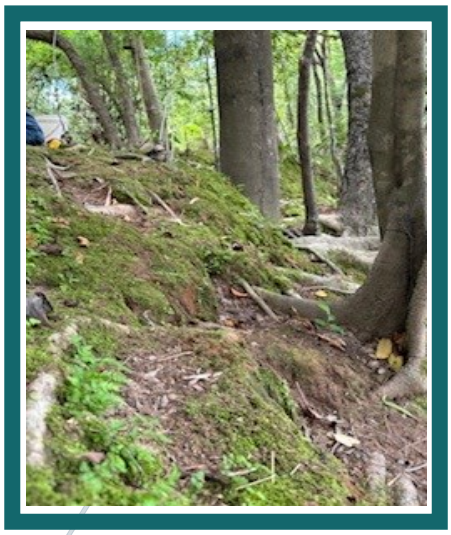
22 December 2024

WDL 249 Environmental Monitoring Report

22 December 2023- 21 December 2024

Toms Gully Mine Project Area



Endorsement

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

MLN1058	Waste Discharge Licence No. 249
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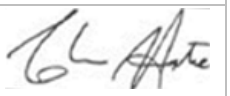
Photos on front page: SWTG1A upstream monitoring sites Mount Bundey creek and Toms Gully RO water treatment plant.

Endorsement

	Author	Author	Reviewed by	Approved by
Date	22/12/2024	22/12/2024	22/12/2024	22/12/2024
Name (s)	Sally Horsnell	Jaime Marr	Charles Hastie	Charles Hastie
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: Sunday 22 December 2024

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	11	Monitoring Method	
N/A	-	Where there is an approved monitoring plan – details of approved plan title, version number, date of submission)	
Y	22-27	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	29	Monitoring Results	
Y	App A	Has all monitoring data been included?	
Y	51	Calculations/exceedance of assessment criteria	
Y	28	QAQC	
Y	34-45	Presentation including graphs against trigger levels/benchmarks.	
Y	34-45	Discussion analysis and data interpretation against trends included?	
Y	55	Conclusions and proposed actions,	
Y	51	Have non-conformances been identified?	
Y	57	Have changes made to monitoring programs been identified and detailed?	
Y	61	Have corrective actions taken and improvements made been detailed?	
Y	64	Incident Reporting: Have environmental incidents been detailed?	
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Executive Summary

This Environmental Monitoring Report (EMR) for the Toms Gully Mine is the second submission under WDL249 to address Primary Gold Limited's performance monitoring and management activities. The reporting period is from 22 December 2023 to 21 December 2024.

The EMR content includes results and interpretation for each aspect of the monitoring programme (as detailed under Item 11 and Conditions 27-36 of WDL 249) as relevant to the current site care and maintenance activities and authorised discharge.

This was the first year controlled discharge of treated wastewater, by reverse osmosis, from the Toms Gully Pit occurred from ADP1 to Mount Bundey Creek. A total 60,480 KL of treated water was discharged from January to April 2024.

Treated water discharge commenced in mid-January 2024 in line with continual creek flows (1.1 metre) in Mount Bundey creek. There was a total of 15 weekly monitoring events starting in mid-January and ceasing at the end of April 2024. Cease of creek flow in the lower catchment was recorded in mid-May 2024. Creek flows generally aligned with rainfall events with the largest rainfall and flood event in late January and mid-March with flood waters (5.2 metres and 5.1 metres respectively).

All monitoring requirements (as per conditions C27-C36) were met during the reporting.

Based on the assessment of information gathered during the reporting period, the activity involving discharge of treated water (by reverse osmosis) to Mount Bundey creek via ADP1 is unlikely to harm or have an adverse effect on, or potential harm to or adverse effect on, the environment. The reasoning for this decision is based on discharge water quality and total loading calculations is generally within WDL 249 GV's. Further considering the dilute nature of the treated water, it is unlikely that the contaminant loads would have resulted in any contaminant accumulation in the sediments of Mount Bundey Creek.

SWTG2 surface water quality and exceedance reports reflect the history of existing mine disturbance at the TGM. Surface water quality trends for physical parameters 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 (2016-2024). There were several reportable exceedances of TV's for these metals triggering Condition 10 (a) An exceedance of a trigger value , on three consecutive sampling occasions; and/ or condition 10 (c) An exceedance of three or more times a trigger value. All were reported to NT EPA.

Upstream water monitoring site (SWTG1A) short- and long-term values recorded cadmium, cobalt, copper and nickel below laboratory LoR however dissolved zinc concentrations were elevated. Surface water quality short- and long-term trends comparisons between upstream and downstream of TGPA establishes a good context for the influences that the degraded mined domains have on water chemistry in Mount Bundey creek.

Results of the baseline biological monitoring programme, surface water quality sampling identified potential point source pollution related to surface/groundwater interactions between infrastructure Toms Gully and Mount Bundey Creek. Exceedance of surface water guideline values, but not sediment guideline values at MBC01 is possibly due to low pH allowing metals to remain dissolved in surface waters close to the TSF. The same could not be said at SWTG2, where the cumulative impact of historical pollution from Tom's Gully Mine is becoming more evident. Waste discharge was not underway during the recessional flow period that sampling was completed, which reflects that impacts associated with poor water quality are more likely to be related to surface/groundwater interactions that are not being diluted from upstream flow or treated water discharge. There was some accumulation of metals in sediments, and an exceedance of the upper guideline value for arsenic for the first time at SWTG2. (AES, 2024)

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 tenement. Further 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.

1 Introduction

In accordance with sections 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 2023/2024 reporting period.

Under the provisions of the License conditions, and during this reporting period, treated wastewater discharge via ADP1 from mid-January 2024 and ceased at the end of April 2024. This is the first year of active discharge with a total of 60 ML released via ADP1.

Communications between the Department of Environment, Parks and Water Security (DEPWS) 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 2023 to 21 December 2024 (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 the 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 the 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, including the TGPA, 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). 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 km2 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 the 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.
- 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.

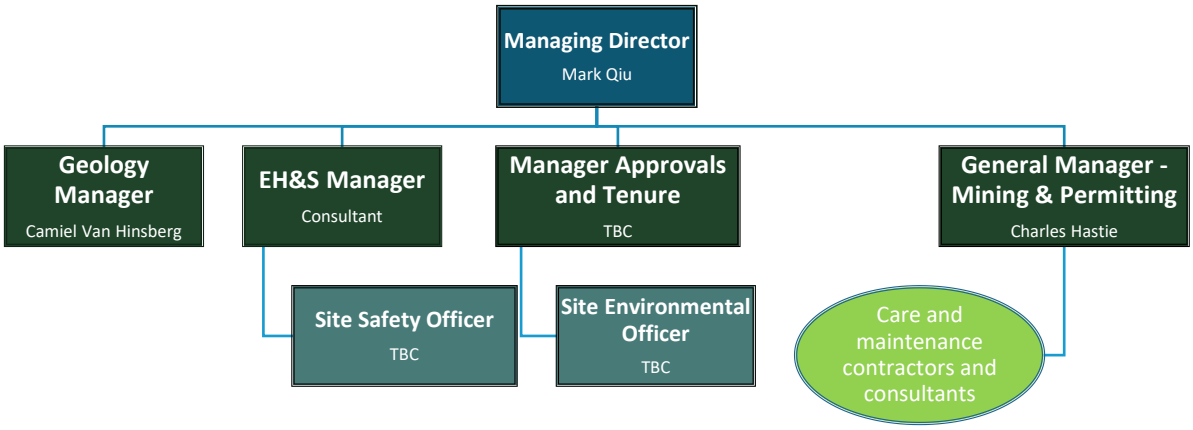


Figure 1-1 Organisation structure (Care and Maintenance)

1.2.2 Workforce

PGO employees operate the 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 old 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 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 2023-2024 reporting period and has been since PGO's purchase of tenements in 2013. No exploration activities occurred at TGPA during this reporting period. The 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 TG Pit (September 2023)

Photo 1-1 TGPA Reverse Osmosis Plant and Pump Pontoon

1.5.2 Waste Discharge Licence

DEPWS issued PGO 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 the ADP1 as per the conditions of the Licence. PGO

obtained the License to manage on site water inventories and maintain Toms Gully Pit water levels to a safe freeboard eliminating the risk of uncontrolled flows off tenement.

As part of the approved TGPA water management programme, Toms Gully Pit (Main Pit) is used as the repository for all pumped water received from the 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 through the authorised compliance point (SWTG2) and only to include wastewater treated by the RO Plant via the authorised discharge point (ADP1).

1.5.2.1 Authorised Discharge Points and Compliance Points

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

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

Creek	Site	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 Compliance Site, SWTG2 (Photo 1-2).

TGPA ADP1 (January 2024)

SWTG2 WDL 249 Compliance Point, telemetry station

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

Active discharge of treated water to ADP1 occurred from January 2024 to end of April 2024. During discharge, flow data is recorded continuously at the at the RO plant release point where data can be retrieved as required. Height levels were taken weekly at Toms Gully Pit. The RO Plant and pumps are connected to mains power.

A solar powered telemetry station is situated at the Compliance Point (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)

TGPA Pit water levels were recorded weekly during routine monitoring, which is above the monthly requirement as per Appendix 2 of the Licence. Water levels were recorded using relative levels off a surveyed marker. Figure 1-2 shows levels of the Pit since 30 November 2023. Current levels of 18.38 mRL as of 27 November 2024 compared to this time 11 months ago with an overall reduction of -0.54m.

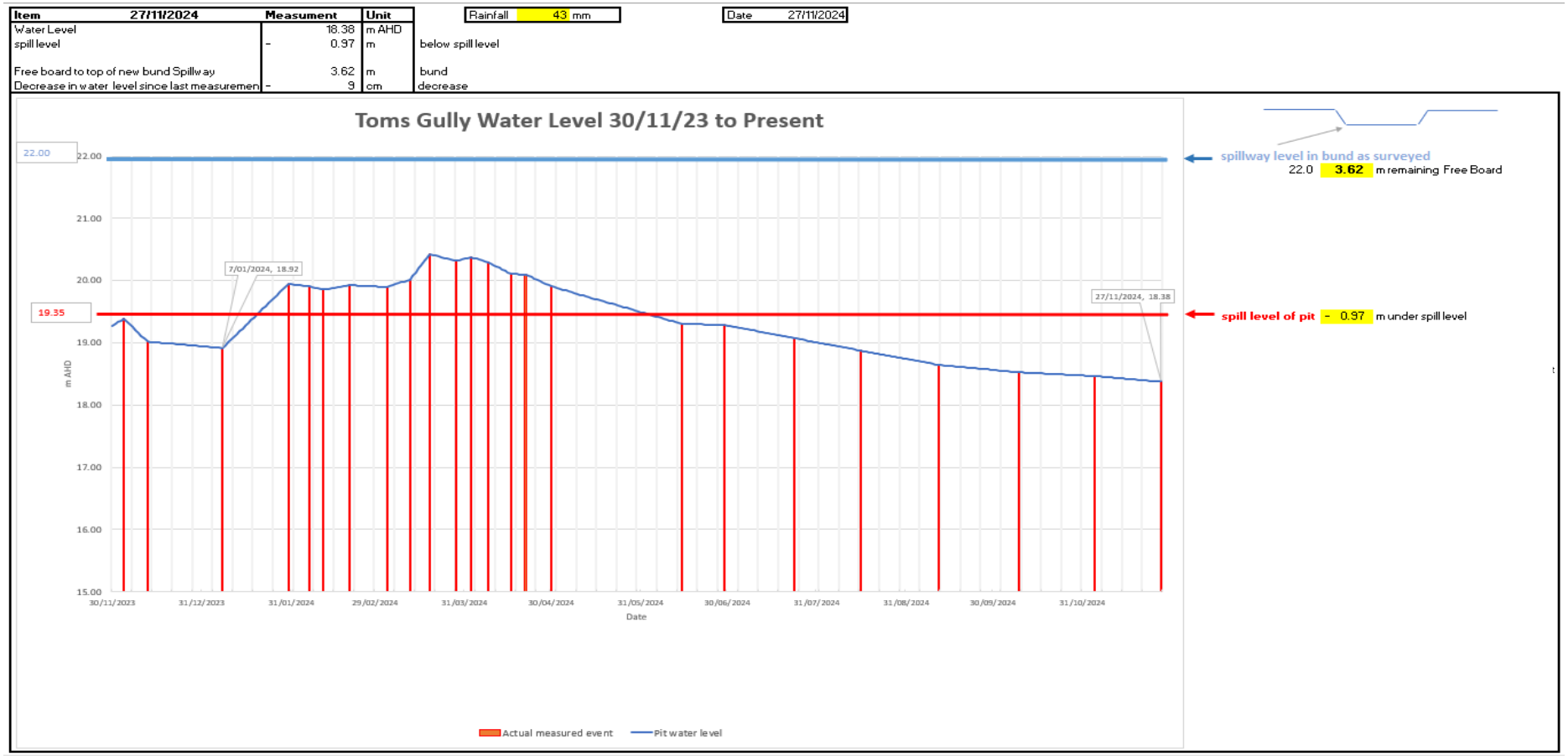


Figure 1-2 Toms Gully Mine Pit Water Level (2023- 24)

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.

Upstream of the TGPA are two other projects owned and managed by PGO, Rustlers Roost and Quest 29. Whilst also in care and maintenance, these two sites report to head waters of the Mount Bundey Creek and contribute to water quality. During the reporting period the Rustlers Roost site held a Waste Discharge Licence (WDL247-2) however no active discharge occurred during the reporting period and the Licence was surrendered June 2024.

All of 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.

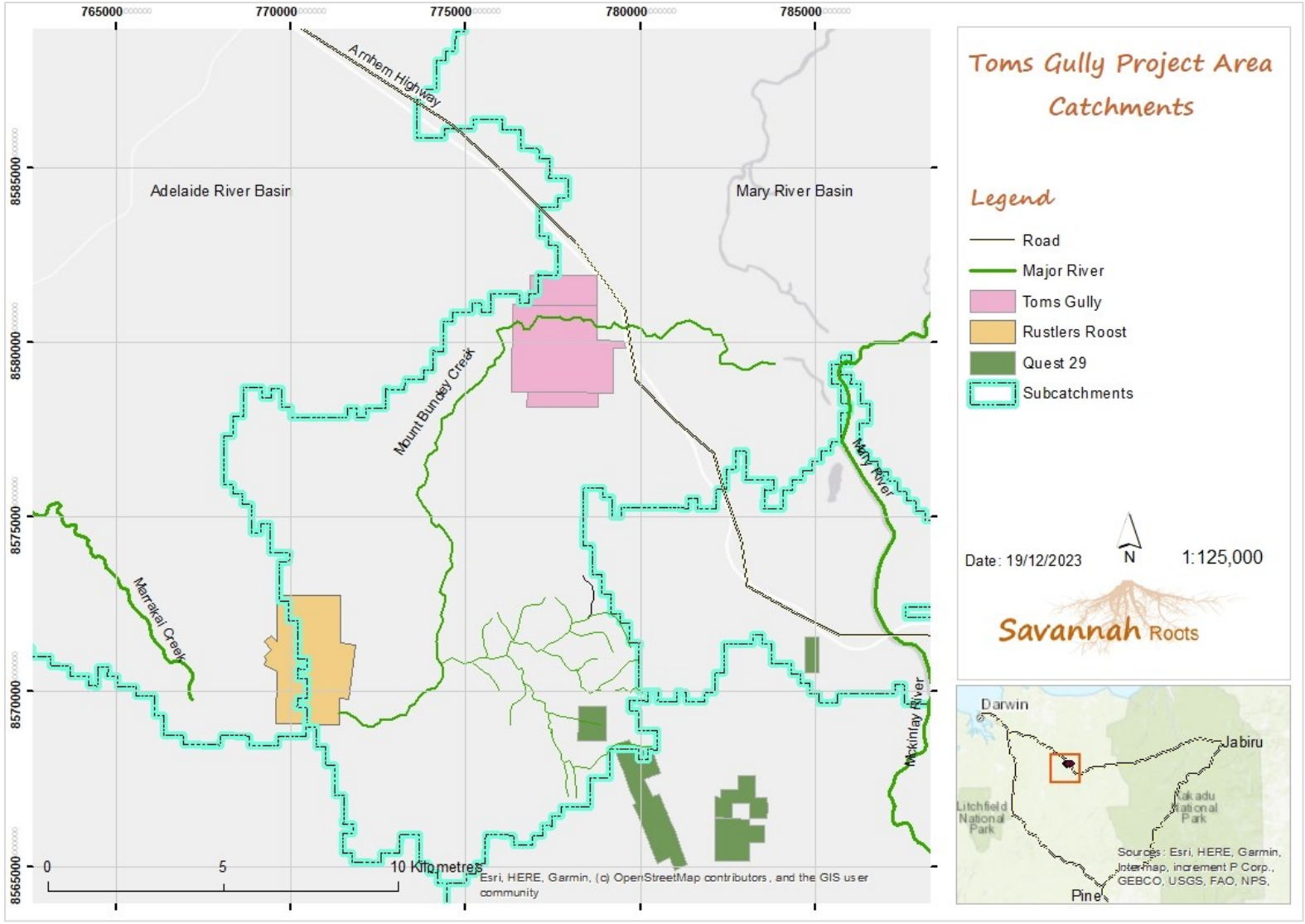


Figure 2-1 Toms Gully Project Area Sub Catchments

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 the Mary River catchment are declared beneficial use (BUD) for its environmental, riparian, and cultural values. The ground water of the same catchment has environmental, riparian, and agricultural values (DIPE, 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 located 4 km to the east via Mount Bundey Creek (NR Maps, 2023; Figure 2-2); and
- Djukdinj National Park located 15 km to the north (NR Maps, 2023);

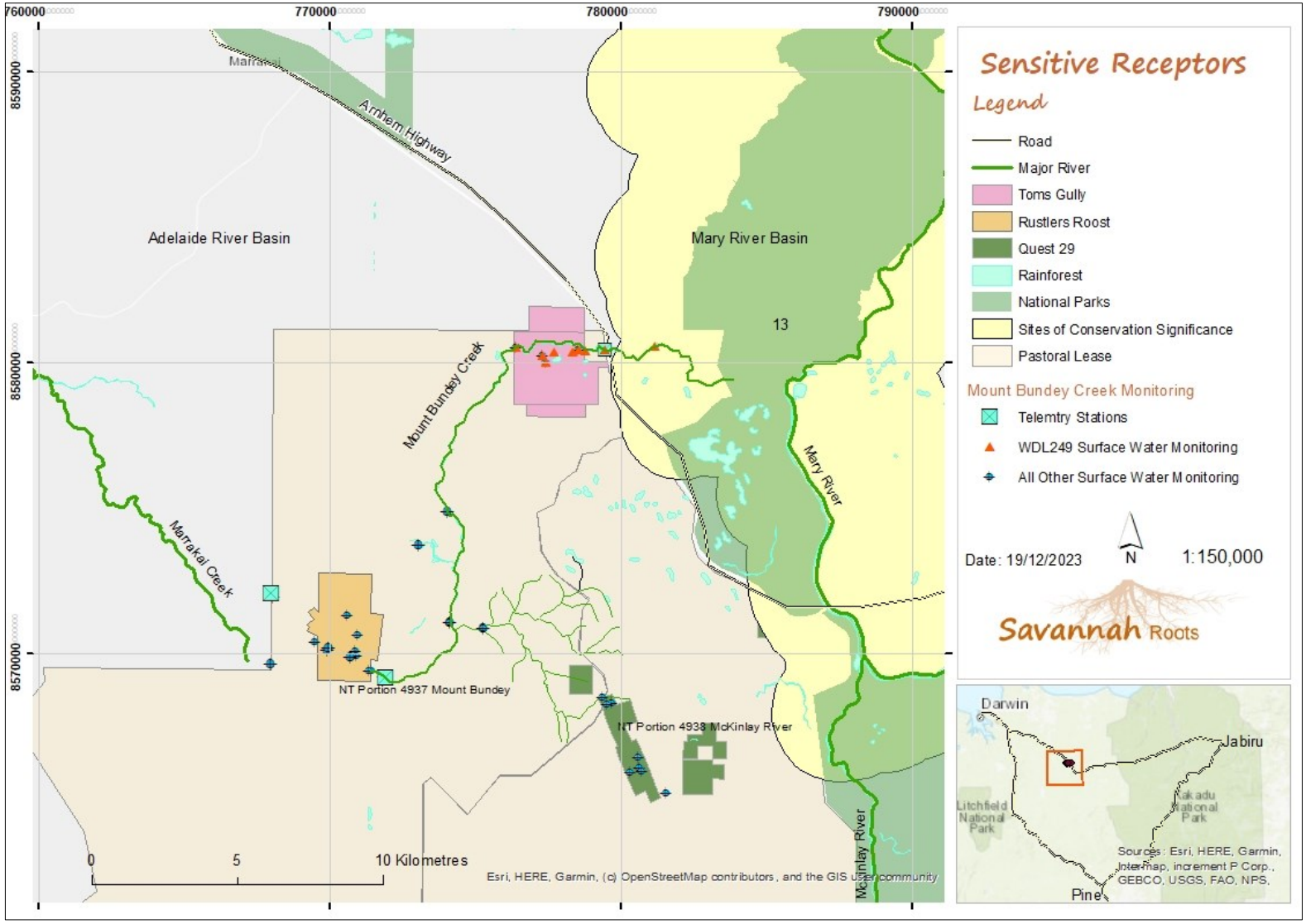


Figure 2-2 Toms Gully Project Area Sensitive Receptors

2.1.3 Rainfall

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 Gullys 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 2023/24 rainfall received a total of 1409 mm recorded to April with January recording the greatest rainfall event for the season. (Figure 2-3) The previous years rainfall in 2022-23 was 1171 mm and in 2021- 22 of 1132 mm.

Quest 29 Project Area recorded 739 mm and Rustlers Roost Project Area recorded 987mm with the highest rainfall recorded in February 2024 for both sites.

Rainfall generally aligns with creek water level fluctuations (level data recorded at the SWTG2 compliance point telemetry station) and upper catchment only rainfall events.

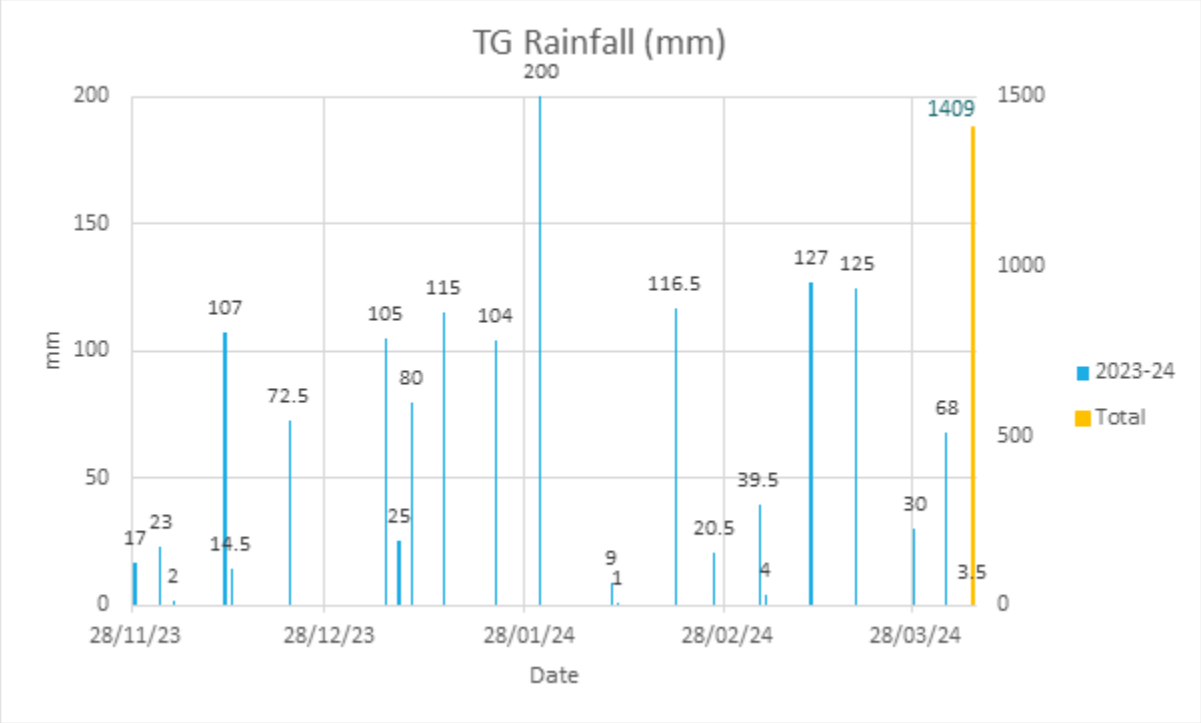


Figure 2-3 Toms Gully Rainfall (mm) for 2023- 24 Wet Season

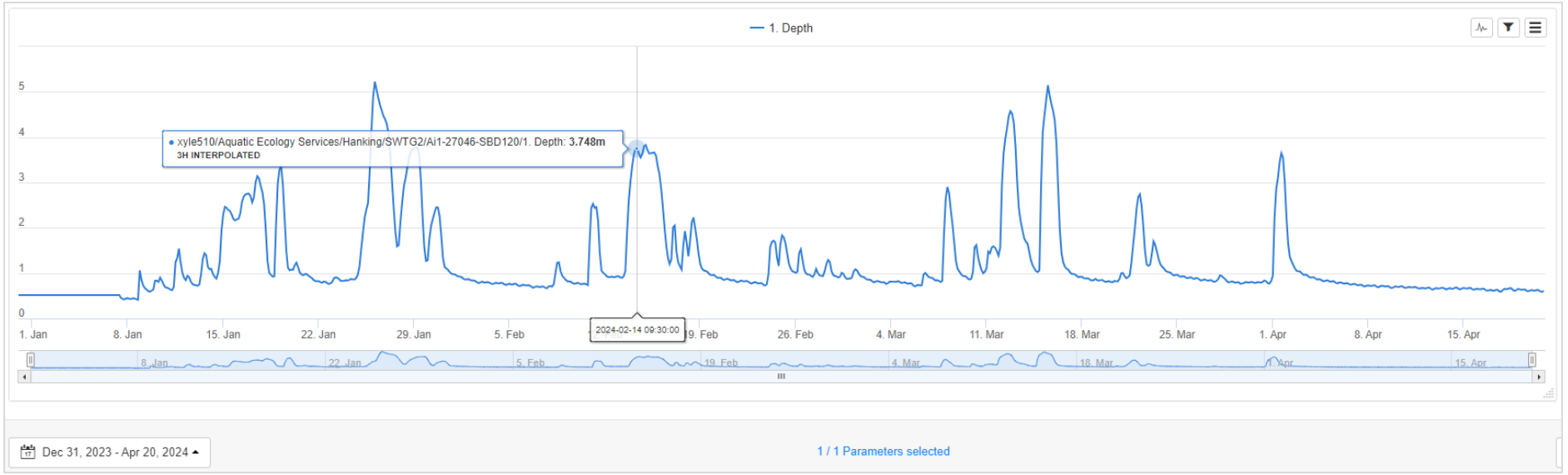


Figure 2-4 SWTG2 water levels (m) during the 2023-24 wet season

2.2 Sampling and Analysis Method

All field sampling was performed as per PGO's water quality monitoring procedure (Appendix C).

An Aquaread AP-2000 Handheld meter was used at all sites 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.

Compliance site 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 and includes water level, pH, electrical conductivity, dissolved oxygen and turbidity, and temperature) and creek. Data is captured via the Xylem Eagle internet portal. Data is analysed over a 7-day rolling average and presented in the results section. Physical analytes data was also capture during field sampling rounds and used to compare trends/anomalies if required.

Toms Gully pit water levels are measured weekly during wet season and monthly during dry season using a laser level and measured against surveyed relative levels markers.

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

All metals/metalloids, and general chemistry are field sampled as per the routine sampling method in pre labelled and acidified bottles provided by the analytical laboratory (Envirolab NATA accredited for the related analysis). Samples were stored in eskies and kept cool using ice or 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, repacked with new ice bricks and sent 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.

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 include seven sampling locations, one Authorized Discharge Point (ADP1) and compliance point (SWTG2). The monitoring programme sample locations are in Table 2-1 and water quality parameters and monitoring frequencies in Table 2-2 and Table 2-3. Appendix E presents a photo recorded of each site.

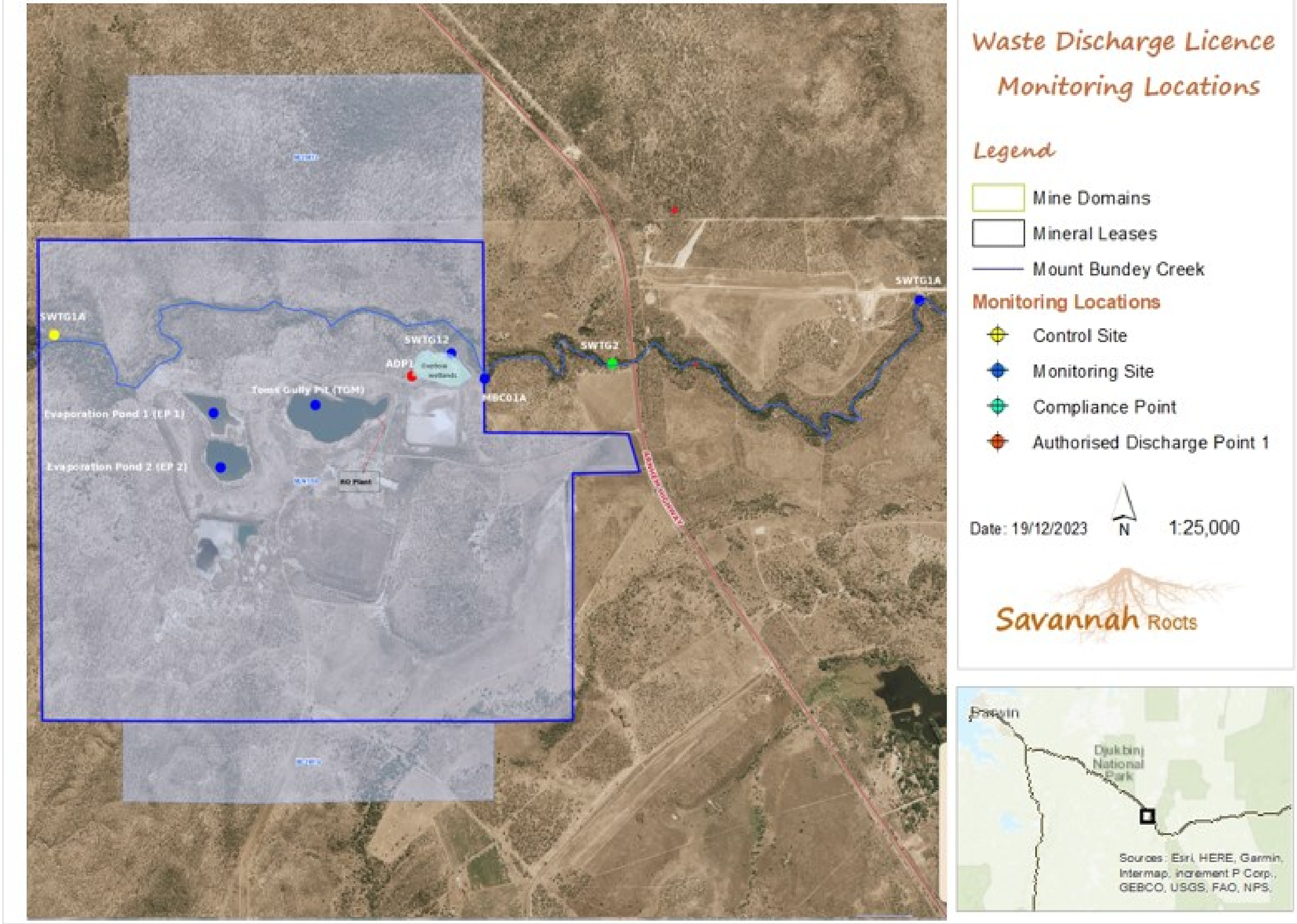


Figure 2-5 WDL 249 monitoring locations

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

Catchment	Monitoring Sites	Lat°	Long°	Sampling Site Description	Analyte Type					
		GDA94			0	1	2	3	4	5
Mount Bundey Creek	ADP1	-12.8292	131.5639	Authorised Discharge Point 1 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 the 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 site 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 kilolitres 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 particularly during first flush and recessional flows, 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 at sample sites

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.

Performance against Monitoring performance is detailed in Table 5-1 compliance against assessment criteria and Appendix A water quality data.

3.2 Quality Control

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.

All metals/metalloids and general chemistry were field sampled as per the routine sampling method in pre labelled and acidified bottles provided by the analytical laboratory (Envirolab NATA accredited for the related analysis). Water quality Investigation Levels for SWTG2 are as per WDL249 License.

Calibration of field equipment was undertaken as per the manufacturer's recommendations for telemetry and data loggers. Field handheld equipment was calibrated prior to each weekly sampling event for pH and EC using buffer and quick Cal solutions. Dissolved Oxygen was also undertaken frequently. A record will be maintained for the upcoming 2024/25rac reporting period.

4 Monitoring Results 2023- 24

4.1 Presentation

Water quality results for the WDL249 monitoring sites have been included in the following tables. Water quality data has been divided into two sections - field physical parameters and general chemistry (Table 4-1) and dissolved metals (Table 4-2). All raw water quality data has been presented in Appendix A.

Each table includes:

- Current results;
- Unit of measure;
- WDL249 Discharge Trigger Value (TV) for the Compliance Point;
- Median results for the Compliance Point; and
- Short- and long-term medians for all other monitoring sites.

As per Item 7 of the Licence, Discharge TVs have been used for each monitoring event at the Compliance Point 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 sites, short term (2022- 24) and long term (2016- 24) 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 points were 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 sites have been monitored as part of the TGPA MMP ultimately accumulating long term data, with eight years of water quality data collected. New sites 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). Nutrients are not part of the WDL 249 suite and therefore are not included in the total load calculation. 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 discharge point 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

Field parameter and major chemistry results for the 2023-24 monitoring period are shown in Table 4-1. Appendix A includes all monitoring data.

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

Site	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**
Compliance Site							
SWTG2	Short term median (2023- 24)	89.1	56	6.2	24.3	21.5	19
SWTG2	Long term median (2017- 24)	89.0	54	6.16	23.4	20	8
SWTG2	Telemetry 7 day rolling average median (N=2685 data points)	88.4	62	6.18	24.0	-	-
All Other Monitoring Sites							
ADP1	Short term median (2024)	78	35	7.81	1	N/A	5.4
ADP1	Long term median	-	-	-	-	-	-
EP1	Short term median (2023- 24)	-	4100	-	5.93	7.75	4900
EP1	Long term median (2017- 24)	66.5	4695	3.4	5.53	10	5400
EP2	Short term median (2023- 24)	53.7	4327	3.27	3.47	7.5	4700
EP2	Long term median (2017- 24)	67.5	4000	3.2	2.85	12.5	5050
TGM PIT	Short term median (2023- 24)	55	2130	3.4	2.14	N/A	1400
TGM PIT	Long term median (2017- 24)	66	2100	3.4	2.12	N/A	1300
SWTG12	Short term median (2023- 24)	56	606	3.76	2.77	6	260
SWTG12	Long term median (2016- 24)	56	469	3.9	-	7.25	195
MBC01A	Short term median (2024)	75.1	65	6.22	20.4	22	11
MBC01A	Long term median	-	-	-	-	-	-
SWTG3A	Short term median (2023- 24)	74.9	86	6.2	18.5	N/A	18
SWTG3A	Long term median	-	-	-	-	-	-
SWTG1A	Short term median (2023- 24)	139.7	33	6.29	35.2	58	2.1
SWTG1A	Long term median (2017- 24)	95.8	36	6.6	20.3	47.5	2.7

4.1.2 Dissolved Metals

Dissolved metal results for the 2023-24 monitoring period are shown in Table 4-2. Appendix A includes all monitoring data.

Table 4-2 Surface Water Dissolved Metals Results

Site	Date	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn
		µg/L													
WDL249 Discharge TV **at SWTG2**		**295**	**9**	**13**	**0.2**	**1**	**1.4**	**1.4**	**2700**	**3.4**	**1900**	**0.6**	**11**	**0.05**	**8**
Compliance Site															
SWTG2	Short term median (2023- 24)	42	N/A	N/A	0.76	N/A	7.1	2.4	160	N/A	130	N/A	8.9	N/A	26
SWTG2	Long term median (2017- 24)	50	-	N/A	0.32	N/A	3	2.6	190	N/A	86	-	4.7	-	22
All other monitoring locations															
ADP1	Short term median (2024)	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
ADP1	Long term median	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EP1	Short term median (2023- 24)	415000	1	24.5	380	49	3100	3600	6700	10.35	33000	N/A	13500	N/A	29500
EP1	Long term median (2017- 24)	420000	-	19	460	41	2700	3700	5800	2.01	35000	-	13500	-	35000
EP2	Short term median (2023- 24)	355000	N/A	18.5	300	44	2600	2100	4750	11.65	28500	N/A	10600	N/A	27500
EP2	Long term median (2017- 24)	445000	-	18.5	403	73	2800	5705	7100	5	30000	-	13000	-	28000
TGM PIT	Short term median (2023- 24)	27000	N/A	6.4	54	2.2	330	290	1100	7.8	11000	N/A	1300	N/A	6000
TGM PIT	Long term median (2017- 24)	23000	N/A	5.4	52	2	300	260	1100	7.2	11000	-	1200	-	6200
SWTG12	Short term median (2023- 24)	2900	N/A	4.4	6.8	N/A	110	51	560	2.4	3100	N/A	250	N/A	1000
SWTG12	Long term median (2016- 24)	2100	-	4.35	5.4	N/A	94	40.5	420	2.3	2400	-	220	-	840
MBC01A	Short term median (2024)	76	N/A	N/A	0.5	N/A	5.9	2.9	220	N/A	150	N/A	9.05	N/A	37
MBC01A	Long term median	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWTG3A	Short term median (2023- 24)	34	N/A	N/A	0.7	N/A	6.2	1.8	210	N/A	210	N/A	14	N/A	57
SWTG3A	Long term median	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWTG1A	Short term median (2023- 24)	89.5	N/A	1.45	N/A	N/A	N/A	N/A	290	N/A	14.5	N/A	N/A	N/A	2.4
SWTG1A	Long term median (2017- 24)	92.5	-	1.45	N/A	N/A	N/A	N/A	285	N/A	14.5	-	N/A	-	3

4.1.1 Loading Calculations

Loading calculations for ADP1 for the 2023-24 monitoring period are shown in Table 4-3 and Table 4-4. Appendix A includes all monitoring data.

Table 4-3 Loading Calculations for General Chemistry at ADP1 2023-24 Reporting Period

Month	Lab Inorganics		Alkalinity as CaC03				Total Hardness	Acidity as CaCO3	Anions Dissolved		Cations Dissolved			
	TDS	TSS	Bicarbonate	Carbonate	Hydroxide	Total		Total	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium
	kg													
January	284.0659	25.272	80.68723	25.272	81.55642	80.68723	47.44397	25.272	87.71674	46.61626	8.73504	2.5272	2.5272	9.762336
February	242.3372	31.752	100.0115	31.752	53.47345	100.0115	31.8909	31.752	57.71816	31.66692	5.642537	3.220539	3.1752	40.6303
March	264.9394	33.48	40.65614	33.48	33.48	40.65614	62.01751	33.48	46.18327	69.17225	10.91861	8.514309	3.348	47.42784
April	226.5408	29.808	29.808	29.808	29.808	29.808	65.5776	29.808	40.53888	67.96224	11.08858	9.180864	2.9808	42.92352
Total	**1017.883**	**120.312**	**251.1628**	**120.312**	**198.3179**	**251.1628**	**206.93**	**120.312**	**232.157**	**215.4177**	**36.38477**	**23.44291**	**12.0312**	**140.744**

Table 4-4 Loading Calculations for Dissolved Metals at ADP1 2023-24 Reporting Period

Month	Metals Dissolved													
	Ag	Al	As (total)	Cd	Cr	Co	Cu	Fe	Hg	Pb	Sb	Mn	Ni	Zn
	kg													
January	0.000253	0.050544	0.005054	0.000505	0.005054	0.005054	0.005054	0.050544	0.005054	0.005054	0.005054	0.046575	0.006703	0.063051
February	0.000318	0.065771	0.00635	0.000649	0.00635	0.00641	0.00635	0.063504	0.00635	0.00635	0.00635	0.08276	0.015252	0.277254
March	0.000335	0.262882	0.006696	0.002492	0.006696	0.014391	0.006696	0.06696	0.006696	0.006696	0.006696	0.524554	0.058723	0.204924
April	0.000298	0.190771	0.005962	0.0031	0.005962	0.016692	0.005962	0.059616	0.005962	0.005962	0.005962	0.548467	0.065578	0.250387
Total	**0.001204**	**0.569968**	**0.024062**	**0.006746**	**0.024062**	**0.042548**	**0.024062**	**0.240624**	**0.024062**	**0.024062**	**0.024062**	**1.20235**	**0.146255**	**0.795617**

4.2 Spatial and Temporal Trends and Analysis

4.2.1 Field Parameters

Physical parameter results from field sampling and telemetry data for the reporting period are presented below. Appendix A includes all monitoring data. Field parameters data points (from 2017-2024) are presented in the following graphs. SWTG2 (compliance) data is presented separately from the other monitoring sites and compared to the respective WDL 249 TV. All other monitoring sites data are presented in Figure 4-2.

- Dissolved oxygen (%) short- and long-term median trends were within respective WDL 249 GV's. DO analytical results (N=15) were outside of WDL 249 TV guidelines of 85-120 % at SWTG2 (compliance point) on two sampling occasions (23/01/2024) and (30/04/2024) during the reporting period. Continuous water quality results recorded at the telemetry station; DO% fluctuated between 80.48 %-91.74 % (based on the 7-day rolling average). Of the total number of data points (N=2685) DO% lowest reading of 67.12 % recorded on 05/05/2024 and highest reading recorded 95.6% on the 11/03/2024. Overall median calculated at 88.36%.
- pH (units) short- and long-term median trends were within respective WDL 249 GV's. pH analytical results (N=15) were outside of WDL 249 TV guidelines of 5.8-8.0 pH units at SWTG2 (compliance point) on one sampling occasion (30/04/024) during the reporting period. Continuous water quality results recorded at the telemetry station; pH fluctuated between 5.68 -6.36pH (based on the 7-day rolling average). Of the total number of data points (N=2685), lowest reading of 5.37 pH recorded on the 26/01/2024 and highest reading recorded 6.66 pH on the 08/02/2024. Overall median calculated at 6.18 pH.
- Electrical Conductivity (µS/cm) short- and long-term median trends were within respective WDL 249 GV's. EC analytical results (N=15) were outside of WDL 249 TV guidelines of 250 µS/cm at SWTG2 (compliance point) on one sampling occasion (30/04/2024) during the reporting period. Continuous water quality results recorded at the telemetry station; EC fluctuated between 27-284µS/cm (based on the 7-day rolling average). Of the total number of data points (N=2685) lowest reading of 9 µS/cm recorded on the 15/03/2024 and highest reading recorded 475 µS/cm on the 05/05/2024. Overall median calculated at 62 µS/cm .
- Turbidity (NTU)) short- and long-term median trends and analytical results (n=15) were within respective WDL 249 TV guidelines of 87 NTU. at SWTG2 (compliance point) during the reporting period. Continuous water quality results recorded at the telemetry station; turbidity fluctuated between 11-47 NTU (based on the 7-day rolling average). Of the total number of data points (N=2685) lowest reading of 7 NTU recorded on the 27/03/2024 and highest reading recorded 366 NTU recorded on the 01/04/2024. Overall median calculated at24 NTU.

- Temperature (^{0}C) continuous water quality results recorded at the telemetry station from a total number of data points (N=2685) lowest reading of 25 (^{0}C) recorded on the 22/04/2024 and highest reading recorded 31(^{0}C) on the 19/02/2024. Overall median calculated at 29 (^{0}C) .
- Water level (m) continuous water level results recorded at the telemetry station from a total number of data points (N=2685) levels lowest reading of 0.46 (m) recorded on the 04/05/2024 and highest reading recorded 5.2 (m) recorded on the 26/01/2024. Overall median calculated at 0.86 (m).

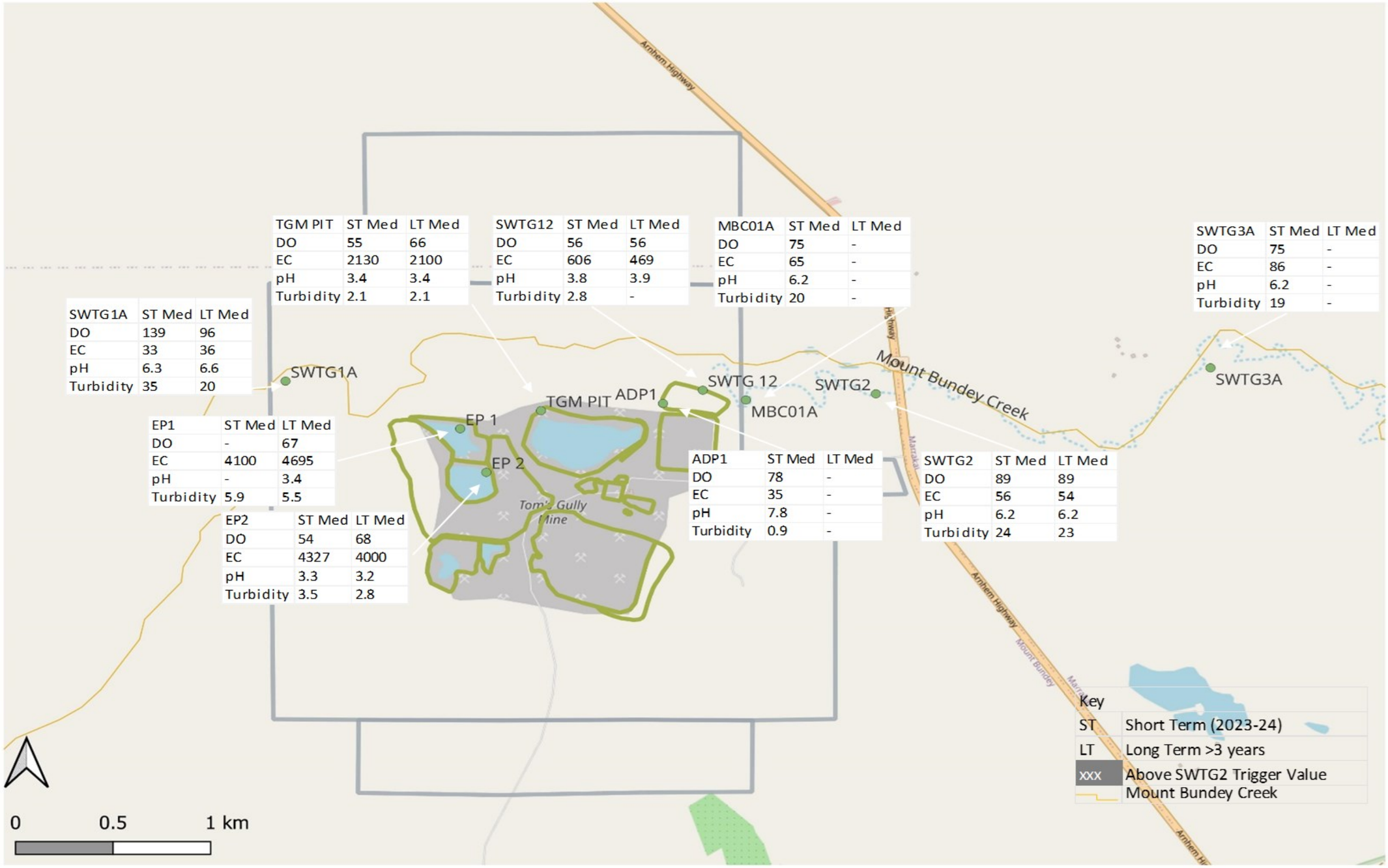
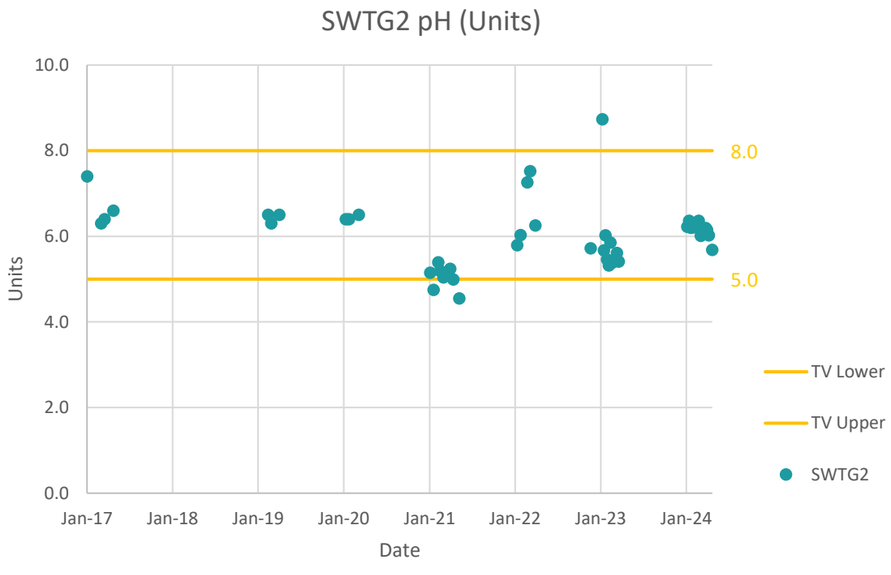
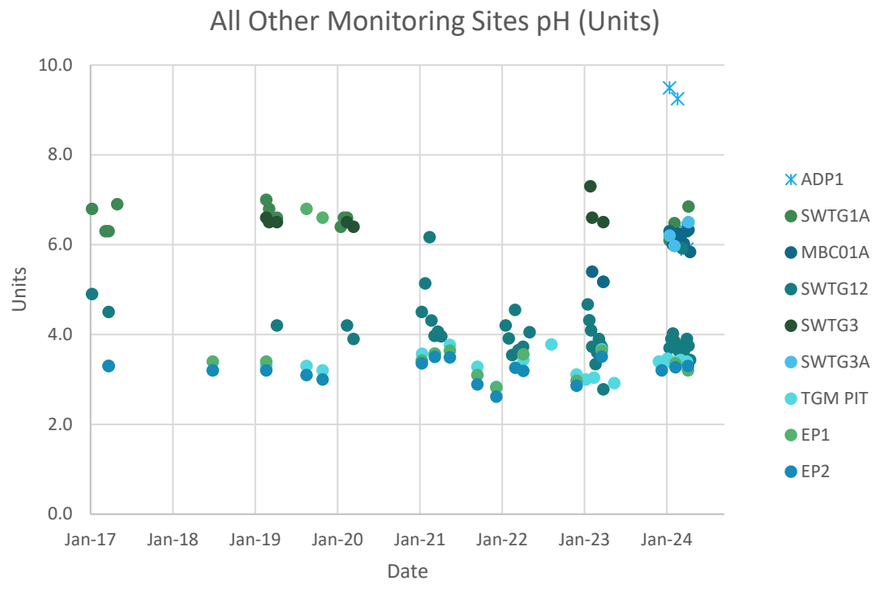
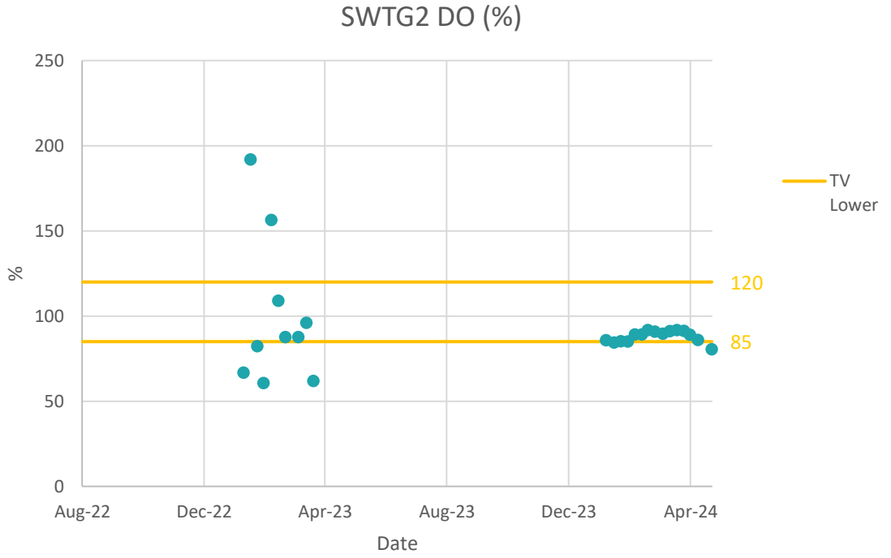
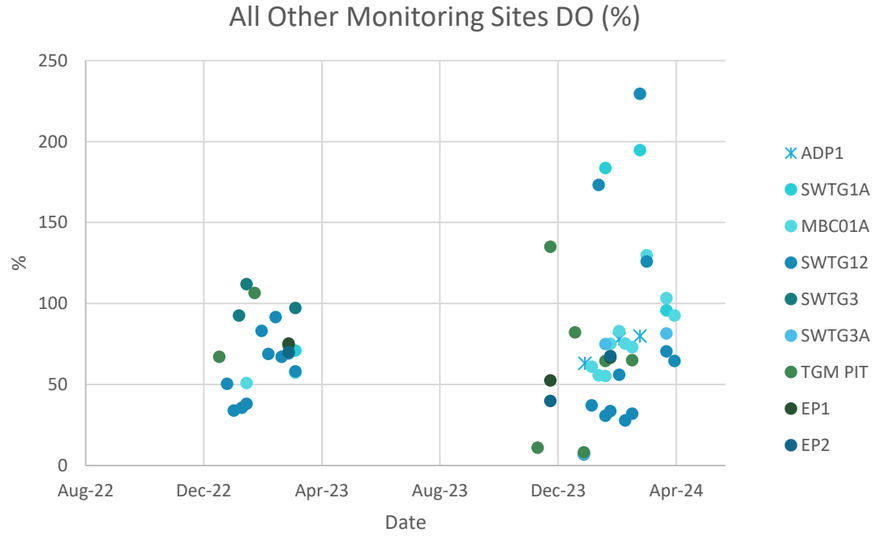


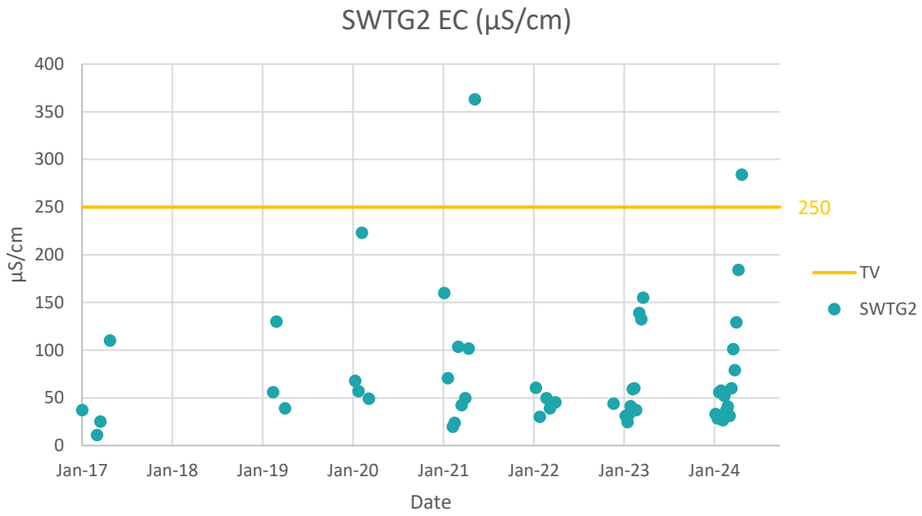
Figure 4-1 Spatial Trend for Surface Water Quality (Physical Parameters)

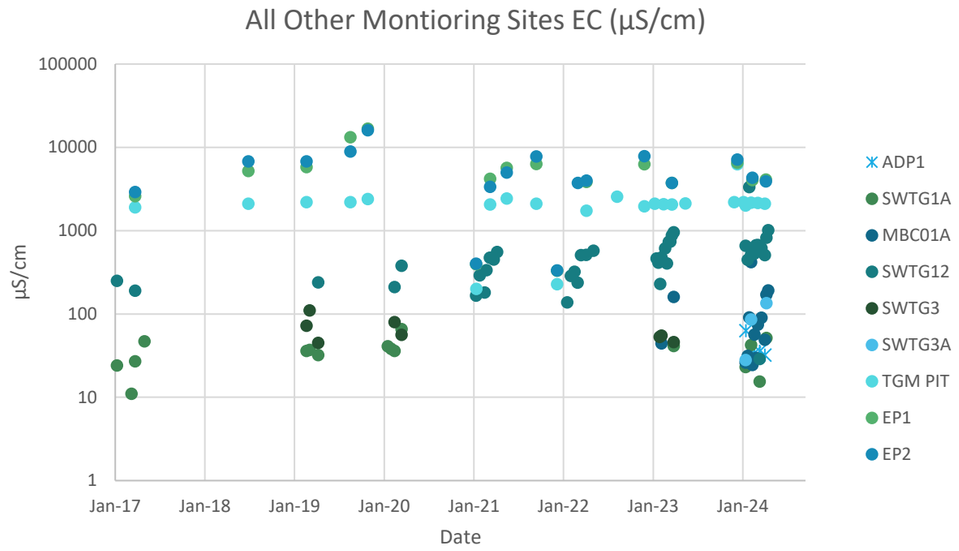

SWTG2 pH (Units)
10.0
8.0
6.0
4.0
2.0
0.0
Units
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Date
8.0
5.0
TV Lower
TV Upper
SWTG2

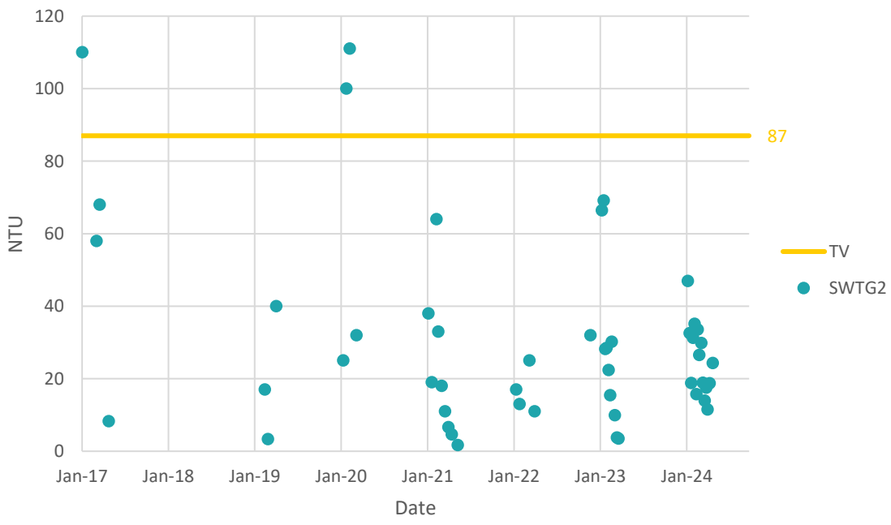

All Other Monitoring Sites pH (Units)
10.0
8.0
6.0
4.0
2.0
0.0
Units
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Date
ADP1
SWTG1A
MBC01A
SWTG12
SWTG3
SWTG3A
TGM PIT
EP1
EP2


SWTG2 DO (%)
250
200
150
100
50
0
%
Aug-22
Dec-22
Apr-23
Aug-23
Dec-23
Apr-24
Date
120
85
TV Lower


All Other Monitoring Sites DO (%)
250
200
150
100
50
0
%
Aug-22
Dec-22
Apr-23
Aug-23
Dec-23
Apr-24
Date
ADP1
SWTG1A
MBC01A
SWTG12
SWTG3
SWTG3A
TGM PIT
EP1
EP2







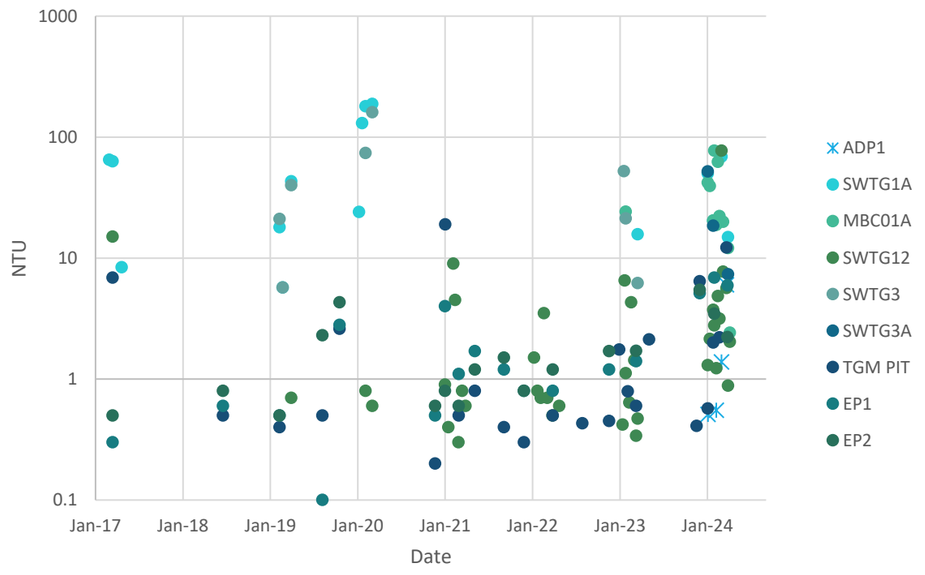
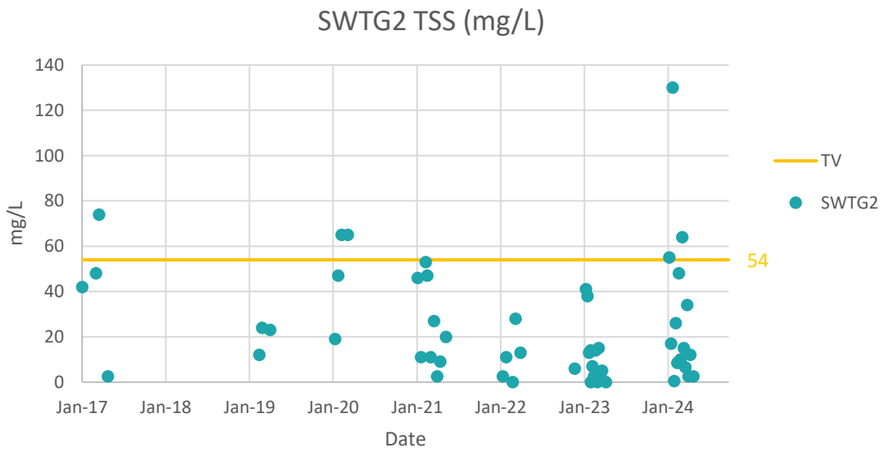


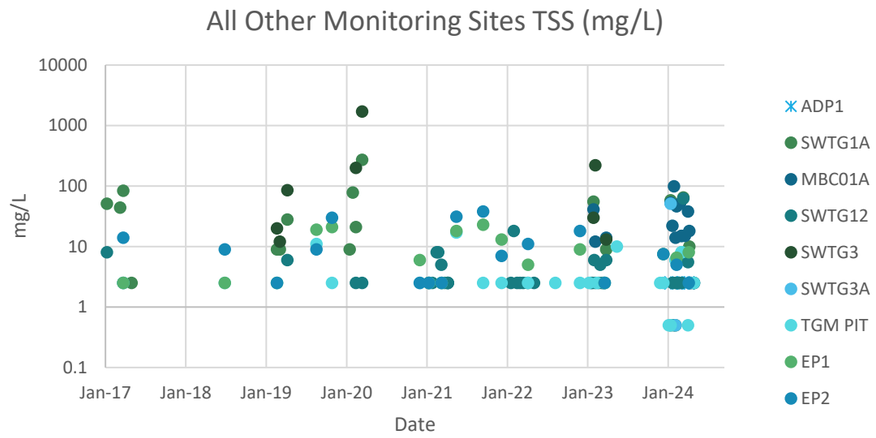
Figure 4-2 SWTG2 and other Monitoring Sites Trend Analysis for Physical Parameters

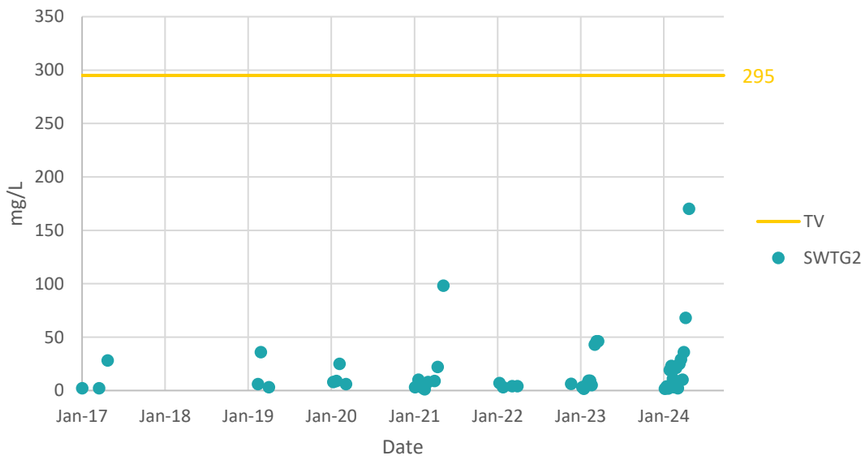
4.2.2 General Chemistry

General chemistry analytical results from field sampling temporal and spatial trends at all creek sites for the reporting period are presented below. Appendix A includes all monitoring data. General chemistry data points (from 2017-2024) are presented in the following graphs. SWTG2 (compliance) data is presented separately from the other monitoring sites and compared to the respective WDL 249 TV's and all other monitoring sites data are presented in Figure 4-3.

- Total suspended solids (TSS mg/l) short- and long-term median trends were within respective WDL 249 GV's . TSS analytical results (N=15) were outside of WDL 249 TV guidelines at SWTG2 (compliance point) on three separate sampling occasions during the reporting period.
- Sulfate (SO_4^{2-}mg/l) short- and long-term median trends and analytical results (N=15) were within respective WDL 249 TV guidelines of 295mg/L at SWTG2 (compliance point) during the reporting period.







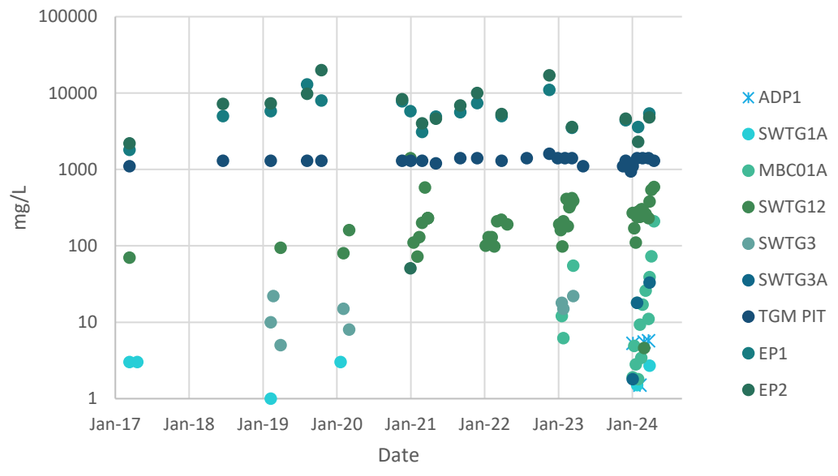


Figure 4-3 SWTG2 and other monitor sites Trend Analysis for General Chemistry

4.2.3 Dissolved Metals

Dissolved metal values for the reporting period are presented below. Appendix A includes all monitoring data. Dissolved metal data points that exceeded respective trigger values and required external reporting, including Cadmium, Cobalt, Copper, Nickel and Zinc (from 2017-2024) are presented in the following graphs. SWTG2 (compliance) data is presented separately from the other monitoring sites and compared to the respective WDL 249 TV and all other monitoring sites data are presented in Figure 4-4 and Figure 4-5.

SWTG2

- Dissolved metals concentrations for Cadmium (µg/l) short- and long-term median trends were outside of the respective WDL 249 GV's. Analytical results (N=15) were outside of WDL 249 TV guidelines of 0.2 µg/L at SWTG2 on six events.
- Dissolved metals concentrations for Cobalt (µg/l) short- and long-term median trends were outside of the respective WDL 249 GV's. Analytical results (N=15) were outside of WDL 249 TV guidelines of 1.4 µg/L at SWTG2 on seven events.
- Dissolved metals concentrations for Copper (µg/l) short- and long-term median trends were outside of the respective WDL 249 GV's. Analytical results (N=15) were outside of WDL 249 TV guidelines of 1.4 µg/L at SWTG2 on six events.
- Dissolved metals concentrations for Nickel (µg/l) short- and long-term median trends were within respective WDL 249 GV's. Analytical results (N=15) were outside of WDL 249 TV guidelines of 11 µg/L at SWTG2 one event.
- Dissolved metals concentrations for Zinc (µg/l) short- and long-term median trends were outside of the respective WDL 249 GV's. Analytical results (N=15) were outside of WDL 249 TV guidelines of 8 µg/L at SWTG2 on eleven events.
- Dissolved metals concentrations for Aluminium, Iron, and Manganese (µg/l) short- and long-term median trends, and analytical results (N=15) were within the respective WDL 249 GV's.
- Dissolved metals concentrations for Antimony, Arsenic (total), Lead, Silver, Chromium, Mercury (µg/l) short- and long-term median trends, and analytical results (N=15), except for Arsenic (total), were below Laboratory Limits of Reporting.

ADP1

- Dissolved metals concentrations for Zinc, Aluminium, Cadmium, Cobalt, Manganese, Nickel (µg/l) short median trends were within WDL 249 GV's except for Zinc. All other metals were below Limits of Reporting.

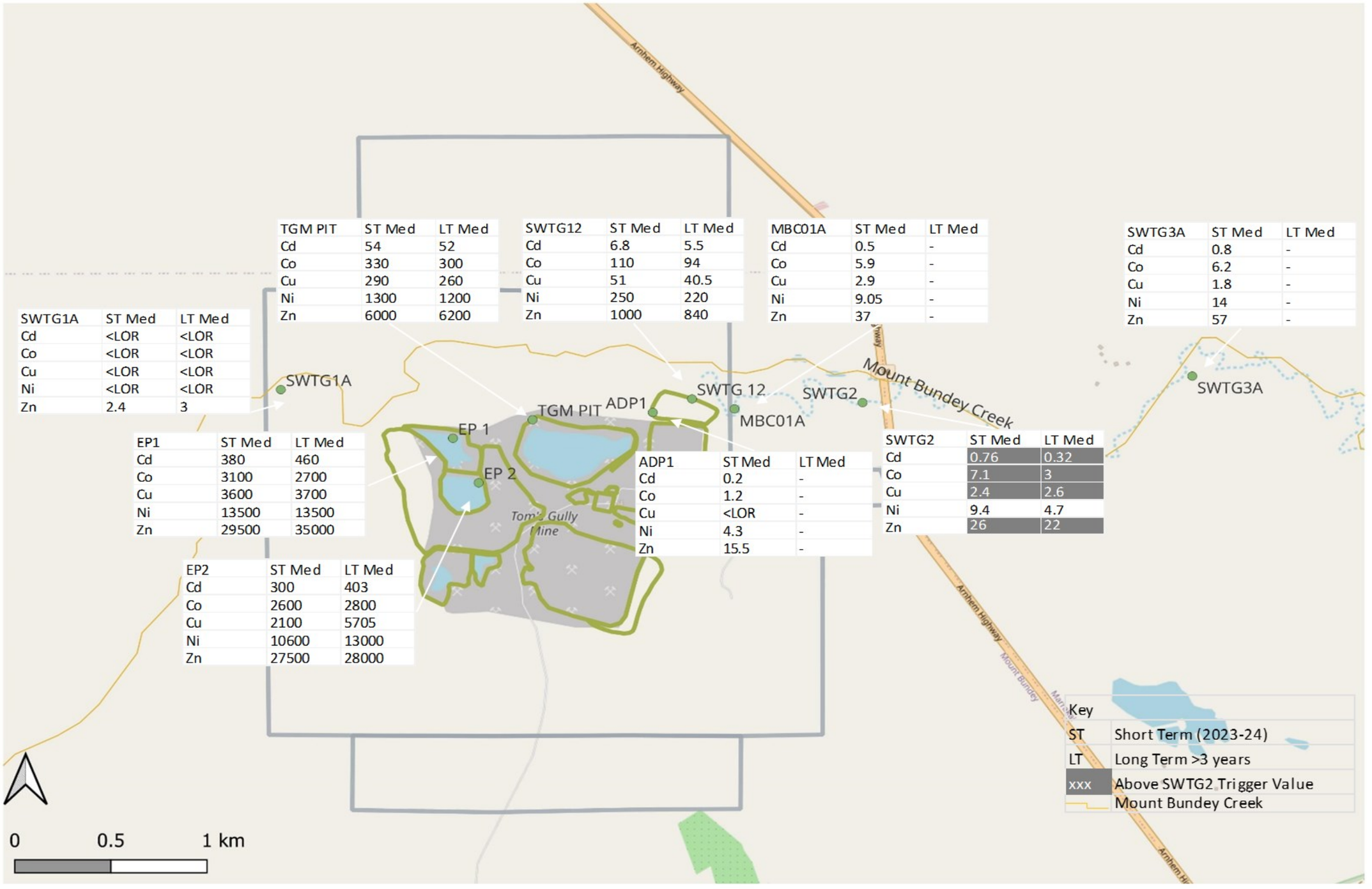
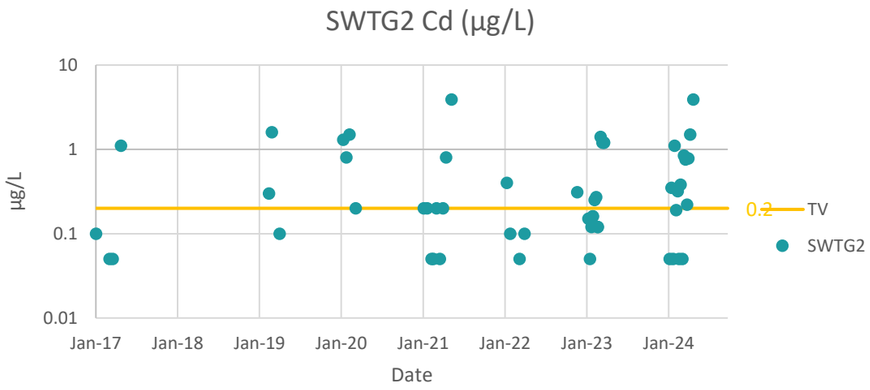
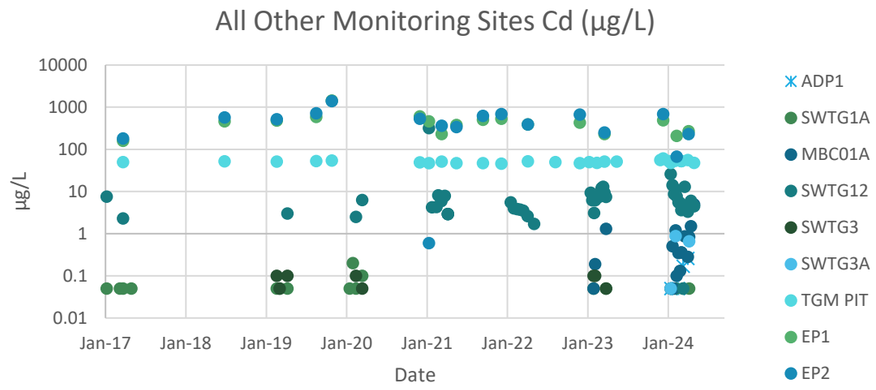
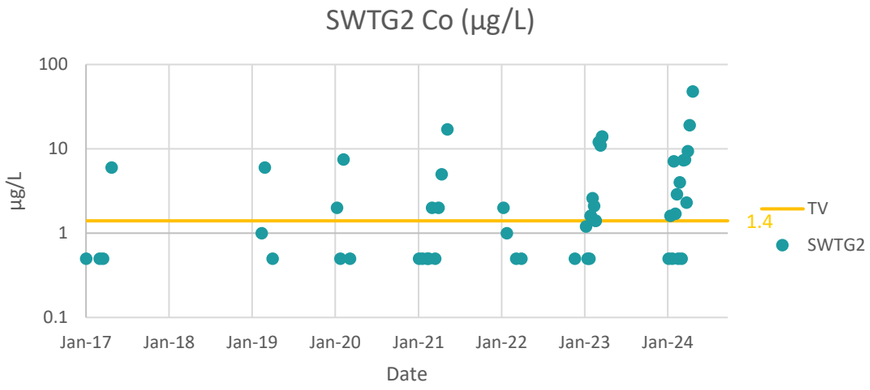
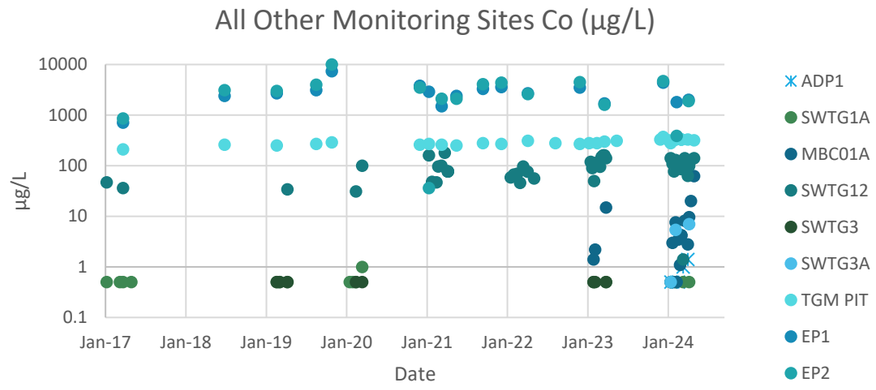


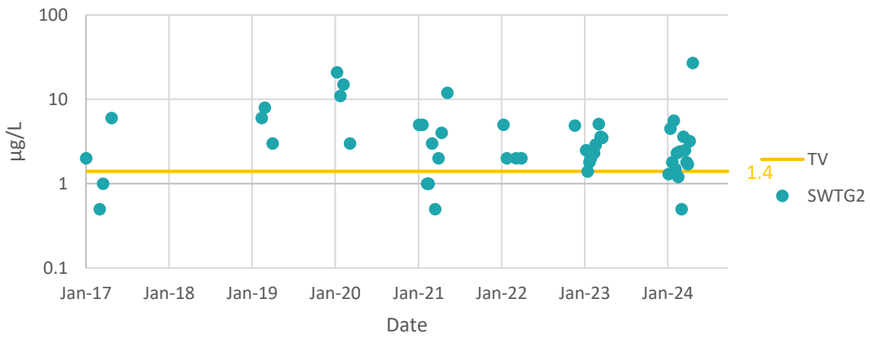
Figure 4-4 Spatial Trend for Surface Water Quality (Dissolved Metals)

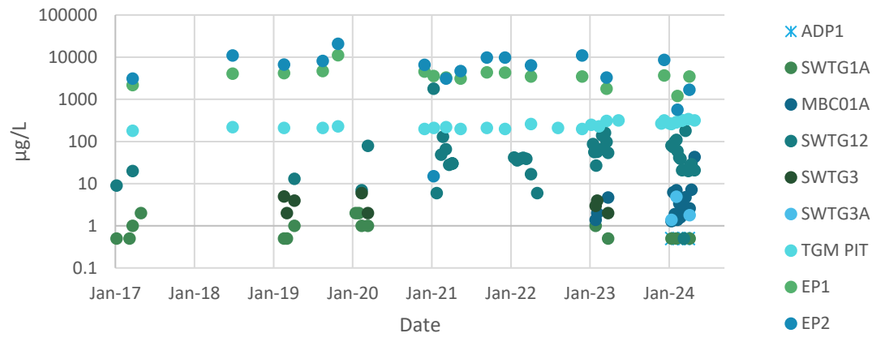

SWTG2 Cd (µg/L)
µg/L
10
1
0.1
0.01
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Date
0.2
TV
SWTG2

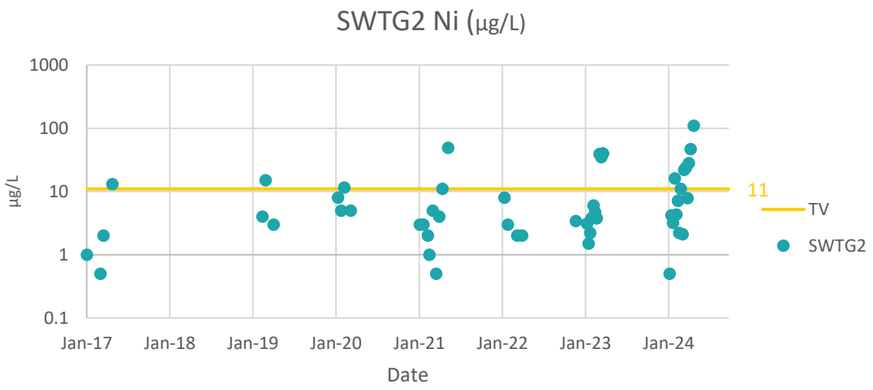

All Other Monitoring Sites Cd (µg/L)
µg/L
10000
1000
100
10
1
0.1
0.01
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Date
ADP1
SWTG1A
MBC01A
SWTG12
SWTG3
SWTG3A
TGM PIT
EP1
EP2

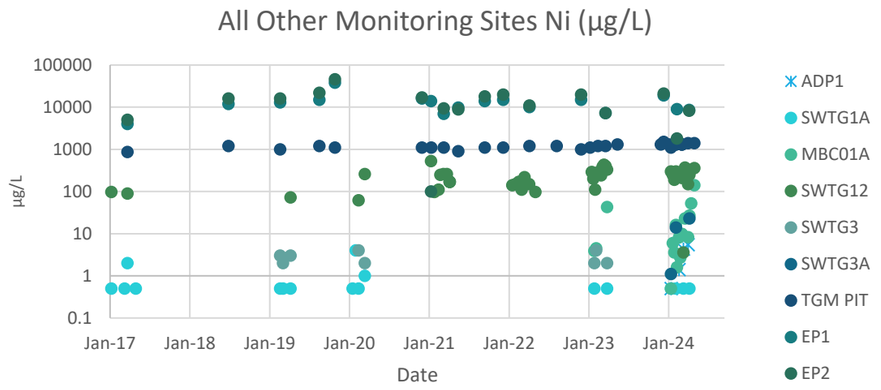

SWTG2 Co (µg/L)
µg/L
100
10
1
0.1
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Date
1.4
TV
SWTG2

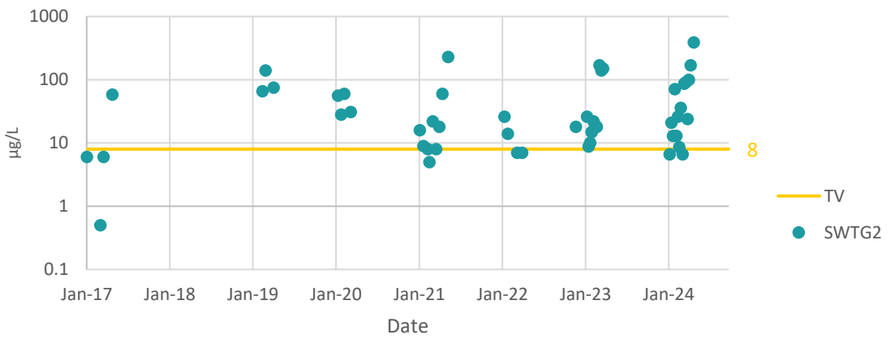

All Other Monitoring Sites Co (µg/L)
µg/L
10000
1000
100
10
1
0.1
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Date
ADP1
SWTG1A
MBC01A
SWTG12
SWTG3
SWTG3A
TGM PIT
EP1
EP2


SWTG2 Cu (µg/L)
µg/L
100
10
1
0.1
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Date
1.4
TV
SWTG2


All Other Monitoring Sites Cu (µg/L)
µg/L
100000
10000
1000
100
10
1
0.1
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Date
ADP1
SWTG1A
MBC01A
SWTG12
SWTG3
SWTG3A
TGM PIT
EP1
EP2







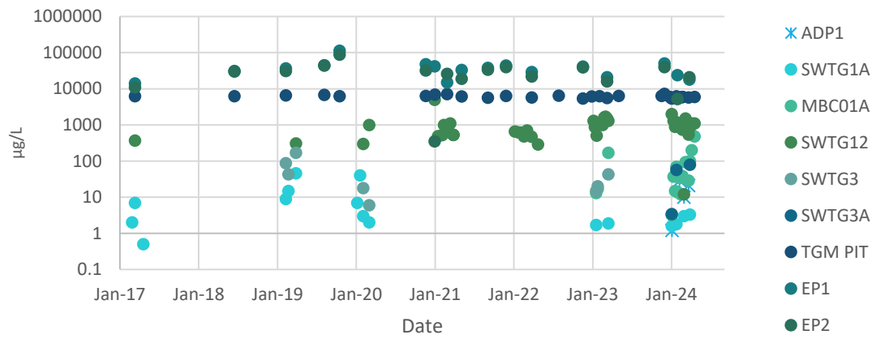


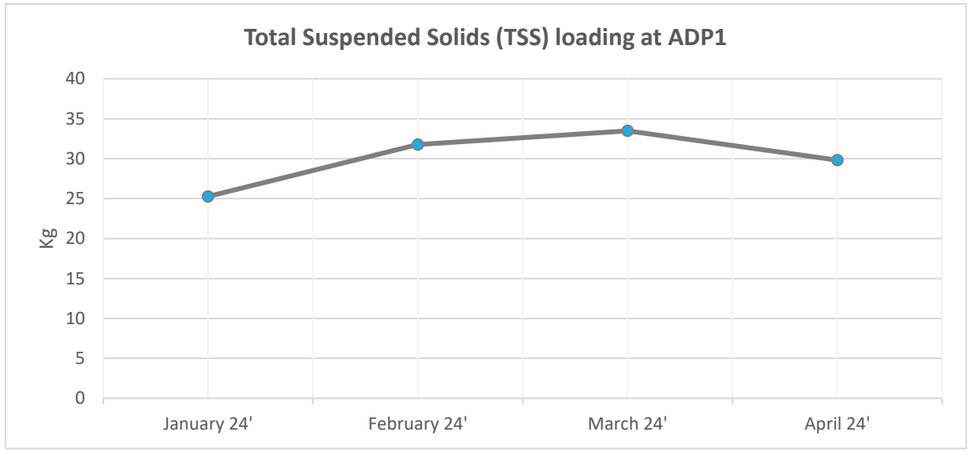
Figure 4-5 SWTG2 and other monitor sites Trend Analysis for Reported Metals (Dissolved)

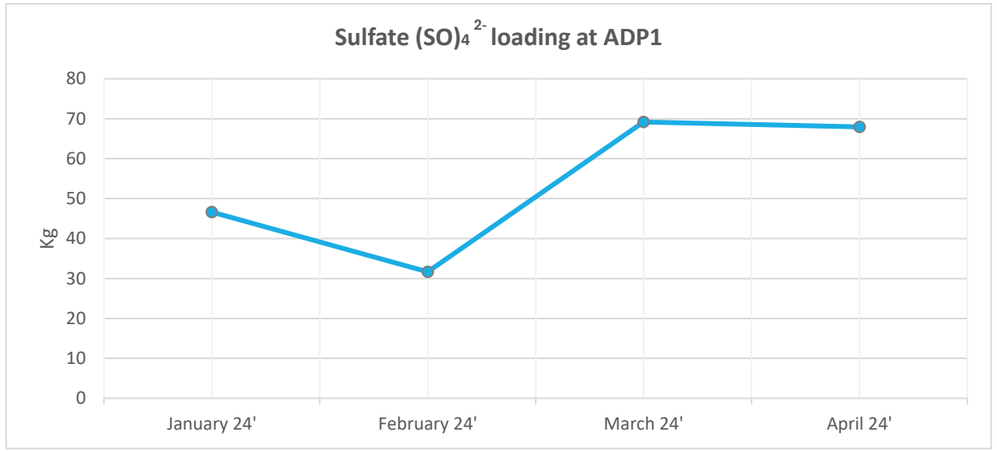
4.2.4 Total Loading

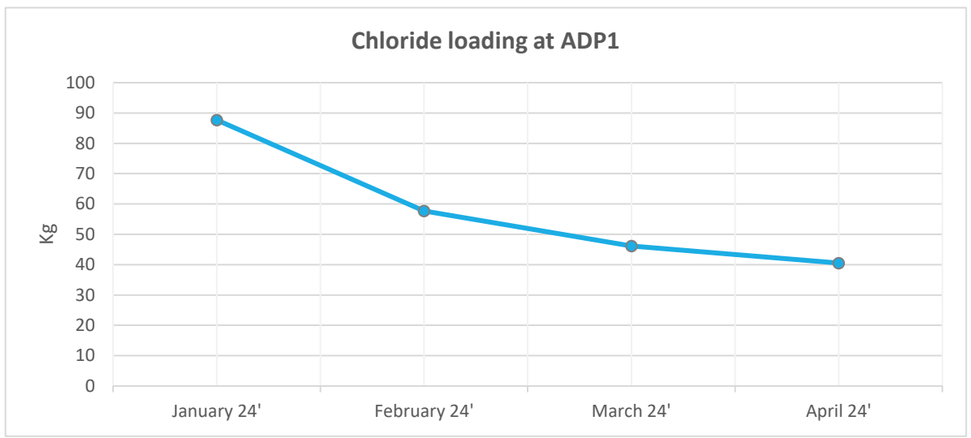
ADP1 discharge water was used to calculate total loading. The NSW EPA '*Load Calculation Protocol*' (2008) was applied to measure the mass load of a specified analyte from controlled discharge activities. Continuous flow allowed for an accurate load calculation. A total of 60,480 KL of treated water was discharged from ADP1 during the 2023/24 wet season. Total load calculations were assessed, and the following analysis has been made:

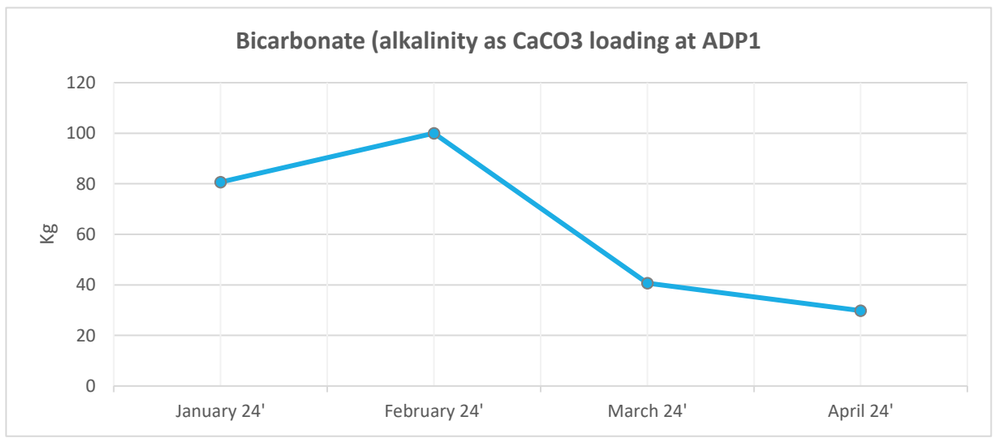
- There were no exceedances of the WDL249 discharge trigger values for major chemistry. Total loads concentrations at ADP1 with the highest concentration of bicarbonates (250kg), with cation loads dominated by sodium (150kg) followed by calcium (36kg). Chloride (232kg) load were slightly higher load compared to sulphates (215kg).
- There were no exceedances of the WDL249 discharge trigger values for dissolved metals, with the exception of cadmium on 02/04/2024, which slightly exceeded the respective GV's. Total load concentrations at ADP1 with the highest concentration included Aluminium (1.2kg), followed by Zinc (0.7kg), Aluminium (0.5kg) and Iron (0.2kg).
- Analytes that exceeded respective WDL 249 T.V's at SWTG2 and required external reporting had concentrations of Zinc (0.7kg), Cadmium (0.01kg), Cobalt (0.04kg), Copper (0.02kg), and Nickel (0.14kg).

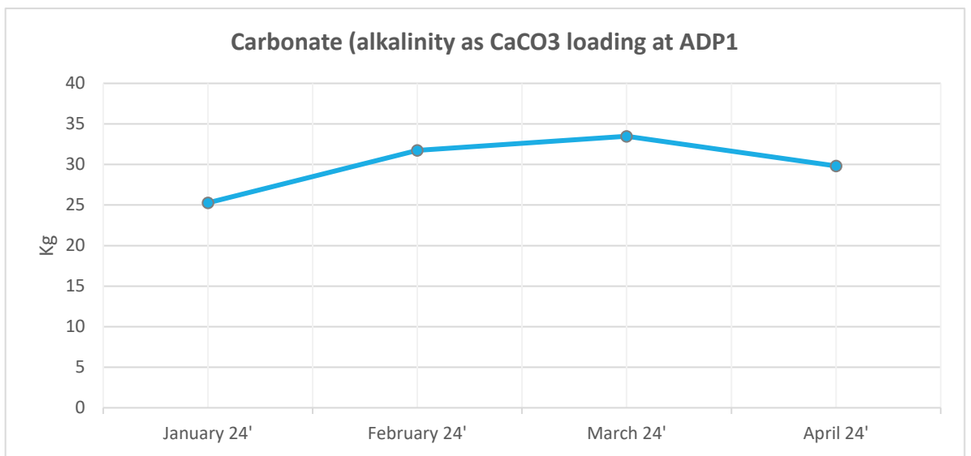
ADP1 total loadings for general chemistry are provided in Figure 4-6. Total loadings for metals/metalloids from ADP1 are provided in Figure 4-7.

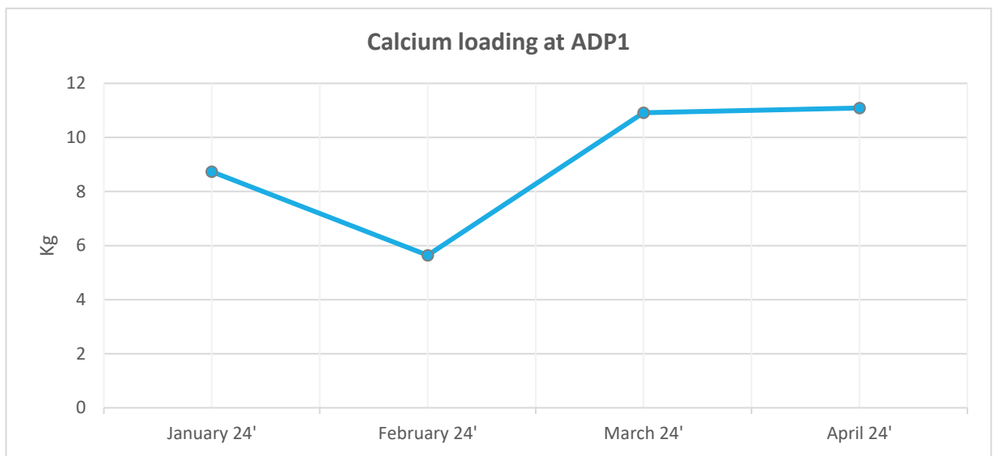

Total Suspended Solids (TSS) loading at ADP1
Kg
40
35
30
25
20
15
10
5
0
January 24'
February 24'
March 24'
April 24'

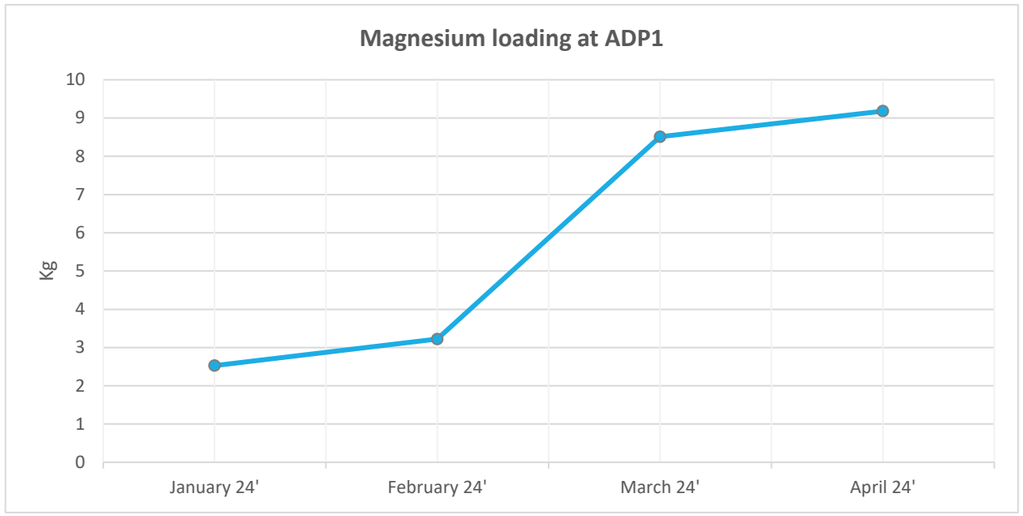

Sulfate (SO)4 2- loading at ADP1
Kg
80
70
60
50
40
30
20
10
0
January 24'
February 24'
March 24'
April 24'

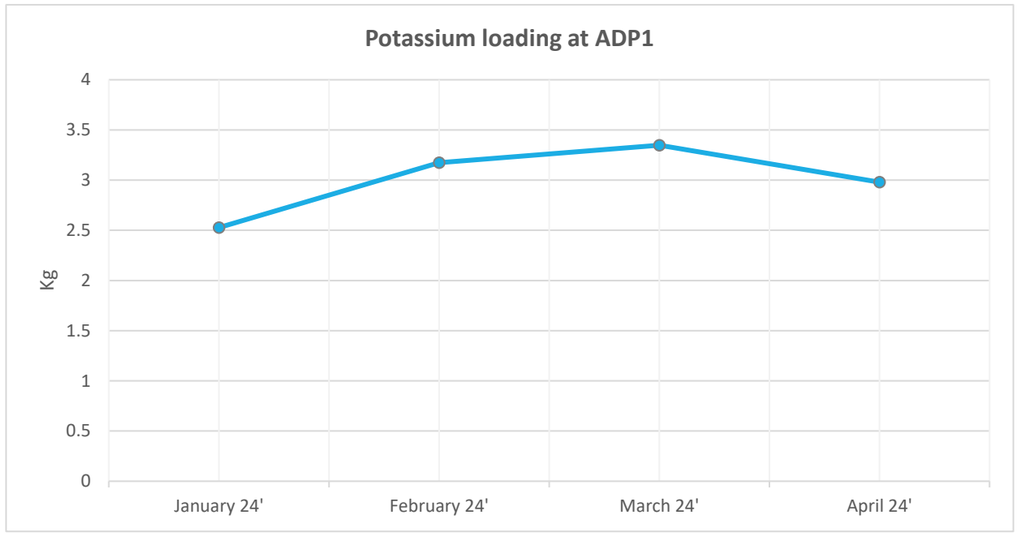

Chloride loading at ADP1
Kg
100
90
80
70
60
50
40
30
20
10
0
January 24'
February 24'
March 24'
April 24'

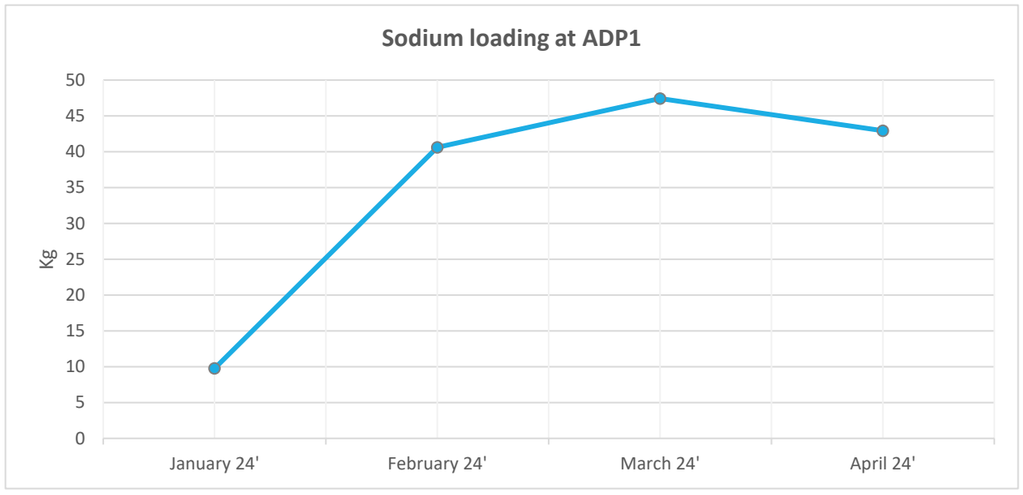

Bicarbonate (alkalinity as CaCO3 loading at ADP1
Kg
120
100
80
60
40
20
0
January 24'
February 24'
March 24'
April 24'


Carbonate (alkalinity as CaCO3 loading at ADP1
Kg
40
35
30
25
20
15
10
5
0
January 24'
February 24'
March 24'
April 24'


Calcium loading at ADP1
Kg
12
10
8
6
4
2
0
January 24'
February 24'
March 24'
April 24'







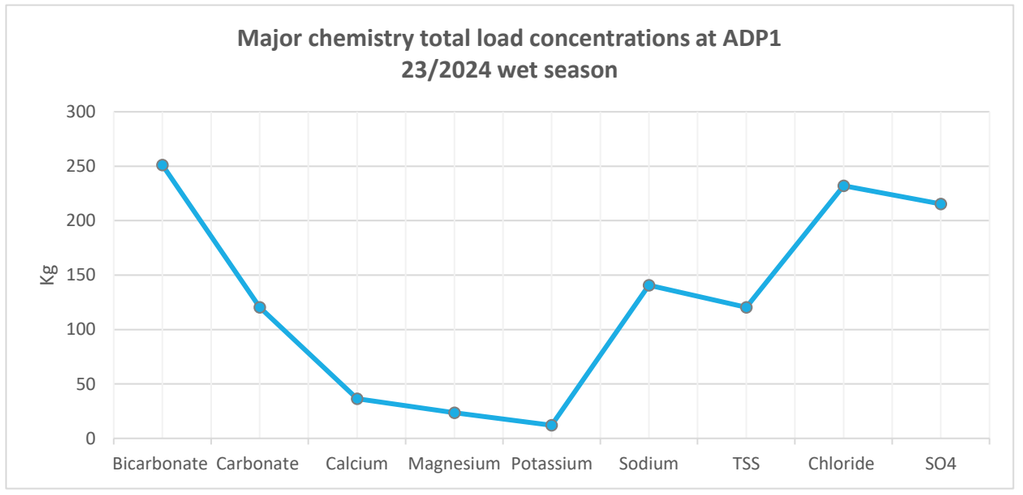
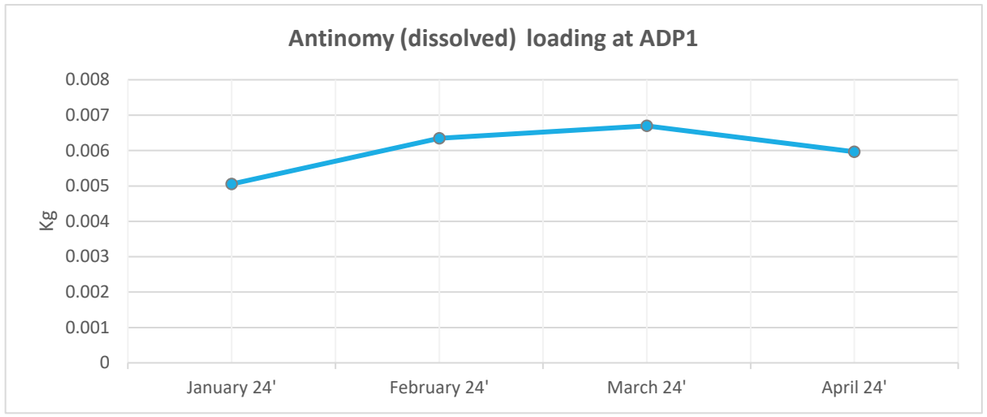
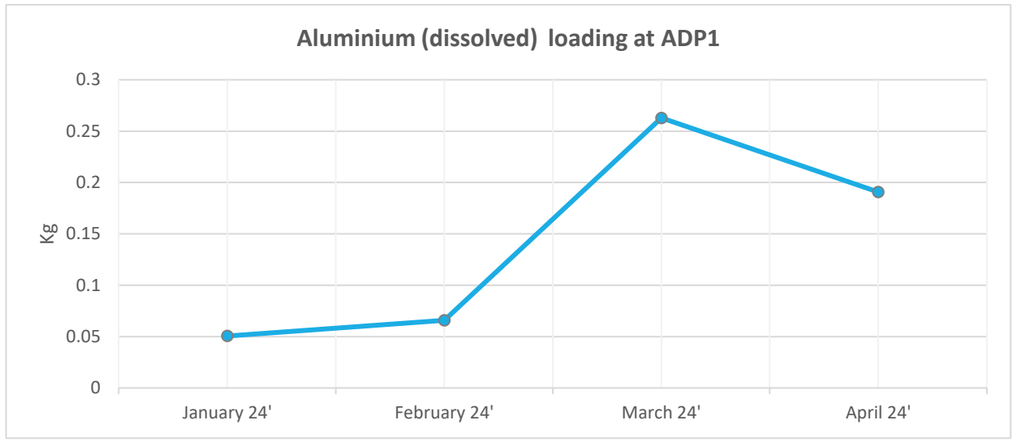
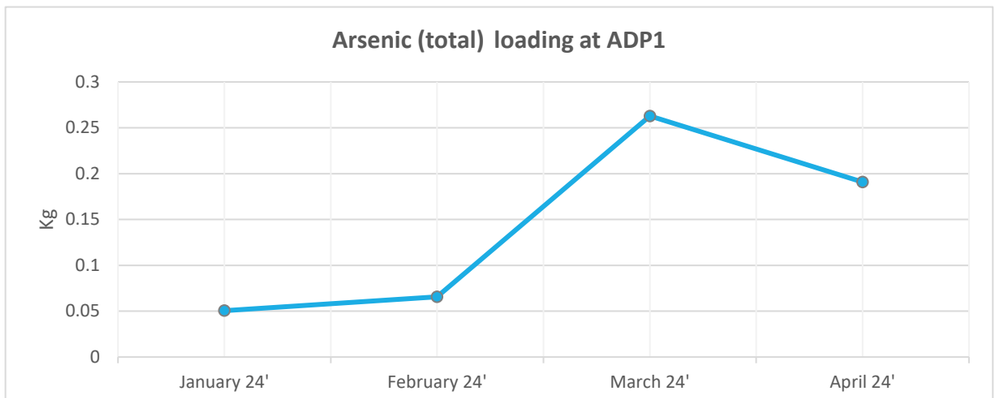
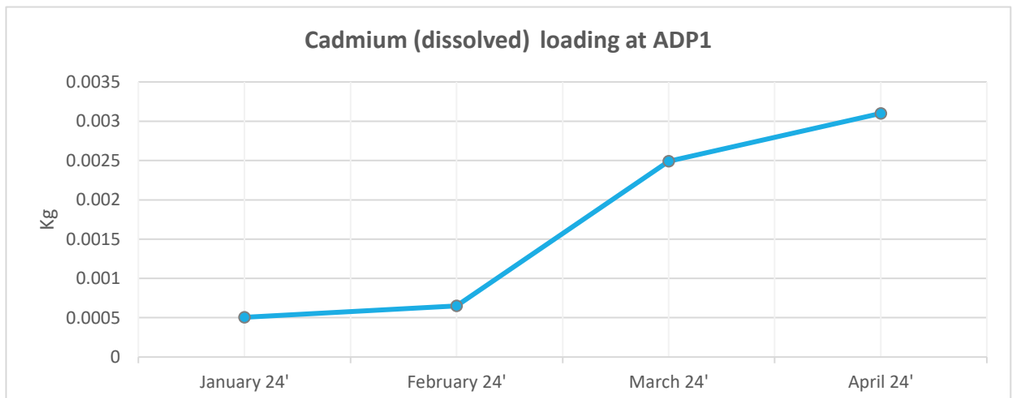


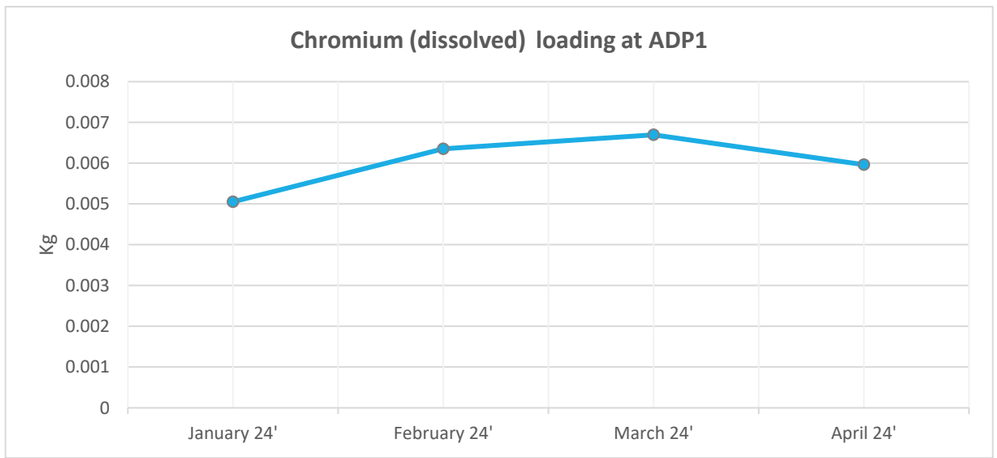
Figure 4-6 ADP1 General Chemistry Loadings

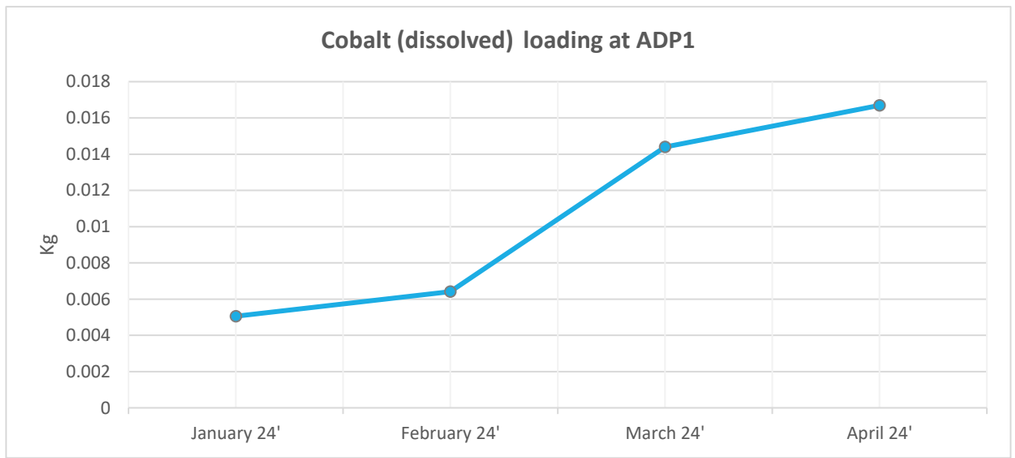

Antinomy (dissolved) loading at ADP1
Kg
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
January 24'
February 24'
March 24'
April 24'

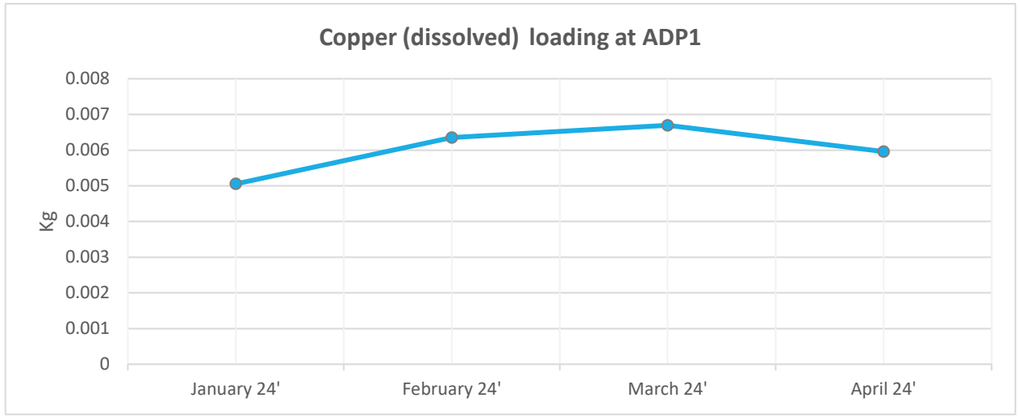

Aluminium (dissolved) loading at ADP1
Kg
0.3
0.25
0.2
0.15
0.1
0.05
0
January 24'
February 24'
March 24'
April 24'

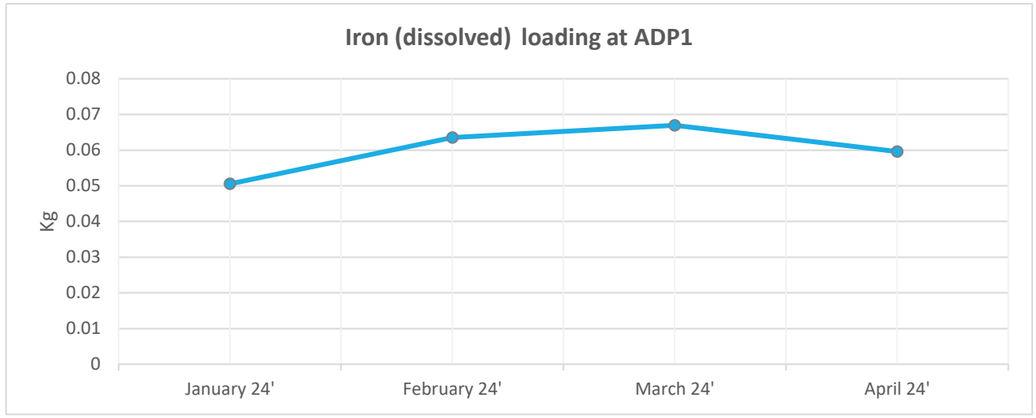

Arsenic (total) loading at ADP1
Kg
0.3
0.25
0.2
0.15
0.1
0.05
0
January 24'
February 24'
March 24'
April 24'

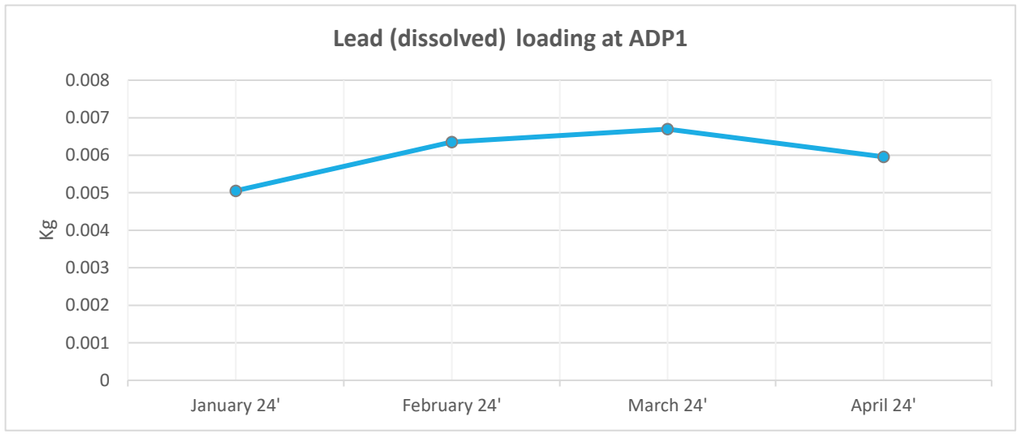

Cadmium (dissolved) loading at ADP1
Kg
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
January 24'
February 24'
March 24'
April 24'

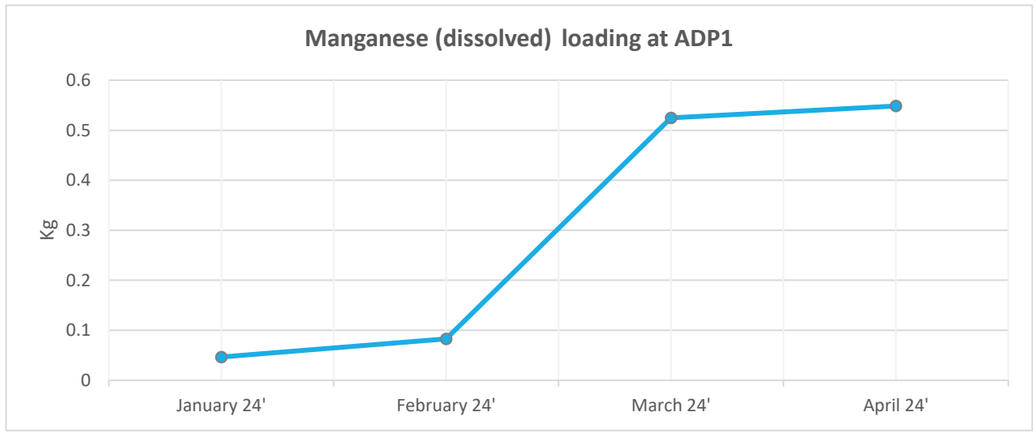

Chromium (dissolved) loading at ADP1
Kg
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
January 24'
February 24'
March 24'
April 24'

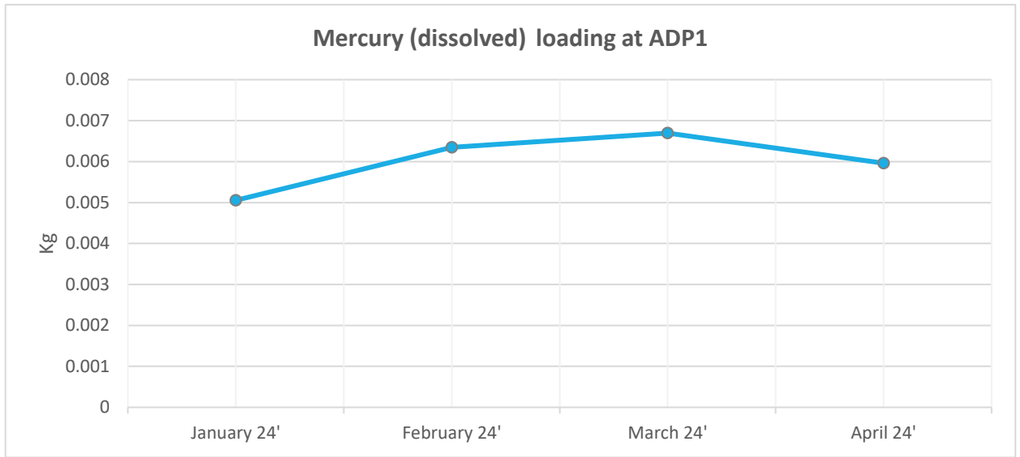

Cobalt (dissolved) loading at ADP1
Kg
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
January 24'
February 24'
March 24'
April 24'

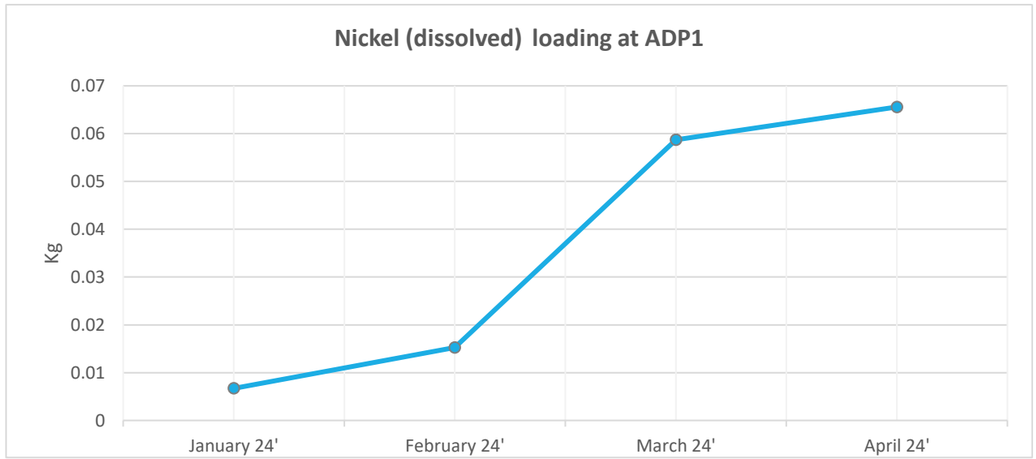

Copper (dissolved) loading at ADP1
Kg
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
January 24'
February 24'
March 24'
April 24'

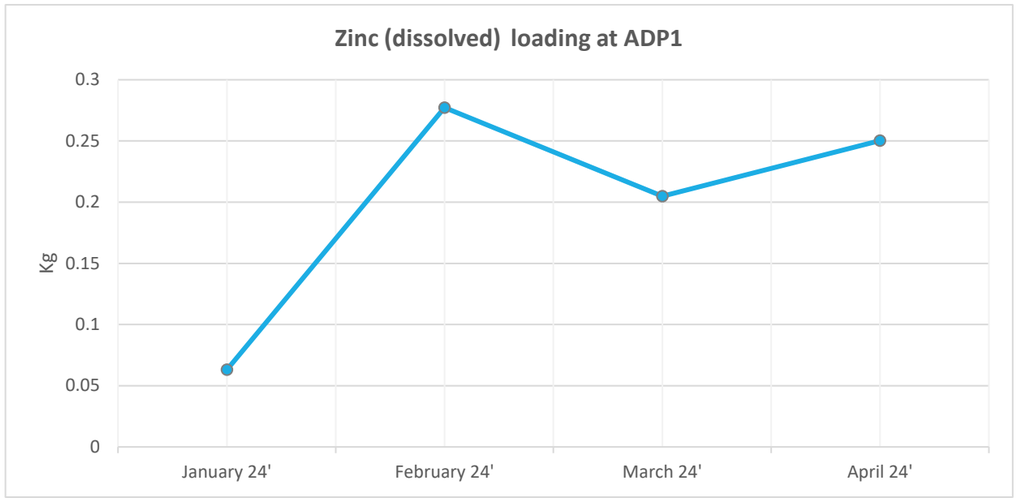

Iron (dissolved) loading at ADP1
Kg
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
January 24'
February 24'
March 24'
April 24'


Lead (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'


Manganese (dissolved) loading at ADP1
Kg
0.6
0.5
0.4
0.3
0.2
0.1
0
January 24'
February 24'
March 24'
April 24'


Mercury (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'


Nickel (dissolved) loading at ADP1
Kg
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
January 24'
February 24'
March 24'
April 24'



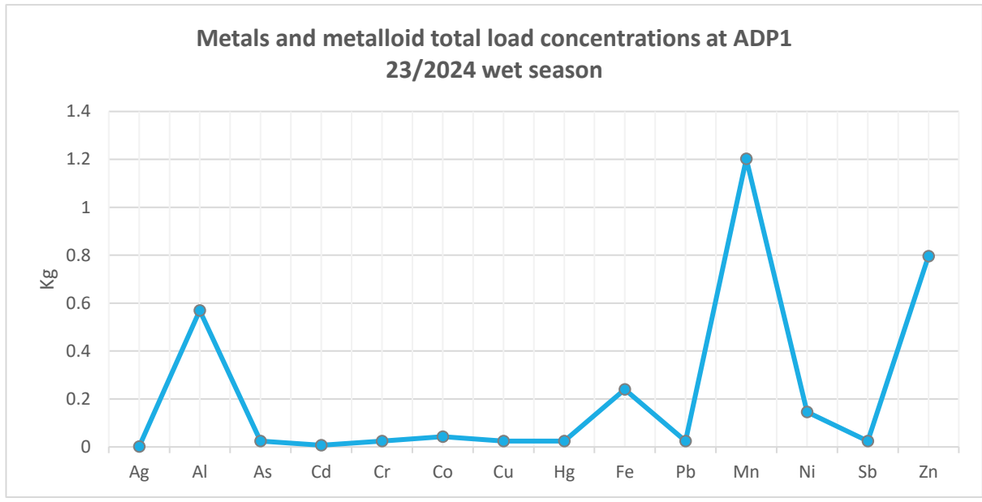


Figure 4-7 ADP1 Dissolved Metals Loadings

4.3 Summary of Exceedances

There were several exceedances of trigger values for metals at Compliance Point SWTG2 (Table 4-5). In accordance with the Licence, a reportable exceedance is if one or both of the following items occurs:

- 10 (a) An exceedance of a trigger value specified in Item 7 at the Compliance Point SWTG2, on three consecutive sampling occasions; and/ or
- 10 (c) An exceedance of three or more times a trigger value specified in Item 7 at Compliance Point SWTG2 of the Licence.

.

Table 4-5 Summary of Reportable Exceedances

Sample Date	Analyte	Trigger Value (µg/L)	Result (µg/L)	Detected	Item	Date Notified	Method of Notification
06/02/2024	Cadmium	0.2	1.1	12/02/2024	10 (c)	12/02/2024	Email
19/03/2024			0.84	27/03/2024	10 (c)	27/03/2024	Email
26/03/2024			0.76	4/04/2024	10 (c)	4/04/2024	Email
2/04/2024			0.22	12/04/2024	10 (a)	12/04/2024	Email
8/04/2024			0.78	16/04/2024	10 (a)	16/04/2024	Email
8/04/2024			0.78	16/04/2024	10 (c)	16/04/2024	Email
06/02/2024	Cobalt	1.4	7.1	12/02/2024	10 (c)	12/02/2024	Email
20/02/2024			2.9	27/02/2024	10 (a)	27/02/2024	Email
4/03/2024			4	12/03/2024	10 (c)	12/03/2024	Email
19/03/2024			7.3	27/03/2024	10 (a)	27/03/2024	Email
26/03/2024			7.4	4/04/2024	10 (c)	4/04/2024	Email
2/04/2024			2.3	12/04/2024	10 (a)	12/04/2024	Email
8/04/2024			9.4	16/04/2024	10 (a)	16/04/2024	Email
8/04/2024			9.4	16/04/2024	10 (c)	16/04/2024	Email
23/01/2024	Copper	1.4	4.5	1/02/2024	10 (c)	1/02/2024	Phone call and later an email
06/02/2024			5.6	12/02/2024	10 (c)	12/02/2024	Email
06/02/2024			4.5 1.8 5.6	12/02/2024	10 (a)	12/02/2024	Email
13/02/2024			1.5	19/02/2024	10 (a)	19/02/2024	Email
20/02/2024			2.3	27/02/2024	10 (a)	27/02/2024	Email
2/04/2024			1.8	12/04/2024	10 (a)	12/04/2024	Email
8/04/2024			1.7	16/04/2024	10 (a)	16/04/2024	Email
30/04/2024	Nickel	11	47	16/04/2024	10 (c)	16/04/2024	Email
06/02/2024	Zinc	8	71	12/02/2024	10 (c)	12/02/2024	Email
06/02/2024			21 13 71	12/02/2024	10 (a)	12/02/2024	Email
13/02/2024			13	19/02/2024	10 (a)	19/02/2024	Email

Sample Date	Analyte	Trigger Value (µg/L)	Result (µg/L)	Detected	Item	Date Notified	Method of Notification
20/02/2024			26	27/02/2024	10 (a)	27/02/2024	Email
20/02/2024			26	27/02/2024	10 (c)	27/02/2024	Email
26/02/2024			8.6	6/03/2024	10 (a)	6/03/2024	Email
4/03/2024			36	12/03/2024	10 (c)	12/03/2024	Email
4/03/2024			36	12/03/2024	10 (a)	12/03/2024	Email
19/03/2024			87	27/03/2024	10 (c)	27/03/2024	Email
26/03/2024			92	4/04/2024	10 (c)	5/04/2024	Email
2/04/2024			24	12/04/2024	10 (a)	12/04/2024	Email
2/04/2024			24	12/04/2024	10 (c)	12/04/2024	Email
8/04/2024			100	16/04/2024	10 (a)	16/04/2024	Email
8/04/2024			100	16/04/2024	10 (c)	16/04/2024	Email

4.4 Discussion of Anomalous

Anomalous have been detected in data results at several monitoring sites. Using long term trend graphs, some sites have highlighted anomalies rather than spikes in water quality. SWTG2 in particular shows anomalies in data during the March to November 2016 monitoring period. Results for each analyte, in particular the dissolved metal concentrations are skewed with the inclusion of these data points.

Monitoring data including and pre 2016 has been excluded from the complete data set, due to lack of certainty of field sampling protocols and data quality.

4.5 Discussion of Results and Conclusions

In conclusion, controlled discharge of treated (by reverse osmosis) water from the Toms Gully Pit commenced from January to April 2024 with a total of 60,480 KL of treated water discharged from ADP1. This is the first year of water treatment and release under WDL 249.

A total of 1409 mm of rainfall was recorded during the reporting period, whilst nearby upstream rain gauges recorded 739 mm at Quest 29 and 739 mm at Rustlers Roost.

Creek flow in the upper catchment commenced in early January 2024 with the telemetry station at TGSW2 recording first flows in early January at 1.1m and cease of flow in the lower catchment at the beginning of May 2024.

Creek flows through this section of the creek varied and generally aligned with rainfall events at TGPA and upper catchment rainfall events. Creek heights varied from 0.4-5.2m with an average height of 1.15m. The largest flood events were in late January and mid-March (5.2 metres and 5.1 metres respectively) breaching the Arnhem Highway bridge guard rails.

During controlled discharge, there were 15 weekly sampling events. ADP1 discharge and SWTG1A (upstream) water quality short term median trends and loading calculations were within WDL 249 GV's or below limits of reporting except for Zinc. There were no exceedances of the WDL249 discharge trigger values for dissolved metals, with the exception of cadmium on 02/04/2024, indicating potential toxicity to sensitive aquatic species. Considering the dilute nature of the water discharged, it is unlikely that the contaminant loads would have resulted in any contaminant accumulation in the sediments of Mount Bundey Creek.

SWTG2 (Compliance) physical parameters and general chemistry were within respective WDL 249 GV's. Surface water quality trends were generally similar to their long-term trends with some analytes (cadmium, cobalt, Copper, Nickel and Zinc) elevated above their respective discharge TV's, during the reporting period and long term trends (2016-2024). As result, there were several reportable exceedances of trigger values for metals which triggered 10 (a) An exceedance of a trigger value , on three consecutive sampling occasions; and/ or 10 (c) An exceedance of three or more times a trigger value. Refer to Section 4.31.

SWTG12 (Oxebow Wetlands weir discharge) water quality is a likely contributor to the exceedances at SWTG2 with reported elevated short- and long-term medians for dissolved metals and electrical conductively (495 µS/cm), pH (3.9) and sulfates (260 mg/l) above 95% s.p. ANZG, 2018. The wetlands receive surface flows and seepage from the degraded metalliferous mined domains (waste rock dump seepage, old mill site surface flows and TSF 1 and 2 seepage). Further, seepage from the evaporation ponds, upstream of SWTG12, is likely contributing to contaminant loads at SWTG2 and downstream SWTG3A.

The elevated metals concentrations were also noted during the biological monitoring program, from a set of single events samples, suspecting that elevations were possibly related to point sources pollution from mine

domains interacting with surface/groundwater and Mount Bundey Creek and that it could lead to impairment of aquatic ecosystems downstream of TGPA.

Zinc (total and dissolved) concentrations tend to remain in concentration compared to other metals with long term trends (2017-2024) showing elevated levels reaching the highest concentrations in 2020 of 230 µg/L. Zinc is prominent and elevated above the discharge TV's for most monitoring occasions at SWTG2 with only two of the 15 monitoring events below this value during the reporting period. ADP1 reported elevated Zinc concentrations. The upstream surface water quality monitoring site (SWTG1A) also recorded long term trends with spikes in Zinc concentrations (120 µg/L in 2016 and 46 µg/L in 2019). A further understanding of Zinc concentrations in the Mount Bundey catchment is required to propose site specific triggers values for zinc.

Dissolved metals concentrations were elevated, sediment results indicate some accumulation of metals particularly for Arsenic. Metals in sediments were not considered to have the potential to be released in concentrations which could be ecotoxic, should waters remain circumneutral at the site. Considering the overall treated water quality discharged from ADP1, it is unlikely that the contaminant loads would have resulted in any adverse impact to aquatic flora or fauna, or contaminant accumulation in the sediments of the Mount Bundey Creek.

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. The Compliance Point was triggered several times including other surface water monitoring sites 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 sites for monitoring was not an issue during this reporting period, SWTG1A, MBC01A will continue to be a challenge particularly after heavy rain events and flooding.

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 sites	SWTG1A	Upstream	●	●	●	●	●	●	●	●	●	●	●
	MBC01A	Upstream (Downstream of Oxbow Wetlands)	●	●	●	●	●	●	●	●	●	●	●
	SWTG2	Compliance Point	●	●	●	●	●	●	●	●	●	●	●
	SWTG3A	Downstream	●	●	●	●	●	●	●	●	●	●	●
Other monitoring sites on tenement	ADP1	Authorised Discharge Point	●	●	●	●	●	●	●	●	●	●	●
	SWTG12	Onsite- Oxbow Wetland	●	●	●	●	●	●	●	●	●	●	●
	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'.

During the Licence reporting period 22 December 2023 to 21 December 2024 controlled active discharge of treated water to Mount Bundey Creek commenced in mid-January 2024 and ceasing discharge at the end of April 2024.

Based on the information and assessment of information gathered during the reporting period, the activity for the discharge of treated RO water to Mount Bundey creek via ADP1 is unlikely to harm or have an adverse effect on, or potential harm to or adverse effect on, the environment based on water quality results collected during the 2024 reporting period. The reasoning for this decision is based on discharge water and total loading calculations is generally within WDL 249 GV's. with the exception of cadmium on 02/04/2024, indicating potential toxicity to sensitive aquatic species. Considering the dilute nature of the water discharged, it is unlikely that the contaminant loads would have resulted in any contaminant accumulation in the sediments of Mount Bundey Creek.

SWTG2 surface water exceedance reports reflect the history of existing mine disturbance at the TGM. This is the first year of water treatment and release. PGO have invested significant financial commitments to manage water at 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 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 during mining with the objective to reduce cumulative impacts occurring.

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

There are no proposed changes for the upcoming reporting period however there were changes proposed in the last reporting period and the outcomes of these actions are discussed in Table 5-2.

Table 5-2 Outcomes of the proposed changes done during the 2023-24 reporting period

Proposed New Actions 2023-24	Rationale	Timeline	Outcome
A croc spotter will accompany Officers to monitor MBC03A site and weeds along access tracks maintained.	The site was difficult to access due to weed infestations, low visibility of access walking track and potential for crocodile or other feral animal presence. The site is a ~100 m walk through dense overgrown weeds that make visibility poor.	Ongoing during wet season	A croc spotter was hired to accompany Officers to monitor MBC03A.All monitoring events were met. Weed spraying was done along the access track to improve visibility.
Commence monitoring at SWTG3A	Approval was not obtained by the pastoral manager for access to SWTG3A. numerous phone calls were made and messages left. Contact has been made and approval granted as long as notification is given prior to accessing the Station.	Ongoing during wet season	Approval was gained from the pastoral manager for access to SWTG3A. All sampling events were met
Review of the database to take out outliers	Several anomalies were identified during analysis of long-term data. The database needs to be reviewed and anomalies such as these are to be reviewed	May, following wet season	Data outliers particularly for long term trends were removed from the data analysis
Access to SWTG1A	Whilst no improvements are being proposed, the site will be accessed during periods of lower rainfall and with attendance of a crocodile spotter	Ongoing during wet season	Access to SWTG1A was improved with the Pastoral owner clearing the main track and fencing. The croc spotter attended all visits to maintain safety from threat of crocodiles, buffalo and pigs.

6 Sediment and Macroinvertebrate Monitoring

Aquatic Ecology Services conducted biological monitoring in accordance with Item 11 (Condition 27) of the WDL 249 in April 2024 involving sediment and macroinvertebrate sample, analysis and reporting. The Biological Monitoring Report is provided in Appendix D.

Aquatic ecology surveys were successfully completed at Toms Gully Mine in 2024. All components were completed at sites on Mount Bundey Creek where access, sufficient water and safety allowed. The following conclusions are made in regard to 2024 monitoring:

- Due to a shorter than average wet season that was characterised by sporadic rain and flow, samples could not be collected at Coulter Creek sites due to a lack of water. The presence of sites upstream on Mount Bundey Creek allow for a comparison given the habitat similarities, and so it is not considered essential that sites on Coulter Creek were sampled as a Control stream.
- Exceedances of dissolved metal guideline values have been recorded previously downstream of influences of Toms Gully Mine. These results present a single sample in time during the recessional flow period and should be viewed in the context of historical water quality monitoring, including results of sampling over the 2023-2024 wet season when discharge was occurring.
- There was some accumulation of metals in sediments, and an exceedance of the upper guideline value for arsenic for the first time at SWTG2. Metals in sediments are considered to have the potential to be released in concentrations which could be ecotoxic, when waters return low pH values, which was observed in May 2024.
- The exceedance of surface water guideline values, but not sediment guideline values at MBC01 is possibly due to low pH allowing metals to remain dissolved in surface waters close to the TSF. The same could not be said at SWTG2, where the cumulative impact of historical pollution from Tom’s Gully Mine is becoming more evident.
- 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. The impairment is likely related to poor water quality results found at MBC01A and SWTG2.
- All macroinvertebrate community data should be viewed in the context of historical data, and for most metrics, there has been a pronounced decrease in ecosystem health at SWTG2.
- Although previous surveys have recorded fish at SWTG2, this did not occur in 2024, despite similar levels of electrofishing effort being applied at all sites. In 2023, far fewer species and a lower abundance of fish were found downstream on Mount Bundey Creek than upstream compared with previous years. This decreasing trend, and the lack of fish at the site in 2024 suggest that poor water quality is affecting the habitability of the water downstream of Toms Gully Mine for fish. The spatial extent of this impact is difficult to know but can be explored through updates to sampling design.

- Surface water quality sampling identified potential point source pollution related to surface/groundwater interactions between infrastructure at Toms Gully and Mount Bundey Creek. Exceedances of the GVs indicate ecotoxic conditions that have likely resulted in an impairment of aquatic ecosystems downstream of Toms Gully Mine. Waste discharge was not underway during the recessional flow period that sampling was completed, which reflects that impacts associated with poor water quality are more likely to be related to surface/groundwater interactions that are not being diluted from upstream flow or treated water discharge.
- 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.
- An uninterrupted data set is the most robust way to analyse conditions in the receiving environment surrounding Toms Gully Mine should operations commence. Therefore, aquatic ecology monitoring should continue in 2024. Access to downstream site SWTG3 or previously sampled site MBC03 should be explored to understand the spatial extent of impacts detected downstream of the TGPA.
- Sites on Culter Creek have been used as control sites during the baseline surveys but given that continuous data exists from upstream sites in the Mount Bundey Creek catchment, there is less requirement for sampling in these sites going forward. Sampling effort should be concentrated to Mount Bundey Creek and could include a site downstream of the Coulter Creek confluence.

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 DEPWS' 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 2023/2024 reporting period. The Environment Incident Reporting contact details have changed with the new regulation changes and are highlighted in red and 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	NEW NT Department of Environment, Parks and Water Security (DEPWS) NT Department of Industry Tourism and Transport (DITT) Mines Branch- (08) 8999 6528 Emergency outside business hours (8am-7pm ACST)- 0419 036 035	NEW PGO acknowledges that the Environmental regulation of mining activities in the Northern Territory has changed. From 1 July 2024, activities will be regulated under the *Environment Protection Act (EP) 2019* Waste Discharge Licences – Notifiable Incidents are to be reported to Environmentregualtion@NT.gov.au The NEW Notification of Environmental Incident Form (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*Environmental Incident Report Form (in accordance with Section 29 *Mining Management Act* 2001) *https://nt.gov.au/industry/mining/mining-operations/report-a-mining-environmental-incident*.	Notification within 24 hours.	NEW From the 1 July 2024 the new contact is: Mining Division Department of Environment, Parks & Water Security Email: mineralinfo.DEPWS@nt.gov.au e-mail to: mineralinfo.itt@nt.gov.au GPO Box 4550 Darwin NT 0801 Waste Discharge Licences – Notifiable Incidents are to be reported to Environmentregualtion@NT.gov.au

Cause/incident event	Department	Notification/ Inform	Timeline	Contact
harm or serious harm.				
Interference, damage, /destruction of a sacred site or unauthorised activity/entry in a restricted work area/ sacred site	Aboriginal Areas Protection Authority- **(08) 8999 4365** or **08 8951 5023**	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.	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	NT Dept of Territory Families, Housing and Communities (TFHC), Heritage Branch- **(08) 8999 5039**	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.	e-mail to: heritagecouncil@nt.gov.au PO Box 4198 Darwin NT 0801

Cause/incident event	Department	Notification/ Inform	Timeline	Contact
objects/places with heritage value.				
For all mining work- related injury, illness or dangerous incident occurring on and off tenement. Incidents including: - Serious injury or illness; - dangerous incident;	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

Cause/incident event	Department	Notification/ Inform	Timeline	Contact
- death of a person				

8 Glossary

Abbreviations	Definitions
ADP	Authorised Discharge Point
BUD	Beneficial Use Declaration
DEPWS	Department of Environment, Parks, and Water Security
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	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

9 References

1. Aquatic Ecology Services. 2024. *Toms Gully Mine Aquatic Ecology Baseline Studies*. Report prepared for Primary Gold Limited.
2. Department of Environment, Parks and Water Security. 2024. *NR Maps*. Northern Territory Government. Viewed on 12 December 2024, retrieved from https://nrmaps.nt.gov.au/nrmaps.html
3. Department of Natural Resources, Environment, The Arts and Sport. 2009. *Sites of Conservation Significance; Mary River Coastal Floodplain*. Northern Territory Government, Darwin.
4. Department of Infrastructure, Planning and Environment. 2002. *Declaration of Beneficial Uses and Objectives of Water May River Surface Water*. Northern Territory Government, Darwin.
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

Site	Date/ Time	Time	Sample	Field Parameters						Lab Inorganics			Alkalinity as CaC03			Anions Dissolved		Cations Dissolved				Metals Dissolved														Metals Total														Field comments
				SWL	Temp	DO	EC	pH	Turbidity	TDS	TSS	Turbidity	HCO_3	CO_3	Total	Cl−	SO_4^{2-}	Ca	Mg	K	Na	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	
				mRL	°C	%	µS/cm	Units	NTU	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
				Laboratory Levels of Reporting						5	5	0.1	5	5	5	1	1	0.5	0.5	0.5	0.5	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	
WDL-249 Discharge Trigger Values SWTG2						85-120	250	5.8-8.0	87	-	54	-	-	-	-	-	295	-	-	-	-	295	9	13	0.2	1	1.4	1.4	2700	3.4	1900	0.6	11	0.05	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ADP1	16/01/2024	10:05:00 AM	Sample	-	28.5	63	63	9.49	0.51	31	<5	0.21	8	<5	<5	10	5.3	1	<0.5	<0.5	<0.5	<10	<1	<1	<0.1	<1	<1	<1	<10	<1	4.1	<0.05	<1	<0.05	1.2	<10	<1	<1	<0.1	<1	<1	<1	<10	<1	4.2	<0.05	<1	<0.05	2.5	
ADP1	20/02/2024	12:22:00 PM	Sample	-	32.9	78	34	9.25	0.55	15	<5	-	7.9	<5	7.9	2.7	1.5	<0.5	<0.5	<0.5	4.2	<10	<1	<1	<0.1	<1	<1	<1	<10	<1	6.9	<0.05	1.4	<0.05	29	19	<1	<1	<0.1	<1	<1	<1	12	<1	7.8	<0.05	1.4	<0.05	25	
ADP1	12/03/2024	12:19:00 PM	Sample	-	32.2	79.9	35.8	6.37	1.38	21	<5	-	<5	<5	<5	3.6	5.5	0.85	0.63	<0.5	3.4	24	<1	<1	0.17	<1	1	<1	<10	<1	41	<0.05	4.3	<0.05	10	29	<1	<1	0.19	<1	1.1	<1	<10	<1	42	<0.05	4.6	<0.05	11	
ADP1	2/04/2024	1:10:00 PM	Sample	-			32	5.9	6.01	19	<5	0.47	<5	<5	<5	3.4	5.7	0.93	0.77	<0.5	3.6	16	<1	<1	0.26	<1	1.4	<1	<10	<1	46	<0.05	5.5	<0.05	21	20	<1	<1	0.3	<1	1.5	1.1	<10	<1	45	<0.05	6	<0.05	22	
Minimum (2024)					28.5	63	32	5.9	0.51	15	N/A	0.21	7.9	N/A	N/A	2.7	1.5	N/A	N/A	N/A	3.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.1	N/A	N/A	N/A	1.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.2	N/A	N/A	N/A	2.5	
Maximum (2024)					32.9	79.9	63	9.49	6.01	31	N/A	0.47	8	N/A	7.9	10	5.7	1	0.77	N/A	4.2	24	N/A	N/A	0.26	N/A	1.4	N/A	N/A	N/A	46	N/A	5.5	N/A	29	29	N/A	N/A	0.3	N/A	1.5	1.1	12	N/A	45	N/A	6	N/A	25	
Standard Deviation (2024)					2	8	13	2	2	6	N/A	-	0	N/A	N/A	3	2	0	0	N/A	0	4	N/A	N/A	0	N/A	0	N/A	N/A	N/A	19	N/A	2	N/A	11	4	N/A	N/A	0	N/A	0	N/A	N/A	N/A	19	N/A	2	N/A	9	
Short term median (2024)					32.2	78	35	7.81	1	20	N/A	-	7.95	N/A	N/A	3.5	5.4	0.93	0.7	N/A	3.6	20	N/A	N/A	0.22	N/A	1.2	N/A	N/A	N/A	24	N/A	4.3	N/A	15.5	20	N/A	N/A	0.2	N/A	1.3	N/A	N/A	N/A	25	N/A	4.6	N/A	16.5	
Long term median				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
EP1	26/03/2017			-	-	-	2600	3.3	-	-	<5	0.3	<5	<5	<5	4	1800	63	240	1.4	2.9	140000	-	10	160	18	710	2200	1300	3	9300	-	4000	-	14000	180000	-	40	170	22	820	2800	1600	4	11000	-	4900	-	14000	-
EP1	30/06/2018			-	-	-	5200	3.4	-	-	<5	0.6	<5	<5	<5	6	5000	100	640	1.7	4.7	400000	-	19	460	42	2400	4100	5800	2	30000	-	12000	-	31000	400000	-	20	480	42	2500	4100	5600	2	32000	-	12000	-	33000	-
EP1	22/02/2019			-	-	-	5800	3.4	-	-	<5	0.5	<5	<5	<5	6	5800	120	720	1.9	5.5	420000	-	19	480	40	2700	4200	5500	1	35000	-	13000	-	37000	420000	-	19	480	41	2800	4400	5900	1	34000	-	12000	-	36000	-
EP1	22/02/2019			-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	730	1.9	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EP1	20/08/2019		Sample	-	-	-	6600	3.4	-	-	10	0.1	<5	<5	<5	<10	6500	140	910	2.1	6.6	570000	-	<1	590	43	3100	4700	5100	2	44000	-	15000	-	45000	510000	-	<1	580	44	3200	5000	5200	2	41000	-	14000	-	43000	-
EP1	20/08/2019		Sample	-	-	-	6600	3.4	-	-	9	-	<5	<5	<5	<10	6500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	570	45	3200	4900	5400	2	42000	-	15000	-	44000	-
EP1	30/10/2019		Sample	-	-	-	8400	3.3	-	-	10	1.4	<5	<5	<5	11	8000	170	1100	2.5	8.3	570000	-	<1	720	49	3700	5600	6200	1	53000	-	19000	-	56000	630000	-	<1	720	48	3800	5900	6700	1	54000	-	18000	-	54000	-
EP1	30/10/2019		Sample	-	-	-	8400	3.3	-	-	11	1.4	<5	<5	<5	-	-	-	-	-	-	570000	-	<1	720	49	3700	5600	6400	1	54000	-	19000	-	57000	640000	-	<1	700	48	3800	5900	6900	1	53000	-	19000	-	55000	-
EP1	2/12/2020		Sample	-	-	-	-	-	-	-	6	0.5	<5	<5	<5	10	7800	160	1100	2.7	8.7	630000	-	19	600	48	3800	4600	7600	2	53000	-	16000	-	48000	640000	-	20	600	47	3800	4800	7500	2	52000	-	17000	-	48000	-
EP1	12/01/2021		Sample	-	-	-	396.3	3.42	-	-	<5	4	6	<5	6	8	5800	120	730	3.1	6.5	420000	-	19	460	37	2900	3600	7300	2	36000	-	14000	-	42000	410000	-	18	440	36	2900	3500	7700	1	3600	-	14000	-	41000	Short walk. Sunny location. Very high water level. No flow. Clear water.
EP1	11/03/2021		Sample	-	-	-	4190	3.57	-	-	<5	1.1	<5	<5	<5	5	3100	53	350	1.7	3.4	250000	-	13	230	32	1500	3300	3000	3	15000	-	7000	-	15000	260000	-	13	240	33	1500	3400	3100	3	15000	-	7200	-	15000	High water level.
EP1	17/05/2021		Sample	-	-	-	5662	3.64	-	-	18	1.7	<5	<5	<5	7	4900	100	610	2.1	5.5	380000	-	16	380	34	2400	3100	5300	2	30000	-	9800	-	33000	390000	-	17	390	35	2500	3200	5800	2	32000	-	10000	-	35000	High water level.
EP1	15/09/2021		Sample	-	-	-	6300	3.1	-	-	23	1.2	<5	<5	<5	13	5600	130	780	2.1	6.5	520000	-	18	500	47	3300	4400	6000	<1	41000	-	14000	-	38000	450000	-	18	520	47	3300	4400	6500	2	37000	-	14000	-	40000	-
EP1	8/12/2021		Sample	-	35	-	330	2.82	-	-	13	0.8	<5	<5	<5	14	7400	150	850	2.4	7.8	520000	-	19	530	48	3600	4300	8400	2	41000	-	15000	-	44000	500000	-	18	490	44	3300	3900	7500	2	42000	-	17000	-	48000	Murky green, still water
EP1	7/04/2022		Sample	-	32.4	-	3850	3.56	-	6800	5	0.8	<5	<5	<5	9	5000	110	5.7	2.2	640	370000	-	17	390	41	2700	3500	6000	2	28000	-	10000	-	29000	370000	-	19	420	45	2900	4000	6500	2	32000	-	14000	-	38000	Green, still, slightly turbid.
EP1	29/11/2022		Sample	-	29.93	-	6254	2.97	-	-	9	1.2	<5	<5	<5	<1	11000	140	870	2.6	8	500000	-	15	430	48	3500	3500	7100	2.1	40000	-	15000	-	41000	530000	-	18	480	55	3800	3800	7300	2.9	42000	-	17000	-	45000	Turbid, green, still.
EP1	21/03/2023	11:40:00 AM	Sample	-	32.4	75.3	3745	3.64	1.4	2500	<5	-	<5	<5	<5	9	3500	77	420	2.1	4.5	250000	1.4	15	230	23	1700	1800	3300	3.6	20000	<0.05	7300	<0.5	21000	250000	<1	12	210	23	1600	1800	3300	3.1	18000	<0.05	7000	<0.5	20000	1 Filter, flourescent green coloured water, water level at overflow point though not overflowing,
EP1	12/12/2023	10:54:00 AM	Sample	-	33.7	52.5	6536	-	5.12	10000	7.5	-	<5	<5	<5	10	4400	160	930	2.6	11	530000	<2.0	30	490	63	4400	3700	8600	5.7	42000	<0.05	19000	<1	50000	600000	<2.0	35	520	64	4500	3800	9000	5.8	48000	<0.05	20000	<1	52000	1 filter, swl low
EP1	11/02/2024	10:42:00 AM	Sample	-	33	66.5	4043	3.36	6.9	5900	6.5	-	<5	<5	<5	<100	3600	78	430	2.3	4.9	260000	<1	8.9	210	19	1800	1200	4500	2.6	24000	<0.05	9000	<0.05	24000	250000	1.8	13	210	25	1900	1800	4500	3.6	23000	<0.05	8200	<0.5	22000	No overflow of pit, algae present. Small water bugs
EP1	06/04/2024	12:25:00 PM	Sample	-	-	-	4100	3.2	5.93	5700	8	1.2	<5	<5	<5	7.4	5400	84	510	2	6.5	300000	-	21	270	35	2000	3500	4800	15	20000	-	8600	-	18000	320000	-	20	300	39	2100	3800	4800	17	23000	-	9300	-	20000	3 filters pump not on
EP1	30/09/2024		Sample	-	-	-	-	-	-	6600	12	-	<5	<5	<5	18	9100	160	960	2.8	10	670000	1	28	590	86	4200	7100	14000	21	44000	<0.05	18000	<0.5	35000	6700000	<1	28	610	85	4300	7100	15000	22	44000	<0.05	18000	<0.5	35000	
Minimum (2017- 24)					29.93	52.5	330	2.82	1.4	2500	N/A	0.1	N/A	N/A	N/A	N/A	1800	53	5.7	1.4	2.9	140000	N/A	N/A	160	18	710	1200	1300	N/A	9300	N/A	4000	N/A	14000	180000	N/A	N/A	170	22	820	1800	1600	1	3600	N/A	4900	N/A	14000	
Maximum (2017-					35	75.3	8400	3.64	6.9	10000	23	4	6	N/A	6	18	11000	170	1100	3.1	640	670000	1.4	30	720	86	4400	7100	14000	21	54000	N/A	19000	N/A	57000	6700000	1.8	40	720	85	4500	7100	15000	22	54000	N/A	20000	N/A	55000	
Standard Deviation (2017- 24)					2	9	2223	0	2	2198	5	1	N/A	N/A	N/A	4	2152	34	286	0	141	143063	0	5	162	15	969	1336	2571	5	12663	N/A	4358	N/A	12757	1406580	0	7	157	14	954	1262	2638	5	14062	N/A	4308	N/A	12441	
Short term median (2023- 24)					-	-	4100	-	5.93	6250	7.75	-	N/A	N/A	N/A	10	4900	122	720	2.45	8.25	415000	1	24.5	380	49	3100	3600	6700	10.4	33000	N/A	13500	N/A	29500	460000	1.8	24	410	52	3200	3800	6900	11.4	33500	N/A	13650	N/A	28500	
Long term median (2017- 24)					32.7	66.5	5431	3.4	5.525	6250	9.5	1.1	N/A	N/A	N/A	9	5600	120	730	2.1	6.5	420000	-	18.5	460	42	2900	3700	6000	2	36000	-	14000	-	37000	420000	-	18.5	480	44	3050	3950	6200	2	35500	-	14000	-	39000	
EP2	26/03/2017		Sample	-	-	-	2900	3.3	-	-	14	0.5	<5	<5	<5	5	2200	47	270	0.9	2.8	190000	-	12	180	25	860	3100	1800	3	11000	-	5000	-	11000	190000	-	13	180	26	890	3100	1800	3	11000	-	5300	-	12000	-
EP2	30/06/2018		Sample	-	-	-	6800	3.2	-	-	9	0.8	<5	<5	<5	9	7200	100	840	1.4	4.3	660000	-	21	570	90	3100	11000	11000	5	34000	-	16000	-	30000	680000	-	23	590	91	3200	10000	11000	5	37000	-	17000	-	32000	-
EP2	22/02/2019		Sample	-	-	-	6800	3.2	-	-	<5	0.5	<5	<5	<5	9	7300	110	850	1.5	5.3	620000	-	22	520	76	3000	6700	13000	2	35000	-	16000	-	31000	630000	-	24	530	83	3300	7300	15000	2	36000	-	16000	-	31000	-
EP2	20/08/2019		Sample	-	-	-	8900	3.1	-	-	9	2.3	<5	<5	<5	14	9800	160	1200	1.9	7.7	940000	-	<1	720	96	4000	8200	11000	6	52000	-	22000	-	44000	890000	-	<1	670	100	4200	8600	12000	6	49000	-	21000	-	42000	-
EP2	30/10/2019		Sample	-	-	-	16000	3	-	-	30	4.3	<5	<5	<5	28	20000	300	2400	3.3	15	1600000	-	<1	1400	180	10000	21000	25000	5	100000	-	46000	-	88000	1800000	-	<1	1300	170	9900	20000	27000	5	100000	-	47000	-	86000	-
EP2	2/12/2020		Sample	-	-	-	-	-	-	-	<5	0.6	<5	<5	<5	14	8300	120	960	2	7.2	740000	-	25	530	82	3500	6600	9000	2	44000	-	17000	-	32000	750000	-	26	530	86	3800	7100	9100	2	44000	-	17000	-	32000	-
EP2	12/01/2021		Sample	-	-	-	400	3.36	-	-	<5	0.8	<5	<5	<5	2	51	2.5	6.5	1.9	3.8	550	-	7	0.6	<1	36	15	820	2	450	-	100	-	350	530	-	8	0.6	<1	37	16	1000	2	450	-	3	-	340	Car access. Very high water level. No flow. Clear water.
EP2	11/03/2021		Sample	-	-	-	3363	3.5	-	-	<5	0.6	<5	<5	<5	6	4000	86	510	2.3	4.8	300000	-	16	360	26	2100	3100	3100	1	26000	-	9400	-	26000	290000	-	17	350	26	2100	3100	3000	1	25000	-	9300	-	26000	High water level.
EP2	17/05/2021		Sample	-	-	-	4966	3.49	-	-	31	1.2	<5	<5	<5	8	4600	75	520	1.6	4.3	410000	-	13	340	55	2100	4700	5900	4	20000	-	8900	-	19000	430000	-	13	350	56	2200	4900	6100	4	20000	-	9200	-	19000	High water level.
EP2	15/09/2021		Sample	-	-	-	7800	2.89	-	-	38	1.5	<5	<5	<5	16	6900	120	960	1.8	6.2	770000	-	22	620	110	4100	9800	11000	6	43000	-	18000	-	34000	770000	-	22	670	120	4200	9900	12000	5	40000	-	19000	-	37000	-
EP2	8/12/2021		Sample	-	33.2	-	331.9	2.62	-	-	7	0.8	<5	<5	<5	13	10000	140	1000	2.1	7.6	830000	-	27	690	110	4400	9900	18000	5	44000	-	20000	-	40000	900000	-	29	700	120	4500	10000	18000	4	51000	-	26000	-	49000	Murky green, still water.
EP2	3/03/2022		-	-	38.1	-	3740	3.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Still, turbid, green.
EP2	7/04/2022		Sample	-	32	-	4000	3.19	-	7600	11	1.2	<5	<5	<5	11	5300	86	5.4	1.7	610	440000	-	15	390	70	2600	6400	8300	7	24000	-	11000	-	22000	440000	-	17	440	78	2900	7400	9100	7	27000	-	14000	-	25000	Green, still, turbid.
EP2	29/11/2022		Sample	-	32	-	7852	2.86	-	-	18	1.7	<5	<5	<5	14	17000	140	1100	2.2	8.6	800000	-	25	670	110	4500	11000	15000	5.6	44000	-	20000	-	39000	790000	-	25	780	130	4700	1100	15000	5.9	45000	-	21000	-	42000	Green, murky, still.
EP2	21/03/2023	11:25:00 AM	Sample	-	32.8	70	3728	3.51	1.71	2500	<5	-	<5	<5	<5	9	3600	69	400	2	5	270000	<1	13	250	32	1600	3300	4200	14	17000	<0.05	7300	<0.5	16000	280000	<1	9.2	220	32	1600	3400	4200	14	16000	<0.05	7200	<0.5	15000	1 Filter, clear to 1m, pump not on, 1.5m from top of dam wall
EP2	12/12/2023	11:06:00 AM	Sample	-	33.5	39.8	7112	3.2	5.45	12000	7.5	-	<5	<5	<5	<10	4600	150	990	2.4	9.5	660000	<2	37	690	100	4700	8700	13000	18	40000	<0.05	21000	<1	40000	740000	<2	40	700	100	4800	8600	14000	19	44000	<0.05	21000	<1	39000	2 filters
EP2	11/02/2024	11:00:00 AM	Sample	-	32.9	67.5	4327	3.27	3.47	6500	5	-	<5	<5	<5	<100	2300	31	79	6.4	5.1	32000	<1	9.6	67	<1	390	570	3600	21	7300	<0.05	1800	0.055	5200	310000	5.9	14	280	40	1900	3700	5700	10	22000	<0.05	8700	<0.5	19000	Water clear
EP2	06/04/2024	12:33:00 PM	Sample	-	-	-	3900	3.3	2.22	5300	<5	0.69	<5	<5	<5	9.3	4800	86	510	2.3	5.2	260000	-	19	230	24	1900	1700	3800	4.1	21000	-	8200	-	21000	240000	-	17	230	27	2100	1900	3800	4.3	23000	-	9000	-	23000	spillway slight overflow
EP2	30/09/2024		Sample	-	-	-	-	-	-	5300	28	-	<5	<5	<5	6.8	7000	140	760	2.9	7.4	450000	<1	18	370	44	3300	2500	5700	5.3	36000	<0.05	13000	<0.5	34000	4500000	<1	20	380	45	3400	2700	7400	5.7	37000	<0.05	14000	<0.5	36000	
Minimum (2017- 24)					32	39.8	331.9	2.62	1.71	2500	N/A	0.5	N/A	N/A	N/A	2	51	2.5	5.4	0.9	2.8	550	N/A	7	0.6	N/A	36	15	820	1	450	N/A	100	N/A	350	530	N/A	8	0.6	N/A	37	16	1000	1	450	N/A	3	N/A	340	
Maximum (2017-					38.1	70	16000	3.51	5.45	12000	38	4.3	N/A	N/A	N/A	28	20000	300	2400	6.4	610	1600000	N/A	37	1400	180	10000	21000	25000	21	100000	N/A	46000	0.055	88000	4500000	5.9	40	1300	170	9900	20000	27000	19	100000	N/A	47000	N/A	86000	
Standard Deviation (2017- 24)					2	14	3559	0	1	2896	11	1	N/A	N/A	N/A	6	4835	62	545	1	138	370834	N/A	7	309	41	2154	4909	6104	5	21445	N/A	9990	N/A	18571	975178	0	8	287	41	2064	4582	6404	4	20824	N/A	9983	N/A	17772	
Short term median (2023- 24)					33.2	53.7	4327	3.27	3.47	5900	7.5	0.69	N/A	N/A	N/A	8.1	4700	113	635	2.65	6.3	355000	N/A	18.5	300	44	2600	2100	4750	11.7	28500	N/A	10600	N/A	27500	525000	5.9	18.5	330	42.5	2750	3200	6550	7.9	30000	N/A	11500	N/A	29500	
Long term median (2017- 24)					32.9	67.5	4327	3.2	2.85	5900	12.5	0.8	N/A	N/A	N/A	9.15	6100	105	800	2	5.75	535000	-	18.5	455	79	3050	6500	8650	5	34500	-	14500	-	30500	655000	-	18.5	485	83	3250	6000	9100	5	36500	-	15000	-	31500	
TGM PIT	26/03/2017		Sample	-	-	-	1900	3.3	-	-	<5	6.9	<5	<5	<5	6	1100	170	120	6.5	19	18000	-	5	50	1	210	180	930	6	8900	-	860	-	6300	11000	-	27	29	<1	140	150	810	4	5700	-	560	-	5700	-
TGM PIT	30/06/2018		Sample	-	-	-	2100	3.2	-	-	<5	0.5	<5	<5	<5	6	1300	200	150	7.6	21	23000	-	7	52	2	260	220	2700	7	11000	-	1200	-	6300	24000	-	9	53	2	270	220	2700	7	11000	-	1200	-	6200	-
TGM PIT	22/02/2019		Sample	-	-	-	2200	3.3	-	-	<5	0.4	<5	<5	<5	6	1300	190	140	7.3	21	21000	-	3	51	1	250	210	1100	6	10000	-	1000	-	6600	22000	-	4	53	2	290	250	1200	7	11000	-	1100	-	6400	-
TGM PIT	20/08/2019		Sample	-	-	-	2200	3.3	-	-	11	0.5	<5	<5	<5	5	1300	210	160	8	22	22000	-	5	53	1	270	210	1700	8	12000	-	1200	-	6800	20000	-	8	52	1	280	220	1900	8	11000	-	1200	-	6500	-
TGM PIT	30/10/2019		Sample	-	-	-	2400	3.2	-	-	<5	2.6	<5	<5	<5	7	1300	210	150	8	22	20000	-	21	54	2	290	230	1500	7	10000	-	1100	-	6300	16000	-	21	52	1	260	220	1600	7	9900	-	1200	-	6600	-
TGM PIT	2/12/2020		Sample	-	-	-	-	-	-	-	<5	0.2	<5	<5	<5	6	1300	200	150	8.2	23	18000	-	4	49	1	260	200	1400	7	11000	-	1100	-	6400	17000	-	5	50	1	280	220	1400	7	11000	-	1100	-	6700	-
TGM PIT	13/01/2021		Sample	-	-	-	200.5	3.57	-	-	<5	19	<5	<5	<5	6	1300	200	140	8.3	22	20000	-	5	47	1	270	210	1300	7	11000	-	1100	-	6900	19000	-	5	46	1	280	220	1400	6	11000	-	29	-	6600	Sampled in the north-west locations where water collection is possible. Clear water.
TGM PIT	11/03/2021		Sample	-	-	-	2058	3.58	-	-	<5	0.5	<5	<5	<5	6	1300	190	140	8.1	21	18000	-	5	51	1	260	220	1100	6	11000	-	1100	-	7100	18000	-	6	54	1	260	230	1100	7	11000	-	1200	-	7200	High water level.
TGM PIT	17/05/2021		Sample	-	-	-	2429	3.77	-	-	17	0.8	<5	<5	<5	6	1200	190	140	7.4	20	21000	-	5	47	1	250	200	950	7	10000	-	900	-	6200	20000	-	5	46	2	270	210	1000	6	10000	-	1000	-	6300	High water level.
TGM PIT	15/09/2021		Sample	-	-	-	2100	3.28	-	-	<5	0.4	<5	<5	<5	10	1400	200	150	7.2	21	20000	-	7	47	1	280	210	1700	6	11000	-	1100	-	5700	19000	-	11	48	1	280	210	1800	7	11000	-	1100	-	5900	-
TGM PIT	8/12/2021		Sample	-	32.3	-	227.4	2.84	-	-	<5	0.3	<5	<5	<5	7	1400	200	150	7.9	22	20000	-	5	46	1	270	200	1400	6	11000	-	1100	-	6400	20000	-	6	48	1	290	220	1500	7	12000	-	1300	-	7400	Clear, no insect life, still water
TGM PIT	7/04/2022		Sample	-	32	-	1738	3.44	-	1900	<5	0.5	<5	<5	<5	8	1300	190	21	7.6	140	22000	-	4	52	2	310	260	1100	8	9900	-	1200	-	5800	37000	-	4	51	2	310	270	1100	8	20000	-	2400	-	13000	Still, clear, green/blue.
TGM Pit	9/08/2022		Sample	-	27	95.76	2553.4	3.78	-	-	<5	0.43	<5	<5	<5	7	1400	190	150	8.1	23	22000	-	5.3	50	1.4	280	210	1500	7.4	11000	-	1200	-	6500	21000	-	5.7	50	1.5	300	220	1500	7.3	11000	-	1200	-	6300	Salts on rocks from higher water level mark, blue/ green, fresh cattle dung, clear to 1m

Site	Date/ Time	Time	Sample	Field Parameters						Lab Inorganics			Alkalinity as CaC03			Anions Dissolved		Cations Dissolved				Metals Dissolved																	Metals Total													Field comments
				SWL	Temp	DO	EC	pH	Turbidity	TDS	TSS	Turbidity	HCO_3	CO_3	Total	Cl^-	SO_4^{2-}	Ca	Mg	K	Na	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	
				mRL	°C	%	µS/cm	Units	NTU	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
				Laboratory Levels of Reporting						5	5	0.1	5	5	5	1	1	0.5	0.5	0.5	0.5	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	
WDL-249 Discharge Trigger Values SWTG2						85-120	250	5.8-8.0	87	-	54	-	-	-	-	-	295	-	-	-	-	295	9	13	0.2	1	1.4	1.4	2700	3.4	1900	0.6	11	0.05	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TGM PIT	29/11/2022		Sample	-	30.18	-	1967	3.11	-	-	<5	0.45	<5	<5	<5	7.2	1600	190	150	7.2	22	21000	-	4.1	47	1.4	270	200	1300	7	11000	-	1000	-	5400	20000	-	5.9	51	2	320	230	1200	7.6	11000	-	1300	-	6400	Clear, grey/green, still.
TGMPIT	9/01/2023	9:15:00 AM	Sample	-	31.7	67.1	2106	3	1.75	2200	<5	0.39	<5	<5	<5	6.3	1400	190	150	8.1	22	22000	-	3.8	50	2.1	280	250	1100	9.9	10000	-	1100	-	6200	22000	-	4.3	50	2.3	290	260	1100	10	10000	-	1200	-	6200	-
TGM PIT	14/02/2023	11:25:00 AM	Sample	-	31.7	106.4	2080	3.04	0.79	1900	<5	-	<5	<5	<5	10	1400	180	150	7.6	21	23000	<1	4.9	48	1.7	280	230	1000	7	10000	<0.05	1200	<.05	6300	20000	<1	5.1	46	1.9	300	280	1000	7	10000	<0.05	1200	<0.1	6100	1 Filter, Pit height 8.63m, water level has risen, clear, blue, new pole installed at 12m
TGM PIT	21/03/2023	10:15:00 AM	Sample	15.2	31.7	74	2065	3.67	0.6	1000	<5	-	<5	<5	<5	7.3	1400	180	150	7.2	20	25000	<1	7.1	51	2.2	300	310	1000	7.1	10000	<0.05	1200	<0.5	5600	26000	<1	7.2	49	3	300	320	1100	6.8	10000	<0.05	1300	<0.5	5900	1 Filter, clear, water fleas, water beatle in water, water level high
TGM PIT DUPLICTE	21/03/2023	10:15:00 AM	Sample	-	31.7	74	2065	3.67	0.6	1000	<5	-	<5	<5	<5	10	1400	180	150	7.2	20	27000	<1	7.7	52	2	310	320	1100	7.7	10000	<0.05	1200	<0.5	5800	25000	<1	6.7	47	2.8	290	320	1100	6.9	9600	<0.05	1200	<0.5	5500	-
TGM PIT	17/04/2023	8:30:00 AM	No sample taken	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TGM PIT	15/05/2023	1:40:00 PM	Sample	19.73	30.8	-	2125	2.92	2.12	2000	10	-	<5	<5	<5	<5	1100	190	160	7.6	20	22000	<1	6.3	51	2.7	310	320	950	7.4	10000	<0.05	1300	<0.5	6400	24000	<1	6.8	51	2.3	290	310	930	7	11000	<0.05	1200	<0.5	6400	1 Filter, clear, lower water level, slight odour of sulphur
TGM PIT	29/11/2023	8:30:00 AM	Sample	-	-	11	2200	3.4	-	2100	<5	0.41	<5	<5	<5	5.5	1100	200	160	7.7	22	25000	<1	7.1	56	1.8	330	270	1300	9	11000	<0.05	1300	<0.05	6400	26000	<1	8.6	55	1.8	330	280	1300	8.8	11000	<0.05	1300	0.055	6400	Fields taken in Lab
TGM PIT	4/12/2023	2:10:00 PM	SWL only	19.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TGM PIT	11/12/2023	3:30:00 PM	SWL only	19.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TGM PIT	12/12/2023	10:40:00 AM	taken	19.02	32.5	45	2093	-	2.14																																									
TGM PIT	12/12/2023	10:40:00 AM	Sample	19.02	32.5	45	2093	-	2.14																																										height taken 60cm from pole 3 filters,duplicate
TGM PIT	12/12/2023	10:40:00 AM	Sample	19.02	32.5	45	2093	3.3	2.14	2100	<5	-	<5	<5	<5	7.6	1300	210	160	7.9	22	27000	<1	7.6	61	2.7	370	320	1300	9.8	13000	<0.05	1500	<0.5	7200	25000	<1	8.3	60	2.5	360	310	1300	9.9	12000	<0.05	1400	<0.5	6900	height taken 60cm from pole 3 filters,duplicate
TGM PIT DUPLICATE	12/12/2023	10:40:00 AM	Duplicate	-	-	-	-	3.4	-	2100	<5	-	<5	<5	<5	5.8	1100	210	160	7.8	22	26000	<1	7.4	62	2.9	370	320	1300	11	13000	<0.05	1500	<0.5	7100	23000	<1	7.3	60	2.3	340	300	1300	9.6	12000	<0.05	1400	<0.5	6600	-
TGM PIT	6/01/2024	12:41:00 PM	Duplicate	18.92	34.5	82.1	2206	3.46	-	1300	<10	-	<5	<5	<5	<5	940	200	150	8.2	22	23000	<1	6.4	53	1.6	320	270	1100	8.5	11000	<0.05	1300	<0.25	6000	26000	<1	6.6	56	1.8	320	270	1200	8.1	11000	<0.05	1400	<0.25	6400	rocky edges, dead veg around water edge,clear water,lots of sticks and leaves in water.no fish
TGM PIT DUPLICATE	6/01/2024	12:41:00 PM	Sample	-	34.5	82.1	2206	3.46	-	2500	<5	-	<5	<5	<5	6.8	1300	200	150	8.2	24	25000	<1	6.4	55	1.8	310	260	1100	8	10000	<0.05	1300	<0.05	6100	27000	<1	6.7	55	1.8	320	260	1200	8	11000	<0.05	1500	<0.05	6800	-
TGM PIT	15/01/2024	11:00:00 AM	Sample	-	-	8	2000	3.4	0.57	2000	<10	-	<5	<5	<5	4.3	1100	180	140	7.1	19	22000	1.3	7.1	48	1.6	280	260	1100	9.1	9300	<0.05	1100	<0.25	5400	24000	<1	8.6	52	1.8	300	280	1200	8.8	10000	<0.05	1200	<0.25	5800	-
TGM Pit	06/02/2024	10:40:00 AM	Sample	-	31.4	64.5	2168	3.39	2	2000	6	-	<5	<5	<5	5.6	1400	190	150	7.9	24	27000	<1	5.4	54	2.2	330	290	1100	7.6	11000	<0.05	1300	<0.05	6200	29000	<1	6	55	2.2	330	300	1100	8	11000	<0.05	1400	<0.05	6500	-
TGM PIT Duplicate	06/02/2024		Sample	-	-	-	-	-	-	2000	<5	-	<5	<5	<5	5.8	1400	190	160	7.9	24	28000	<1	5.4	53	2.1	310	280	1000	7.8	11000	<0.05	1300	<0.05	6400	29000	<1	6	54	2.2	320	300	1100	7.9	11000	<0.05	1400	0.053	6500	-
TGM PIT	11/02/2024	9:50:00 AM	Heights only	19.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TGM PIT	20/02/2024	12:04:00 PM	Heights only	19.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TGM PIT	4/03/2024	11:47:00 AM	Sample	19.91	33.5	64.9	2159	3.43	2.21	2200	8	-	<5	<5	<5	6.5	1400	190	150	7.2	22	26000	<1	5.8	53	2.3	330	320	1000	7.4	11000	<0.05	1300	<0.25	6000	24000	<1	5.5	50	1.9	310	290	960	6.7	9800	<0.05	1200	0.28	5500	water clear
TGM PIT	12/03/2024	10:00:00 AM	Heights only	20.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TGM PIT	19/03/2024	9:53:00 AM	Heights only	20.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TGM PIT	2/04/2024	12:42:00 PM	Sample	-	-	-	2100	3.4	12.2	940	<10	2.4	<5	<5	<5	7.3	1400	190	160	7.3	24	33000	<1	9.4	56	2.8	330	340	1100	6.9	11000	<0.05	1400	<0.05	5800	30000	<1	18	61	3	350	350	1500	9.6	11000	<0.05	1500	<0.05	5700	pit height taken
TGM PIT DUPLICATE	2/04/2024		Sample	20.38	-	-	2200	3.4	12.2	1200	10	3.1	<5	<5	<5	7	1400	190	160	7.1	24	33000	<1	9.6	56	2.8	330	330	1100	6.9	11000	<0.05	1400	<0.05	5700	31000	<1	17	62	3	360	360	1500	9.4	11000	<0.05	1500	0.058	5800	
TGM PIT	30/04/2024		Sample		-	-				2200	<5	-	<5	<5	<5	6.4	1300	180	160	6.9	22	33000	<1	6.1	48	2.6	320	320	1100	7	10000	<0.05	1400	<0.05	6000	34000	<1	8.4	58	2.7	330	330	1200	7.5	11000	<0.05	1400	<0.05	5400	
TGM PIT	30/09/2024		Sample		-	-				1800	<5	-	<5	<5	<5	7.5	1500	190	150	8.2	26	28000	<1	4.3	55	2	330	280	850	7.2	11000	<0.05	1300	<0.05	5400	28000	1.7	4.5	56	2.1	350	310	1100	10	11000	<0.05	1400	<0.25	5800	
TGM PIT Duplicate	30/09/2024		Sample		-	-				1600	<5	-	<5	<5	<5	8.3	1500	190	150	8.3	25	27000	<1	3.6	54	2	330	280	850	8.1	11000	<0.05	1300	<0.05	5400	27000	<1	3.8	56	2	330	280	1100	9.1	10000	<0.05	1300	<0.05	5400	
Minimum (2017- 24)					27	8	200.5	2.84	0.57	940	N/A	0.2	N/A	N/A	N/A	4.3	940	170	21	6.5	19	18000	N/A	3	46	1	210	180	850	6	8900	N/A	860	N/A	5400	11000	N/A	3.8	29	1	140	150	810	4	5700	N/A	29	N/A	5400	
Maximum (2017-					34.5	106.4	2553.4	3.78	12.2	2500	17	19	N/A	N/A	N/A	10	1600	210	160	8.3	140	33000	1.3	21	62	2.9	370	340	2700	11	13000	N/A	1500	N/A	7200	37000	1.7	27	62	3	360	360	2700	10	20000	N/A	2400	0.28	13000	
Standard Deviation (2017- 24)					2	28	509	0	4	452	3	4	N/A	N/A	N/A	1	137	10	24	0	20	4073	N/A	3	4	1	35	48	338	1	862	N/A	151	N/A	492	5269	N/A	5	6	1	40	47	345	1	1926	N/A	340	N/A	1257	
Short term median (2023- 24)					32.5	55	2130	3.4	2.1	2000	N/A	2.8	N/A	N/A	N/A	6.7	1400	190	150	7.9	24	27000	N/A	6.4	54	2.2	330	290	1100	7.8	11000	N/A	1300	N/A	6000	27000	N/A	6.7	56	2.2	330	300	1200	8.8	11000	N/A	1400	N/A	5800	
Long term median (2017- 24)					31.85	66	2100	3.4	2.1	2000	N/A	0.5	N/A	N/A	N/A	6.5	1300	190	150	7.7	22	23000	N/A	5.4	52	2	300	260	1100	7.2	11000	-	1200	-	6200	24000	-	6.6	52	2	300	270	1200	7.5	11000	-	1200	-	6400	
SWTG12	11/01/2017		Sample	-	-	-	250	4.9	-	-	8	3.2	<5	<5	<5	100	3	18	13	3.5	4	300	-	5	7.5	<1	47	9	30	<1	1200	-	97	-	760	230	-	5	7.2	<1	48	10	100	<1	1200	-	100	-	690	
SWTG12	26/03/2017		Sample	-	-	-	190	4.5	-	-	<5	15	<5	<5	<5	2	70	8.2	9.1	1.6	2.2	1200	-	2	2.3	<1	36	20	40	<1	760	-	89	-	370	1500	-	2	2.1	<1	39	22	130	<1	830	-	95	-	340	
SWTG12	11/04/2019		Sample	-	-	-	240	4.2	-	-	6	0.7	<5	<5	<5	2	94	12	12	2.4	2.8	630	-	3	3	<1	34	13	130	<1	980	-	72	-	310	580	-	5	2.7	<1	34	13	340	<1	920	-	71	-	290	
SWTG12	16/02/2020		Sample	-	-	-	210	4.2	-	-	<5	0.8	<5	<5	<5	2	80	11	10	1.7	2.7	250	-	5	2.5	<1	31	7	90	<1	740	-	62	-	300	250	-	6	2.6	<1	33	7	290	<1	760	-	66	-	310	
SWTG12	15/03/2020		Sample	-	-	-	380	3.9	-	-	<5	0.6	<5	<5	<5	2	160	15	21	2.5	3	3000	-	4	6.3	<1	100	79	240	2	1800	-	260	-	1000	2900	-	4	6.3	<1	100	75	320	2	1800	-	270	-	980	
SWTG12	12/01/2021		Sample	-	-	-	166.1	4.5	-	-	<5	0.9	<5	<5	<5	1	1400	14	47	<0.5	0.7	86000	-	7400	320	160	160	1800	210000	16	780	-	530	-	5000	81000	-	7400	300	150	150	1700	7300	18	730	-	17	-	4600	Car access. Shaded location. Medium water level. Stagnant water. Brown turbid.
SWTG12	27/01/2021		Sample	-	-	-	289.5	5.14	-	-	<5	0.4	2	-5.5	10	<5	110	16	16	2.5	3.5	420	-	3	4.2	<1	48	6	70	<1	1200	-	98	-	490	390	-	4	4	<1	51	6	160	<1	1200	-	100	-	470	Car access. Shaded location. Medium water level. Stagnant water. Brown turbid.
SWTG12	16/02/2021		Sample	-	-	-	180.7	6.17	-	-	8	9	<5	<5	<5	1	72	7.1	11	2.2	1.9	1300	-	4	4.3	<1	47	49	170	1	770	-	110	-	520	1700	-	7	4.5	<1	52	60	570	1	840	-	130	-	560	Medium water level.
SWTG12	24/02/2021		Sample	-	-	-	336.2	4.31	-	-	8	4.5	<5	<5	<5	2	130	13	20	4	3.1	3900	-	4	8.1	<1	96	130	320	4	1600	-	250	-	1000	4300	-	7	8.6	<1	94	140	900	4	1600	-	250	-	1000	Medium water level.
SWTG12	10/03/2021		Sample	-	-	-	474	3.97	-	-	5	0.3	<5	<5	<5	2	200	22	25	3.3	4.8	2600	-	4	5.9	<1	100	66	150	2	2700	-	260	-	940	2700	-	4	5.9	<1	110	70	180	2	2800	-	280	-	960	Water level dropped from last sampling. Very slight flow.
SWTG12	25/03/2021		Sample	-	-	-	448.6	4.06	-	-	<5	0.8	<5	<5	<5	4	580	49	72	5.5	8.9	5300	-	140	7.9	2	180	28	12000	3	5400	-	260	-	1100	6200	-	170	7.9	2	190	30	13000	3	5500	-	290	-	1100	Medium water level. Flow.
SWTG12	8/04/2021		Sample	-	-	-	553	3.96	-	-	<5	0.6	<5	<5	<5	2	230	33	30	3.3	7.8	2100	-	4	2.9	<1	77	30	340	2	3000	-	170	-	530	1800	-	4	2.7	<1	73	28	400	2	3100	-	170	-	500	Low water level. Low flow.
SWTG12	22/04/2021		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry.
SWTG12	17/05/2021		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry.
SWTG12	19/01/2022		Sample	-	29.2	-	138.1	4.2	-	-	<5	1.5	<5	<5	<5	2	100	9.9	13	2.2	2.6	1400	-	4	5.5	<1	59	42	220	<1	1200	-	140	-	660	1300	-	5	5.3	<1	63	46	540	<1	1100	-	140	-	670	Clear, brown water. Still
SWTG12 QA1	19/01/2022		Sample	-	-	-	-	-	-	-	<5	1.4	<5	<5	<5	2	100	9.8	13	2.3	2.6	1300	-	4	5.3	<1	58	42	210	<1	1100	-	140	-	650	1300	-	5	5.1	<1	61	45	520	<1	1100	-	140	-	650	-
SWTG12	2/02/2022		Sample	-	27.3	-	285.7	3.91	-	-	18	0.8	<5	<5	<5	2	130	12	16	3.2	3.8	1600	-	4	4	<1	67	36	160	<1	1400	-	150	-	630	1700	-	4	4	<1	69	37	300	<1	1500	-	150	-	640	Clear, brown, still, lots of leaf litter
SWTG12	17/02/2022		Sample	-	33.9	-	320.6	3.54	-	-	<5	0.7	<5	<5	<5	2	130	15	17	3.2	4	1700	-	7	3.8	<1	69	39	330	1	1700	-	170	-	620	1800	-	7	3.9	<1	75	43	440	1	1800	-	180	-	650	No flow, brown, clear, lots of leaf litter.
SWTG12 QA1	17/02/2022		Sample	-	-	-	-	-	-	-	<5	1	-	-	-	-	-	15	17	3.2	4	1700	-	7	3.9	<1	68	39	330	1	1700	-	160	-	610	1700	-	7	3.9	<1	74	43	430	1	1800	-	180	-	640	-
SWTG12	2/03/2022		Sample	-	31.9	-	237	4.55	-	-	<5	3.5	<5	<5	<5	2	98	12	13	2.2	3.2	1300	-	3	3.7	<1	46	41	100	<1	1200	-	110	-	480	1300	-	4	3.4	<1	50	45	510	<1	1300	-	120	-	490	Still, clear, orange.
SWTG12 QA1	2/03/2022		Sample	-	-	-	-	-	-	-	<5	4	<5	<5	<5	2	98	12	13	2.2	3.1	1300	-	3	3.6	<1	46	41	100	<1	1200	-	110	-	480	1300	-	4	3.4	<1	49	45	510	<1	1200	-	120	-	480	-
SWTG12	16/03/2022		Sample	-	31.1	-	507.4	3.65	-	-	<5	0.7	<5	<5	<5	2	210	22	26	3.4	5.2	2900	-	6	3.5	<1	96	39	480	2	2500	-	220	-	710	2500	-	6	3.5	<1	96	39	480	2	2400	-	220	-	670	Brown, clear, no flow, leaf litter.
SWTG12 QA1	16/03/2022		Sample	-	-	-	-	-	-	-	<5	0.4	<5	<5	<5	2	210	21	26	3.4	5.2	2900	-	6	3.6	<1	97	40	480	2	2600	-	230	-	720	2500	-	6	3.4	<1	95	40	500	2	2400	-	230	-	680	-
SWTG12	6/04/2022		Sample	-	33	-	511.4	3.73	-	380	<5	0.5	<5	<5	<5	2	220	26	27	3	6.1	1700	-	4	2.6	<1	76	17	320	1	2900	-	150	-	470	1600	-	4	2.6	<1	74	18	370	1	2900	-	150	-	450	Still, clear, lots of leaf litter.
SWTG12 QA2	6/04/2022		Sample	-	-	-	-	-	-	410	<5	0.4	<5	<5	<5	2	220	26	26	3.1	6.1	1600	-	4	2.4	<1	73	18	320	1	2800	-	140	-	450	1600	-	4	2.5	<1	76	18	330	1	2900	-	150	-	450	-
SWTG12	5/05/2022		Sample	-	30	-	573.3	4.05	-	380	<5	0.6	<5	<5	<5	2	190	28	28	3.8	7	1200	-	4	1.7	<1	56	6	420	<1	3500	-	98	-	290	1200	-	9	1.6	<1	59	6	940	<1	3400	-	99	-	290	Grey, still, turbid.
SWTG12 QA1	5/05/2022		Sample	-	-	-	-	-	-	330	<5	0.4	<5	<5	<5	2	190	29	28	3.7	7	1200	-	4	1.6	<1	58	7	430	<1	3600	-	100	-	300	1200	-	9	1.7	<1	59	6	810	<1	3100	-	97	-	290	-
SWTG12	29/11/2022		No sample taken	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry - no sample collected.
SWTG12	17/01/2023	12:06:00 PM	Sample	-	30.1	50.3	463	4.67	-	330	<5	-	<5	<5	<5	2.3	190	18	24	3.6	4.4	3400	<1	6.2	9.4	<1	120	88	680	2.6	2400	<0.05	290	<1	1300	3200	<1	6.4	9.1	<1	120	81	670	4.4	2300	<0.05	270	<1	1200	1 Filter, flowing over weir boards, clear, no discharge
SWTG12	24/01/2023	10:20:00 AM	Sample	-	29.9	33.9	411.8	4.32	0.42	250	<5	-	<5	<5	<5	1.9	160	17	21	2.6	4.6	2100	1.4	5.3	6.2	<1	90	56	600	1.6	2200	<0.05	200	<1	870	2300	<1	5.4	6	<1	89	59	690	1.8	1900	<0.05	200	<1	900	Smell of ammonia, discharging from weir, flow rate 0.2m/sec, clear, spiders on water surface
SWTG12	1/02/2023	1:40:00 PM	Sample	-	29.5	35.6	229.8	4.09	6.52	120	6	-	<5	<5	<5	1.4	98	8.9	10	2	2.4	1200	<1	3.4	3.1	<1	50	27	260	<1	1200	<0.05	110	<1	510	1200	<1	4.4	3	<1	49	28	610	<1	1200	<0.05	110	<1	470	Overflowing weir, clear to bottom, leaf litter, smell of ammonia, visible turbidity
SWTG12	6/02/2023	1:45:00 PM	Sample	-	29.7	38	475.6	3.73	1.12	390	<5	-	<5	<5	<5	2.4	210	18	25	3.6	4.5	3200	<1	4.7	6.2	<1	100	57	660	2.2	2400	<0.05	240	<1	980	3100	<1	4.8	6	<1	110	59	770	2	2300	<0.05	250	<1	970	1 Filter, overflowing at weir, slik on water surface, leaf litter
SWTG12	14/02/2023	10:55:00 AM	sampled	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site	Date/ Time	Time	Sample	Field Parameters						Lab Inorganics			Alkalinity as CaC03			Anions Dissolved		Cations Dissolved				Metals Dissolved																		Metals Total														Field comments
				SWL	Temp	DO	EC	pH	Turbidity	TDS	TSS	Turbidity	HCO_3	CO_3	Total	Cl-	SO_4^{2-}	Ca	Mg	K	Na	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	
				mRL	°C	%	µS/cm	Units	NTU	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Laboratory Levels of Reporting										5	5	0.1	5	5	5	1	1	0.5	0.5	0.5	0.5	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	
WDL-249 Discharge Trigger Values SWTG2						85-120	250	5.8-8.0	87	-	54	-	-	-	-	-	295	-	-	-	-	295	9	13	0.2	1	1.4	1.4	2700	3.4	1900	0.6	11	0.05	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SWTG12	21/02/2023	12:30:00 PM	Sample	-	30.2	83.1	614	3.34	0.64	470	<5	-	<5	<5	<5	4.1	410	28	33	3	5.5	4400	<1	5.6	7.3	<1	120	66	680	2.6	3300	<0.05	300	<0.1	1100	3600	<1	5.9	7.3	<1	120	66	710	2.5	3500	<0.05	280	<0.1	1000	2 Filters, clear to bottom, water smells stagnant, overflowing weir, leaf litter on surface
SWTG12	28/02/2023	12:25:00 PM	Sample	-	28.1	68.8	403.6	3.6	4.3	260	5	-	<5	<5	<5	2.2	180	16	22	3.5	3.8	4000	<1	4.4	8.6	<1	95	140	600	4.6	2100	<0.05	240	<0.05	1000	3700	<1	6.4	8.8	<1	95	140	820	4.6	1900	<0.05	240	<0.05	910	1 Filter, fast flow, recent rain, really pungent smellbaround monitoring site, clear, slightly murky
SWTG12	8/03/2023	3:10:00 PM	Sample	-	31.8	91.6	733	3.9	-	570	<5	-	<5	<5	<5	2.9	320	29	37	3.6	5.9	7200	<1	4.2	12	<1	150	160	590	5.1	3600	<0.05	390	<0.05	1600	6000	<1	4.1	11	<1	140	130	590	4.4	4000	<0.05	350	<0.05	1400	Very clear, algae present in wet lands upstream, overflowing
SWTG12	14/03/2023	11:03:00 AM	Sample	-	30.8	67	738	3.78	1.43	700	<5	-	<5	<5	<5	5.4	350	31	39	3.3	5.4	6900	<1	6.1	13	<1	160	160	840	5.4	3900	<0.05	430	<0.05	1700	7800	<1	6.9	14	<1	160	170	990	5.5	3800	<0.05	410	<0.05	1600	1 Filter, clear to bottom, leaf litter on surface, water level not above weir boards though flowing through bottom board
SWTG12	21/03/2023	1:55:00 PM	Sample	-	31.4	69.2	878	3.72	0.34	500	<5	-	<5	<5	<5	3	420	48	47	3.6	7.8	6900	<1	6.4	9.4	<1	160	98	800	6.1	5200	<0.05	400	<0.25	1500	6100	<1	4.8	8.5	<1	150	88	750	4.7	4500	<0.05	390	<0.25	1400	1 Filter, clear in some areas, not overflowing though going through weir boards, lots of organic matter in surface, slight ammonia smell
SWTG12	28/03/2023	9:40:00 AM	Sample	-	30.4	58	959	2.78	0.47	750	6	-	<5	<5	<5	2.5	390	48	52	3.8	8.8	5100	<1	5.7	7.4	<1	140	54	1200	5.4	5000	<0.05	330	<0.05	1300	5300	<1	5	6.6	<1	130	54	1200	4.4	4600	<0.05	360	0.19	1300	1 Filter, flowing through weir boards, organic debris on water surface, ammonia smell, clear in areas.
SWTG12	15/01/2024	2:00:00 PM	Sample	-	-	6.7	660	3.7	1.3	510	<10	-	<5	<5	<5	1.9	270	37	34	4.4	9.7	2500	<1	4.9	26	<1	140	80	1100	2.3	3100	<0.05	300	<0.05	2000	2400	<1	5.9	25	<1	140	77	1200	2.2	3200	<0.05	290	<0.05	1900	-
SWTG12	23/01/2024	10:01:00 AM	Sample	-	30	37	448	3.9	2.15	300	<5	-	<5	<5	<5	4.3	170	20	21	3.2	6.7	2100	<1	3.7	14	<1	110	74	560	1.4	2200	<0.05	250	<0.05	1300	2100	<1	4	14	<1	110	75	740	1.5	2100	<0.05	250	<0.05	1300	weir flowing over, water clear
SWTG12 DUPLICATE	23/01/2024	10:01:00 AM	Sample	-	30	37	448	3.9	2.15	290	<5	-	<5	<5	<5	4.7	180	20	21	3.1	6.7	2100	<1	3.7	14	<1	110	76	560	1.5	2200	<0.05	250	<0.05	1300	2300	<1	4.4	15	<1	120	83	750	1.6	2300	<0.05	270	<0.05	1400	-
SWTG12	30/01/2024	2:18:00 PM	Sample	-	28.8	173.2	3329	4.02	-	190	<10	-	<5	<5	<5	2.5	110	10	14	2.4	3	2400	<1	4.3	8.7	<1	77	100	350	2.8	1400	<0.05	190	<0.05	890	2600	<1	8.1	9.4	<1	84	110	830	3.1	1500	<0.05	210	<0.05	920	
SWTG12	06/02/2024	11:00:00 AM	Sample	-	30.6	30.6	517	3.85	3.74	310	<5	-	<5	<5	<5	3.1	240	25	28	3.3	7.5	3400	<1	6.1	11	<1	130	110	410	3	2900	<0.05	300	<0.05	1200	3100	<1	6.7	11	<1	120	110	1200	3.1	2900	<0.05	300	<0.05	1200	weir overflowing,water clear
SWTG12	11/02/2024	1:06:00 PM	Sample	-	32	33.6	594	3.79	2.77	460	<5	-	<5	<5	<5	3.6	280	30	29	3	8.7	3100	<1	5.4	7.7	<1	110	60	530	2.3	3100	<0.05	260	<0.05	1000	2800	<1	8.1	8.2	<1	120	72	810	2.7	3300	<0.05	290	<0.05	1000	Duplicate. weir overflowing,water clear, leaf litter in water
SWTG12 DUPLICATE	11/02/2024		Sample	-	32	33.6	594	3.79	2.77	450	<10	-	<5	<5	<5	3.7	280	30	29	3	8.8	3100	<1	5.8	7.6	<1	120	61	550	2.3	3100	<0.05	260	<0.05	1000	2700	<1	8.3	6.6	<1	100	65	780	2.4	3200	<0.05	260	<0.25	970	-
SWTG12	20/02/2024	12:59:00 PM	Sample	-	32	56	531	3.76	1.23	400	<5	-	<5	<5	<5	2.5	240	26	25	2.6	7.5	2100	<1	4.8	5.5	<1	95	42	790	1.7	2900	<0.05	220	<0.05	870	2000	<1	5.3	5.7	<1	91	42	850	1.9	2800	<0.05	210	<0.05	800	Water clear, flowing, ammonia smell, leaf litter on water surface
SWTG12 DUPLICATE	20/02/2024		Sample	-	32	56	531	3.76	1.23	400	<5	-	<5	<5	<5	2.7	240	26	25	2.5	7.4	2100	<1	4.7	5.5	<1	94	42	780	1.8	2900	<0.05	220	<0.05	860	2100	<1	5.3	5.7	<1	91	42	840	2	2900	<0.05	210	<0.05	810	
SWTG12	26/02/2024	1:54:00 PM	Sample	-	30.4	27.7	670	3.63	4.85	490	<5	0.77	<5	<5	<5	3.1	300	33	33	3.1	9.4	2900	<1	5.1	5.4	<1	110	39	730	2.5	3500	<0.05	260	<0.05	970	2800	<1	5.6	5.5	<1	100	37	1200	2.7	3300	<0.05	250	<0.05	890	weir overflowing, leaf littler on surface
SWTG12	4/03/2024	12:00:00 PM	Sample	-	31.1	31.9	673	3.65	3.16	470	<5	-	<5	<5	<5	3.5	300	36	31	2.7	9.4	2300	<1	4.2	3.6	<1	86	21	700	2	3200	<0.05	210	<0.05	740	2200	<1	4.5	3.3	<1	82	21	820	2	3100	<0.05	190	<0.05	680	overflowing, leaf matter on water surface
SWTG12	12/03/2024	12:02:00 PM	Sample	-	28.8	229.5	28.8	5.92	77	16	62	-	5.8	<5	5.8	<1	4.6	1.2	0.93	0.72	1	87	<1	<1	<0.1	<1	1.4	<1	160	<1	57	<0.05	3.6	<0.05	12	820	<1	1.1	<0.1	1.1	2.1	1.8	1200	1.4	83	<0.05	4.6	<0.05	17	weir flooded and creek into wetland, 6 fitlers
SWTG12	19/03/2024	10:23:00 AM	Sample	-	30.2	125.8	617	3.63	7.7	420	6.5	-	<5	<5	<5	2.4	260	22	32	3.3	5.9	5600	<1	4.1	13	<1	140	180	720	12	2500	<0.05	370	<0.05	1500	5700	<1	5.6	14	<1	150	200	1300	13	2600	<0.05	410	<0.05	1500	1 filter creek in flow, water slightly turbid, leaf litter on surface
SWTG12 DUPLICATE	19/03/2024	10:23:00 AM	Sample	-	30.2	125.8	617	3.63	7.7	420	5	-	<5	<5	<5	2	260	22	32	3.4	5.9	5500	<1	4	13	<1	140	170	720	12	2500	<0.05	370	<0.05	1400	5600	<1	5.8	14	<1	150	200	1400	13	2500	<0.05	410	<0.05	1500	-
SWTG12	2/04/2024	1:04:00 PM	Sample	-	-	-	510	3.9	5.65	380	5.5	2.2	<5	<5	<5	2.6	230	29	25	2.3	7.4	1800	<1	2.8	3.3	<1	63	20	380	1.8	3200	<0.05	150	<0.05	540	1600	<1	3.1	3.5	<1	64	20	590	2	3300	<0.05	160	<0.05	510	weir in flow. Wetland water looks slightly milky
SWTG12	08/04/2024	12:31:00 PM	Sample	-	29.8	70.4	820	3.75	0.88	600	<5	-	<5	<5	<5	3.4	380	48	42	3.9	11	3100	<1	3.8	4.8	<1	99	26	550	3.5	4400	<0.05	250	<0.05	840	2700	<1	3.7	4.3	<1	100	27	560	3.7	4900	<0.05	260	<0.05	820	weir overflowing, lots of leaf debris
SWTG12	08/04/2024	12:31:00 PM	taken	-	29.8	70.4	820	3.75	0.88	530	<5	-	<5	<5	<5	3.5	380	48	41	3.9	11	2900	<1	3.8	4.7	<1	94	25	560	3.5	4200	<0.05	250	<0.05	810	2700	<1	4	4.1	<1	99	27	570	3.7	5100	<0.05	250	<0.05	810	-
SWTG12	16/04/2024	10:03:00 AM	Sample	-	29.4	64.5	1011	3.43	2.03	800	<5	-	<5	<5	<5	4	540	63	53	3.7	13	4600	<1	4.7	6	<1	130	29	890	4.8	5800	<0.05	330	<0.05	1100	4900	<1	5.1	6.1	<1	130	30	930	4.9	7100	<0.05	340	<0.05	1100	2 filters. Weir overflowing. Lots of lead debris on surface Mertens water monitor
SWTG12	30/04/2024		Sample	-	-	-	-	-	-	940	<5	-	<5	<5	<5	4.3	590	78	67	4.4	18	5200	<1	4.5	4.5	<1	140	21	970	4.8	6700	<0.05	360	<0.05	1100	5000	<1	5.4	5.3	<1	130	20	1000	4.7	6700	<0.05	340	<0.05	1000	
Minimum (2016- 24)					27.3	6.7	28.8	2.78	0.34	16	5	0.3	2	-5.5	5.8	N/A	3	1.2	0.93	0.72	0.7	87	N/A	N/A	N/A	N/A	1.4	N/A	30	N/A	57	N/A	3.6	N/A	12	230	N/A	1.1	N/A	N/A	2.1	1.8	100	N/A	83	N/A	4.6	N/A	17	
Maximum (2016-					33.9	229.5	3329	6.17	77	940	62	15	5.8	N/A	10	100	1400	78	72	5.5	18	86000	1.4	7400	320	160	180	1800	210000	16	6700	N/A	530	N/A	5000	81000	N/A	7400	300	150	190	1700	13000	18	7100	N/A	410	0.19	4600	
Standard Deviation (2016- 24)					1	47	466	1	15	184	15	3	2	N/A	N/A	14	206	15	14	1	3	11357	N/A	1006	43	N/A	39	241	28263	3	1392	N/A	105	N/A	687	10691	N/A	997	40	N/A	38	226	1896	3	1466	N/A	99	N/A	637	
Short term median (2023- 24)					30.2	56	606	3.8	2.8	420	6	-	5.8	N/A	N/A	3.3	260	29	29	3.1	7.5	2900	N/A	4.4	6.8	N/A	110	51	560	2.4	3100	N/A	250	N/A	1000	2700	N/A	5.3	6.4	N/A	100	42	840	2.7	3100	N/A	260	N/A	970	
Long term median (2016- 24)					30.2	56	507	3.9	-	410	6.0	0.8	3.9	N/A	N/A	2.2	210	22	25	3.2	5.45	2350	-	4.2	5.5	N/A	95	42	480	2.3	2500	-	225	-	865	2350	-	5.2	5.7	N/A	94.5	44	700	2.4	2450	-	215	-	815	
MBC01A	29/01/2023	10:40:00 AM	Sample	-	-	-	-	-	-	35	41	-	8.1	<5	8.1	2.4	12	2	2.6	0.71	2	48	<1	<1	<0.1	<1	1.4	1.4	150	<1	59	<0.05	3.9	<1	13	530	<1	1.4	0.12	1.4	2.5	2.6	1400	1.3	96	<0.05	4.9	<1	17	-
MBC01A	6/02/2023	11:20:00 AM	Sample	-	28.5	50.9	44.3	5.4	24.2	25	12	-	8.9	<5	8.9	2.5	6.2	1.7	1.6	0.72	2.6	46	<1	<1	0.19	<1	2.2	2	190	<1	94	<0.05	4.5	<1	17	340	<1	1.3	0.21	<1	2.6	3.3	1200	<1	110	<0.05	5.1	<1	19	4 filters, fast flow, evidence of higher flow, turbid
MBC01A	28/03/2023	10:15:00 AM	Sample	-	29.3	57.2	160.3	5.17	-	120	14	-	9.4	<5	9.4	2.8	55	8.9	8	1.3	4.2	71	<1	<1	1.3	<1	15	4.7	240	<1	610	<0.05	43	<0.05	170	480	<1	1.5	1.2	<1	14	8.2	950	<1	600	<0.05	42	0.18	170	3 Filters, flowing, grey/ brown, recent oig rooting in bank, difficult and unsafe access, access track covered with calopo
MBC01A	15/01/2024	12:00:00 PM	Sample	-	-	7.6	26	6.3	42	16	53	-	8	<5	8	<1	1.9	0.95	0.82	1.3	1.8	170	<1	<1	<0.1	<1	<1	1.3	220	<1	17	<0.05	<1	<0.05	3.2	660	<1	1	<0.1	1	<1	2.7	970	1.3	39	<0.05	1.5	<0.05	6.1	-
MBC01A	23/01/2024	11:05:00 AM	Sample	-	29	61	31.4	6.26	39.5	28	22	-	11	<5	11	3.9	4.9	1.6	1.4	1.2	3	76	<1	1.1	0.5	<1	3	6.3	270	<1	100	<0.05	6	<0.05	37	520	<1	1.7	0.63	1.1	3.1	7.4	1500	1.1	110	<0.05	6.1	<0.05	47	creek flowing ,slightly turbid
MBC01A	30/01/2024	2:28:00 PM	Sample	-	29.9	55.6	91	6		13	99	-	8.3	<5	8.3	2.8	2.8	0.86	0.79	0.84	1.6	110	<1	<1	<0.1	<1	<1	1.9	270	<1	20	<0.05	3.6	<0.05	15	1000	<1	2	0.15	2.9	1.8	3.5	2100	2.6	55	<0.05	5.4	<0.05	24	
MBC01A	06/02/2024	12:13:00 PM	Sample	-	29.6	55.2	420	6.2	20.4	42	14	-	13	<5	13	2.3	18	4.2	3.4	1.3	4.2	28	<1	1	1.2	<1	7.6	7	86	<1	250	<0.05	16	<0.05	70	420	<1	3.4	1.3	<1	7.9	13	1500	1.1	240	<0.05	17	<0.05	81	creek in flow, slightly turbid
MBC01A	11/02/2024	1:26:00 PM	Sample	-	29.2	75.1	24.4	5.98	77	<5	46	-	7.3	<5	7.3	<1	1.8	0.72	0.72	0.82	1.6	120	<1	1.2	0.1	<1	<1	1.4	250	<1	25	<0.05	1.6	<0.05	14	820	<1	3	0.18	1.6	1.2	2.8	1400	1.6	45	<0.05	2.8	<0.05	18	creek in flow, slightly turbid. Pig rooting at monitoring site
MBC01A	20/02/2024	1:29:00 PM	Sample	-	30.2	82.9	56.5	6.24	18.8	30	6	-	13	<5	13	1.7	9.3	2.2	2	0.69	2.7	59	<1	<1	0.35	<1	3.5	3.4	220	<1	150	<0.05	8.1	<0.05	34	330	<1	1.8	0.52	<1	3.8	4.3	1000	<1	150	<0.05	8.6	<0.05	57	creek in flow slightly turbid, pig rooting
MBC01A	26/02/2024	1:32:00 PM	Sample	-	29.2	75.3	29.7	6.24	62.5	16	51	35	8.6	<5	8.6	1	3.4	1.1	0.97	0.64	1.6	92	<1	<1	0.13	<1	1.1	1.6	200	<1	48	<0.05	2.7	<0.05	12	610	<1	1.1	0.17	<1	1.5	2.3	1200	1.5	63	<0.05	3.2	<0.05	15	creek in flow ,slightly turbid, pig rooting in area, cattle dung
MBC01A	4/03/2024	12:17:00 PM	Sample	-	29.5	73	74.1	6.18	22.24	41	15	-	19	<5	19	2.1	17	3.1	2.9	0.83	3	46	<1	<1	0.36	<1	4.2	2.9	180	<1	170	<0.05	9.8	<0.05	38	340	<1	2.1	0.38	<1	4.2	3.9	1300	<1	170	<0.05	9.6	<0.05	40	-
MBC01A	12/03/2024		Sample	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Unable to sample due to flooded access
MBC01A	19/03/2024	10:51:00 AM	Sample	-	29.6	129.8	90.1	6.02	19.9	69	15	-	9	<5	9	2	26	4.1	3.5	0.86	3.9	39	<1	<1	0.86	<1	8.2	4.8	89	<1	240	<0.05	23	<0.05	93	500	<1	2.3	0.96	<1	8.9	9.3	940	<1	250	<0.05	26	<0.05	99	3 filters, creek in flow, slightyl turbid
MBC01A	2/04/2024	1:21:00 PM	Sample	-			49	6.3	0	29	38	32	9.7	<5	9.7	1.7	11	2.2	1.9	0.82	2.4	55	<1	<1	0.28	<1	2.8	2.3	100	<1	110	<0.05	8.3	<0.05	29	570	1.3	1.4	0.34	<1	3.5	3.3	1100	1.2	130	<0.05	9.2	<0.05	34	didn't sample due to crocin area and water sample contamianted from creek edge silt creek in flow and slightly turbid
MBC01A	08/04/2024	1:01:00 PM	Sample	-	28.2	103.2	171	6.33	12.1	120	18	-	11	<5	11	2.7	39	6.3	5.3	1.1	5.1	40	<1	<1	0.84	<1	9.6	2.6	150	<1	380	<0.05	27	<0.05	100	480	<1	1.9	0.79	<1	11	6.1	890	<1	410	<0.05	31	<0.05	110	creek in flow slightly turbid. Smell, recent weed spraying killed calopo along track
MBC01A	16/04/2024	10:19:00 AM	Sample	-	27.2	92.6	191	5.84	2.41	140	<5	-	7.6	<5	7.6	2.7	73	9.1	7.5	1.2	4.1	110	<1	1.4	1.5	<1	20	7.2	360	<1	870	<0.05	52	<0.05	200	390	<1	2.1	1.5	<1	20	9.9	550	<1	820	<0.05	50	<0.05	190	creek in flow
MBC01A	30/04/2024		Sample	-	-	-	-	-	-	400	<5	-	<5	<5	<5	3.4	210	30	23	1.9	7.1	1100	<1	2.6	4.9	<1	62	43	680	2.1	2800	<0.05	140	<0.05	480	1200	<1	3.8	5.5	<1	58	44	1400	2.4	2400	<0.05	130	<0.05	430	
Minimum (2023- 24)					27.2	7.6	24.4	5.17	0	N/A	N/A	32	N/A	N/A	N/A	1	1.8	0.72	0.72	0.64	1.6	28	N/A	N/A	N/A	N/A	N/A	1.3	86	N/A	17	N/A	1.6	N/A	3.2	330	N/A	1	N/A	N/A	N/A	2.3	550	N/A	39	N/A	1.5	N/A	6.1	
Maximum (2023-					30.2	129.8	420	6.33	77	400	99	35	19	N/A	19	3.9	210	30	23	1.9	7.1	1100	N/A	2.6	4.9	N/A	62	43	680	2.1	2800	N/A	140	N/A	480	1200	1.3	3.8	5.5	2.9	58	44	2100	2.6	2400	N/A	130	0.18	430	
Standard Deviation (2023- 24)					1	28	103	0	22	96	24	2	3	N/A	3	1	50	7	5	0	1	251	N/A	1	1	N/A	16	10	137	0	667	N/A	34	N/A	117	237	N/A	1	1	1	14	10	342	1	568	N/A	31	N/A	104	
Short term median (20 24)					29.35	75.1	65	6.22	20.4	36	22	-	9.4	N/A	9.4	2.3	11	2.2	2	0.86	3	76	N/A	N/A	0.5	N/A	5.9	2.9	220	N/A	150	N/A	9.1	N/A	37	520	N/A	2	0.58	N/A	4	4.3	1200	1.4	150	N/A	9.2	N/A	47	
Long term median (2023- 24)					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SWTG2	11/01/2017		Sample	-	-	-	37	7.4	-	-	42	110	16	<5	16	2	2	1.3	1	1	2.5	170	-	<1	0.1	<1	<1	2	200	<1	10	-	1	-	6	620	-	1	0.3	1	2	4	1400	2	99	-	2	-	12	
SWTG2	12/03/2017		Sample	-	-	-	11	6.3	-	-	48	58	<5	<5	<5	<1	<1	0.5	<0.5	0.8	0.6	190	-	1	<0.1	<1	<1	<1	160	<1	<5	-	<1	-	<1	560	-	30	<0.1	<1	<1	2	820	4	16	-	<1	-	3	
SWTG2	26/03/2017		Sample	-	-	-	25	6.4	-	-	74	68	8	<5	5	2	2	1.2	0.9	0.7	1.7	180	-	<1	<0.1	<1	<1	1	180	<1	<5	-	2	-	6	240	-	1	<0.1	<1	<1	2	410	<1	28	-	3	-	12	

Site	Date/ Time	Time	Sample	Field Parameters						Lab Inorganics			Alkalinity as CaC03			Anions Dissolved		Cations Dissolved				Metals Dissolved																		Metals Total														Field comments
				SWL	Temp	DO	EC	pH	Turbidity	TDS	TSS	Turbidity	HCO_3	CO_3	Total	Cl^-	SO_4^{2-}	Ca	Mg	K	Na	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	
				mRL	°C	%	µS/cm	Units	NTU	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
				Laboratory Levels of Reporting						5	5	0.1	5	5	5	1	1	0.5	0.5	0.5	0.5	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	
WDL-249 Discharge Trigger Values SWTG2						85-120	250	5.8-8.0	87	-	54	-	-	-	-	-	295	-	-	-	-	295	9	13	0.2	1	1.4	1.4	2700	3.4	1900	0.6	11	0.05	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SWTG2	3/05/2017		Sample	-	-	-	110	6.6	-	-	<5	8.3	17	<5	17	3	28	5.5	3.4	1.8	4.3	40	-	<1	1.1	<1	6	6	140	<1	320	-	13	-	58	150	-	1	1.1	<1	6	9	790	<1	310	-	13	-	61	
SWTG2	22/02/2019		Sample	-	-	-	56	6.5	-	-	12	17	12	<5	12	2	6	2.6	1.9	1.4	3.5	30	-	<1	0.3	<1	1	6	220	<1	74	-	4	-	66	300	-	2	0.5	<1	2	10	1700	1	120	-	5	-	93	
SWTG2	7/03/2019		Sample	-	-	-	130	6.3	-	-	24	3.3	10	<5	10	2	36	8.1	5.3	1.8	4.2	<10	-	<1	1.6	<1	6	8	10	<1	460	-	15	-	140	140	-	2	1.7	<1	7	14	950	1	460	-	16	-	140	
SWTG2	11/04/2019		Sample	-	-	-	39	6.5	-	-	23	40	9	<5	9	3	3	1.5	1.2	1.5	2.9	790	-	<1	0.1	<1	<1	3	490	<1	8	-	3	-	75	550	-	<1	0.2	<1	1	4	860	1	56	-	3	-	93	
SWTG2	19/01/2020		Sample	-	-	-	68	6.4	-	-	19	25	15	<5	15	3	8	4.1	2.5	3.2	2.2	860	-	12	1.3	<1	2	21	810	<1	150	-	8	-	56	530	-	150	1.7	1	3	27	1400	4	290	-	8	-	64	
SWTG2	2/02/2020		Sample	-	-	-	57	6.4	-	-	47	100	10	<5	10	3	9	3	2	2	2.9	70	-	3	0.8	<1	<1	11	190	<1	79	-	5	-	28	1200	-	12	1.1	2	3	19	2300	2	160	-	7	-	44	
SWTG2	16/02/2020		Sample	-	-	-	82	6.2	-	-	20	36	12	<5	12	3	19	5.2	3.3	1.1	2.9	50	-	3	1.4	<1	4	12	210	<1	300	-	10	-	44	630	-	6	1.6	<1	6	23	2000	2	350	-	12	-	67	
SWTG2	16/02/2020		Sample	-	-	-	98	6.8	-	-	17	23	37	<5	37	5	6	4.8	0.9	1	14	20	-	7	<0.1	<1	3	2	330	<1	84	-	1	-	14	270	-	25	<0.1	2	4	3	2600	<1	110	-	2	-	19	
SWTG2	16/02/2020		Sample	-	-	-	43	6.4	-	-	28	52	17	<5	17	3	<1	1.7	1.7	1.3	3.7	80	-	2	<0.1	<1	<1	1	500	<1	<5	-	<1	-	2	690	-	3	<0.1	1	2	2	3700	2	160	-	1	-	6	
SWTG2	15/03/2020		Sample	-	-	-	49	6.5	-	-	65	32	14	<5	14	3	6	2.6	1.9	1	3.3	30	-	1	0.2	<1	<1	3	220	<1	21	-	5	-	31	360	-	6	0.3	<1	2	5	1500	1	95	-	6	-	48	
SWTG2	13/01/2021		Sample	-	-	-	159.9	5.15	-	-	46	38	9	<5	9	2	3	1.6	1.2	0.9	2.4	80	-	2	0.2	<1	<1	5	220	<1	26	-	3	-	16	570	-	8	0.3	1	1	7	1400	1	62	-	<1	-	19	Car access. Sunny location, very hot. High flow. Brown turbid water.
SWTG2	28/01/2021		Sample	-	-	-	70.7	4.75	-	-	11	19	3	-3.6	<5	11	10	1.7	1.4	0.9	3	50	-	<1	0.2	<1	<1	5	230	<1	48	-	3	-	9	340	-	5	0.3	<1	2	10	1300	<1	90	-	6	-	23	Car access. Sunny day. Lots of weed. High flow. Brown turbid water.
SWTG2	17/02/2021		Sample	-	-	-	19.7	5.39	-	-	53	64	6	<5	6	<1	2	0.7	0.7	0.7	0.98	100	-	<1	<0.1	<1	<1	1	170	<1	19	-	2	-	8	650	-	1	<0.1	<1	1	3	960	1	38	-	3	-	11	Very high water level and high flow.
SWTG2	24/02/2021		Sample	-	-	-	23.7	5.19	-	-	47	33	7	<5	7	1	1	0.8	0.8	1.3	1.7	90	-	<1	<0.1	<1	<1	1	210	<1	6	-	1	-	5	620	-	1	<0.1	<1	<1	2	970	1	33	-	2	-	7	Very high water level and high flow.
SWTG2	11/03/2021		Sample	-	-	-	103.5	5.04	-	-	11	18	<5	<5	11	3	8	2.7	2.1	1.1	3.6	30	-	1	0.2	<1	2	3	130	<1	110	-	5	-	22	420	-	2	0.3	<1	2	5	1100	<1	110	-	5	-	29	Medium water level. High flow.
SWTG2	25/03/2021		Sample	-	-	-	42.4	5.15	-	-	27	11	11	<5	11	2	<1	1.1	0.9	1.3	2.8	20	-	<1	<0.1	<1	<1	<1	150	<1	9	-	<1	-	8	250	-	1	<0.1	<1	<1	1	930	<1	31	-	<1	-	12	High water level. High flow.
SWTG2	8/04/2021		Sample	-	-	-	49.5	5.24	-	-	<5	6.6	13	<5	13	2	9	2.9	2	0.9	3.6	20	-	<1	0.2	<1	2	2	150	<1	100	-	4	-	18	130	-	2	0.2	<1	2	4	1200	<1	110	-	4	-	20	Medium water level. High flow.
SWTG2	22/04/2021		Sample	-	-	-	101.6	4.99	-	-	9	4.6	12	<5	12	2	22	5.6	4.3	1.4	3.9	10	-	1	0.8	<1	5	4	20	<1	310	-	11	-	60	140	-	2	0.7	<1	5	8	920	<1	300	-	11	-	58	Medium water level. Medium flow.
SWTG2	17/05/2021		Sample	-	-	-	362.9	4.55	-	-	20	1.7	5	<5	5	11	98	17	12	2	9.4	70	-	3	3.9	<1	17	12	160	<1	1200	-	49	-	230	90	-	5	3.7	<1	16	13	300	<1	1200	-	48	-	220	Low water level. Very low flow.
SWTG2	19/01/2022		Sample	-	28.6	-	60.6	5.79	-	-	<5	17	10	<5	10	4	7	2.2	1.9	1	5.3	50	-	1	0.4	<1	2	5	230	<1	88	-	8	-	26	340	-	1	0.4	<1	2	6	1200	1	88	-	5	-	28	Van Dorn used to sample from bridge. Brown, turbid. Approx. 0.33m/s flow rate
SWTG2	3/02/2022		Sample	-	28.2	-	30.1	6.03	-	-	11	13	9	<5	9	3	3	1.3	1.2	0.6	2.4	60	-	<1	0.1	<1	1	2	230	<1	49	-	3	-	14	290	-	1	0.1	<1	1	3	930	<1	60	-	3	-	15	Sample taken by Van Dorn from bridge, grey, turbid, high flow.
SWTG2	3/03/2022		-	-	36.3	-	49.7	7.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Brown, turbid, sample taken by Van Dorn from bridge. Approx. 0.5 m/s flow rate.
SWTG2	16/03/2022		Sample	-	35.2	-	39.1	7.52	-	-	28	25	23	<5	23	2	4	1.3	1.2	1.2	2.8	70	-	1	<0.1	<1	<1	2	320	<1	38	-	2	-	7	70	-	1	<0.1	<1	<1	2	510	<1	33	-	2	-	9	Taken with Van Dorn, fast flowing, brown, turbid.
SWTG2	7/04/2022		Sample	-	35.4	-	45.3	6.25	-	24	13	11	<5	<5	10	3	4	1.8	3.2	1.3	1.3	50	-	2	0.1	<1	<1	2	230	<1	47	-	2	-	7	300	-	2	0.2	<1	1	4	980	<1	61	-	3	-	13	Brown, turbid, sampled with Van Dorn, approx. 0.5 m/s flow rate.
SWTG2	29/11/2022		Sample	-	35.3	-	44	5.72	-	-	6	32	8.4	<5	8.4	5	6.1	1.8	1.4	2.4	1.5	130	-	3.9	0.31	<1	<1	4.9	270	<1	65	-	3.4	-	18	540	-	4.9	0.44	1.1	1.4	9.3	870	<1	86	-	4.9	-	28	Brown, still, turbid.
SWTG2	17/01/2023	9:10:00 AM	Sample	4.3	28.9	66.7	31	8.73	66.4	34	41	-	7.4	<5	7.4	1.7	3	1.3	1.1	0.84	2	120	<1	<1	0.15	<1	1.2	2.5	250	<1	44	<0.05	3.1	<1	26	610	<1	1	0.18	1.1	1.5	3.7	950	1.7	58	<0.05	3.2	<1	30	6 Filters, brown, turbid, indication of recent higher flows, telemetry set up and online
SWTG2	24/01/2023	11:20:00 AM	Sample	4.1	28.2	191.9	24.6	5.67	69.1	57	38	-	7.4	<5	7.4	1.6	1.6	0.87	0.86	0.85	2	40	<1	<1	<0.1	<1	<1	1.4	210	<1	21	<0.05	1.5	<1	8.8	860	<1	1.3	<0.1	1.5	1.1	2.4	1300	1.8	43	<0.05	2	<1	8.6	Flowing, turbid, flow 0.2m/sec
SWTG2	31/01/2023	12:25:00 PM	Sample	4.4	29.2	82.2	33.1	6.02	28.2	20	13	-	8.5	<5	8.5	1.9	3.8	1.2	0.99	0.63	2.1	53	<1	<1	0.12	<1	<1	1.8	180	<1	50	<0.05	2.2	<1	10	420	<1	1.2	0.14	1.1	1.4	2.7	1100	<1	65	<0.05	2.5	<1	13	5 Filters, flowing, water level broke banks yesterday >4m, turbid, archer fish at surface, 0.3m/sec
SWTG2	6/02/2023	12:00:00 PM	Sample	-	29.6	60.6	41.3	5.46	28.5	24	14	-	9.2	<5	9.2	4.3	5.4	1.6	1.5	0.8	2.8	60	<1	<1	0.16	<1	1.6	2	230	<1	65	<0.05	3.8	<1	15	360	<1	1.7	0.19	1.1	2	3.3	1300	<1	85	<0.05	5	<1	32	6 Filters, Sampled at bridge, flowing, turbid
SWTG2	7/02/2023	9:30:00 AM	SWL only	4.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWTG2	14/02/2023	2:15:00 PM	Sample	4.68	29.6	156.3	59.1	5.32	22.4	31	7	-	9.2	<5	9.2	2.2	9.1	2.5	2.1	0.74	2.8	38	<1	<1	0.25	<1	2.6	2.4	160	<1	110	<0.05	6	<.05	22	300	<1	1.4	0.26	<1	2.9	3.7	1100	<1	120	<0.05	6.6	<0.1	27	5 Filters, murky, foam on surface, flowing, dropped flow meter pole in water, retrieved.
SWTG2 DUPLICATE	14/02/2023	2:15:00 PM	Sample	-	29.6	156.3	59.1	5.32	22.4	31	13	-	9.1	<5	9.1	2.3	9.4	2.6	2.1	0.77	2.9	33	<1	<1	0.27	<1	2.8	2.6	140	<1	110	<0.05	6.6	<.05	26	290	<1	1.5	0.28	<1	3	3.9	1100	<1	120	<0.05	6.8	<0.1	32	5 Filters,
SWTG2	21/02/2023	11:25:00 AM	Sample	4.9	28.3	109	60	5.85	15.4	33	<5	-	11	<5	11	2.6	9.2	2.8	2.2	0.89	3.1	37	<1	<1	0.27	<1	2.1	2.3	150	<1	110	<0.05	4.7	<0.1	19	250	<1	1.5	0.31	<1	2.5	4.1	1300	<1	110	<0.05	5.4	<0.1	25	4 Filters, flowing, turbid brown, leaf litter, archer fish at sampling site, water level too shallow to measure flow,
SWTG2	28/02/2023	12:55:00 PM	Sample	3.66	28.6	87.6	37	5.38	30.2	19	14	-	7.3	<5	7.3	2	5.1	1.5	1.3	0.88	2.8	94	<1	<1	0.12	<1	1.4	2.9	190	<1	52	<0.05	3.8	<0.05	18	420	<1	1.1	0.21	<1	2.1	3.4	950	1.1	70	<0.05	4.5	<0.05	20	5 Filters, Fast flow, turbid brown
SWTG2	8/03/2023	2:40:00 PM	SWL Only	4.5	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No sample taken, no discharge, too low for flow measurement
SWTG2	13/03/2023	12:45:00 PM	Sample	4.66	29.7	87.6	139	5.44	9.94	120	15		6.8	<5	6.8	2.5	43	6.3	5.9	1	3.7	45	<1	<1	1.4	<1	12	5.1	120	<1	390	<0.05	39	<0.05	170	270	<1	1.1	1.5	<1	12	7.7	420	<1	350	<0.05	39	<0.05	160	2 Filters, grey, murky. clear to bottom, good flow, no flow measurement taken as waterlevel too low
SWTG2	21/03/2023	1:20:00 PM	Sample	4.88	30.2	96	132.3	5.61	3.75	100	<5	-	7.1	<5	7.1	2.5	46	6.7	6.3	0.98	3.7	37	<1	<1	1.2	<1	11	3.6	110	<1	410	<0.05	35	<0.05	140	190	<1	1.1	1.1	<1	11	5.6	390	<1	460	<0.05	37	<0.05	140	2 Filters, low level, sampled from bridge, clear to bottom, slightly grey,
SWTG2	28/03/2023	12:40:00 PM	Sample	5.1	30.3	61.8	154.9	5.41	3.5	120	5	-	7.7	<5	7.7	2.5	46	8.2	7.5	1.2	4.1	34	<1	1	1.2	<1	14	3.5	160	<1	560	<0.05	40	<0.05	150	140	<1	1.3	1.1	<1	13	5	390	<1	590	<0.05	40	0.61	160	2 Filters, flowing, clear to bottom, perch underntrees, low water level
SWTG2	14/04/2023	11:00:00 AM	SWL only	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWTG2	15/01/2024	9:00:00 AM	Sample	2.35	-	85.7	33	6.22	47	16	55	-	7.9	<5	7.9	<1	1.7	0.93	0.78	1.3	1.8	160	<1	<1	<0.1	<1	<1	1.3	220	<1	14	<0.05	<1	<0.05	6.6	690	<1	1.2	<0.1	1.1	<1	2.5	980	1.5	39	<0.05	1.5	<0.05	6.1	-
SWTG2	23/01/2024	9:26:00 AM	Sample	2.35	30	84.4	28.5	6.36	32.5	24	17	-	12	<5	12	3.7	3.9	1.6	1.4	1.2	3	90	<1	1.1	0.35	<1	1.6	4.5	250	<1	64	<0.05	4.2	<0.05	21	580	<1	1.7	0.39	1.1	2.2	5.5	1500	1	84	<0.05	4.9	0.062	28	creek flowing ,slightly turbid,finches in bamboo
SWTG2	30/01/2024	2:03:00 PM	Sample	0.919	28	85.2	56	6.2	18.8	13	130	-	8	<5	8	2.6	1.8	0.9	0.85	0.91	1.7	110	<1	<1	<0.1	<1	<1	1.8	250	<1	20	<0.05	3.2	<0.05	13	1000	<1	2	0.15	2.4	1.7	3.5	1900	2.7	56	<0.05	5.3	<0.05	23	-
SWTG2	06/02/2024	1:02:00 PM	Sample	0.766	30.3	85	57.5	6.26	31.2	50	<10	-	13	<5	13	2.6	19	4	3.3	1.2	4.1	32	<1	1.2	1.1	<1	7.1	5.6	140	<1	260	<0.05	16	<0.05	71	370	<1	3.9	1.1	<1	7	10	1500	1.1	240	<0.05	16	0.051	74	creek in flow, slightly turbid
SWTG2	13/02/2024	11:51:00 AM	Sample	1.74	27.7	89.2	26.5	6.21	35.1	51	26	22	10	<5	10	1.9	23	3.6	4.5	0.78	2.8	42	<1	<1	0.19	<1	1.7	1.5	210	<1	130	<0.05	4.3	<0.05	13	400	<1	1.6	0.22	<1	2.2	2.4	1300	<1	140	<0.05	4.8	<0.05	17	Creek in flow, water clear. Light rain
SWTG2	20/02/2024	2:28:00 PM	Sample	0.898	30.4	89.1	52	6.29	15.7	30	8.5	13	12	<5	12	17	11	2.4	2.1	0.74	2.6	40	<1	<1	0.32	<1	2.9	2.3	180	<1	120	<0.05	7.1	<0.05	26	290	<1	1.9	0.32	<1	2.9	3.3	990	<1	120	<0.05	7.3	<0.05	36	creekin flow and slightly turbid
SWTG2	26/02/2024	2:13:00 PM	Sample	0.95	29.4	91.7	36	6.33	33.5	15	48	54	6.8	<5	6.8	1.1	3	1	0.94	0.62	1.6	91	<1	<1	<0.1	<1	<1	1.2	200	<1	34	<0.05	2.2	<0.05	8.6	850	<1	1.3	0.11	1.2	1.3	2.1	1400	1.6	54	<0.05	2.8	<0.05	11	creek in flow and slightly turbid
SWTG2	4/03/2024	10:40:00 AM	Sample	0.91	30	90.8	41	6.36	26.5	47	10	-	10	<5	10	2.1	21	3.5	3.4	0.81	3	32	<1	<1	0.38	<1	4	2.4	140	<1	180	<0.05	11	<0.05	36	350	<1	2.1	0.37	<1	4.1	4	1200	<1	180	<0.05	11	<0.05	45	Creek in slight flow, turbid
SWTG2	12/03/2024	1:01:00 PM	Sample	1.56	28.8	89.6	31	6.01	29.8	11	64	40	6.5	<5	6.5	<1	2.2	0.87	0.65	0.72	1.1	70	<1	<1	<0.1	<1	<1	<1	160	<1	31	<0.05	2.1	<0.05	6.6	870	<1	1.4	<0.1	1.3	1.6	1.9	1300	1.7	63	<0.05	2.9	<0.05	11	creek in flood and turbid
SWTG2	19/03/2024	11:27:00 AM	Sample	1	30	91.1	60	6.12	18.8	51	15	10	8.5	<5	8.5	2.3	25	4	3.4	0.88	4.3	25	<1	<1	0.84	<1	7.3	3.6	62	<1	220	<0.05	22	<0.05	87	430	<1	2.3	0.91	<1	8.1	7.7	840	<1	220	<0.05	24	<0.05	94	creek in flow slightly turbid. 4 filters
SWTG2	26/03/2024	12:48:00 PM	Sample	0.84	-	91.7	101	6.17	13.9	52	6.5	7.9	9.8	<5	9.8	1.9	29	4.7	4	0.82	3.4	23	<1	<1	0.76	<1	7.4	2.5	53	<1	290	<0.05	24	<0.05	92	540	<1	2.1	0.84	<1	8.2	5.9	900	<1	290	<0.05	26	<0.05	100	no fields taken as meter in service. Refer to lab reports, creek in flow, slightly turbid
SWTG2	2/04/2024	2:05:00 PM	Sample	0.86	-	91.2	79	6.19	17.5	29	34	22	8.4	<5	8.4	1.7	10	2.1	1.8	0.81	2.4	64	<1	<1	0.22	<1	2.3	1.8	120	<1	100	<0.05	7.8	<0.05	24	460	<1	1.3	0.25	<1	2.8	2.8	840	<1	110	<0.05	8.4	<0.05	30	No NTU taken. Creek in flow and slightly turbid
SWTG2	08/04/2024	11:51:00 AM	Sample	0.68	28.2	89	129	6.15	11.5	55	<5	-	11	<5	11	2.2	36	6	5	1.1	4	20	<1	<1	0.78	<1	9.4	1.7	86	<1	390	<0.05	28	<0.05	100	190	<1	1.6	0.84	<1	9.2	4	560	<1	340	<0.05	27	<0.05	96	creek in slight flow turbid
SWTG2	16/04/2024	10:40:00 AM	Sample	0.63	27.5	85.9	184	6.02	18.7	120	12	-	8.1	<5	8.1	2.6	68	9	7.4	1.2	4.1	39	<1	1.5	1.5	<1	19	3.2	240	<1	750	<0.05	47	<0.05	170	130	<1	2.3	1.5	<1	18	6.2	380	<1	800	<0.05	47	<0.05	170	creek in flow
SWTG2	30/04/2024		Sample	0.57	-	80.5	284	5.68	24.3	350	<5	-	5.5	<5	5.5	3.4	170	25	21	1.8	6.8	590	<1	3	3.9	<1	48	27	62	<1	2400	<0.05	110	<0.05	390	720	<1	5.5	4.3	<1	48	31	380	<1	2300	<0.05	110	<0.05	380	
Minimum (2017- 24)					27.5	60.6	11	4.55	3.5	11	5	1.7	3	N/A	5	N/A	1	0.5	0.65	0.6	0.6	10	N/A	N/A	N/A	N/A	N/A	N/A	10	N/A	6	N/A	N/A	N/A	2	70	N/A	1	0.1	N/A	1	1	300	N/A	16	N/A	1	N/A	3	
Maximum (2017-					36.3	191.9	362.9	8.73	69.1	350	130	110	37	-3.6	37	17	170	25	21	3.2	14	860	N/A	12	3.9	N/A	48	27	810	N/A	2400	N/A	110	N/A	390	1200	N/A	150	4.3	2.4	48	31	3700	4	2300	N/A	110	0.61	380	
Standard Deviation (2017- 24)					2	29	63	1	16	66	24	26	5	N/A	5	3	29	4	3	0	2	167	N/A	3	1	N/A	9	5	123	N/A	380	N/A	19	N/A	70	244	N/A	21	1	0	7	6	587	N/A	356	N/A	18	N/A	67	
Short term median (2023- 24)					29.4	89.1	56	6.2	24.3	47	21.5	22	8.5	N/A	8.5	2.3	19	3.5	3.3	0.88	3	42	N/A	N/A	0.76	N/A	7.1	2.4	160	N/A	130	N/A	9.4	N/A	26	460	N/A	1.9	0.39	N/A	3.5	4	990	N/A	140	N/A	8.4	N/A	36	
Long term median (2017- 24)					29.6	89.0	54	6.16	23.4	33	20	23	9.2	N/A	9.2	2.5	8	2.4	1.9	1	2.9	50	-	N/A	0.32	N/A	3	2.6	190	N/A	86	-	4.7	-	22	370	-	1.7	0.35	1.1	2.2	4	990	N/A	110	-	5.2	-	28	
SWTG3A	31/01/2023	8:30:00 AM	No access gained	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWTG3A	28/02/2023	12:00:00 PM	No access gained	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site	Date/ Time	Time	Sample	Field Parameters						Lab Inorganics			Alkalinity as CaC03			Anions Dissolved		Cations Dissolved					Metals Dissolved																Metals Total														Field comments
				SWL	Temp	DO	EC	pH	Turbidity	TDS	TSS	Turbidity	HCO_3	CO_3	Total	Cl^-	SO_4^{2-}	Ca	Mg	K	Na	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	Al	Sb	As	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Ag	Zn	
				mRL	°C	%	µS/cm	Units	NTU	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
				Laboratory Levels of Reporting						5	5	0.1	5	5	5	1	1	0.5	0.5	0.5	0.5	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	10	1	1	0.1	1	1	1	10	1	1	0.05	1	0.05	1	
WDL-249 Discharge Trigger Values SWTG2							85-120	250	5.8-8.0	87	-	54	-	-	-	-	-	295	-	-	-	-	295	9	13	0.2	1	1.4	1.4	2700	3.4	1900	0.6	11	0.05	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SWTG3A	28/03/2023	12:00:00 PM	No access gained	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWTG3A	15/01/2024	1:00:00 PM	Sample	-	-	7.3	28	6.2	52	17	51	-	7.7	<5	7.7	<1	1.8	1	0.84	1.4	1.8	120	<1	<1	<0.1	<1	<1	1.4	210	<1	15	<0.05	1.1	<0.05	3.4	770	<1	1.3	<0.1	1.2	<1	2.9	1100	1.6	42	<0.05	1.8	<0.05	8.8	-
SWTG3A	06/02/2024	1:20:00 PM	Sample	-	30.2	74.9	85.8	5.97	18.5	42	<10	-	13	<5	13	2.3	18	4	3.4	1.2	4.2	34	<1	1.2	0.88	<1	5.4	4.9	210	<1	210	<0.05	14	<0.05	57	360	<1	3.1	1	<1	6.1	9.9	1600	<1	220	<0.05	15	<0.05	69	creek in flow, slightly turbid
SWTG3A	08/04/2024	11:31:00 AM	Sample	-	27.8	81.4	134.4	6.5	7.35	52	<5	-	11	<5	11	2.2	33	5.5	4.6	1.1	3.9	14	<1	<1	0.66	<1	7	1.8	66	<1	310	<0.05	23	<0.05	79	150	<1	1.3	0.62	<1	7.3	3.2	530	<1	300	<0.05	24	<0.05	81	creek in flow turbid. Observed something dived I nwater. Smell of crocs 2 fitlers
Minimum (2023- 24)					27.8	7.3	28	5.97	7.35	17	N/A	-	7.7	N/A	7.7	N/A	1.8	1	0.84	1.1	1.8	14	N/A	N/A	0.66	N/A	N/A	1.4	66	N/A	15	N/A	1.1	N/A	3.4	150	N/A	1.3	N/A	N/A	N/A	2.9	530	N/A	42	N/A	1.8	N/A	8.8	
Maximum (2023-					30.2	81.4	134.4	6.5	52	52	51	-	13	N/A	13	2.3	33	5.5	4.6	1.4	4.2	120	N/A	1.2	0.88	N/A	7	4.9	210	N/A	310	N/A	23	N/A	79	770	N/A	3.1	1	1.2	7.3	9.9	1600	1.6	300	N/A	24	N/A	81	
Standard Deviation (2023- 24)					1	34	43	0	19	15	0	-	2	N/A	2	0	13	2	2	0	1	46	N/A	0	0	N/A	1	2	68	N/A	122	N/A	9	N/A	32	257	N/A	1	0	0	1	3	437	0	108	N/A	9	N/A	32	
Short term median (20 24)					29	74.9	85.8	6.2	18.5	42	N/A	-	11	N/A	11	2.25	18	4	3.4	1.2	3.9	34	N/A	N/A	0.77	N/A	6.2	1.8	210	N/A	210	N/A	14	N/A	57	360	N/A	1.3	0.8	N/A	6.7	3.2	1100	N/A	220	N/A	15	N/A	69	
Long term median (2023- 24)					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SWTG1A	11/01/2017		Sample	-	-	-	24	6.8	-	-	51	120	10	<5	10	<1	2	1.1	0.9	1	2.6	200	-	<1	<0.1	<1	<1	<1	210	<1	<5	-	<1	-	<1	620	-	1	<0.1	1	<1	2	1200	2	32	-	<1	-	3	-
SWTG1A	12/03/2017		Sample	-	-	-	11	6.3	-	-	44	65	<5	<5	<5	<1	<1	0.5	<0.5	0.7	0.7	210	-	<1	<0.1	<1	<1	<1	170	<1	<5	-	<1	-	2	520	-	1	<0.1	<1	<1	2	850	2	23	-	<1	-	1	-
SWTG1A	26/03/2017		Sample	-	-	-	27	6.3	-	-	84	63	9	<5	6	2	3	1.5	1	0.8	1.8	170	-	<1	<0.1	<1	<1	1	190	<1	6	-	2	-	7	440	-	1	<0.1	<1	1	2	740	1	64	-	3	-	11	-
SWTG1A	3/05/2017		Sample	-	-	-	47	6.9	-	-	<5	8.4	21	<5	21	3	3	1.5	1.2	1.7	4.4	80	-	2	<0.1	<1	<1	2	340	<1	<5	-	<1	-	<1	70	-	2	<0.1	<1	<1	3	550	<1	19	-	<1	-	<1	-
SWTG1A	22/02/2019		Sample	-	-	-	36	7	-	-	9	18	13	<5	13	2	1	1.3	1.2	1.2	3.3	40	-	<1	<0.1	<1	<1	<1	290	<1	<5	-	<1	-	9	200	-	2	<0.1	<1	<1	<1	1400	<1	18	-	<1	-	2	-
SWTG1A	7/03/2019		Sample	-	-	-	37	6.8	-	-	9	5.7	15	<5	15	2	<1	1.7	1.4	1.2	3.3	20	-	<1	<0.1	<1	<1	<1	180	<1	<5	-	<1	-	15	80	-	1	<0.1	<1	<1	<1	750	<1	30	-	<1	-	5	-
SWTG1A	11/04/2019		Sample	-	-	-	32	6.6	-	-	28	43	9	<5	9	3	<1	0.9	0.8	1.4	2.8	650	-	<1	<0.1	<1	<1	1	420	<1	<5	-	<1	-	46	470	-	<1	<0.1	<1	<1	2	970	<1	21	-	<1	-	62	-
SWTG1A	19/01/2020		Sample	-	-	-	41	6.4	-	-	9	24	13	<5	13	3	<1	1.9	1.4	2.9	2.1	720	-	2	<0.1	<1	<1	2	550	<1	28	-	<1	-	7	380	-	2	<0.1	<1	<1	2	710	<1	88	-	<1	-	6	-
SWTG1A	2/02/2020		Sample	-	-	-	38	6.6	-	-	78	130	10	<5	10	2	3	1.8	2	2.3	5.5	100	-	3	0.2	<1	<1	2	220	<1	<5	-	4	-	40	1400	-	43	0.4	2	2	4	2500	5	70	-	6	-	73	-
SWTG1A	16/02/2020		Sample	-	-	-	36	6.6	-	-	21	180	13	<5	13	3	<1	1.8	1.3	1	2.6	90	-	1	<0.1	<1	<1	1	310	<1	<5	-	<1	-	3	410	-	1	<0.1	<1	<1	2	1400	<1	26	-	<1	-	6	-
SWTG1A	15/03/2020		Sample	-	-	-	32	7.2	-	-	130	94	15	<5	15	2	<1	1.2	1	0.8	3.2	40	-	1	<0.1	<1	<1	<1	290	<1	<5	-	<1	-	1	750	-	3	<0.1	1	<1	2	2200	2	51	-	1	-	19	-
SWTG1A	15/03/2020		Sample	-	-	-	34	6.6	-	-	140	94	14	<5	14	3	<1	1.2	1	0.9	3.2	40	-	1	<0.1	<1	<1	<1	280	<1	<5	-	<1	-	1	710	-	3	<0.1	1	<1	2	2200	2	51	-	1	-	19	-
SWTG1A	29/01/2023	10:40:00 AM	Sample	-	-	-	-	-	-	18	55	-	11	<5	11	1.8	<1	1.2	0.91	0.7	1.7	98	<1	<1	<0.1	<1	<1	1	200	<1	9.3	<0.05	<1	<1	1.7	610	<1	<1	<0.1	1.2	<1	2.2	1000	1.4	38	<0.05	<1	<1	3.2	-
SWTG1A	14/02/2023	8:30:00 AM	No sample taken	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWTG1A	28/03/2023	12:00:00 PM	Sample	-	29.6	70.9	41.3	5.17	15.7	25	9	-	15	<5	15	1.5	<1	1.8	1.5	0.93	3.4	43	<1	<1	<0.1	<1	<1	<1	380	<1	21	<0.05	<1	<0.05	1.9	180	<1	1.7	<0.1	1.1	<1	<1	1300	<1	31	<0.05	<1	1.7	4.8	3 Filters, flowing, murky, slightly turbid
SWTG1A	15/01/2024	10:00:00 AM	Sample	-	-	7.2	23	6.1	50	14	58	-	7.2	<5	7.2	<1	<1	0.74	0.59	1.2	1.7	160	<1	<1	<0.1	<1	<1	<1	230	<1	11	<0.05	<1	<0.05	1.6	610	<1	<1	<0.1	<1	<1	4.5	900	1.5	32	<0.05	<1	<0.05	5.7	-
SWTG1A	06/02/2024	2:14:00 PM	Sample	-	30.4	183.6	42.4	6.48	20.3	25	<10	-	15	<5	15	2.5	1.5	1.3	1	1.2	4	46	<1	1.5	<0.1	<1	<1	<1	350	<1	18	<0.05	<1	<0.05	1.8	260	<1	3	<0.1	<1	<1	1.2	1400	<1	27	<0.05	<1	<0.05	4.4	creek in flow, slightly turbid
SWTG1A	12/03/2024	11:38:00 AM	Sample	-	28.7	194.6	15.4	6.03	69	8	65	-	12	<5	12	<1	<1	<0.5	<0.5	0.68	0.9	84	<1	<1	<0.1	<1	<1	<1	180	<1	9.4	<0.05	<1	<0.05	3	710	<1	<1	<0.1	1	<1	1.4	1100	1.3	25	<0.05	<1	<0.05	5.5	creek in flood, turbid, 6 filters
SWTG1A	08/04/2024	11:01:00 AM	Sample	-	28	95.8	51.7	6.85	14.9	17	10	-	14	<5	14	2.2	2.7	1.2	1	1	3.5	95	<1	1.4	<0.1	<1	<1	<1	700	<1	18	<0.05	<1	<0.05	3.3	150	<1	1.8	<0.1	<1	<1	<1	890	<1	18	<0.05	<1	<0.05	17	creek in flow slightly
Minimum (2017- 24)					28	7.2	11	5.17	14.9	8	N/A	5.7	7.2	N/A	N/A	N/A	N/A	N/A	N/A	0.68	0.7	20	N/A	N/A	N/A	N/A	N/A	N/A	170	N/A	N/A	N/A	N/A	N/A	N/A	70	N/A	N/A	N/A	N/A	N/A	N/A	550	N/A	18	N/A	N/A	N/A	1	
Maximum (2017-					30.4	194.6	51.7	7.2	69	25	140	180	21	N/A	21	3	3	1.9	2	2.9	5.5	720	N/A	3	0.2	N/A	N/A	2	700	N/A	28	N/A	4	N/A	46	1400	N/A	43	0.4	2	2	4.5	2500	5	88	N/A	6	1.7	73	
Standard Deviation (2017- 24)					1	71	10	0	22	6	41	52	3	N/A	3	1	1	0	0	1	1	194	N/A	1	N/A	N/A	N/A	N/A	136	N/A	7	N/A	N/A	N/A	13	312	N/A	11	N/A	N/A	1	1	542	1	19	N/A	N/A	N/A	20	
Short term median (2023- 24)					28.7	139.7	33	6.29	35.15	15.5	58	-	13	N/A	13	2.4	2.1	1.2	1	1.1	2.6	90	N/A	1.5	N/A	N/A	N/A	N/A	290	N/A	15	N/A	N/A	N/A	2.4	435	N/A	2.4	N/A	N/A	N/A	1.4	1000	1.4	26	N/A	N/A	N/A	5.6	
Long term median (2017- 24)					29.15	95.8	36	6.6	20.3	17.5	47.5	64	13	N/A	13	2.1	2.7	1.3	1	1	3	93	-	1.5	N/A	N/A	N/A	N/A	285	N/A	15	-	N/A	-	3	455	-	1.9	N/A	N/A	N/A	2	1050	2	31	-	N/A	-	5.7	
TripBlank	22/12/2022		Sample	-	-	-	-	-		-	<5	0.4	<5	<5	<5	<1	<1	<0.5	<0.5	<0.5	<0.5	<10	-	<1	<0.1	<1	<1	<1	<10	<1	<1	-	<1	-	<1	11	-	<1	<0.1	<1	<1	<1	<10	<1	<1	-	<1	-	1.4	No field data
FB	22/12/2022		Sample	-	-	-	-	-		-	<5	0.19	<5	<5	<5	<1	<1	<0.5	<0.5	<0.5	<0.5	<10	-	<1	<0.1	<1	<1	<1	<10	<1	<1	-	<1	-	<1	<10	-	<1	<0.1	<1	<1	<1	<10	<1	<1	-	<1	-	<1	No field data

Loading Calculations for ADP1 for the 2023/24 Reporting Period (WDL 249)

Date	Lab Inorganics		Alkalinity as CaC03				Total Hardness	Acidity as CaCO3	Anions Dissolved		Cations Dissolved				Metals Dissolved											Metals Total
	TDS	TSS	Bicarbonate	Carbonate	Hydroxide	Total		Total	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium	Ag	Al	As	Cd	Cr	Co	Cu	Fe	Pb	Sb	Mn	Ni	Zn	As
	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
15/01/2024	34.8192	2.808	8.9856	2.808	10.44576	8.9856	6.06528	2.808	11.232	5.95296	1.1232	0.2808	0.2808	0.2808	0.00002808	0.005616	0.000562	0.00005616	0.0005616	0.0005616	0.0005616	0.005616	0.0005616	0.000562	0.00460512	0.000562	0.001348	0.000562
16/01/2024	34.8192	2.808	8.9856	2.808	10.44576	8.9856	6.06528	2.808	11.232	5.95296	1.1232	0.2808	0.2808	0.2808	0.00002808	0.005616	0.000562	0.00005616	0.0005616	0.0005616	0.0005616	0.005616	0.0005616	0.000562	0.00460512	0.000562	0.001348	0.000562
17/01/2024	34.30574	2.808	8.982391	2.808	10.22754	8.982391	5.940123	2.808	10.99773	5.831013	1.099131	0.2808	0.2808	0.407561	0.00002808	0.005616	0.000562	0.00005616	0.0005616	0.0005616	0.0005616	0.005616	0.0005616	0.000562	0.00469498	0.00059	0.00224	0.000562
18/01/2024	25.99406	2.16	6.907063	2.16	7.699474	6.907063	4.473051	2.16	8.279589	4.391589	0.826971	0.216	0.216	0.411017	0.0000216	0.00432	0.000432	0.0000432	0.000432	0.000432	0.000432	0.00432	0.000432	0.000432	0.00368064	0.000476	0.002409	0.000432
19/01/2024	25.59909	2.16	6.904594	2.16	7.531611	6.904594	4.376777	2.16	8.099383	4.297783	0.808457	0.216	0.216	0.508526	0.0000216	0.00432	0.000432	0.0000432	0.000432	0.000432	0.000432	0.00432	0.000432	0.000432	0.00374976	0.000499	0.003096	0.000432
20/01/2024	12.60206	1.08	3.451063	1.08	3.681874	3.451063	2.140251	1.08	3.959589	2.101989	0.394971	0.108	0.108	0.303017	0.0000108	0.00216	0.000216	0.0000216	0.000216	0.000216	0.000216	0.00216	0.000216	0.000216	0.00190944	0.00026	0.001891	0.000216
21/01/2024	12.40457	1.08	3.449829	1.08	3.597943	3.449829	2.092114	1.08	3.869486	2.055086	0.385714	0.108	0.108	0.351771	0.0000108	0.00216	0.000216	0.0000216	0.000216	0.000216	0.000216	0.00216	0.000216	0.000216	0.001944	0.000272	0.002234	0.000216
22/01/2024	12.20709	1.08	3.448594	1.08	3.514011	3.448594	2.043977	1.08	3.779383	2.008183	0.376457	0.108	0.108	0.400526	0.0000108	0.00216	0.000216	0.0000216	0.000216	0.000216	0.000216	0.00216	0.000216	0.000216	0.00197856	0.000283	0.002577	0.000216
23/01/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24/01/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25/01/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26/01/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27/01/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28/01/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29/01/2024	28.14418	2.808	8.943881	2.808	7.608878	8.943881	4.438245	2.808	8.186523	4.367643	0.810309	0.2808	0.2808	1.928695	0.00002808	0.005616	0.000562	0.00005616	0.0005616	0.0005616	0.0005616	0.005616	0.0005616	0.000562	0.00577325	0.000937	0.012946	0.000562
30/01/2024	31.8816	3.24	10.31616	3.24	8.52768	10.31616	4.97664	3.24	9.17568	4.89888	0.9072	0.324	0.324	2.37168	0.0000324	0.00648	0.000648	0.0000648	0.000648	0.000648	0.000648	0.00648	0.000648	0.000648	0.00676512	0.001115	0.015967	0.000648
31/01/2024	31.28914	3.24	10.31246	3.24	8.275886	10.31246	4.832229	3.24	8.905371	4.758171	0.879429	0.324	0.324	2.517943	0.0000324	0.00648	0.000648	0.0000648	0.000648	0.000648	0.000648	0.00648	0.000648	0.000648	0.0068688	0.001148	0.016996	0.000648
1/02/2024	30.69669	3.24	10.30875	3.24	8.024091	10.30875	4.687817	3.24	8.635063	4.617463	0.851657	0.324	0.324	2.664206	0.0000324	0.00648	0.000648	0.0000648	0.000648	0.000648	0.000648	0.00648	0.000648	0.000648	0.00697248	0.001181	0.018026	0.000648
2/02/2024	30.10423	3.24	10.30505	3.24	7.772297	10.30505	4.543406	3.24	8.364754	4.476754	0.823886	0.324	0.324	2.810469	0.0000324	0.00648	0.000648	0.0000648	0.000648	0.000648	0.000648	0.00648	0.000648	0.000648	0.00707616	0.001215	0.019055	0.000648
3/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/02/2024	18.09463	2.16	6.857691	2.16	4.342217	6.857691	2.547566	2.16	4.675474	2.515474	0.456686	0.216	0.216	2.361189	0.0000216	0.00432	0.000432	0.0000432	0.000432	0.000432	0.000432	0.00432	0.000432	0.000432	0.00506304	0.000921	0.016135	0.000432
8/02/2024	17.69966	2.16	6.855223	2.16	4.174354	6.855223	2.451291	2.16	4.495269	2.421669	0.438171	0.216	0.216	2.458697	0.0000216	0.00432	0.000432	0.0000432	0.000432	0.000432	0.000432	0.00432	0.000432	0.000432	0.00513216	0.000943	0.016821	0.000432
9/02/2024	17.30469	2.16	6.852754	2.16	4.006491	6.852754	2.355017	2.16	4.315063	2.327863	0.419657	0.216	0.216	2.556206	0.0000216	0.00432	0.000432	0.0000432	0.000432	0.000432	0.000432	0.00432	0.000432	0.000432	0.00520128	0.000965	0.017507	0.000432
10/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/02/2024	16.11977	2.16	6.845349	2.16	3.502903	6.845349	2.066194	2.16	3.774446	2.046446	0.364114	0.216	0.216	2.848731	0.0000216	0.00432	0.000432	0.0000432	0.000432	0.000432	0.000432	0.00432	0.000432	0.000432	0.00540864	0.001032	0.019566	0.000432
13/02/2024	15.7248	2.16	6.84288	2.16	3.33504	6.84288	1.96992	2.16	3.59424	1.95264	0.3456	0.216	0.216	2.94624	0.0000216	0.00432	0.000432	0.0000432	0.000432	0.000432	0.000432	0.00432	0.000432	0.000432	0.00547776	0.001054	0.020252	0.000432
14/02/2024	22.99474	3.24	10.26062	3.24	4.750766	10.26062	2.810469	3.24	5.121051	2.788251	0.490629	0.324	0.324	4.565623	0.0000324	0.00648	0.000648	0.0000648	0.000648	0.000648	0.000648	0.00648	0.000648	0.000648	0.00832032	0.001614	0.031408	0.000648
15/02/2024	22.40229	3.24	10.25691	3.24	4.498971	10.25691	2.666057	3.24	4.850743	2.647543	0.462857	0.324	0.324	4.711886	0.0000324	0.00648	0.000648	0.0000648	0.000648	0.000648	0.000648	0.00648	0.000648	0.000648	0.008424	0.001648	0.032437	0.000648
16/02/2024	21.80983	3.24	10.25321	3.24	4.247177	10.25321	2.521646	3.24	4.580434	2.506834	0.435086	0.324	0.324	4.858149	0.0000324	0.00648	0.000648	0.0000648	0.000648	0.000648	0.000648	0.00648	0.000648	0.000648	0.00852768	0.001681	0.033466	0.000648
17/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19/02/2024	5.341989	0.864	2.731227	0.864	0.931145	2.731227	0.55691	0.864	1.005202	0.555922	0.093806	0.0864	0.0864	1.412517	0.00000864	0.001728	0.000173	0.00001728	0.0001728	0.0001728	0.0001728	0.001728	0.0001728	0.000173	0.00235699	0.000475	0.009748	0.000173
20/02/2024	5.184	0.864	2.73024	0.864	0.864	2.73024	0.5184	0.864	0.93312	0.5184	0.0864	0.0864	0.0864	1.45152	0.00000864	0.001728	0.000173	0.00001728	0.0001728	0.0001728	0.0001728	0.001728	0.0001728	0.000173	0.00238464	0.000484	0.010022	0.000173
21/02/2024	5.282743	0.864	2.641371	0.864	0.864	2.641371	0.571063	0.864	0.947931	0.584229	0.096274	0.092654	0.0864	1.438354	0.00000864	0.002041	0.000173	1.92549E-05	0.0001728	0.000181029	0.0001728	0.001728	0.0001728	0.000173	0.00294583	0.000532	0.00971	0.000173
22/02/2024	6.726857	1.08	3.190629	1.08	1.08	3.190629	0.779657	1.08	1.203429	0.812571	0.132686	0.123634	0.108	1.781486	0.0000108	0.002942	0.000216	2.65371E-05	0.000216	0.000236571	0.000216	0.00216	0.000216	0.000216	0.00438377	0.000724	0.011746	0.000216
23/02/2024	6.850286	1.08	3.079543	1.08	1.08	3.079543	0.845486	1.08	1.221943	0.894857	0.145029	0.131451	0.108	1.765029	0.0000108	0.003333	0.000216	2.90057E-05	0.000216	0.000246857	0.000216	0.00216	0.000216	0.000216	0.00508526	0.000784	0.011355	0.000216
24/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29/02/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/03/2024	19.40297	2.592	4.724846	2.592	2.592	4.724846	3.609051	2.592	3.377006	4.122514	0.644297	0.503095	0.2592	3.841097	0.00002592	0.017379	0.000518	0.000128859	0.0005184	0.000839314	0.0005184	0.005184	0.0005184	0.000518	0.02904027	0.003313	0.017872	0.000518
5/03/2024	19.6992	2.592	4.45824	2.592	2.592	4.45824	3.76704	2.592	3.42144	4.32	0.67392	0.521856	0.2592	3.8016	0.00002592	0.018317	0.000518	0.000134784	0.0005184	0.000864	0.0005184	0.005184	0.0005184	0.000518	0.03072384	0.003456	0.016934	0.000518
6/03/2024	21.66171	2.808	4.540937	2.808	2.808	4.540937	4.252114	2.808	3.754697	4.893943	0.762171	0.585669	0.2808	4.075611	0.00002808	0.020859	0.000562	0.000152434	0.0005616	0.000962743	0.0005616	0.005616	0.0005616	0.000562	0.03510802	0.003899	0.017329	0.000562
7/03/2024	21.98263	2.808	4.252114	2.808	2.808	4.252114	4.423269	2.808	3.802834	5.107886	0.794263	0.605993	0.2808	4.032823	0.00002808	0.021876	0.000562	0.000158853	0.0005616	0.000989486	0.0005616	0.005616	0.0005616	0.000562	0.03693189	0.004054	0.016313	0.000562
8/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17/03/2024	10.63954	1.296	1.296	1.296	1.296	1.296	2.535223	1.296	1.841554	2.875886	0.450514	0.343872	0.1296	1.787246	0.00001296	0.011454	0.000259	9.92366E-05	0.0002592	0.000567771	0.0002592	0.002592	0.0002592	0.000259	0.02187154	0.002377	0.006542	0.000259
18/03/2024	10.59017	1.296	1.296	1.296	1.296	1.296	2.554971	1.296	1.836617	2.880823	0.452489	0.347328	0.1296	1.792183	0.00001296	0.011257	0.000259	0.000101458	0.0002592	0.000577646	0.0002592	0.002592	0.0002592	0.000259	0.02199497	0.002407	0.006813	0.000259
19/03/2024	10.5408	1.296	1.296	1.296	1.296	1.296	2.57472	1.296	1.83168	2.88576	0.454464	0.350784	0.1296	1.79712	0.00001296	0.011059	0.000259	0.00010368	0.0002592	0.00058752	0.0002592	0.002592	0.0002592	0.000259	0.0221184	0.002436	0.007085	0.000259

Loading Calculations for ADP1 for the 2023/24 Reporting Period (WDL 249)

Date	Lab Inorganics		Alkalinity as CaC03				Total Hardness	Acidity as CaCO3	Anions Dissolved		Cations Dissolved				Metals Dissolved											Metals Total
	TDS	TSS	Bicarbonate	Carbonate	Hydroxide	Total		Total	Chloride	Sulfate	Calcium	Magnesium	Potassium	Sodium	Ag	Al	As	Cd	Cr	Co	Cu	Fe	Pb	Sb	Mn	Ni	Zn	As
	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
20/03/2024	26.22857	3.24	3.24	3.24	3.24	3.24	6.486171	3.24	4.566857	7.226743	1.141097	0.8856	0.324	4.505143	0.0000324	0.027154	0.000648	0.000264754	0.000648	0.001493486	0.000648	0.00648	0.000648	0.000648	0.05560457	0.006165	0.018391	0.000648
21/03/2024	26.10514	3.24	3.24	3.24	3.24	3.24	6.535543	3.24	4.554514	7.239086	1.146034	0.89424	0.324	4.517486	0.0000324	0.026661	0.000648	0.000270309	0.000648	0.001518171	0.000648	0.00648	0.000648	0.000648	0.05591314	0.006239	0.01907	0.000648
22/03/2024	31.17806	3.888	3.888	3.888	3.888	3.888	7.901897	3.888	5.450606	8.701714	1.381166	1.083456	0.3888	5.435794	0.00003888	0.0314	0.000778	0.000331035	0.0007776	0.001851429	0.0007776	0.007776	0.0007776	0.000778	0.06746606	0.007576	0.023698	0.000778
23/03/2024	22.41051	2.808	2.808	2.808	2.808	2.808	5.749714	2.808	3.925851	6.295269	1.001787	0.789984	0.2808	3.936549	0.00002808	0.02225	0.000562	0.000243895	0.0005616	0.001358537	0.0005616	0.005616	0.0005616	0.000562	0.04899291	0.005536	0.017704	0.000562
24/03/2024	22.30354	2.808	2.808	2.808	2.808	2.808	5.792503	2.808	3.915154	6.305966	1.006066	0.797472	0.2808	3.947246	0.00002808	0.021822	0.000562	0.000248709	0.0005616	0.001379931	0.0005616	0.005616	0.0005616	0.000562	0.04926034	0.0056	0.018292	0.000562
25/03/2024	22.19657	2.808	2.808	2.808	2.808	2.808	5.835291	2.808	3.904457	6.316663	1.010345	0.80496	0.2808	3.957943	0.00002808	0.021394	0.000562	0.000253522	0.0005616	0.001401326	0.0005616	0.005616	0.0005616	0.000562	0.04952777	0.005664	0.01888	0.000562
26/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31/03/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/04/2024	24.624	3.24	3.24	3.24	3.24	3.24	7.128	3.24	4.4064	7.3872	1.20528	0.99792	0.324	4.6656	0.0000324	0.020736	0.000648	0.00033696	0.000648	0.0018144	0.000648	0.00648	0.000648	0.000648	0.059616	0.007128	0.027216	0.000648
11/04/2024	24.624	3.24	3.24	3.24	3.24	3.24	7.128	3.24	4.4064	7.3872	1.20528	0.99792	0.324	4.6656	0.0000324	0.020736	0.000648	0.00033696	0.000648	0.0018144	0.000648	0.00648	0.000648	0.000648	0.059616	0.007128	0.027216	0.000648
12/04/2024	21.3408	2.808	2.808	2.808	2.808	2.808	6.1776	2.808	3.81888	6.40224	1.044576	0.864864	0.2808	4.04352	0.00002808	0.017971	0.000562	0.000292032	0.0005616	0.00157248	0.0005616	0.005616	0.0005616	0.000562	0.0516672	0.006178	0.023587	0.000562
13/04/2024	21.3408	2.808	2.808	2.808	2.808	2.808	6.1776	2.808	3.81888	6.40224	1.044576	0.864864	0.2808	4.04352	0.00002808	0.017971	0.000562	0.000292032	0.0005616	0.00157248	0.0005616	0.005616	0.0005616	0.000562	0.0516672	0.006178	0.023587	0.000562
14/04/2024	21.3408	2.808	2.808	2.808	2.808	2.808	6.1776	2.808	3.81888	6.40224	1.044576	0.864864	0.2808	4.04352	0.00002808	0.017971	0.000562	0.000292032	0.0005616	0.00157248	0.0005616	0.005616	0.0005616	0.000562	0.0516672	0.006178	0.023587	0.000562
15/04/2024	21.3408	2.808	2.808	2.808	2.808	2.808	6.1776	2.808	3.81888	6.40224	1.044576	0.864864	0.2808	4.04352	0.00002808	0.017971	0.000562	0.000292032	0.0005616	0.00157248	0.0005616	0.005616	0.0005616	0.000562	0.0516672	0.006178	0.023587	0.000562
16/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18/04/2024	16.416	2.16	2.16	2.16	2.16	2.16	4.752	2.16	2.9376	4.9248	0.80352	0.66528	0.216	3.1104	0.0000216	0.013824	0.000432	0.00022464	0.000432	0.0012096	0.000432	0.00432	0.000432	0.000432	0.039744	0.004752	0.018144	0.000432
19/04/2024	16.416	2.16	2.16	2.16	2.16	2.16	4.752	2.16	2.9376	4.9248	0.80352	0.66528	0.216	3.1104	0.0000216	0.013824	0.000432	0.00022464	0.000432	0.0012096	0.000432	0.00432	0.000432	0.000432	0.039744	0.004752	0.018144	0.000432
20/04/2024	16.416	2.16	2.16	2.16	2.16	2.16	4.752	2.16	2.9376	4.9248	0.80352	0.66528	0.216	3.1104	0.0000216	0.013824	0.000432	0.00022464	0.000432	0.0012096	0.000432	0.00432	0.000432	0.000432	0.039744	0.004752	0.018144	0.000432
21/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28/04/2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29/04/2024	21.3408	2.808	2.808	2.808	2.808	2.808	6.1776	2.808	3.81888	6.40224	1.044576	0.864864	0.2808	4.04352	0.00002808	0.017971	0.000562	0.000292032	0.0005616	0.00157248	0.0005616	0.005616	0.0005616	0.000562	0.0516672	0.006178	0.023587	0.000562
30/04/2024	21.3408	2.808	2.808	2.808	2.808	2.808	6.1776	2.808	3.81888	6.40224	1.044576	0.864864	0.2808	4.04352	0.00002808	0.017971	0.000562	0.000292032	0.0005616	0.00157248	0.0005616	0.005616	0.0005616	0.000562	0.0516672	0.006178	0.023587	0.000562

Appendix B. Regulatory Communication's Register

Communication Type/Date/ref	Direction	Feedback	Action/response and reference in EMR
16/01/2024 Email Communications	PGO to NT EPA	Notification of commencement of RO treated wastewater discharge as per WDL 249	No response
19/01/2024 Email Communications	PGO to NT EPA	Query on WDL 249 ITEM 9 Limitations on discharge	No response
02/02/2024 Email Communications	PGO to NT EPA	Investigation Report for the exceedance copper concentration more than 3 times the trigger value at SWTG2.	No response
12/02/2024 Email Communications	PGO to NT EPA	Notification for the exceedance of copper, cadmium, cobalt and zine concentrations more than 3 times the trigger value at SWTG2 on the 6/02/24.	12/02/2024 response from Ranid May
16/02/2024 Email Communications	PGO to NT EPA	Investigation Report for the exceedance copper, cobalt, Cadmium and Zinc at SWTG2.	20/02/2024 response from Mia Sandgren
21/02/2024 Email Communications	PGO to NT EPA	Notification for the exceedance of copper more than 3 times the trigger value at SWTG2 on the 13/02/24.	22/02/2024 response from Ranid May
21/02/2024 Email Communications	PGO to NT EPA	Trigger level exceedance at swtg2 Tom's Gully' Hi Ranid, we have just had an exceedance again at swtg2 for copper and zinc. Do we report this as 3 consecutive sampling occasions given then the previous two exceedances were already captured in the previous investigation report?'	21/02/2024 response from Ranid May
23/02/2024 Email Communications	PGO to NT EPA	Investigation Report for the exceedance Copper and Zinc at SWTG2.	23/02/2024 response from Ranid May
28/02/2024 Email Communications	PGO to NT EPA	Notification for the exceedance of copper, cobalt and zinc on 3 consecutive occasions and zinc more than 3 times the trigger value at SWTG2 on the 20/02/24.	28/02/2024 response from Ranid May
01/03/2024 Email Communications	PGO to NT EPA	Investigation Report for the exceedance Cobalt, Copper and Zinc at SWTG2.	01/03/2024 response from Ranid May
07/03/2024 Email Communications	PGO to NT EPA	Notification for the exceedance of zinc on 3 consecutive occasions at SWTG2 on the 26/02/24.	11/03/2024 response from Ranid May
13/03/2024 Email Communications	PGO to NT EPA	Investigation Report for the exceedance Zinc at SWTG2.	13/03/2024 response from Ranid May
13/03/2024 Email Communications	PGO to NT EPA	Notification for the exceedance of zinc and cobalt trigger values at SWTG2 on the 4/03/24.	13/03/2024 response from Ranid May
24/03/2024 Email Communications	PGO to NT EPA	Investigation Report for the exceedance Cobalt and Zinc at SWTG2.	25/03/2024 response from Ranid May
27/03/2024 Email Communications	PGO to NT EPA	Notification for the exceedance of zinc, cobalt and cadmium trigger values at SWTG2 on the 19/03/24.	
05/04/2024 Email Communications	PGO to NT EPA	Investigation Report for the exceedance Cobalt, Cadmium and Zinc at SWTG2.	

Communication Type/Date/ref	Direction	Feedback	Action/response and reference in EMR
05/04/2024 Email Communications	PGO to NT EPA	Notification for the exceedance of zinc, cobalt and cadmium trigger values at SWTG2 on the 26/03/24.	
12/04/2024 Email Communications	PGO to NT EPA	Notification for the exceedance of zinc, copper, cobalt and cadmium trigger values at SWTG2 on the 02/04/24.	
22/04/2024 Email Communications	PGO to NT EPA	Notification for the exceedance of zinc, copper, cobalt and cadmium trigger values at SWTG2 on the 08/04/24.	
22/04/2024 Email Communications	PGO to NT EPA	Investigation Report for the exceedance Cobalt, Copper, Cadmium and Zinc at SWTG2.	
26/04/2024 Email Communications	PGO to NT EPA	Investigation Report for the exceedance Cobalt, Copper, Cadmium and Zinc at SWTG2.	25/03/2024 response from Ranid May
22/12/2024 Email Document Submission	PGO to NTEPA	Submission of Tom Gully WDL 249 EMR and Annual Return	

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, 2024)

Toms Gully Aquatic Ecology Baseline Studies

Draft 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		

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Figures

Tables

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. Aquatic ecology monitoring has continued at the site to provide a continuous and robust data set. 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.

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 baseline surveys at the Toms Gully Mine to characterise the existing aquatic health and condition of the receiving environment. The survey included:

- A study design that incorporates locations upstream, within and downstream of the Toms Gully Mine Lease (ML), and as a minimum, assessment of Primary sites SWTG1 (control site) and SWTG2 (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)
- Fish community sampling
- Water and sediment quality sampling

This report presents the results of the above monitoring conducted in May 2024.

2. Study design

2.1 Sampling Sites

Aquatic ecology monitoring was undertaken at seven sites in May 2024 (Table 1, Figure 1). Five sites were sampled on Mount Bundey Creek, consisting of three sites upstream of the mine and two sites downstream of the mine. A site downstream of Toms Gully (SWTG3), which has been sampled on a number of occasions previously could not be safely accessed in 2023 and so was not sampled. Two sites were sampled on the reference system Coulter Creek.

Table 1 – Sample site locations visited in May 2023

Site	Site Type	Location	Easting	Northing
SWTG1A	Upstream	Mount Bundey Creek upstream of mine at lease boundary	776351	8580503
SWTG1	Upstream	Mount Bundey Creek at confluence of tributary adjacent to EP1 and EP2	776825	8580290
MBC0	Adjacent	Mount Bundey Creek upstream of tributary draining EP1 and EP2, downstream of WRD	777606	8580736
MBC01A	Downstream	Mount Bundey Creek downstream of wetland oxbow and Toms Gully Mine Tailings Dam 2 (TSF2).	778787	8580437
SWTG2	Downstream	Compliance monitoring point at Arnhem Highway Crossing	779453	8580428
CC02	Reference	Coulter Creek. Approx. 2 km upstream from CK7	778299	8578355
CK7	Reference	Coulter Creek. Existing monitoring site located at highway crossing	779807	8579538

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 2024, 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 Water and sediment grab sampling

Water and sediment sampling methods utilised at each site were in accordance with those outlined in ANZECC (2000) and Simpson and Batley (2016) and involved:

- Collection of water samples from below the water surface in the centre of the creek where possible
- 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.
- The collection of one QA/QC duplicate sample per project area to validate results.
- 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.

Analyses performed on surface waters are detailed in Table 2. Bioavailable metals data (from 1M HCl dilute acid digestion analysis) were analysed for the parameters shown in Table 3.

Table 2 - Testing parameters for water collected at Toms Gully

Suite	Analytes
Physico-chemical	Total dissolved solids (TDS), total suspended solids (TSS), turbidity
Major anions	Alkalinity, chloride, sulfate
Major cations	Calcium, magnesium, sodium, potassium
Metals (dissolved and total)	Aluminium, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, uranium, zinc
Cyanide	Free cyanide, weak acid dissociable (WAD) cyanide, total cyanide

Table 3 – 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.

Updated guideline values are not yet available for the Timor Sea Drainage Division (ANZG 2018). Therefore, *in situ* results were compared against ANZECC (2000) Tropical Australia guideline values for slightly-

moderately disturbed ecosystems (95% species protection). This aligns with the recommendations made by the NT EPA in the Assessment Report (NT EPA 2020).

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 Early (dry season) Family level Edge habitat model. New guidance on the use of these models in the NT to understand impacts of point source pollution have been published (ANZG 2021). The updated guidance states that the models are not useful in understanding aquatic ecosystem health outside of the large rivers where

macroinvertebrates have been collects, and therefore the use of AUSRIVAS modelling has not taken place on the data collected for this project 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 2022.

3.4 Fish Community

Fish sampling was carried out primarily using backpack electrofishing. Electrofishing is a proven technique capable of capturing the majority of taxa present, as it is not size or species specific (as compared to gill nets for instance). Further, it is a nonlethal means of sampling when applied properly and can be used in a way that can provide quantitative data where required. However, at some sites electrofishing was not possible due to safety concerns regarding steep banks, deep pool habitat and the potential presence of estuarine crocodiles. Wherever instances such as these occurred, the field team recorded visual observations (to the best of their ability) regarding fish species present.

Where electrofishing was completed, a single pass from downstream to upstream was completed. All caught fish were identified in the field using appropriate keys (Allen et al. 2003) and counts for each species captured were recorded. The total number of fish captured at each site was derived from that information. All macrocrustaceans (Palaemonidae and Atyidae) caught at a site were also counted. Notes were also taken of any evidence of external lesions, parasites or deformities among the fish specimens collected at each of the study sites.

4. Results and Discussion

All sites were accessible in May 2024, and Table 4 details sampling carried out at each site. Sites on Coulter Creek were dry at the time of sampling and so data was not collected at these sites in 2024.

Table 4 – Sampling completed at each site in May 2024

Site	Macroinvertebrate sampling	Fish sampling	Habitat assessment	Water/ Sediment quality
SWTG1A	✓		✓	✓
SWTG1	✓	✓	✓	✓
MBC0	✓	✓	✓	✓
MBC01A				✓
SWTG2	✓	✓	✓	✓

4.1 Site Conditions

4.1.1 Catchment flow

The water height of Mount Bundey Creek at 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 January and March, with sustained creek flow present throughout a three 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 and active discharge from Rustlers Roost Mine (RRPA). Flow remained steady at SWTG2 from April onwards, particularly for the month leading up to sampling in early May.

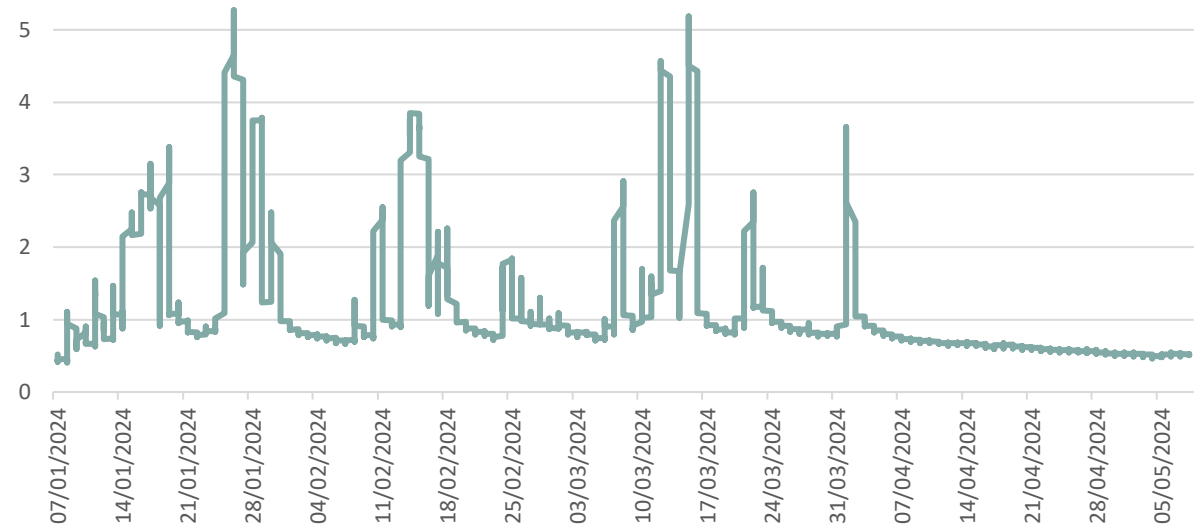

Figure 2 – Creek height at SWTG2 January - May 2024

4.1.2 Site descriptions

A description of habitat characteristics associated with monitoring sites sampled in May 2024 are presented in Table 5, along with site photographs taken at the time of sampling.

Table 5 – Aquatic ecology sampling site descriptions on Mount Bundey Creek, May 2024

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.	
MBC0 – Adjacent The site is located approximately 100m upstream of the confluence between a small, unnamed tributary that drains passive discharge from mining infrastructure. The site was well shaded due to a continuous riparian zone, and presence of trees along banks allowed for exposed roots, large woody debris and leaf packs to be common through the site. The majority of substrate at the site was made up of sand and pebbles. Long gliding pools were connected by shallow runs. And riffles	

Site description	Site photo
SWTG2 - Downstream The site is made up two gliding pools connected by runs, and is intersected by a stock crossing. The stock crossing has undergone significant upgrades, which have resulted in erosion and a change in flow through the site from previous years. Downstream of the crossing, the site was a wide, shallow pool. Substrate along the entire reach was a mixture of cobbles, pebbles and sand, with clay banks covered by a film of iron-producing bacteria.	

4.2 Water and sediment quality

4.2.1 In situ water quality

In situ water quality data is compiled and presented in Table 6, with comparisons made to ANZECC (2000) guideline values. The following observations about the results can be made:

- Temperatures were very similar between sites and ranged between 23.37 and 26.42°C
- Sites on Mount Bundey Creek downstream of influences from evaporation ponds and the oxbow wetland returned lower pH results that were below the guideline range, lowest at SWTG2 All other pH results were within the guideline value range all and were circumneutral.
- 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 range at sites where pH exceeded guidelines on Mount Bundey Creek.
- Water clarity was high at all sites, and turbidity was below the guideline value at all sites. Turbitity was higher at MBC01, which is located at a crossing for cattle, and contains a higher amount of fine material within the creek bed.

Table 6 – In situ water quality data collected at aquatic ecology sites in 2023. 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	12:32	24.90	7.21	84.87	7.01	40.46	1.01
SWTG1	13:33	26.42	6.43	66.15	5.33	39.47	9.16
MBC0	10:52	23.37	6.34	55.31	4.71	34.40	0.50
MBC01A	12:16	25.63	4.97	51.14	4.16	807.25	19.86
SWTG2	15:24	24.19	4.51	69.58	5.80	714.61	0.05

4.2.2 Laboratory water quality

Results of laboratory analysis of water quality grab samples from Mount Bundey Creek are presented in Table 7. The following observations are made about the results:

- No exceedances of the GVs for physico-chemical stressors or toxicants were observed at the upstream/adjacent sites (SWTG1A, SWTG1, and MBC0). Water at these sites had circumneutral pH, was relatively dilute, had low turbidity, and the major ions were dominated by sodium and bicarbonate alkalinity.
- In contrast, multiple exceedances of GVs were observed at downstream sites MBC01A and SWTG2. Results were indicative of the influence of acid mine drainage influences:
    - The dominant major ions at MBC01A and SWTG2 were calcium/magnesium and sulfate
    - The DGVs for the following metals were exceeded at both MBC01A and SWTG2: Aluminium, Cadmium, Cobalt, Copper, Manganese, Nickel, and Zinc. Cadmium, Nickel, and zinc concentrations also exceeded the Hardness Modified Guideline Values (HMGVs) based on the observed water hardness at each site.
    - The majority of metals were found in lower concentrations downstream at SWTG2 compared with results at MBC01A.
- It is likely that during the wet season, rainfall/runoff and discharges occurring to Mount Bundey Creek upstream had combined to ameliorate poor water quality that may be present as a result of passive discharge from Toms Gully Mine infrastructure. For this reason, the results of this sampling event must be reviewed in the context of previous results from the wet season. The results of this sampling are consistent with previous sampling events, which have shown poor water quality downstream of Toms Gully Mine during the recessional flow period.

Table 7 – Laboratory derived water quality results from sites within Mount Bundey Creek, guideline exceedances highlighted in blue

Analyte	Units	LOR	Upstream		Adjacent	Downstream		Default Guideline Value
			SWTG1A	SWTG1	MBC0	MBC01A	SWTG2	
Physicochemical parameters								
TSS	mg/L	5	<5	<5	<5	7	<5	NA
TDS	mg/L	5	24	31	20	460	310	NA
Major ions								
Bicarbonate alkalinity	mg/L	5	18	16	15	<5	<5	NA
Carbonate alkalinity	mg/L	5	<5	<5	<5	<5	<5	NA
Total alkalinity as $CaCO_3$	mg/L	5	18	16	15	<5	<5	NA
Sulfate as SO_4	mg/L	1	2	2	2	430	340	210
Chloride	mg/L	1	3	3	3	4	4	NA
Calcium	mg/L	0.5	1	1	2	53	43	NA
Potassium	mg/L	0.5	1	0.8	0.6	4	3	NA
Sodium	mg/L	0.5	4	5	3	15	13	NA
Magnesium	mg/L	0.5	1	1	1	43	35	NA
Dissolved metals								
Aluminium	µg/L	0.5	10	<10	<10	3700	1800	pH<6.5: 0.8* pH>6.5: 55
Arsenic	µg/L	1	<1	<1	<1	6	27	13
Cadmium	µg/L	0.1	<0.1	<0.1	<0.1	10	6.4	0.2
Cobalt	µg/L	1	<1	1	<1	120	74	1.4*
Copper	µg/L	1	<1	<1	<1	130	52	1.4
Iron	µg/L	2	40	160	70	250	540	-
Manganese	µg/L	0.5	6	160	76	5800	4500	1900
Nickel	µg/L	1	<1	4	<1	240	170	11
Zinc	µg/L	1	2	5	5	820	550	8

**Level of species protection unknown*

4.2.3 Sediment quality

Laboratory derived sediment quality results are presented in Table 8. Given the higher concentration of dissolved metals at sites downstream, it was expected that accumulation in sediments of those contaminants might be seen, but this did not materialise for the majority of metals. Lower pH at sites downstream is likely to be resulting in metals remaining in solution, which is reflected in results for dissolved metals in water quality results.

A single exceedance of the arsenic SQGV-high was recorded in sediments at SWTG2. Acid-extractible arsenic at the site has been elevated previously (Figure 3). The pH result from SWTG2 was acidic and therefore the risk of bioavailability of Arsenic from sediments is raised.

Table 8 – Sediment quality results from aquatic ecology monitoring sites, May 2024 All results presented in mg/kg

Sample	LOR	SWTG1A	SWTG1	MBC0	MBC01A	SWTG2	GV-low	GV-high
Aluminium	2	180	86	43	500	430	-	-
Arsenic	4	<4	<4	<4	<4	140	20	70
Cadmium	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	10
Cobalt	1	<1	<1	<1	2.2	5.5	-	-
Chromium	1	<1	<1	<1	<1	<1	80	370
Copper	1	2	1	<1	5	8	65	270
Iron	2	660	550	330	1500	2100	-	-
Lead	2	3	4	2	7	5	50	220
Manganese	1	58	21	34	120	89	-	-
Nickel	1	<1	<1	<1	2	3	21	52
Zinc	1	2	1	1	9	21	200	410

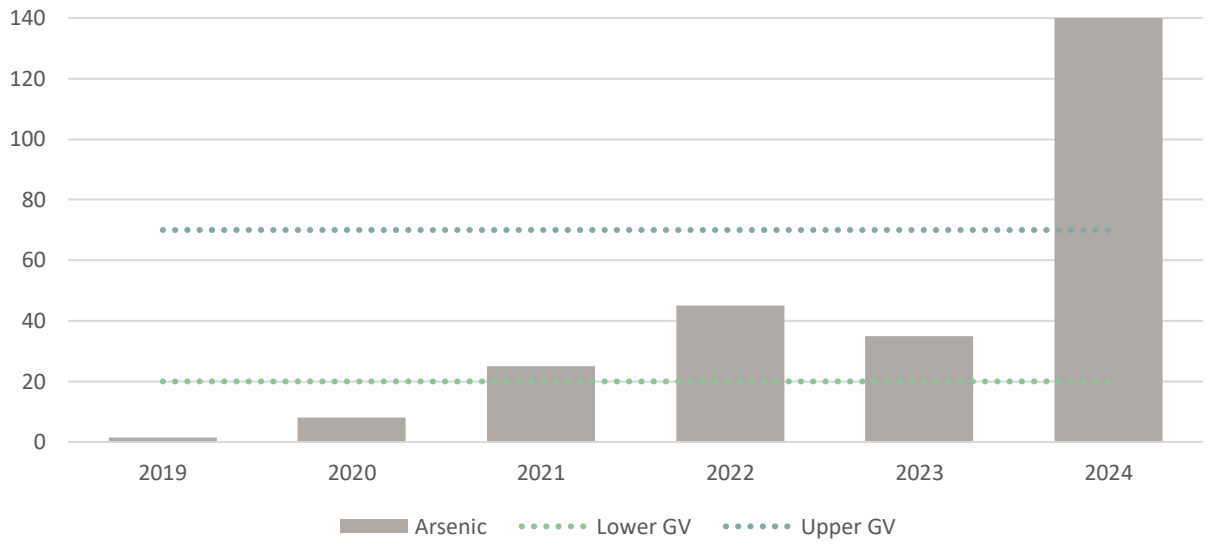

Figure 3 – Acid-extractible arsenic concentrations in sediments at SWTG2 2019-2024

4.3 Macroinvertebrates

4.3.1 Relative abundance

Relative abundance results for all sites sampled in May 2024 are presented below in Figure 4. In general, numbers increased with distance downstream on Mount Bundey Creek, but dropped significantly downstream of mine influences. Control sites showed similar relative abundance at both sites, and downstream samples contained a slightly higher number of taxa.

When reviewing relative abundance data in a historical context (Figure 5) lower macroinvertebrate numbers observed in 2024 have been recorded downstream prior to any active discharge to Mount Bundey Creek. A similar trend of lower relative abundance was seen both upstream and downstream of TGPA in 2021.

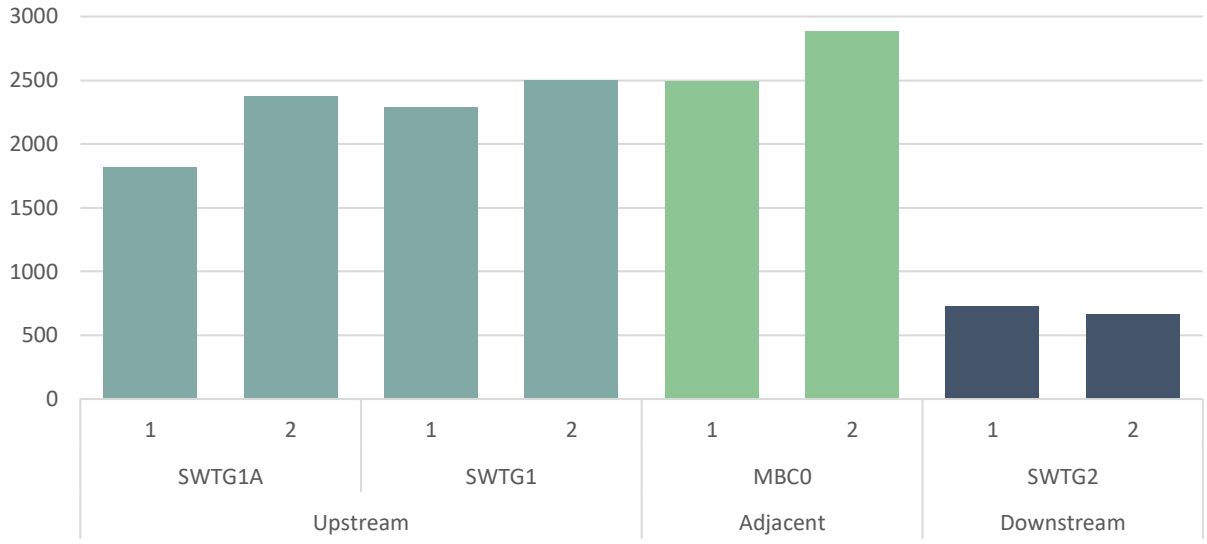

Figure 4 – Relative abundance at sites sampled in May 2024

Figure 5 – Relative abundance of samples collected at SWTG1A (upstream) and SWTG2 (downstream) 2020 - 2024

4.3.2 Taxa richness

Taxa richness results from all sites sampled are presented in Figure 6. Family diversity was highest at MBC0, which matched relative abundance results, and the number of taxa was more than halved downstream at SWTG2. Taxa numbers were lower in 2024 compared to previous years of baseline sampling (Figure 7), but has had a variable relationship with the upstream site (SWTG1A) in previous years.

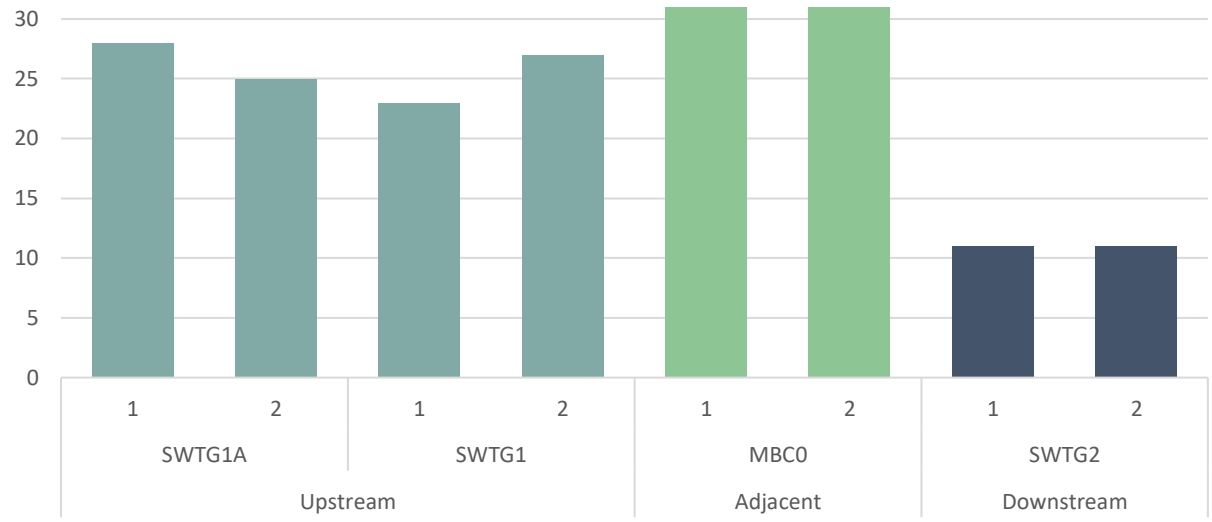

Figure 6 – Taxa richness results at sites sampled in May 2024

Figure 7 – Taxa richness of samples collected at SWTG1A (upstream) and SWTG2 (downstream) 2020 - 2024

4.3.3 PET richness

The PET richness results for all sites sampled in May 2024 are presented below in Figure 8. PET richness was similar upstream, highest adjacent on Mount Bundey Creek. and lower downstream. Historically, PET richness has been lower or equal to numbers recorded at the upstream site, but 2024 showed a more notable difference between the two sites. the number of PET taxa has been trending downwards over the last three years.

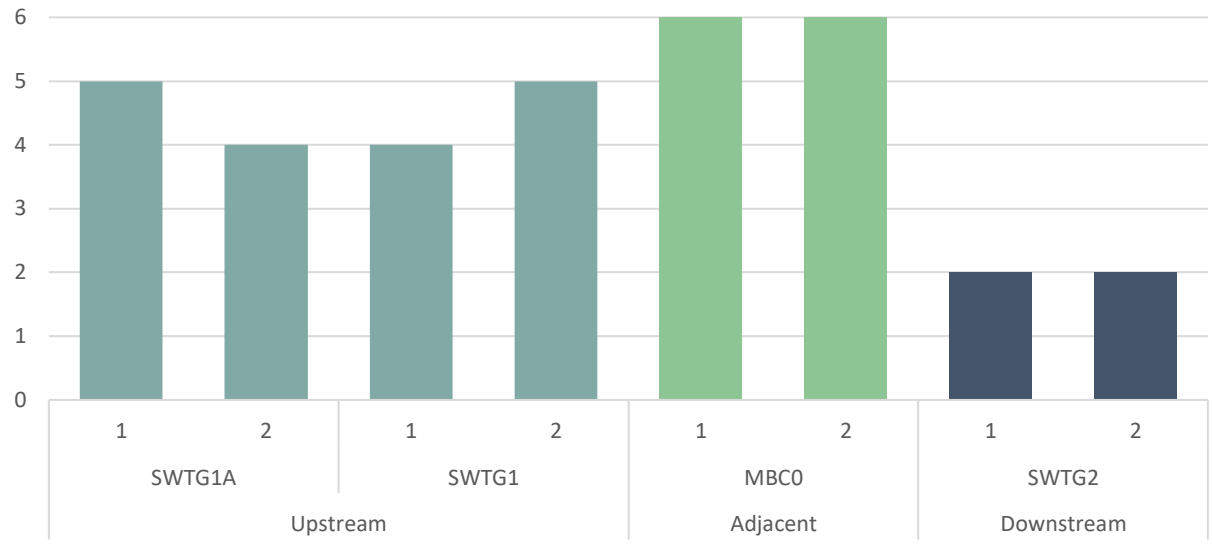

Figure 8 – PET richness at sites sampled in May 2024

Figure 9 - PET richness of samples collected at SWTG1A (upstream) and SWTG2 (downstream) 2020 - 2024

4.3.4 SIGNAL-2

SIGNAL-2 scores for all samples collected in May 2024 are presented in Figure 10. There was very little variation in SIGNAL-2 scores between site types on Mount Bundey Creek (3.4-3.83). The SIGNAL score range at the sites are well within the pollution tolerant end of the scale (Marshall *et al.* 2001). Results from the past five years showed a decrease in pollution sensitivity at both upstream and downstream sites in 2023 and 2024. 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 2023).

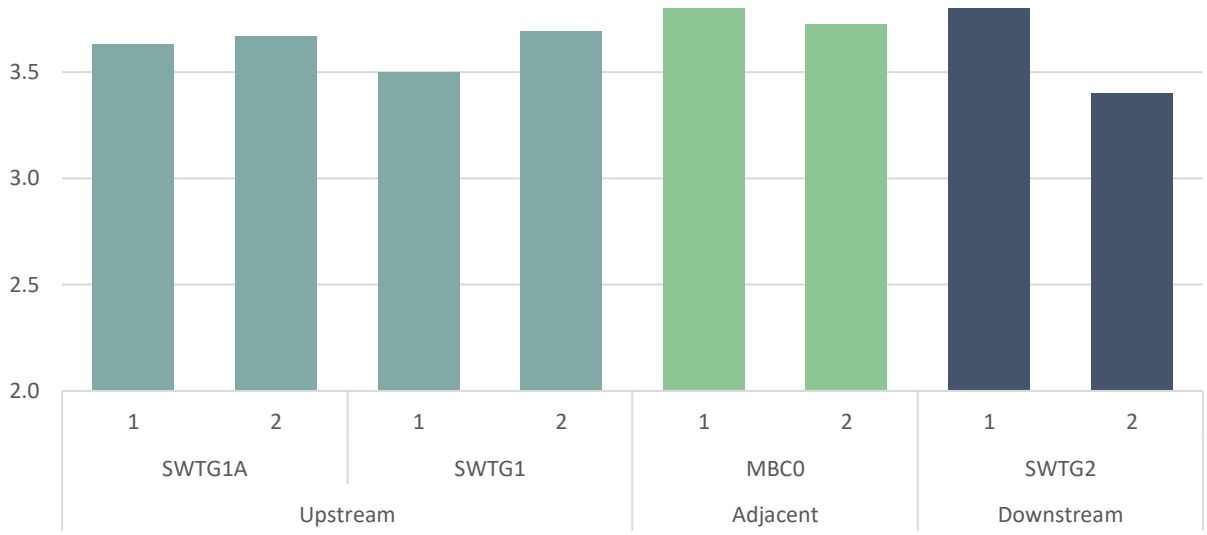

Figure 10 – SIGNAL-2 scores at all aquatic ecology sites visited in May 2024

Figure 11 – SIGNAL-2 results from samples collected at SWTG1A (upstream) and SWTG2 (downstream) 2020 - 2024

4.3.5 Community composition

The non-metric MDS plot displayed in Figure 12 provides an indication of the relative similarity in the macroinvertebrate community composition between samples collected on Mount Bundey Creek. There was at least 40% similarity between all sites on Mount Bundey Creek in 2024, and at least 80% similarity between sites upstream and adjacent to Toms Gully Mine. Samples collected at SWTG2 were separated, but were very similar to each other.

Similarities in habitat availability is noted in Section 4.1.2 is likely to be influencing the similarity in community composition across upstream and adjacent sites, whereas differences in water quality (Section 4.2.2) are likely to be separating samples at SWTG2. Lower abundances at SWTG2, along with several taxa present at upstream and adjacent sites that were not collected downstream have resulted in the difference between the site and others.

Historical results show that samples collected SWTG2 in 2022, 2023 and 2024 were most similar to each other, with other

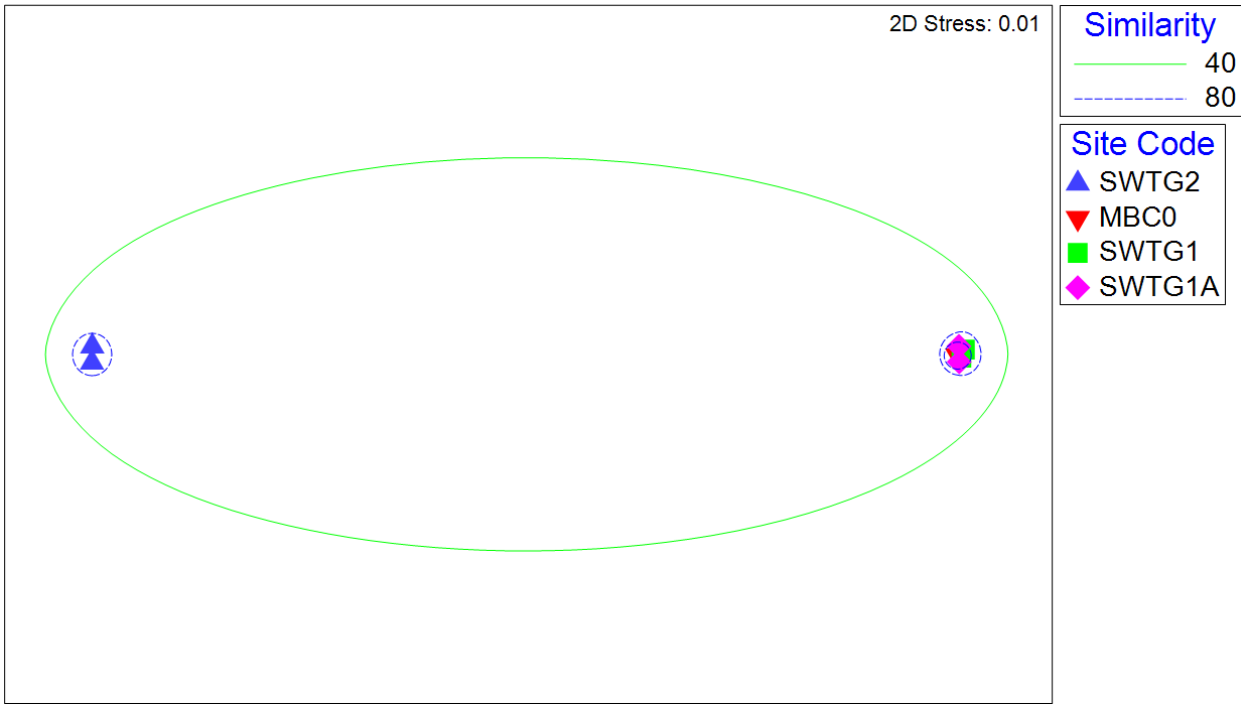

Figure 12 - NMDS demonstrating relative similarity of macroinvertebrate communities in samples collected on Mount Bundey Creek in May 2024

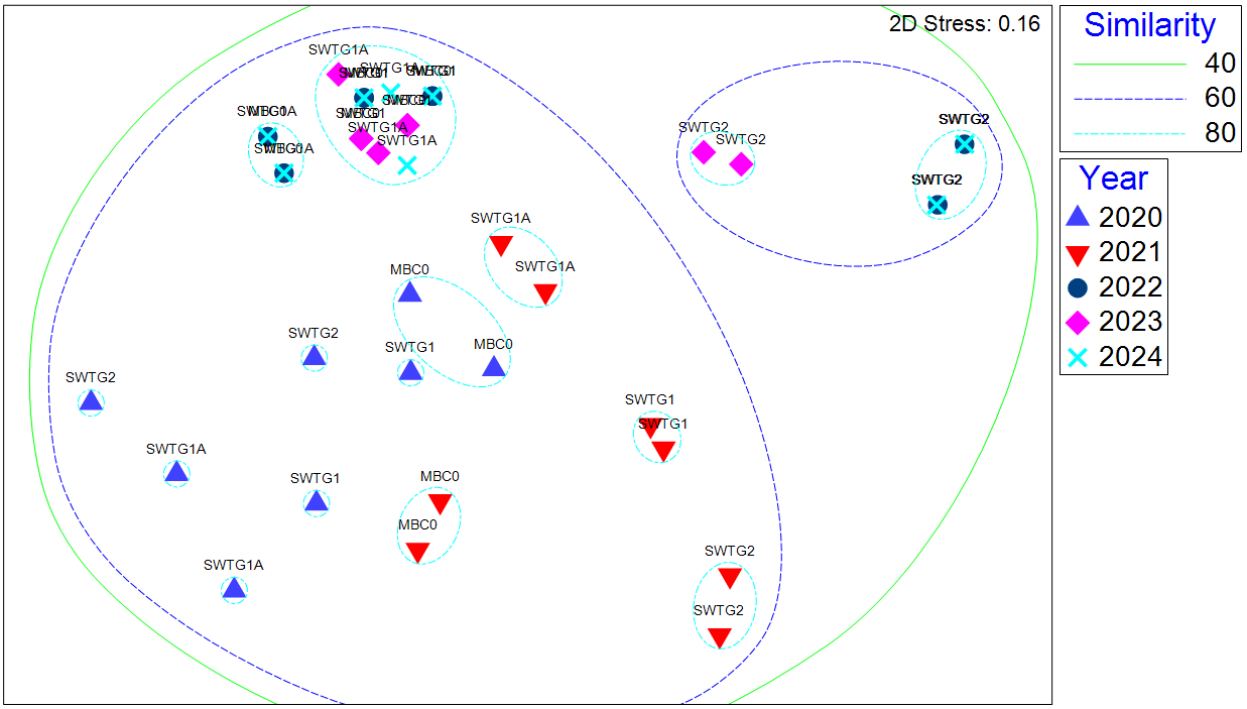

Figure 13 - NMDS demonstrating relative similarity of macroinvertebrate communities in samples collected on Mount Bundey Creek 2020-2024

4.4 Fish community

Fish sampling was possible at key sites on Mount Bundey in 2024, and the results of electrofishing at each site are presented below in Table 9. A total of 222 fish were captured across three sites on Mount Bundey Creek. Nine species were recorded, and the highest abundance of fish were captured at MBC0, with a similar diversity of fish captured at SWTG1. No fish were collected at SWTG2 despite a similar amount of fishing effort being applied at the site. Although previous studies have found fish at SWTG2 (AES 2023), there were none present in 2024, there were no visible injuries or illness recorded where fish were captured upstream in 2024.

Compared with the previous four years, there was a reduction in diversity at SWTG2 in 2023, before no fish were collected in 2024 (Figure 14). Fish diversity did also decrease at upstream sites in 2023 and 2024, but the trend was much less prominent.

Table 9 – Fish sampling results for all sites on Mount Bundey Creek, May 2024

Species Name	Common name	SWTG1	MBC0	SWTG2
Ambassis sp.	Northwest Glassfish	8	23	0
Hepaphagus fuluginensis	Sooty Grunter	0	3	0
Leiopatherapon unicolor	Spangled Perch	2	65	0
Melanotaenia splendida inornata	Chequered Rainbowfish	33	39	0
Mogurnda mogurnda	Northern Purple-spotted Gudgeon	0	59	0
Neosilurus hyrtlii	Hyrtls Tandan	2	1	0
Neosilurus ater	Black Catfish	0	1	0
Oxyleotris lineolata	Sleepy Cod	1	0	0
Oxyleotris selheimi	Giant Gudgeon	1	2	0
Diversity		**6**	**7**	**0**
Abundance		**52**	**170**	**0**

Figure 14 – Fish diversity results 2020 - 2024

5. Conclusions

5.1 Overview

Aquatic ecology surveys were successfully completed at Toms Gully Mine in 2024. All components were completed at sites on Mount Bundey Creek where access, sufficient water and safety allowed. The following conclusions are made in regards to 2024 monitoring:

- Due to a shorter than average wet season that was characterised by sporadic rain and flow, samples could not be collected at Coulter Creek sites due to a lack of water. The presence of sites upstream on Mount Bundey Creek allow for a fair comparison given the habitat similarities, and so it is not considered essential that sites on Coulter Creek were sampled as a Control stream.
- Exceedances of dissolved metal guideline values have been recorded previously downstream of influences of Toms Gully Mine. These results present a single sample in time during the recessional flow period, and should be viewed in the context of historical water quality monitoring, including results of sampling over the 2023-2024 wet season when discharge was occurring.
- There was some accumulation of metals in sediments, and an exceedance of the upper guideline value for arsenic for the first time at SWTG2. Metals in sediments are considered to have the potential to be released in concentrations which could be ecotoxic, when waters return low pH values, which was observed in May 2024.
- The exceedance of surface water guideline values, but not sediment guideline values at MBC01 is possibly due to low pH allowing metals to remain dissolved in surface waters close to the TSF. The same could not be said at SWTG2, where the cumulative impact of historical pollution from Tom's Gully Mine is becoming more evident.
- 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. The impairment is likely related to poor water quality results found at MBC01A and SWTG2.
- All macroinvertebrate community data should be viewed in the context of historical data, and for most metrics, there has been a pronounced decrease in ecosystem health at SWTG2.
- Although previous surveys have recorded fish at SWTG2, this did not occur in 2024, despite similar levels of electrofishing effort being applied at all sites. In 2023, far fewer species and a lower abundance of fish were found downstream on Mount Bundey Creek than upstream compared with previous years. This decreasing trend, and the lack of fish at the site in 2024 suggest that poor water quality is affecting the habitability of the water downstream of Toms Gully Mine for fish. The spatial extent of this impact is difficult to know, but can be explored through updates to sampling design.
- Surface water quality sampling identified potential point source pollution related to surface/groundwater interactions between infrastructure at Toms Gully and Mount Bundey Creek. Exceedances of the GVs indicate ecotoxic conditions that have likely resulted in an impairment of

aquatic ecosystems downstream of Toms Gully Mine. Waste discharge was not underway during the recessional flow period that sampling was completed, which reflects that impacts associated with poor water quality are more likely to be related to surface/groundwater interactions that are not being diluted from upstream flow or treated water discharge.

- 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

An uninterrupted data set is the most robust way to analyse conditions in the receiving environment surrounding Toms Gully Mine should operations commence. Therefore, aquatic ecology monitoring should continue in 2024. Access to downstream site SWTG3 or previously sampled site MBC03 should be explored to understand the spatial extent of impacts detected downstream of the TGPA.

Sites on Culter Creek have been used as control sites during the baseline surveys, but given that continuous data exists from upstream sites in the Mount Bundey Creek catchment, there is less requirement for sampling in these sites going forward. Sampling effort should be concentrated to Mount Bundey Creek, and could include a site downstream of the Coulter Creek confluence.

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Appendix A. Certificates of Analysis

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 2024

ADP1	 January 2024	 February 2024	 March 2024	 April, 2024
SWTG1A	 January 2024	 February 2024	 March 2024	 April 2024
SWTG2	 January 2024	 February 2024	 March 2024	 April 2024

MBC01A	 January 2024	 February 2024	 March 2024	 April 2024
SWTG12	 January 2024	 February 2024	 March 2024	 April 2024
SWTG3A	 January 2024	 February 2024	 March 2024	 April 2024

EP1	 January 2024	 February 2024	 March 2024	 April 2024
EP2	 January 2024	 February 2024	 March 2024	 April 2024
TGM Pit	 January 2024	 February 2024	 March 2024	 April 2024