050 | <0.0050 | [NA]	<0.0050 | <0.0050 | [NA]	108	105

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

QC Comments

Identifier	Description
[2]	Note: There was insufficient sample to perform all QC according to our internal guidelines.
[3]	Duplicate %RPD may be flagged as an outlier to routine laboratory acceptance, however, where one or both results are <10*PQL, the RPD acceptance criteria increases exponentially.