Gove Operations

WDL Annual Monitoring Report

30 June 2025

For the reporting period of 1 April 2024 to 31 March 2025.

Prepared in accordance with the requirements of the Northern Territory Government Waste Discharge Licence (WDL171-12, 24 August 2023) and Northern Territory Environment Protection Authority “Guideline for Reporting on Environmental Monitoring (Version 1.0, May 2016).”

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ACRONYMS

µg/L	micrograms per litre
µS/cm	micro-Siemens per centimetre
ASC NEPM	*National Environment Protection (Assessment of Site Contamination) Measure 2013*
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CFU	Colony Forming Units
COC	Chain of Custody
DLPE	Department of Lands, Planning and Environment
EC	Electrical Conductivity
EPA	Environmental Protection Authority
FSANZ	Food Standards Australia New Zealand
HTF	Harbour Tank Farm
LFTF	Light Fuel Tank Farm
LOR	Limit of reporting
mg/L	milligrams per litre
MHMP	Marine Health Monitoring Plan
ML	Mega litre
mL	millilitres
mm	millimetres
MPN	Most-probable number
NATA	National Association of Testing Authorities
NEPC Act	*National Environment Protection Council Act 2013*
NSNL	Neutralised Supernatant Liquor
NT	Northern Territory
NTU	Nephelometric Turbidity unit
PAH	Polycyclic Aromatic Hydrocarbons
QA/QC	quality assurance and quality control
RDA	Residue Disposal Area
RPD	Relative percentage difference
RTA	Rio Tinto Australia
SCP	Southern Containment Pond
SNL	SuperNatant Liquor
STP	Sewerage Treatment Plant
SWMP	Surface Water Monitoring Plan
TDN	Total Dissolved Nitrogen
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TV	Trigger Value
WCP	Western Containment Pond
WDL	Waste Discharge License
WMP	Water Monitoring Plan
WWNP	Wastewater Neutralisation Plant

EXECUTIVE SUMMARY

This Waste Discharge Licence (WDL) Annual Monitoring Report presents the results of the WDL monitoring program conducted in accordance with the conditions of the Waste Discharge Licence (WDL) 171-12 (the Licence). This report has been prepared in accordance with Conditions 39 and 40 of the Licence and covers the April 2024 – March 2025 reporting period.

The current version of the Licence was issued to Gove Operations by the Northern Territory Government on 24 August 2023, and governs the "controlled discharge of treated wastewater from authorised sources in the Refinery into the receiving environment [Gove Harbour] via the authorised discharge points". The Licence specifies the monitoring frequency, sampling and analytical requirements, and nominates site specific Trigger Values (TVs) and Limits, for a series of "Authorised Discharge Points," "Authorised Monitoring Points" and "Compliance Points."

The primary objectives of this report are to assess compliance against the monitoring and reporting requirements outlined in the Licence, summarise data trends for the reporting period, and assess the potential impact (if any) of authorised discharge on marine ecosystem health.

Review of the monitoring data for the reporting period indicated that monitoring and reporting was completed in general compliance with the Licences.

The following conclusions are noted:

- Sampling of both surface water and marine environments was completed as per the Surface Water Monitoring Plan (GPM-EHS-077) and the Marine Health Monitoring Plan (APM-EHS-039), which supersede the Water Monitoring Plan (2019). No deviations from the methodology were noted during the reporting period.
- The Seawater Outfall Channel site (S001) is located in the refinery, where seawater discharges to the marine receiving environment. Discharge flows are continuously monitored, except when discharges do not occur. In the reporting period, the Seawater Outfall Channel was not discharging for periods in May 2024, June 2024, August 2024 and November 2024.
- Monitoring was generally completed in compliance with the Licence. The samples collected from S001 on 20 May 2024 were not analysed by the laboratory. A follow up sample was taken as soon as possible on 04 June 2024 following a shutdown of the Seawater Outfall Channel for planned maintenance.
- The following non-compliances were reported to the Northern Territory Government:
    - Eight unauthorised untreated discharge events into the seawater channel occurred during the reporting period. Each event was reported to the Department of Lands, Planning and Environment (DLPE) as an incident. i.e. 12 April 2024 (Incident 1000650986), 20 April 2024 (Incident 1000651027), 21-22 April 2024 (Incident 1000651110), 8 December 2024 (Incident 3066265228), 22 December 2024 (Incident 43180511_61246), 2 February 2025 (Incident 3667102533_65918), 22 March 2025 (Incident 3459278952_71855) and 24 March 2025 (Incident 3635805760_72045).
    - The release of approximately <20 litres of hydrocarbons into the seawater channel on 25 November 2024 (Incident 1999106409_57466).
    - The release of turbid water through the authorised discharge point S001 on 19 February 2025 (Incident 846817585_68026).

- Analytical results for the reporting period generally complied with the Waste Discharge Licence 171-12 conditions. TVs and limits were not exceeded during the reporting period.
- Results for all parameters monitored in the reporting period remained within their respective historical range.
- In the 2024/25 reporting period, all wastewater from the sewerage treatment plant was redirected and used for irrigation of a rehabilitation area inside the refinery. As such, no discharge data is available for S015.
- A complaint was received by the Environment Regulation Department via phone call on the 19 February 2025 in relation to the release of turbid water through the authorised discharge point S001. Initial notification had already been raised with the Department, and incident investigation was in process; Incident 846817585_68026. The complaint received by the Environmental Regulation Department was acknowledged in incident 846817585_68026.

This report presents the 20th annual monitoring report in compliance with the Gove Operations Marine Health Monitoring Program (MHMP) for Southern Melville Bay (Routine Surveillance Monitoring Program – Receiving Environment Quality Survey). New data for seawater, sediment and oysters for the reporting period is presented and attached in Appendix E.

No current evidence of deterioration of marine ecosystem health from authorised discharge was identified based on the monitoring data collected and incident reports reviewed for this reporting period.

1 OPERATOR DETAILS

Details	
Operator	RTA Gove Pty Limited (ABN 76 000 453 663)
Owner	Swiss Aluminium Australia Limited (ACN 008 589 099)
Operator Registered Address	155 Charlotte Street, Brisbane QLD 4000
Operator Postal Address	PO Box 21, Nhulunbuy NT 0881
Operator Street Address	1 Melville Bay Road, Nhulunbuy NT 0880
Waste Discharge Licence	171-12
Reporting timeframe	1 April 2024 – 31 March 2025
Date of report	15 June 2025
Key site contact	Drew Carmichael

2 INTRODUCTION

EcOz Environmental Consultants (EcOz) was engaged by RTA Gove Pty Limited to complete the WDL Monitoring Report (this report) for the surface water and marine monitoring samplings conducted in accordance with the Waste Discharge Licence (WDL) 171-12 (the Licence).

The current version of the Licence was issued to Gove Operations by the Northern Territory Government on 24 August 2023 and provides authority for the "*controlled discharge of treated wastewater from Authorised Discharge Points at the Refinery*" into Gove Harbour. The Licence was issued by the Department of Environment, Parks and Water Security (DEPWS), now DLPE, pursuant to Section 73 and Section 93 of the *Water Act 1992 (2016)*. In accordance with Condition 39 of the Licence, this report summarises monitoring data collected for the reporting period: 1 April 2024 to 31 March 2025 (the reporting period).

The domains discussed in this report include:

- the Refinery (Figure 1 and Figure 3, Appendix B); and
- the Marine receiving environment.

The Licence requires the maintenance and implementation of the following Gove Operations documents:

- Surface Water Monitoring Plan (GPM-EHS-077 SWMP) (superseding the Water Monitoring Plan (WMP, 2019);
- Water Management Plan 2021, Rev 0 (GPM-EHS-100);
- Marine Health Monitoring Program, Rev 006, APM-EHS-039; and
- WDL Adaptive Management Plan, Rev Final, AMP-EHS-008.

Table 2-1 summarises the Waste Discharge Licence conditions and compliance for the reporting period 1 April 2024 to 31 March 2025.

Table 2-1. Summary of Compliance with WDL171-12.

Licence Condition	Compliance Statement	Report Section
1-16	Not applicable to this report.	Not included in this report.
17	No complaints were received by Rio Tinto Gove during the reporting period.	Section 4.8
18 -19	Not applicable to this report.	Not included in this report.
20 - 21	Eight incidents relating to unauthorised discharge events were recorded and notified to the NT EPA	Section 4.4.1
22	Each discharge event at each discharge point measured and recorded: 22.1. the time discharge commenced and the duration of discharge 22.2. the discharge flow rate and 23.3. the discharge volume	Section 4.4.1 Table 2, Appendix C
23	23.1 to 23.2 - Monitoring of the authorised discharge points for all discharge events occurred and the presence of floating debris or hydrocarbon odours etc. was not observed. 23.3 to 23.8 The health of marine organisms and plants was not affected. The marine health monitoring report indicates that there was no adverse impact on marine health.	Section 4.5 Section 5 Appendix E Annual Water Monitoring Report 2024-25

Licence Condition	Compliance Statement	Report Section
24	For each recorded exceedance of trigger values (Appendix 2 of the WDL):	-
24.1	Investigations were undertaken including targeted monitoring, in addition to routine monitoring.	Section 4.4 Appendix F
24.2	Corrective actions were taken to mitigate any environmental harm and ensure the exceedance did not reoccur.	Appendix F
24.3	Details regarding the trigger value and limit exceedances were recorded in the associated data files and are summarised in this report and included in appendix F incident notifications.	Section 4.4 Appendix F
25 - 26	Incident Notifications are included as attached reports. Details regarding specific notifications of incidents are included in the incident reports attached.	Appendix F
27	Monitoring was conducted in accordance with Item 11 of the WDL.	Section 4 Section 5
28 - 29	Sampling locations were sampled on the same day as discharge events from a part of the waterway that provides representative samples and in order from the authorised discharge point to the compliance point. Results presented in the marine monitoring report indicate sampling was undertaken in the order specified. Samples and field environmental data were representative of conditions at the time of sampling. Field and laboratory QA/QC results are discussed.	Section 4.2.2 Section 4.4.3 Appendix A Section 5 and Appendix E
30	Samples were collected at the appropriate frequency set out in Appendix 4, except when specified in Section 4.	Section 4.4.4
31	Samples and field environmental data were collected in accordance with recognised Australian Standards and guidelines.	Section 4.2.2
32	All monitoring samples were analysed at a laboratory with NATA accreditation or equivalent at the time of monitoring, for the parameters to be measured. Detection and reporting limits were appropriate to determine compliance with the WDL.	Section 4.2.2
33	Samples collected in connection with the activity of this licence were obtained by or under the supervision of a qualified sampler.	Section 4.2.2
34	Plant and equipment used in conducting the monitoring program was reasonably fit for the purpose and use to which it was put, properly calibrated, maintained, operational, and was operated by a suitably trained person.	Section 4.2.2
35	For each sample collected all required information was recorded and retained as described throughout this report. Records and data held by Gove Operations and results are summarised in this report.	Section 4.2.2
36	Not applicable to this report	Not included in this report
37	Contraventions with this licence are presented as incidents in this report. All contraventions are recorded and retained ensuring notification conditions are met, with incidents presented in this report.	Appendix F Executive Summary Section 4.4 Conclusions
38	This report is the Annual Return.	This report and its associated files

Licence Condition	Compliance Statement	Report Section
39	This report is the monitoring report.	This report and its associated files
40	This Monitoring Report:	
40.1	Was prepared as per the Administering Agency guidelines.	Table 2-2
40.2	Provides all monitoring data (electronically as tabulated).	Appendix C and associated Excel files
40.3	Provides tabulation of monthly and annual contaminant loads discharged from the authorised discharge points specified in item 5 of the WDL (S001 and S044).	Appendix C
40.4	Includes the long-term trend analysis over a minimum period of three years demonstrating environmental impact.	Section 4.7 Appendix D Excel files
40.5	Summarises all investigations undertaken in accordance with the WDL over the reporting period.	Section 4.4
40.6	Includes assessment of environmental impact.	Section 6
41	Not applicable to this report	Not included in this report
42	Not applicable to this report	Not included in this report
43	Limit exceedances occurred during unauthorised discharge events and the turbidity plume event. In each case the WWNP was offline and not discharging into the channel.	Section 4 Appendix F

2.1 Monitoring objectives

The monitoring objectives are defined in the Surface Water Monitoring Plan (SWMP GPM-EHS-077) and the Marine Health Monitoring Program (MHMP APM-EHS-039).

This report aims to:

- Demonstrate compliance with the monitoring and reporting requirements outlined within the Licence;
- Detail sampling methodology over the reporting period, including deviations from the SWMP (GPM- EHS-077) and MHMP (APM-EHS-039);
- Summarise and interpret data trends for the reporting period;
- Demonstrate no deterioration of marine ecosystem health, as a result of authorised discharge(s);
- Assess environmental impact associated with authorised discharge(s); and
- Suggest changes to improve efficiency in sampling and/or in the SWMP.

2.1.1 Reporting Requirements

This report has been prepared in accordance with the requirements of the Northern Territory Environmental Protection Authority (NT EPA) document "*Guideline for Reporting on Environmental Monitoring*" (NT EPA 2016), which are summarised in Table 2-2.

Table 2-2. NT EPA (2016) Reporting Requirements.

Monitoring Report Requirements	Report Section
Title page	Title page
Executive summary	Executive Summary
Monitoring objective	Section 2.1
Monitoring method	Section 3
Monitoring results – presentation	Appendix C (Table 1 to Table 5)
Monitoring results – quality assurance and quality control (QA/QC) evaluation	Appendix A
Discussion and interpretation of results	Section 4.4
Conclusion and proposed actions	Section 6
Certification	Title page
Abbreviations	Abbreviations
References	Section 7
Appendices	Appendix A to Appendix G

3 MONITORING METHODS

3.1 Surface Water Monitoring

Gove Operations manages three primary operational domains within the Gove mining leases: the Mine, the Refinery and the Residue Disposal Area (RDA) (refer Figure 1, Appendix B). The monitoring activities conducted within each of the three domains differ considerably. Each domain resides within a separate surface water catchment requiring specific surface water management strategies and priorities.

Authorised discharge of treated wastewater from the Refinery to the marine receiving environment (Gove Harbour) is governed by conditions outlined in the Licence. The nominated Authorised Discharge Points are sites S001 and S044 (Section 3.2.1 and Figure 2, Appendix B). Site S001 is co-located with Authorised Monitoring Point S074.

The Licence requires monitoring of surface water quality at each Authorised Discharge Point (Section 3.2.1). The Licence additionally identifies a series of marine monitoring points for marine surface water quality (Section 5 and Appendix E).

Surface water management plans and priorities are continually reviewed for relevance and accuracy, in consultation with the Department of Lands, Planning and Environment and the NT EPA.

3.2 Monitoring sites

The Licence outlines the Authorised Discharge Points and Authorised Monitoring Points of the Refinery and marine receiving environment to be monitored.

3.2.1 Authorised Discharge Points

Table 3-1 summarises the Authorised Discharge Points defined in the Licence. Each Authorised Discharge Point has defined trigger values and limits (presented in Section 4.3). The locations of the Authorised Discharge Points and Authorised Monitoring Points / Compliance Points are shown in Figure 2, Appendix B. Further information is provided in Section 4.2.1. Monitoring results from the Authorised Discharge Points and Authorised Monitoring Points are discussed in Section 4.4.4.

Table 3-1. WDL Authorised Discharge Points

Discharge point	Description	Active Discharge
S001	Seawater Outfall Channel	Treated wastewater from the Wastewater Neutralisation Plant (WWNP) and the Sewerage Treatment Plant (STP)
S044	Refinery Light Fuel Tank Farm (LFTF) Bund (housing an oily water separator)	Treated wastewater from the Refinery LFTF Bund (stormwater contained in the bunded area)

During the reporting period Authorised Discharge Point S001 was upgraded to improve the in-built redundancy of the outfall monitoring station. The new S001 monitoring station is located at Latitude: -12.192103 Longitude: 136.684516, 20m upstream of the original station (Latitude: -12.192297 Longitude: 136.684483). As part of the upgrade, trials and assessments were undertaken to ensure monitoring new station was representative of current monitoring and discharge conditions (well mixed) in accordance with condition 28 and 29.2. There is no material change to the monitoring location or discharge conditions.

During a routine WDL compliance inspection by the Environmental Regulation Division NT EPA, on 18 December 2024, further information was provided to the division, including results of the trial period. Both the

old and new monitoring stations operated in conjunction for over 6-months, until all components were operational, and the performance of the telemetry systems and equipment for S001 and S074 and had been tested. Prior to the live cut-over on 28th October, a further intensive trial was conducted to compare both stations. Analysis included pH, EC, Turbidity, Alkalinity, TSS and metals. Results concluded that there is no significant difference between the two monitoring stations.

3.2.2 Authorised Monitoring Points

Table 3-2 summarises marine monitoring sites defined in the Licence. Sites S074 and S094 are discussed in Section 4.4.4. Compliance sites SW9, SW10 and RR2 have defined trigger values. Hydrocarbon monitoring at the compliance sites is discussed in Section 4.6. Monitoring results are summarised in Section 5.

Table 3-2. WDL Authorised Monitoring Points

Monitoring point	Area	Source and Description
SW9*	Mixing Zone Boundary	Sample site to delineate impact of authorised discharge from Refinery at sites S001 and tank farm bund release .
SW10*	Mixing Zone Boundary	Sample site to delineate impact of authorised discharge from Refinery at sites S001 and tank farm bund release.
RR2*	Mixing Zone Boundary	Sample site to delineate impact of authorised discharge from Refinery at sites S001 and tank farm bund release.
S074	Seawater Outfall Channel (Refinery)	Composite sampler at the seawater outfall channel (located in the outfall monitoring station).
S094	Public boat ramp (Refinery)	For detection of potential bacteriological impacts resulting from S001 discharge.
MB1	Mixing zone boundary test site (Refinery)	Sample site providing background marine surface water information.
MB2	Mixing zone boundary test site (Refinery)	Sample site providing background marine surface water information.
MB3	Mixing zone boundary test site (Refinery)	Sample site providing background marine surface water information.
MB4	Mixing zone boundary test site (Refinery)	Sample site providing background marine surface water information.
SW2	Arafura Sea – Off West Woody Island	Sample site providing background marine surface water information.
SW3	Gove Harbour – Off Granite Island	Sample site providing background marine surface water information.
SW4	Melville Bay – Off Dolphin Rocks	Sample site providing background marine surface water information.
SW7	Offshore Drimmie Arm	Sample site providing background marine surface water information.
SW8	Inverell Bay / Gove	Sample site providing background marine surface water information.

Monitoring point	Area	Source and Description
	Harbour	
SW11	Gove Harbour – Off Outfall	Information – in seawater discharge plume.
S098	WWNP discharge site (Refinery)	Sample site for WWNP which treats SuperNatant Liquor (SNL) pumped from the RDA. The treated discharge stream is released into the seawater channel. Sample site is located prior to discharge to the seawater channel.
S015	Sewerage Treatment Plant (STP)	Sample site for treated discharge from the sewerage treatment plant (STP) prior to discharge into seawater channel

* SW9, SW10 and RR2 are also considered to be Compliance Points under WDL171-12. As such, the Licence specifies trigger values for these locations. The remaining Monitoring Points do not have specific trigger values/limits in the WDL.

3.3 Site Rainfall Monitoring

Gove Operations currently operates five rainfall gauges around the RDA; the location of these are presented on Figure 2, Appendix B. These gauges collect rainfall measured at five-minute intervals and are accessible via an online system for real time interrogation. Rainfall data from all gauges collected over the reporting period were downloaded and assessed as average daily rainfall.

Despite their close proximity, the rainfall gauges display variable volumes of total rainfall in any given day. The average rainfall values for the 5 gauges have been calculated and are presented as average cumulative rainfall on Figure 3-1 below.

The monsoonal season or the wet season typically occurs between November until April each year. The reporting period begins at the end of the monsoonal wet season. Rainfall which occurred during April 2024 and May 2024 is reflective of the end of the 2023/24 monsoonal season; however, is included as part of the current reporting period.

For the 2024-2025 reporting period, the first significant rainfall event (>1mm) occurred on 5 April 2024 with gauges across the RDA recording an average daily rainfall of 21.5 mm. Rainfall was recorded for the following 7 days with a cumulative average rainfall of 133.4 mm. No significant event was recorded between May and November 2024 (see Figure 3-1). The first large rainfall event with the onset of the monsoonal 2024/25 wet season was recorded on 17 November.

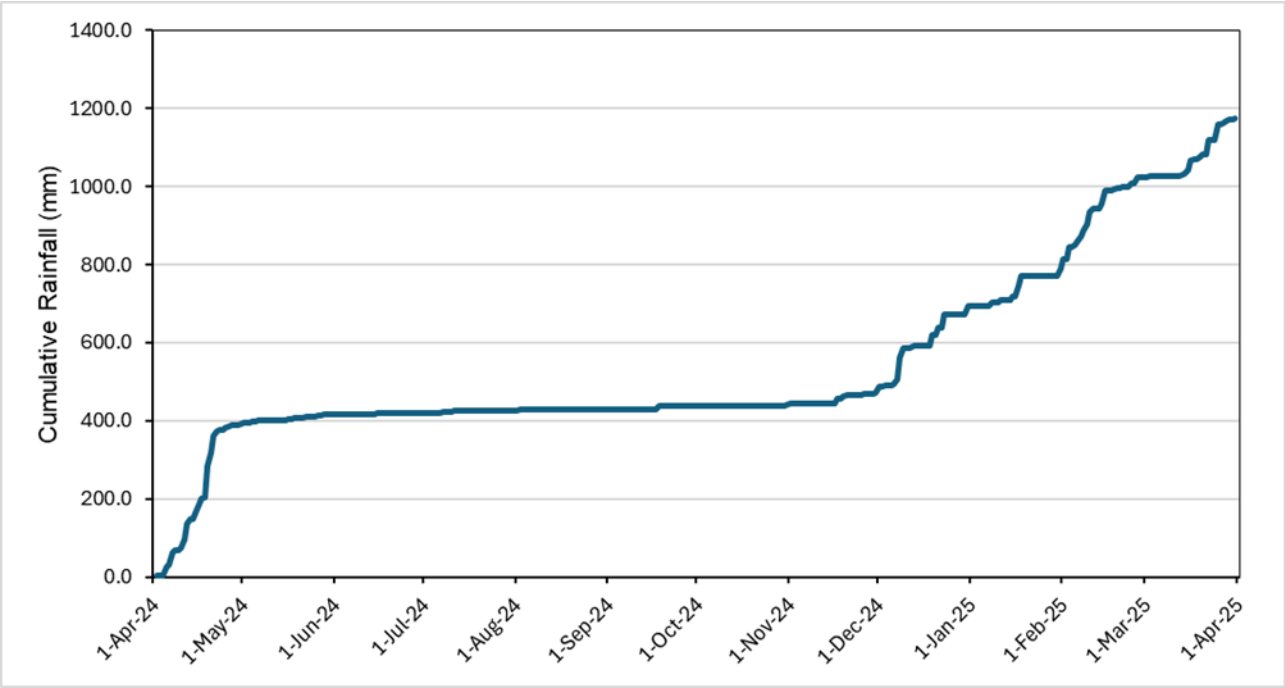
The average cumulative total rainfall for the reporting period was 1,173.7. Most of this rainfall (1,112.2 mm) occurred over 13 significant events and is summarised in Table 3-3 below.

Table 3-3. Significant Rainfall Events

Event number	Average Cumulative Total Rainfall (mm)	Period	Season
1	133.4	5 April 2024 – 12 April 2024	2023/2024 wet season
2	238.0	15 April 2024 – 26 April 2024	2023/2024 wet season
3	11.6	29 April 2024 – 5 May 2024	2023/2024 wet season
4	15.1	16 May 2024 – 2 June 2024	2024 dry season
5	19.3	17 November 2024 – 19 November 2024	2024/2025 wet season
6	116.1	1 December 2024 – 9 December 2024	2024/2025 wet season
7	79.6	17 December 2024 – 24 December 2024	2024/2025 wet season

Event number	Average Cumulative Total Rainfall (mm)	Period	Season
8	22.7	31 December 2024	2024/2025 wet season
9	15.4	8 January 2025 – 11 January 2025	2024/2025 wet season
10	59.4	15 January 2025 – 19 January 2025	2024/2025 wet season
11	220.1	31 January 2025 – 15 February 2025	2024/2025 wet season
12	34.7	18 February 2025 – 26 February 2025	2024/2025 wet season
13	146.9	11 March 2025 – 29 March 2025	2024/2025 wet season

Figure 3-1. Cumulative Average Site Daily Rainfall



4 THE REFINERY: SURFACE WATER MONITORING REVIEW

4.1 Refinery Surface Water Catchments

The Refinery has a total of 14 surface water sub-catchments that drain to the Eastern, Western and Southern Containment Ponds located within the Refinery (Figure 3, Appendix B). These ponds are designed to collect and retain surface water runoff, including any operational release of liquids, for subsequent re-processing and/or treatment. During storm events, the Containment Ponds provide a runoff surge capacity and, if required, allow contaminated surface water to be recycled to the RDA, for treatment via the WWNP, prior to discharge (under the Licence) via the Seawater Outfall Channel (S001).

The Seawater Outfall Channel is located down-gradient of the convergence of the “seawater circuit” channels (Eastern Channel and Western Channel). The seawater circuit of the Refinery comprises the main process water intake and wastewater discharge system within the Refinery Catchment, with a seawater channel discharge rate of approximately 10,500 m3/hr.

During the reporting period, the Refinery Demolition & Remediation project continued on ground activities, including Demolition, Decontamination and Disposal (DDD) of the closed refinery related infrastructure. The DDD aspects of the overall project remain on schedule for completion in 2027. During the reporting period, the project works maintained the use of the refinery surface water catchments and each of the containment ponds to manage and transfer potentially contaminated water to the RDA for future treatment. Additional surface water management and certified erosion and sediment controls are implemented within the refinery demolition project to manage bunded work fronts and erosion and sediment control from disturbed areas.

The remediation and land forming aspects of the project have commenced across the eastern side of the refinery footprint, and are scheduled to continue over of the 2025 dry season across both east and west catchments. Major milestones include the removal of the WCP, WSC (north and west) and the oily water pond (OWP). A transitional landform across the WCP catchment has been designed and is scheduled to be completed prior to the onset of the 2025-26 wet season. The Transitional Landform is necessary as the time constraints between demolition and the 2025-26 wet season would not permit a fully constructed and vegetated permanent (Interim) landform.

Two Interim landforms are scheduled to be completed prior to the onset of the 2027-28 wet season, including Interim Landform A, across the old eastern catchments, and Interim Landform B, across the western catchment. A final refinery rehabilitated landform is scheduled for completion post 2032, when the mine bauxite infrastructure is removed and remediated and WWNP operations are completed.

To date, all tanks in the Harbour Tank Farm (HTF) area have been drained of historic caustic and fuel. No further draining is possible at this stage and chances for tank leaks are highly unlikely. Tanks are also protected from rain ingress, hence reducing the likelihood of creating additional contaminated water. Residual contaminants are schedule to be removed from all tanks and cleaned during the 2025 dry season. Therefore, the risk of further contamination from the tanks is very low. The caustic bladder bund and caustic Tanks T777-3 and T777-4 are scheduled to be demolished in 2025. The HTF Tanks T777-1, T777-2, T777-11, T777-12, T777-13, T777-16 and T777-17 are to be retained for future use.

The HTF demolition, decontamination, disposal and remediation is currently part of the wider Refinery demolition scope. Prior to September 2023, stormwater from the HTF bunds was discharged in accordance with WDL171-11. Discharge points S086, S087 and S088 are no longer included in WDL171-12. RTA Gove will continue managing this area in compliance with its Environmental (Mining) Licence and the *Environmental Protection Act 2019* and the responsibilities to not cause environmental impact.

4.2 Surface Water Monitoring Plan

4.2.1 Site Sampling Locations

The following Authorised Discharge Points and associated Authorised Monitoring Points (surface water sampling locations) across the Refinery are defined in the Licence as:

- Seawater Outfall Channel (S001 – discharge, and S074 - monitoring);
- Public boat ramp (S094 - monitoring);
- Sewerage Treatment Plant (S015 - monitoring);
- Waste Water Neutralisation Plant (S098 - monitoring);
- Seawater compliance point monitoring (SW9, SW10 and RR2); and
- Light Fuel Tank Farm Bund (S044 – discharge).

The Seawater Outfall Channel (S001) is the point source of continuous discharge from the Refinery into Gove Harbour. Authorised Monitoring Point S074 is an automated, composite surface water sampler located adjacent to Authorised Discharge Point S001 and is not a discharge point. Sampling locations S074 and S094 are identified in Appendix 4, Table 3 of the Licence, the Marine Health Monitoring Program (MHMP) and Surface Water Monitoring Plan (GPM-EHS-077) are discussed in Section 4.4. Authorised Discharge Point S044 typically discharges during the wet season and cyclone events. Locations of the Authorised Discharge Points and Authorised Monitoring Points are provided in Figure 2, Appendix B.

4.2.2 Sampling Methodology and Frequency

Surface water sampling is conducted by experienced and qualified Gove Operations personnel in accordance with:

- Australian Standards / New Zealand Standards (AS/NZS) 5667.1:1998 Water Quality – Sampling, Part 1: *Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*;
- National Environment Protection Council (NEPC) (2013) *National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM)*, 1999 (amended 2013); and
- Australian and New Zealand Guidelines (2018) *for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments*, Canberra ACT, Australia.

Monitoring frequency, locations, analytical suite, trigger values and limits for the Authorised Discharge Points are detailed in the Licence. Trigger values are discussed further in Section 4.3 and summarised in Appendix G. The Water Management Plan 2024 (document ID GPM-EHS-100) is the overarching plan developed for Gove Operations across all three site domains. Standalone monitoring plans were developed for Surface water (GPM-EHS-077, 2022) the Marine environment (APM-EHS-039, 2022) and Groundwater (GPM EHS-081, 2024).

Real time continuous measurements are recorded from S001 with in situ observation of surface water conditions including debris, oil, grease, sheen and hydrocarbon odour. A daily composite sample is retrieved from site S074. Manual samples were collected for external analysis by a National Association of Testing Authorities (NATA) accredited laboratory (results presented in Appendix C) and includes chain of custody (COC) documentation, laboratory certification, analytical results and quality assurance and quality control (QA/QC) documentation. All documentation, retained by Gove Operations, is excluded from this report.

Most field parameters used for the WDL reporting derive from continuous monitoring probes (pH & Electrical Conductivity (EC)), which are calibrated on a daily basis. These calibrations are conducted by suitably qualified electrical operators/engineers. The internal lab (pH, EC, Alkalinity, Turbidity and Total Suspended Solids (TSS)) also calibrate equipment on a daily basis and calibrations are conducted by suitable qualified

laboratory chemists and technicians. When required, field parameters were recorded when taking manual samples. The equipment used to record parameters was calibrated prior to use in accordance with the manufacturer's specifications. Water quality meters were recalibrated daily in the laboratory on site prior to use by the Environment team.

Monthly monitoring for Total Petroleum Hydrocarbons (TPH), Polycyclic Aromatic Hydrocarbons (PAH) and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) is required at SW9, SW10 and RR2 when discharging from S044 (as per WDL171-12). Samples are retrieved from the marine sites when safe to do so, with some discharges occurring during monsoon conditions. Analytical results for TPH, PAH and BTEX are presented in Table 3, Appendix C and discussed in Section 4.6.

4.3 Trigger Values and Limits

Trigger Values (TVs) and Limits are provided in the Licence Appendix 2, Tables 1 and 2 (Appendix G of this report). Item 10 of Schedule 1 of the Licence states a notifiable incident is:

- An exceedance of a defined limit (at S001 or S044);
- An exceedance of a trigger value at an authorised discharge point (S001 or S044), on three consecutive sampling occasions;
- An exceedance of a trigger value at a compliance point (SW9, SW10 or RR2), on three consecutive sampling occasions;
- An exceedance of three or more times a trigger value at an authorised discharge point (S001 or S044);
- An exceedance of three or more times a trigger value at a compliance point (SW9, SW10 or RR2);
- A discharge at a point not specified in the Licence (other than S001 or S044);
- A discharge from a source not specified in the Licence; and
- A failure to comply with condition 23 of the Licence.

All analytical results for the reporting period were screened against the TVs and Limits, as summarised in Table 1 (Seawater Outfall Channel) and Table 2 (Tank Farm Bunds), Appendix C. Results exceeding the Trigger Values and Limits are discussed in Section 4.4.

4.4 Data review and interpretation

4.4.1 Discharge events

Seawater Outfall Channel Operational Flow

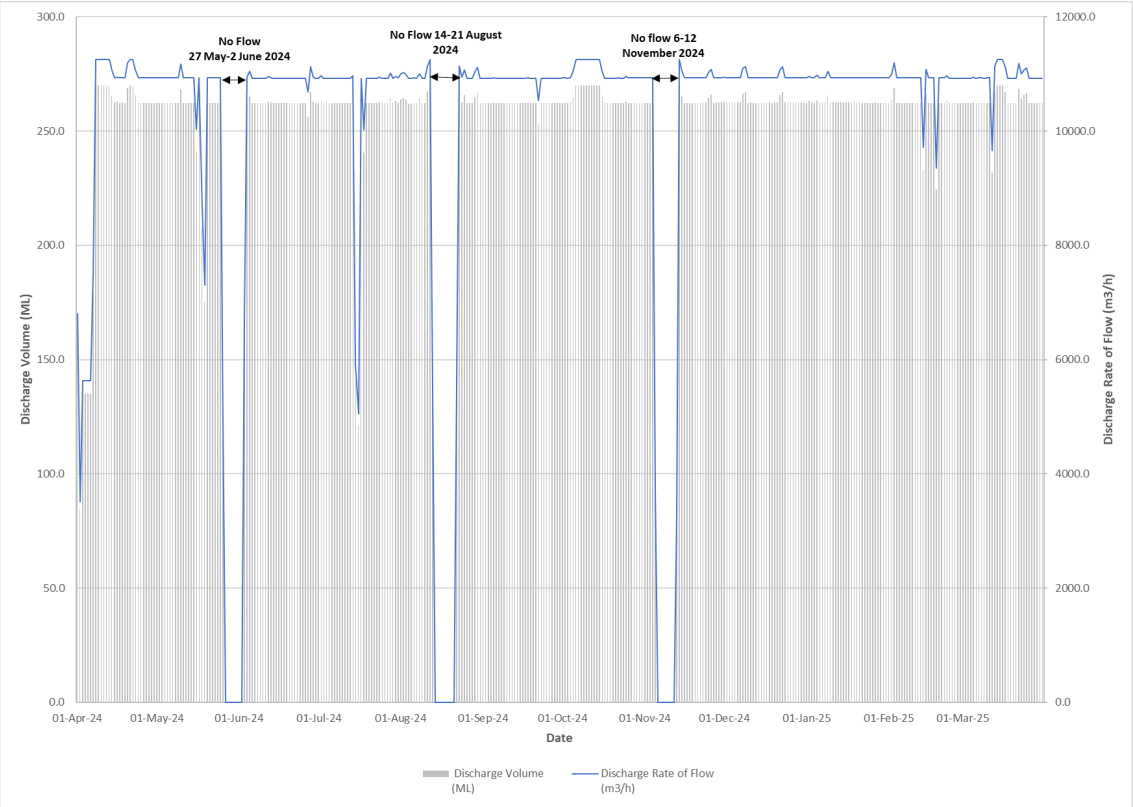
Figure 4-1 presents the discharge from the Seawater Outfall Channel and also shows the absence of channel flow and non-operational periods for the reporting period. Note, the discharge volumes reported in the 2023-2024 and 2022-2023 reporting periods were incorrect, and reported as 239,997ML/day instead of 239ML/day.

Discharge volumes from the Seawater Outfall Channel (S001) were recorded during the reporting period. The average daily discharge rate for the reporting period was 10,045 m^3/h, the average daily discharge volume was 241 ML. The Seawater Outfall Channel typically discharges continuously, except during operational maintenance and shutdowns, shown in Figure 4-1. When the WWNP is offline (i.e. not discharging neutralised supernatant liquor (NSNL)), such as during maintenance or shutdowns, monitoring at S001 and S074 is not required under the Licence. During periods such as these, S001 discharges with seawater only, to maintain flow in the seawater circuit. The seawater outfall channel was not discharging for at least part of the 24-hour period on 22 days over the reporting period, specifically:

- 27 May – 2 June 2024;

- 14 – 21 August 2024;
- 6 – 12 November 2024;

Figure 4-1. Seawater Outfall Channel Discharge Flow.



Light Fuel Tank Farm Bund

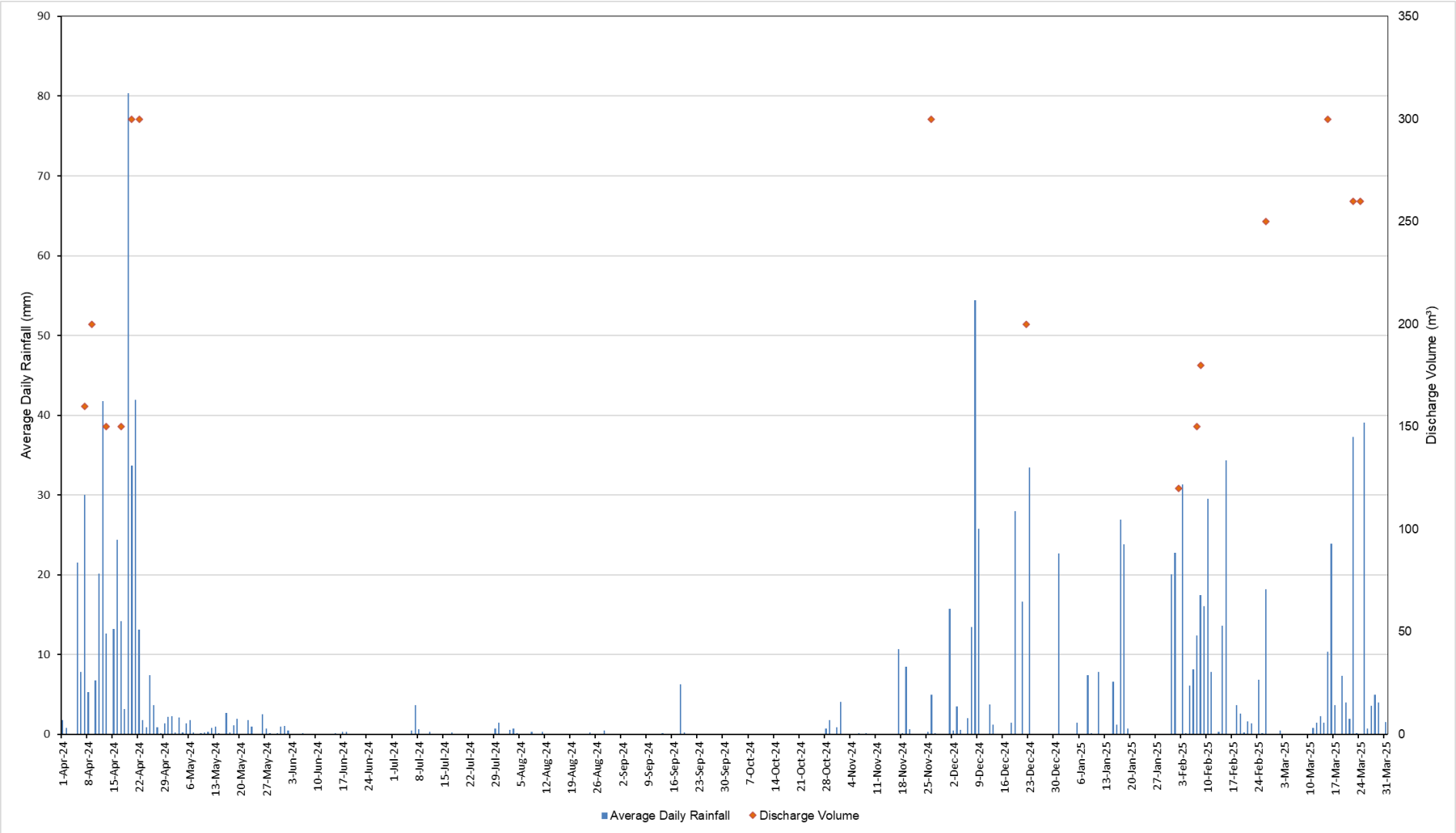
Flow rates for this reporting period are based on the duration and volumes of discharge. The discharge duration and rate of flow for S044 is shown in Table 2, Appendix C. Discharge durations ranged between 30 minutes and 5 hours during the reporting period. Discharge volumes ranged between 120 m^3 and 300 m^3 at S044.

As shown in Figure 4-2, all surface water releases coincided with rainfall events. Low average daily rainfall was recorded prior to the discharge on 26 November. However, the calculated average presented in Figure 4-2 is influenced by the high variability in rainfall between gauge station. For instance, between 17 and 26 November, 47.2 mm was recorded at one station, while only 9.8 mm was recorded at another.

Discharge events for the reporting period are summarised below.

- 7, 9, 13, 17, 20 and 22 April 2024;
- 26 November 2024;
- 22 December 2024;
- 2, 7, 8, 16, 26 February 2025;
- 15, 22, 24 March 2025.

Figure 4-2. Average Daily rainfall events and discharges from S044



Unauthorised discharge

Condition 21.1 of the Licence requires that all discharge events at each authorised discharge point must only consist of waste from sources specified in the Licence. Authorised sources are treated wastewater from the WWNP site S098 and the STP site S015 (via S001), and the Refinery LFTF Bund site S044.

Formerly, the Refinery Tank Farm Bund sites S086, S087 and S088 were also listed as Authorised Discharge sites under WDL171-11. However, Gove Operations submitted an amendment to the Licence to remove the Refinery Tank Farm Bund sites as Authorised Discharge sites which came into effect on 24 August 2023 under the newly amended licence (WDL171-12). Therefore they no longer need to be monitored under the WDL. However, the Tank Farm Bund sites are still monitored as though the same conditions from WDL-171-11 apply in order to monitor the area in line with the *Waste Management and Pollution Control Act 1998* and *Environmental Protection Act 2019*.

Eight unauthorised discharge incidents were reported as notifiable incidents occurred during the reporting period. Eight of the incidents were a direct result of heavy rainfall that led to overtopping from the Western Containment Pond (WCP).

The eight notifiable incidents occurred on 12 April 2024 (Incident 1000650986), 20 April 2024 (Incident 1000651027), 21-22 April 2024 (Incident 1000651110), 8 December 2024 (Incident 3066265228), 22 December 2024 (Incident 43180511_61246), 2 February 2025 (Incident 3667102533_65918), 22 March 2025 (Incident 3459278952_71855) and 24 March 2025 (Incident 3635805760_72045). All incident notifications are included in Appendix F.

The 2023-24 WDL close out letter, received from the DLPE Environmental Regulation Division, on 12 May 2025, File Reference; 33-D25-7260, noted close out of all reportable non-compliances against WDL171-11 and WDL171-12 from the 2023-24 reporting period.

4.4.2 Additional non-compliances

Licence non-compliances during the reporting period that were reported to the Northern Territory Government as incidents are summarised below in Table 4-1. Additional non-compliant deviations from the monitoring program that are not required to be notified to the government are also summarised below. Incident notifications and Environmental Impact Assessments for non-compliances are provided in Appendix F.

Table 4-1. Summary of non-compliances, including Incidents

Incident Number	Date	Licence Condition Non-Compliance	Description
846817585_68026	19 February 2025	Condition 21	Turbid water was released through the authorised discharge point S001, exceeding the Limit established for this parameter in Table 1, Appendix 2, of the Licence. A maximum turbidity of 575 NTU was recorded during the event, but a follow up sample (collected 24 minutes later) reported a result of 4 NTU.
1999106409_57466	25 November 2024	Schedule 1, Item 10 (h), Condition 23.1.	A small volume (<20Litres) of hydrocarbons was observed to have entered the western seawater channel following a significant rainfall event. Hydrocarbons were not detected in investigation sampling.

4.4.3 Variability and Quality Control of Dataset

A QA/QC assessment was undertaken during the reporting period. The QA/QC assessment results are presented in Appendix A. Duplicates, triplicates, rinsates and trip blanks were not collected in the reporting period.

As outlined in Section 4.2.2, all samples were collected by an experienced and qualified sampler, using laboratory supplied bottles. All field parameters were collected using a meter calibrated by a suitable laboratory chemist and technician. Samples were submitted to ALS and the Queensland Health Laboratory (E. *Coli* analysis at Water Microbiology).

The results of the QA/QC assessment identified the majority of samples collected during the reporting period exceeded the temperature on receipt; and some holding times were exceeded. This was due to air freight delays between Gove and Sydney laboratories. All samples were transported with ice blocks and were received below the Gove ambient temperatures (which typically exceeds 30°C).

Although some non-compliances in the bottles used for the collection of some samples, an assessment of the results obtained from such samples do not indicate an impact on the results obtained.

While non-conformances with the laboratory QA/QC were reported (i.e. matrix spikes recovery, holding times, frequency of quality control samples), these are not considered to adversely affect or impact the purpose of the sampling with respect to comparison against historical data and assessment criteria.

A relative percent difference (RPD) outlier was reported once during the reporting period in a laboratory duplicate sample for total aluminium, arsenic, chromium, molybdenum, vanadium, and iron (see Laboratory Report Number ES2427077 in Appendix A). The results obtained, along with available historical data, were used to assess the impact of this outlier, which indicates a lower precision in the analytical process conducted. Based on this assessment, it is concluded that the outlier does not affect the interpretation of the results, as the reported concentrations were consistent with historically recorded levels at the sample site (S098), and most metals were below the laboratory limit of reporting.

Overall, the results of the QA/QC assessment, when considered with the previous analytical results, indicate the data is suitable for use and interpretation for the reporting period.

4.4.4 Surface Water Analytical Results

The following sections summarise monitoring analytical results for the Seawater Outfall Channel sites (S001, S074, and S015), upstream of the Seawater Outfall Channel (S098), Tank Farm bund monitoring sites (S044) and marine compliance monitoring points (SW9, SW10, RR2 and S094) reported by the external laboratory.

Field measured water quality and laboratory analytical results for the reporting period are summarised in Appendix C:

- Table 1: Surface Water Analytical Results – Seawater Outfall Channel sites S001, S074 and S094;
- Table 2: Surface Water Analytical Results – Tank Farm Bund Release Sampling sites S044;
- Table 3: Marine Mixing Zone Compliance Points sites RR2, SW9, SW10; and
- Table 4: Surface Water Analytical Results – Discharge Load Monitoring sites S001, S098, S015 and S044.

Continuous and daily monitoring results were measured in the field and/or analysed by the internal on-site laboratory, are discussed in the subsections below.

Seawater Outfall Channel – WDL Samples

The seawater circuit comprises the main process water intake and wastewater discharge system within the Refinery and has several monitoring points, with site S001, the Seawater Outfall Channel, the only point with associated limits and TVs defined in the Licence. The Seawater Outfall Channel is located between the eastern LFTF and the western HTF, down-gradient of the convergence of the seawater circuit Eastern and Western Channels (Figure 3, Appendix B). The Seawater Outfall Channel discharges to the south into inner Gove Harbour, governed by the Licence. The STP and the WWNP discharge into the seawater circuit, and subsequently via the Seawater Outfall Channel.

Surface water quality is monitored from collected grab samples (S001), continuous monitoring at least hourly for pH and EC, and a 24-hour composite sample via an automated sampler that collects 50 mL of water every 20 minutes (S074). Bacterial parameters are analysed from Monitoring Point S094.

Table 1, Appendix C compares analytical results for S001 against relevant TVs and Limits defined in the Licence. Results for S074 are included; however, screening criteria are not applicable under the Licence.

All parameters were measured in compliance with the frequency established in the Licence. Samples were collected on 20 May 2024, but these were not analysed by the laboratory. A follow up sample was taken as soon as possible on 04 June 2024 following a shutdown of the Seawater Outfall Channel for planned maintenance.

All analytical results for the surface water samples collected at S001 were below the relevant TVs and Limits defined in the Licence during the reporting period.

Seawater Outfall Channel – Daily and Continuous Monitoring

S001 - pH and EC

Daily and continuous monitoring at S001 are defined in the Licence conditions. Continuous measurements for EC and pH are collected every 30 seconds using a data logger. Daily average pH and EC for the reporting period are presented in Figure 4-3 and Figure 4-4 identifying absence of flow when continuous monitoring was not recorded.

Average daily pH ranged between 7.90 and 8.86, with an overall average of 8.49. No exceedances of the pH TV of 9.0 or Limit of 9.5 were recorded.

Average daily EC fluctuated between 41.92 mS/cm and 52.42 mS/cm. There is no TV or Limit for EC at S001.

The low pH recorded between 5 October and 15 October 2024, and low EC observed on 5 October 2024, are consistent with a period when the WWNP was offline.

The seawater outfall discharge was absent for a total of 22 days (Section 4.4.1).

Figure 4-3. Daily Average pH at S001.

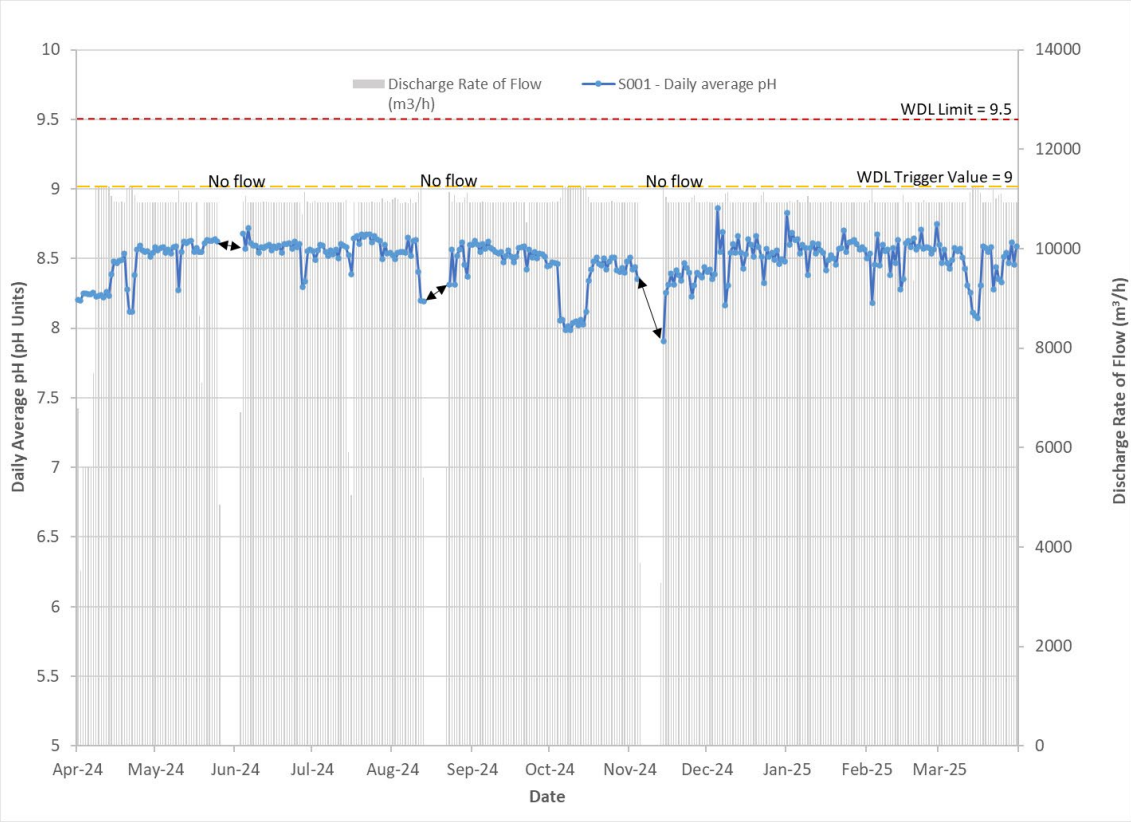
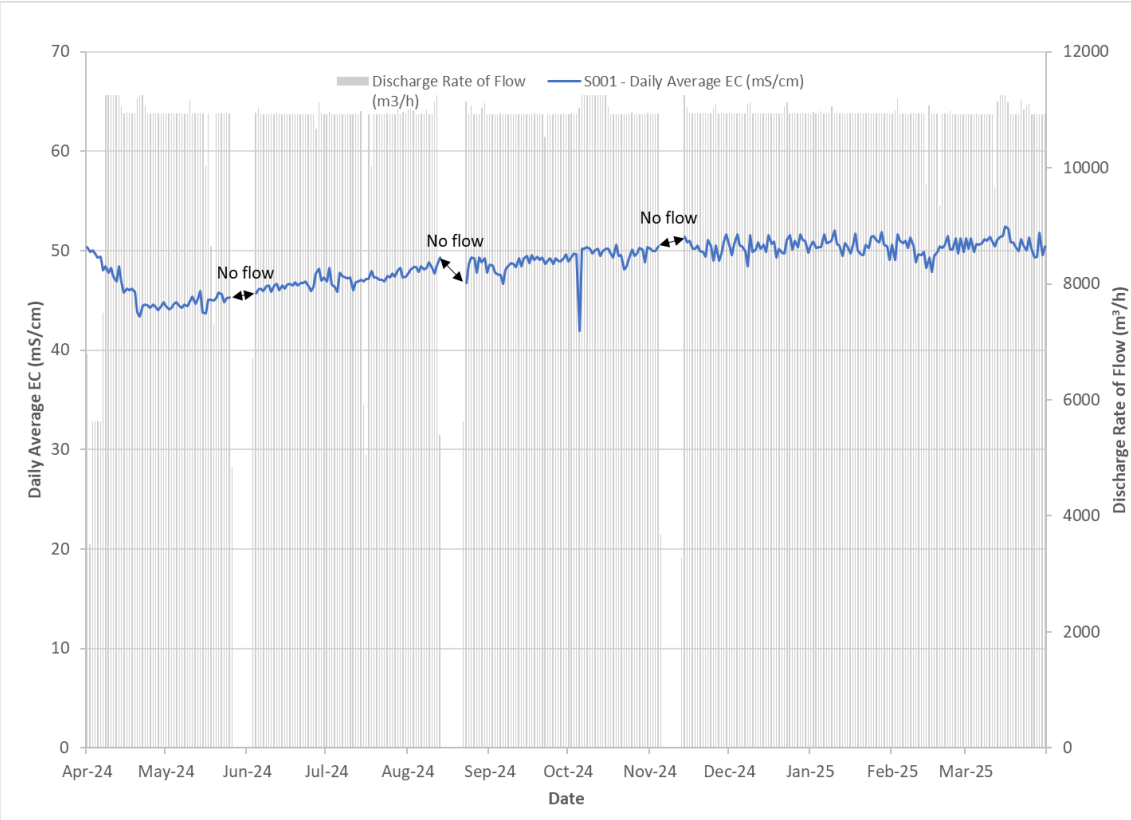


Figure 4-4. Daily Average EC at S001.



S001 – Turbidity and Alkalinity at S001

The Licence conditions include daily monitoring for turbidity and alkalinity at S001 (Figure 4-5 and Figure 4-6, respectively). Turbidity has associated TVs of 20 NTU during dry conditions and 75 NTU during rain events, and a Limit of 100 NTU. During the reporting period:

- Daily turbidity data was recorded during seawater channel operation. Turbidity ranged between 1.31 NTU and 101.16 NTU (Figure 4-5). Turbidity was measured above the TV for wet conditions on two occasions. The first exceedance was recorded on 25 November 2024, with a concentration of 75.35 NTU. This exceedance is not considered a notifiable incident, as the turbidity was less than three times the trigger value and decreased to 7.82 NTU the following day.

  The second exceedance was recorded on 2 February 2025, when a concentration of 101.16 NTU was reported at S001. This concentration was above the TV and Limit established for turbidity. The exceedance was caused by the overflow of the WCP into the Seawater Channel, as reported in Incident 3667102533_65918 (see Appendix F).

- Daily alkalinity ranged between 104.9 mg/L and 411.1 mg/L during the reporting period. Results reported within the reporting period are presented in Figure 4-6.The low concentrations recorded in the reporting period (<150 mg/L) were generally consistent with periods of little to no discharge recorded at S098 (see Figure 4-13).

Figure 4-5. Daily Turbidity at S001.

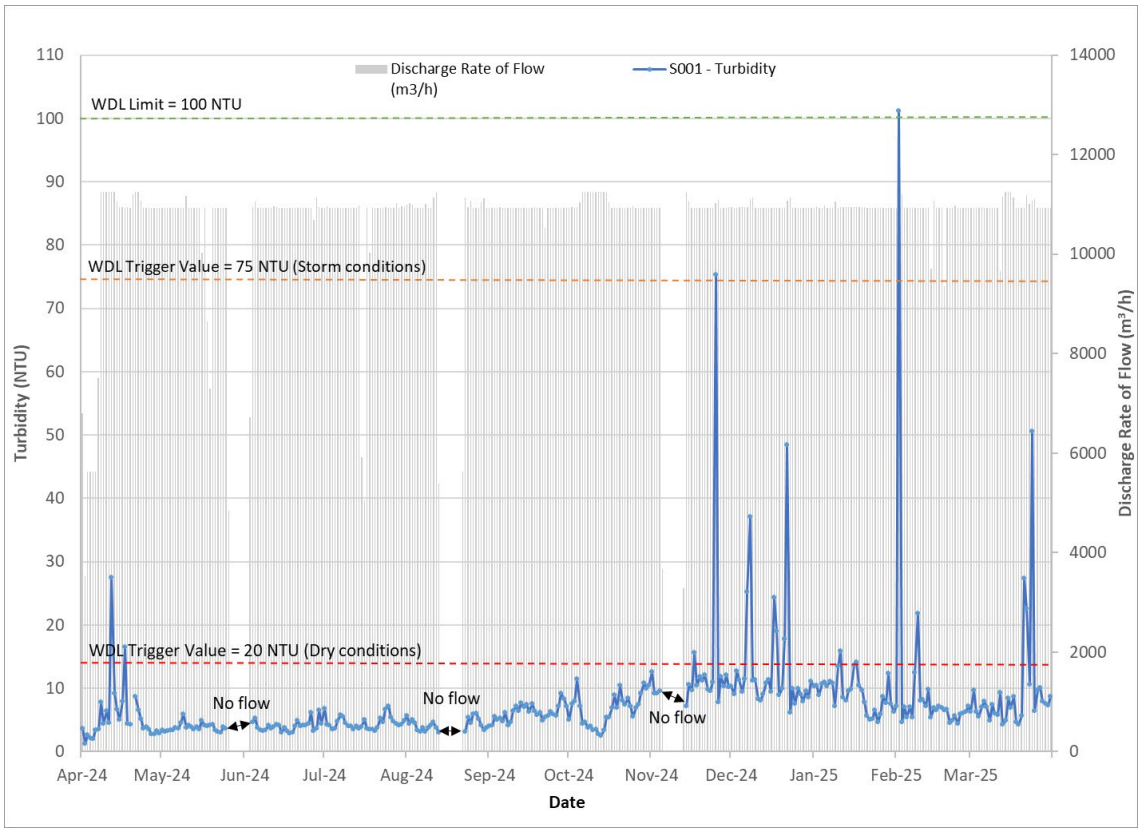
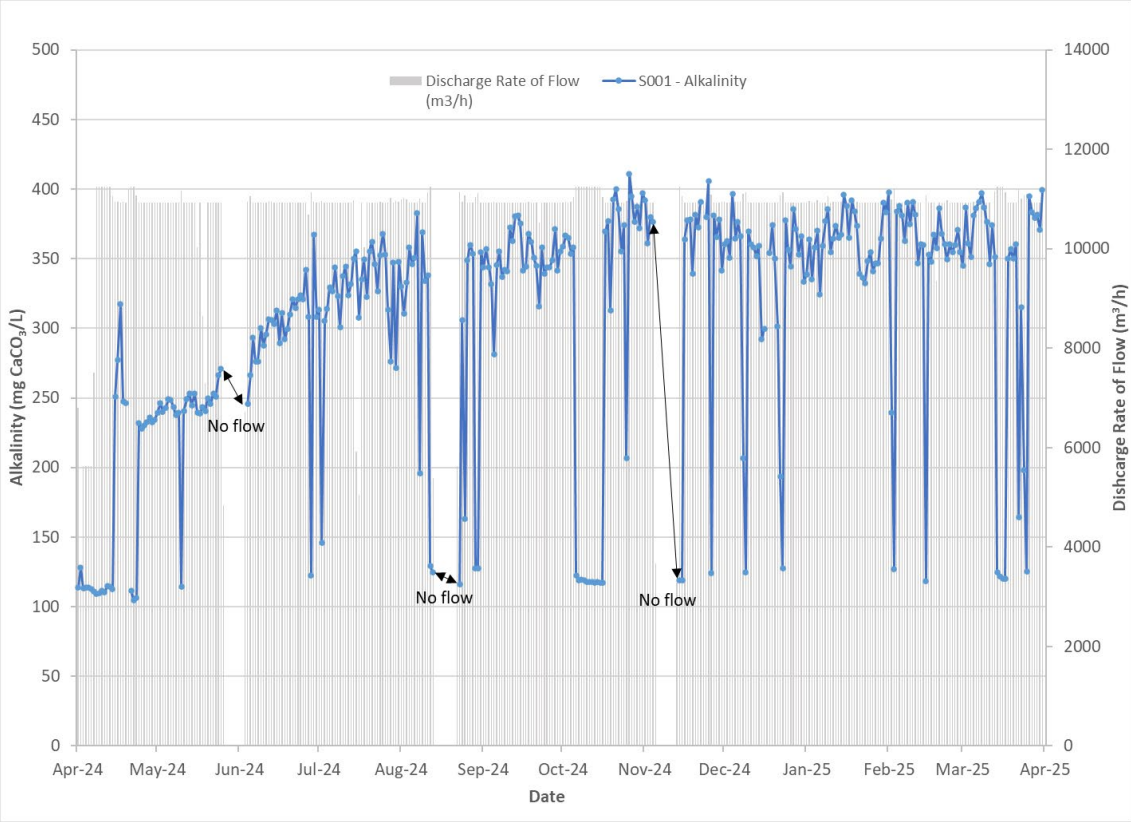


Figure 4-6. Daily Alkalinity at S001.



S074 - Daily Monitoring of pH, EC, TSS, Alkalinity and Turbidity

The Licence conditions require daily monitoring of pH, EC, turbidity, alkalinity and TSS at S074. Site S074 is located next to Site S001 in the Seawater Outfall Channel and is an automatic water sampler which collects a 50 mL sample every 20 minutes recording a composite sample every 24 hours. Composite samples are a comprehensive representation of discharge quality into the receiving environment, providing weighted average results. Where grab samples provide a point in time, a composite sample shows concentration across the entire 24 hours.

Composite samples are relevant to TVs and Limits enabling assessment of potential environmental impact. Data for S074 is presented in Figure 4-7 to Figure 4-11.

During the reporting period:

- pH ranged between 8.22 and 8.95 (Figure 4-7).
- EC ranged between 39.2 mS/cm and 50.9 mS/cm (Figure 4-8)
- Alkalinity varied between 98.5 mg/L and 359.5 mg/L (Figure 4-9);
- TSS typically ranged between 1.2 mg/L and 207.3 mg/L (Figure 4-10).; and
- Turbidity varied between 1.0 NTU and 37.5 NTU (Figure 4-11)

There is a minor, but noticeable, step change in pH and Alkalinity recorded at S074 from 28 October 2024 when the new S001 monitoring station cut over commenced. After further assessment it was determined that improvements and efficiencies in the new station, such as shorter pumping distance from the channel to the continuous monitoring trough, and improved maintenance regimes are the most likely cause. There is no observed step changes from the S001 monitoring data when the cut over commenced.

Figure 4-7. Daily pH at S074.

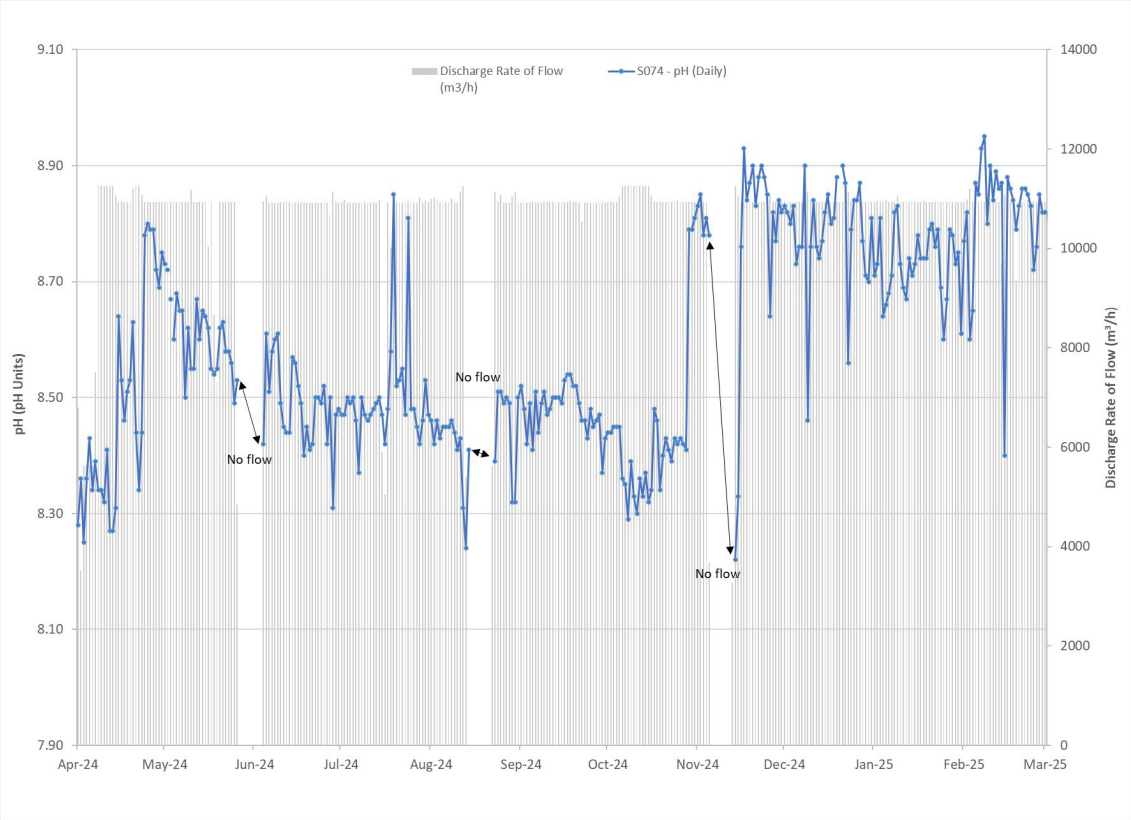


Figure 4-8. Daily EC at S074.

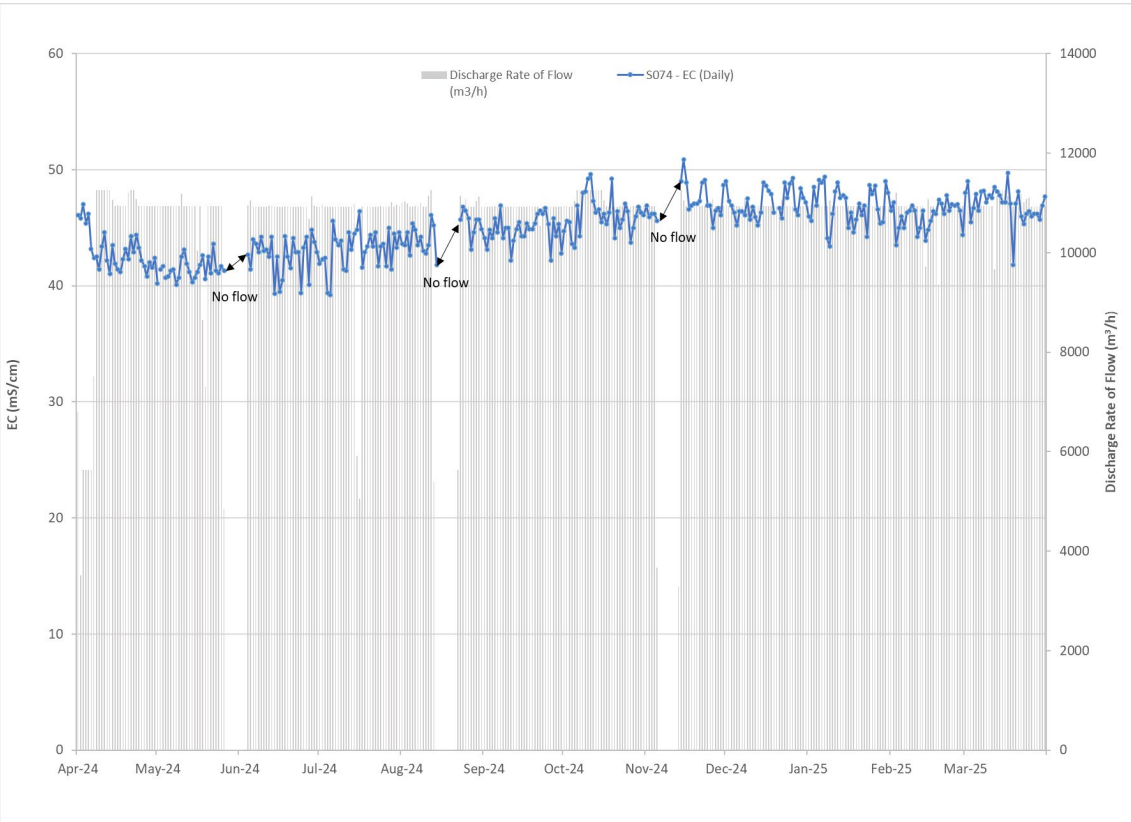


Figure 4-9. Daily Alkalinity at S074.

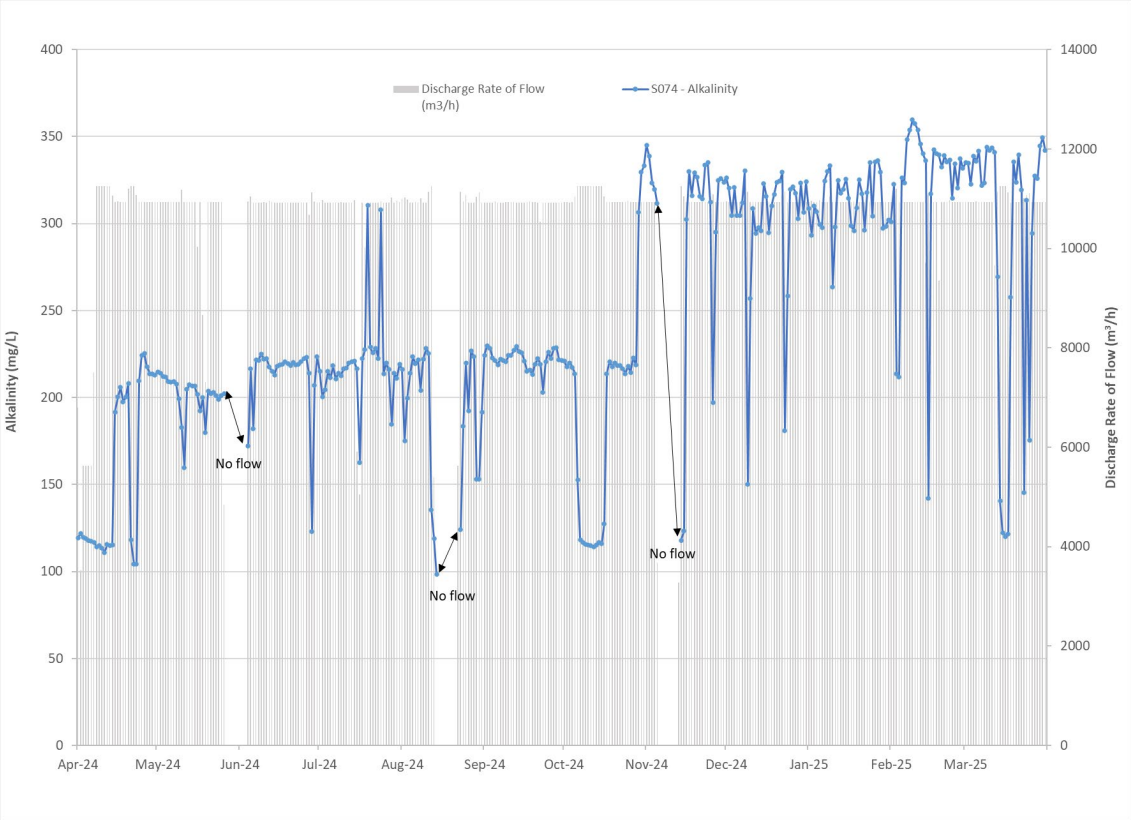


Figure 4-10. Daily TSS at S074.

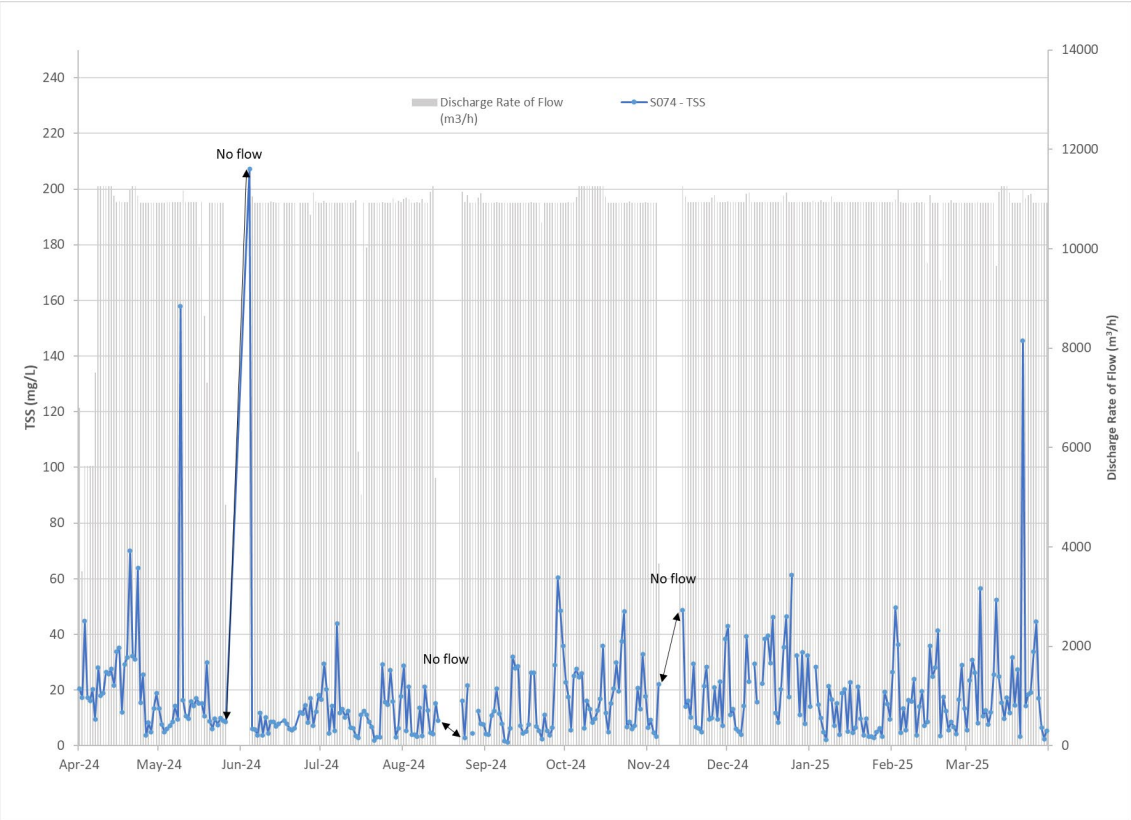
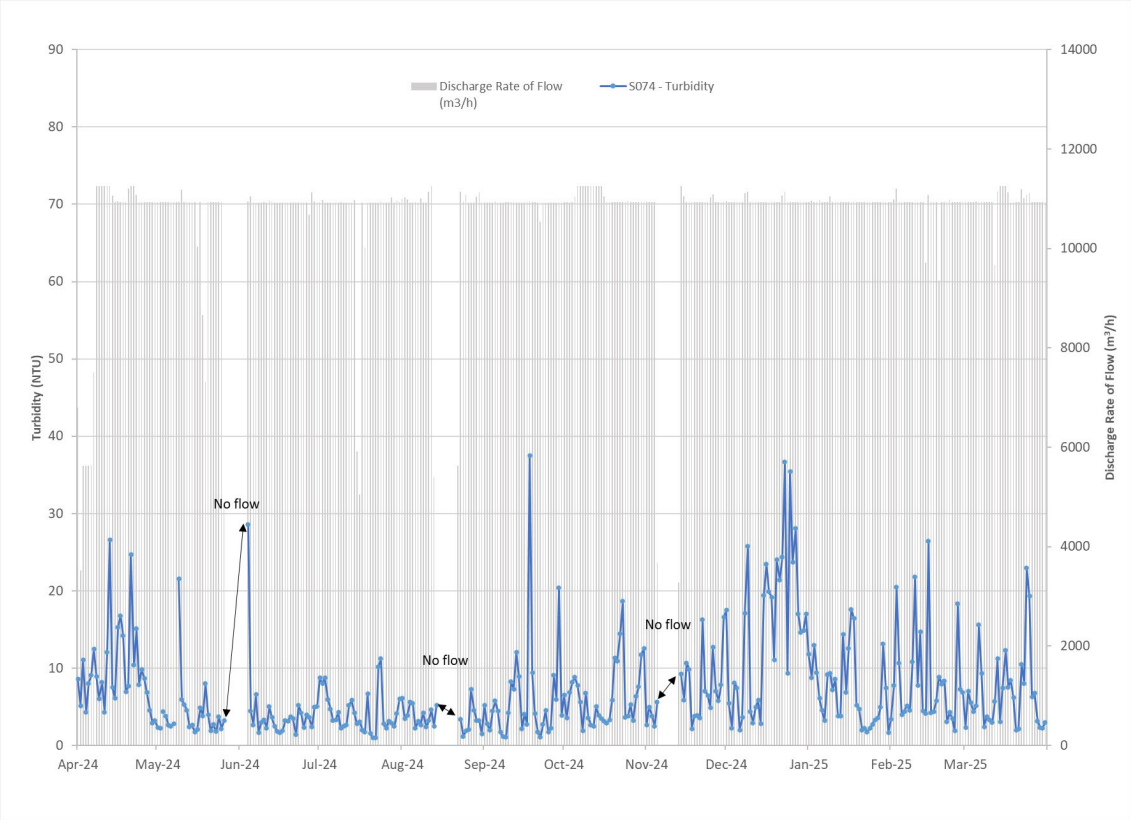


Figure 4-11. Daily Turbidity at S074.



Tank Farm bund Release (S044)

The Licence conditions require daily surface water field pH measurements from S044 during discharge events. pH levels range from 7.44 to 8.75, below the pH TV or Limit. A pH of 9.11 was recorded on 16 February 2024; however, no discharge occurred until criteria was met.

Authorised Licence discharge point at the Light Fuel Tank Farm (S044) was monitored for TPH C10-C36 (Total) as a requirement of the Licence (results presented in Table 2, Appendix C). Weekly TPH sampling and analysis at S044, during discharge events was completed within the required frequency, summarised in Section 4.4.1 and Table 2, Appendix C.

During the reporting period, no exceedance of the Licence Limit of 600 µg/L for TPH C10-C36 (Total) or the TV of 100 µg/L was observed at S044. All results for this parameter were less than the laboratory limit of reporting (LOR; 50 µg/L), as shown in Table 2, Appendix C.

Bacteriological (Enterococci) Monitoring (S001 and S094)

The monitoring location S094 located at the boat ramp and areas associated with seawater channel discharges into Gove Harbour are accessed by members of the public for recreational activities. This area is required to be monitored for potential bacteriological impacts caused from treated discharge released from the Refinery STP via authorised site S015 (via S001) into the seawater channel.

Analysis of Enterococci at site S094 provides direct monitoring for seawater contamination in the receiving environment. Monitoring is also required at S001 under WDL171-12. Analytical results were provided as most-probable number (MPN) per 100 mL for monthly sampling (Table 1, Appendix C). The action level for S094 is 35 Colony Forming Units (CFU)/100 mL.

An exceedance will trigger weekly responsive sampling at S094. Similarly, if results at S001 exceed 35 CFU/100 mL, responsive sampling is required until concentrations at S094 are less than 35 CFU/100 mL. The analytical results presented as MPN/100 mL are assumed to be equivalent to CFU/100 mL.

Monthly monitoring for enterococci was conducted at S001 and S094, as per item 11(c) of the WDL. Samples collected during the reporting period were generally less than the LOR (10 MPN/100 mL) or were less than 35 CFU/100 mL. Two results were observed during the monitoring period that triggered responsive sampling:

- A sample retrieved on 16 September 2024 at 8:50 am at S094 reported a concentration of 189 MPN/100 mL. This concentration exceeded 35 CFU/100 mL, triggering responsive sampling. The subsequent sample collected at 8:00 am on 24 September 2024 had an observed concentration of 10 MPN/100 mL, ceasing responsive sampling.
- A sample retrieved on 11 February 2025 at 8:48 am at S094 reported a concentration of 93 MPN/100 mL. This concentration exceeded 35 CFU/100 mL, triggering responsive sampling. The subsequent sample collected from S094 at 6:45 am on 18 February 2025 had an observed concentration of <10 MPN/100 mL, ceasing responsive sampling.

The observed exceedances were single occurrences. No environmental harm was observed or human health risk is expected, and no further action was required.

Discharge Load Monitoring (S001, S098, S015, S044)

Condition 22 under the Licence requires a flow meter to be installed for each authorised discharge point (S001 and S098), as well as from the LFTF (S044) and the STP (S015) to measure:

- time discharge commenced and the duration of discharge;
- discharge rate of flow; and
- discharge volume.

Treated water from the STP is routinely redirected to irrigate a rehabilitation area nearby and on occasions (usually during wet season) treated water is discharged into the channel as per the authorised sources of waste. In the reporting period, all wastewater from the sewerage treatment plant was redirected and used for irrigation of a rehabilitation area inside the refinery. As such, no discharge data are available for this site, although water quality monitoring was conducted as per Item 11(d) of the WDL171-12.

Current flow data for S098 is calculated based on discharge volume. The discharge flow rates and volumes for each of S001, S098 and S044 are presented in Figure 4-12, Figure 4-13 to Figure 4-14 (respectively).

As per Item 11(d) of the WDL171-12, weekly total phosphorus and total nitrogen loads are calculated for site S001 and S015. Selected metal(loid) loads are calculated for site S001 and S098, and weekly TPH loads are calculated for S044 when discharging. Calculations are determined from daily discharge volume and concentration when discharging at S001 and weekly discharge volume and concentration at site S044 when it is actively discharging, as summarised in Table 5, Appendix C. As requested in WDL171-12, on the days when a sample was not taken, the concentration of the contaminant was estimated using Linear Interpolation methodology, to calculate the monthly and annual contaminant load.

All water quality data for S001, S098, S015 and S044 in the reporting period is included in Table 4, Appendix C

Figure 4-12. Daily Discharge / Flow Rate at S001

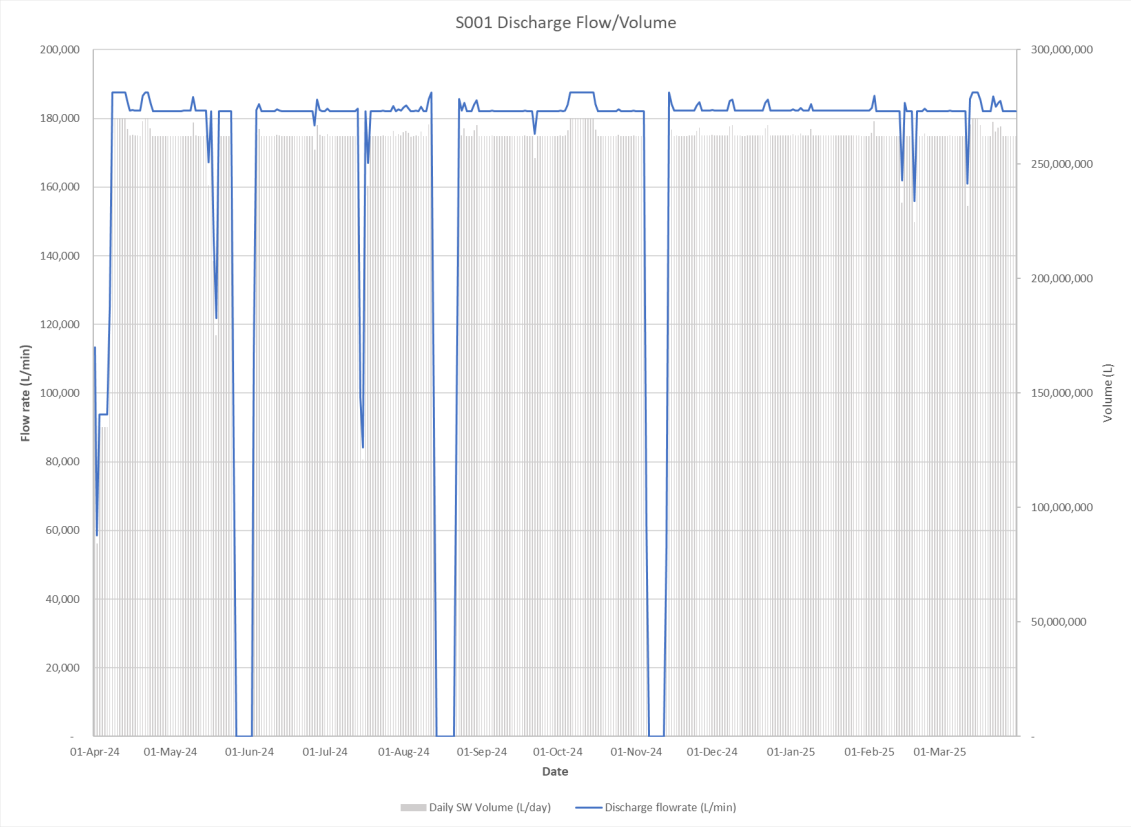


Figure 4-13. Daily Discharge / Flow Rate at S098.

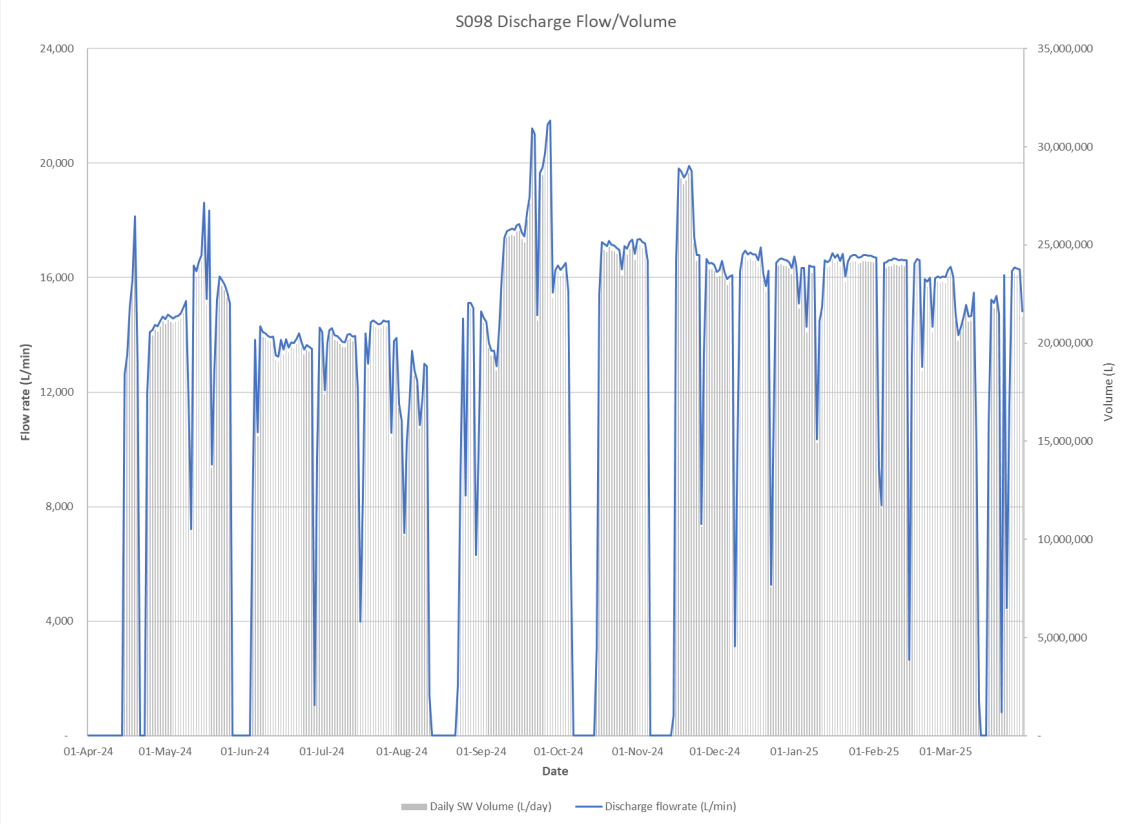
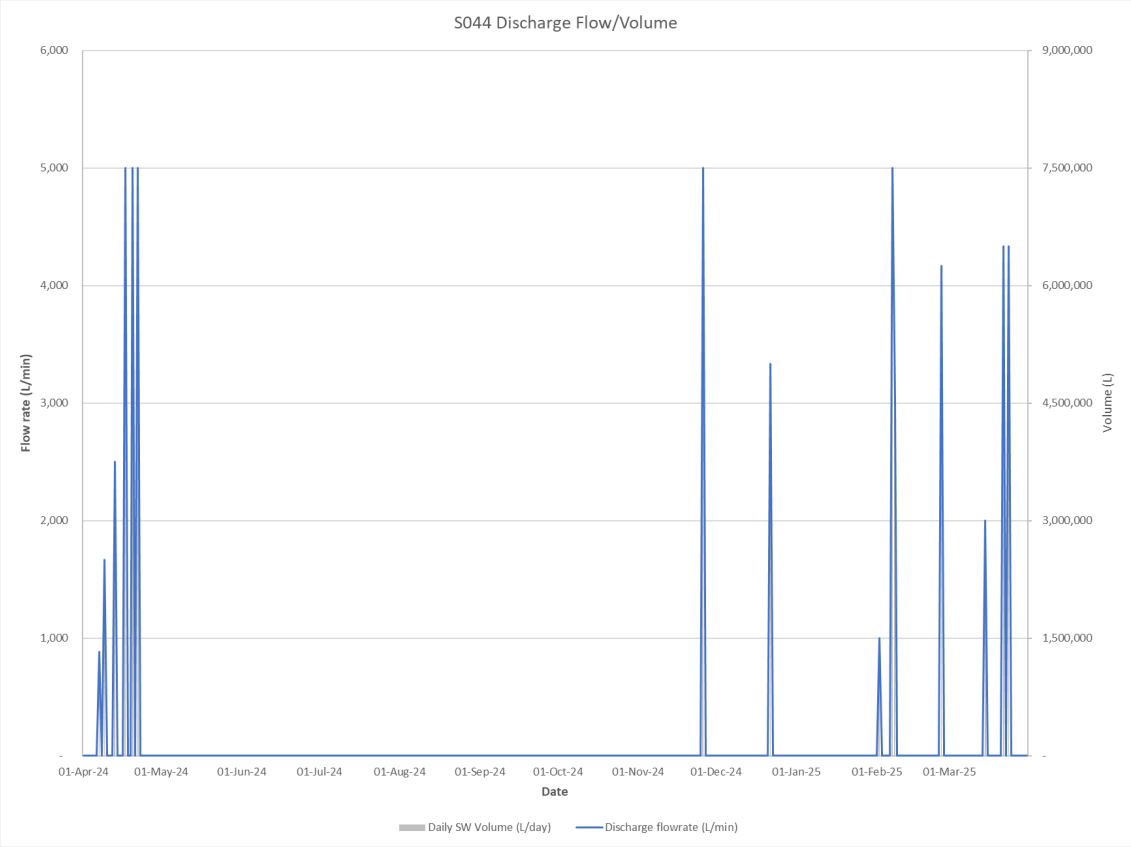


Figure 4-14. Daily Discharge / Flow Rate at S044.



4.5 Field Observations

Debris, oil, grease, sheen, or hydrocarbon odour at site S001 was not observed during the reporting period. Slightly turbid water was reported on 15 November 2024. On 25 March 2025, the water appeared murky white. On both occasions, turbidity remained below the TV for the site.

4.6 Mixing Zone Compliance Point Monitoring (SW9, SW10, RR2)

Sites SW9, SW10 and RR2, located in the mixing zone boundary, are monitored monthly for hydrocarbons when S044, is discharging. Results for TPH, BTEX and PAH at SW9, SW10 and RR2 were less than the laboratory LORs, presented in Table 3, Appendix C.

Additional monthly monitoring of compliance locations SW9, SW10 and RR2 is discussed in the MHMR and is summarised in Section 5.

4.7 Long Term Trend Analysis

Long-term trends in surface water concentrations from 2013 to 2024 are presented in Appendix D for:

- Site S001 showing pH, EC, turbidity, alkalinity, TSS, aluminium, arsenic, gallium, molybdenum and vanadium.
- Site S074 for pH, EC, turbidity, alkalinity, TSS, aluminium, arsenic, chromium, gallium, manganese, molybdenum, vanadium and zinc.
- Sites S044 for pH and TPH.

- Site S094 for Enterococcus.

Results use external laboratory data and in situ pH and EC data.

4.7.1 Seawater Outfall Channel (S001)

Key observations for S001 are:

- pH has historically varied mostly between 7.5 and 9, with a historically low pH of 6.95 in January 2024.
- EC has remained relatively stable since March 2016, varying mostly between 40,000 µS/cm and 60,000 µS/cm. Concentrations below this threshold were recorded on 23 March 2015 (2,230 µS/cm), 17 December 2018 (20,000 µS/cm), 11 January 2024 (30,500 µS/cm) and 15 January 2024 (35,280).
- Turbidity has historically mostly varied between <1 NTU and 10 NTU. In the reporting period, concentrations ranging between 15 NTU and 20 NTU were recorded in the wet season but were below the adopted criteria.
- Alkalinity has remained generally stable ranging between 100 mg/L and 300 mg/L, with lower values between 2018 and mid-2020, and a high concentration recorded on 10 July 2024 (447 mg/L). From 2014 to 2018, alkalinity concentrations declined from values of up to 400-500 mg/L. Due to available historical data, Bicarbonate Alkalinity is used in place of Total Alkalinity, where bicarbonate is the dominant species for the pH range reported.
- TSS has been stable ranging between <5 mg/L and 81 mg/L from March 2016, noting data gaps for 2017 and 2018.
- Dissolved aluminium and vanadium concentrations were typically below the Licence limit, varying between 2 µg/L and 100 µg/L since 2019.
- Historically, dissolved arsenic concentrations have mostly remained below 20 µg/L, although some spikes in concentration were reported in February 2018, December 2018 and May 2022.
- Dissolved molybdenum concentrations have historically oscillated between 9 and 47 µg/L since 2019.
- Concentrations of dissolved gallium have been below 22 µg/L since January 2019.
- Dissolved vanadium has remained below the Limit

4.7.2 Seawater Outfall Channel (S074)

- Since December 2018, pH has generally ranged between 8.0 and 8.5. A lower pH of 7.39 was recorded on 10 April 2024; however, levels returned to this typical range during subsequent monitoring rounds.
- EC has typically fluctuated between 40,000 µS/cm and 55,000 µS/cm.
- Since October 2020, alkalinity levels have ranged from 100 mg/L to 300 mg/L.
- Turbidity levels have commonly fluctuated since March 2021, typically ranging between 0.8 NTU and 10 NTU. The highest concentrations since 2014 were observed in the 2024-25 wet season.
- Since 2014, TSS values have fluctuated between <5 mg/L and 36 mg/L, with the highest value (66 mg/L) measured in 2013.
- Total dissolved aluminium concentrations have decreased since January 2020, remaining relatively stable from September 2020, with occasional spikes.
- Total dissolved molybdenum concentrations have decreased since January 2018, fluctuating between 10 mg/L and 39.5 mg/L since April 2020.
- Concentrations of dissolved arsenic and vanadium have decreased since January 2018. Periodic spikes and greater fluctuations are observed since October 2021 for arsenic, typically around the wet season. These spikes were within the historical range.

4.7.3 Tank Farm Bund Release (S044)

Key observations for Tank Farm Bunds surface water samples are:

- pH at S044 has historically fluctuated between 7.0 and 9.0. The pH level of 9.11 recorded on 16 February 2025 is excluded from the figure presented in Appendix D given that no discharge occurred.
- TPH concentrations have been reported below laboratory LOR since December 2016.

4.7.4 The Boat Ramp (S094)

Key observations for enterococci concentrations at site S094 are that concentrations have been reported below the laboratory LOR or TV, with periodic spikes and fluctuations observed. Spikes that are not repeated in responsive sampling do not represent prolonged elevated concentrations and no environmental harm or human health risk is expected is expected.

During the current reporting period, concentrations of 189 and 93 MPN/100 mL were reported on 16 September 2024 and 11 February 2025, respectively, as discussed in Section 4.4.4. Results from subsequent responsive sampling were below 35 MPN/100 mL.

4.8 Complaints Log

A complaint was received by the Environment Regulation Department via phone call on the 19 February 2025 in relation to the release of turbid water through the authorised discharge point S001. Initial notification had already been raised with the Department, and incident investigation was in process; Incident 846817585_68026. The complaint received by the Environmental Regulation Department was acknowledged in incident 846817585_68026.

5 MARINE

The 20th report on Marine Health Monitoring Program (MHMP) for the Southern Melville Bay was prepared by Rio Tinto Gove – Routine Surveillance Monitoring Program – Receiving Environment Quality Survey.

The report provides new data for seawater, sediment and oysters for the period 1 April 2024 – 31 March 2025, (Appendix E).

5.1 Seawater Monitoring

- Monthly data for the WDL171-12 compliance sites along the mixing zone boundary in Inner Gove Harbour showed that most parameters monitored were below the Trigger Values specified by the Waste Discharge Licence. The exceptions were Total Dissolved Nitrogen (TDN) (July 2024, January and March 2025). Concentrations of TDN following the July 2024, January and March 2025 trigger value exceedances returned to historic levels (120 – 150 µg/L), below the TV.
- Dissolved concentrations of V and associated elements (mainly aluminium, gallium and arsenic) have remained below the LOR or near background concentrations at the mixing zone boundary compliance sites in Inner Gove Harbour and at information sites in Southern Melville Bay.
- Total element concentrations at the compliance sites (unfiltered sample) were added to the MHMP in October 2020. As would be expected, total concentrations of Al and Fe substantially exceeded dissolved concentrations due to the natural occurrence in particulate matter. Total concentrations of chromium, manganese and gallium also exceeded dissolved concentrations of the same metals. In contrast, dissolved phases of vanadium, copper, zinc, arsenic, molybdenum and uranium accounted for almost all the total concentrations of these elements.
- A change in analytical laboratory for marine samples from December 2023 have resulted in higher LORs for several metals. However, LORs remain well below trigger levels for all WDL parameters.

5.2 Sediment Monitoring

The most recent sediment survey was conducted in September 2024. A change in analytical laboratory for sediment testing in 2024 resulted in significant changes in average concentrations for Al, Cu, Ga and Mo. However, all parameters monitored since 2004 were below the ANZG (2018) sediment quality guideline values where available.

5.3 Oyster Monitoring

Oyster sampling occurred in April and October 2024. A qualitative comparison of temporal variation in average compositions for each group (Granite Island, Harbour Islets, West Woody Island and Bonner Rocks) is typically biannual. Comparisons to Australia New Zealand Food Authority maximum permitted concentrations of metals in food were undertaken. The results from oyster monitoring include:

- During 2004-24 oysters from Harbour Islets, Granite Islands and West Woody Islands relatively close to the RTG Refinery had higher concentrations of aluminium, molybdenum, zinc, iron, vanadium and gallium compared to oysters from the more distant background site at Bonner Rocks.
- Oysters from Harbour Islets continue to have elevated zinc and reduced cadmium concentrations relative to oysters from other sampling sites. The reduced cadmium concentrations are likely to be related to the increased zinc concentration in Gove Harbour due to a mechanism of competitive exclusion of cadmium by zinc.

- Cadmium concentrations in oysters from Bonner Rocks, West Woody Island and occasionally Granite Islands have been above the Food Standards Australia New Zealand (FSANZ) food standard (2 mg/kg) during most of the 2004-24 monitoring period. However, this phenomenon appears to have natural causes and have been reported previously from locations across Northern Australia. Cadmium is not a chemical of concern in Gove Refinery discharges. The concentration in oysters from Harbour Islet remain lower than the other sites and below the food standard.
- Total As in oysters from all sampling sites exceeded the FSANZ maximum permitted concentrations for inorganic arsenic. However, arsenic speciation analyses carried out on samples from 2009 and 2017 showed that inorganic arsenic concentrations were below the FSANZ food standard.
- Copper concentrations across all sites exceeded the ANZFA maximum permitted limit, however the current FSANZ (2021) standard does not contain maximum permitted concentration for copper in food. Similar copper concentrations have been reported elsewhere across the Northern Australian coastline and appear to be natural concentrations.
- Lead concentrations in oysters from all sampling sites were below the FSANZ maximum permitted concentrations
- Where applicable, all other concentrations were recorded less than the FSANZ food standard.

6 CONCLUSIONS

This report is submitted by Gove Operations in compliance with Conditions 39 and 40 of Waste Discharge Licence 171-12. Key conclusions for the reporting period 1 April 2024 to 31 March 2025 are:

- Sampling of both surface water and marine environments was completed as per the Surface Water Monitoring Plan (GPM-EHS-077) and the Marine Health Monitoring Plan (APM-EHS-039), which supersede the Water Monitoring Plan (2019). No deviations from the methodology were noted during the reporting period.
- Monitoring was generally completed in compliance with the Licence. The samples collected from S001 on 20 May 2024 were not analysed by the laboratory. A follow up sample was taken as soon as possible on 04 June 2024 following a shutdown of the Seawater Outfall Channel for planned maintenance.
- Discharge volumes from the Seawater Outfall Channel (S001) were recorded during the reporting period, except during three events when discharging did not occur: 27 May- 2 June 2024, 14 - 21 August 2024 and 6 – 12 November 2024.
- The following non-compliances were reported to the Northern Territory Government:
    - Eight unauthorised untreated discharge events into the seawater channel occurred during the reporting period. Each event was reported to the DLPE as an incident. i.e. 12 April 2024 (Incident 1000650986), 20 April 2024 (Incident 1000651027), 21-22 April 2024 (Incident 1000651110), 8 December 2024 (Incident 3066265228), 22 December 2024 (Incident 43180511_61246), 2 February 2025 (Incident 3667102533_65918), 22 March 2025 (Incident 3459278952_71855) and 24 March 2025 (Incident 3635805760_72045).
    - The release of approximately <20 liters of hydrocarbons into the seawater channel on 25 November 2024 (Incident 1999106409_57466).
    - The release of turbid water through the authorised discharge point S001 on 19 February 2024 (Incident 846817585_68026).
- Analytical results for the reporting period generally complied with the Waste Discharge Licence 171-12 conditions . TVs and limits were not exceeded during the reporting period with the exception of total dissolved nitrogen trigger values at the marine compliance sites, during unauthorised discharge events and the reported turbidity plume event.
- Long term data trends and interpretation are:
    - pH, EC and TSS at S001 remained stable and similar to historical data.
- Alkalinity and turbidity at S001 remained relatively stable from the 2020/2021 reporting period. Some turbidity results in the 2024/25 wet season were above the levels commonly recorded at this site but were well below the trigger value for the wet season.
- Concentrations of dissolved aluminium, arsenic, gallium, molybdenum and vanadium were below the Licence limit and have remained relatively stable since January 2019.
    - Since December 2018, pH has generally ranged between 8.0 and 8.5. A lower pH of 7.39 was recorded on 10 April 2024; however, levels returned to this typical range during subsequent monitoring rounds.
- Alkalinity and turbidity at S074 remained stable at the lower range of the historical data set from September 2018, with increased fluctuations from October 2020. In November 2024 and January 2025, turbidity concentrations spiked to levels above those commonly recorded since 2019. However, they significantly decreased in the following months.

- Metal concentrations at S074 have decreased since January 2018, although periodic spikes and slight increasing trends (within historical range) in dissolved arsenic, molybdenum and vanadium were observed from April 2020.
- In the 2024/25 reporting period, all wastewater from the sewerage treatment plant was redirected and used for irrigation of a rehabilitation area inside the refinery. As such, no discharge data are available for S015.
- One complaint via phone call was known to have been received by the Environment Regulation Department on the 19 February 2025 in relation to the release of turbid water through the authorised discharge point S001 relating to Incident 846817585_68026. The monitoring and observations conducted confirmed the discharge incident occurred for a short period of between 30-45 minutes. Follow up marine based monitoring also confirmed the short-term nature of the incident. Overall, the data demonstrates that there was no material environmental impact expected from the event. The community compliant was also included in incident 846817585_68026 on the incident register Enablon.

Marine monitoring monthly sampling and analysis of seawater and annual sampling and analysis of sediment will continue under the Marine Health Monitoring Plan. Oyster monitoring will continue biannually. No evidence of deterioration of marine ecosystem health and no significant environmental impact is observed for the 1 April 2024 to 31 March 2025 reporting period.

7 REFERENCES

Australian/New Zealand Standards (AS/NZS) (1998) *5667.1:1998 Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.* Standards Australia, NSW.

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Rio Tinto Gove Operations (RTA Gove) (2021) *Water Management Plan (GPM-EHS-100)*, July 2021.

Rio Tinto Gove Operations (RTA Gove) (2022) Marine Health Monitoring Program, Rev 001 (APM-EHS-039), April 2022.

Rio Tinto Gove Operations (RTA Gove) (2022) *Surface Water Monitoring Plan (GPM-EHS-077)*, November 2022.

Rio Tinto Gove Operations (RTA Gove) (2023) *Groundwater Monitoring Plan* - Draft (GPM EHS-081), September 2023

Rio Tinto Gove Operations (RTA Gove) *WDL Adaptive Management Plan*, Rev Final (AMP-EHS-008)

APPENDIX A QUALITY ASSURANCE AND QUALITY CONTROL

Monitoring Round Date	Laboratory Report Number	Holding Times Met	Comment on Holding Times	Temperature Received (°C)*	Comment on Temperature	Comment on bottles used	Laboratory Duplicate RPD Acceptable	Comment on Laboratory RPDs	Matrix Spike Acceptable	Comment on Matrix Spikes	Surrogate Recovery Acceptable	Laboratory Control Spike Recoveries Acceptable	Method Blanks Acceptable	Frequency of laboratory quality control samples acceptable	Comment on frequency of laboratory quality control samples acceptable
Apr-24	ES2411561	No	• S001 analysis for pH 7 days overdue. • S001 analysis for turbidity 4 days overdue.	16.1, 17.4, 16.7	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix Spikes for dissolved metals and total metals
Apr-24	ES2411534	No	• S015 analysis for Nitrite as N 7 days overdue.	16.1, 17.4, 16.7	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Nitrite as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix Spikes for filtered total phosphorus and laboratory control samples for total Kjeldahl nitrogen
Apr-24	ES2411569	Yes	No comment	16.1, 17.4, 16.7	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Apr-24	ES2412082	No	• SW4, SW8 and SW7 analysis for Turbidity 9 days overdue. • SW2, SW3, SW9, SW10, SW11, MB1, MB2, MB3, MB4 and RR2 analysis for Turbidity 8 days overdue.	21.5, 21.0, 21.1	Ice Bricks Present	Dup 2 and RR1 bottles for total and dissolved metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Apr-24	ES2412074	Yes	No comment	21.5, 21.0, 21.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Apr-24	ES2412066	No	• S074 and S001 analysis for pH 7 days overdue. • S074 and S001 analysis for turbidity 7 days overdue.	21.5, 21.0, 21.1	Ice Bricks Present	S020B bottles for total metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH. Laboratory control samples for conductivity.
Apr-24	ES2412579	No	• S015 analysis for Nitrite as N 6 days overdue.	10.5, 11.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for total Kjeldahl nitrogen.
Apr-24	ES2412618	No	• S044 extraction for polynuclear aromatic hydrocarbons 2 days overdue. • S044 extraction for total petroleum hydrocarbons 2 days overdue. • S044 extraction for total recoverable hydrocarbons 2 days overdue.	10.5, 11.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for total Kjeldahl nitrogen.
Apr-24	ES2412573	No	• S098 analysis for pH 10 days overdue. • S098 analysis for Turbidity 2 days overdue.	10.5, 11.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Apr-24	ES2412621	No	• S001 analysis for pH 10 days overdue. • S001 analysis for Turbidity 2 days overdue.	10.5, 11.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix spikes for total and dissolved metals.
Apr-24	ES2412711	No	• S098 analysis for pH 7 days overdue.	14.3, 14.4, 13.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix spikes for total metals
Apr-24	ES2412713	Yes	No comment	14.3, 14.4, 13.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Apr-24	ES2412712	No	• S001 analysis for pH 7 days overdue.	14.3, 14.4, 13.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Apr-24	ES2413339	No	• S015 analysis for Nitrite as N 5 days overdue.	18.1, 18.2, 11.0	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Apr-24	ES2413444	Yes	No comment	17.8, 16.4, 18.2	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Apr-24	ES2414120	No	• S001 analysis for pH 7 days overdue. • S001 analysis for turbidity 4 days overdue.	16.3, 16.5 17.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Apr-24	ES2414118	No	• S015 analysis for Nitrite as N 8 days overdue.	16.3, 16.5 17.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix spikes for filtered total phosphorus as P.
Apr-24	ES2414122	No	• S098 analysis for pH 7 days overdue. • S098 analysis for turbidity 4 days overdue.	16.3, 16.5 17.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Apr-24	ES2414121	No	• S001 analysis for pH 3 days overdue.	16.3, 16.5 17.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Apr-24	ES2414123	No	• S098 analysis for pH 3 days overdue.	16.3, 16.5, 17.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
May-24	ES2415068	No	• S015 analysis for Nitrite as N 10 days overdue.	17.1, 18.1, 19.0	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
May-24	ES2415071	No	• S074, S001 and S098 analysis for pH 6 days overdue.	17.1, 18.1, 19.0	Ice Bricks Present	S020B bottles for total metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
May-24	ES2415238	No	• SW2, SW8, SW9, SW10, SW11, MB1, MB2, MB3, MB4 and RR2 analysis for turbidity 2 days overdue. • SW3, SW4 and SW7 analysis for turbidity 1 day overdue. • SW10 and RR2 analysis for dissolved major cations 1 day overdue.	18.8, 17.9, 19.4	Ice Bricks Present	SW10 and RR2 bottles for dissolved metals not compliant.	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
May-24	ES2415682	No	• S015 analysis for Nitrite as N 6 days overdue.	17.7, 19.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix spike for total Kjeldahl nitrogen.
May-24	ES2415799	No	• S001 analysis for pH 6 days overdue.	17.7, 19.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
May-24	ES2415798	No	• S098 analysis for pH 6 days overdue.	17.7, 19.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix spike for dissolved metals.
May-24	ES2416523	No	• S015 analysis for Nitrite as N 3 days overdue.	13.1, 14.6, 14.3	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Nitrite + Nitrate as N and Total Phosphorus as P	Yes	Yes	Yes	Yes	No comment
May-24	ES2418558	No	• S015 analysis for Nitrite as N 16 days overdue.	13.9, 14.8, 13.9	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike	Yes	Yes	Yes	Yes	No comment

Monitoring Round Date	Laboratory Report Number	Holding Times Met	Comment on Holding Times	Temperature Received (°C)*	Comment on Temperature	Comment on bottles used	Laboratory Duplicate RPD Acceptable	Comment on Laboratory RPDs	Matrix Spike Acceptable	Comment on Matrix Spikes	Surrogate Recovery Acceptable	Laboratory Control Spike Recoveries Acceptable	Method Blanks Acceptable	Frequency of laboratory quality control samples acceptable	Comment on frequency of laboratory quality control samples acceptable
										level." - Nitrite + Nitrate as N					
May-24	ES2418559	No	• S015 analysis for Nitrite as N 9 days overdue.	13.9, 14.8, 13.9	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Nitrite + Nitrate as N	Yes	Yes	Yes	Yes	No comment
Jun-24	ES2418546	No	• S001 analysis for pH 4 days overdue. • S001 analysis for Turbidity 2 days overdue.	13.9, 14.8, 13.9	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jun-24	ES2418542	No	• S098 analysis for pH 4 days overdue	13.9, 14.8, 13.9	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate -Matrix spikes for total metals.
Jun-24	ES2419496	No	• S015 analysis for pH 9 days overdue.	11.9, 12.0, 10.4	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for total Kjeldahl nitrogen.
Jun-24	ES2420990	Yes	• No comment	4.4	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jun-24	ES2419690	No	• S074, S001 and S098 analysis for pH 10 days overdue. • S074, S001 and S098 analysis for Turbidity 5 days overdue.	11.7, 13.4	Ice Bricks Present	S020B bottles for total metals not compliant	Yes	No comment	No	"Recovery less than lower data quality objective." - Dissolved Chromium	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH. Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity.
Jun-24	ES2419709	Yes	• No comment	11.7, 13.4	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Jun-24	ES2419721	No	• SW1, SW2, SW9, SW10, SW9, SW11, SW12, SW13, SW17, MB1, MB2, MB3, RR1, RR2 and DUP 1 analysis for Turbidity 5 days overdue. • SW3, SW4, SW5, SW6, SW7, SW8, SW14, SW15, SW16, MB4 and DUP 2 analysis for Turbidity 4 days overdue. • SW1, SW13 and RR1 analysis for Total Major Cations 1 day overdue.	11.7, 13.4	Ice Bricks Present	SW1, SW13, RR1 bottles for total metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jun-24	ES2420321	No	• S015 analysis for Nitrite as N 8 days overdue.	10.8, 12.7	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Nitrite + Nitrate as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for Nitrate as N.
Jun-24	ES2420329	No	• S098 analysis for pH 6 days overdue. • S098 analysis for turbidity 2 days overdue	10.8, 12.7	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for Total Metals.
Jun-24	ES2420309	No	• S001 analysis for pH 6 days overdue. • S001 analysis for turbidity 2 days overdue	10.8, 12.7	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jun-24	ES2421265	No	• S015 analysis for Nitrite as N 9 days overdue.	11.2, 12.4, 10.3	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen and total phosphorus. .
Jun-24	ES2421262	No	• S001 analysis for pH 8 days overdue. • S001 analysis for Turbidity 3 days overdue.	11.2, 12.4, 10.3	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Dissolved: Copper, Manganese and Zinc.	Yes	Yes	Yes	Yes	No comment
Jun-24	ES2421263	No	• S098 analysis for pH 8 days overdue. • S098 analysis for Turbidity 3 days overdue.	11.2, 12.4, 10.3	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jun-24	ES2419721	No	• SW2, SW9, SW10, SW11, MB1, MB2, MB3 and RR2 analysis for Turbidity 5 days overdue. • SW3, SW4, SW7, SW8 and MB4 analysis for Turbidity 4 days overdue.	11.7, 13.4	Ice Bricks Present	SW1, SW13, RR1 bottles for total metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jun-24	ES2421704	No	• S015 analysis for Nitrite as N 4 days overdue.	11.7, 9.6	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen and total phosphorus. .
Jul-24	ES2422067	No	• S098 analysis for pH 7 days overdue.	8.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jul-24	ES2422068	No	• S001 analysis for pH 7 days overdue.	8.8	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Total and Dissolved Manganese	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for total metals.
Jul-24	ES2422514	No	• S015 analysis for Nitrite as N 5 days overdue.	7.7	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen.
Jul-24	ES2423334	No	• S001 analysis for pH 9 days overdue. • S001 analysis for Turbidity 4 days overdue.	10.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total metals.
Jul-24	ES2423333	No	• S098 analysis for pH 9 days overdue. • S098 analysis for Turbidity 4 days overdue.	10.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for dissolved metals.
Jul-24	ES2423335	No	• S015 analysis for Nitrite as N 4 days overdue.	10.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen and total phosphorus. .
Jul-24	ES2423833	No	• S074, S098 and S001 analysis for pH 5 days overdue.	13.0, 12.2, 12.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH. Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity.
Jul-24	ES2424634	No	• S015 analysis for Nitrite as N 10 days overdue.	13.3, 11.9	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N and Nitrite as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen and total phosphorus. .
Jul-24	ES2425338	No	• S098 analysis for pH 5 days overdue.	11.5, 11.1, 10.2	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jul-24	ES2424630	No	• S098 analysis for pH 5 days overdue. • S098 analysis for turbidity 3 days overdue.	13.3, 11.9	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Arsenic, Copper, Manganese and Zinc	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for Alkalinity

Monitoring Round Date	Laboratory Report Number	Holding Times Met	Comment on Holding Times	Temperature Received (°C)*	Comment on Temperature	Comment on bottles used	Laboratory Duplicate RPD Acceptable	Comment on Laboratory RPDs	Matrix Spike Acceptable	Comment on Matrix Spikes	Surrogate Recovery Acceptable	Laboratory Control Spike Recoveries Acceptable	Method Blanks Acceptable	Frequency of laboratory quality control samples acceptable	Comment on frequency of laboratory quality control samples acceptable
Jul-24	ES2424631	No	• S001 analysis for pH 5 days overdue. • S001 analysis for turbidity 3 days overdue	13.3, 11.9	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for Alkalinity
Jul-24	ES2424623	No	• SW2, SW9 - SW11, MB1 - MB4 and RR2 analysis for turbidity 3 days overdue.	13.3, 11.9	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for Alkalinity, PAH/phenols and TRH. Frequency of Quality Control Samples below expected rate - matrix spikes for PAH/phenols and TRH.
Jul-24	ES2425342	No	• S015 analysis for Nitrite as N 9 days overdue.	11.5, 11.1, 10.2	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Filtered Total Phosphorus as P and Total Phosphorus as P	Yes	Yes	Yes	Yes	No comment
Jul-24	ES2425339	No	• S001 analysis for pH 5 days overdue	11.5, 11.1, 10.2	Ice Bricks Present	S001 bottles for total metals not compliant	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Total Zinc	Yes	Yes	Yes	Yes	No comment
Aug-24	ES2426184	No	• S015 analysis for Nitrite as N 12 days overdue	16.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen.
Aug-24	ES2426179	No	• SW3 , SW4, SW7 and SW8, analysis for turbidity 4 days overdue. • SW2, SW9, SW10 , SW11, MB1 - MB4 and RR2 analysis for turbidity 3 days overdue.	16.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Aug-24	ES2426181	No	• S001, S074 and S098, analysis for pH 7 days overdue. • S001, S074 and S098 analysis for pH 7 days overdue.	16.1	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Vanadium	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for PAH/phenols and TRH. Frequency of Quality Control Samples below expected rate - matrix spikes for dissolved metals.
Aug-24	ES2426983	No	• S015 analysis for Nitrite as N 11 days overdue.	16.6, 18.1, 17.4	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N, Nitrite + Nitrate as N, Total Kjeldahl Nitrogen as N, Total Phosphorus as P.	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen.
Aug-24	ES2427079	No	• S001 analysis for pH 8 days overdue. • S001 analysis for Turbidity 5 days overdue.	11.4, 10.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total metals.
Aug-24	ES2427077	No	• S098 analysis for pH 8 days overdue. • S098 analysis for Turbidity 5 days overdue.	11.4, 10.8	Ice Bricks Present	No comment	No	RPD exceeds LOR based limits -Total: Aluminium, Arsenic, Chromium, Molybdenum, Vanadium and Iron	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Dissolved Copper, Dissolved Manganese and Dissolved Zinc.	Yes	Yes	Yes	Yes	No comment
Aug-24	ES2427680	No	• S015 analysis for Nitrite as N 8 days overdue.	15.8, 16.1	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N, Nitrite as N, Total Kjeldahl Nitrogen as N, Total Phosphorus as P.	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen.
Aug-24	ES2427965	No	• S015 analysis for Nitrite as N 4 days overdue.	13.0, 15.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen and phosphorus
Aug-24	ES2428566	No	• S001 analysis for pH 10 days overdue. • S001 analysis for Total Suspended Solids 6 days overdue. • S001 analysis for Turbidity 8 days overdue.	17.0, 16.6	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Aug-24	ES2428564	No	• S098 analysis for pH 12 days overdue. • S098 analysis for Total Suspended Solids 5 days overdue. • S098 analysis for Turbidity 8 days overdue.	17.0, 16.6	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity.
Aug-24	ES2427975	No	• S001 analysis for pH 1 day overdue.	13.8, 15.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Aug-24	ES2427970	No	• S098 analysis for pH 1 day overdue.	13.8, 15.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for dissolved metals.
Aug-24	ES2428923	No	• S015 analysis for Nitrite as N 4 days overdue.	12.4, 22.8, 22.6	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N and Total Phosphorus as P.	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen.
Aug-24	ES2428922	No	• S001 analysis for pH 6 days overdue. • S001 analysis for Turbidity 4 days overdue.	12.4, 22.8, 22.6	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Sep-24	ES2429789	No	• SW2-SW11, MB1 - MB4 and RR2 analysis for Total Suspended Solids 6 days overdue. • SW2-SW11, MB1 – MB2 and RR2 analysis for Turbidity 9 days overdue. • SW9, SW10 and RR2 extraction for Polynuclear Aromatic Hydrocarbons 2 days overdue. • SW9, SW10 and RR2 extraction for Total Petroleum Hydrocarbons 2 days overdue. SW9, SW10 and RR2 extraction for Total Recoverable Hydrocarbons 2 days overdue.	21.0, 19.8, 20.3	No comment	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Sep-24	ES2429782	No	• S074, S001 and S098 analysis for pH 12 days overdue. • S074, S001 and S098, analysis for Total Suspended Solids 1 day overdue. • S074, S001 and S098 analysis for Turbidity 7 days overdue. • S074 and S001 extraction for Polynuclear Aromatic Hydrocarbons 2 days overdue. • S074 and S001 extraction for Total Petroleum Hydrocarbons 2 days overdue.	21.0, 19.8, 20.3	No comment	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.

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			• S074 and S001 extraction for Total Recoverable Hydrocarbons 2 days overdue												
Sep-24	ES2429786	No	• S015 analysis for Nitrite as N 6 days overdue.	21.0, 19.8, 20.3	No comment	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Total Kjeldahl Nitrogen as N and Total Phosphorus as P	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen.
Sep-24	ES2429785	No	• S098 analysis for pH 6 days overdue.	21.0, 19.8, 20.3	No comment	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Sep-24	ES2429788	No	• S001 analysis for pH 23 days overdue. • S001 analysis for Total Suspended Solids 17 days overdue. • S001 analysis for Turbidity 20 days overdue. • S001 analysis for Alkalinity 9 days overdue.	21.0, 19.8, 20.3	No comment	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Sep-24	ES2430573	No	• S015 analysis for Nitrite as N 3 days overdue	16.3, 16.9, 17.0	-	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Total Kjeldahl Nitrogen as N and Total Phosphorus as P.	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen and phosphorus
Sep-24	ES2430578	No	• S098 analysis for pH 1 day overdue.	16.3, 16.9, 17.0	-	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Sep-24	ES2430584	No	• S001 analysis for pH 1 day overdue.	16.3, 16.9, 17.0	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for dissolved metals.
Sep-24	ES2431195	No	• S015 analysis for Nitrite as N 4 days overdue.	15.3	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Total Kjeldahl Nitrogen as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen.
Sep-24	ES2431204	No	• S001 analysis for pH 2 days overdue	-	-	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Sep-24	ES2431201	No	• S098 analysis for pH 2 days overdue.	15.3	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Sep-24	ES2432572	No	• S015 analysis for Nitrite as N 6 days overdue.	16.3, 14.7, 15.2	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Filtered Total Phosphorus as P	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen.
Oct-24	ES2432575	No	• S074, S001 and S098 analysis for pH 6 days overdue.	16.3, 14.7, 16.2	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Oct-24	ES2432567	No	• SW2 - SW7 and MB4 analysis for Turbidity 1 day overdue.	16.3, 14.7, 16.2	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Oct-24	ES2433807	No	• S015 analysis for pH 13 days overdue. • S015 extraction for Filtered Total Kjeldahl Nitrogen as N 14 days overdue. • S015 extraction for Filtered Total Phosphorus as P 13 days overdue.	-	-	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen and phosphorus
Oct-24	ES2432985	No	• S015 analysis for pH 10 days overdue. • S015 extraction for Turbidity 6 days overdue. • S015 extraction for Dissolved Major Cations 3 days overdue. • S015 extraction for Total Major Cations 4 days overdue.	13.0, 12.8	Ice Bricks Present	S015 bottles for total metals and dissolved metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity.
Oct-24	ES2432864	No	• S098 analysis for pH 1 day overdue.	13.0, 12.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total metals.
Oct-24	ES2434052	No	• S015 analysis for pH 10 days overdue. • S015 analysis for Turbidity 5 days overdue. • S015 analysis for Dissolved Major Cations 4 days overdue. • S015 analysis for Total Major Cations 4 days overdue.	7.8	Ice Bricks Present	S015 bottles for total metals and dissolved metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Qualitity Control Samples below expected rate - matrix spikes for total metals.
Oct-24	ES2434032	No	• S098 analysis for pH 4 days overdue.	7.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Oct-24	ES2434020	No	• S001 analysis for pH 4 days overdue.	7.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total metals.
Oct-24	ES2434535	No	• S015 analysis for pH 6 days overdue. • S015 analysis for Turbidity 6 days overdue.	19.1, 18.7, 19.0	Ice Bricks Present	S015 bottles for total metals and dissolved metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - lab duplicates for dissolved metals, dissolved cations, total cations.
Oct-24	ES2434524	No	• S001 analysis for pH 20 days overdue. • S098 analysis for pH 2 days overdue. • S001 analysis for Total Suspended Solids 13 days overdue. • S001 analysis for Turbidity 18 days overdue. • S001 analysis for Alkalinity 6 days overdue.	19.1, 18.7, 19.0	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Nitrite as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen, total phosphorus, dissolved metals, and total metals.
Oct-24	ES2435322	No	• S015 analysis for pH 5 days overdue. • S015 analysis for Turbidity 6 days overdue.	16.9, 12.4	Ice Bricks Present	S015 bottles for total metals and dissolved metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment

Monitoring Round Date	Laboratory Report Number	Holding Times Met	Comment on Holding Times	Temperature Received (°C)*	Comment on Temperature	Comment on bottles used	Laboratory Duplicate RPD Acceptable	Comment on Laboratory RPDs	Matrix Spike Acceptable	Comment on Matrix Spikes	Surrogate Recovery Acceptable	Laboratory Control Spike Recoveries Acceptable	Method Blanks Acceptable	Frequency of laboratory quality control samples acceptable	Comment on frequency of laboratory quality control samples acceptable
Oct-24	ES2435328	No	• S001 analysis for pH 1 day overdue.	16.9, 12.4	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for dissolved metals.
Oct-24	ES2435327	No	• S098 analysis for pH 1 day overdue.	16.9, 12.4	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Nov-24	ES2439260	No	• S015 analysis for ammonia as N 4 days overdue. • S015 analysis for nitrite as N 30 and 17 days overdue. • S015 analysis for nitrite plus nitrate as N 4 days overdue. • S015 analysis for filtered total Kjeldahl nitrogen as N 4 days overdue. • S015 analysis for total Kjeldahl nitrogen as N 4 days overdue. • S015 analysis for filtered total phosphorus as P 4 days overdue. • S015 analysis for total phosphorus as P 4 days overdue.	16.3, 15.9, 17.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Nov-24	ES2437712	No	• S015 analysis for pH 20 days overdue. • S015 analysis for Total Suspended Solids 12 days overdue. • S015 analysis for Turbidity 19 days overdue. • S015 analysis for Alkalinity 6 days overdue. • S015 analysis for Dissolved and Total Major Cations 13 days overdue.	16.3, 15.9, 17.5	Ice Bricks Present	S015 bottles for total metals and dissolved metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity.
Nov-24	ES2436324	No	• S074, S001 and S098 analysis for pH 4 days overdue. • S074, S001 and S098 analysis for turbidity 2 days overdue.	17.2, 22.8, 19.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicate for PAH/phenols and TRH and matrix spikes for dissolved metals, total metals, PAH/phenols and TRH.
Nov-24	ES2436320	No	• SW3, SW9, SW10, RR2, MB1, MB2, MB3, MB4, SW2 and SW8 analysis for turbidity 2 days overdue.	17.2, 22.8, 19.8	Ice Bricks Present	RR1 and SW11 bottles for dissolved metals not compliant.	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Nov-24	ES2439440	No	• S015 analysis for Nitrite as N 25 days overdue.	15.6, 14.4, 13.9	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N, Nitrite + Nitrate as N, Total Kjeldahl Nitrogen as N, Total Phosphorus as P.	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen.
Nov-24	ES2437711	No	• S015 - analysis for pH 2 days overdue.	16.3, 15.9, 17.5	Ice Bricks Present	S015 bottles for total metals and dissolved metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity and matrix spikes for dissolved metals and total metals.
Nov-24	ES2437709	No	• S015 - analysis for pH 2 days overdue.	16.3, 15.9, 17.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity.
Nov-24	ES2437707	No	• S098 analysis for pH 6 days overdue. • S098 analysis for turbidity 5 days overdue.	16.3, 15.9, 17.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for dissolved and total metals.
Nov-24	ES2437956	No	• S001 analysis for pH 6 days overdue.	16.3, 18.1, 17.4	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total metals.
Nov-24	ES2437957	No	• S098 analysis for pH 6 days overdue.	-	-	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spikes for total Kjeldahl nitrogen and phosphorus
Nov-24	ES2438906	No	• S015 analysis for nitrite as N 7 days overdue.	-	-	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity.
Nov-24	ES2438901	No	• S001 - analysis for pH 7 days overdue.	15.9, 15.7, 16.3	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Nov-24	ES2439854	No	• S015 analysis for Nitrite as N 10 days overdue.	10.8, 11.7, 12.1	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N, Nitrite + Nitrate as N	Yes	Yes	Yes	Yes	No comment
Nov-24	ES2440781	No	• S086, S087, S088 and S044 extraction for polynuclear aromatic hydrocarbons 13 days overdue. • S086, S087, S088 and S044 extraction for total petroleum hydrocarbons 13 days overdue. • S086, S087, S088 and S044 analysis for total petroleum hydrocarbons 9 days overdue. • S086, S087, S088 and S044 extraction for total recoverable hydrocarbons 13 days overdue. • S086, S087, S088 and S044 analysis for total recoverable hydrocarbons 9 days overdue. • S086, S087, S088 and S044 analysis for BTEXN 9 days overdue.	15.3	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Dec-24	ES2439867	No	• S074, S001 and S098 analysis for pH 8 days overdue. • S074, S001 and S098 analysis for turbidity 3 days overdue.	10.8, 11.7, 12.1	Ice Bricks Present	S004 bottles for total metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Dec-24	ES2439840	No	• MB2, MB3, MB4 and SW2,analysis for turbidity 3 days overdue. • SW3, SW4. SW7, SW9, SW10, RR2, SW8, MB1 and SW11 analysis for turbidity 2 days overdue.	10.8, 11.7, 12.1	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for total phosphorus
Dec-24	ES2440326	No	• S015 analysis for nitrite as N 4 days overdue.	16.0, 15.2, 16.7	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N, Total Kjeldahl Nitrogen as N, Total Phosphorus as P	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.

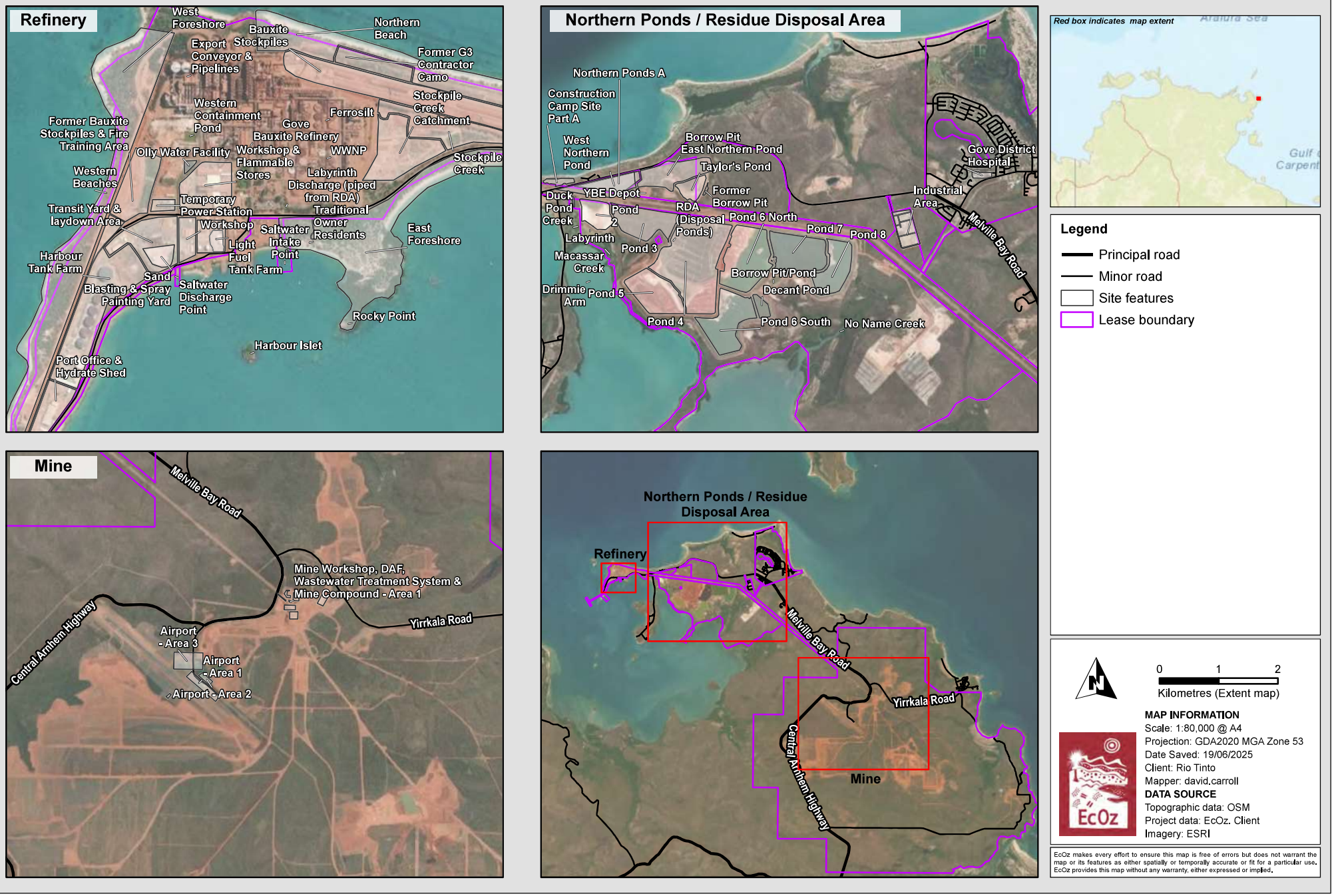
Monitoring Round Date	Laboratory Report Number	Holding Times Met	Comment on Holding Times	Temperature Received (°C)*	Comment on Temperature	Comment on bottles used	Laboratory Duplicate RPD Acceptable	Comment on Laboratory RPDs	Matrix Spike Acceptable	Comment on Matrix Spikes	Surrogate Recovery Acceptable	Laboratory Control Spike Recoveries Acceptable	Method Blanks Acceptable	Frequency of laboratory quality control samples acceptable	Comment on frequency of laboratory quality control samples acceptable
Dec-24	ES2441304	No	• S001 analysis for pH 11 days overdue. • S001 analysis for Turbidity 3 days overdue.	18.2, 20.1, 22.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Dec-24	ES2441308	No	• S098 analysis for pH 11 days overdue. • S098 analysis for Turbidity 4 days overdue.	18.2, 20.1, 22.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Dec-24	ES2441309	No	• S015 analysis for Nitrite as N 4 days overdue.	18.2, 20.1, 22.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for total phosphorus and Matrix spike for total Kjeldahl nitrogen and phosphorus
Dec-24	ES2441307	No	• S098 analysis for pH 7 days overdue.	18.2, 20.1, 22.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Dec-24	ES2441300	No	• S001 analysis for pH 7 days overdue.	18.2, 20.1, 22.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for dissolved metals
Dec-24	ES2442082	No	• S015 analysis for Nitrite as N 15 days overdue.	10.3, 14.2, 19.5	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for total phosphorus and Matrix spike for total Kjeldahl nitrogen.
Dec-24	ES2442101	No	• S098 analysis for pH 6 days overdue. • S098 analysis for Turbidity 2 days overdue.	10.3, 14.2, 19.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity.
Dec-24	ES2442091	No	• S001 analysis for pH 6 days overdue. • S001 analysis for Turbidity 1 days overdue.	10.3, 14.2, 19.5	Ice Bricks Present	S001 bottles for total metals and dissolved metals not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity and matrix spike for dissolved metals.
Dec-24	ES2442098	No	• S086 and S0888 extraction for Polynuclear Aromatic Hydrocarbons 2 days overdue. • S086 and S0888 extraction for Total Petroleum Hydrocarbons 2 days overdue. • S086 and S0888 extraction for Total Recoverable Hydrocarbons 2 days overdue.	10.3, 14.2, 19.5	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Dec-24	ES2442172	No	• S098 analysis for pH 3 days overdue. • S015 analysis for Nitrite as N 5 days overdue.	11.2, 14.9, 8.4	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Arsenic, Vanadium, Ammonia as N, Total Kjeldahl Nitrogen as N and Total Phosphorus as P	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for total phosphorus and Matrix spike for total Kjeldahl nitrogen and total metals.
Dec-24	ES2442171	No	• S001 analysis for pH 3 days overdue.	11.2, 14.9, 8.4	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jan-25	ES2501282	No	• S001 analysis for pH 5 days overdue.	12.6, 12.2, 13.0	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jan-25	ES2501281	No	• S098 analysis for pH 12 days overdue. • S098 analysis for total suspended solids 5 days overdue. • S098 analysis for turbidity 8 days overdue. • S015 analysis for nitrite as N 15 days overdue.	12.6, 12.2, 13.0	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jan-25	ES2501262	No	• S015 analysis for nitrite as N 8 days overdue.	16.9, 14.9, 16.2	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Nitrite + Nitrate as N, Total Kjeldahl Nitrogen as N, Total Phosphorus as P	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for total phosphorus and Matrix spike for total Kjeldahl nitrogen and total phosphorus.
Jan-25	ES2501252	No	• S074, S001 and S098 analysis for pH 4 days overdue. • S074, S001 and S098, analysis for turbidity 3 days overdue. • S074 and S001 extraction for polynuclear aromatic hydrocarbons 1 day overdue. • S074 and S001 extraction for total petroleum hydrocarbons 1 day overdue. • S074 and S001 extraction for total recoverable hydrocarbons 1 day overdue.	16.9, 14.9, 16.2	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Jan-25	ES2501237	No	• SW3, SW4, SW7, SW9, SW10, RR2, MB1, MB2, MB3. MB4, SW2, SW8 and SW11 analysis for turbidity 3 days overdue. • SW9, SW10 and RR2 analysis for chlorophyll a & pheophytin 3 days overdue. • SW9, RR2 and SW10 extraction for polynuclear aromatic hydrocarbons 1 day overdue. • SW9, RR2 and SW10 extraction for total petroleum hydrocarbons 1 day overdue. • SW9, RR2 and SW10 extraction for total recoverable hydrocarbons 1 day overdue.	16.9, 14.9, 16.2	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Jan-25	ES2502404	No	• S098 analysis for pH 6 days overdue.	16.0, 15.3, 17.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jan-25	ES2502402	No	• S001 analysis for pH 6 days overdue.	16.0, 15.3, 17.8	Ice Bricks Present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Jan-25	ES2502130	No	• S001 analysis for pH 9 days overdue. • S001 analysis for total suspended solids 1 day overdue. • S001 analysis for turbidity 6 days overdue.	10.7, 8.9, 7.4	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Manganese	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory control samples for conductivity and matrix spike for dissolved metals.

Monitoring Round Date	Laboratory Report Number	Holding Times Met	Comment on Holding Times	Temperature Received (°C)*	Comment on Temperature	Comment on bottles used	Laboratory Duplicate RPD Acceptable	Comment on Laboratory RPDs	Matrix Spike Acceptable	Comment on Matrix Spikes	Surrogate Recovery Acceptable	Laboratory Control Spike Recoveries Acceptable	Method Blanks Acceptable	Frequency of laboratory quality control samples acceptable	Comment on frequency of laboratory quality control samples acceptable
Jan-25	ES2502129	No	• S098 analysis for pH 8 days overdue. • S098 analysis for total suspended solids 1 day overdue. • S098 analysis for turbidity 6 days overdue. • S015 analysis for nitrite as N 10 days overdue.	10.7, 8.9, 7.4	Ice Bricks Present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - matrix spike for total metals and total phosphorus.
Feb-25	ES2503302	No	• SW4, SW9, SW10, SW11, MB1, MB2, MB3, MB4 and RR2 analysis for pH 3 days overdue. • SW4, SW9, SW10, SW11, MB1, MB2, MB3, MB4 and RR2 analysis for pH 2 days overdue.	17.3, 16.8, 16.3	Ice Bricks Present	RR1 bottles for total metals not compliant.	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Feb-25	ES2503329	No	• S015 analysis for nitrite as N 7 days overdue. • S015 analysis for filtered nitrate plus nitrate as N 5 days overdue.	17.3, 16.8, 16.3	Ice Bricks Present	S015 bottles for filtered nitrate and nitrate not compliant	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Nitrite + Nitrate as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Feb-25	ES2503323	No	• S074, S001 and S098 analysis for pH 3 days overdue. • S074, S001 and S098 analysis for turbidity 2 days overdue.	17.3, 16.8, 16.3	Ice Bricks Present	S023, S030 bottles for dissolved metals not compliant	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Arsenic	Yes	Yes	Yes	Yes	No comment
Feb-25	ES2505359	No	• S001 analysis for pH 2 days overdue.	7.1, 6.5, 6.8	Ice Brick present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Feb-25	ES2504913	No	• S098 analysis for pH 3 days overdue. • S015 analysis for Nitrite as N 2 days overdue. • S015 analysis for Filtered Nitrite plus Nitrate as N (NOx) 6 days overdue.	15.9, 15.5, 16.1	Ice Bricks present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for total metals.
Feb-25	ES2504223	No	• S044 extraction for Polynuclear Aromatic Hydrocarbons, Total Petroleum Hydrocarbons and Total Recoverable Hydrocarbons 3 days overdue. • S044 extraction for Polynuclear Aromatic Hydrocarbons, Total Petroleum Hydrocarbons and Total Recoverable Hydrocarbons 2 days overdue.	18.7, 19.4	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix Spike for total phosphorus.
Feb-25	ES2504215	No	• S098 analysis for pH 4 days overdue. • S098 analysis for Turbidity 2 days overdue. • S015 analysis for Nitrite as N 6 days overdue. • S015 analysis for Filtered Nitrite plus Nitrate as N (NOx) 5 days overdue.	18.7, 19.4	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Feb-25	ES2504159	No	• S001 analysis for pH 4 days overdue. • S001 analysis for Turbidity 2 days overdue.	18.7, 19.4	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Feb-25	ES2505413	No	• S098 analysis for pH 2 days overdue. • S015 analysis for filtered nitrite plus nitrate as N 2 days overdue.	7.1, 6.5, 6.8	Ice Bricks present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Total Nitrite + Nitrate as N, Filtered Nitrite + Nitrate as N, Total Kjeldahl Nitrogen as N	Yes	Yes	Yes	Yes	No comment
Feb-25	ES2504930	No	• S044 extraction for polynuclear aromatic hydrocarbons 1 day overdue. • S044 extraction for total petroleum hydrocarbons 1 day overdue. • S044 extraction for total recoverable hydrocarbons 1 day overdue.	15.9, 15.5, 16.1	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix spike for total Kjeldahl nitrogen and total phosphorus.
Feb-25	ES2504912	No	• S001 analysis for pH 3 days overdue.	15.9, 15.5, 16.1	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Feb-25	ES2504918	Yes	• No comment.	15.9, 15.5, 16.1	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix Spikes for dissolved metals and total metals
Feb-25	ES2505860	Yes	• No comment.	15.3, 17.8	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for TRH.
Mar-25	ES2506601	No	• S074, S098 and S001 analysis for pH 6 days overdue. • S074, S098 and S001 analysis for Turbidity 2 days overdue.	17.9, 18.2, 18.0	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Mar-25	ES2506575	No	• S015 analysis for Nitrite as N 2 days overdue. • S015 analysis for Filtered Nitrite plus Nitrate as N 7 days overdue.	17.9, 18.2, 18.0	Ice Bricks present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Nitrite + Nitrate as N - Filtered and Nitrite as N	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Feb-25	ES2506110	No	• SW2, SW8, SW3 and SW7 analysis for pH 5 days overdue. • SW2, SW8, SW3 and SW7 analysis for Turbidity 3 days overdue.	8.9, 10.2	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Matrix spike for total Kjeldahl nitrogen and total phosphorus.
Mar-25	ES2506582	No	• SW3, SW4, SW7, SW8, SW9, SW10, MB2, MB3, MB4 and RR2 analysis for pH 3 days overdue. • SW2, SW11 and MB1 analysis for pH 2 days overdue. • SW3, SW4, SW7, SW8, SW9, SW10, MB2, MB3, MB4 and RR2 analysis for Turbidity 1 day overdue.	17.9, 18.2, 18.0	Ice Bricks present	RR1 bottles for total metals not compliant.	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Mar-25	ES2507558	No	• S098 analysis for pH 5 days overdue. • S098 analysis for turbidity 5 days overdue.	16.8, 17.3	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Mar-25	ES2507556	No	• S001 analysis for pH 5 days overdue. • S001 analysis for turbidity 5 days overdue.	16.8, 17.3	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment

Monitoring Round Date	Laboratory Report Number	Holding Times Met	Comment on Holding Times	Temperature Received (°C)*	Comment on Temperature	Comment on bottles used	Laboratory Duplicate RPD Acceptable	Comment on Laboratory RPDs	Matrix Spike Acceptable	Comment on Matrix Spikes	Surrogate Recovery Acceptable	Laboratory Control Spike Recoveries Acceptable	Method Blanks Acceptable	Frequency of laboratory quality control samples acceptable	Comment on frequency of laboratory quality control samples acceptable
Mar-25	ES2507413	No	• S015 analysis for Nitrite 9 days overdue. • S015 analysis for Filtered Nitrite 9 days overdue.	-	-	S015 bottles for filtered nitrate and nitrate not compliant	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for dissolved metals.
Mar-25	ES2508476	Yes	• No comment.	20.5, 20.3, 20.9	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates for total metals.
Mar-25	ES2508449	No	• S044 extraction for Polynuclear Aromatic Hydrocarbons 4 days overdue. • S044 extraction for Total Recoverable Hydrocarbons 4 days overdue.	13.8, 13.4	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Mar-25	ES2508477	No	• S098 analysis for pH 2 days overdue. • S015 analysis for pH 1 day overdue. • S015 extraction for filtered Total Kjeldahl Nitrogen as N 2 days overdue. • S015 extraction for filtered total phosphorus 1 day overdue.	20.5, 20.3, 20.9	Ice Bricks present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N, Total Kjeldahl Nitrogen as N, Total Phosphorus as P	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.
Mar-25	ES2508471	No	• S098 analysis for pH 2 days overdue.	20.5, 20.3, 20.9	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Mar-25	ES2508395	No	• S098 analysis for pH 7 days overdue. • S098 analysis for turbidity 8 days overdue. • S015 analysis for Nitrite as N 7 days overdue. • S015 analysis for Filtered Nitrite plus Nitrate as N 8 days overdue. • S015 extraction for Filtered Total Kjeldahl Nitrogen as N 9 days overdue. • S015 extraction for Filtered Total Phosphorus as P 8 days overdue.	13.8,13.4	Ice Bricks present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Ammonia as N, Total Kjeldahl Nitrogen as N, Total Phosphorus as P	Yes	Yes	Yes	Yes	No comment
Mar-25	ES2508393	No	• S001 analysis for pH 8 days overdue. • S001 analysis for turbidity 8 days overdue. • S001 analysis for total suspended solids 1 day overdue.	13.8, 13.4	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Mar-25	ES2509071	No	• S098 analysis for pH 6 days overdue. • S098 analysis for turbidity 6 days overdue.	21.3, 21.3, 20.8	Ice Bricks present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Total zinc	Yes	Yes	Yes	Yes	No comment
Mar-25	ES2509078	No	• S001 analysis for pH 6 days overdue. • S001 analysis for turbidity 6 days overdue	21.3, 21.3, 21.3	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Mar-25	ES2508783	Yes	• No comment.	21.3, 21.3, 20.8	Ice Bricks present	No comment	Yes	No comment	Yes	No comment	Yes	Yes	Yes	Yes	No comment
Mar-25	ES2510090	No	• S015 analysis for Nitrite as N 7 days overdue. • S015 analysis for Filtered Nitrite plus Nitrate 9 days overdue. • S015 extraction for Filtered Total Kjeldahl Nitrogen as N 10 days overdue. • S015 extraction for Filtered Total Phosphorus as P 9 days overdue.	18.1, 18.8, 17.2	Ice Bricks present	No comment	Yes	No comment	No	"MS recovery not determined, background level greater than or equal to 4x spike level." - Nitrite + Nitrate as N - Filtered	Yes	Yes	Yes	No	Frequency of Quality Control Samples below expected rate - Laboratory duplicates and matrix spikes for PAH/phenols and TRH.

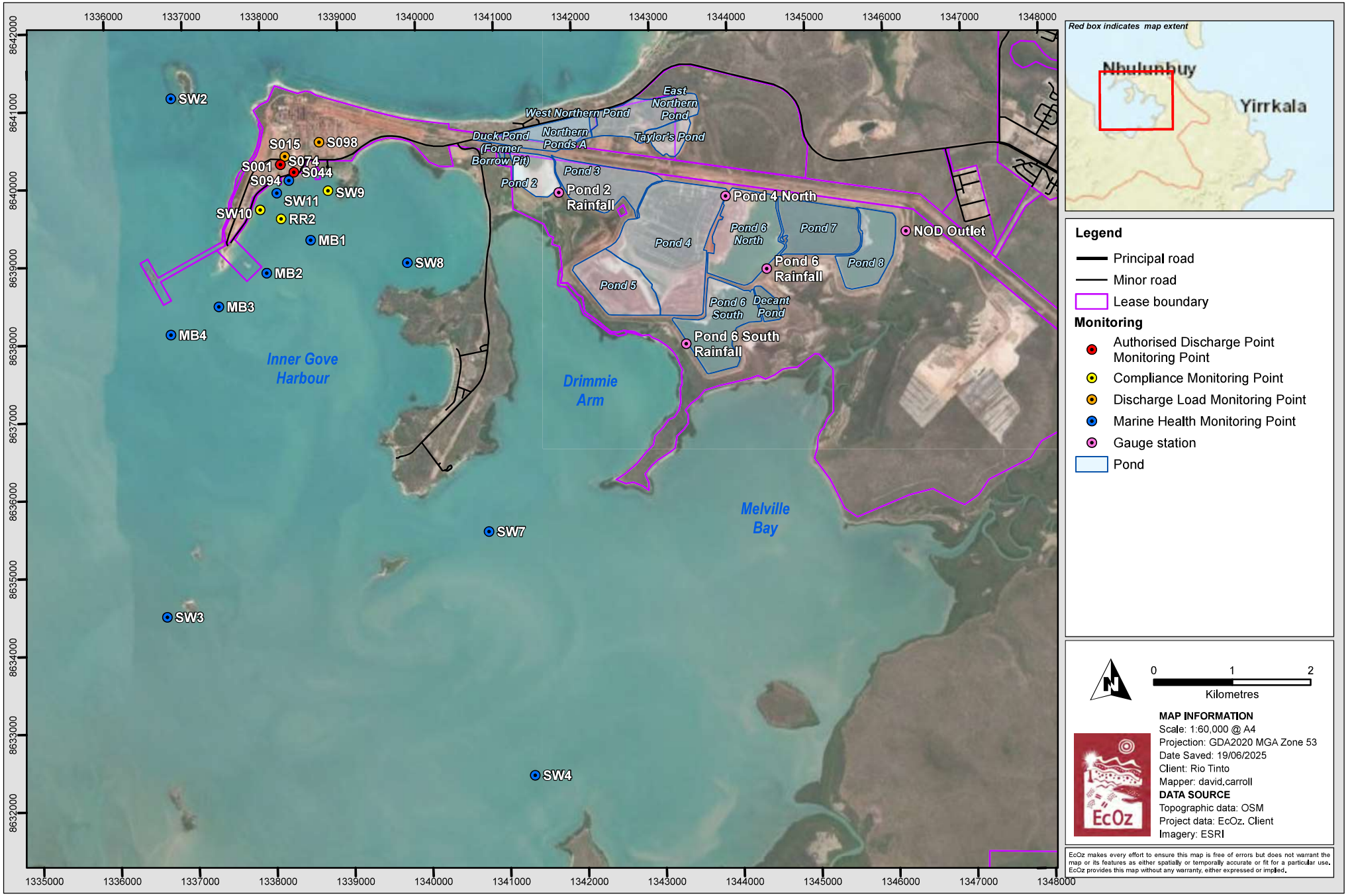
*Likely due to air freight between Gove and Sydney laboratory, acceptable considering below Northern Territory ambient temperatures (>30°C).

APPENDIX B FIGURES



Path: D:\OneDrive - Ecoz\Documents 1\ArcGIS\Projects\EZ24050 - EOI-01654 Water Monitoring Program Gove\EZ24050 - EOI-01654 Water Monitoring Program Gove.aprx
Layout: Figure 1. Site overview

Figure 1. Site overview



Path: D:\OneDrive - Ecoz\Documents 1\ArcGIS\Projects\EZ24050 - EOI-01654 Water Monitoring Program Gove\EZ24050 - EOI-01654 Water Monitoring Program Gove.aprx
Layout: Figure 2. Rainfall Gauges, Authorised Discharge and Monitoring Points

Figure 2. Rainfall Gauges, Authorised Discharge and Monitoring Points



Path: D:\OneDrive - Ecoz\Documents 1\ArcGIS\Projects\EZ24050 - EOI-01654 Water Monitoring Program Gove\EZ24050 - EOI-01654 Water Monitoring Program Gove.aprx
Layout: Figure 3. Refinery Surface Water Catchments and Key Features

Figure 3. Refinery Surface Water Catchments and Key Features

APPENDIX C TABLES

			pH, Lab	pH, Field	Electrical Conductivity @ 25°C	Conductivity, Field	Turbidity	Alkalinity, Total as CaCO3	Bicarbonate Alkalinity as CaCO3	Total suspended solids	Aluminum, Dissolved	Aluminum, Total	Arsenic, Dissolved	Arsenic, Total	Chromium, Dissolved	Copper, Dissolved	Gallium, Dissolved	Gallium, Total	Magnesium, Dissolved	Manganese, Dissolved	Molybdenum, Dissolved	Molybdenum, Total	Vanadium, Dissolved	Vanadium, Total	Zinc, Dissolved	Total Dissolved Phosphorus	Total Dissolved Nitrogen	C10-C36-Total	Enterococcus
		LOR	0.01		1		0.1	1	1	5	5	5	0.5	0.5	0.5	1	1.00	1.00	1,000	0.5	0.1	0.1	0.5	0.5	5	10	1	50	10
		Units	pH units	pH units	uS/cm	uS/cm	NTU	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	ug/L	mpn/100ml
		Action Levels																											35
		RIO_TINTO-GOVE-WS-WDL LIMIT	9.5	9.5			100				560		200				8,000				38,800		1,000			140	1,700	600	
		RIO_TINTO-GOVE-WS-WDL TV	9	9			20[1] or 75[2]																					100	
Sample Location	**Date Sampled**	**Sample ID**																											
S001	5/04/2024	S001	8.09	-	51,800	-	1.1	124	124	<5	30	81	1.5	1.6	<0.5	<1	<10	<10	1,200,000	0.8	9.1	10.1	2.4	2.4	<5	-	-	-	-
	10/04/2024	S001	7.94		47,000	-	4.4	112	112	7	<5	129	1.5	1.7	<0.5	<1	<10	<10	1,160,000	0.8	9.0	10.1	2.6	3.0	<5	3	160	<50	-
	14/04/2024	S001	8.50	7.47	46,500	45,500	1.6	241	198	<5	7	159	5.7	5.6	<0.5	<1	<10	<10	1,130,000	4.7	18.7	21.7	6.2	7.0	<5	-	-	-	-
	17/04/2024	S001	8.49	-	47,600	-	2.2	232	194	7	13	197	3.3	3.3	<0.5	<1	<10	<10	1,080,000	5.6	16.3	19.6	5.3	6.4	<5	-	-	-	-
	23/04/2024	S001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
	26/04/2024	S001	8.44	-	46,400	-	1.1	224	196	<5	10	74	3.6	4.0	<0.5	<1	<10	<10	1,240,000	4.3	19.4	20.7	6.1	6.8	<5	-	-	-	-
	30/04/2024	S001	8.52	-	49,700	-	1.2	230	188	13	13	133	3.8	4.3	<0.5	<1	<10	<10	1,140,000	4.9	19.8	21.3	7.0	7.6	<5	-	-	-	-
	7/05/2024	S001	8.61	8.36	45,500	53,000	1.2	253	191	20	<5	53	4.4	5.2	<0.5	<1	<10	<10	1,260,000	3.8	21.2	20.9	9.4	10.8	<5	4	200	<50	-
	13/05/2024	S001	8.59	-	47,600	-	2.5	233	175	<5	8	136	4.9	5.0	<0.5	<1	<10	<10	1,130,000	4.0	19.6	23.0	9.5	10.9	<5	-	-	-	<10
	20/05/2024	S001	-	-	-	-	Samples not analysed by laboratory					Samples not analysed by laboratory														Samples not analysed by laboratory			
	4/06/2024	S001	8.51	-	49,500	-	2.4	221	178	17	6	96	4.2	4.5	<0.5	<1	<10	<10	1,140,000	6.0	17.6	21.1	7.7	8.7	<5	-	-	-	-
	11/06/2024	S001	8.29	8.78	47,100	46,040	2.4	209	209	<5	6	34	5.3	5.9	<0.5	<1	<10	<10	1,150,000	4.8	22.3	25.4	11.3	12.0	<5	-	-	<50	-
	17/06/2024	S001	8.55	-	45,600	-	5.4	278	208	5	6	59	5.6	5.6	<0.5	<1	<10	<10	1,110,000	6.4	22.8	25.3	10.1	9.7	<5	4	230	-	<10
	24/06/2024	S001	8.42	-	45,900	-	4.1	252	207	<5	7	66	7.9	7.7	<0.5	<1	<10	<10	1,290,000	5.4	22.1	27.5	16.8	18.7	<5	-	-	-	-
	1/07/2024	S001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	3/07/2024	S001	8.22	-	49,500	-	2.3	204	198	6	6	98	5.8	6.1	<0.5	<1	<10	<10	1,130,000	4.6	20.9	25.3	13.7	15.9	<5	-	-	-	-
	10/07/2024	S001	8.16	-	1,420	-	2.3	447	447	9	6	64	7.7	8.5	<0.5	<1	<10	<10	1,160,000	3.0	22.8	28.4	18.8	20.5	<5	-	-	-	-
	17/07/2024	S001	8.53	-	49,400	-	1.5	290	232	<5	<5	39	7.3	8.4	<0.5	<1	<10	<10	1,110,000	5.2	23.5	27.6	17.5	19.3	<5	10	250	<50	-
	24/07/2024	S001	8.55	-	51,400	-	2.0	258	196	24	5	113	6.4	6.7	<0.5	<1	<10	<10	1,230,000	5.2	20.2	23.0	11.6	13.2	<5	-	-	-	-
	31/07/2024	S001	8.43	-	50,100	-	4.7	283	244	6	62	116	7.8	8.0	<0.5	<1	<10	<10	1,150,000	8.3	26.8	29.9	17.6	17.9	8	-	-	-	-
	7/08/2024	S001	8.16	-	47,700	-	0.6	237	237	<5	7	59	10.0	9.7	<0.5	<1	<10	<10	1,150,000	4.9	30.7	30.1	26.8	26.5	<5	11	260	<50	-
	13/08/2024	S001	7.98	-	50,200	-	1.6	122	122	5	<5	29	2.0	1.9	<0.5	<1	<10	<10	1,200,000	5.0	11.3	11.7	3.0	3.6	<5	-	-	-	-
	23/08/2024	S001	8.09	-	46,500	-	1.2	116	116	16	<5	97	1.7	2.0	<0.5	<1	<10	<10	1,190,000	1.4	10.3	11.4	2.6	3.0	<5	-	-	-	-
	26/08/2024	S001	8.57	-	49,600	-	8.0	319	242	-	7	70	10.2	10.2	<0.5	<1	<10	<10	1,230,000	5.7	27.5	31.0	30.3	32.4	<5	-	-	-	<10
	30/08/2024	S001	8.12	-	48,200	-	2.1	126	126	<5	<5	100	2.2	2.1	<0.5	<1	<10	<10	1,260,000	2.0	11.0	12.2	3.5	3.7	<5	-	-	-	-
	3/09/2024	S001	8.31	-	47,000	-	1.1	247	236	<5	8	37	10.8	11.1	<0.5	<1	<10	<10	1,180,000	5.1	26.0	28.0	31.7	33.7	<5	-	-	<50	-
	10/09/2024	S001	8.26	-	47,500	-	0.8	228	228	<5	11	27	14.5	15.2	<0.5	<1	<10	12	1,160,000	3.6	27.6	29.2	37.3	38.2	<5	9	300	-	-
	16/09/2024	S001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	17/09/2024	S001	8.31	-	51,300	-	8.9	232	224	<5	13	103	12.8	13.7	<0.5	<1	<10	15	1,220,000	3.7	28.9	32.2	43.4	45.2	<5	-	-	-	-
	23/09/2024	S001	8.62	-	47,400	-	6.2	289	231	9	10	36	11.0	12.2	<0.5	<1	<10	<10	1,270,000	5.7	30.8	34.2	34.6	36.0	<5	-	-	-	-
	24/09/2024	S001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
	2/10/2024	S001	8.39	8.80	49,900	45,110	2.7	245	221	<5	12	111	11.8	14.2	<0.5	<1	<10	12	1,220,000	3.6	28.6	30.5	45.6	44.4	<5	12	270	<50	-
	17/10/2024	S001	8.41	-	49,300	-	7.7	244	213	30	15	52	10.8	11.6	<0.5	<1	11	11	1,240,000	5.4	27.0	29.3	43.4	45.6	<5	-	-	-	-
	22/10/2024	S001	8.05	-	48,100	-	7.7	235	235	37	11	93	18.1	21.8	<0.5	<1	13	18	1,290,000	3.1	28.5	35.7	51.2	62.1	<5	50	400	-	20
	29/10/2024	S001	8.48	-	49,900	-	10.4	300	250	28	11	92	21.6	24.3	<0.5	<1	<10	<10	1,180,000	8.3	33.9	44.6	63.5	72.6	<5	-	-	-	-
	4/11/2024	S001	8.35	8.75	48,700	49,450	5.3	270	246	<5	14	114	19.0	20.0	<0.5	<1	14	15	1,270,000	2.4	33.4	34.4	55.0	56.7	<5	9	300	<50	-
	15/11/2024	S001	8.22	-	58,500	-	6.1	226	226	15	8	73	12.1	12.4	1.4	<1	<10	<10	1,180,000	3.3	24.9	29.4	50.7	55.7	<5	-	-	-	-
	19/11/2024	S001	8.15	-	48,100	-	9.1	232	232	<5	7	57	16.7	17.3		<1	<10	<10	1,250,000	3.0	25.8	28.8	42.5	45.8	<5	-	-	-	<10
	26/11/2024	S001	8.25	-	48,600	-	10.3	254	254	<5	8	30	9.6	10.1	<0.5	<1	<10	<10	1,160,000	4.7	21.6	27.1	22.7	23.2	<5	-	-	-	-
	2/12/2024	S001	8.19	8.59	50,100	50,300	1.0	241	241	<5	11	43	16.9	17.5	<0.5	<1	<10	12	1,190,000	2.9	30.3	36.2	46.8	51.9	<5	6	250	<50	-
	9/12/2024	S001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	12/12/2024	S001	8.25	-	51,900	-	4.7	202	202	<5	10	104	11.4	12.2	<0.5	<1	<10	<10	1,130,000	3.4	27.1	30.4	38.7	42.5	<5	-	-	-	-
	16/12/2024	S001	8.24	-	52,100	-	15.0	244	244	<5	11	143	12.0	12.2	<0.5	<1	<10	<10	1,120,000	3.7	27.4	29.3	41.2	42.3	<5	-	-	-	-
	24/12/2024	S001	8.25	-	49,300	-	2.5	248	248	<5	14	57	10.6	11.4	<0.5	<1	<10	<10	1,240,000	3.1	23.9	28.8	37.2	37.5	<5	-	-	-	-
	30/12/2024	S001	8.32	-	50,800	-	3.8	250	244	<5	9	74	14.0	14.5	<0.5	<1	13	11	1,190,000	3.0	30.7	36.9	47.0	49.7	<5	-	-	-	-
	8/01/2025	S001	8.25	-	48,600	-	1.1	228	228	<5	<5	130	15.0	16.0	<0.5	<10	<10	16	1,160,000	<10	24.0	33.0	<100	<100	<5	-	-	-	-
	13/01/2025	S001	8.40	-	50,600	-	6.1	246	218	<5	14	42	12.4	15.7	<0.5	<1	<10	19	1,160,000	2.2	27.2	31.6	42.0	48.1	<5	7	250	<50	-
	20/01/2025	S001	8.10	-	49,900	-	3.8	238	238	<5	13	48	12.1	13.6	<0.5	<1	12	11	1,260,000	2.6	28.3	30.6	42.7	46.0	<5	-	-	-	<10
	28/01/2025	S001	8.26	-	50,000	-	2.4	248	248	5	11	74	12.9	13.6	<0.5	<1	12	17	1,270,000	2.5	27.6	29.4	44.0	44.9	<5	-	-	-	-
	3/02/2025	S001	7.94	-	53,100	-	4.2	126	126	37	10	58	2.5	2.6	<0.5	<1	<10	<10	1,300,000	2.3	10.5	12.2	3.6	3.6	<5	6	630	<50	-
	10/02/2025	S001	8.28	-	48,800	-	21.0	226	226	28	19	406	16.6	17.3	<0.5	<1	22	20	1,210,000	3.5	29.8	32.6	49.8	53.2	<5	-	-	-	-
	11/02/2025	S001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	18/02/2025	S001	8.51	-	50,400	-	5.6	303	250	81	21	85	14.4	16.2	<0.5	<1	16	14	1,220,000	5.5	28.6	33.4	46.6	59.7	<5	-	-	-	<10
	24/02/2025	S001	8.68	-	49,500	-	2.5	331	236	<5	16	66	9.6	9.8	<0.5	<1	17	16	1,220,000	3.3	23.3	26.6	48.6	51.6	<5	-	-	-	-
	4/03/2025	S001	8.47	-	50,900	-	0.8	269	232	<5	19	44	14.6	14.2	<0.5	<1	12	11	1,180,000	3.3	27.4	30.2	48.7	44.8	<5	11	27	<50	-
	11/03/2025	S001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	12/03/2025	S001	8.61	-	51,100	-	1.7	295	220	<5	14	42	16.8	17.7	<0.5	<1	13	11	1,220,000	2.9	27.0	29.9	36.8	38.8	<5	-	-	-	-
	18/03/2025	S001	8.26	-	51,300	-	5.4	240	240	<5	26	108	13.3	14.0	<0.5	<1	14	21	1,290,000	2.4	29.6	33.5	58.1	59.7	<5	-	-	-	-
	24/03/2025	S001	8.39	-	52,000	-	3.7	271	246	<5	14	83	14.3	13	<0.5	<1	16	18	1270000	2.9	27.4	27.0	58.3	53	<5	-	-	-	-
	25/03/2025	S001	8.24	-	51,900	-	19.2	233	233	<5	14	183	17.4	18.4	<0.5	<1	<10	13	1,240,000	2.3	27.4	33.4	47.8	50.5	<5	-	-	-	-
S074	10/04/2024	S074	7.85	7.39	47,200	48,720	8.3	111	111	9	<5	282	1.6	2.1	3.1	<1	<10	<10	1,150,000	0.8	9.4	10.5	2.4	3.9	<5	<3	210	<50	-
	7/05/2024	S074	8.34	-	45,500	-	5.4	220	210	30	<5	453	4.1	5.2	<0.5	<1	<10	<10	1,210,000	2.0	21.2	20.7	8.2	10.7	<5	<3	230	260	-
	11/06/2024	S074	8.25	-	45,900	-	0.8	209	209	<5	9	23	5.0	5.0	<0.5	<1	<10	<10	1,120,000	1.1	21.7	25.6	8.3	9.5	<5	<3	220	<50	-
	17/07/2024	S074	8.15	-	49,100	-	3.2	218	218	<5	<5	69	5.9	6.6	<0.5	<1	<10	<10	1,150,000	<0.5	21.1	23.9	12.0	12.5	<5	7	240	<50	-
	7/08/2024	S074	8.00	8.45	48,000	43,500	0.7	204	204	<5	6	23	7.4	7.0	0.8	1	<10	<10	1,120,000	0.8	27.0	29.3	16.7	17.7	<5	7	270	<50	-
	3/09/2024	S074	8.13	8.42	47,800	44,800	0.7	230	230	<5	6	13	8.3	9.1	<0.5	3	<10	<10	1,180,000	0.6	27.3	30.0	20.7	22.3	<5	7	300	<50	-
	2/10/2024	S074	8.23	8.44	49,100	45,600	1.5	211	211	<5	8	32	9.7	11.3	<0.5	2	<10	<10	1,270,000	0.8	27.5	30.3	34.9	33.4	<5	7	290	<50	-
	4/11/2024	S074	8.38	-	47,600	-	18.1	292	262	<5	12	26	16.4	16.7	1.0	<1	<10	14	1,280,000	4.4	34.1	34.0	54.3	55.9	<5	10	320	<50	-
	2/12/2024	S074	8.31	8.40	50,100	50,300	11.7	266	253	<5	11	81	13.6	14.7	<0.5	<1	<10	<10	1,240,000	4.1	29.3	35.6	44.6	49.1	<5	12	360	<50	-
	13/01/2025	S074	8.43	-	50,400	-	16.0	267	229	9	43	42	11.8	14.9	1.9	<1	<10	<10	1,170,000	3.0	26.9	33.2	44.3	49.0	<5	9	280	<50	-
	3/02/2025	S074	8.39	-	51,400	-	7.5	229	200	26	23	919	13.2	25.6	<0.5	<1	<10	<10	1,280,000	7.4	17.3	32.8	51.4	90.3	<5	19	240	<50	-
	4/03/2025	S074	8.53	-	49,500	-	1.5	323	266	<5	17	59	14.7	15.0	<0.5	<1	12	11	1,170,000	4.0	31.3	32.8	47.9	45.7	<5	13	340	<50	-
S094	23/04/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	13/05/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
	17/06/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	1/07/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	26/08/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	16/09/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	189
	24/09/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
	22/10/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
	19/11/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10

			pH, Lab	pH, Field	Electrical Conductivity @ 25°C	Conductivity, Field	Turbidity	Alkalinity, Total as CaCO3	Bicarbonate Alkalinity as CaCO3	Total suspended solids	Aluminum, Dissolved	Aluminum, Total	Arsenic, Dissolved	Arsenic, Total	Chromium, Dissolved	Copper, Dissolved	Gallium, Dissolved	Gallium, Total	Magnesium, Dissolved	Manganese, Dissolved	Molybdenum, Dissolved	Molybdenum, Total	Vanadium, Dissolved	Vanadium, Total	Zinc, Dissolved	Total Dissolved Phosphorus	Total Dissolved Nitrogen	C10-C36-Total	Enterococcus
LOR			0.01		1		0.1	1	1	5	5	5	0.5	0.5	0.5	1	1.00	1.00	1,000	0.5	0.1	0.1	0.5	0.5	5	10	1	50	10
Units			pH units	pH units	uS/cm	uS/cm	NTU	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	µg/L	µg/L	ug/L	mpn/100ml
Action Levels																													35
RIO_TINTO-GOVE-WS-WDL LIMIT			9.5	9.5			100				560		200				8,000				38,800		1,000			140	1,700	600	
RIO_TINTO-GOVE-WS-WDL TV			9	9			20[1] or 75[2]																					100	
Sample Location	Date Sampled	Sample ID																											
	9/12/2024	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
	20/01/2025	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
	11/02/2025	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93
	18/02/2025	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
	12/03/2025	S094	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10

Legend:
- Not analysed / not calculated
LOR – Limit of Recording
* LOR Exceeds Guideline Trigger Value
[1]Dry conditions
[2]Storm event
Sample Type: N - Primary, FD - Duplicate, FT - Triplicate
mg/L = milligrams per liter
mpn/100ml = most probable number per 100 ml
NTU = nephelometric turbidity units
pH units = pH units
ug/L = micrograms per liter
uS/cm = microSiemens per centimeter

					pH, Field	C10-C36-Total	Start Time	Finish Time	Duration	Quantity (m3)	Discharge flow
				LOR		50					
				Units	pH units	ug/L	24hr	24hr	hours	m3	m3/hr
				Action Levels							
				RIO_TINTO-GOVE-WS-WDL TV-LOC SPEC	9	100					
				RIO_TINTO-GOVE-WS-WDL LIMIT-LOC SPEC	9.5	600					
Sample Location	**Date Sampled**	**Sample ID**	**Depth Range (m)**	**Sample Type**							
S044	7/04/2024	S044		N	8.75	< 50	13:00	16:00	3:00	160	53
	9/04/2024	S044		N	8.02	< 50	12:00	14:00	2:00	200	100
	13/04/2024	S044		N	8.69	< 50	10:30	11:30	1:00	150	150
	17/04/2024	S044		N	7.57	< 50	16:30	17:00	0:30	150	300
	20/04/2024	S044		N	7.82	<50	7:30	8:30	1:00	300	300
	22/04/2024	S044		N	8.51	< 50	9:00	10:00	1:00	300	300
	26/11/2024	S044		N	7.68	< 50	11:00	12:00	1:00	300	300
	22/12/2024	S044		N	8.43	<50	15:30	16:30	1:00	200	200
	2/02/2025	S044		N	7.77	< 50	9:00	11:00	2:00	120	60
	7/02/2025	S044		N	8.66	< 50	15:30	16:00	0:30	150	300
	8/02/2025	S044		N	8.48	< 50	15:30	16:30	1:00	180	180
	16/02/2025	S044		N	9.11	< 50	No discharge event				
	26/02/2025	S044		N	7.62	< 50	9:30	10:30	1:00	250	250
	15/03/2025	S044		N	7.91	< 50	10:00	12:30	2:30	300	120
	22/03/2025	S044		N	7.44	< 50	8:00	9:00	1:00	260	260
	24/03/2025	S044		N	7.49	< 50	15:00	16:00	1:00	260	260

Legend:
LOR – Limit of Recording
Sample Type: N - Primary, FD - Duplicate, FT - Triplicate
pH units = pH units
ug/L = micrograms per liter

				BTEXN								Total Petroleum Hydrocarbons											Polycyclic Aromatic Hydrocarbons															
				Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylene	Xylene - Total	BTEX - Total	Naphthalene	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction (sum)	C6 - C10 Fraction	C6 - C10 Fraction minus BTEX (F1)	>C10 - C16 Fraction	C10 - C16 minus Napthalene (F2)	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction (sum)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3,cd)pyrene	Phenanthrene	Pyrene	Total PAH
			LOR	1	2	2	2	2	2	1	5	20	50	100	50	50	20	20	100	100	100	100	100	1.0	1.0	1.0	1.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5
			Units	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			Action Levels																																				
Sample Location	Date Sampled	Depth Range (m)	Sample Type																																				
RR2	10/04/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	7/05/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	11/06/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	24/07/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	7/08/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	3/09/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	2/10/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	4/11/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	3/12/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	13/01/2025		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	3/02/2025		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	4/03/2025		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
SW09	10/04/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	7/05/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	11/06/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	24/07/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	7/08/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	3/09/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	2/10/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	4/11/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	3/12/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	13/01/2025		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	3/02/2025		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	4/03/2025		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
SW10	10/04/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	7/05/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	11/06/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	24/07/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	7/08/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
	3/09/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	2/10/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	4/11/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	3/12/2024		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	13/01/2025		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	3/02/2025		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
	4/03/2025		N	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5

Legend:
- Not analysed / not calculated
LOR – Limit of Recording
* LOR Exceeds Guideline Trigger Value
Sample Type: N - Primary, FD - Duplicate, FT - Triplicate
µg/L = µg/L

			AUS-RTA-SW-WDL-Table4							
			Aluminum, Total	Arsenic, Total	Gallium, Total	Molybdenum, Total	Vanadium, Total	Total Phosphorus	Total Nitrogen	C10-C36-Total
		LOR	5	1	10	0.1	0.2	10	1	50
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		Action Levels								
Sample Location	Date Sampled	Sample Type								
S001	4/04/2024	N	81	1.6	<10	10.1	2.4	-	-	-
	10/04/2024	N	129	1.7	<10	10.1	3	5	140	<50
	14/04/2024	N	159	5.6	<10	21.7	7	-	-	-
	17/04/2024	N	197	3.3	<10	19.6	6.4	-	-	-
	26/04/2024	N	74	4	<10	20.7	6.8	-	-	-
	30/04/2024	N	133	4.3	<10	21.3	7.6	-	-	-
	7/05/2024	N	53	5.2	<10	20.9	10.8	10	240	<50
	13/05/2024	N	136	5	<10	23	10.9	-	-	-
	20/05/2024	-						-	-	
	4/06/2024	N	96	4.5	<10	21.1	8.7	-	-	-
	11/06/2024	N	34	5.9	<10	25.4	12	-	-	<50
	17/06/2024	N	59	5.6	<10	25.3	9.7	10	270	-
	24/06/2024	N	66	7.7	<10	27.5	18.7	-	-	-
	3/07/2024	N	98	6.1	<10	25.3	15.9	-	-	-
	10/07/2024	N	64	8.5	<10	28.4	20.5	-	-	-
	17/07/2024	N	39	8.4	<10	27.6	19.3	16	290	<50
	24/07/2024	N	113	6.7	<10	23	13.2	-	-	-
	31/07/2024	N	116	8	<10	29.9	17.9	-	-	-
	7/08/2024	N	59	9.7	<10	30.1	26.5	14	300	<50
	13/08/2024	N	29	1.9	<10	11.7	3.6	-	-	-
	23/08/2024	N	97	2	<10	11.4	3	-	-	-
	26/08/2024	N	70	10.2	<10	31	32.4	-	-	-
	30/08/2024	N	100	2.1	<10	12.2	3.7	-	-	-
	3/09/2024	N	37	11.1	<10	28	33.7	-	-	<50
	10/09/2024	N	27	15.2	12	29.2	38.2	12	240	-
	17/09/2024	N	103	13.7	15	32.2	45.2	-	-	-
	23/09/2024	N	36	12.2	<10	34.2	36	-	-	-
	2/10/2024	N	111	14.2	12	30.5	44.4	11	270	<50
	17/10/2024	N	52	11.6	11	29.3	45.6	-	-	-
	22/10/2024	N	93	21.8	18	35.7	62.1	50	400	-
	29/10/2024	N	92	24.3	<10	44.6	72.6	-	-	-
	4/11/2024	N	114	20	15	34.4	56.7	10	260	<50
	15/11/2024	N	73	12.4	<10	29.4	55.7	-	-	-
	19/11/2024	N	57	17.3	<10	28.8	45.8	-	-	-
	26/11/2024	N	30	10.1	<10	27.1	23.2	-	-	-
	2/12/2024	N	43	17.5	12	36.2	51.9	17	310	<50
	12/12/2024	N	104	12.2	<10	30.4	42.5	-	-	-
	16/12/2024	N	143	12.2	<10	29.3	42.3	-	-	-
	24/12/2024	N	57	11.4	<10	28.8	37.5	-	-	-
	30/12/2024	N	74	14.5	11	36.9	49.7	-	-	-
	8/01/2025	N	130	16	16	33	<100	-	-	-
	13/01/2025	N	42	15.7	19	31.6	48.1	12	310	<50
	20/01/2025	N	48	13.6	11	30.6	46	-	-	-
	28/01/2025	N	74	13.6	17	29.4	44.9	-	-	-
	3/02/2025	N	58	2.6	<10	12.2	3.6	30	560	<50
	10/02/2025	N	406	17.3	20	32.6	53.2	-	-	-
	18/02/2025	N	85	16.2	14	33.4	59.7	-	-	-
	24/02/2025	N	66	9.8	16	26.6	51.6	-	-	-
	4/03/2025	N	44	14.2	11	30.2	44.8	15	320	<50
	12/03/2025	N	42	17.7	11	29.9	38.8	-	-	-
	18/03/2025	N	108	14	21	33.5	59.7	-	-	-
	24/03/2025	N	83	13	18	27	53	-	-	-
	25/03/2025	N	183	18.4	13	33.4	50.5	-	-	-
S015	5/04/2024	N	-	-	-	-	-	3160	11700	-
	12/04/2024	N	-	-	-	-	-	3730	15200	-
	19/04/2024	N	-	-	-	-	-	-	-	-
	26/04/2024	N	-	-	-	-	-	3500	15600	-
	3/05/2024	N	-	-	-	-	-	5460	26000	-
	10/05/2024	N	-	-	-	-	-	3930	14300	-
	17/05/2024	N	-	-	-	-	-	160	14800	-
	24/05/2024	N	-	-	-	-	-	3840	19700	-
	31/05/2024	N	-	-	-	-	-	3910	17000	-
	7/06/2024	N	-	-	-	-	-	3850	17600	-
	14/06/2024	N	-	-	-	-	-	3430	26400	-
	21/06/2024	N	-	-	-	-	-	4380	18700	-
	28/06/2024	N	-	-	-	-	-	3730	17000	-
	5/07/2024	N	-	-	-	-	-	3640	20600	-
	12/07/2024	N	-	-	-	-	-	3410	24500	-
	19/07/2024	N	-	-	-	-	-	5770	45800	-
	26/07/2024	N	-	-	-	-	-	6810	55200	-
	2/08/2024	N	-	-	-	-	-	5510	40000	-
	9/08/2024	N	-	-	-	-	-	4620	33500	-
	16/08/2024	N	-	-	-	-	-	4470	33400	-
	23/08/2024	N	-	-	-	-	-	2170	17100	-
	30/08/2024	N	-	-	-	-	-	2900	13900	-
	6/09/2024	N	-	-	-	-	-	3210	15400	-
	13/09/2024	N	-	-	-	-	-	3830	16700	-
	20/09/2024	N	-	-	-	-	-	4630	18100	-
	27/09/2024	N	-	-	-	-	-	5780	36000	-
	4/10/2024	N	430	<1	<1	<1	<10	-	-	-
	4/10/2024	N	-	-	-	-	-	-	42400	-
	11/10/2024	N	540	<1	<1	<1	<10	-	-	-
	18/10/2024	N	200	<1	<1	1	<10	-	-	-
	25/10/2024	N	390	<1	<1	<1	<10	-	-	-
	1/11/2024	N	660	<1	<1	<1	<10	-	-	-
	1/11/2024	N	-	-	-	-	-	3720	16800	-
	8/11/2024	N	-	-	-	-	-	4020	18300	-
	14/11/2024	N	-	-	-	-	-	3650	21700	-
	15/11/2024	N	390	<1	<1	<1	<10	-	-	-
	25/11/2024	N	-	-	-	-	-	3220	19500	-
	29/11/2024	N	-	-	-	-	-	3310	21000	-
	6/12/2024	N	-	-	-	-	-	4060	23900	-
	13/12/2024	N	-	-	-	-	-	3400	18900	-
	20/12/2024	N	-	-	-	-	-	3520	19300	-
	27/12/2024	N	-	-	-	-	-	2450	10400	-
	3/01/2025	N	-	-	-	-	-	2220	9200	-
	10/01/2025	N	-	-	-	-	-	2710	15500	-
	17/01/2025	N	-	-	-	-	-	3720	23000	-
	3/02/2025	N	-	-	-	-	-	2280	6900	-

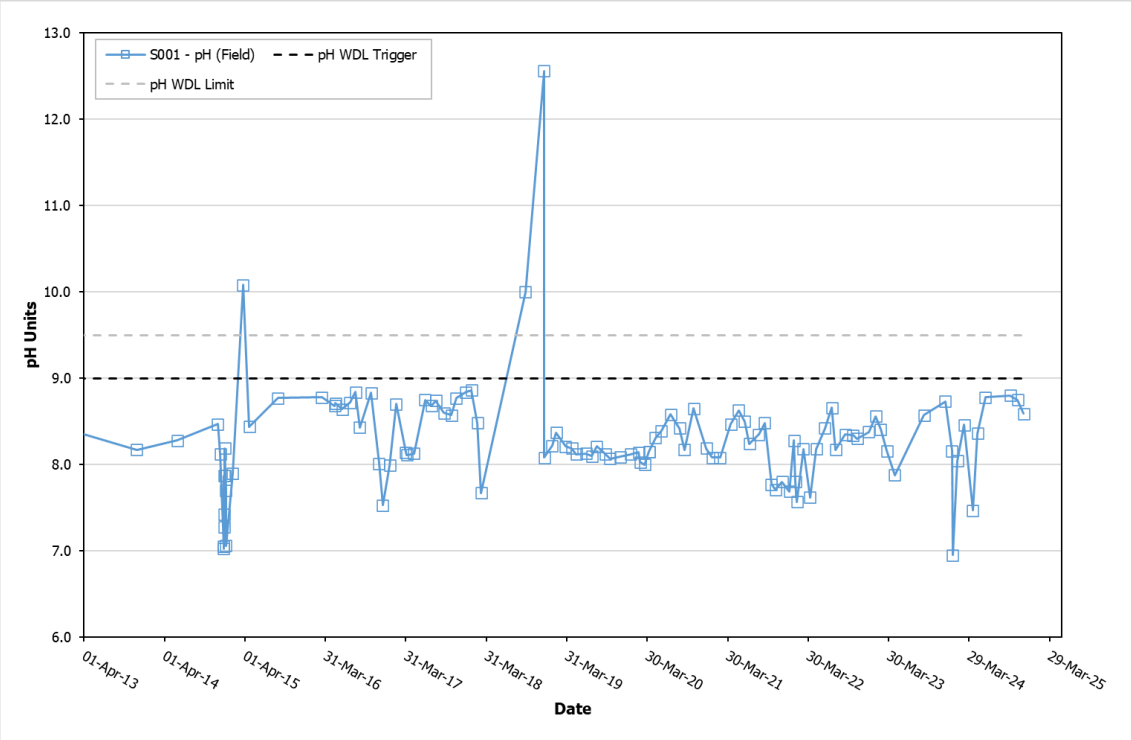
			AUS-RTA-SW-WDL-Table4							
			Aluminum, Total	Arsenic, Total	Gallium, Total	Molybdenum, Total	Vanadium, Total	Total Phosphorus	Total Nitrogen	C10-C36-Total
		LOR	5	1	10	0.1	0.2	10	1	50
		Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		Action Levels								
Sample Location	Date Sampled	Sample Type								
	10/02/2025	N	-	-	-	-	-	3230	13600	-
	17/02/2025	N	-	-	-	-	-	3420	19200	-
	24/02/2025	N	-	-	-	-	-	3140	19200	-
	3/03/2025	N	-	-	-	-	-	2840	10100	-
	9/03/2025	N	-	-	-	-	-	2490	1600	-
	17/03/2025	N	-	-	-	-	-	2720	5700	-
	24/03/2025	N	-	-	-	-	-	2460	6800	-
	31/03/2025	N	-	-	-	-	-	3070	7800	-
S044	7/04/2024	N	-	-	-	-	-	-	-	< 50
	9/04/2024	N	-	-	-	-	-	-	-	< 50
	13/04/2024	N	-	-	-	-	-	-	-	< 50
	17/04/2024	N	-	-	-	-	-	-	-	< 50
	20/04/2024	N	-	-	-	-	-	-	-	<50
	22/04/2024	N	-	-	-	-	-	-	-	< 50
	26/11/2024	N	-	-	-	-	-	-	-	< 50
	22/12/2024	N	-	-	-	-	-	-	-	<50
	2/02/2025	N	-	-	-	-	-	-	-	< 50
	7/02/2025	N	-	-	-	-	-	-	-	< 50
	8/02/2025	N	-	-	-	-	-	-	-	< 50
	16/02/2025	N	-	-	-	-	-	-	-	< 50
	26/02/2025	N	-	-	-	-	-	-	-	< 50
	15/03/2025	N	-	-	-	-	-	-	-	< 50
	22/03/2025	N	-	-	-	-	-	-	-	< 50
	24/03/2025	N	-	-	-	-	-	-	-	< 50
S098	14/04/2024	N	<100	70	20	156	<100	-	-	-
	17/04/2024	N	<100	21	17	134	<100	-	-	-
	26/04/2024	N	<100	23	<10	162	<100	-	-	-
	30/04/2024	N	<100	35	17	158	<100	-	-	-
	7/05/2024	N	61	40.5	25	144	102	-	-	-
	13/05/2024	N	<100	35	24	134	<100	-	-	-
	4/06/2024	N	<100	37	22	148	<100	-	-	-
	11/06/2024	N	31	50	36	184	113	-	-	-
	17/06/2024	N	<100	48	22	201	<100	-	-	-
	24/06/2024	N	<100	81	40	233	210	-	-	-
	3/07/2024	N	<100	62	31	210	150	-	-	-
	10/07/2024	N	120	83	36	229	220	-	-	-
	17/07/2024	N	95	86.7	52	228	223	-	-	-
	24/07/2024	N	<100	61	39	179	140	-	-	-
	31/07/2024	N	120	85	40	279	200	-	-	-
	7/08/2024	N	67	126	49	329	323	-	-	-
	13/08/2024	N	<100	<10	<10	14	<100	-	-	-
	23/08/2024	N	<100	24	<10	82	<100	-	-	-
	26/08/2024	N	<100	70	79	207	340	-	-	-
	3/09/2024	N	85	124	93	233	405	-	-	-
	10/09/2024	N	<100	106	87	177	300	-	-	-
	17/09/2024	N	140	107	104	182	380	-	-	-
	23/09/2024	N	<100	85	52	197	280	-	-	-
	2/10/2024	N	125	123	132	217	442	-	-	-
	8/10/2024	N	<100	74	23	216	190	-	-	-
	17/10/2024	N	<100	115	137	215	460	-	-	-
	22/10/2024	N	<100	159	134	210	480	-	-	-
	29/10/2024	N	130	182	202	224	550	-	-	-
	4/11/2024	N	143	156	148	223	504	-	-	-
	15/11/2024	N	<100	112	100	198	480	-	-	-
	19/11/2024	N	<100	157	99	211	450	-	-	-
	26/11/2024	N	<100	142	79	250	320	-	-	-
	2/12/2024	N	82	170	142	265	515	-	-	-
	12/12/2024	N	<100	96	92	196	370	-	-	-
	16/12/2024	N	<100	97	86	192	370	-	-	-
	24/12/2024	N	120	149	112	214	430	-	-	-
	30/12/2024	N	110	105	115	199	410	-	-	-
	8/01/2025	N	140	146	127	248	490	-	-	-
	13/01/2025	N	135	151	149	231	503	-	-	-
	20/01/2025	N	110	123	130	213	470	-	-	-
	28/01/2025	N	<100	123	174	222	460	-	-	-
	3/02/2025	N	56	34.2	6	63.9	60.2	-	-	-
	10/02/2025	N	130	154	161	216	470	-	-	-
	18/02/2025	N	280	130	119	225	480	-	-	-
	24/02/2025	N	160	123	138	236	500	-	-	-
	4/03/2025	N	274	155	162	252	556	-	-	-
	12/03/2025	N	120	196	99	233	370	-	-	-
	18/03/2025	N	340	174	208	248	670	-	-	-
	24/03/2025	N	150	145	166	236	590	-	-	-
	25/03/2025	N	<100	168	135	225	510	-	-	-

Legend:
- Not analysed / not calculated
LOR – Limit of Recording
* LOR Exceeds Guideline Trigger Value
Sample Type: N - Primary, FD - Duplicate, FT - Triplicate
µg/L = µg/L

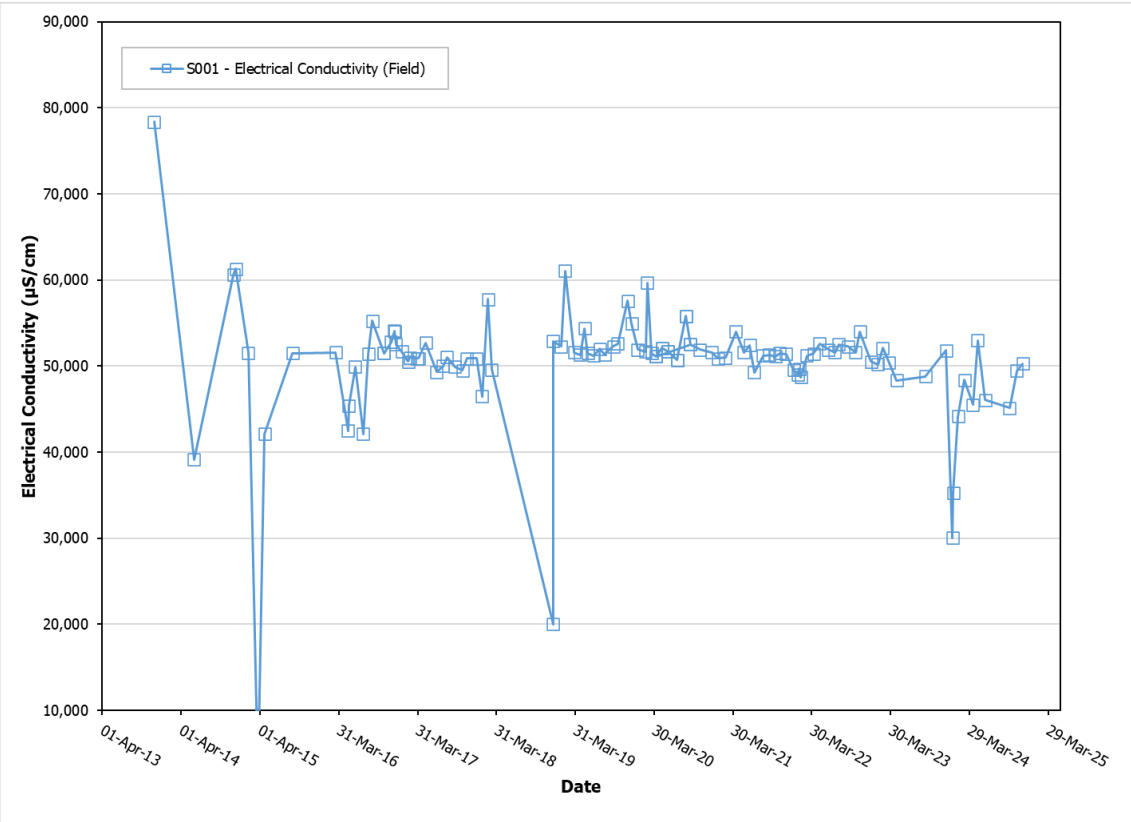
Location ID	Month	Aluminum, Total (kg)	Arsenic, Total (kg)	Gallium, Total (kg)	Molybdenum, Total (kg)	Vanadium, Total (kg)	Total Phosphorus (kg)	Total Nitrogen (kg)	C10-C36-Total (kg)
S001	April	936.25	25.08	70.77	123.0	49.32	47.0	1196.1	-
S001	May	564.87	26.44	65.17	117.9	54.66	64.2	1576.9	-
S001	June	463.69	44.11	72.45	182.0	94.53	77.2	1952.9	-
S001	July	657.36	59.10	78.50	208.6	135.88	115.9	2266.2	-
S001	August	432.13	37.68	58.07	132.9	99.56	78.6	1643.7	-
S001	September	455.60	102.05	92.39	240.3	299.91	92.5	1981.6	-
S001	October	696.78	136.95	102.80	276.5	437.86	254.9	2760.1	-
S001	November	349.80	86.07	62.33	174.2	252.30	82.1	1642.4	-
S001	December	683.99	109.47	86.18	262.0	361.70	124.9	2526.6	-
S001	January	597.95	116.20	121.16	253.3	465.54	138.6	3057.4	-
S001	February	1161.83	89.07	110.66	198.5	321.09	174.4	3374.7	-
S001	March	651.61	125.80	120.66	253.1	404.00	91.1	3723.2	-
Pro-rata Annual Load:		7651.9	958.0	1041.1	2422.3	2976.4	1341.4	27701.6	-
S098	April	26.80	7.46	3.93	40.31	26.80	-	-	-
S098	May	50.35	20.35	12.84	78.53	55.80	-	-	-
S098	June	41.02	28.51	15.58	99.18	68.56	-	-	-
S098	July	62.79	44.19	23.38	129.84	109.71	-	-	-
S098	August	29.06	28.16	17.40	75.51	91.31	-	-	-
S098	September	81.28	77.67	64.62	146.12	256.03	-	-	-
S098	October	56.53	72.55	72.39	107.41	233.75	-	-	-
S098	November	53.54	74.52	55.08	112.59	215.49	-	-	-
S098	December	69.78	84.99	74.33	146.25	286.01	-	-	-
S098	January	84.52	92.67	98.79	158.35	331.02	-	-	-
S098	February	100.73	72.04	71.40	119.54	248.04	-	-	-
S098	March	109.28	87.78	83.07	131.21	291.44	-	-	-
Pro-rata Annual Load:		765.7	690.9	592.8	1344.8	2214.0	-	-	-
S015	April	-	-	-	-	-	-	-	-
S015	May	-	-	-	-	-	-	-	-
S015	June	-	-	-	-	-	-	-	-
S015	July	-	-	-	-	-	-	-	-
S015	August	-	-	-	-	-	-	-	-
S015	September	-	-	-	-	-	-	-	-
S015	October	-	-	-	-	-	-	-	-
S015	November	-	-	-	-	-	-	-	-
S015	December	-	-	-	-	-	-	-	-
S015	January	-	-	-	-	-	-	-	-
S015	February	-	-	-	-	-	-	-	-
S015	March	-	-	-	-	-	-	-	-
Pro-rata Annual Load:		-	-	-	-	-	-	-	-
S044	April	-	-	-	-	-	-	-	0.06
S044	May	-	-	-	-	-	-	-	0.00
S044	June	-	-	-	-	-	-	-	0.00
S044	July	-	-	-	-	-	-	-	0.00
S044	August	-	-	-	-	-	-	-	0.00
S044	September	-	-	-	-	-	-	-	0.00
S044	October	-	-	-	-	-	-	-	0.00
S044	November	-	-	-	-	-	-	-	0.02
S044	December	-	-	-	-	-	-	-	0.01
S044	January	-	-	-	-	-	-	-	0.00
S044	February	-	-	-	-	-	-	-	0.04
S044	March	-	-	-	-	-	-	-	0.03
Pro-rata Annual Load:		-	-	-	-	-	-	-	0.16

APPENDIX D SURFACE WATER DATA TRENDS

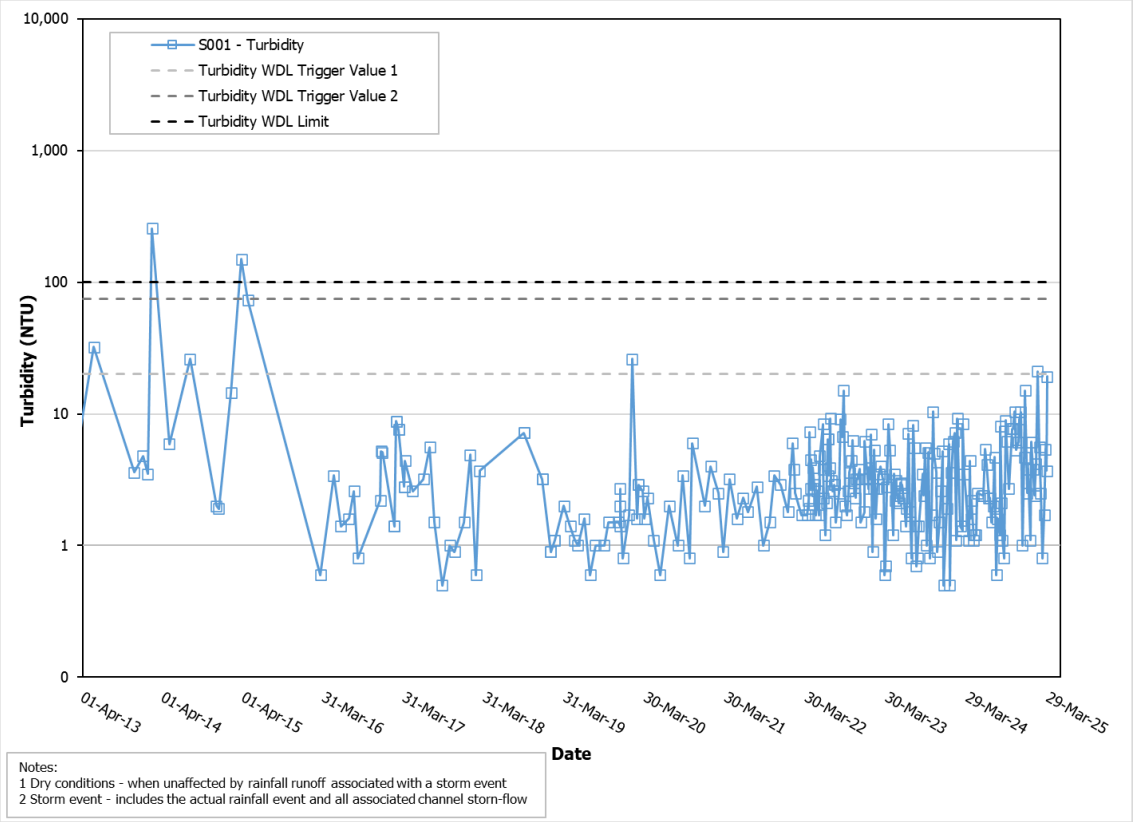
S001 (grab sample) – pH (field)



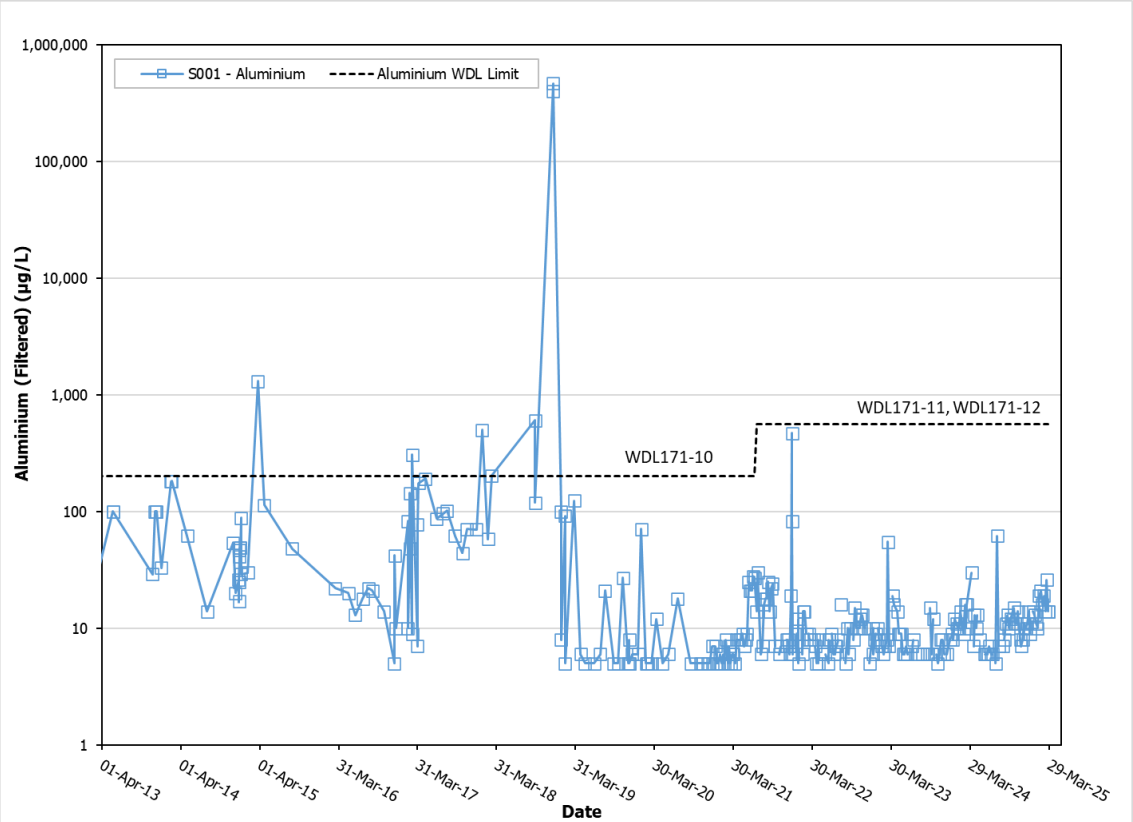
S001 (grab sample) – EC



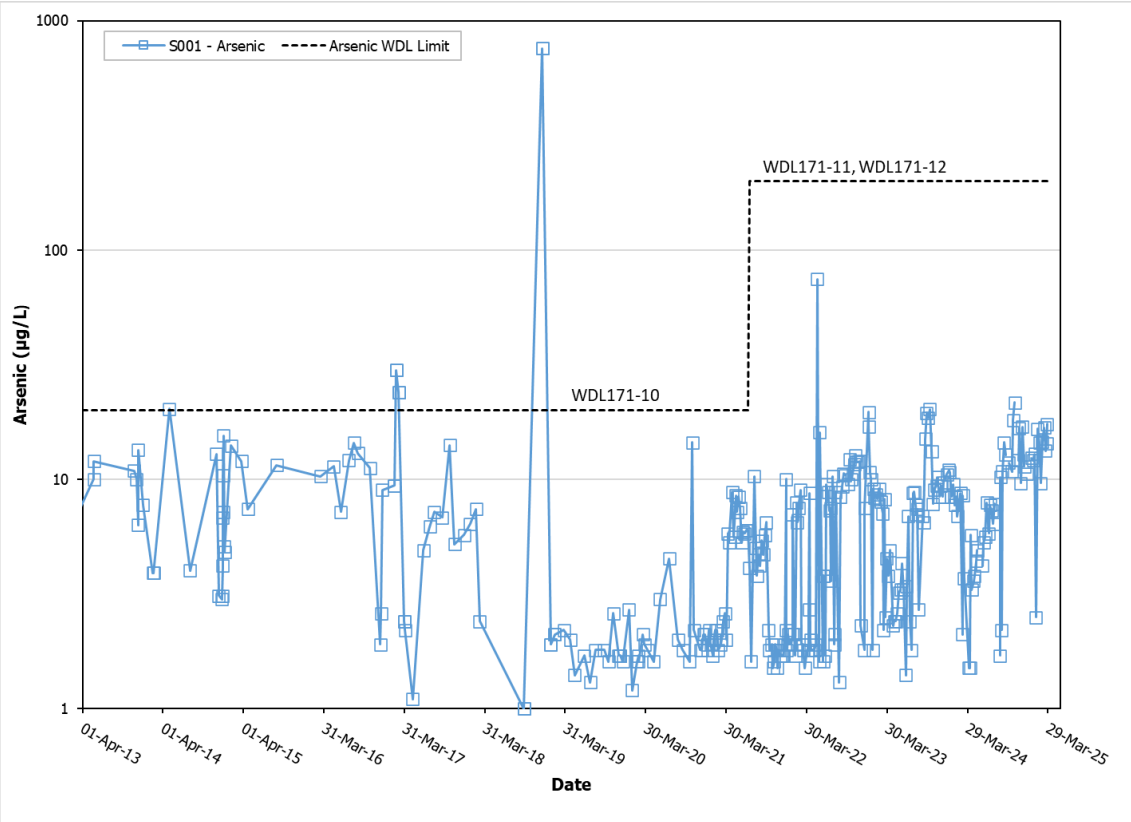
S001 (grab sample) – Turbidity



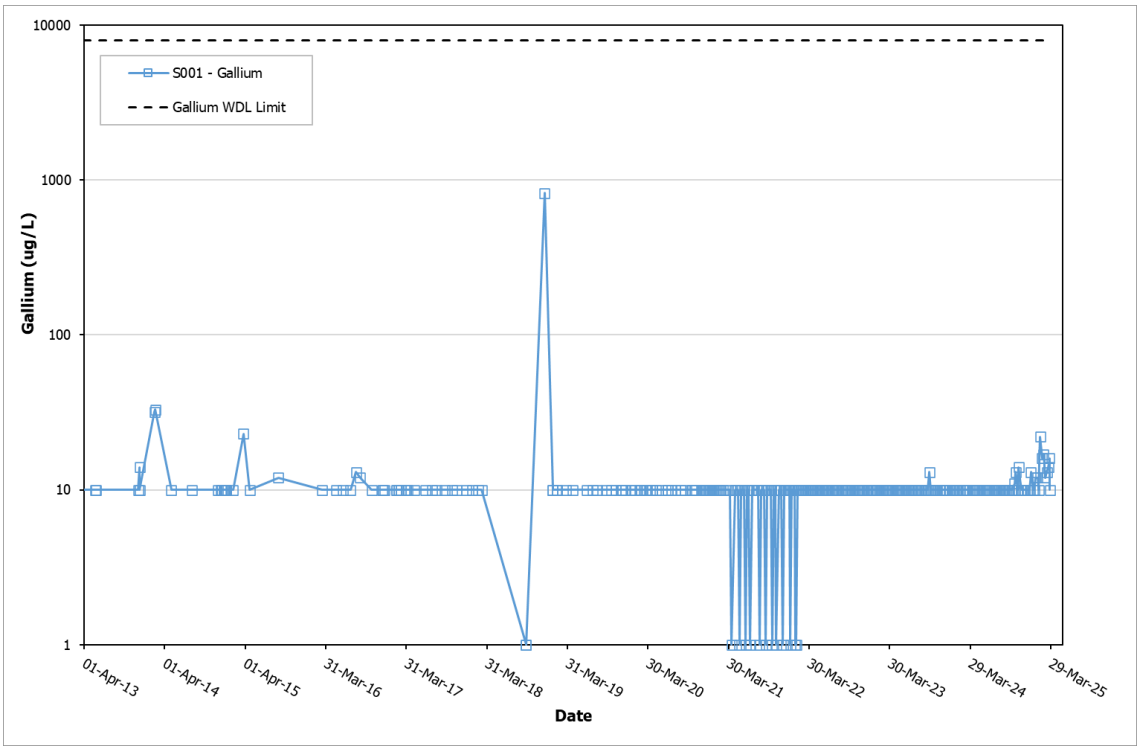
S001 (grab sample) – Aluminium (filtered)



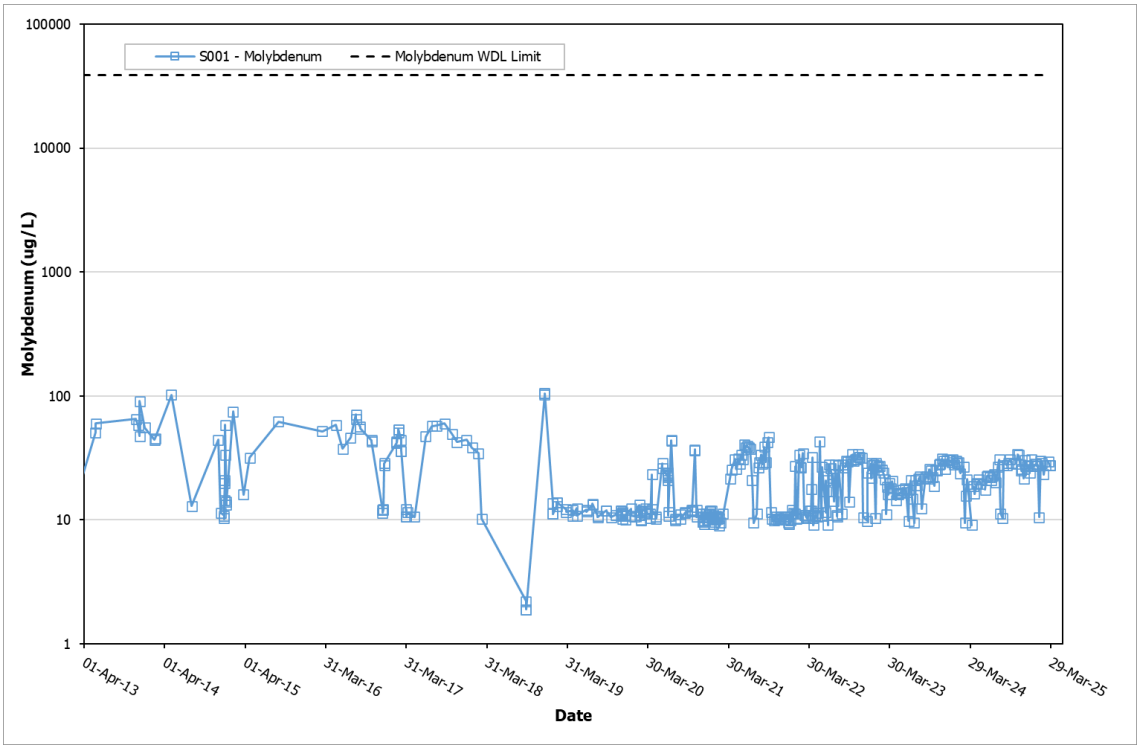
S001 (grab sample) – Arsenic (filtered)



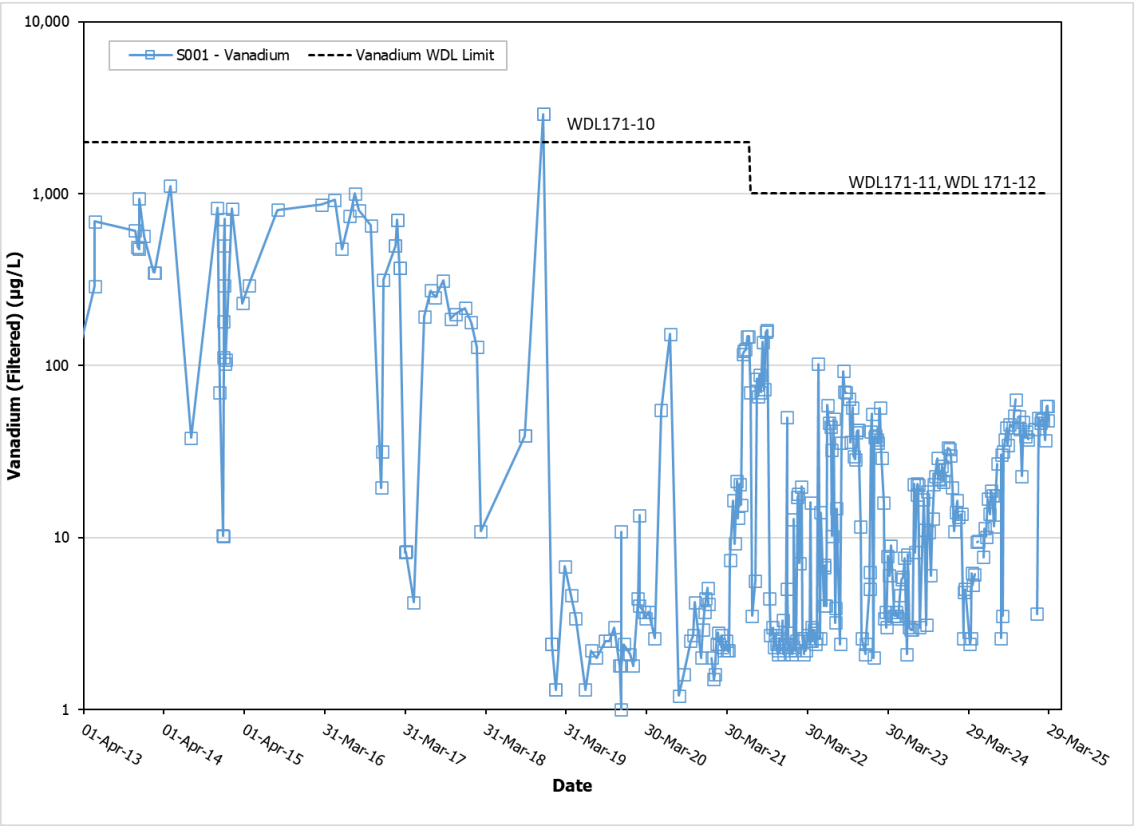
S001 (grab sample) – Gallium (filtered)



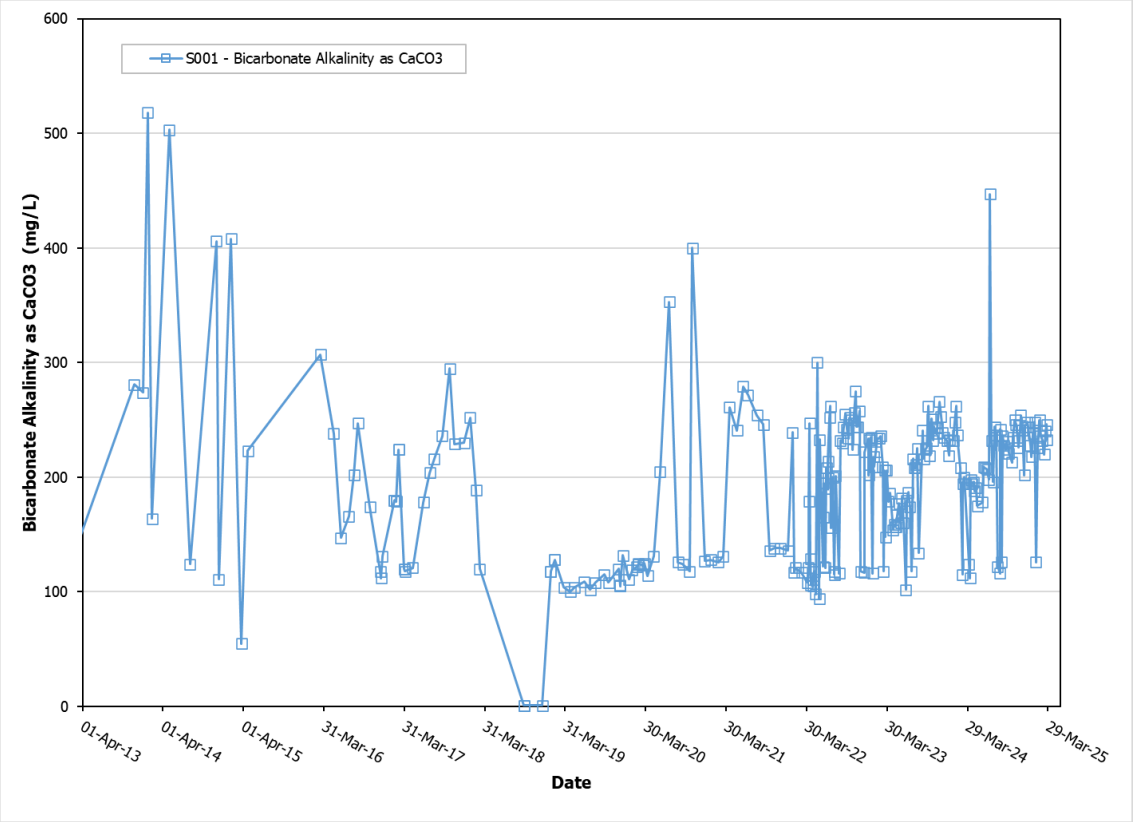
S001 (grab sample) – Molybdenum (filtered)



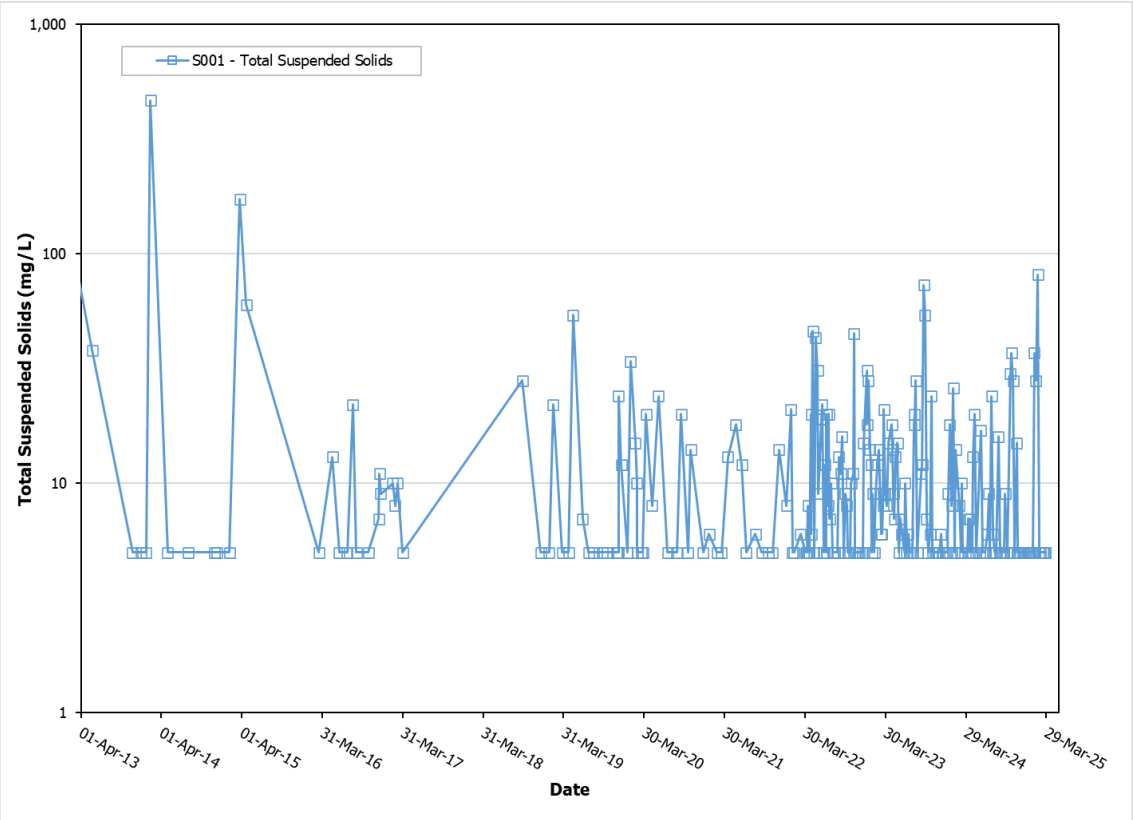
S001 (grab sample) – Vanadium (filtered)



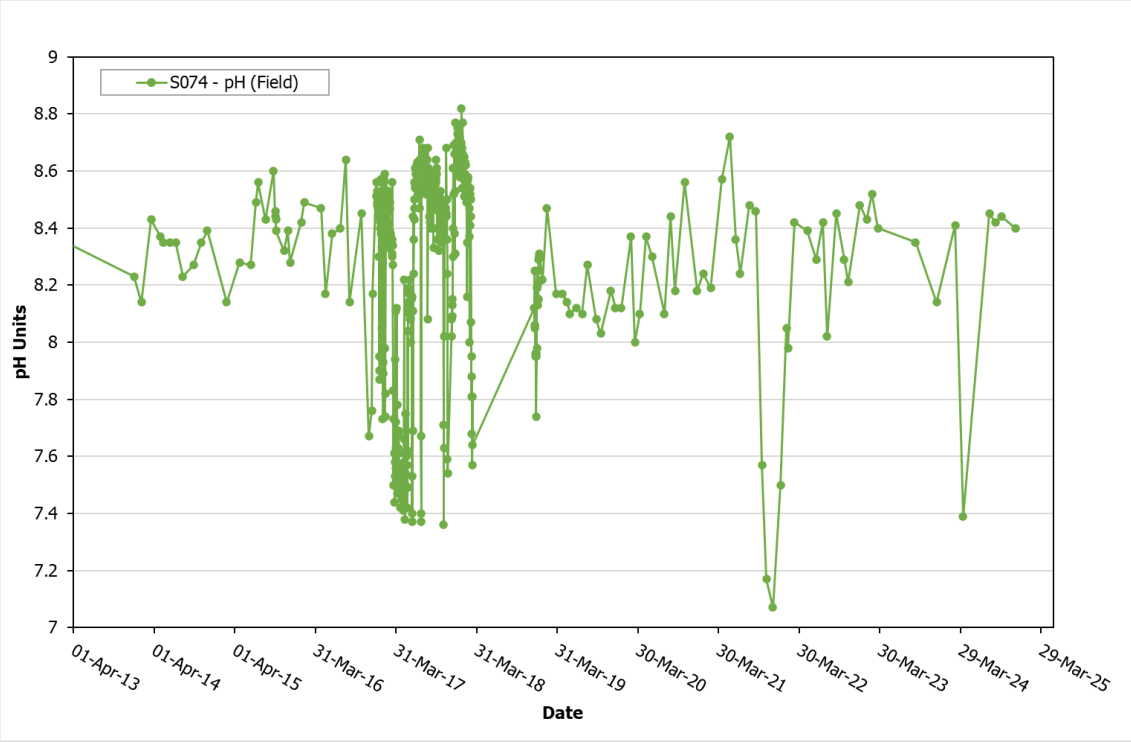
S001 (grab sample) – Alkalinity



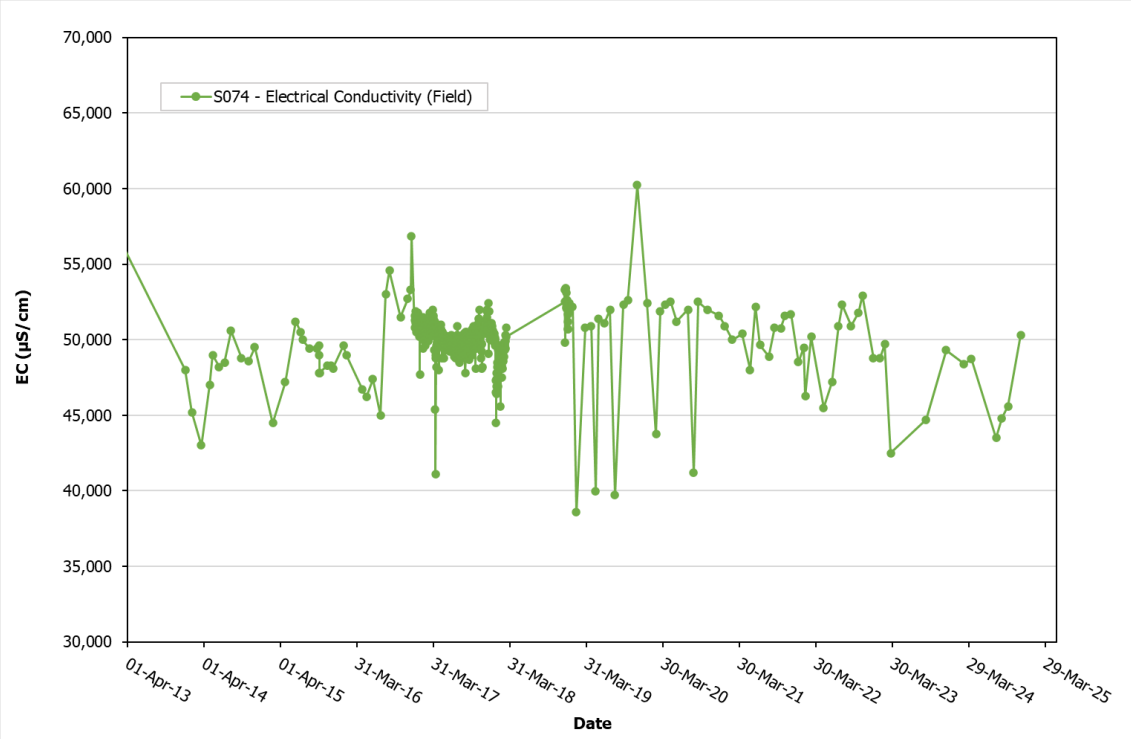
S001 (grab sample) – Total Suspended Solids (TSS)



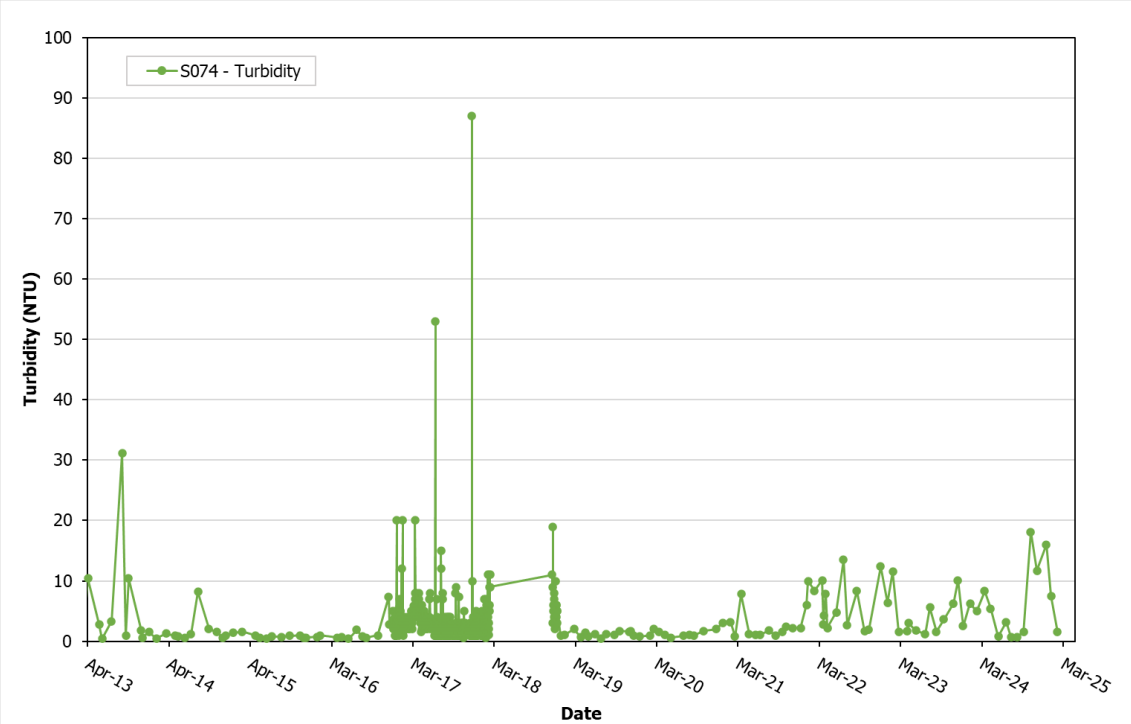
S074 (composite sample) – pH (field)



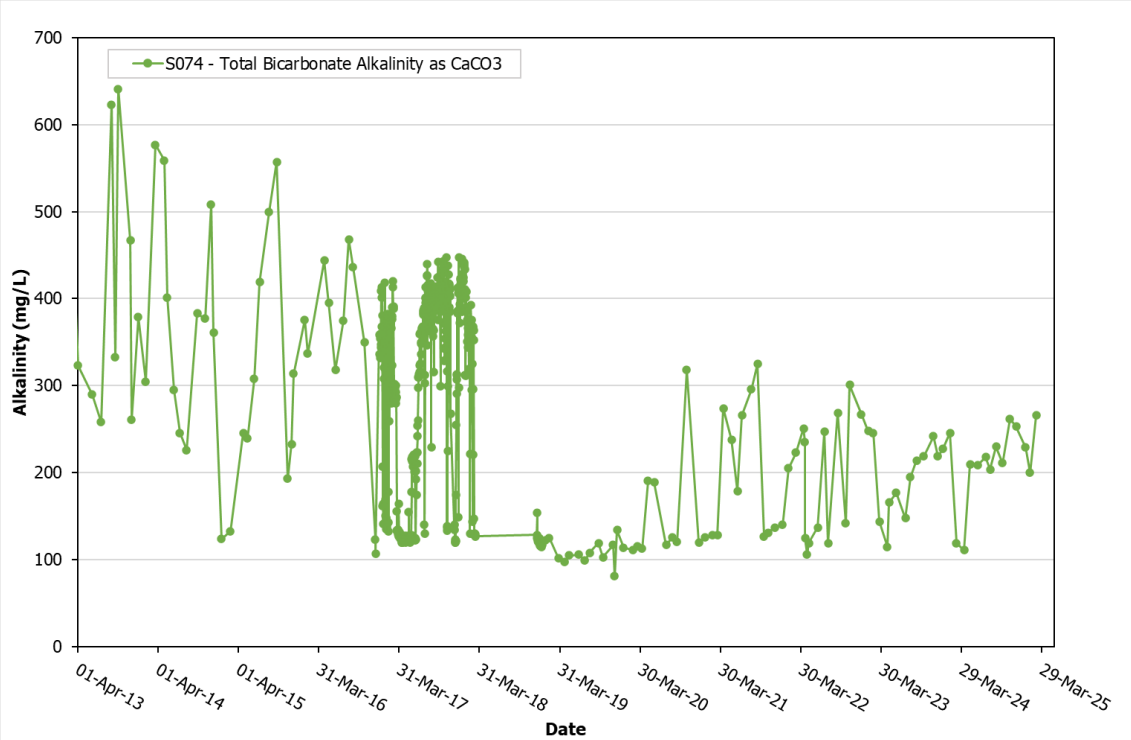
S074 (composite sample) – Electrical Conductivity



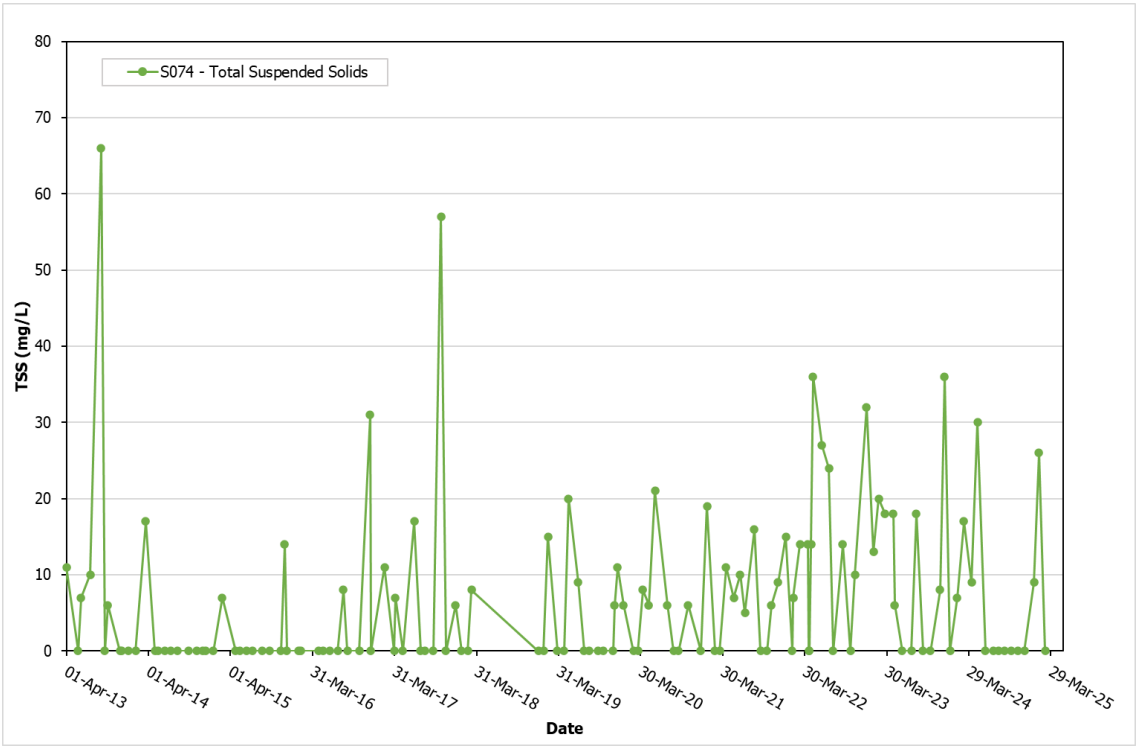
S074 (composite sample) – Turbidity



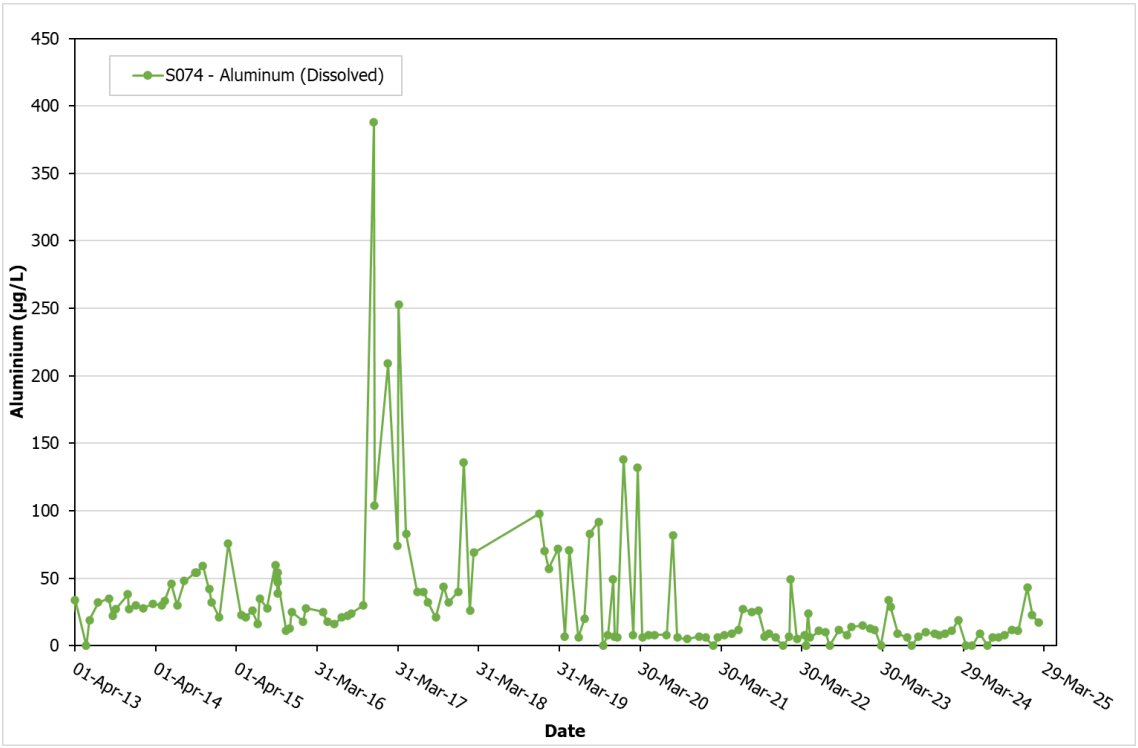
S074 (composite sample) – Alkalinity



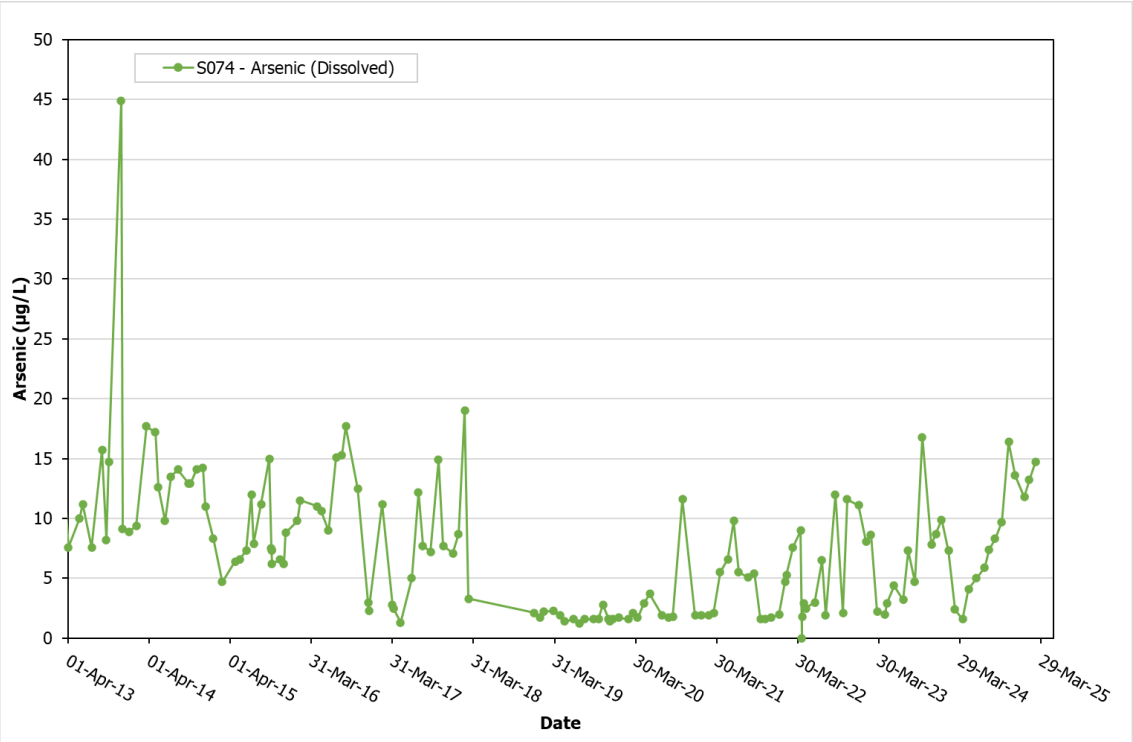
S074 (grab sample) – Total Suspended Solids (TSS)



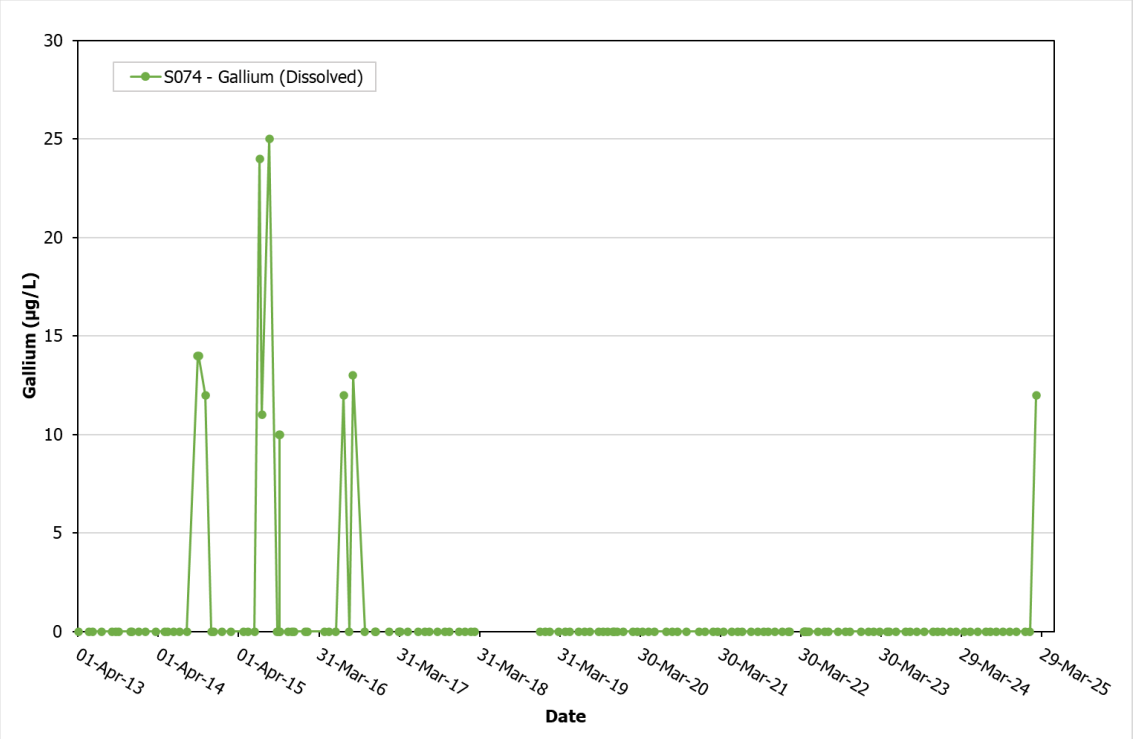
S074 (composite sample)– Aluminium (filtered)



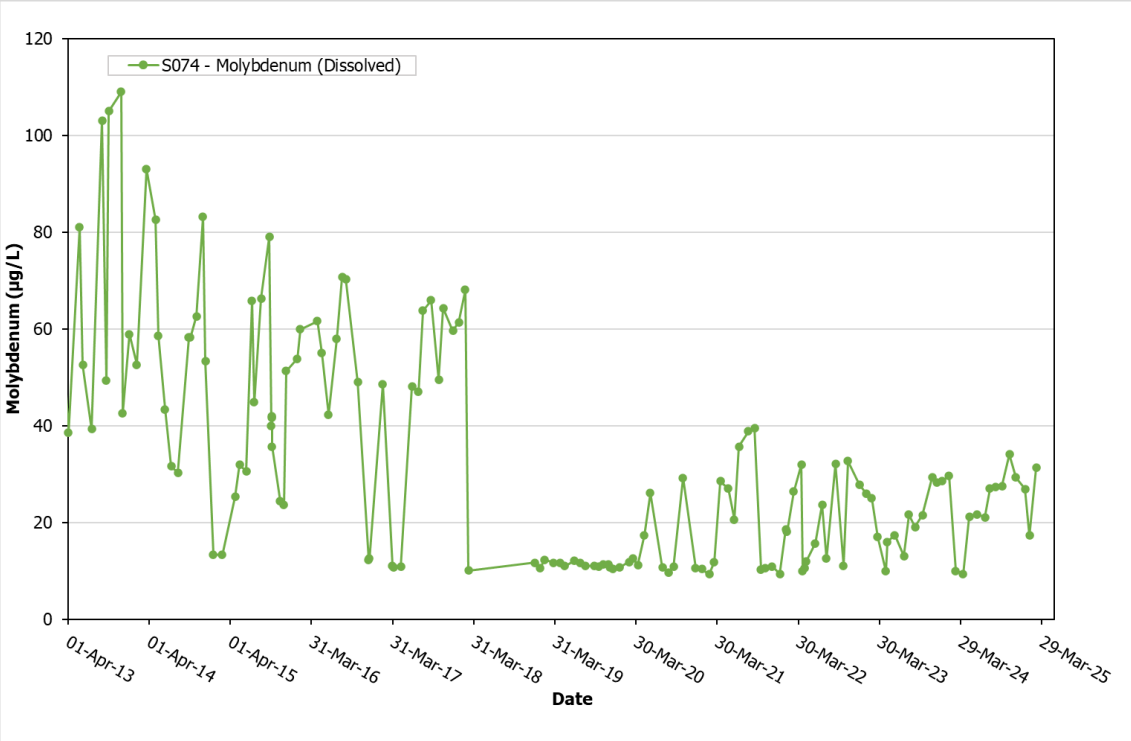
S074 (composite sample) – Arsenic (filtered)



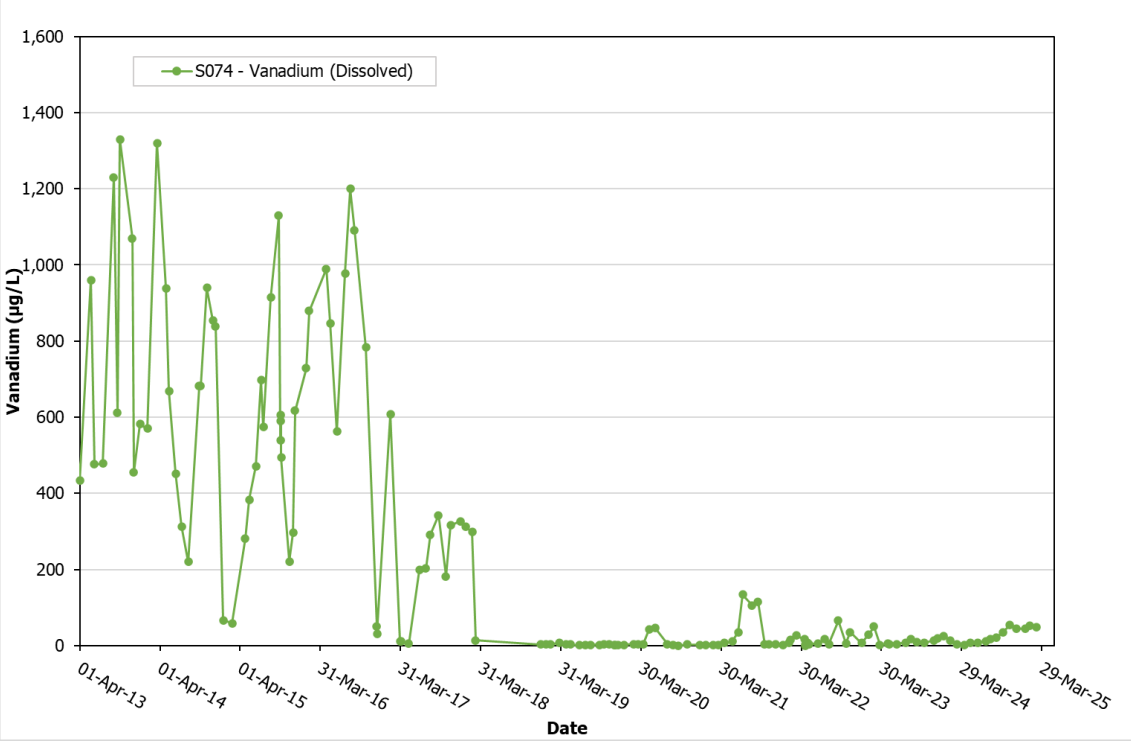
S074 (composite sample) – Gallium (filtered)



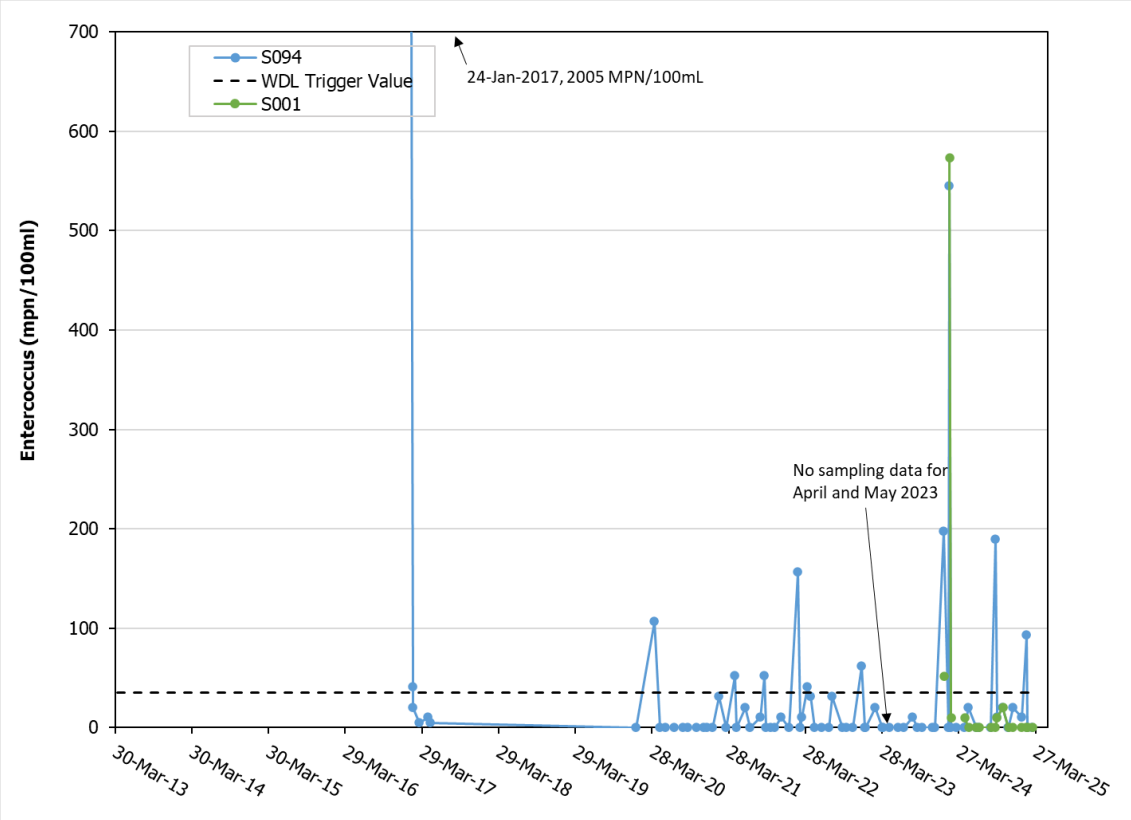
S074 (grab sample) – Molybdenum (filtered)



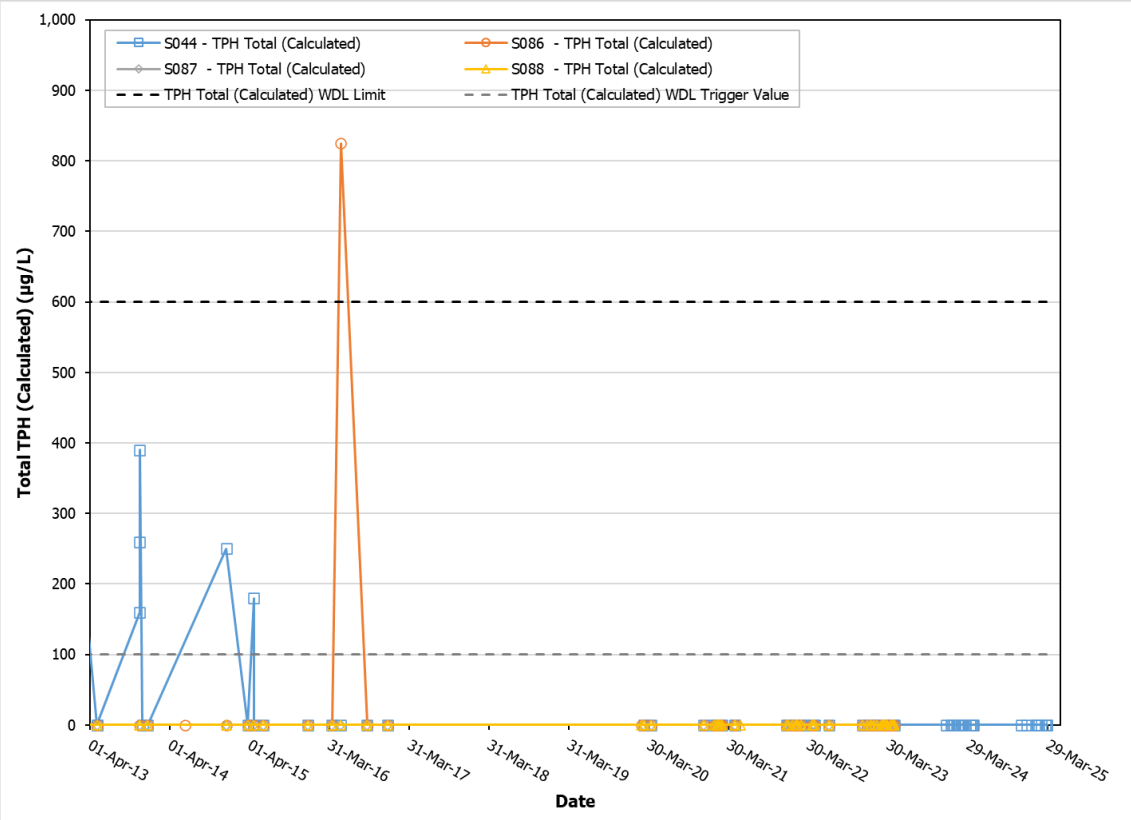
S074 (composite sample) – Vanadium (filtered)



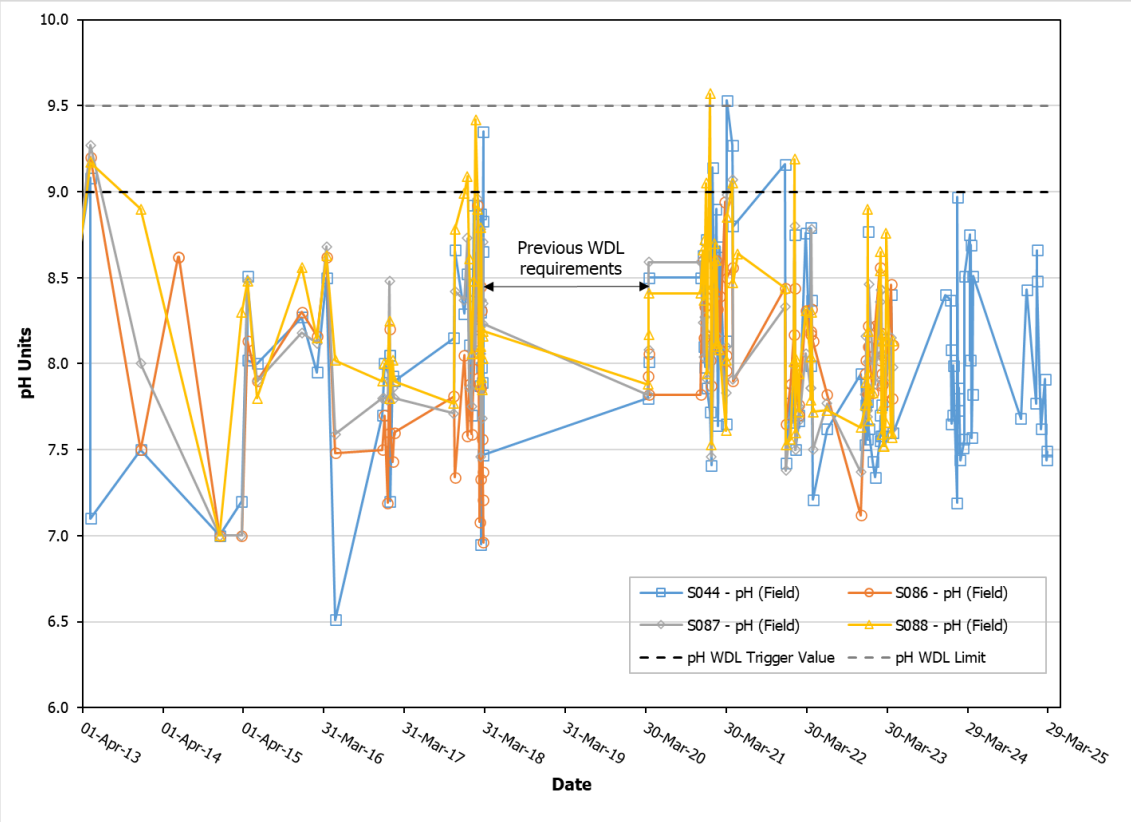
S094, Boat Ramp and S001 – Enterococci



S044, S086, S087 and S088 – Total Petroleum Hydrocarbons (calculated)



S044, S086, S087 and S088 – pH (field)



APPENDIX E MARINE HEALTH MONITORING REPORT

Provided as addtional submission

APPENDIX F INCIDENT NOTIFICATIONS

Notification of an Environmental Incident

☒ Incident ☐ Critical Incident ☐ Preliminary ☒ Final

Incident number:	**1000650986**
Name of mining site:	Rio Tinto - Gove operations
Name of operator:	RTA Gove Pty Limited
Date & time of detection:	Date: 12/04/2024 Time: 18:10
Date & time of incident:	Date: 12/04/2024 Time: 19:04
Name of person notifying:	Drew Carmichael
Position/Title:	Environment Superintendent
Contact person:	Drew Carmichael
Contact details:	Business: 08 8987 5233 Mobile: 0467 946 163
	E-mail: andrew.carmichael@riotinto.com
INCIDENT LOCATION (use GPS co-ordinates, attach map, etc. as appropriate)	Latitude -12.188147 Longitude 136.685306  WCP Overflow location into Seawater Channel

INCIDENT DESCRIPTION	Overflow of Western Containment Pond (WCP) into the Seawater Channel resulting in discharge via S001 (Schedule 1, Item 10 (f), Condition 25 & 26).	
Causes & contributing factors to the incident:	A high rainfall event was experienced across the Gove peninsula on the evening of 12th April 2024, with approximately 60 mm recorded on 12 April 2024. The majority of the rainfall fell over a 2-3 hour period during the overflow event. The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in overflow from the WCP into the seawater channel. Overflow from the WCP commenced at approximately 19:04 PM, and ceased at approximately 21.23 PM. The Waste Water Neutralisation Plant (WWNP) was in sustained shutdown during the event. Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation and was not discharging into the channel at the time of the overflow.	
Potential causes & contributing factors to the incident:	Intense rainfall over a short period, resulting in stormwater inflow into the WCP catchments which caused the pond to overtop its weir into the seawater channel.	
Action Taken:	YES ☒	NO ☐
If no, why?		
Corrective Actions that have/will be undertaken to ensure this does not reoccur:	Immediate corrective actions implemented to minimise the risk of overtopping included; • Continual operation of the WCP pumps. • Implementation of the Trigger Action Response Plan (TARP), and • Both sea water pumps remaining in operation. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination of the catchment. The demolition of the refinery has commenced. The WCP catchment is scheduled to be decontaminated and converted to clean stormwater catchment by 2026. The removal of the WCP cannot be brought forward due to constraints around the demolition of the refinery	
Date when investigation report will be submitted to Administering Agency:	26 April 2024 (10 business days after the incident is 29 April 2024. Excludes 25 April Public Holiday).	

ENVIRONMENTAL DETAILS

Nature of impact and severity: (Volume of spillage, area impacted, wildlife/vegetation/ erosion, etc.)	Refer to attached Environmental Impact Assessment (EIA)

Emergency & remedial actions taken:	• The Water Treatment plant was already in a shutdown so was not operating during the event. • WCP pump operated continuously until the pond level reduced to below 50%.
Current situation: (Potential / ongoing / ceased / etc.)	The WCP overtopping event lasted for 2 hours and 19 minutes, from 19:04pm and ceased at approximately 21:23pm on the 12/04/24. The containment pond pumps remained in operation throughout the event and WCP levels returned below 50% on the 14.04.2024 01:00 AM. The WWNP has remained offline since the 15 March 2024 due to a separate health and safety investigation not related to the WDL. At the time of writing this notification, the WWNP has since been online and operational during favourable conditions. Additional erosion and sediment controls have also been monitored and managed across the refinery to help control and transfer water to the RDA for storage and future treatment.
Details of any samples taken: (when / where / type / number / time for results /etc) If incident is related to Total Nitrogen, refer to WDL171-11 section 38.8 for further analysis.	Sample details as follows: • Continuous monitoring at S001 for pH and EC • Daily sample at S001. • Daily composite sample at S074 • Investigation samples collected at S001 & S030 every 2-hours (internal and external analysis). 4-hourly sampling continued after the overflow ceased. • Marine incident investigation sampling at RR2, SW9 & SW10 compliance sites was completed at approximately 11:20 AM on the 13/04/2024. See the EIA for further details.

OPERATOR INTERNAL REPORTING

Has the incident been reported internally?	☒ **YES**		☐ **NO**
If so, to whom:	**Name:**	Johann MENEZES	
	Position:	Water treatment Superintendent	

Has the department been notified earlier?	☒ **YES**	☐ **NO**
Who was notified:	Sally-Anne Orchard	
How: **(phone/email/fax)**	Phone voicemail and follow up email notification	

When: (date & time)	Phone voicemail at 14:00PM on 13rd April 2024 and follow up email notification.
By whom:	Drew Carmichael

Name: Drew Carmichael

Signed Drew Carmichael **Date:** 26 April 2024

Title: Environment Superintendent

OFFICE USE ONLY

Received by:

Date: **Time:**

Environmental Impact Assessment

Incident #1000650986

12 April 2024

Compliance monitoring and investigative (event based) sampling was conducted in response to the Western Containment Pond (WCP) overtopping into the Seawater Channel on 12 April 2024 following a significantly large rainfall event across the Gove peninsula. The over topping of the WCP occurred for 2 hours and 19 minutes from 19:04 to 21:23.

The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC and continuous operation of the autosampler (S074) to retrieve a composite sample.

The incident was reported as #1000650986 to the Department of Environment, Parks, and Water Security (DEPWS) on 12 April 2024. Immediate corrective action included continual operation of WCP pumps, implementation of the Trigger Action Response Plan (TARP); the Waste Water Neutralisation Plant (WWNP) was offline at the time, and both sea water pumps remaining operational. The ultimate corrective action remains the demolition of the Refinery and decontamination of the catchment scheduled for conversion to a clean stormwater catchment. The removal of the WCP cannot be brought forward due to constraints around the demolition of the refinery.

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GLOSSARY

COPC	Contaminants of Potential Concern
LOR	Limit of reporting
MZB	Mixing Zone Boundary
RDA	Residue Disposal Area
SCP	Southern Containment Pond
STP	Sewerage Treatment Plant
TARP	Trigger Action Response Plan
TDN	Total Dissolved Nitrogen
TDP	Total Dissolved Phosphorous
TV	Trigger Value
UPS	Uninterrupted Power Source
WCP	Western Containment Pond
The Licence	Waste Discharge Licence
WWNP	Waste Water Neutralisation Plant

Introduction

A significant rainfall event was experienced across the Gove Peninsula on 12 April 2024. The Stockpile Creek Rain Gauge recorded 60.4 mm of rainfall over the 12 April 2024.

The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in stormwater overtopping the WCP weir into the seawater channel. Overflow from the WCP commenced at approximately 19:04 PM. The Waste Water Neutralisation Plant (WWNP) had been offline since 15 of March 2024 as a result of a separate health and safety investigation not related to the WDL.

Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation and was not discharging into the seawater channel at the time of the overflow.

The WCP ceased overtopping its weir into the seawater channel at approximately 21:23 PM on 12 April 2024. Total duration of discharge from the WCP into the seawater channel was 2 hours and 19 minutes.

Operational and investigative (event based) samples were collected from Authorised Outfall Monitoring Station (S001) and Western Containment Pond (S030). One separate sampling event from the marine mixing zone boundary sites (SW9, SW10 and RR2) (MZB) was undertaken on the morning of 13 April 2024. These results combined with the daily compliance composite sample (S074) results provide the evidence to assess any impact from the incident on the receiving environment.

The sampling undertaken at MZB sites was at 11:20 AM, 13 April 2024, after the WCP ceased overtopping into the seawater channel.

Results

Tabulated results for incident #1000650986 are provided in Appendix A. Operational results are samples analysed at the onsite laboratory. Investigative results are samples analysed offsite at a NATA accredited laboratory.

Results for Operational Samples for the intake site at S004 are summarised in Appendix A, Table A2.

Results for the Daily Compliance Samples taken at 08:00 AM for 11 to 14 of April 2024 at the Authorised Discharge Site S001 are summarised in Appendix A, Table A3.

An automatic water sampler collects a 50 mL sample every 20 minutes resulting in a composite sample every 24 hours. Composite sample results over a 24-hour period provide a comprehensive representation of discharge quality into the receiving environment during the WCP overtopping events, providing weighted average results. The site S074 composite sample results for the 11 to the 24 of April 2024 were analysed onsite and are summarised in Appendix A, Table A4.

Investigation event-based samples (NATA laboratory offsite) for the 12 and 13 of April 2024 at Authorised Discharge site S001 are summarised in Appendix A, Table A5.

Results for event based internally analysed samples on the 12 and 13 of April at S001 are summarised in Appendix A, Table A6.

Results for the externally analysed Western Containment Pond Site S030 are summarised in Appendix A, Table A7.

Marine sites SW9, SW10 and RR2 were sampled once on the 13 of April 2024, the results summarised in Appendix A, Table A8.

Figure 1 shows the location of the WCP and associated refinery catchments. Figure 2 shows hourly rainfall (mm) recorded at Stockpile Creek and WCP storage capacity (%) for the 12 of April 2024. Figure 3 shows continuous monitoring of the Outfall monitoring station site S001 for pH and EC.

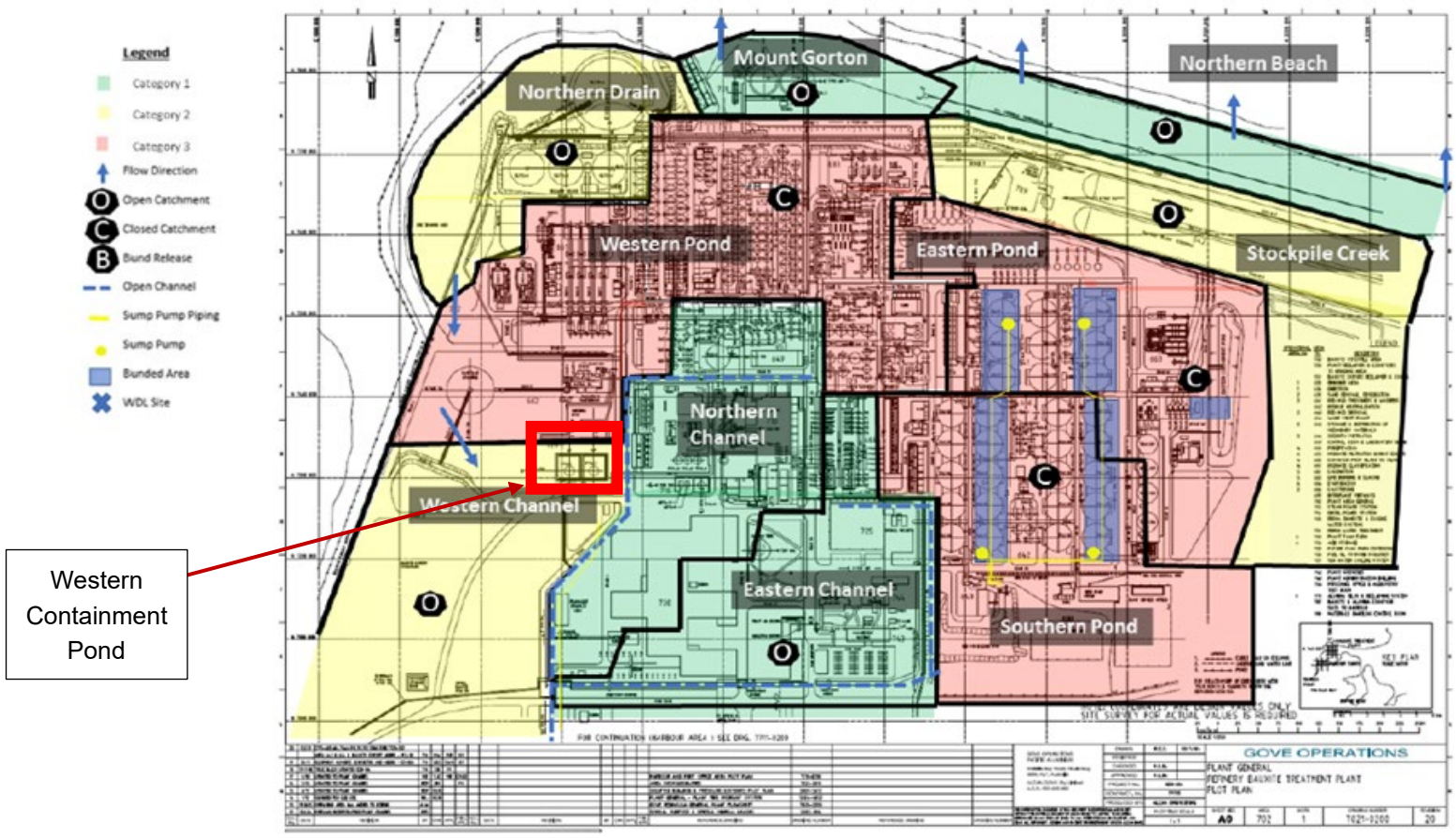


Figure 1 Refinery Catchments identifying the Western Containment Pond

Note: Many areas are bunded to contain rainwater across each catchment during each rain event, minimising the volume of water reporting to each pond. This contained water is pumped to the RDA for storage and treatment. Additional localised surface water and erosion & sediment controls have been implement to manage and reduce the volume of water reporting to each containment pond during the demolition phase of the refinery. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination and rehabilitation of the catchment.

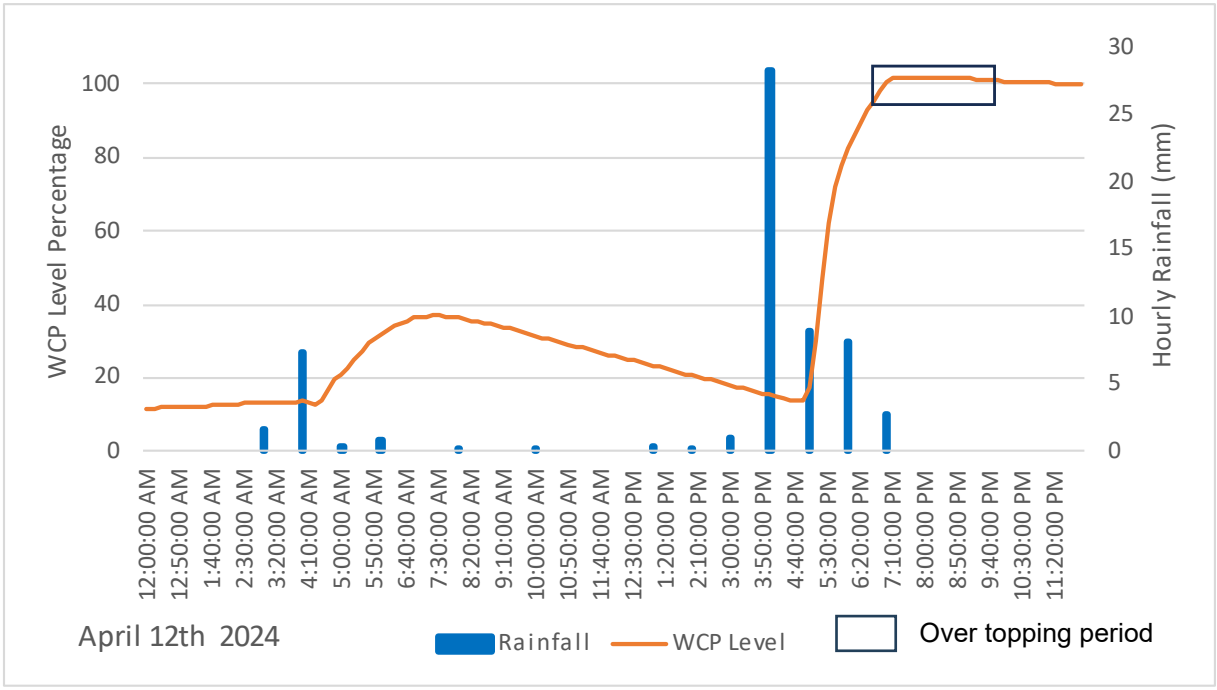


Figure 2 Measured hourly rainfall (mm) collected from Stockpile Creek Rain Gauge and WCP storage capacity (%) for the 12 April 2024.

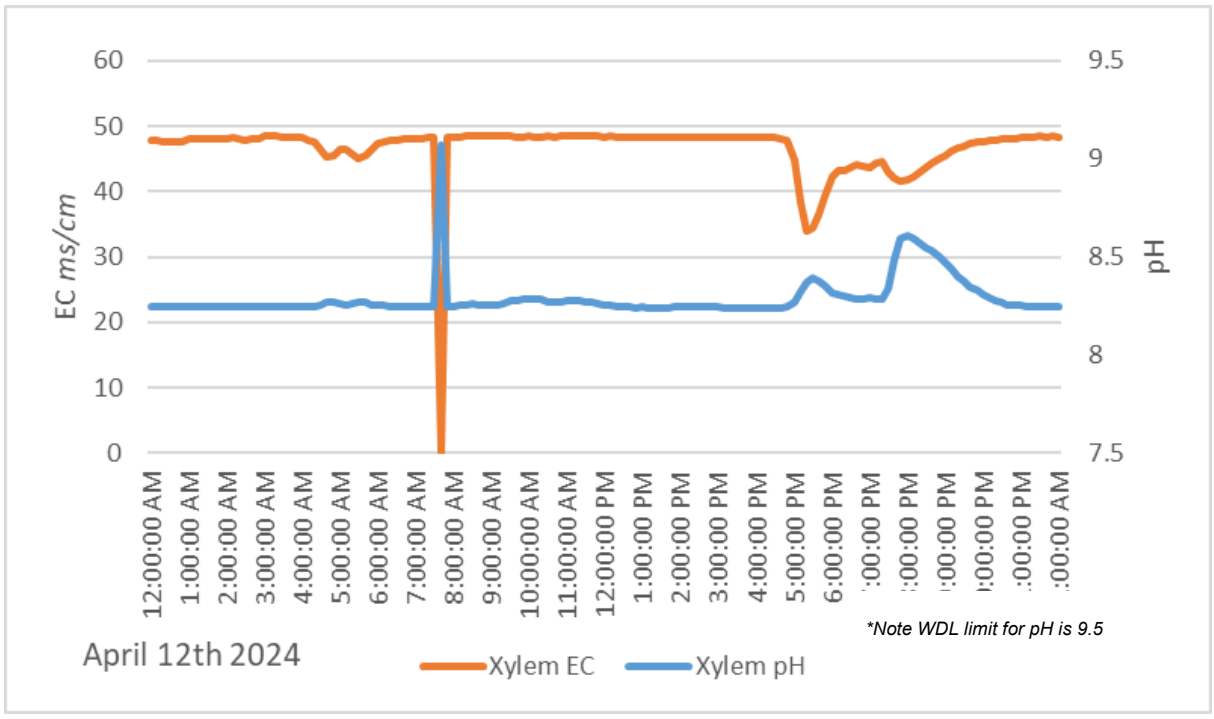


Figure 3 Continuous monitoring of pH and EC at the Outfall Monitoring Station (S001) on 12 April 2024.

Continuous monitoring of pH ranged from 8.23 – 8.61 during the period of 12 to 13 April as shown Figure 3 above. Sample results retrieved as a part of the event sample regime on the 12 and 13 April 2024 showed pH results ranging from 7.94 - 8.23 throughout the overtopping event (Appendix A, Table A5). This is supported with the continuous data reporting no exceedance of the WDL limit throughout the overtopping incident.

Discussion

WWNP Operation

Figure 4 shows the duration in which the WWNP ceased operation and remained offline throughout the event on the 12 April 2024. At the time of writing this report the WWNP has remained offline since the 15 March due to a separate health and safety investigation not related to the WDL.

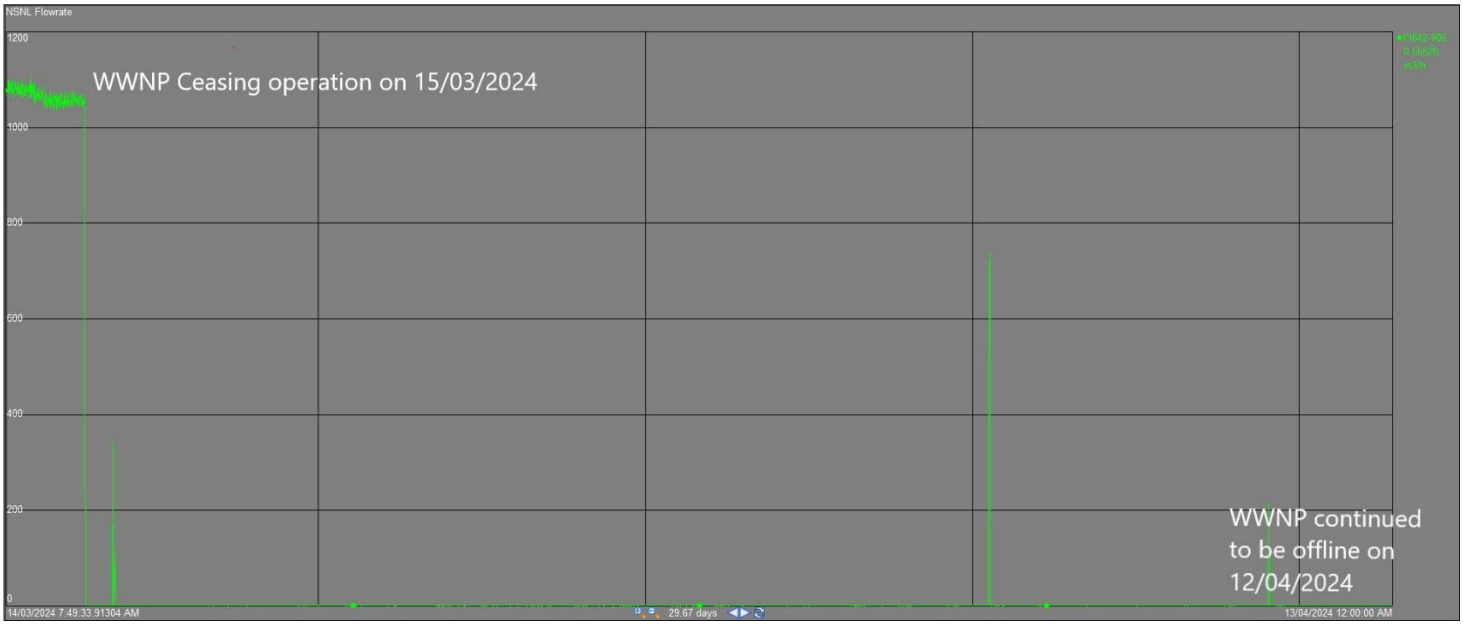


Figure 4 WWNP Operation 14 March to 12 April 2024 ceasing operation on 15 March 2024 shown as NSNL flow rate (m3/hr) vs Time.

Alkalinity

Alkalinity concentrations are indicative of WWNP operation. Results for alkalinity concentrations from daily 08:00 AM operational (compliance) samples at site S001 for the period 11 to 14 March 2024 are summarised in Appendix A, Table A3. Alkalinity concentrations remained at natural background seawater concentrations throughout this period, ranging from 110.1 mg/L to 114.2 mg/L, and are indicative of no WWNP outputs into the channel

WCP sample location

Water quality results of investigation samples (offsite analysis) for WCP site S030 are summarised in Appendix A, Table A7. Care should be taken when reviewing these results, as samples may not be representative of actual discharge of WCP water into the seawater channel. The sample location is adjacent to the WCP pump located at the bottom opposite side of the weir to where water is pumped to the sands-disposal then onto the RDA (Figure 5). Samples collected from the south-east corner are expected to exhibit higher concentrations than actual surface water discharge into the seawater channel at the overflow weir located at the north-east corner of the WCP. The location of the discharge weir is unable to be safely accessed for sampling.

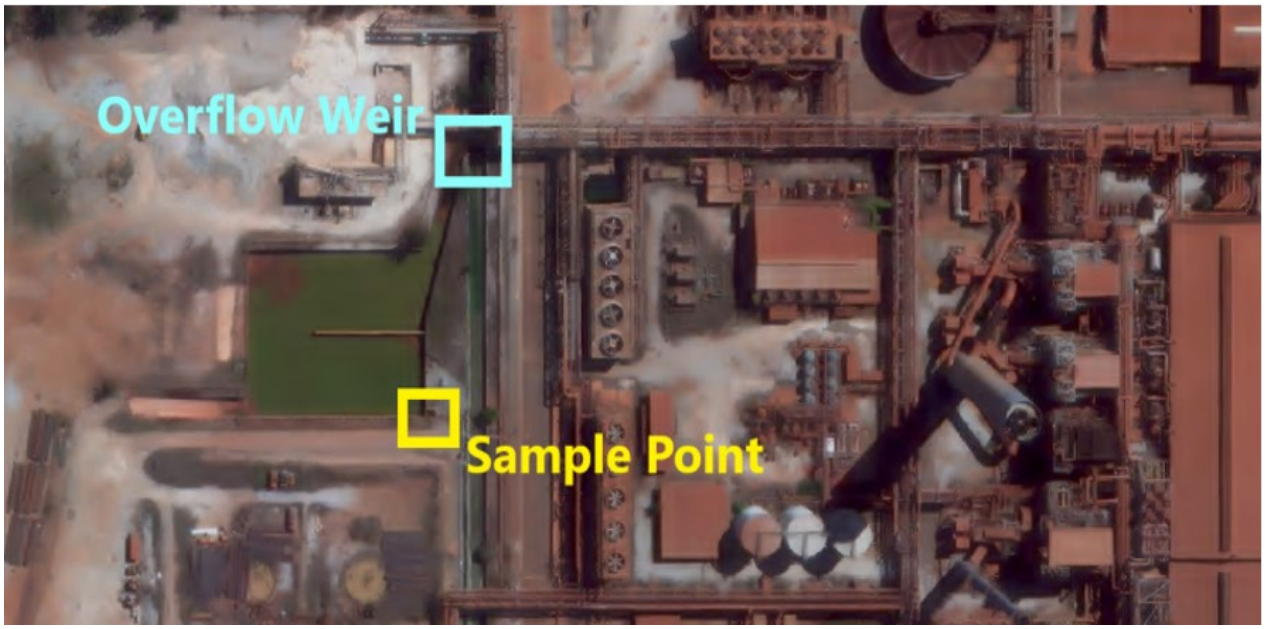


Figure 5 Sample point for the WCP site S030 is the pump located at the bottom of the pond, on the opposite side of the overflow weir location where discharge flows into the seawater channel.

Electrical Conductivity

Electrical conductivity (EC) is indicative of discharges of stormwater into the seawater channel. Background seawater has an EC of approximately 50 ms/cm. The seawater channel intake site S004 ranged from 46.2 ms/cm to 47 ms/cm for the period 11 to 14 April 2024 which is relatively low when compared to typical background marine wate (Table 1). This suggests a high volume of freshwater input into the bay.

The outfall channel site S001 for the same period 11 to 14 April 2024 is also summarised in Table 1 (S001).

Table 1 Seawater channel intake site S004 and outfall channel site S001 showing EC from the 08:00 AM sample from 11 to 14 April 2024.

Date and Time	**EC (ms/cm) S004 intake**	**EC (ms/cm) S001 outfall**
11 April 2024 08:00	46.5	46.5
12 April 2024 08:00	46.9	47.3
13 April 2024 08:00	46.2	47.2
14 April 2024 08:00	47	47.9

There is evidence of stormwater inputs into the channel from WCP during the 12 April event. The EC value decreased to approximately 34 mS/cm at 17:20 (Figure 3).

Turbidity

Turbidity results from event based samples from S001 during and following the WCP overtopping incident on the 12 April 2024 are shown in Figure 6. Turbidity tested from both the internal and external NATA accredited laboratory's returned results below the S001 trigger value and limit during the WCP overtopping events. A strong correlation between the over topping events and an increase in turbidity at S001 is highlighted in Figure 6.

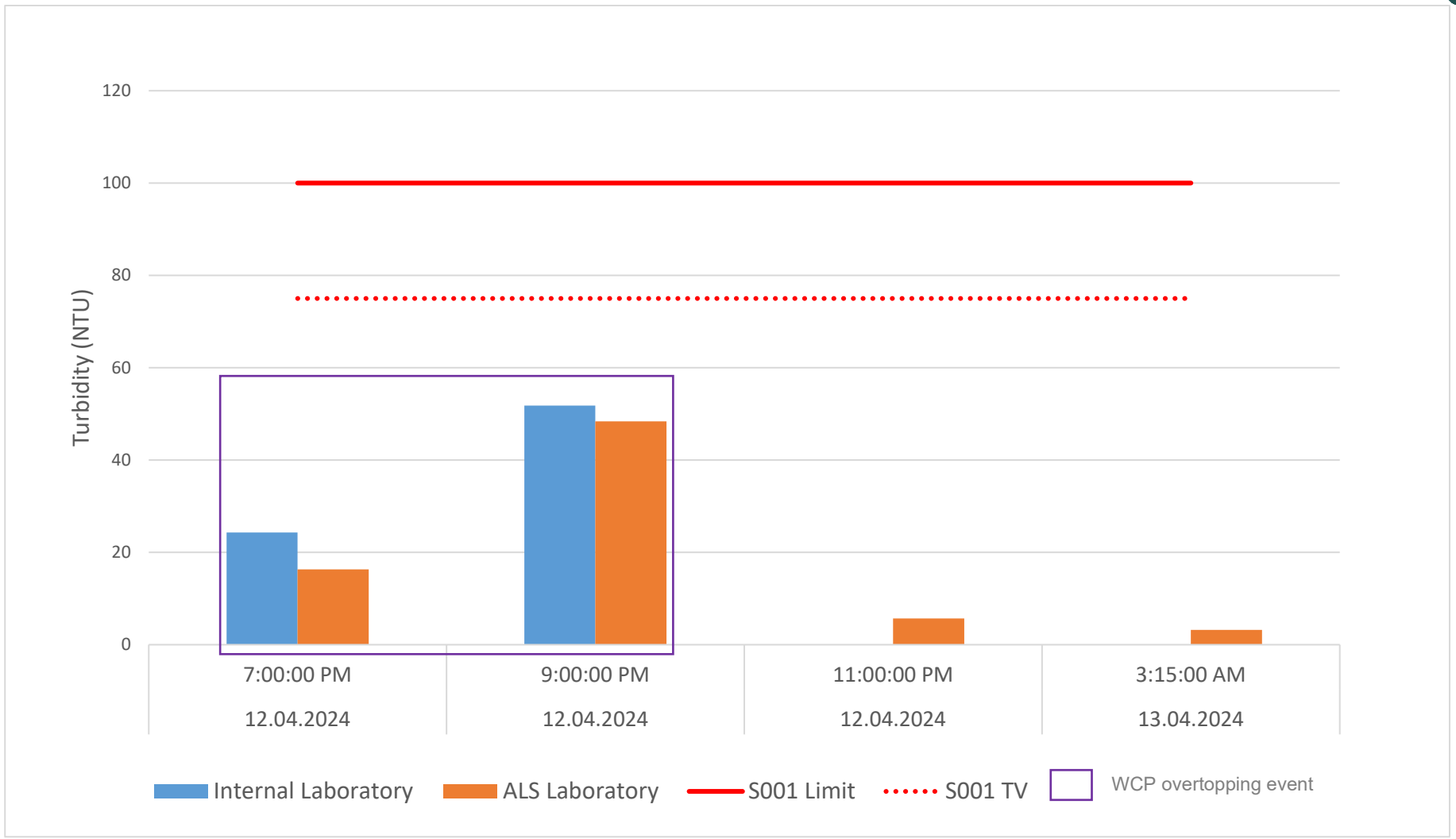


Figure 6 External NATA and internal laboratory Turbidity (NTU), for S001 investigative samples for 12 and 13 April 2024. Due to time constraints the 12.04.2024, 11:00 PM and 13.04.2024 03:15 AM samples were not analysed by Internal Laboratory.

Hydrocarbons

Hydrocarbon results from event based samples from S001 during and following the WCP overtopping incident on 12 April 2024 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 13 of April 2024, with the results summarised in Appendix A, Table A8 (NATA analysis).

All hydrocarbon concentrations at S001 and the MZB sites were less than the laboratory limit of reporting (LOR) and considered to not be of concern.

Metals and Metalloids

Analysis of metals and metalloids at site S001 from investigative samples (NATA analysis) are summarised in Appendix Table A5 and Figures 7 and 8 .

Investigation samples taken at S001 during the overtopping event on the 12 April 2024 recorded an elevated dissolved aluminium concentration of 243 mg/L during the overtopping event (Figure 7 & Table A5). This coincides with the observed large rainfall pulse event. The elevated concentration values were substantially lower than the Licence Limit of 560 µg/L. Successive samples taken from 11:00 PM, approximately 2-hours later the following day, decreased to 12 µg/L confirming the pulse event had ceased. Further consecutive samples indicated that aluminum concentrations had decreased to background concentrations.

Investigation samples taken on 12 April 2024 during the overtopping event showed slightly elevated dissolved arsenic concentrations during the overtopping event with the concentration being 23.8 µg/L at 09:00 PM (Figure 8). The concentrations were significantly less than Licence Limit of 200 µg/L. Once the WCP overtopping event ceased the dissolved arsenic decreased to background concentration of 1.6 µg/L at 11:00 PM on 12 April 2024.

Dissolved vanadium concentrations increased during the overtopping event, with the 09:00 PM S001 sample recording a concentration of 125 µg/L, below the Licence Limit of 1000 µg/L. The concentration decreased to background concentration (<4 µg/L) at 11:00 PM (Appendix A, Table A5).

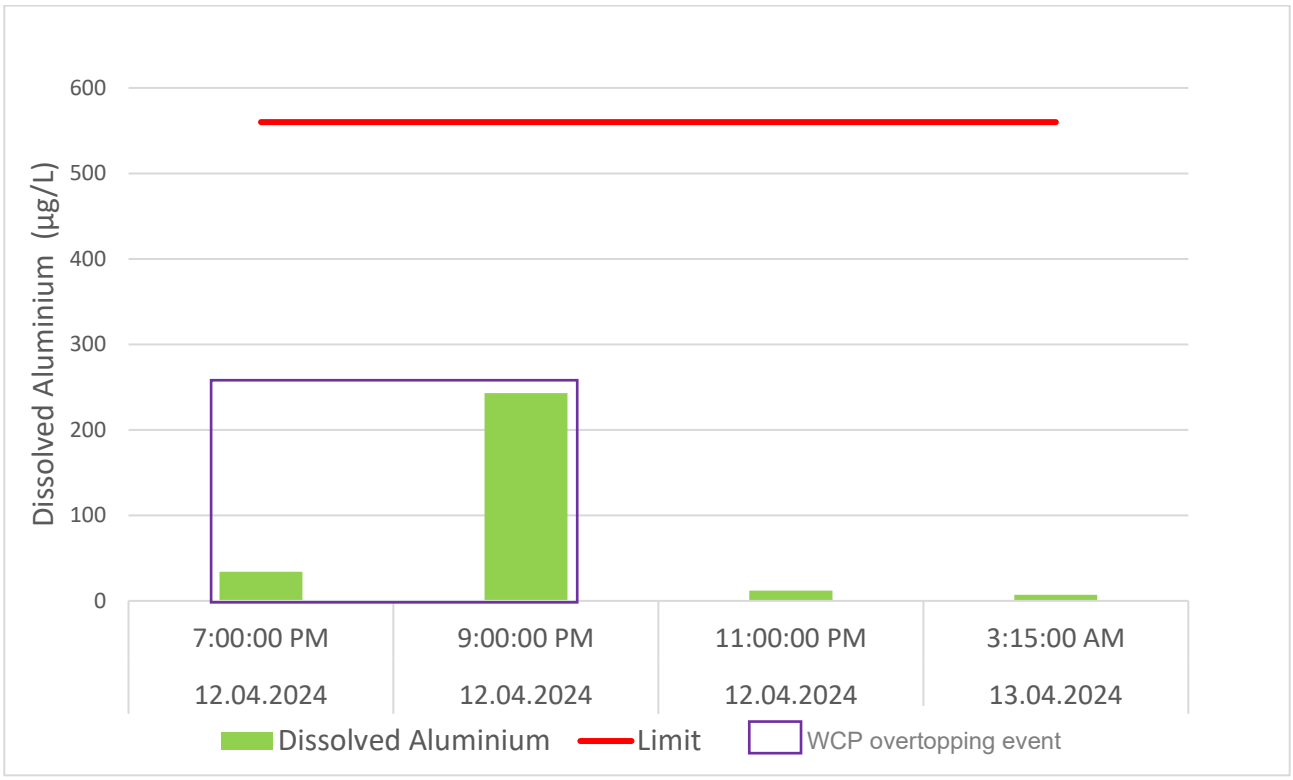


Figure 7 Dissolved aluminium (µg/L) and limit at S001 from event samples (NATA analysis) from 12 and 13 April 2024.

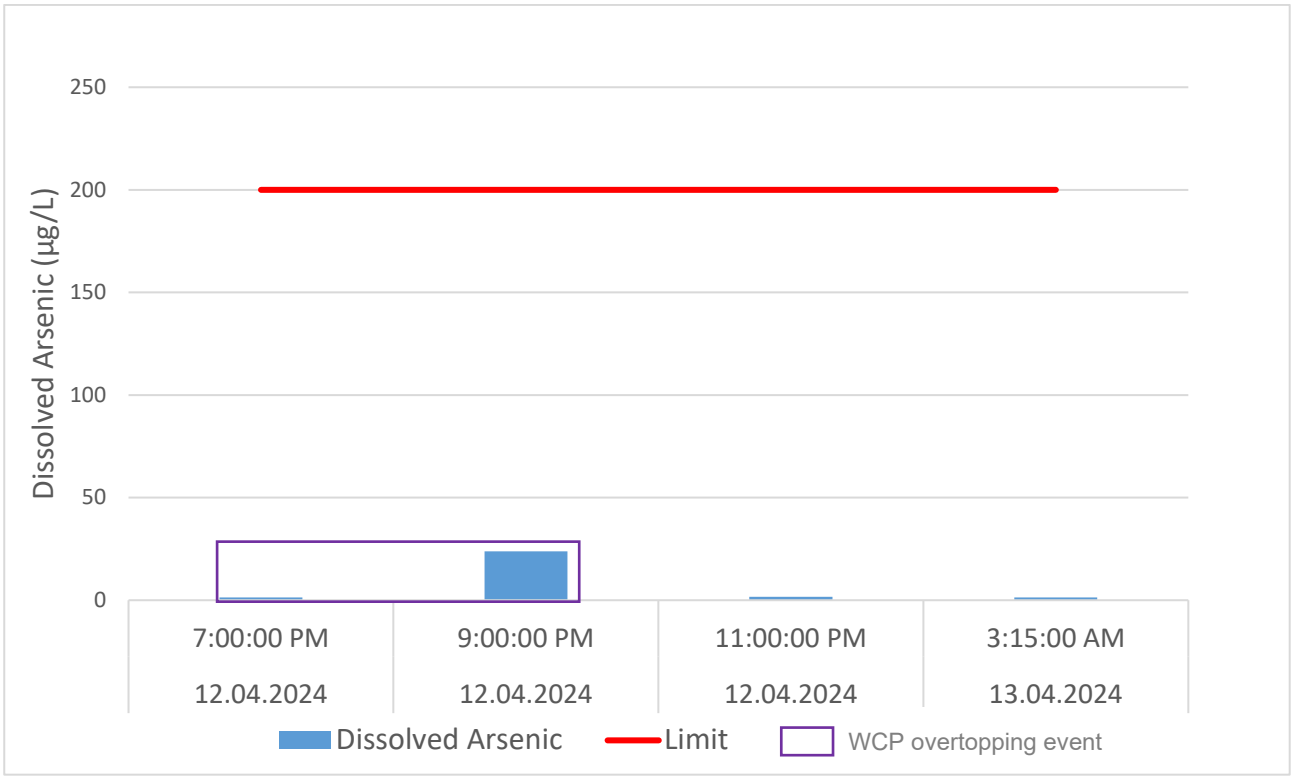


Figure 8 Dissolved arsenic (µg/L) and limit at S001 from event samples (NATA analysis) from 12 and 13 April 2024.

Composite Sample

The S074 composite sample results (Appendix A, Table A4) provide a time and volume weighted average over twenty-four hours, including when the unauthorised release was discharging into the eastern seawater channel. Composite samples are relevant to TVs and Limits to assess potential environmental impact. The composite sample (13 April 2024) recorded minor increases for several analytes from the WCP event on the 12 April 2024, with all results returning to baseline in the 14 April 2024 composite sample (Appendix A, Table A4). All analytes remained below WDL Limits and TVs.

Marine Results Discussion

Investigative sample results for dissolved aluminium (offsite NATA laboratory) from the MZB sites are shown in Figure 9. Sampling of the marine sites was completed at approximately 11:20 AM, 13 April 2024, after the overtopping event ceased. Results at the MZB sites for dissolved aluminium were recorded well below the license trigger value of 56 µg/L (Figure 9).

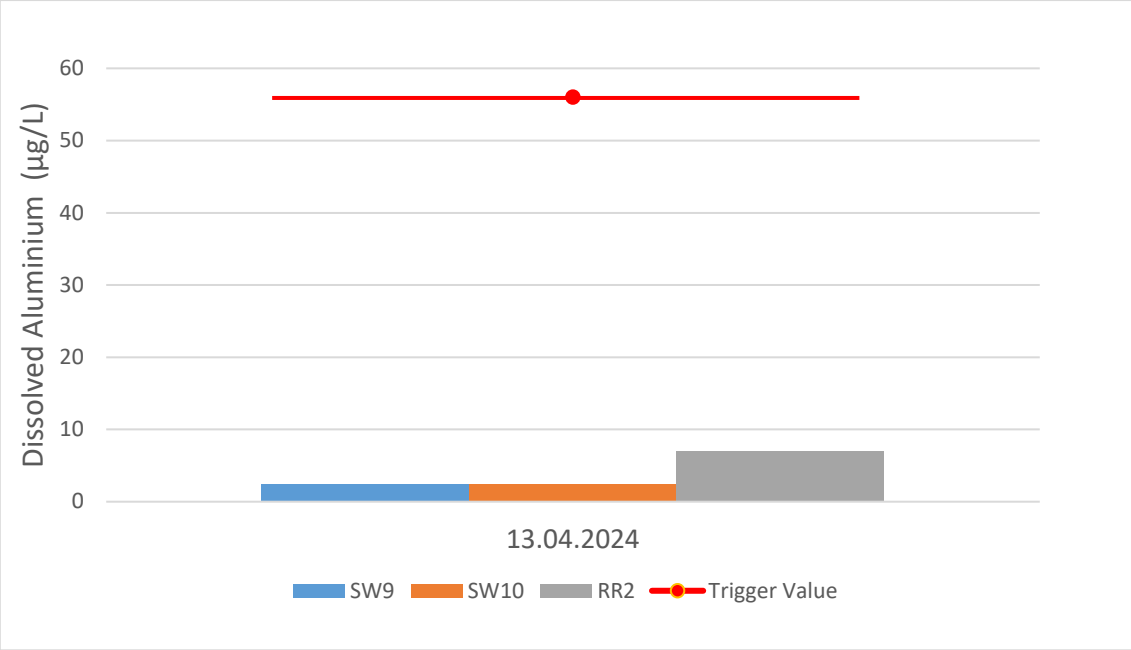


Figure 9 Dissolved aluminium concentrations at MZB sites for samples collected after the event at 11:20 AM 13 April. Note that Dissolved aluminium for site SW9 and SW10 was recorded at below the limit of reporting.

The tides times and heights during the WCP incident are provided in Figure 10 and Figure 11. The incident occurred during a flood tide.

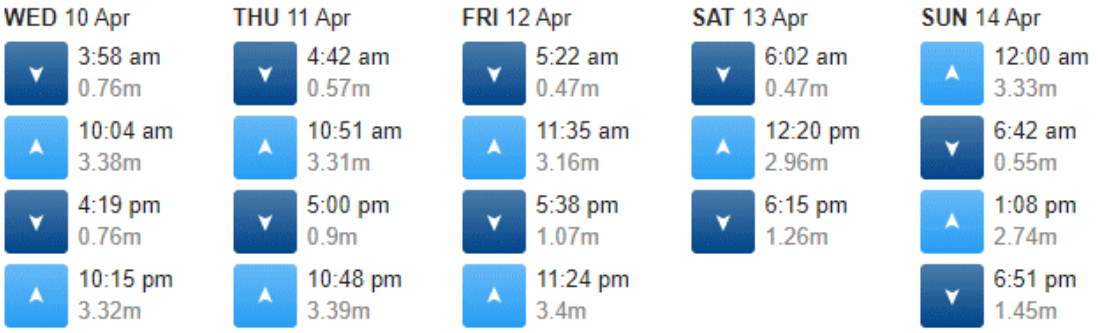
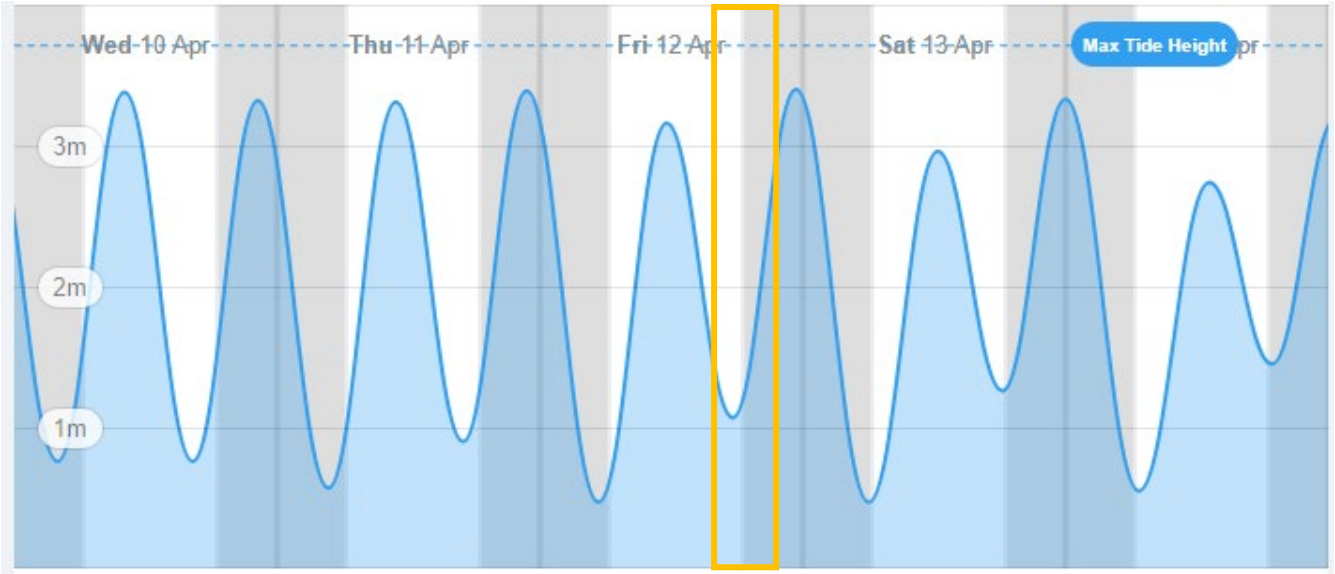


Figure 10 Tide Times from 10 to 14 April 2024. Source: WillyWeather



Incident time periods

Figure 11 Tide height from 10 to 14 April 2024.

The Australian Institute of Marine Science (AIMS) developed a hydrodynamic model of Melville Bay to assess the dilution and dispersion of the seawater channel discharge into inner Gove Harbour and Melville Bay (AIMS, 2020). The model predicted a minimum dilution rate of 1:25 for the three MZB compliance sites SW9, SW10 and RR2 at a discharge rate of 10,500 m^3/h. Concentrations at the MZB during the incident are conservatively predicted by applying the minimum dilution rate from the hydrodynamic model at the MZB of 1:25 to S001 data (Appendix B, Table A5). The predicted concentrations of dissolved Al at the MZB sites are presented in Figure 12.

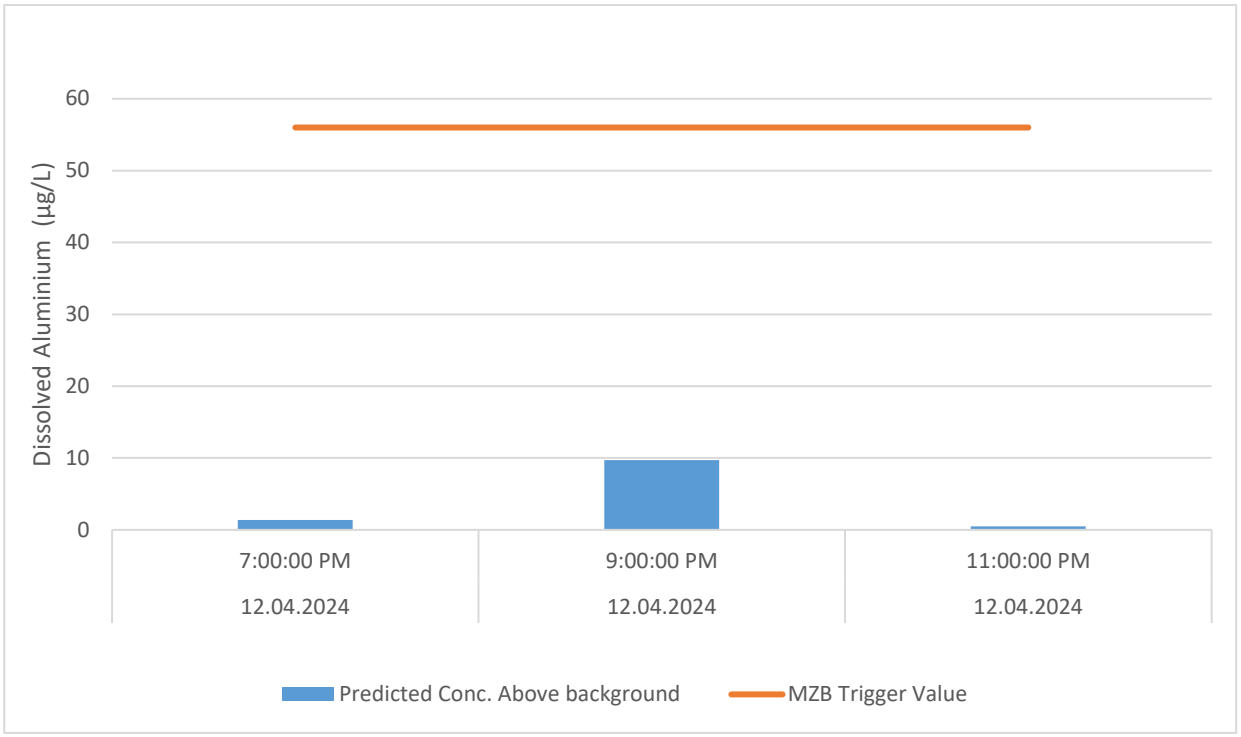


Figure 12 Predicted concentration of dissolved aluminium at the marine mixing zone boundary based on S001 concentrations from investigative samples and actual measured MZB concentrations.

From the Marine Health Monitoring Program (MHMP) data base, background concentration for dissolved Al in Melville Bay is 1.7 µg/L (80th percentile for the previous 24 months monthly samples). Predicted concentrations are above the background concentrations. Predicted concentrations of dissolved Al for the marine sites are all lower than TVs defined in the Licence for the MZB. Similarly predicted concentrations for dissolved As and V are well below the corresponding TVs.

Conclusion

The results of the investigation sampling confirmed there were no exceedances of Licence Limits for the event. Turbidity remained well below the TV for the duration of the event on the 12 April 2024 reaching a maximum of 48.4 NTU at S001 and dropping to 5.4 NTU within 2 hours (Appendix A, Table A5). TSS results from the same sample at 09:00 PM on 12 April 2024 were comparatively low. Overall, the data demonstrates that there was no environmental impact expected from the WCP overtopping on 12 April 2024.

References

Australian Institute of Marine Science, 2020, *Assessment of seawater channel dilution in inner Gove Harbour for development of discharge Trigger Values*. Report to Rio Tinto Aluminium Gove.

Appendix A – Analytical Results Tables

Table A2 Water quality results for site S004 seawater intake location from 11 to 14 April 2024 (onsite analysis).

Daily Operational Samples at site S004 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	11/04/2024	12/04/2024	13/04/2024	14/04/2024
Environmental Parameters							
pH		9	9.5	8.22	8.19	8.14	8.18
Electrical Conductivity	ms/cm	-	-	46.5	46.9	46.2	47
Turbidity	NTU	75 [1]	100	4.45	5.61	8.33	7.61
Alkalinity	mg/L	-	-	110.4	109.8	109.3	112.7
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	6.19	7.16	6.29	8.07
Arsenic	µg/L	-	200	1.52	1.62	1.58	1.63
Gallium	µg/L	-	8000	0.03	0.03	0.06	0.06
Manganese	µg/L	-	-	0.51	0.70	0.52	0.66
Molybdenum	µg/L	-	38800	8.58	8.68	8.13	9.38
Vanadium	µg/L	-	1000	2.47	2.55	2.45	2.71

Table A3 Daily Authorised Monitoring Site S001 Outfall Monitoring Station water quality results – 11 to 14 April 2024 (Onsite Analysis).

Daily Compliance Samples - S001 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	11/04/2024	12/04/2024	13/04/2024	14/04/2024
Environmental Parameters							
pH		9	9.5	8.23	8.2	8.19	8.23
Electrical Conductivity	ms/cm	-	-	46.5	47.3	47.2	47.9
Turbidity	NTU	75[t]	100	4.58	6.5	9.17	8.64
Alkalinity	mg/L	-	-	110.1	113.9	114.2	112.6
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	8.25	14.14	9.99	8.79
Arsenic	µg/L	-	200	1.56	1.61	1.59	1.66
Gallium	µg/L	-	8000	0.11	0.12	0.09	0.08
Manganese	µg/L	-	-	3.11	3.4	3.20	1.95
Molybdenum	µg/L	-	38800	8.57	8.88	8.74	9.30
Vanadium	µg/L	-	1000	2.62	2.72	2.55	2.84

Table A4 Daily water quality results – 24 hour Composite sample at Authorised Monitoring Site **S074** – 11 to 14 April 2024 (Onsite Analysis)

Daily Compliance Samples - S074 Samples retrieved at 08:00 Hrs		***S001 Trigger value***	***S001 Limit***	**11/04/2024**	**12/04/2024**	**13/04/2024***	**14/04/2024**
Environmental Parameters							
pH		9	9.5	8.41	8.27	8.27	8.31
Electrical Conductivity	ms/cm	-	-	44.6	42.2	41	43.5
Turbidity	NTU	75[‡]	100	4.31	12.1	26.6	7.53
Alkalinity	mg/L	-	-	110.9	115.5	114.95	115.45
Total Suspended Solids	mg/L	-	-	26.5	25.7	27.6	21.6
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	6.83	8.77	22.39	11.28
Arsenic	µg/L	-	200	1.42	1.41	2.78	2.12
Gallium	µg/L	-	8000	0.11	0.13	0.42	0.17
Manganese	µg/L	-	-	2.33	0.96	0.79	0.93
Molybdenum	µg/L	-	38800	8.90	9.05	8.56	10.06
Vanadium	µg/L	-	1000	2.33	2.14	7.26	4.59

* Composite sample from channel water quality from 8am 12/04/2024 to 8am 13/04/2024, capturing WCP overtopping period.

Table A5 Event based external water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 12 and 13 April 2024 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S001		S001 Trigger value	S001 Limit	12/04/2024	12/04/2024	12/04/2024	13/04/2024
			Time	19:00	21:00	23:00	03:15
Environmental Parameters							
pH		9	9.5	8.02	8.23	7.94	7.98
Electrical Conductivity	µs/cm	-	-	43100	45600	48100	48500
Turbidity	NTU	75[t]	100	16.3	48.4	5.7	3.2
Total Alkalinity	mg/L	-	-	103	123	108	109
Total Suspended Solids	mg/L	-	-	7	21	<5	<5
Metals & Metalloids							
Dissolved Aluminium	µg/L	-	560	34	243	12	7
Dissolved Arsenic	µg/L	-	200	1.4	23.8	1.6	1.4
Dissolved Gallium	µg/L	-	8000	<10	<10	<10	<10
Dissolved Iron	µg/L	-	-	<5	<5	<5	<5
Dissolved Manganese	µg/L	-	-	0.6	1.4	1.5	0.6
Dissolved Molybdenum	µg/L	-	38800	7.5	11.1	7.9	8.1
Dissolved Vanadium	µg/L	-	1000	3.8	125	3.4	2.6
Total Aluminium	µg/L	-	-	939	2520	224	130
Total Arsenic	*µg/L*	-	-	1.8	29.4	2.1	1.5
Total Gallium	*µg/L*	-	-	<10	<10	<10	<10
Total Iron	*µg/L*	-	-	708	1320	213	140
Total Manganese	*µg/L*	-	-	5.8	7.2	6.4	3.8
Total Molybdenum	*µg/L*	-	-	8.1	10.6	9.6	9.5
Total Vanadium	*µg/L*	-	-	6.3	143	4.3	3.1
Nutrients							
Total Dissolved Phosphorus	µg/L	-	140	9	18	7	8
Total Dissolved Nitrogen	µg/L	-	1700	140	170	140	160
Hydrocarbons							
Total Petroleum Hydrocarbons	µg/L	-	-	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	-	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	-	<1	<1	<1	<1
Toluene	µg/L	-	-	<2	<2	<2	<2
Ethylbenzene	µg/L	-	-	<2	<2	<2	<2
Xylene	µg/L	-	-	<2	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

Table A6 Event based internal water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 12 and 13 March 2024 (onsite analysis).

Event Operational samples - S001 Analysed onsite		S001 Trigger value	S001 Limit	12/04/2024	12/04/2024	13/04/2024
			Time	19:00	21:00	08:00
Environmental Parameters						
pH		9	9.5	8.25	8.51	8.19
Electrical Conductivity	ms/cm	-	-	42.1	43.2	47.2
Turbidity	NTU	75[t]	100	24.3	51.8	9.17
Alkalinity	mg/L	-	-	105.3	125.6	114.2
Dissolved Aluminium	µg/L	-	560	34.11	214.74	9.99
Dissolved Arsenic	µg/L	-	200	1.28	22.64	1.59
Dissolved Gallium	µg/L	-	8000	0.30	3.56	0.09
Dissolved Iron	µg/L	-	-	1.98	3.34	1.66
Dissolved Manganese	µg/L	-	-	1.57	1.04	3.20
Dissolved Molybdenum	µg/L	-	38800	7.81	9.81	8.74
Dissolved Vanadium	µg/L	-	1000	2.84	112.92	2.55

This data is event based – it does not form part of the WDL monitoring program.

Table A7 event based external water quality results – Western Containment Pond site **S030** – 12 and 13 April 2024 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S030		12/04/2024 19:00	12/04/2024 21:00	13/04/2024 23:00
Environmental Parameters				
pH		10.4	10.3	10.2
Electrical Conductivity	µs/cm	1200	1070	1040
Turbidity	NTU	3350	2040	1470
Alkalinity	mg/L	451	419	389
Total Suspended Solids	mg/L	1100	644	488
Metals & Metalloids				
Dissolved Aluminium	µg/L	7220	6040	5750
Dissolved Arsenic	µg/L	455	436	408
Dissolved Gallium	µg/L	63	52	52
Dissolved Iron	µg/L	114	102	91
Dissolved Manganese	µg/L	0.9	0.8	0.7
Dissolved Molybdenum	µg/L	45.2	38.8	36.7
Dissolved Vanadium	µg/L	2060	1980	1890
Total Aluminium	µg/L	133000	94800	82100
Total Arsenic	µg/L	429	421	438
Total Gallium	µg/L	95	78	75
Total Iron	µg/L	26800	20800	18500
Total Manganese	µg/L	102	68.4	54.0
Total Molybdenum	µg/L	23.5	22.7	25.6
Total Vanadium	µg/L	2220	2090	2080

Table A8 Investigative water quality results - **Marine Mixing Zone (MZB)** sites – 13 April 2024 (External Analysis - NATA accredited laboratory).

		MZB Trigger Values	13/04/2024	13/04/2024	13/04/2024
			SW9	SW10	RR2
		Time	11:20	11:30	11:40
Environmental Parameters					
pH		7.7 – 8.4	7.99	7.96	8.01
Electrical Conductivity	µS/cm	-	46300	46900	46100
Total Suspended Solids (SS)	mg/L	-	<5	<5	<5
Turbidity	NTU	20	1.2	0.8	1.2
Alkalinity	mg/L	-	105	103	102
Metals and Metalloids					
Dissolved Aluminium	µg/L	56	<5	<5	7
Dissolved Arsenic	µg/L	20	1.6	1.6	1.9
Dissolved Gallium	µg/L	800	<10	<10	<10
Dissolved Iron	µg/L	-	<5	<5	<5
Dissolved Manganese	µg/L	-	0.7	<0.5	0.6
Dissolved Molybdenum	µg/L	3880	8.0	7.3	8.6
Dissolved Vanadium	µg/L	100	2.2	2.9	4.7
Nutrients					
Total Dissolved Phosphorus	µg/L	14	5	4	5
Total Dissolved Nitrogen	µg/L	170	110	120	120
Hydrocarbons					
Total Petroleum Hydrocarbons	µg/L	-	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	<0.5	<0.5	<0.5
Benzene	µg/L	-	<1	<1	<1
Toluene	µg/L	-	<2	<2	<2
Ethylbenzene	µg/L	-	<2	<2	<2
Xylene	µg/L	-	<2	<2	<2

Notification of an Environmental Incident

☒ Incident ☐ Critical Incident ☐ Preliminary ☒ Final

Incident number:	**1000651027**
Name of mining site:	Rio Tinto - Gove operations
Name of operator:	RTA Gove Pty Limited
Date & time of detection:	Date: 20/04/2024 Time: 03:59
Date & time of incident:	Date: 20/04/2024 Time: 03:59
Name of person notifying:	Drew Carmichael
Position/Title:	Environment Superintendent
Contact person:	Drew Carmichael
Contact details:	Business: 08 8987 5233 Mobile: 0467 946 163
	E-mail: andrew.carmichael@riotinto.com
INCIDENT LOCATION (use GPS co-ordinates, attach map, etc. as appropriate)	Latitude -12.188147 Longitude 136.685306  WCP Overflow location into Seawater Channel

INCIDENT DESCRIPTION	Overflow of Western Containment Pond (WCP) into the Seawater Channel resulting in discharge via S001 (Schedule 1, Item 10 (f), Condition 25 & 26).	
Causes & contributing factors to the incident:	A high rainfall event was experienced across the Gove peninsula early on the morning of 20 April 2024. With approximately 69mm of rainfall recorded over a short period from 01:00 AM to 08:00 AM on 20 April 2024. Over 90 mm of rainfall was recorded over the previous 24 hours (from 10:00 AM on 19 April 2024 to 10:00 AM on 20 April). The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in overflow from the WCP into the seawater channel. Overflow from the WCP commenced at approximately 03:59 AM and ceased at approximately 10:28 AM. The Waste Water Neutralisation Plant (WWNP) was shutdown at approximately 03:40 AM prior to the WCP reaching 90% capacity. Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation. However, it was recorded to have discharged into the channel for a short period (between 2:56am to 3:58am on the 20 April 2024 during the intense rainfall event), prior to and within the first half hour of the overflow due to the high rainfall event.	
Potential causes & contributing factors to the incident:	Intense rainfall over a short period, resulting in stormwater inflow into the WCP catchments which caused the pond to overtop its weir into the seawater channel.	
Action Taken:	YES ☒	NO ☐
If no, why?		
Corrective Actions that have/will be undertaken to ensure this does not reoccur:	Immediate corrective actions implemented to minimise the risk of overtopping included; • Continual operation of the WCP pumps. • Implementation of the Trigger Action Response Plan (TARP), and • Both sea water pumps remaining in operation. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination of the catchment. The demolition of the refinery has commenced. The WCP catchment is scheduled to be decontaminated and converted to clean stormwater catchment by 2026. The removal of the WCP cannot be brought forward due to constraints around the demolition of the refinery	
Date when investigation report will be submitted to Administering Agency:	Tuesday 07 May 2024. Updated submission with Nutrient data on 09 May 2024.	

ENVIRONMENTAL DETAILS

Nature of impact and severity: (Volume of spillage, area impacted, wildlife/vegetation/ erosion, etc.)	Refer to attached Environmental Impact Assessment (EIA)

Emergency & remedial actions taken:	• The Water Treatment plant was shutdown prior to the WCP capacity reaching 90%. • WCP pump operated continuously until the pond level reduced to below 50%.
Current situation: (Potential / ongoing / ceased / etc.)	The WCP overtopping event lasted for 6 hours and 29 minutes, from 03:59am and ceased at approximately 10:28am on the 20/04/24. The containment pond pumps remained in operation throughout the event and WCP levels returned below 50% on the 23.04.2024 08:44 AM. The WWNP was shutdown at 03:40 AM prior to the WCP overtopping. Additional erosion and sediment controls have also been monitored and managed across the refinery to help control and transfer water to the RDA for storage and future treatment.
Details of any samples taken: (when / where / type / number / time for results /etc) If incident is related to Total Nitrogen, refer to WDL171-11 section 38.8 for further analysis.	Sample details as follows: • Continuous monitoring at S001 for pH and EC • Daily sample at S001. • Daily composite sample at S074 • Investigation samples collected at S001 & S030 every 2-hours (internal and external analysis). 4-hourly sampling continued after the overflow ceased. • Marine incident investigation sampling at RR2, SW9 & SW10 compliance sites was completed at approximately 13:30 AM on the 21/04/2024. See the EIA for further details. Nutrients were not of concern during the overflow event given the STP was not discharging. This report has been re-submitted to include Nutrient results received from NATA accredited Queensland Health Laboratory that had not been provided at the time of the initial submission 7 May 2024.

OPERATOR INTERNAL REPORTING

Has the incident been reported internally?	☒ **YES**	☐ **NO**
If so, to whom:	**Name:**	Johann MENEZES
	Position:	Water treatment Superintendent

Has the department been notified earlier?	☒ **YES**	☐ **NO**
Who was notified:	Sally-Anne Orchard	

How: (phone/email/fax)	Phone voicemail and follow up email notification
When: (date & time)	Phone voicemail at 13:30PM on 20 April 2024 and follow up email notification.
By whom:	Drew Carmichael

Name: Drew Carmichael

Signed Drew Carmichael **Date:** 9 May 2024

Title: Environment Superintendent

OFFICE USE ONLY

Received by:

Date: **Time:**

Environmental Impact Assessment

Incident #1000651027

20 April 2024

Compliance monitoring and investigative (event based) sampling was conducted in response to the Western Containment Pond (WCP) overtopping into the Seawater Channel on the 20th April 2024 following a significantly large rainfall event across the Gove peninsula. The over topping of the WCP occurred for 6 hours and 29 minutes from 03:59 AM to 10:28 AM.

The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC and continuous operation of the autosampler (S074) to retrieve a composite sample.

The incident was reported as #1000651027 to the Department of Environment, Parks, and Water Security (DEPWS) on 20 April 2024. Immediate corrective action included continual operation of WCP pumps, implementation of the Trigger Action Response Plan (TARP); the Waste Water Neutralisation Plant (WWNP) was offline at the time, and both sea water pumps remaining operational. The ultimate corrective action remains the demolition of the Refinery and decontamination of the catchment scheduled for conversion to a clean stormwater catchment. The removal of the WCP cannot be brought forward due to constraints around the demolition of the refinery.

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GLOSSARY

COPC	Contaminants of Potential Concern
LOR	Limit of reporting
MZB	Mixing Zone Boundary
RDA	Residue Disposal Area
SCP	Southern Containment Pond
STP	Sewerage Treatment Plant
TARP	Trigger Action Response Plan
TDN	Total Dissolved Nitrogen
TDP	Total Dissolved Phosphorous
TV	Trigger Value
UPS	Uninterrupted Power Source
WCP	Western Containment Pond
The Licence	Waste Discharge Licence
WWNP	Waste Water Neutralisation Plant

Introduction

A significant rainfall event was experienced across the Gove Peninsula on the 19 April 2024 to 20 April 2024. The Stockpile Creek Rain Gauge recorded 73.6 mm of rainfall on the 20 April 2024. Over 90 mm was recorded over the previous 24 hours (10:00 AM 19 April to 10:00 AM 20 April).

The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in stormwater overtopping the WCP weir into the seawater channel. Overflow from the WCP commenced at approximately 03:59 AM. The Waste Water Neutralisation Plant (WWNP) ceased operation at 03:40 AM prior to reaching 90% capacity and remained offline throughout the event on the 20 April 2024.

Treated water from the Sewage Treatment Plant (STP) was discharging into the seawater channel from 2:56am to 3:58am on the 20 April 2024 immediately prior to the overflow event commencing. The STP has been directed to a rehabilitation area for irrigation and not discharging into the seawater channel for the duration of the WCP overflow.

The WCP ceased overtopping its weir into the seawater channel at approximately 10:28 AM on 20 April 2024. Total duration of discharge from the WCP into the seawater channel was 6 hours and 29 minutes.

Operational and investigative (event based) samples were collected from Authorised Outfall Monitoring Station (S001) and Western Containment Pond (S030). One separate sampling event from the marine mixing zone boundary sites (SW9, SW10 and RR2) (MZB) was undertaken on the afternoon of the 20 April 2024. These results combined with the daily compliance composite sample (S074) results provide the evidence to assess any impact from the incident on the receiving environment.

The sampling undertaken at MZB sites was at 13:30 PM on 20 April 2024, after the WCP ceased overtopping into the seawater channel.

Results

Tabulated results for incident #1000651027 are provided in Appendix A. Operational results are samples analysed at the onsite laboratory. Investigative results are samples analysed offsite at a NATA accredited laboratory.

Results for Operational Samples for the intake site at S004 are summarised in Appendix A, Table A2.

Results for the Daily Compliance Samples taken at 08:00 AM for 19 April to 22 of April 2024 at the Authorised Discharge Site S001 are summarised in Appendix A, Table A3.

An automatic water sampler collects a 50 mL sample every 20 minutes resulting in a composite sample every 24 hours. Composite sample results over a 24-hour period provide a comprehensive representation of discharge quality into the receiving environment during the WCP overtopping events, providing weighted average results. The site S074 composite sample results for the 19 to the 22 of April 2024 were analysed onsite and are summarised in Appendix A, Table A4.

Investigation event-based samples (NATA laboratory offsite) for the 20 April 2024 at Authorised Discharge site S001 are summarised in Appendix A, Table A5.

Results for event based internally analysed samples on the 20 April 2024 at S001 are summarised in Appendix A, Table A6.

Results for the externally analysed Western Containment Pond Site S030 are summarised in Appendix A, Table A7.

Marine sites SW9, SW10 and RR2 were sampled once on the 20 April 2024, the results summarised in Appendix A, Table A8.

Figure 1 shows the location of the WCP and associated refinery catchments. Figure 2 shows hourly rainfall (mm) recorded at Stockpile Creek and WCP storage capacity (%) for the 20 April 2024. Figure 3 shows continuous monitoring of the Outfall monitoring station site S001 for pH and EC.

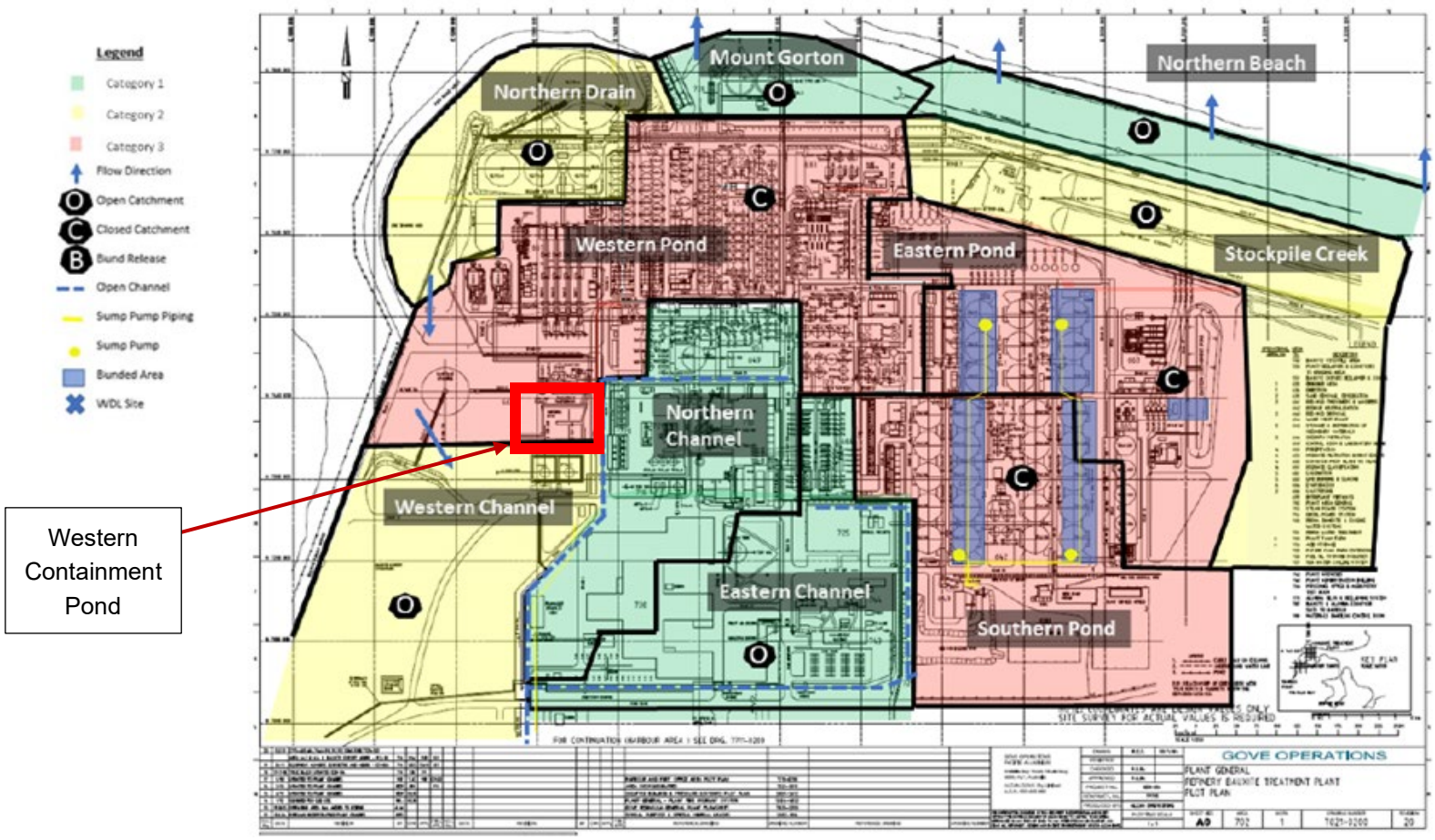


Figure 1 Refinery Catchments identifying the Western Containment Pond

Note: Many areas are bunded to contain rainwater across each catchment during each rain event, minimising the volume of water reporting to each pond. This contained water is pumped to the RDA for storage and treatment. Additional localised surface water and erosion & sediment controls have been implemented to manage and reduce the volume of water reporting to each containment pond during the demolition phase of the refinery. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination and rehabilitation of the catchment.

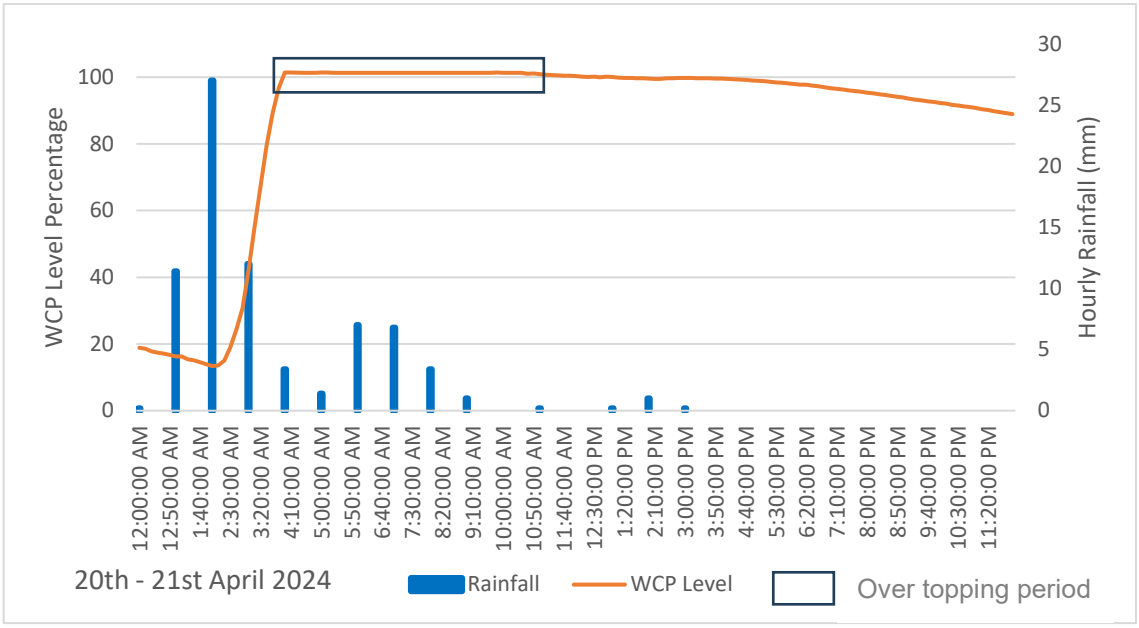


Figure 2 Measured hourly rainfall (mm) collected from Stockpile Creek Rain Gauge and WCP storage capacity (%) for the 20 April 2024.

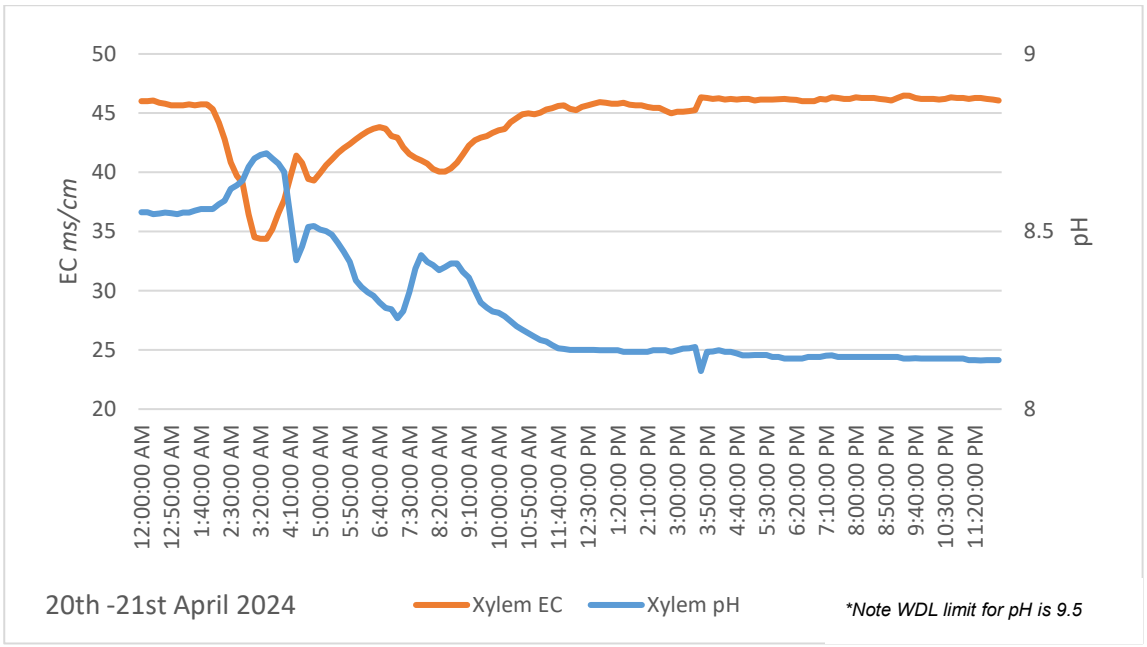


Figure 3 Continuous monitoring of pH and EC at the Outfall Monitoring Station (S001) on 20 - 21 April 2024.

Continuous monitoring of pH ranged from 8.1 – 8.7 during the period of 20 to 21 April as shown Figure 3 above. Sample results retrieved as a part of the event sample regime on the 20 and 21 April 2024 showed pH results ranging from 8.16 - 8.38 throughout the overtopping event (Appendix A, Table A5). This is supported with the continuous data reporting no exceedance of the WDL Trigger or Limit throughout the overtopping incident.

Discussion

WWNP Operation

Figure 4 shows the duration in which the WWNP ceased operation and remained offline throughout the event on the 20 April 2024.

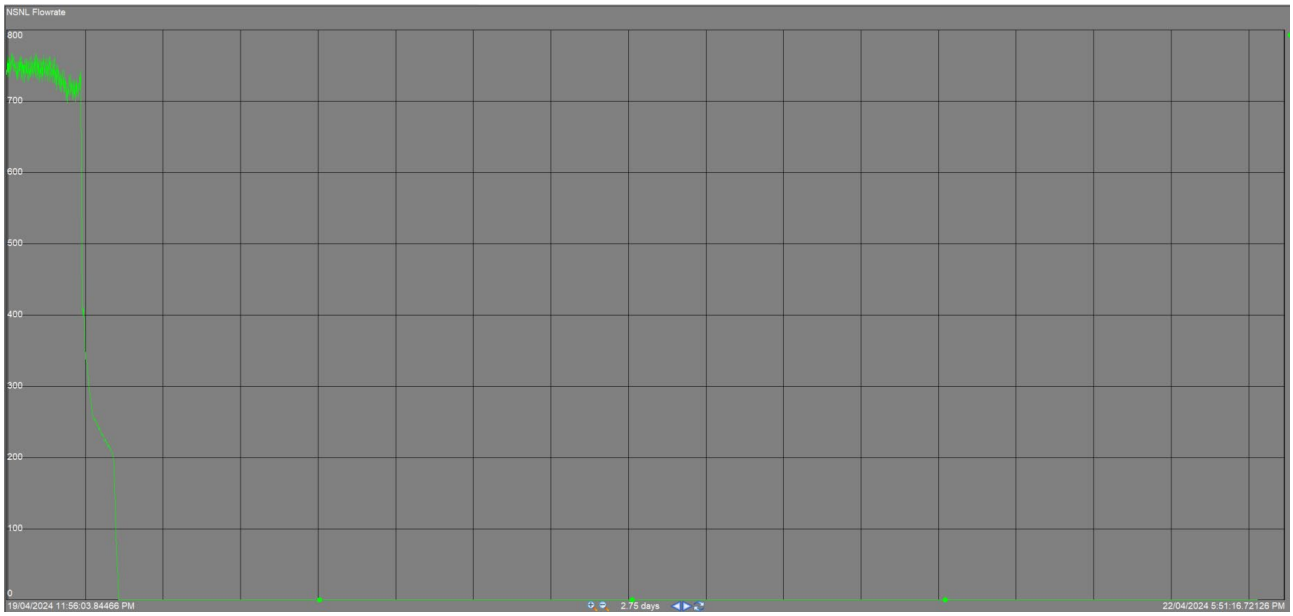


Figure 4 WWNP Operation 20 April to the 22 April 2024 shown as NSNL flow rate (m3/hr) vs Time. Operation of WWNP ceased at 03:45 AM on 20 April.

Alkalinity

Alkalinity concentrations are indicative of WWNP operation. Results for alkalinity concentrations from daily 08:00 AM operational (compliance) samples at site S001 for the period 19 to 22 April 2024 are summarised in Appendix A, Table A3. Alkalinity prior to the WWNP shutdown on the 19 of April 2024 was 246.2 mg/L, indicative of WWNP operation. Following the shutdown alkalinity results remained at background seawater concentrations, ranging from 104.9 mg/L to 124.4 mg/L, indicating the WWNP was not influencing alkalinity concentrations.

WCP sample location

Water quality results of investigation samples (offsite analysis) for WCP site S030 are summarised in Appendix A, Table A8. Care should be taken when reviewing these results, as samples may not be representative of actual discharge of WCP water into the seawater channel. The sample location is adjacent to the WCP pump located at the bottom opposite side of the weir to where water is pumped to the sands-disposal then onto the RDA (Figure 5). Samples collected from the south-east corner are expected to exhibit higher concentrations than actual surface water discharge into the seawater channel at the overflow weir located at the north-east corner of the WCP. The location of the discharge weir is unable to be safely accessed for sampling.

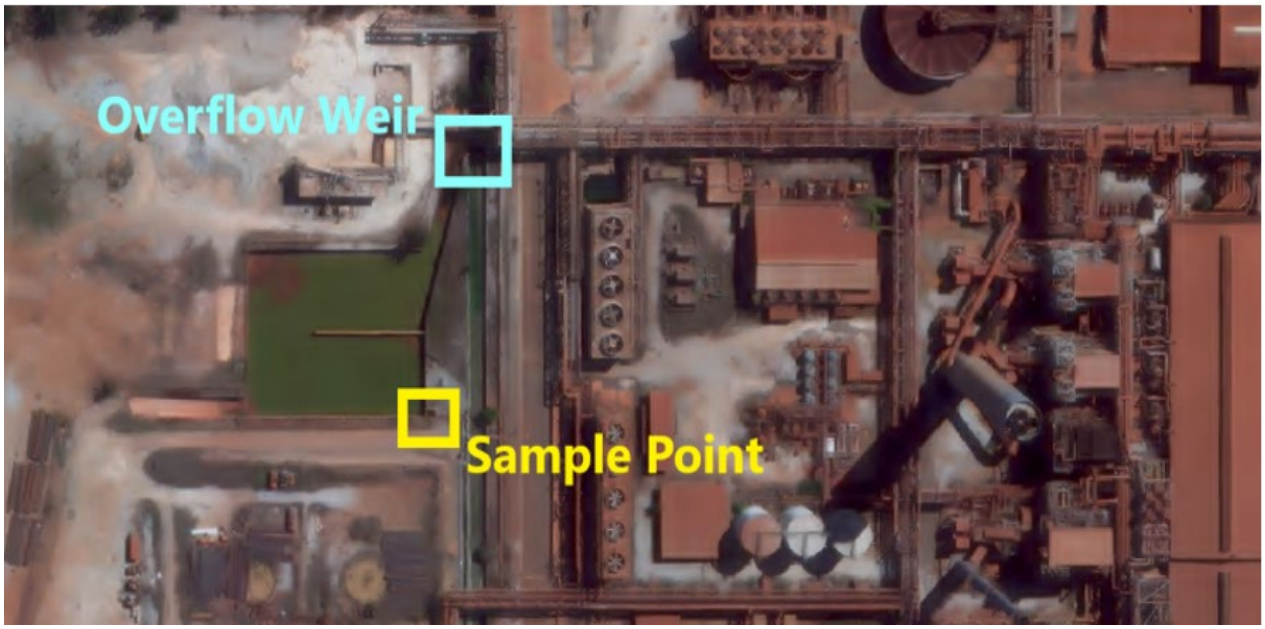


Figure 5 Sample point for the WCP site S030 is the pump located at the bottom of the pond, on the opposite side of the overflow weir location where discharge flows into the seawater channel.

Electrical Conductivity

Electrical conductivity (EC) is indicative of discharges of stormwater into the seawater channel. Background seawater has an EC of approximately 50 ms/cm. The seawater channel intake site S004 ranged from 46.7 ms/cm to 44.2 ms/cm for the period 19 to 22 April 2024 which is relatively low when compared to typical background marine water (Table 1). This suggests a high volume of freshwater input into the bay.

The outfall channel site S001 for the same period 19 to 22 April 2024 is also summarised in Table 1 (S001).

Table 1 Seawater channel intake site S004 and outfall channel site S001 showing EC from the 08:00 AM sample from 19 to 22 April 2024.

Date and Time	EC (mS/cm) S004 intake	EC (mS/cm) S001 outfall
19 April 2024 08:00	46.7	46
20 April 2024 08:00	-	39.5
21 April 2024 08:00	45	44.1
22 April 2024 08:00	44.2	44.2

There is evidence of stormwater inputs into the channel from WCP during the 20 April event. The EC value decreased to approximately 34 mS/cm at 03:30 AM prior to the WCP overflow event (Figure 3). A S004 seawater intake sample was not collected on the 20 April due to the WCP overflowing at this time.

Turbidity

Turbidity results from event based samples from S001 during and following the WCP overtopping incident on the 20 April 2024 are shown in Figure 6. Turbidity tested at the NATA accredited laboratory during the over topping event exceeded the S001 limit reaching 103 NTU, however the corresponding internal laboratory testing for this time returned 76.7 NTU below the S001 limit but exceeding the trigger value (Figure 6). A strong correlation between the overtopping event duration and an increase in turbidity at S001 is highlighted in Figure 6.

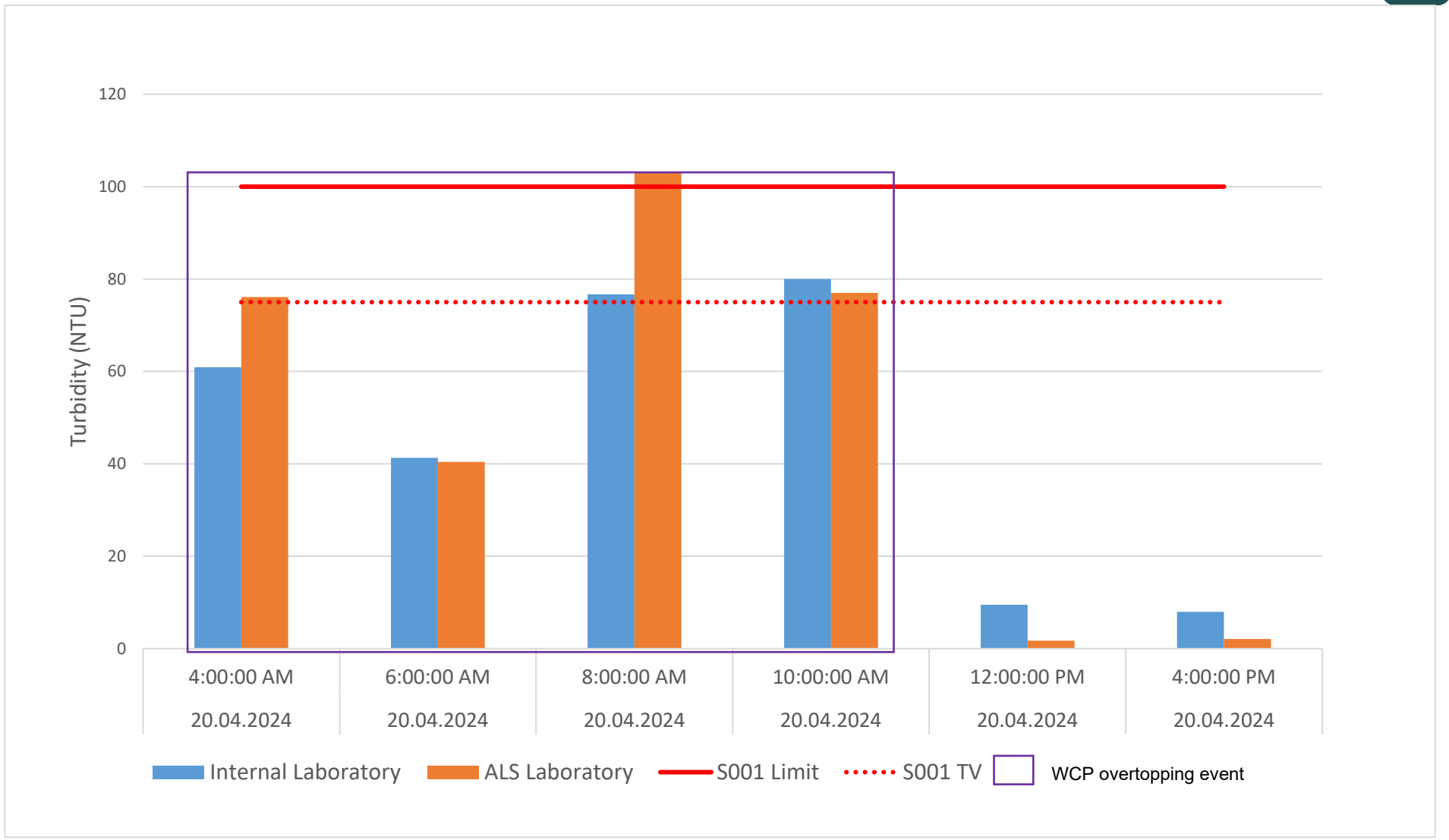


Figure 6 External NATA and internal laboratory Turbidity (NTU), for S001 investigative samples for 20 April 2024.

Internal NTU is analysed almost immediately onsite under controlled laboratory conditions. The internal laboratory results provide an accurate NTU reading within standard holding time (<48 hours).

Hydrocarbons

Hydrocarbon results from event based samples from S001 during and following the WCP overtopping incident on 20 April 2024 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 20 April 2024, with the results summarised in Appendix A, Table A8 (NATA analysis).

All hydrocarbon concentrations at S001 and the MZB sites were less than the laboratory limit or reporting (LOR) and considered to not be of concern.

Nutrients

Treated water from the Sewage Treatment Plant (STP) was recorded to be discharging into the seawater channel for a short period during the intense rainfall event between 2:56am to 3:58am on the 20 April 2024, and ceased immediately prior to the WCP overflow event. The STP was being redirected to the rehabilitation area for irrigation and not discharging into the seawater channel for the duration of the WCP overflow.

Nutrients results are not considered to be of concern during this overflow event given the STP was not discharging into the seawater channel for the overflow event.

Metals and Metalloids

Analysis of metals and metalloids at site S001 from investigative samples (NATA analysis) are summarised in Appendix Table A5 and Figures 7 and 8 .

Investigation samples taken at S001 during the overtopping events on the 20 April 2024 recorded an elevated dissolved aluminium concentration of 330 mg/L during the overtopping event (Figure 7 & Table A5). This coincides with the observed large rainfall pulse event. The elevated concentration values were substantially lower than the Licence Limit of 560 µg/L. Successive samples taken from midday, approximately 1.5-hours after the overflow event had ceased, decreased to 23 µg/L confirming the pulse event has ceased. Further consecutive samples indicated that aluminium concentrations had decreased to background concentrations.

Investigation samples taken on 20 April 2024 during the overtopping event showed slightly elevated dissolved arsenic concentrations during the overtopping event with the concentration being 21.5 µg/L at 08:00 AM (Figure 8). The concentrations were significantly less than Licence Limit of 200 µg/L. Once the WCP overtopping event ceased the dissolved arsenic decreased to background concentration of 1.8 µg/L at 12:00 PM on 20 April 2024.

Dissolved vanadium concentrations increased during the overtopping event, with the 08:00 AM S001 sample recording a concentration of 105 µg/L, below the Licence Limit of 1000 µg/L. The concentration decreased to near background concentration of 5.4 µg/L by the 12:00 PM sample. Approximately 1.5 hours after the WCP ceased overflowing (Appendix A, Table A5).

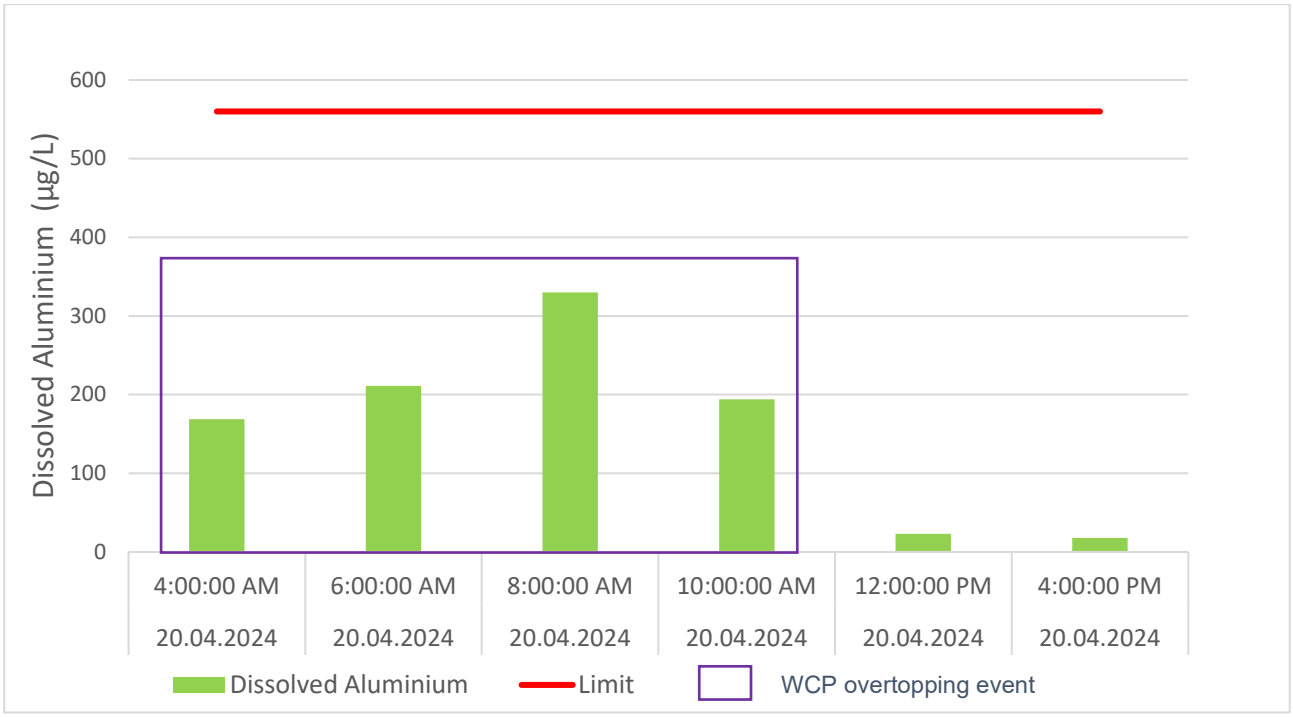


Figure 7 Dissolved aluminium (µg/L) and limit at S001 from event samples (NATA analysis) from 20 April 2024.

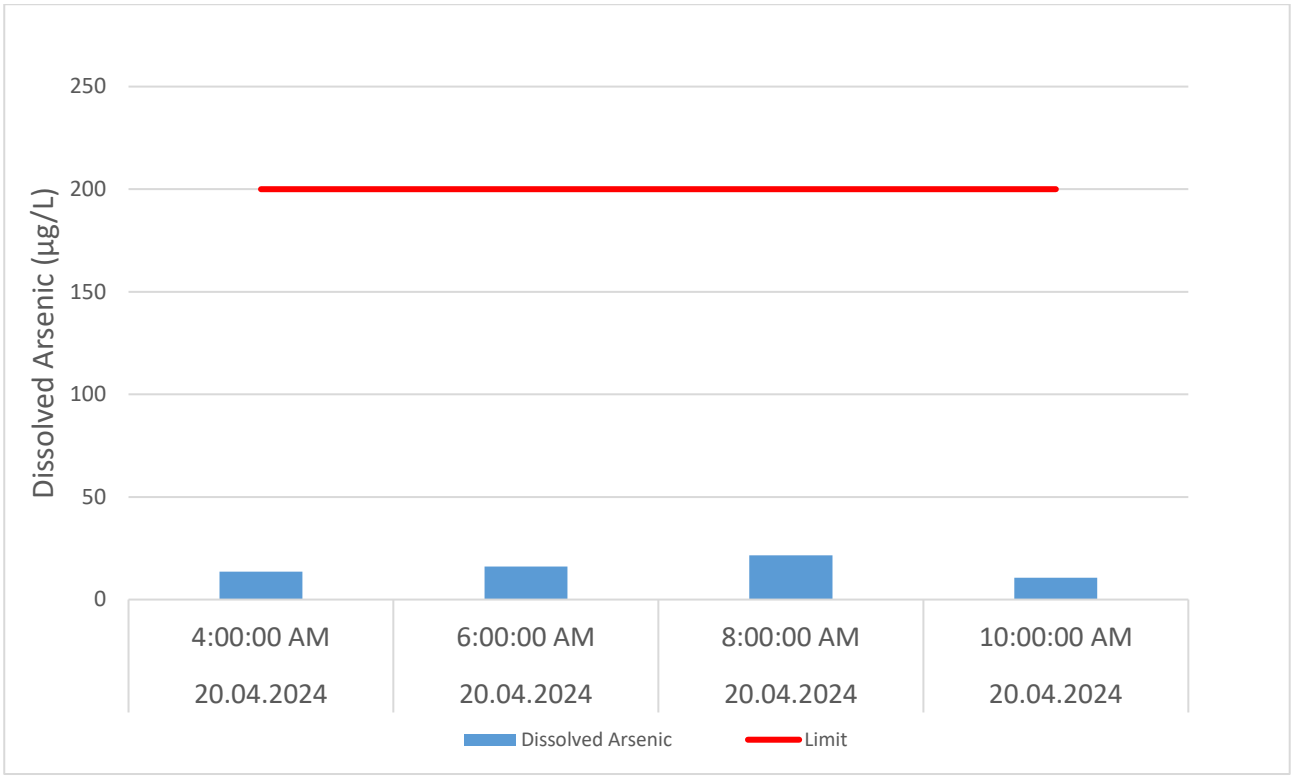


Figure 8 Dissolved arsenic (µg/L) and limit at S001 from event samples (NATA analysis) from 20 April 2024.

Composite Sample

The S074 composite sample results (Appendix A, Table A4) provide a time and volume weighted average over twenty-four hours, including when the unauthorised release was discharging into the eastern seawater channel. Composite samples are relevant to TVs and Limits to assess potential environmental impact. The composite sample (20 April 2024) recorded minor increases for several analytes from the WCP event on the 20 April 2024, and results returned to baseline on the 23 April following the further rainfall recorded on the 21 and 22 April (Appendix A, Table A4). All analytes remained below WDL Limits and TVs.

Marine Results Discussion

Investigative sample results for dissolved aluminium (offsite NATA laboratory) from the MZB sites are shown in Figure 9. Sampling of the marine sites was completed at approximately 13:00 PM, 20 April 2024, after the overtopping event ceased. Results at the MZB sites showed slight elevation for dissolved aluminium at SW9 with the concentration of 28 µg/L, below the license trigger value of 56 µg/L (Figure 9). Other MZB sites, SW10 and RR2 returned results below the limit of reporting for the laboratory (5µg/L).

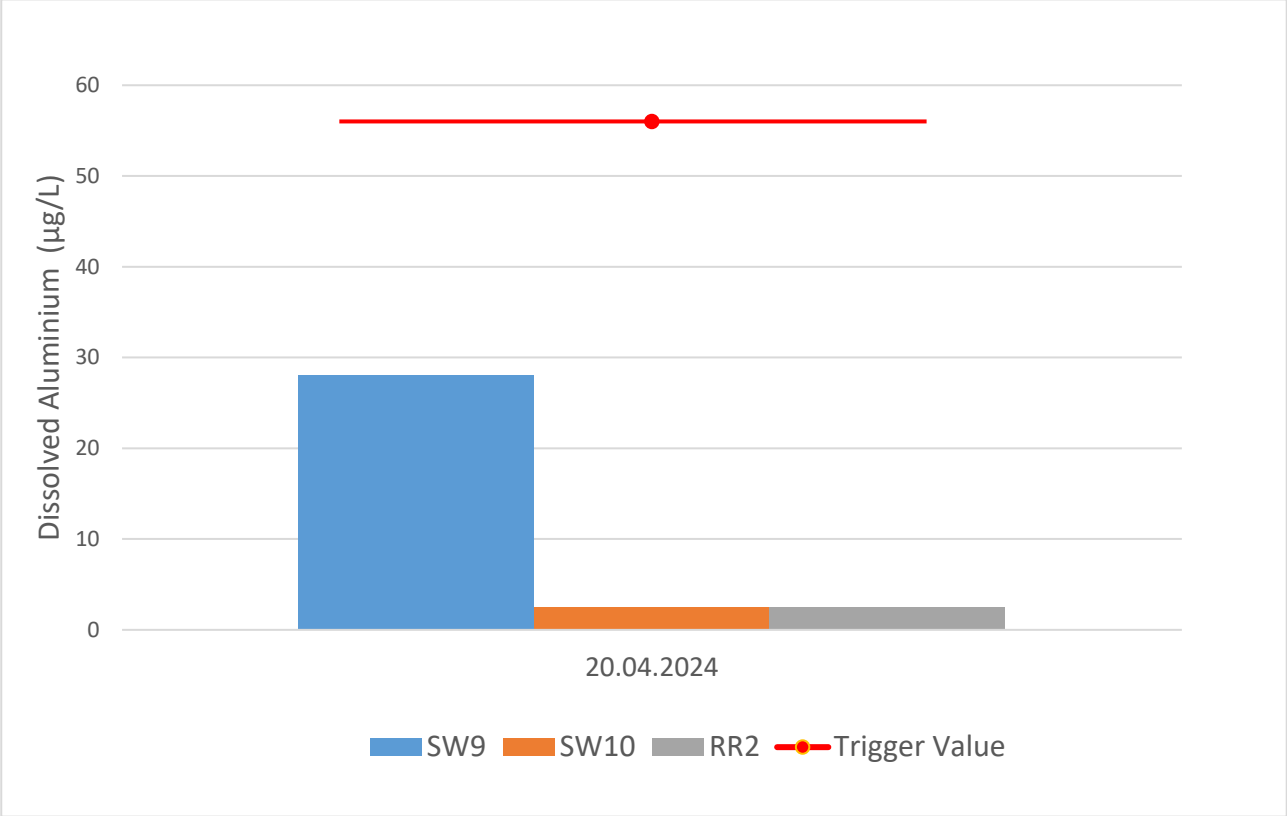
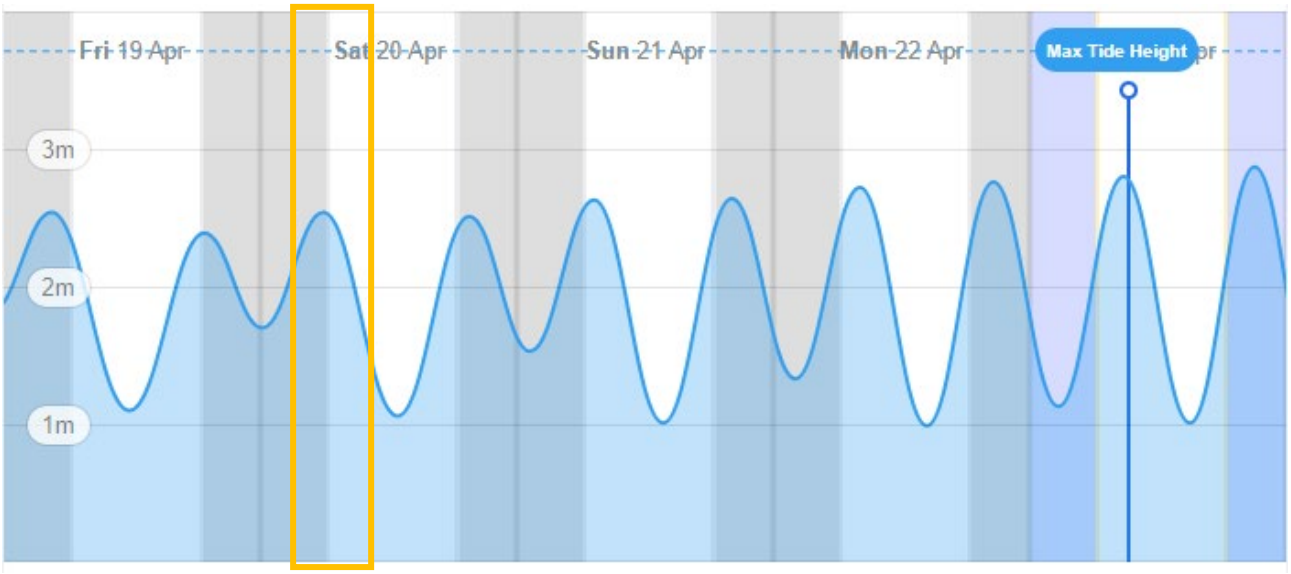


Figure 9 Dissolved aluminium concentrations at MZB sites for samples collected after the event at 13:30 PM 20 April 2024. Note that Dissolved aluminium for site RR2 and SW10 was recorded at below the limit of reporting.

The tides times and heights during the WCP incident are provided in Figure 10 and Figure 11. The incident occurred during a flood tide.

FRI 19 Apr	SAT 20 Apr	SUN 21 Apr	MON 22 Apr	TODAY 23 Apr
4:28 am 2.54m	12:11 am 1.7m	1:16 am 1.53m	2:03 am 1.33m	2:42 am 1.13m
11:45 am 1.1m	5:54 am 2.54m	7:14 am 2.63m	8:07 am 2.72m	8:47 am 2.8m
6:46 pm 2.39m	12:51 pm 1.06m	1:42 pm 1.01m	2:23 pm 0.99m	3:00 pm 1.01m
	7:34 pm 2.51m	8:08 pm 2.64m	8:37 pm 2.76m	9:03 pm 2.87m

Figure 10 Tide Times from 19 to 23 April 2024. *Source:* *Nhulunbuy Tide Times, NT 0880 - WillyWeather*



Incident time periods

Figure 11 Tide height from 19 to 23 April 2024. *Source:* *Nhulunbuy Tide Times, NT 0880 - WillyWeather*

The Australian Institute of Marine Science (AIMS) developed a hydrodynamic model of Melville Bay to assess the dilution and dispersion of the seawater channel discharge into inner Gove Harbour and Melville Bay (AIMS, 2020). The model predicted a minimum dilution rate of 1:25 for the three MZB compliance sites SW9, SW10 and RR2 at a discharge rate of 10,500 m^3/h. Concentrations at the MZB during the incident are conservatively predicted by applying the minimum dilution rate from the hydrodynamic model at the MZB of 1:25 to S001 data (Appendix B, Table A5). The predicted concentrations of dissolved Al at the MZB sites are presented in Figure 12.

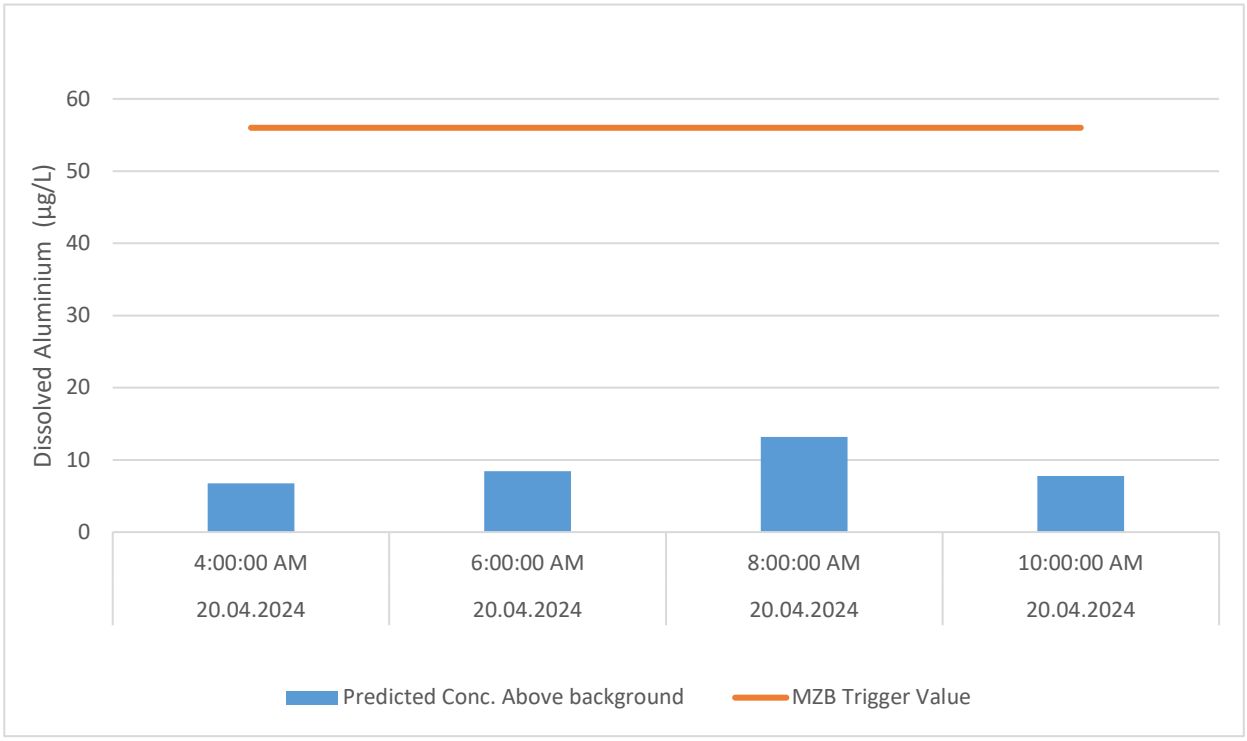


Figure 12 Predicted concentration of dissolved aluminium at the marine mixing zone boundary based on S001 concentrations from investigative samples and actual measured MZB concentrations.

From the Marine Health Monitoring Program (MHMP) data base, background concentration for dissolved Al in Melville Bay is 1.7 µg/L (80th percentile for the previous 24 months monthly samples). Predicted concentrations are above the background concentrations. Predicted concentrations of dissolved Al for the marine sites are all lower than TVs defined in the Licence for the MZB. Similarly predicted concentrations for dissolved As and V are well below the corresponding TVs.

Conclusion

The results of the investigation sampling confirmed turbidity was the only parameter to exceed a License Limit for the event sample taken at S001 at 08:00 AM on 20 April 2024, returning 103 NTU. TSS results from the same sample at 08:00 AM on 20 April were comparatively low. Follow up sample taken at 12:00 PM on 20 April 2024 after the event, returned a result of 1.7 NTU at the NATA accredited laboratory. This confirms that the spike was due to a pulse event with minimal impact.

Overall the data demonstrates that there was no environmental impact expected from the WCP overtopping on 20 April 2024.

References

Australian Institute of Marine Science, 2020, *Assessment of seawater channel dilution in inner Gove Harbour for development of discharge Trigger Values*. Report to Rio Tinto Aluminium Gove.

Appendix A – Analytical Results Tables

Table A2 Water quality results for site S004 seawater intake location from 19 to 22 April 2024 (onsite analysis).

Daily Operational Samples at site S004 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	19/04/2024	20/04/2024[1]	21/04/2024	22/04/2024
Environmental Parameters							
pH		9	9.5	8.28		8.26	8.29
Electrical Conductivity	ms/cm	-	-	46.7		45	44.2
Turbidity	NTU	75[1]	100	1.79		5.05	3.85
Alkalinity	mg/L	-	-	115.1		112.9	103.9
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	6.3		5.8	8.1
Arsenic	µg/L	-	200	1.6		1.8	1.5
Gallium	µg/L	-	8000	0.4		0.1	0.1
Manganese	µg/L	-	-	0.8		0.9	0.7
Molybdenum	µg/L	-	38800	9.6		9.7	8.4
Vanadium	µg/L	-	1000	2.9		3.6	3.1

[1]*Internal Laboratory did not analyse a sample at S004 as no sample was collected from the seawater intake during the WCP overflow event.*

Table A3 Daily Authorised Monitoring Site S001 Outfall Monitoring Station water quality results – 19 to 22 April 2024 (Onsite Analysis).

Daily Compliance Samples - S001 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	19/04/2024	20/04/2024	21/04/2024	22/04/2024
Environmental Parameters							
pH		9	9.5	8.68	8.56	8.27	8.29
Electrical Conductivity	ms/cm	-	-	46.0	39.5	44.1	44.2
Turbidity	NTU	75[‡]	100	2.27	**76.7**	8.65	6.51
Alkalinity	mg/L	-	-	246.2	124.4	111.7	104.9
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	11.9	422	25.3	23.3
Arsenic	µg/L	-	200	4.5	21.83	2.1	1.6
Gallium	µg/L	-	8000	1.4	5.01	0.3	0.2
Manganese	µg/L	-	-	4.6	1.34	4.8	1.0
Molybdenum	µg/L	-	38800	20.9	10.2	9.9	8.6
Vanadium	µg/L	-	1000	8.4	102.6	5.0	3.7

Table A4 Daily water quality results – 24 hour Composite sample at Authorised Monitoring Site **S074** – 19 to 22 April 2024 (Onsite Analysis)

Daily Compliance Samples - S074 Samples retrieved at 08:00 Hrs		***S001 Trigger value***	***S001 Limit***	**19/04/2024**	**20/04/2024**	**21/04/2024**	**22/04/2024**
Environmental Parameters							
pH		9	9.5	8.53	8.63	8.44	8.34
Electrical Conductivity	ms/cm	-	-	43.2	42.3	44.3	42.9
Turbidity	NTU	75[t]	100	6.96	7.68	24.7	10.4
Alkalinity	mg/L	-	-	200.3	208.3	118.15	104.35
Total Suspended Solids	mg/L	-	-	12	29.2	32.3	31.1
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	8.3	20.1	35.5	18.8
Arsenic	µg/L	-	200	3.2	4.3	4.1	1.8
Gallium	µg/L	-	8000	1.2	1.7	0.8	0.2
Manganese	µg/L	-	-	1.0	1.4	1.1	1.2
Molybdenum	µg/L	-	38800	21.4	18.6	9.6	8.8
Vanadium	µg/L	-	1000	5.2	9.9	12.4	4.6

Table A5 Event based external water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 20 April 2024 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S001		S001 Trigger value	S001 Limit	20/04/2024	20/04/2024	20/04/2024	20/04/2024	20/04/2024	20/04/2024
			Time	04:00	06:00	08:00	10:00	12:00	16:00
Environmental Parameters									
pH		9	9.5	8.38	8.18	8.29	8.16	7.98	8.01
Electrical Conductivity	us/cm	-	-	42400	44700	41200	44800	44300	45200
Turbidity	NTU	75[t]	100	**76.1**	40.4	**103**	**77.0**	1.7	2.1
Total Alkalinity	mg/L	-	-	142	119	125	121	113	112
Total Suspended Solids	mg/L	-	-	54	22	54	46	<5	<5
Metals & Metalloids									
Dissolved Aluminium	µg/L	-	560	169	211	330	194	23	18
Dissolved Arsenic	µg/L	-	200	13.6	16.1	21.5	10.6	1.8	1.6
Dissolved Gallium	µg/L	-	8000	<10	<10	<10	<10	<10	<10
Dissolved Iron	µg/L	-	-	<5	<5	<5	8	<5	<5
Dissolved Manganese	µg/L	-	-	1.0	0.7	0.6	0.6	0.5	0.6
Dissolved Molybdenum	µg/L	-	38800	11.3	10.0	10.4	10.2	9.4	9.5
Dissolved Vanadium	µg/L	-	1000	64.2	70.5	105	47.7	5.4	4.0
Total Aluminium	µg/L	-	560	3990	2010	5310	3380	244	260
Total Arsenic	µg/L	-	200	18.1	19.4	25.6	12.5	1.9	1.7
Total Gallium	µg/L	-	8000	<10	<10	<10	<10	<10	<10
Total Iron	µg/L	-	-	2380	1180	2980	2100	175	238
Total Manganese	µg/L	-	-	9.1	5.4	8.7	7.3	2.1	2.6
Total Molybdenum	µg/L	-	38800	11.2	10.2	10.6	9.5	9.1	9.7
Total Vanadium	µg/L	-	1000	75.0	78.4	117	56.1	5.6	4.6
Nutrients									
Total Dissolved Phosphorus	µg/L	-	140	11	12	15	8	4	4

Investigative / Event samples - S001		S001 Trigger value	S001 Limit	20/04/2024	20/04/2024	20/04/2024	20/04/2024	20/04/2024	20/04/2024
			Time	04:00	06:00	08:00	10:00	12:00	16:00
Total Dissolved Nitrogen	µg/L	-	1700	140	140	190	140	170	140
Hydrocarbons									
Total Petroleum Hydrocarbons	µg/L	-	-	<50	<50	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	-	<1	<1	<1	<1	<1	<1
Toluene	µg/L	-	-	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	-	-	<2	<2	<2	<2	<2	<2
Xylene	µg/L	-	-	<2	<2	<2	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

Table A6 Event based internal water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 20 April 2024 (onsite analysis).

Event Operational samples - S001 Analysed onsite		S001 Trigger value	S001 Limit	20/04/2024	20/04/2024	20/04/2024	20/04/2024	20/04/2024	20/04/2024
			Time	04:00	06:00	08:00	10:00	12:00	16:00
Environmental Parameters									
pH		9	9.5	8.58	8.43	8.56	8.37	8.27	8.26
Electrical Conductivity	ms/cm	-	-	40.4	43.1	39.5	43.8	46.6	46.1
Turbidity	NTU	75[4]	100	60.9	41.3	**76.7**	**80.0**	9.5	8.0
Alkalinity	mg/L	-	-	140.9	119.5	124.2	123.6	113.0	113.1
TSS	Mg/L			49.0	33.0	70.0	63.0	9.0	34.0
Dissolved Aluminium	µg/L	-	560	197	235	422	371	40	36
Dissolved Arsenic	µg/L	-	200	12.76	16.85	21.83	11.10	2.14	1.94
Dissolved Gallium	µg/L	-	8000	2.40	2.26	5.01	2.21	0.32	0.29
Dissolved Iron	µg/L	-	-	19.7	19.9	38.5	76.6	6.8	7.0
Dissolved Manganese	µg/L	-	-	1.76	1.42	1.34	1.22	1.11	1.35
Dissolved Molybdenum	µg/L	-	38800	11.44	10.07	10.02	9.78	9.41	9.71
Dissolved Vanadium	µg/L	-	1000	54.9	73.1	102.6	48.3	5.8	4.8

This data is event based – it does not form part of the WDL monitoring program.

Table A7 event based external water quality results – Western Containment Pond site **S030** – 20-21 April 2024 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S030		20/04/2024 04:00	20/04/2024 06:00	20/04/2024 08:00	20/04/2024 10:00	21/04/2024 19:45	21/04/2024 21:45
Environmental Parameters							
pH		10.1	10.0	10.1	10.1	9.85	9.68
Electrical Conductivity	ms/cm	897	722	822	792	853	646
Turbidity	NTU	2980	1860	2100	2210	407	343
Alkalinity	mg/L	352	316	346	352	267	209
Total Suspended Solids	mg/L	759	579	584	384	164	143
Metals & Metalloids							
Dissolved Aluminium	µg/L	6810	5670	6430	6340	5250	3980
Dissolved Arsenic	µg/L	265	222	296	263	191	142
Dissolved Gallium	µg/L	54	37	46	46	46	33
Dissolved Iron	µg/L	510	490	467	385	216	210
Dissolved Manganese	µg/L	0.6	0.6	0.6	<0.5	<0.5	<0.5
Dissolved Molybdenum	µg/L	29.8	22.8	27.4	26.0	28.0	21.0
Dissolved Vanadium	µg/L	1220	1020	1290	1180	865	668
Total Aluminium	µg/L	119000	87700	82700	86000	25400	18700
Total Arsenic	µg/L	194	180	223	208	170	126
Total Gallium	µg/L	72	55	68	72	62	42
Total Iron	µg/L	25000	23200	20000	21100	5840	4060
Total Manganese	µg/L	94.6	64.0	65.5	64.4	14.4	11.2
Total Molybdenum	µg/L	8.1	7.6	9.3	9.1	20.9	14.8
Total Vanadium	µg/L	1150	1020	1210	1150	878	669

This data is event based – it does not form part of the WDL monitoring program.

Table A8 Investigative water quality results - **Marine Mixing Zone (MZB)** sites – 20 April 2024 (External Analysis - NATA accredited laboratory).

		MZB Trigger Values	20/04/2024	20/04/2024	20/04/2024
			SW9	SW10	RR2
		Time	13:38	13:35	13:32
Environmental Parameters					
pH		7.7 – 8.4	8.18	8.09	8.09
Electrical Conductivity	µS/cm	-	45900	47300	47300
Total Suspended Solids (SS)	mg/L	-	<5	<5	<5
Turbidity	NTU	20	3.7	1.4	1.1
Alkalinity	mg/L	-	121	111	112
Metals and Metalloids					
Dissolved Aluminium	µg/L	56	28	<5	<5
Dissolved Arsenic	µg/L	20	3.1	1.2	1.3
Dissolved Gallium	µg/L	800	<10	<10	<10
Dissolved Iron	µg/L	-	<5	<5	<5
Dissolved Manganese	µg/L	-	<0.5	<0.5	<0.5
Dissolved Molybdenum	µg/L	3880	10.3	8.8	9.0
Dissolved Vanadium	µg/L	100	11.7	2.7	2.8
Nutrients					
Total Dissolved Phosphorus*	µg/L	14	5	4	3
Total Dissolved Nitrogen*	µg/L	170	120	110	110
Hydrocarbons					
Total Petroleum Hydrocarbons	µg/L	-	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	<0.5	<0.5	<0.5
Benzene	µg/L	-	<1	<1	<1
Toluene	µg/L	-	<2	<2	<2
Ethylbenzene	µg/L	-	<2	<2	<2
Xylene	µg/L	-	<2	<2	<2

Notification of an Environmental Incident

☒ Incident ☐ Critical Incident ☐ Preliminary ☒ Final

Incident number:	**1000651110**
Name of mining site:	Rio Tinto - Gove operations
Name of operator:	RTA Gove Pty Limited
Date & time of detection:	Date: 21/04/2024 Time: 20:03
Date & time of incident:	Date: 21/04/2024 Time: 20:03
Name of person notifying:	Drew Carmichael
Position/Title:	Environment Superintendent
Contact person:	Drew Carmichael
Contact details:	Business: 08 8987 5233 Mobile: 0467 946 163
	E-mail: andrew.carmichael@riotinto.com
INCIDENT LOCATION (use GPS co-ordinates, attach map, etc. as appropriate)	WCP Overflow location into Seawater Channel; Latitude -12.188147 Longitude 136.685306  S074 adjacent to the outfall S001 Station; Latitude: -12.192297; Longitude: 136.684483 

INCIDENT DESCRIPTION	Overflow of Western Containment Pond (WCP) into the Seawater Channel resulting in discharge via S001 (Schedule 1, Item 10 (f), Condition 25 & 26). Incomplete 24-hour composite sample collected at S074, as per Schedule 1, Item 11 (Condition 27) Monitoring Program (c), (Appendix 4, Table 3 – Authorised monitoring point S074.	
Causes & contributing factors to the incident:	The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in overflow from the WCP into the seawater channel. Overflow from the WCP commenced at approximately 19:50 PM on the 21 April and ceased at approximately 02:00 on the 22 April. Further overflow was recorded again at 02:40 AM on 22 April ceasing at 06:30 AM on the 22 April 2024. The WCP capacity was in the process of being pump to the Residual Disposal Pond (RDA) via the Sands Disposal pump station after the recent overflow event on the 20 April 2024 (reported to the Department as incident #1000651027 on Saturday 21 April 2024). The capacity of the WCP was reduced to 72% by 15:50 PM on the 21 April, before the onset of further rainfall. Following the rainfall recorded over the previous overflow event on 20 April (>90 mm). Further rainfall was recorded across the Gove peninsula early on the evening of 21 April 2024. With approximately 51 mm of rainfall was recorded over a period from 15:00 PM on 21 April to 05:00 AM on 22 April 2024, in the lead up to and over course of the overflow event. In total, over 150 mm of rainfall has been recorded over the previous 3 days (05:00 AM on 19 April to 05:00 AM on 22 April 2024). The Waste Water Neutralisation Plant (WWNP) was still shutdown since approximately 03:40 AM on 20 April the prior to the WCP reaching 90% capacity before the previous overflow event (Incident #1000651027). Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation.	
Potential causes & contributing factors to the incident:	Intense rainfall over a short period, resulting in stormwater inflow into the WCP catchments which caused the pond to overtop its weir into the seawater channel.	
Action Taken:	YES ☒	NO ☐
If no, why?		
Corrective Actions that have/will be undertaken to ensure this does not reoccur:	Immediate corrective actions implemented to minimise the risk of overtopping included; • Continual operation of the WCP pumps. • Implementation of the Trigger Action Response Plan (TARP), and • Both sea water pumps remaining in operation. • Inspection and maintenance of erosion and sediment controls, and surface water management controls across the refinery footprint. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination of the catchment. The demolition of the refinery has commenced. The WCP catchment is scheduled to be	

	decontaminated and converted to clean stormwater catchment by 2026. The removal of the WCP cannot be brought forward due to constraints around the demolition of the refinery. Corrective actions identified as a result of the incomplete composite sample collected at S074 on 22 April include; • At the time of the electrical fault, the control room was able to check and confirm the UPS was providing back up power to the rest of the outfall station (continuous pH and EC). A field verification step has been included to confirm the autosampler is functioning if power outages or electrical faults occur, and if the UPS is triggered. This verification process is also being reviewed and updated in the TARP (ERP-CCR-001); • Continue to record and improve current auto-sampler maintenance tactics to ensure auto-sampler functionality and alert systems in the event of power outages or electrical faults occur, or if the UPS is triggered;
Date when investigation report will be submitted to Administering Agency:	Submitted on Tuesday 08 May 2024 - awaiting nutrient results from Queensland Health. Updated with Queensland Health data for S001 and Marine sites RR2, SW9 and SW10, and resubmitted on 27 May 2024.

ENVIRONMENTAL DETAILS

Nature of impact and severity: (Volume of spillage, area impacted, wildlife/vegetation/ erosion, etc.)	Refer to attached Environmental Impact Assessment (EIA)
Emergency & remedial actions taken:	• The Water Treatment plant was shutdown prior to the WCP capacity reaching 90%. • WCP pump operated continuously until the pond level reduced to below 50%. • Inspection and maintenance of erosion and sediment controls and surface water management controls across the refinery footprint.
Current situation: (Potential / ongoing / ceased / etc.)	The WCP overtopping event lasted for 10 hours with a short cessation of 40 minutes in between, before finally ceasing at 6:30 AM on the 22/04/24. The containment pond pumps remained in operation throughout the event and WCP levels returned below 50% on the 23.04.2024 at 08:44 AM. The WWNP remained offline since 3:40am on 20 April due to incident #100651027. Additional erosion and sediment controls have also been monitored and managed across the refinery to help control and transfer water to the RDA for storage and future treatment.

Details of any samples taken: (when / where / type / number / time for results /etc) If incident is related to Total Nitrogen, refer to WDL171-11 section 38.8 for further analysis.	Sample details as follows: • Continuous monitoring at S001 for pH and EC • Daily sample at S001. • Daily composite sample at S074 (noting that the S074 sample for the 22 April is recorded as an incomplete sample. See appended EIA for further details and assessment. • Investigation samples collected at S001 & S030 every 2-hours (internal and external analysis). 4-hourly sampling continued after the overflow ceased. • Marine incident investigation sampling at RR2, SW9 & SW10 compliance sites was completed at approximately 12:00 PM on the 22/04/2024. See the EIA for further details. Results from the NATA accredited laboratory, Queensland Health were yet to be provided at the time of the original submission of this notification on 8 May 2024. This Notification and EIA has been updated with nutrient analysis from Queensland Health. Nutrients results are not considered to be of concern during this overflow event given the STP was not discharging for entirety of the overflow event.

OPERATOR INTERNAL REPORTING

Has the incident been reported internally?	☒ **YES**	☐ **NO**
If so, to whom:	**Name:**	Johann MENEZES
	Position:	Water treatment Superintendent

Has the department been notified earlier?	☒ **YES**	☐ **NO**
Who was notified:	Sally-Anne Orchard	
How: (phone/email/fax)	Phone voicemail and follow up email notification	
When: (date & time)	Phone voicemail at 13:50PM on 22 April 2024 and follow up email notification.	
By whom:	Drew Carmichael	

Name: Drew Carmichael

Signed Drew Carmichael **Date:** 27 May 2024

Title: Environment Superintendent

OFFICE USE ONLY			
Received by:			
Date:		**Time:**	

Environmental Impact Assessment

Incident #1000651110

22 April 2024

Compliance monitoring and investigative (event based) sampling was conducted in response to the Western Containment Pond (WCP) overtopping into the Seawater Channel on the 21 - 22 April 2024 following a significantly large rainfall event across the Gove peninsula. The over topping of the WCP occurred for 6 hours and 10 minutes from 19:50 PM on the 21 April to 02:00 AM on the 22 April when it ceased for a short duration (40 minutes) before continuing to over top for a further 3 hours and 50 minutes at 02:40 AM to 06:30 AM on the 22 April 2024 (total duration of 10 hours for this event).

The WCP capacity was in the process of being pumped to the Residual Disposal Pond (RDA) via the Sands Disposal pump station after the recent overflow event on the 20 April 2024 (reported to the Department as incident #1000651027). The capacity of the WCP was reduced to 72% by 15:50 PM on the 21 April, before the onset of further rainfall.

An electrical fault at 20:00 PM on the 21 April at the autosampler (S074) resulted in the power tripping at the Authorised Outfall Monitoring Station S001 and the retrieval of an incomplete representative composite sample for the previous 24 hours (08:00 AM 21 April to 08:00 AM 22 April). Further investigation attributed the S074 electrical fault from water ingress into the autosampler unit. Grab samples were collected when power was restored as part of this investigation. The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC.

The incident was reported as #1000651110 to the Department of Environment, Parks, and Water Security (DEPWS) on 22 April 2024. Immediate corrective action included continual operation of WCP pumps, implementation of the Trigger Action Response Plan (TARP); the Waste Water Neutralisation Plant (WWNP) was offline at the time, and both sea water pumps remaining operational. The ultimate corrective action remains the demolition of the Refinery and decontamination of the catchment scheduled for conversion to a clean stormwater catchment. The removal of the WCP cannot be brought forward due to constraints around the demolition of the refinery.

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GLOSSARY

COPC	Contaminants of Potential Concern
LOR	Limit of reporting
MZB	Mixing Zone Boundary
RDA	Residue Disposal Area
SCP	Southern Containment Pond
STP	Sewerage Treatment Plant
TARP	Trigger Action Response Plan
TDN	Total Dissolved Nitrogen
TDP	Total Dissolved Phosphorous
TV	Trigger Value
UPS	Uninterrupted Power Source
WCP	Western Containment Pond
The Licence	Waste Discharge Licence
WWNP	Waste Water Neutralisation Plant

Introduction

A significant rainfall event was experienced across the Gove Peninsula from the 19 April 2024 to 22 April 2024. The Stockpile Creek Rain Gauge recorded over 150 mm of rainfall during this 4-day period. With approximately 51 mm of rainfall recorded from 15:00 PM on 21 April to 06:30 AM on the 22 April 2024.

The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in stormwater overtopping the WCP weir into the seawater channel. The WCP capacity was in the process of being pumped to the Residual Disposal Pond (RDA) via the Sands Disposal pump station after the recent overflow event on the 20 April 2024 (reported to the Department as incident #1000651027 on Saturday 21 April 2024). The capacity of the WCP was reduced to 72% by 15:50 PM on the 21 April, before the onset of further rainfall. Overflow from the WCP commenced at approximately 19:50 PM, 21 April 2024. The Waste Water Neutralisation Plant (WWNP) was already offline from the recent overflow event on the 20 April 2024 and remained offline throughout the event on the 21-22 April 2024.

Treated water from the Sewage Treatment Plant (STP) was being redirected to a rehabilitation area and was not discharging into the seawater channel for the duration of the WCP overflow.

The WCP ceased overtopping its weir into the seawater channel at approximately 06:30 AM on 22 April 2024. Total duration of discharge from the WCP into the seawater channel on the 21 – 22 April 2024 was 10 hours with a short cessation of 40 minutes between 02:00 AM – 02:40 AM on the 22 April.

Operational and investigative (event based) samples were collected from Authorised Outfall Monitoring Station (S001) and Western Containment Pond (S030). One separate sampling event from the marine mixing zone boundary sites (SW9, SW10 and RR2) (MZB) was undertaken on the 22 April 2024 at 11:45 AM after the WCP ceased overtopping into the seawater channel.

An electrical fault at 20:00 PM on the 21 April at the autosampler (S074) resulted in the power tripping at the Authorised Outfall Monitoring Station S001 and the retrieval of an incomplete representative composite sample for the previous 24 hours (08:00 AM 21 April to 08:00 AM 22 April) as per Schedule 1, Item 11 (Condition 27) *Monitoring Program* (c), (Appendix 4, Table 3 – Authorised monitoring point S074). The composite sample obtained is representative of the period from 08:00 AM to 20:16 PM 21 April 2024. Grab samples were collected when power was restored as part of this investigation. The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC.

It is unlikely that the ability to understand or interpret the potential for impact on the receiving environment in the absence of the incomplete composite sample during this period is reasonably low given the fact that all other aspects of the monitoring program were in situ and investigation samples were collected.

Results

Tabulated results for incident #1000651110 are provided in Appendix A. Operational results are samples analysed at the onsite laboratory. Investigative results are samples analysed offsite at a NATA accredited laboratory.

Results for Operational Samples for the intake site at S004 are summarised in Appendix A, Table A2.

Results for the Daily Compliance Samples taken at 08:00 AM for 21 April to 23 of April 2024 at the Authorised Discharge Site S001 are summarised in Appendix A, Table A3. Note an incomplete representative composite sample for 08:00 AM on the 22 April due to an electrical fault on autosampler (S074).

An automatic water sampler collects a 50 mL sample every 20 minutes resulting in a composite sample every 24 hours. Composite sample results over a 24-hour period provide a comprehensive representation of discharge quality into the receiving environment during the WCP overtopping events, providing weighted average results. The site S074 composite sample results for the 21 to the 23 of April 2024 were analysed onsite and are summarised in Appendix A, Table A4.

Investigation event-based samples (NATA laboratory offsite) for the 21-22 April 2024 at Authorised Discharge site S001 are summarised in Appendix A, Table A5.

Results for event based internally analysed samples on the 21-22 April 2024 at S001 are summarised in Appendix A, Table A6.

Results for the externally analysed Western Containment Pond Site S030 are summarised in Appendix A, Table A7.

Marine sites SW9, SW10 and RR2 were sampled once on the 22 April 2024, the results summarised in Appendix A, Table A8.

Figure 1 shows the location of the WCP and associated refinery catchments. Figure 2 shows hourly rainfall (mm) recorded at Stockpile Creek and WCP storage capacity (%) for the 21-22 April 2024. Figure 3 shows continuous monitoring of the Outfall monitoring station site S001 for pH and EC.

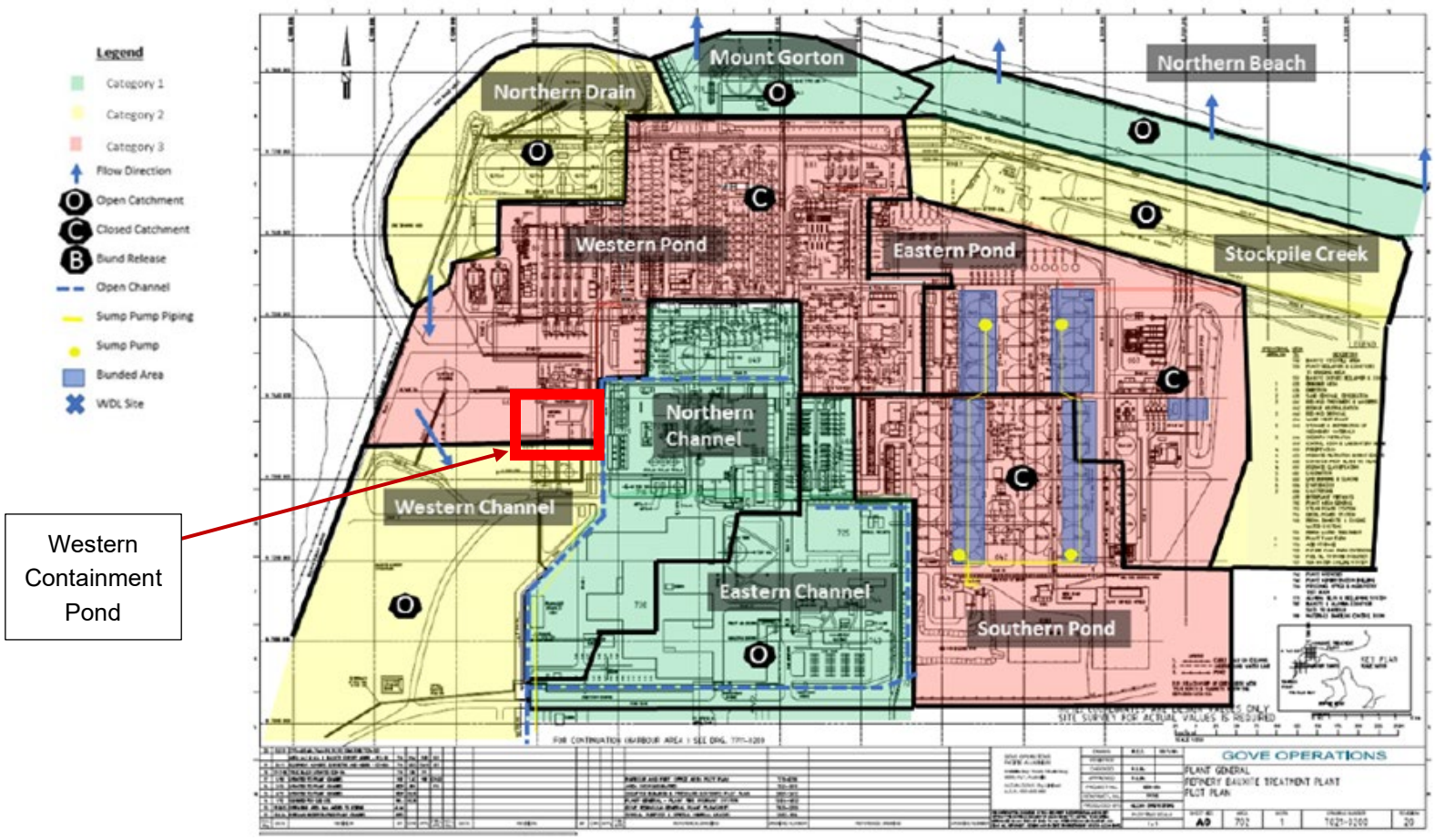


Figure 1 Refinery Catchments identifying the Western Containment Pond

Note: Many demolition work fronts and areas are bunded to contain rainwater across each catchment during each rain event, minimising the volume of water reporting to each pond. This contained water is pumped to the RDA for storage and treatment. Additional localised surface water and erosion & sediment controls have been implemented to manage and reduce the volume of water reporting to each containment pond during the demolition phase of the refinery. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination and rehabilitation of the catchment.

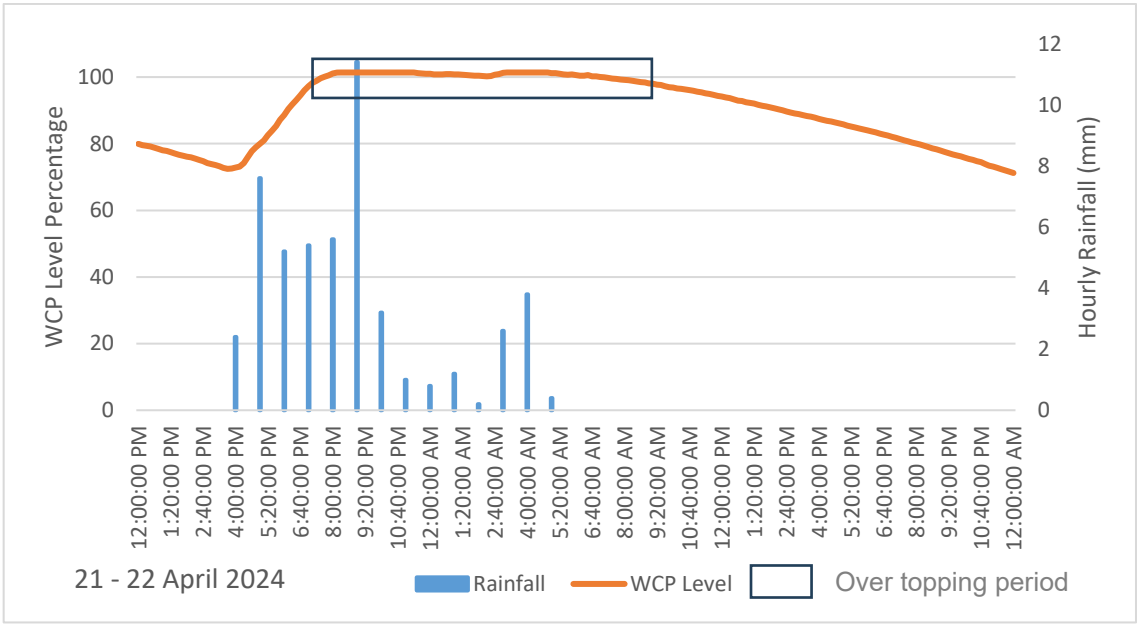


Figure 2 Measured hourly rainfall (mm) collected from Stockpile Creek Rain Gauge and WCP storage capacity (%) for the 21 - 22 April 2024.

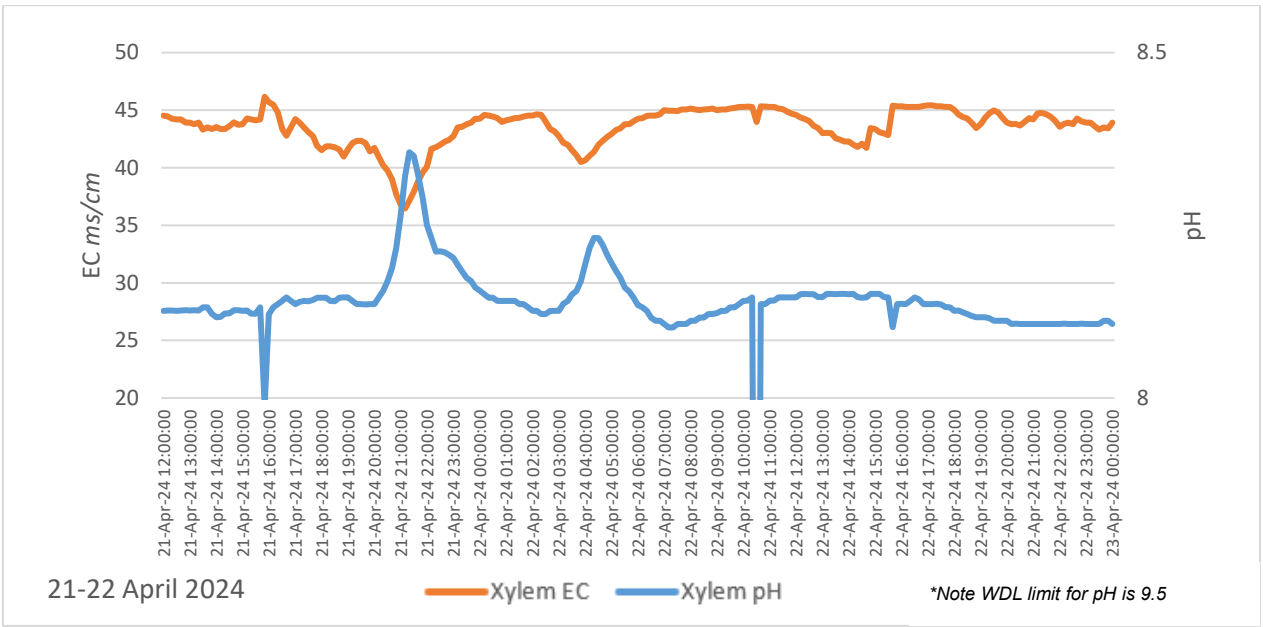


Figure 3 Continuous monitoring of pH and EC at the Outfall Monitoring Station (S001) on 21 - 22 April 2024.

Continuous monitoring of pH ranged from 7.98 – 8.35 during the period of 21 to 22 April as shown Figure 3 above. Sample results retrieved as a part of the event sample regime on the 21 and 22 April 2024 showed pH results ranging from 7.99 - 8.13 throughout the overtopping event (Appendix A, Table A5). This is supported with the continuous data reporting no exceedance of the WDL limit throughout the overtopping incident.

Discussion

WWNP Operation

Figure 4 shows the Waste Water Neutralisation Plant (WWNP) was already offline from the recent overflow event on the 20 April 2024 (#1000651027 reported to the Department on 21 April 2024) and remained offline throughout the event on the 21-22 April 2024.

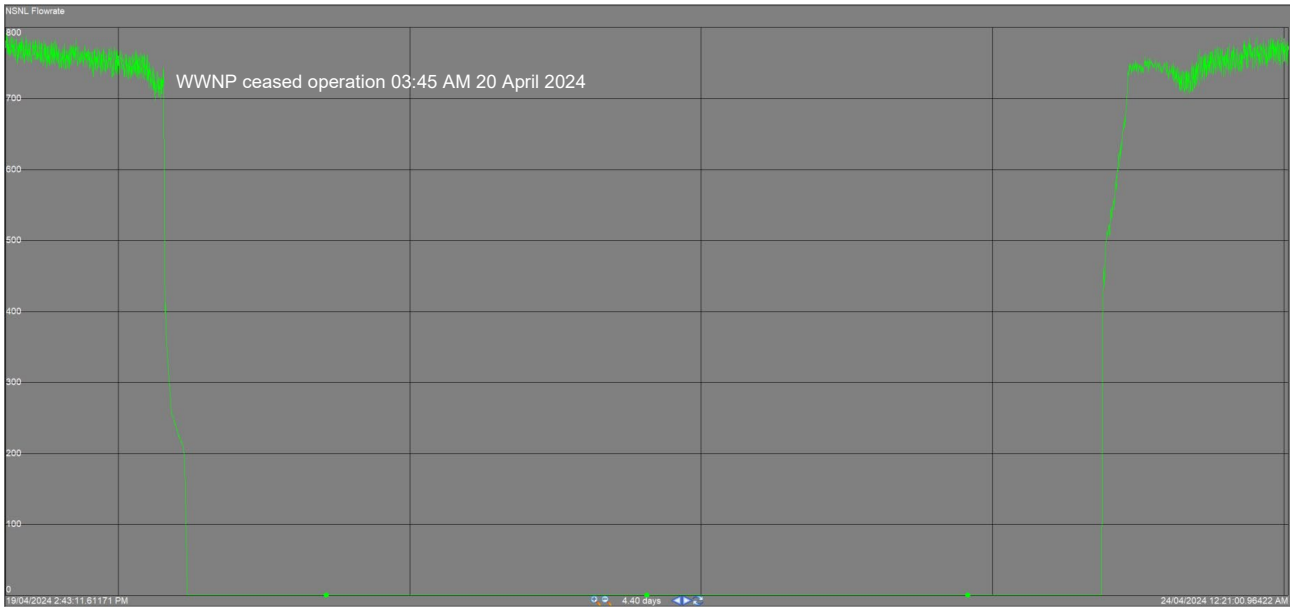


Figure 4 WWNP Operation 20 April to the 24 April 2024 shown as NSNL flow rate (m3/hr) vs Time. Operation of WWNP ceased at 03:45 AM on 20 April (previous rainfall event) and remained offline until 11:00 AM 23 April 2024.

Alkalinity

Alkalinity concentrations are indicative of WWNP operation. Results for alkalinity concentrations from daily 08:00 AM operational (compliance) samples at site S001 for the period 21 to 23 April 2024 are summarised in Appendix A, Table A3. Alkalinity prior to the WWNP shutdown on the 19 of April 2024 was 246.2 mg/L, indicative of WWNP operation. Following the shutdown alkalinity results remained at background seawater concentrations, ranging from 114.4 mg/L to 117.1 mg/L, indicating the WWNP was not influencing alkalinity concentrations.

WCP sample location

Water quality results of investigation samples (offsite analysis) for WCP site S030 are summarised in Appendix A, Table A7. Care should be taken when reviewing these results, as samples may not be representative of actual discharge of WCP water into the seawater channel. The sample location is adjacent to the WCP pump located at the bottom opposite side of the weir to where water is pumped to the sands-disposal then onto the RDA (Figure 5). Samples collected from the south-east corner are expected to exhibit higher concentrations than actual surface water discharge into the seawater channel at the overflow weir located at the north-east corner of the WCP. The location of the discharge weir is unable to be safely accessed for sampling.

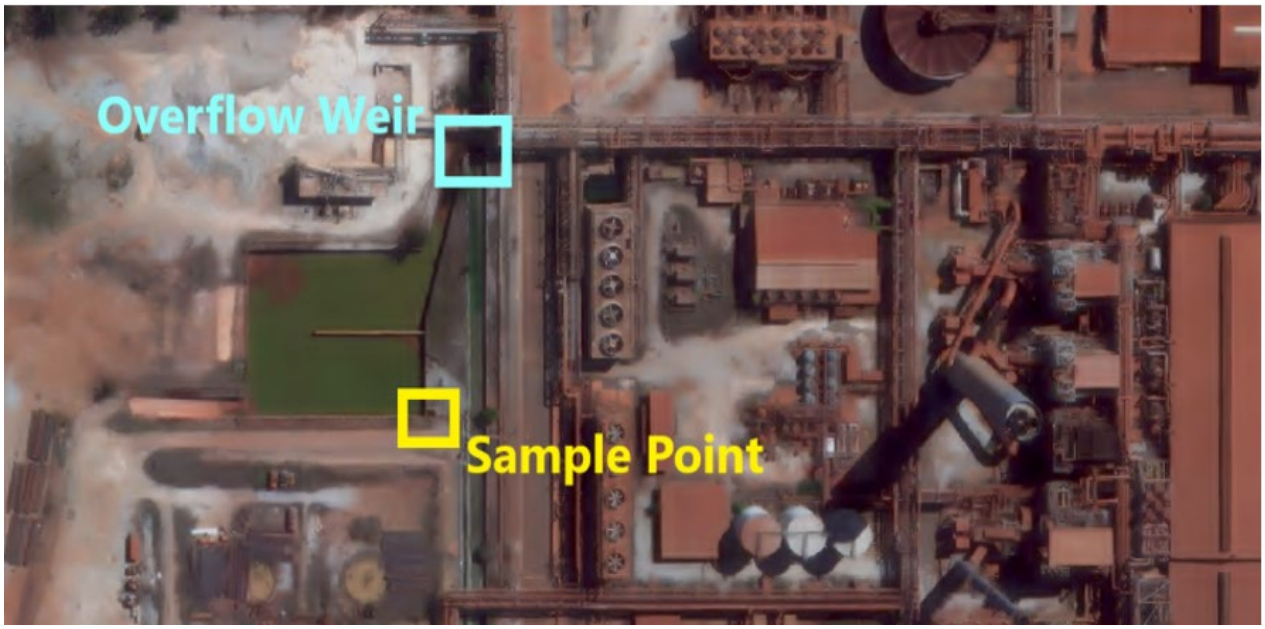


Figure 5 Sample point for the WCP site S030 is the pump located at the bottom of the pond, on the opposite side of the overflow weir location where discharge flows into the seawater channel.

Electrical Conductivity

Electrical conductivity (EC) is indicative of discharges of stormwater into the seawater channel. Background seawater has an EC of approximately 50 ms/cm. The seawater channel intake site S004 ranged from 44.2 ms/cm to 45.0 ms/cm for the period 21 to 23 April 2024 which is relatively low when compared to typical background marine water (Table 1). This suggests a high volume of freshwater input into the bay.

The outfall channel site S001 for the same period 21 to 23 April 2024 is also summarised in Table 1 (S001).

Table 1 Seawater channel intake site S004 and outfall channel site S001 showing EC from the 08:00 AM sample from 21 to 23 April 2024.

Date and Time	**EC (ms/cm) S004 intake**	**EC (ms/cm) S001 outfall**
21 April 2024 08:00	45.0	50.2
22 April 2024 08:00	44.2	49.9
23 April 2024 08:00	44.6	50.1

There is evidence of stormwater inputs into the channel from WCP during the 21-22 April event. The EC value decreased to approximately 36 mS/cm at 10:00 AM (Figure 3).

Turbidity

Turbidity results from event based samples from S001 during and following the WCP overtopping incident on the 21-22 April 2024 are shown in Figure 6. Turbidity tested from both the internal and external NATA accredited laboratory's returned results below the S001 Trigger value and limit during the WCP overtopping event (Figure 6).

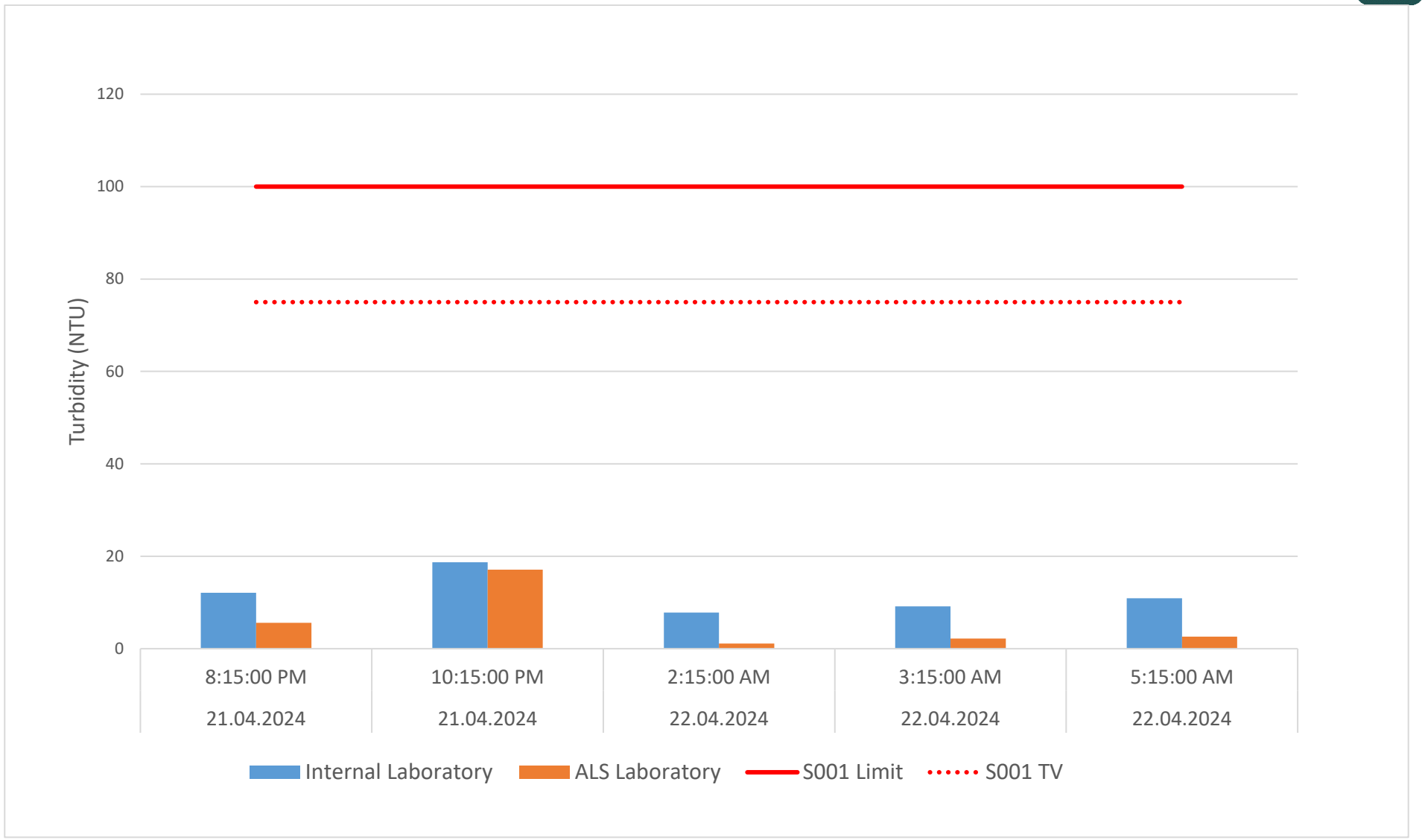


Figure 6 External NATA and internal laboratory Turbidity (NTU), for S001 investigative samples for 21-22 April 2024.

Hydrocarbons

Hydrocarbon results from event based samples from S001 during and following the WCP overtopping incident on 21-22 April 2024 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 22 April 2024, with the results summarised in Appendix A, Table A8 (NATA analysis).

All hydrocarbon concentrations at S001 and the MZB sites were less than the laboratory limit or reporting (LOR) and considered to not be of concern.

Nutrients

Treated water from the Sewage Treatment Plant (STP) was being redirected to a rehabilitation area and was not discharging into the seawater channel for the duration of the WCP overflow.

Similar to the previously reported incident (# 1000651027) nutrients results are not considered to be of concern during this overflow event given the STP was not discharging into the seawater channel for the entirety of the overflow event. Nutrient analysis for MZB SW9 sampled on 22 April 2024 at 12:05 PM, returned results for Total Dissolved Nitrogen in exceedance of the Trigger Value 170 µg/L at 250 µg/L. It likely that his can be attributed to the extended holding period prior to analysis as a result of a delayed receipt of sample at the NATA accredited laboratory.

Follow up results conducted as part of the routine marine health monitoring program on the 7 May 2024 at compliance point SW9, returned results for Total Dissolved Nitrogen of 100 µg/L, which is below the Trigger Value 170 µg/L.

Metals and Metalloids

Analysis of metals and metalloids at site S001 from investigative samples (NATA analysis) are summarised in Appendix Table A5 and Figures 7 and 8 .

Investigation samples taken at S001 during the overtopping events on the 21-22 April 2024 recorded a slightly elevated dissolved aluminium concentration of 151 mg/L during the overtopping event (Figure 7 & Table A5). This coincides with the observed large rainfall pulse event (~40 mm from 16:00 PM to 22:00 PM, 21 April). The concentration values were substantially lower than the Licence Limit of 560 µg/L. Further consecutive samples indicated that aluminium concentrations had decreased to background concentrations.

Investigation samples taken on 21-22 April 2024 during the overtopping event for dissolved arsenic concentrations remained at background concentrations ranging from 1.4 µg/L to 6.5 µg/L April 2024 (Figure 8). The concentrations were significantly less than Licence Limit of 200 µg/L.

Dissolved vanadium concentrations increased during the overtopping event, with the 22:15 AM S001 sample recording a concentration of 34 µg/L, well below the Licence Limit of 1000 µg/L. Vanadium concentrations remained low for the duration of the overtopping event decreasing to background concentrations of 4.8 µg/L at 05:15 AM on the 22 April (Appendix A, Table A5).

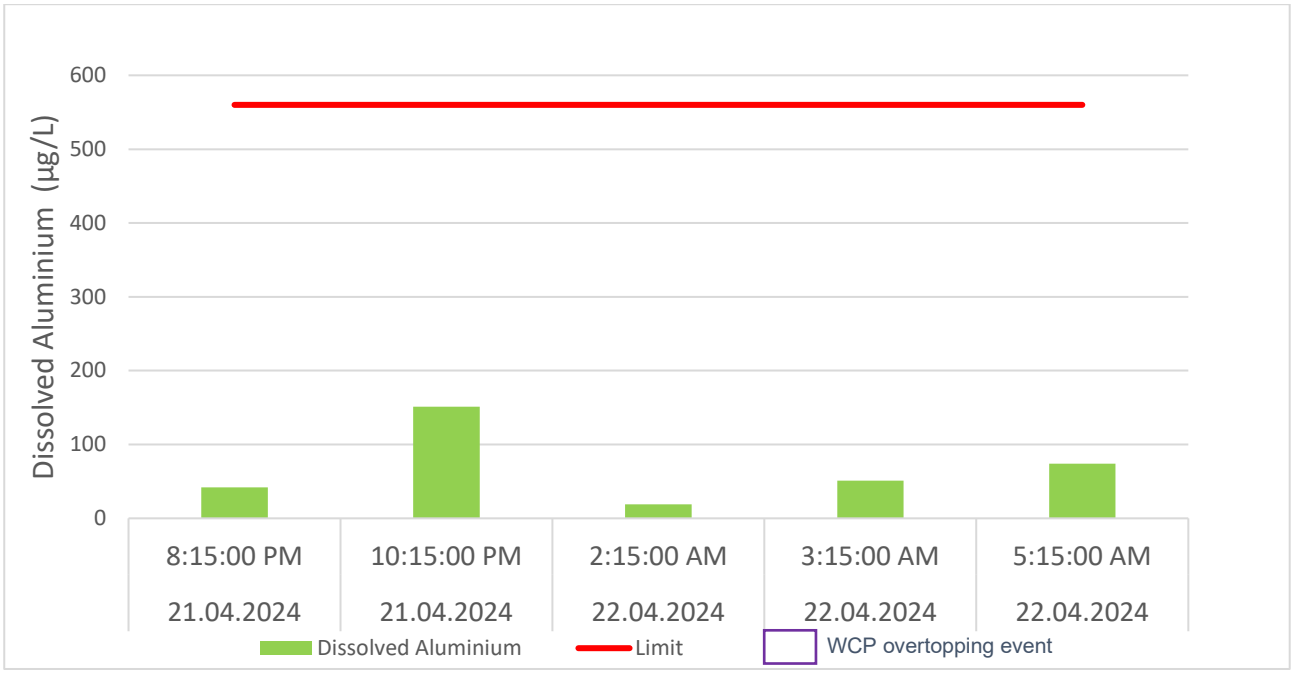


Figure 7 Dissolved aluminium (µg/L) and limit at S001 from event samples (NATA analysis) from 21-22 April 2024.

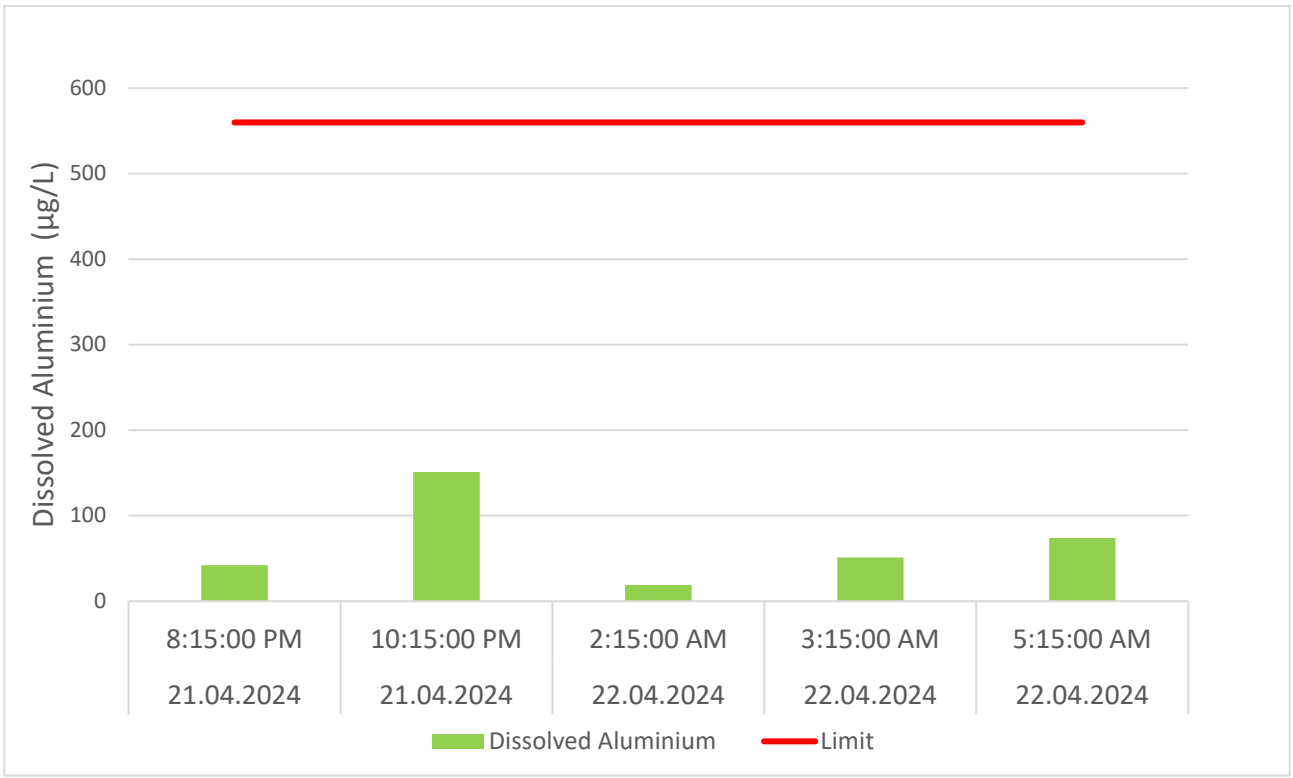


Figure 8 Dissolved arsenic (µg/L) and limit at S001 from event samples (NATA analysis) from 21-22 April 2024.

Composite Sample

The S074 collected on the 22 April is an incomplete composite sample representative from 08:00 AM on 21 April to 20:16 PM on 21 April 2024 due to electrical fault with the autosampler. The electrical fault was attributed to water ingress into the unit. The uninterrupted power supply to the authorised outfall station was unable to allow the autosampler to continue to function due to the water ingress, however the UPS allowed the continuous pH and EC monitoring system to function as intended.

The S074 composite sample results (Appendix A, Table A4) provide a time and volume weighted average over twenty-four hours, including when the unauthorised release was discharging into the eastern seawater channel. Composite samples are relevant to TVs and Limits to assess potential environmental impact. The incomplete representative composite sample for 22 April is comparable to results of full composite 24 hourly sample taken prior (21 April) and the full composite 24 hourly sample taken post the event (23 April) (Appendix A, Table A4). All analytes remained below the WDL TVs and Limits.

Marine Results Discussion

Investigative sample results for dissolved aluminium (offsite NATA laboratory) from the MZB sites are shown in Figure 9. Sampling of the marine sites was completed at approximately 11:45 AM, 22 April 2024, after the overtopping event ceased. Results at the MZB sites showed slight elevation for dissolved aluminium at SW9 and SW10 with concentrations being 5 µg/L (equal to the Laboratory LOR) and 10 µg/L respectively, well below the license trigger value of 56 µg/L (Figure 9). MZB site RR2 returned results below the Laboratory LOR (5µg/L).

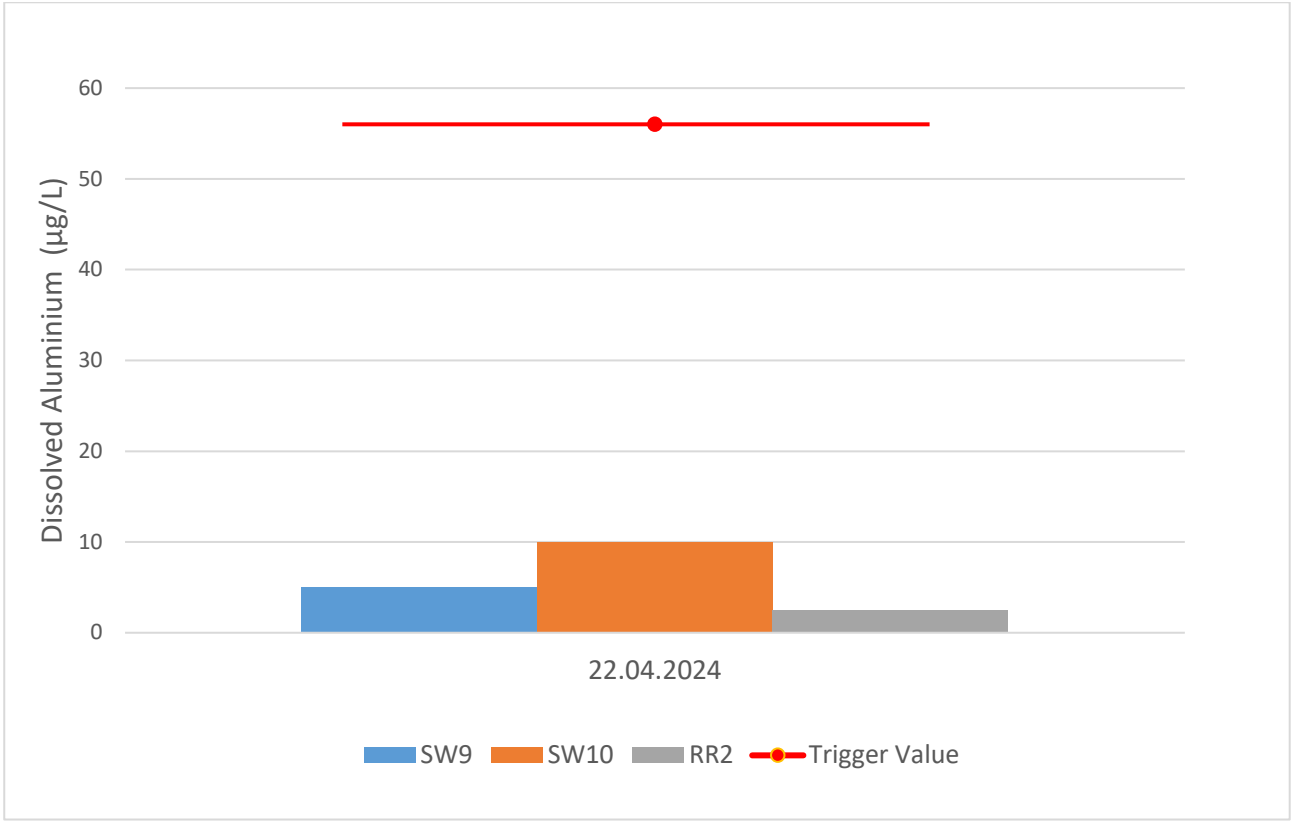


Figure 9 Dissolved aluminium concentrations at MZB sites for samples collected after the event at 11:45 AM 22 April 2024. Note that Dissolved aluminium for site RR2 was recorded at below the limit of reporting.

The tides times and heights during the WCP incident are provided in Figure 10 and Figure 11.

SUN 21 Apr	MON 22 Apr	TUE 23 Apr	WED 24 Apr	THU 25 Apr
1:16 am 1.53m	2:03 am 1.33m	2:42 am 1.13m	3:17 am 0.95m	3:50 am 0.79m
7:14 am 2.63m	8:07 am 2.72m	8:47 am 2.8m	9:25 am 2.84m	10:00 am 2.85m
1:42 pm 1.01m	2:23 pm 0.99m	3:00 pm 1.01m	3:34 pm 1.06m	4:05 pm 1.12m
8:08 pm 2.64m	8:37 pm 2.76m	9:03 pm 2.87m	9:27 pm 2.96m	9:53 pm 3.03m

Figure 10 Tide Times from 19 to 23 April 2024. *Source:* *Nhulunbuy Tide Times, NT 0880 - WillyWeather*

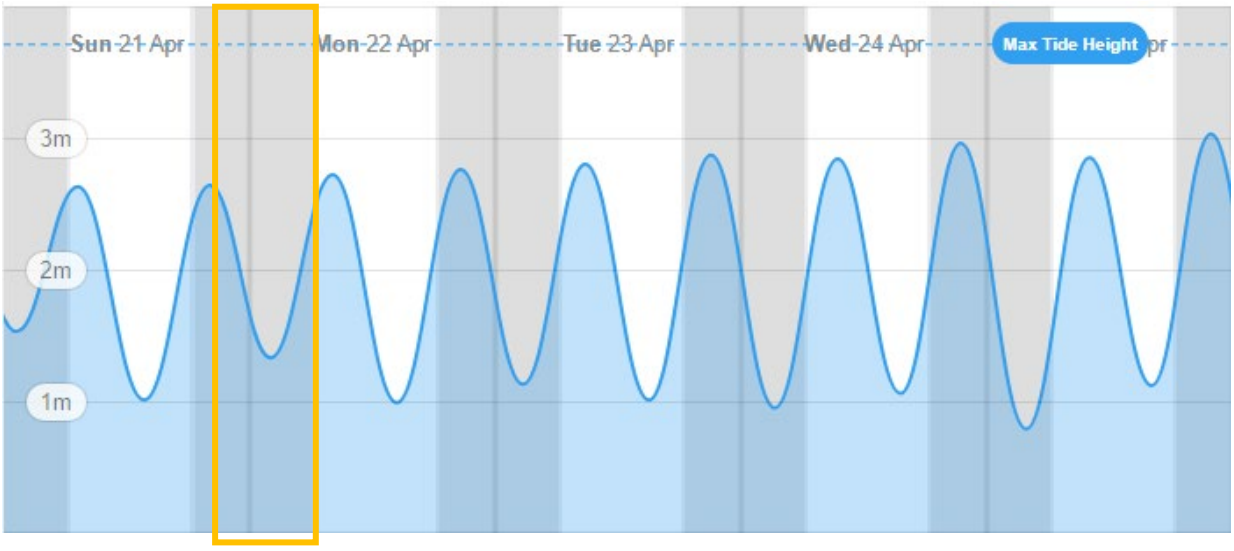


Figure 11 Tide height from 21 to 23 April 2024. *Source:* *Nhulunbuy Tide Times, NT 0880 - WillyWeather*

The Australian Institute of Marine Science (AIMS) developed a hydrodynamic model of Melville Bay to assess the dilution and dispersion of the seawater channel discharge into inner Gove Harbour and Melville Bay (AIMS, 2020). The model predicted a minimum dilution rate of 1:25 for the three MZB compliance sites SW9, SW10 and RR2 at a discharge rate of 10,500 m^3/h. Concentrations at the MZB during the incident are conservatively predicted by applying the minimum dilution rate from the hydrodynamic model at the MZB of 1:25 to S001 data (Appendix B, Table A5). The predicted concentrations of dissolved Al at the MZB sites are presented in Figure 12.

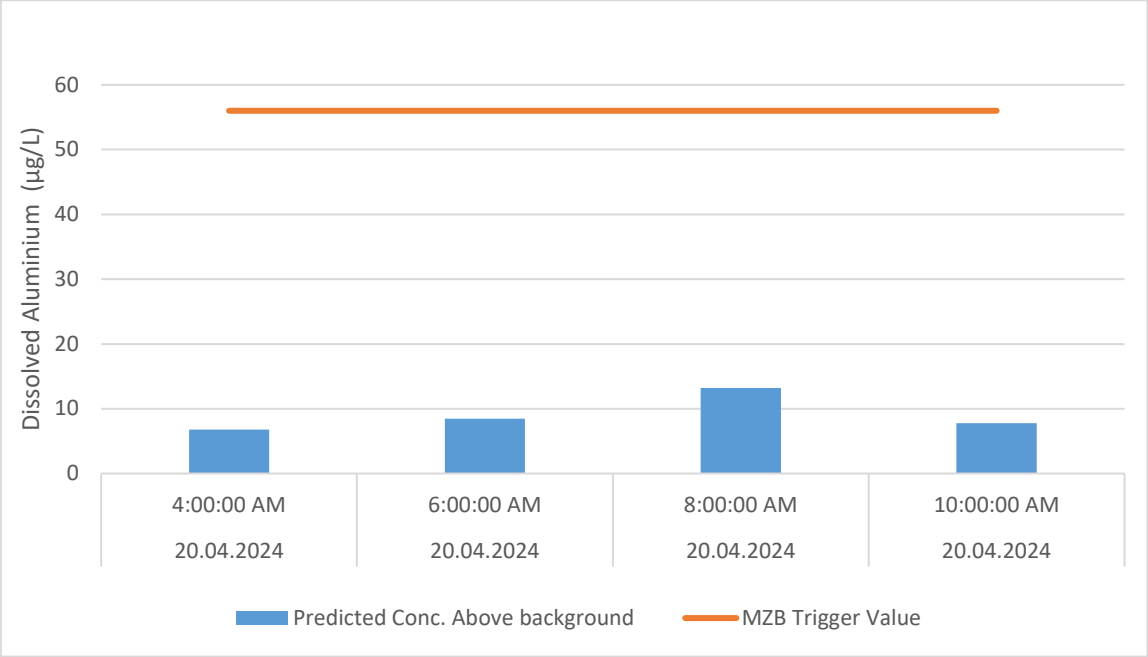


Figure 12 Predicted concentration of dissolved aluminium at the marine mixing zone boundary based on S001 concentrations from investigative samples and actual measured MZB concentrations.

From the Marine Health Monitoring Program (MHMP) data base, background concentration for dissolved Al in Melville Bay is 1.7 µg/L (80th percentile for the previous 24 months monthly samples). Predicted concentrations are above the background concentrations. Predicted concentrations of dissolved Al for the marine sites are all lower than TVs defined in the Licence for the MZB. Similarly predicted concentrations for dissolved As and V are well below the corresponding TVs.

Conclusion

The results of the investigation sampling confirmed Total Dissolved Nitrogen was the only parameter to exceed a TV for the event sample taken at MZB SW9 at 12:05 PM on 22 April 2024, returning 250 µg/L. This anomaly is likely due to the extended holding period experienced prior to analysis, with a follow up sample conducted as part of the routine monthly marine monitoring program confirming Total Dissolved Nitrogen levels remained below the TV. Additionally, nutrients results are not considered to be of concern during this overflow event given the STP was not discharging for the overflow event.

There were no other exceedances of Licence Limits or Trigger Values for this event. Turbidity remained well below the TV for the duration of the event on the 21-22 April 2024 reaching a maximum of 17.1 NTU at S001 and dropping to 2.2 NTU over the following 4 hours (Appendix A, Table A5). TSS results from the same sample were below the laboratory limit of reporting.

Overall, the data demonstrates that there was no environmental impact expected from the WCP overtopping on 21-22 April 2024.

References

Australian Institute of Marine Science, 2020, *Assessment of seawater channel dilution in inner Gove Harbour for development of discharge Trigger Values*. Report to Rio Tinto Aluminium Gove.

Appendix A – Analytical Results Tables

Table A2 Water quality results for site S004 seawater intake location from 21 to 23 April 2024 (onsite analysis).

Daily Operational Samples at site S004 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	21/04	22/04	23/04
Environmental Parameters						
pH		9	9.5	8.26	8.29	8.25
Electrical Conductivity	ms/cm	-	-	45.0	44.2	44.6
Turbidity	NTU	75[1]	100	5.05	3.85	3.06
Alkalinity	mg/L	-	-	112.9	103.9	104.1
Dissolved Metals & Metalloids						
Aluminium	µg/L	-	560	5.75	8.13	7.84
Arsenic	µg/L	-	200	1.84	1.45	1.52
Gallium	µg/L	-	8000	0.10	0.05	0.03
Manganese	µg/L	-	-	0.86	0.71	0.60
Molybdenum	µg/L	-	38800	9.68	8.37	8.60
Vanadium	µg/L	-	1000	3.64	3.06	2.81

Table A3 Daily Authorised Monitoring Site S001 Outfall Monitoring Station water quality results – 21 to 23 April 2024 (Onsite Analysis).

Daily Compliance Samples - S001 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	21/04	22/04	23/04
Environmental Parameters						
pH		9	9.5	8.27	8.28	8.26
Electrical Conductivity	ms/cm	-	-	50.2	49.9	50.1
Turbidity	NTU	75[‡]	100	8.64	6.51	7.36
Alkalinity	mg/L	-	-	114.4	116.5	117.1
Dissolved Metals & Metalloids						
Aluminium	µg/L	-	560	25.25	23.34	10.52
Arsenic	µg/L	-	200	2.07	1.57	1.65
Gallium	µg/L	-	8000	0.27	0.17	0.11
Manganese	µg/L	-	-	4.83	1.00	0.69
Molybdenum	µg/L	-	38800	9.88	8.62	8.86
Vanadium	µg/L	-	1000	5.04	3.68	3.02

Table A4 Daily water quality results – 24 hour Composite sample at Authorised Monitoring Site **S074** – 21 to 23 April 2024 (Onsite Analysis)

Daily Compliance Samples - S074 Samples retrieved at 08:00 Hrs		***S001 Trigger value***	***S001 Limit***	**21/04**	**22/04[1]**	**23/04**
Environmental Parameters						
pH		9	9.5	8.43	8.34	8.43
Electrical Conductivity	ms/cm	-	-	44.29	42.90	44.40
Turbidity	NTU	75[t]	100	24.70	10.39	15.10
Alkalinity	mg/L	-	-	118.15	104.34	104.34
Total Suspended Solids	mg/L	-	-	12	29.20	32.29
Dissolved Metals & Metalloids						
Aluminium	µg/L	-	560	35.50	18.77	15.82
Arsenic	µg/L	-	200	4.11	1.80	2.94
Gallium	µg/L	-	8000	0.77	0.24	0.37
Manganese	µg/L	-	-	1.14	1.15	9.64
Molybdenum	µg/L	-	38800	9.62	8.84	9.16
Vanadium	µg/L	-	1000	12.38	4.58	4.46

[1] *S074 incomplete composite sample represented 08:00 AM 21 April to 20:16 PM 21 April 2024 due to electrical fault with autosampler (S074).*

Table A5 Event based external water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 21 - 22 April 2024 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S001		S001 Trigger value	S001 Limit	21/04	21/04	22/04	22/04	22/04
			Time	20:15	22:15	02:15	03:15	05:15
Environmental Parameters								
pH		9	9.5	8.06	8.13	7.99	8.02	8.03
Electrical Conductivity	us/cm	-	-	42900	43200	41800	40400	41900
Turbidity	NTU	75[4]	100	5.6	17.1	1.1	2.2	2.6
Total Alkalinity	mg/L	-	-	98	105	100	99	105
Total Suspended Solids	mg/L	-	-	16	9	<5	<5	<5
Metals & Metalloids								
Dissolved Aluminium	µg/L	-	560	42	151	19	51	74
Dissolved Arsenic	µg/L	-	200	2.0	6.5	1.4	2.6	4.2
Dissolved Gallium	µg/L	-	8000	<10	<10	<10	<10	<10
Dissolved Iron	µg/L	-	-	<5	8	<5	<5	<5
Dissolved Manganese	µg/L	-	-	1.0	0.9	<0.5	<0.5	0.8
Dissolved Molybdenum	µg/L	-	38800	8.4	9.2	8.9	9.0	8.6
Dissolved Vanadium	µg/L	-	1000	7.4	32.3	4.1	9.6	16.6
Total Aluminium	µg/L	-	560	237	841	406	194	92
Total Arsenic	µg/L	-	200	2.3	7.8	4.7	2.4	1.7
Total Gallium	µg/L	-	8000	<10	<10	<10	<10	<10
Total Iron	µg/L	-	-	130	438	248	85	50
Total Manganese	µg/L	-	-	1.7	3.5	2.7	1.5	1.1
Total Molybdenum	µg/L	-	38800	8.7	9.4	9.1	8.5	8.4
Total Vanadium	µg/L	-	1000	7.7	34.3	16.7	10.2	4.8
Nutrients								
Total Dissolved Phosphorus	µg/L	-	140	4	6	4	5	4

Investigative / Event samples - S001		S001 Trigger value	S001 Limit	21/04	21/04	22/04	22/04	22/04
			Time	20:15	22:15	02:15	03:15	05:15
Total Dissolved Nitrogen	µg/L	-	1700	110	120	110	150	120
Hydrocarbons								
Total Petroleum Hydrocarbons	µg/L	-	-	<50	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	-	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	-	<1	<1	<1	<1	<1
Toluene	µg/L	-	-	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	-	-	<2	<2	<2	<2	<2
Xylene	µg/L	-	-	<2	<2	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

Table A6 Event based internal water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 21-22 April 2024 (onsite analysis).

Event Operational samples - S001 Analysed onsite		S001 Trigger value	S001 Limit	21/04	21/04	22/04	22/04	22/04	22/04
			Time	20:15	22:15	02:15	03:15	05:15	15:30
Environmental Parameters									
pH		9	9.5	8.34	8.50	8.41	8.43	8.51	8.29
Electrical Conductivity	ms/cm	-	-	40.7	41.0	42.4	40.9	42.3	43.6
Turbidity	NTU	75[4]	100	12.1	18.7	7.8	9.16	10.9	5.19
Alkalinity	mg/L	-	-	101.4	108.9	5.24	102.1	108.6	105.8
Dissolved Aluminium	µg/L	-	560	42.4	128	19.4	48.6	73.2	11.7
Dissolved Arsenic	µg/L	-	200	2.59	7.69	2.06	3.20	4.18	1.63
Dissolved Gallium	µg/L	-	8000	0.50	1.42	0.23	0.61	0.77	0.14
Dissolved Iron	µg/L	-	-	1.36	2.76	2.09	1.74	3.02	1.39
Dissolved Manganese	µg/L	-	-	1.13	1.37	1.12	1.15	1.03	1.21
Dissolved Molybdenum	µg/L	-	38800	8.11	8.93	9.10	8.32	8.88	8.34
Dissolved Vanadium	µg/L	-	1000	8.2	30.5	4.6	9.6	15.9	3.2

This data is event based – it does not form part of the WDL monitoring program.

Table A7 event based external water quality results – Western Containment Pond site **S030** – 20-21 April 2024 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S030		21/04 20:15	21/04 22:15	22/04 03:15	22/04 05:15
Environmental Parameters					
pH		9.85	9.68	9.79	9.90
Electrical Conductivity	ms/cm	853	646	719	854
Turbidity	NTU	407	343	162	181
Alkalinity	mg/L	267	209	238	287
Total Suspended Solids	mg/L	164	143	96	108
Metals & Metalloids					
Dissolved Aluminium	µg/L	5250	3980	5160	6270
Dissolved Arsenic	µg/L	191	142	193	249
Dissolved Gallium	µg/L	46	33	39	43
Dissolved Iron	µg/L	216	210	378	481
Dissolved Manganese	µg/L	<0.5	<0.5	0.6	0.7
Dissolved Molybdenum	µg/L	28.0	21.0	24.5	28.5
Dissolved Vanadium	µg/L	865	668	874	1110
Total Aluminium	µg/L	25400	18700	18100	21100
Total Arsenic	µg/L	170	126	172	227
Total Gallium	µg/L	62	42	54	57
Total Iron	µg/L	5840	4060	4030	3980
Total Manganese	µg/L	14.4	11.2	10.1	11.6
Total Molybdenum	µg/L	20.9	14.8	18.9	21.6
Total Vanadium	µg/L	878	669	872	1110

This data is event based – it does not form part of the WDL monitoring program.

Table A8 Investigative water quality results - **Marine Mixing Zone (MZB)** sites – 22 April 2024 (External Analysis - NATA accredited laboratory).

		MZB Trigger Values	22/04	22/04	22/04
			SW9	SW10	RR2
		Time	12:05	11:55	11:45
Environmental Parameters					
pH		7.7 – 8.4	8.00	8.02	8.02
Electrical Conductivity	µS/cm	-	42900	42700	43200
Total Suspended Solids (SS)	mg/L	-	<5	<5	<5
Turbidity	NTU	20	0.9	1.1	0.5
Alkalinity	mg/L	-	102	102	102
Metals and Metalloids					
Dissolved Aluminium	µg/L	56	5	10	<5
Dissolved Arsenic	µg/L	20	1.1	1.4	1.1
Dissolved Gallium	µg/L	800	<10	<10	<10
Dissolved Iron	µg/L	-	<5	<5	<5
Dissolved Manganese	µg/L	-	<0.5	<0.5	<0.5
Dissolved Molybdenum	µg/L	3880	8.5	8.8	8.9
Dissolved Vanadium	µg/L	100	2.6	3.4	2.4
Nutrients					
Total Dissolved Phosphorus*	µg/L	14	4	6	4
Total Dissolved Nitrogen*	µg/L	170	**250**	150	130
Hydrocarbons					
Total Petroleum Hydrocarbons	µg/L	-	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	<0.5	<0.5	<0.5
Benzene	µg/L	-	<1	<1	<1
Toluene	µg/L	-	<2	<2	<2
Ethylbenzene	µg/L	-	<2	<2	<2
Xylene	µg/L	-	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

Notification of environmental incident

All notifiable incidents are to be reported in accordance with section 225 *Environment Protection Act 2019*

Incident details				
Name of mining site	Rio Tinto - Gove operations			
Licence number *If not known, provide Authorisation number*	WDL-171-12			
Name of operator	RTA Gove Pty Limited			
Date and time of incident And / or when you first became aware of it	Date: 25/11/2024 Time: 17:00			
Name of person notifying	Andrew Carmichael			
Position / title	Environment Superintendent			
Contact person	Andrew Carmichael			
Contact details	**Business**	08 8987 5233	**Mobile**	0467 946 163
	Fax		**Email**	andrew.carmichael@riotinto.com
Incident location Use GPS co-ordinates, attach map etc. as appropriate	12°11'23"S 136°41'06"E Gove Refinery, Area 720, Gate 4, Overhead pipe rack adjacent to Road 6  			

<table>
<tr><td>Description of incident
Attach photographs etc.</td><td colspan="4">At approximately 17:00 on the 25 November 2024, operators observed the presence of hydrocarbons caught in the containment booms of the Western Seawater Channel after a heavy rain event (Schedule 1, Item 10 (h), Condition 23.1).

A high rainfall event was experienced across the Gove peninsula on the 25 November 2024, with 74mm recorded. The source of hydrocarbons was confirmed to come from a decommissioned overhead pipe rack located adjacent to Road 6 near Gate 4 of the decommissioned refinery. The pipe rack had previously been drained during early works and wrapped to control any potential residual Heavy Fuel Oil (HFO) from leaking. A section of wrapping around the pipe rack to control leaks had deteriorated allowing a small volume (<20 litres) of HFO to seep out. During the heavy rainfall event the HFO has entered the Western Seawater Channel.</td></tr>
<tr><td rowspan="5">Nature of actual / potential impact
Volume of material (L, m^3), area impacted (ha, m^2), flora and fauna affected, erosion, duration of incident, etc. as relevant</td><td rowspan="5">It is estimated that <20L of HFO entered the seawater channel and was contained within the deployed booms located approximately 100m downstream in the channel.</td><td rowspan="2">Volume</td><td></td><td>m^3</td></tr>
<tr><td><20</td><td>L</td></tr>
<tr><td rowspan="2">Area</td><td></td><td>m^2</td></tr>
<tr><td></td><td>ha</td></tr>
<tr><td>Duration</td><td>15</td><td>hours</td></tr>
<tr><td>Immediate action taken
ie, spill contained / stopped / location of disposal</td><td colspan="4">Immediate corrective actions implemented to minimise the risk of contamination of the receiving environment include:
1. HFO was retained in the western seawater channel by containment booms (Figure 1).
2. A vac truck was used to remove HFO from western seawater channel (Figure 1). Recovered HFO was pumped into an International Bulk Container (IBC) and stored in bunded area 726.
3. HFO contaminated material spilled to ground below overhead pipe rack disposed of in bunded area 726 (Figure 2).

 
Figure 1 Boom 2 located in western seawater channel near Oily Water Pond

 
Figure 2 Heavy Fuel Oil (HFO) contaminated material removed and disposed of.</td></tr>
</table>

Environmental details

Emergency and remedial action taken

Additional wrapping was applied to the entire pipe rack (Figure 3).



Figure 3 Additional wrapping applied to overhead pipe rack

Current situation
Potential / ongoing / ceased etc. Include current location of contaminated material

The leak has ceased.

Contaminated soil was disposed of at area 726, a bunded area within the demolition project area.
Recovered HFO was pumped into International Bulk Container (IBC) and stored in bunded area 726.

Details of any samples taken
When / where / type / number / time for availability of results etc. Include plans of sampling locations where possible

Continuous monitoring at S001
Investigation samples from Western Seawater Channel and at S001.

Hydrocarbon analysis conducted by external (NATA accredited) ALS Laboratory

		S001_INV 25-Nov-24 17:30	S001 26-Nov-24 08:00
Environmental Parameters			
pH		8.15	8.18
EC	*ms/cm*	48.1	50.6
Turbidity	*NTU*	5.9	4.01
Alkalinity	*mg/L*	140	124
Total Petroleum Hydrocarbons			
C10 – C35 Fraction (sum)	*µg/L*	<50	

Continuous monitoring and investigative samples did not detect the presence of any Hydrocarbons or sheens downstream of the boom and demonstrates no environmental impact.

Future actions (if any) including timeframe	1. Integrity inspections of similar wrapping applied to pipe works across refinery. Completed and ongoing under routine inspections. 2. Earthen bund wall raised and silt fence rei-installed (Figure 4 and 5) Completed 3. Continuation of daily inspection program for sea water channel. Ongoing 4. The removal of the overhead pipework is part of the wider refinery demolition scope and is scheduled to be completed during the 2025 dry season period.  Figure 3 Earthen bund raised  Figure 4 Silt fence re-installed

Operator internal reporting		
Has the incident been reported internally? If so, to whom		Yes
Name	Jason Hughes	
Position	WWNP Supervisor	
Operator reference number Where applicable / available	N/A	
Has the department been notified earlier?		Yes
Who was notified	Chris Coombes	
How (phone / email / fax)	Phone	
When (date and time)	26 November 2024	
By whom	Anna Horwood (Acting Environment Superintendent)	

Signed	*Andrew Carmichael*	**Date**	18 Dec 2024	**Time**	1430
Name	Drew Carmichael	**Position**	Environment Superintendent		

Forward completed form to:

Mining Division
Department of Environment, Parks & Water Security
Email: mineralinfo.DEPWS@nt.gov.au

Notification of an Environmental Incident

☒ Incident ☐ Critical Incident ☐ Preliminary ☒ Final

Incident number:	**3066265228_59212**
Name of mining site:	Rio Tinto - Gove operations
Name of operator:	RTA Gove Pty Limited
Date & time of detection:	Date: 08/12/2024 Time: 10:27 AM
Date & time of incident:	Date: 08/12/2024 Time: 10:27 AM
Name of person notifying:	Andrew Carmichael
Position/Title:	Environment Superintendent
Contact person:	Andrew Carmichael
Contact details:	Business: 08 8987 5233 Mobile: 0467 946 163
	E-mail: andrew.carmichael@riotinto.com
INCIDENT LOCATION (use GPS co-ordinates, attach map, etc. as appropriate)	Latitude -12.188147 Longitude 136.685306  WCP Overflow location into Seawater Channel

INCIDENT DESCRIPTION	Overflow of Western Containment Pond (WCP) into the Seawater Channel resulting in discharge via S001 (Schedule 1, Item 10 (f), Condition 25 & 26).	
Causes & contributing factors to the incident:	During a high rainfall event on the morning of 8th December, the capacity of the Western Containment Pond (WCP) was exceeded, resulting in overflow from the WCP into the seawater channel. Overflow from the WCP commenced at approximately 10:27 AM and ceased at approximately 12.45pm on 8th December.	
Potential causes & contributing factors to the incident:	A storm cell over the Gove Peninsula brought heavy rainfall over a short period, resulting in stormwater inflow into the WCP catchments which caused the pond to overtop its weir into the seawater channel.	
Action Taken:	YES ☒	NO ☐
If no, why?		
Corrective Actions that have/will be undertaken to ensure this does not reoccur:	Immediate corrective actions implemented to minimise the risk of overtopping included; • Continual operation of the WCP pumps. • Implementation of the Trigger Action Response Plan (TARP); WWNP shut down, response sampling taken, Marine sampling conducted • Both sea water pumps remaining in operation. Inspection and maintenance of erosion and sediment controls, and surface water management controls across the refinery footprint. Following the 2023-24 wet season the following improvements have been implemented to minimise the volume of water reporting to the Western Containment Pond (WCP). The demolition of areas 645, 646, 723 and 724 which previously reported to the Western Containment Pond (WCP) are now contained and pumped to Southern Containment Pond reducing WCP catchment area. The demolition of areas 649, 652, 653, 655, and 657 have removed high pH materials from the WCP catchment. Earth placed in bunded areas has reduced runoff, reducing flow to WCP. Area 661 basin has been increased, resulting in increased catchment storage. The installation of sediment fence and improved rock check at WCP inlet channel improves quality of water inflow. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination and rehabilitation of the catchment. The demolition, decontamination and removal of the WCP is scheduled to commence in 2025 with conversion to a clean stormwater catchment by 2026.	
Date when investigation report will be submitted to Administering Agency:	Friday 20 Dec 2024 (10 business days post incident).	

ENVIRONMENTAL DETAILS

Nature of impact and severity: (Volume of spillage, area impacted, wildlife/vegetation/ erosion, etc.)	Refer to attached Environmental Impact Assessment (EIA).
Emergency & remedial actions taken:	• The WWNP was shutdown at 10:17 AM as WCP capacity reached 90% on 8th Dec 2024 • WCP pump continued to operate until pond levels reduced to <50%. • Inspection and maintenance of erosion and sediment controls and surface water management controls across the refinery in preparation of future rainfall events.
Current situation: (Potential / ongoing / ceased / etc.)	The WCP overtopping event commenced at 10:27 AM and ceased at approximately 12:45 PM on the 8th December 2024. A total duration of 2 hours and 18 minutes. The WWNP was shutdown at 10:17 AM prior to the WCP overtopping. The containment pond pumps remained in operation throughout the event and WCP levels returned to below 50% on the 9 December 2024. Additional erosion and sediment controls have been monitored and managed across the refinery to help control and transfer water to the RDA for storage and future treatment.
Details of any samples taken: (when / where / type / number / time for results /etc) If incident is related to Total Nitrogen, refer to WDL171-11 section 38.8 for further analysis.	Samples and compliance monitoring program in place. • A 2-hourly sampling regime at the WCP and S001 commenced at 10:30 AM through to 14:30 PM 8th December. • 4-hourly sampling regime commenced after the WCP ceased overflowing at 18:25 PM, with the final sample taken at 22:30 PM 8th December. • Continuous monitoring at S001 remained in operation. • Daily sample at S001. • Daily composite sample at S074 (see below for further details) • Marine event investigation sampling at RR2, SW9 & SW10 compliance sites was undertaken at 14:30 PM 8th December and 12:30 PM 9th December. Refer to EIA for further details.

OPERATOR INTERNAL REPORTING

Has the incident been reported internally?	☒ **YES**	☐ **NO**
If so, to whom:	**Name:**	Nigel Goodson

	Position:	Acting HSE Business Partner

Has the department been notified earlier?	☒ **YES**	☐ **NO**
Who was notified:	Chris Coombes, Environmental Officer Department of Lands, Planning and Environment	
How: **(phone/email/fax)**	Phone call and voicemail left, Sunday 8th Dec 2024	
When: **(date & time)**	Phone call at 12:15 PM on 8th Dec 2024 and follow up email notification.	
By whom:	Anna Horwood	

Name: Andrew Carmichael

Signed Andrew Carmichael **Date:** 20 December 2024

Title: Environment Superintendent

OFFICE USE ONLY	
Received by:	
Date:	**Time:**

Environmental Impact Assessment

Event #3066265228

8 December 2024

Compliance monitoring and investigative (event based) sampling was conducted in response to the Western Containment Pond (WCP) overtopping into the Seawater Channel on 8 December 2024 following a heavy rainfall event across the Gove peninsula. The over topping of the WCP occurred for 2 hours and 18 minutes from 10:27 AM to 12:45 PM.

The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC and continuous operation of the autosampler (S074) to retrieve a composite sample.

The event was reported as 3066265228 to the Department of Lands, Planning and Environment (DLPE) on 8 December 2024. Immediate corrective action included continual operation of WCP pumps, implementation of the Trigger Action Response Plan (TARP); the Waste Water Neutralisation Plant (WWNP) was shutdown, and both sea water pumps remained operational. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination of the catchment scheduled for conversion to a clean stormwater catchment; with the decommissioning and removal of the Western Containment Pond (WCP) due to commence in 2025.

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GLOSSARY

COPC	Contaminants of Potential Concern
LOR	Limit of reporting
MZB	Mixing Zone Boundary
RDA	Residue Disposal Area
SCP	Southern Containment Pond
STP	Sewerage Treatment Plant
TARP	Trigger Action Response Plan
TDN	Total Dissolved Nitrogen
TDP	Total Dissolved Phosphorous
TV	Trigger Value
UPS	Uninterrupted Power Source
WCP	Western Containment Pond
WDL	Waste Discharge Licence 'The Licence'
WWNP	Waste Water Neutralisation Plant

Introduction

A heavy rainfall event was experienced across the Gove Peninsula on 8 December 2024. The Pond 6 Rainfall Gauge recorded 60 mm of rainfall over the 8 December 2024.

The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in stormwater overtopping the WCP weir into the seawater channel. Overflow from the WCP commenced at approximately 10:27 AM. The Waste Water Neutralisation Plant (WWNP) was shutdown at 10:17 AM as per TARP.

Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation and was not discharging into the seawater channel at the time of the overflow.

The WCP ceased overtopping its weir into the seawater channel at approximately 12:45 PM on 8 December 2024. Total duration of discharge from the WCP into the seawater channel was 2 hours and 18 minutes.

Operational and investigative (event based) samples were collected from Authorised Outfall Monitoring Station (S001) and Western Containment Pond (S030). Two sampling events from the marine mixing zone boundary (MZB) sites (SW9, SW10 and RR2) were undertaken on the afternoon of 8 December 2024 and the morning of the 9 December 2024 following the cessation of the WCP overtopping into the seawater channel. These results combined with the daily composite sample (S074) results provide the evidence to assess any impact from the event on the receiving environment.

Results

Tabulated results for event 3066265228 are provided in Appendix A. Operational results are samples analysed at the onsite laboratory. Investigative results are samples analysed offsite at a NATA accredited laboratory.

Results for operational samples for the intake site at S004 are summarised in Appendix A, Table A2.

Results for the daily compliance samples taken at 08:00 AM for 8 to 11 of December 2024 at the Authorised Discharge Site S001 are summarised in Appendix A, Table A3.

An automatic water sampler collects a 50 mL sample every 20 minutes resulting in a composite sample every 24 hours. Composite sample results over a 24-hour period provide a comprehensive representation of discharge quality into the receiving environment during the WCP overtopping event, providing weighted average results. The site S074 composite sample results for the 8 to the 11 of December 2024 were analysed onsite and are summarised in Appendix A, Table A4.

Investigation event-based samples (NATA laboratory offsite) for the 8 December 2024 at Authorised Discharge site S001 are summarised in Appendix A, Table A5.

Results for event based internally analysed samples on the 8 December at S001 are summarised in Appendix A, Table A6.

Results for the externally analysed Western Containment Pond Site (S030) are summarised in Appendix A, Table A7.

Marine sites SW9, SW10 and RR2 were sampled on the 8 and 9 December 2024, the results summarised in Appendix A, Table A8.

Figure 1 shows the location of the WCP and associated refinery catchments. Figure 2 shows hourly rainfall (mm) recorded at Pond 6 and WCP storage capacity (%) for the 8 December 2024. Figure 3 shows continuous monitoring of the Outfall monitoring Station Site (S001) for pH and EC.

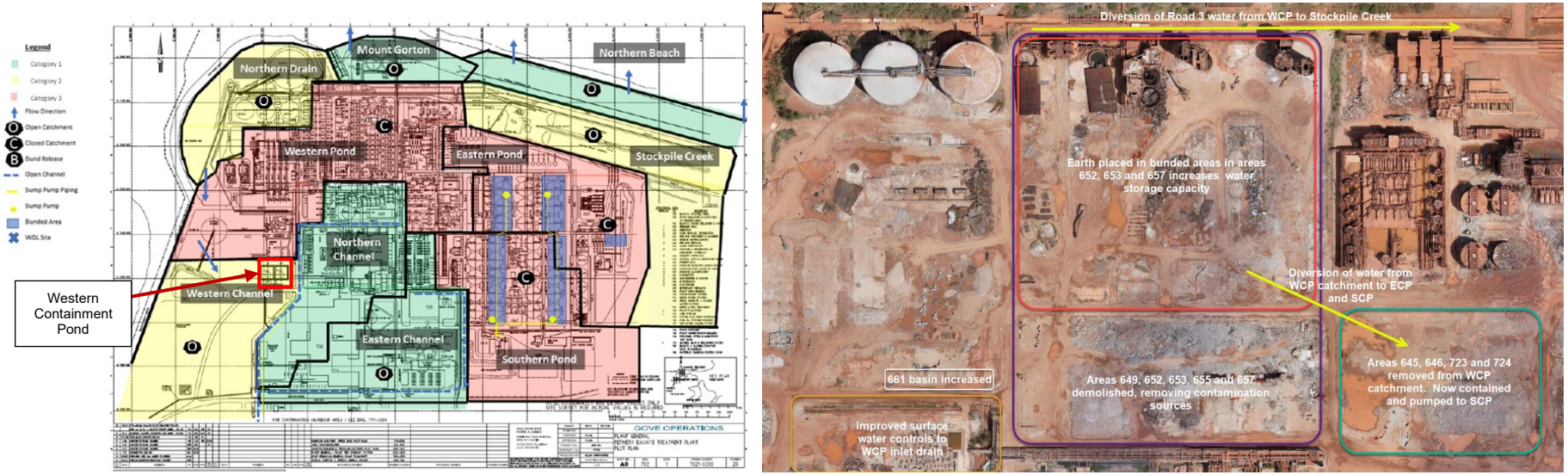


Figure 1 [Left] Refinery Catchments map prior to 2023-24 wet season. [Right] Changes to Refinery catchments commencement of 2024-25 wet season.

Note: Following the 2023-24 wet season the following improvements have been implemented to minimise the volume of water reporting to the Western Containment Pond (WCP). The demolition of areas 645, 646, 723 and 724 which previously reported to the Western Containment Pond (WCP) are now contained and pumped to Southern Containment Pond reducing WCP catchment area. The demolition of areas 649, 652, 653, 655, and 657 have removed high pH materials from the WCP catchment. Earth placed in bunded areas has reduced runoff, reducing flow to WCP. Area 661 basin has been increased, resulting in increased catchment storage. The installation of sediment fence and improved rock check at WCP inlet channel improves quality of water inflow. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination and rehabilitation of the catchment. The demolition, decontamination and removal of the WCP is scheduled to commence in 2025 with conversion to a clean stormwater catchment by 2026.

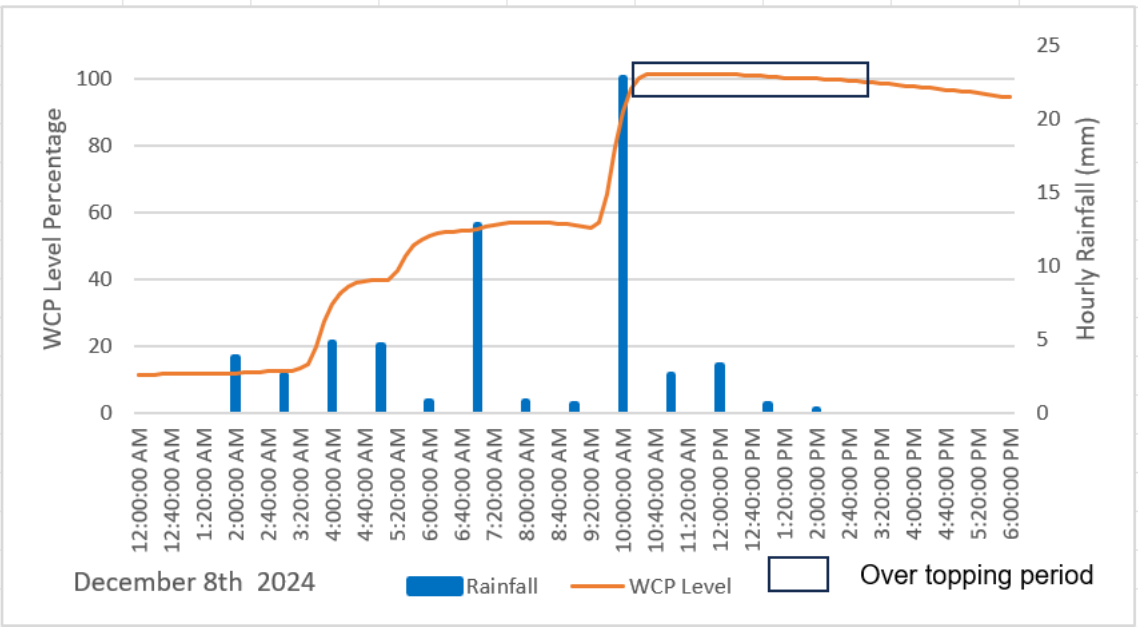


Figure 2 Measured hourly rainfall (mm) collected from Pond 6 Rain Gauge and WCP storage capacity (%) for the 8 December 2024.

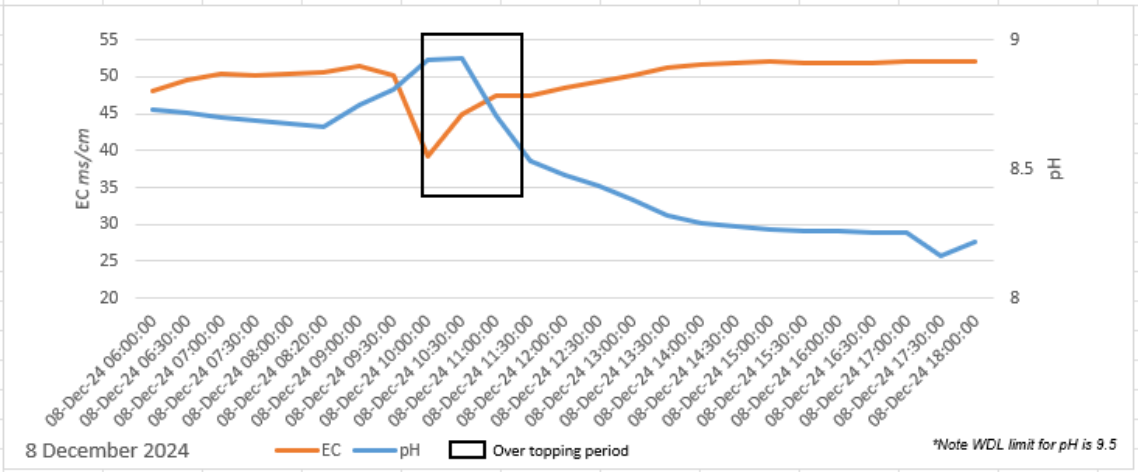


Figure 3 Continuous monitoring of pH and EC at the Outfall Monitoring Station (S001) on 8 December 2024.

Continuous monitoring of pH ranged from 8.16 – 8.92 during the period of 8 December 2024 as shown in Figure 3. Sample results retrieved as a part of the event sample regime on the 8 and 9 December 2024 showed pH results ranging from 7.90 - 8.51 throughout the overtopping event (Appendix A, Table A5). This is supported with the continuous data reporting no exceedance of the WDL TV throughout the overtopping event.

Discussion

WWNP Operation

Figure 4 shows the duration in which the WWNP ceased operation and remained offline throughout the event on the 8 and 9 December 2024.

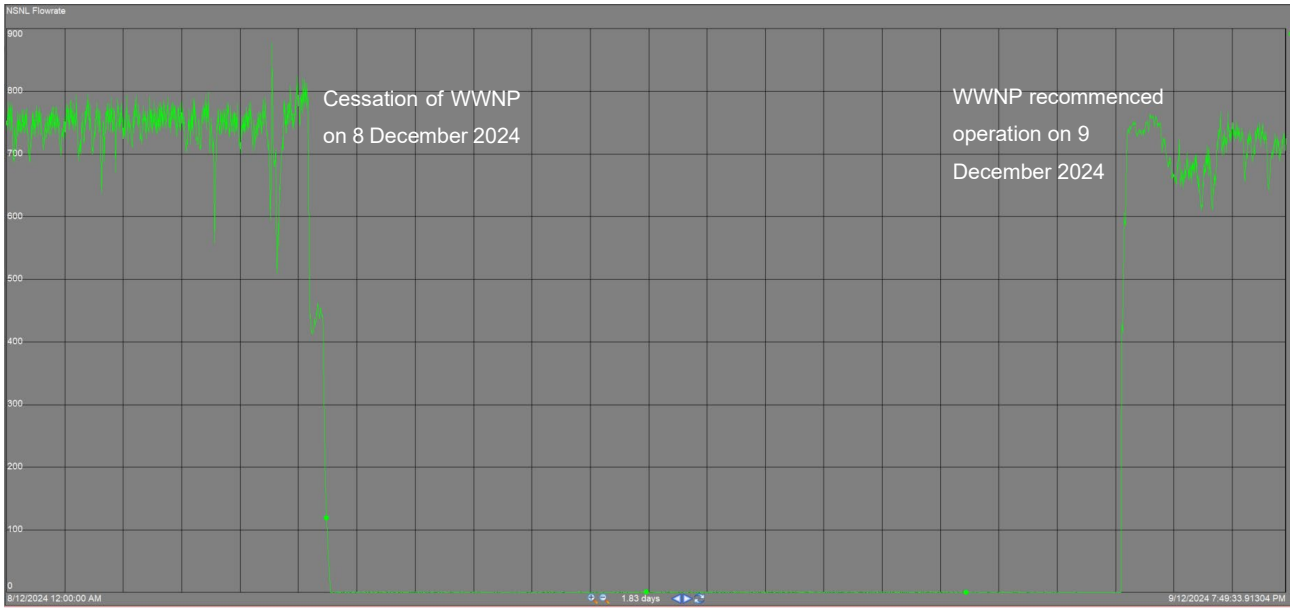


Figure 4 WWNP Operation 8 to 9 December ceasing operation on 8 December 2024 shown as NSNL flow rate (m3/hr) vs Time.

Alkalinity

Alkalinity concentrations are indicative of WWNP operation. Results for alkalinity concentrations from daily 08:00 AM operational (compliance) samples at site S001 for the period 8 to 11 December 2024 are summarised in Appendix A, Table A3. Alkalinity concentration on 9 December was at natural background seawater concentrations as WWNP was off-line.

WCP sample location

Water quality results of investigation samples (offsite analysis) for WCP site S030 are summarised in Appendix A, Table A7. Care should be taken when reviewing these results, as samples may not be representative of actual discharge of WCP water into the seawater channel. The sample location is adjacent to the WCP pump located at the bottom opposite side of the weir to where water is pumped to the sands-disposal then onto the RDA (Figure 5). Samples collected from the south-east corner are expected to exhibit higher concentrations than actual surface water discharge into the seawater channel at the overflow weir located at the north-east corner of the WCP. The location of the discharge weir is unable to be safely accessed for sampling.

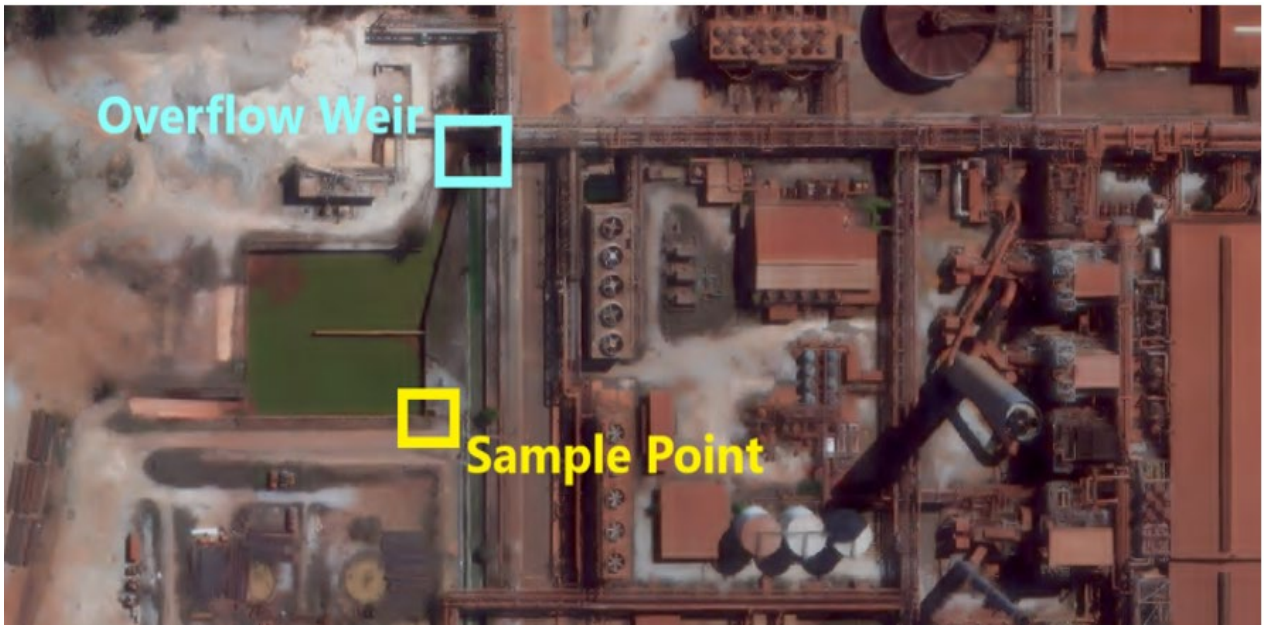


Figure 5 Sample point for the WCP site S030 is the pump located at the bottom of the pond, on the opposite side of the overflow weir location where discharge flows into the seawater channel.

Electrical Conductivity

Electrical conductivity (EC) is indicative of discharges of stormwater into the seawater channel. Background seawater has an EC of approximately 50 mS/cm. The seawater channel intake site S004 ranged from 50.3 mS/cm to 50.9 mS/cm for the period 7 to 10 December 2024.

The outfall channel site S001 for the same period 7 to 10 December 2024 is also summarised in Table 1 (S001). There is evidence of stormwater inputs into the channel from WCP during the 8 December event. The EC value decreased to approximately 39 mS/cm at 10:00 on 8 December 2024 (Figure 3).

Table 1 Seawater channel intake site S004 and outfall channel site S001 showing EC from the 08:00 AM sample from 7 to 10 December 2024.

Date and Time	EC (mS/cm) S004 intake	EC (mS/cm) S001 outfall
7 December 2024 08:00	50.5	50.6
8 December 2024 08:00	50.4	49.1
9 December 2024 08:00	50.3	50.6
10 December 2024 08:00	50.9	51.5

Turbidity

Turbidity results from event-based samples from S001 during and following the WCP overtopping event on the 8 December 2024 are shown in Figure 6. Turbidity results from the external NATA accredited laboratory were below the S001 trigger value and limit during the WCP overtopping events. A strong correlation between the over topping events and an increase in turbidity at S001 is highlighted in Figure 6.



Figure 6 External NATA and internal laboratory Turbidity (NTU), for S001 investigative samples for 8 December 2024.

Hydrocarbons

Hydrocarbon results from event-based samples from S001 and S030 during and following the WCP overtopping event on 8 December 2024 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 8 and 9 of December 2024, with the results summarised in Appendix A, Table A8 (NATA analysis).

All hydrocarbon concentrations at S001, S030 and the MZB sites were less than the laboratory limit of reporting (LOR) and considered to not be of concern.

Metals and Metalloids

Analysis of metals and metalloids at site S001 from investigative samples (NATA analysis) are summarised in Appendix Table A5 and Figures 7 and 8.

Investigation samples taken at S001 during the overtopping event on the 8 December 2024 recorded an elevated dissolved aluminium concentration of 86 µg/L during the overtopping event (Figure 7 & Table A5). This coincides with the observed large rainfall pulse event. The elevated concentration values were substantially lower than the Licence Limit of 560 µg/L. Successive samples taken from 14:30 PM, approximately 2-hours later that day, decreased to 10 µg/L confirming the pulse event had ceased. Further consecutive samples indicated that dissolved aluminum concentrations had decreased to background concentrations.

Investigation samples taken at S001 on 8 December 2024 during the overtopping event showed slightly elevated dissolved arsenic concentrations during the overtopping event with the concentration being 29.5 µg/L at 10:30 AM (Figure 8). The concentrations were significantly less than Licence Limit of 200 µg/L. Once the WCP overtopping event ceased the dissolved arsenic decreased to background concentration of 1.9 µg/L at 22:30 PM on 8 December 2024.

Dissolved vanadium concentrations increased during the overtopping event, with the 10:30 AM S001 sample recording a concentration of 160 µg/L, below the Licence Limit of 1000 µg/L. The concentration decreased approaching background concentration (4 µg/L) at 22:30 PM (Appendix A, Table A5).

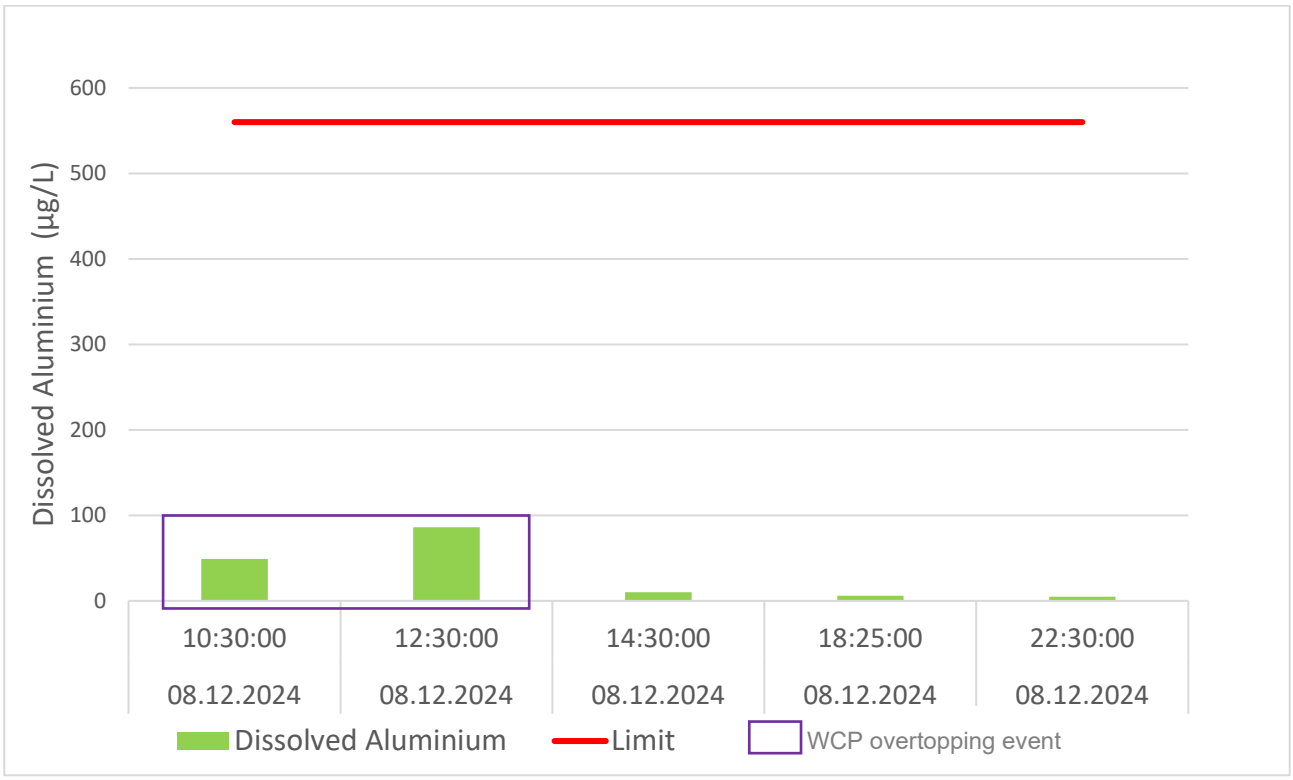


Figure 7 Dissolved aluminium (µg/L) and limit at S001 from event samples (NATA analysis) from 8 December 2024.

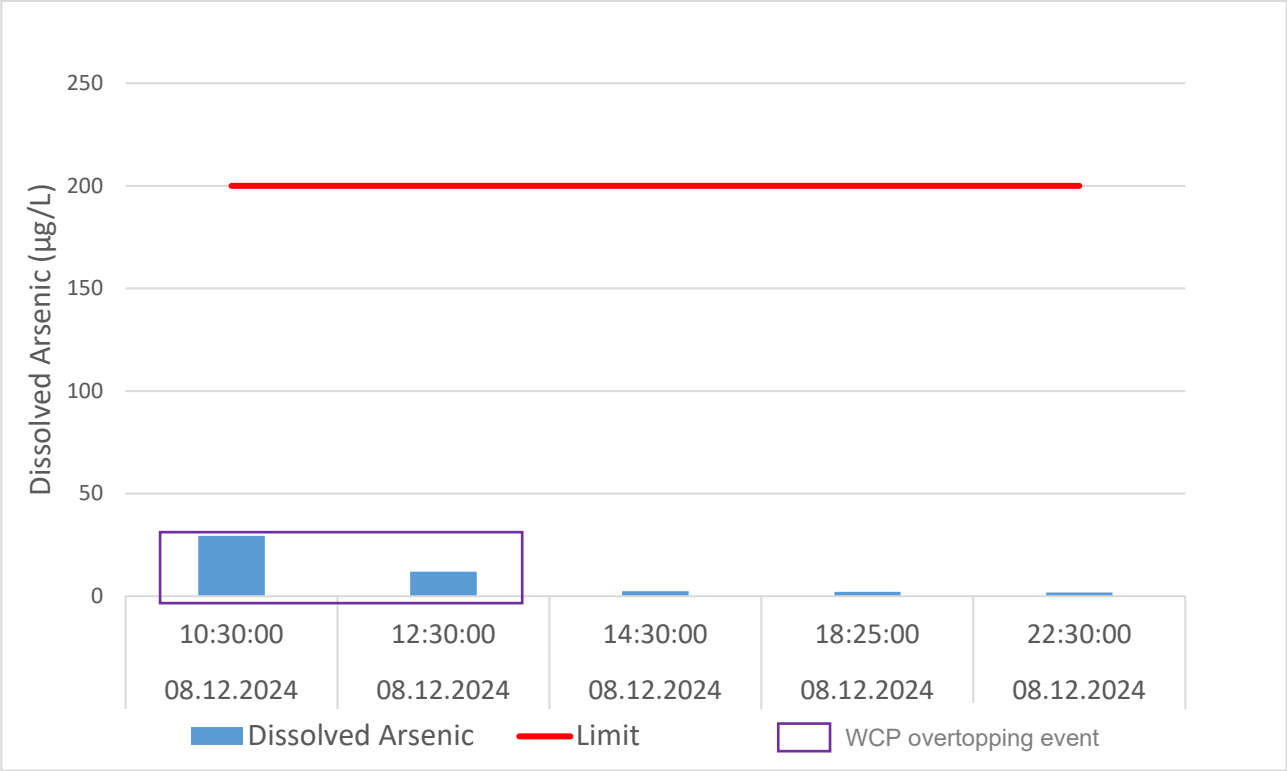


Figure 8 Dissolved arsenic (µg/L) and limit at S001 from event samples (NATA analysis) from 8 December 2024.

Composite Sample

The S074 composite sample results (Appendix A, Table A4) provide a time and volume weighted average over twenty-four hours, including when the unauthorised release was discharging into the eastern seawater channel. Composite samples are relevant to TVs and Limits to assess potential environmental impact. The composite sample (9 December 2024) showed higher dissolved Al concentrations during WWNP operation resulting from the WCP event on the 8 December 2024. Results returned to typical concentrations once the WWNP was brought back online on 9 December (Appendix A, Table A4). All analyte concentrations remained below WDL Limits and TVs.

Marine Results Discussion

Investigative sample results for dissolved aluminium (offsite NATA laboratory) from the MZB sites are shown in Figure 9. Sampling of the marine sites was completed at 14:30 PM, 8 December and 12:25 PM, 9 December 2024, after the overtopping event ceased. Results at the MZB sites for dissolved aluminium were recorded well below the license trigger value of 56 µg/L (Figure 9). Appendix A, Table A8 shows all analytes at the MZB were substantially lower than the corresponding TVs with concentrations returning to background concentrations on 9 December 2024.

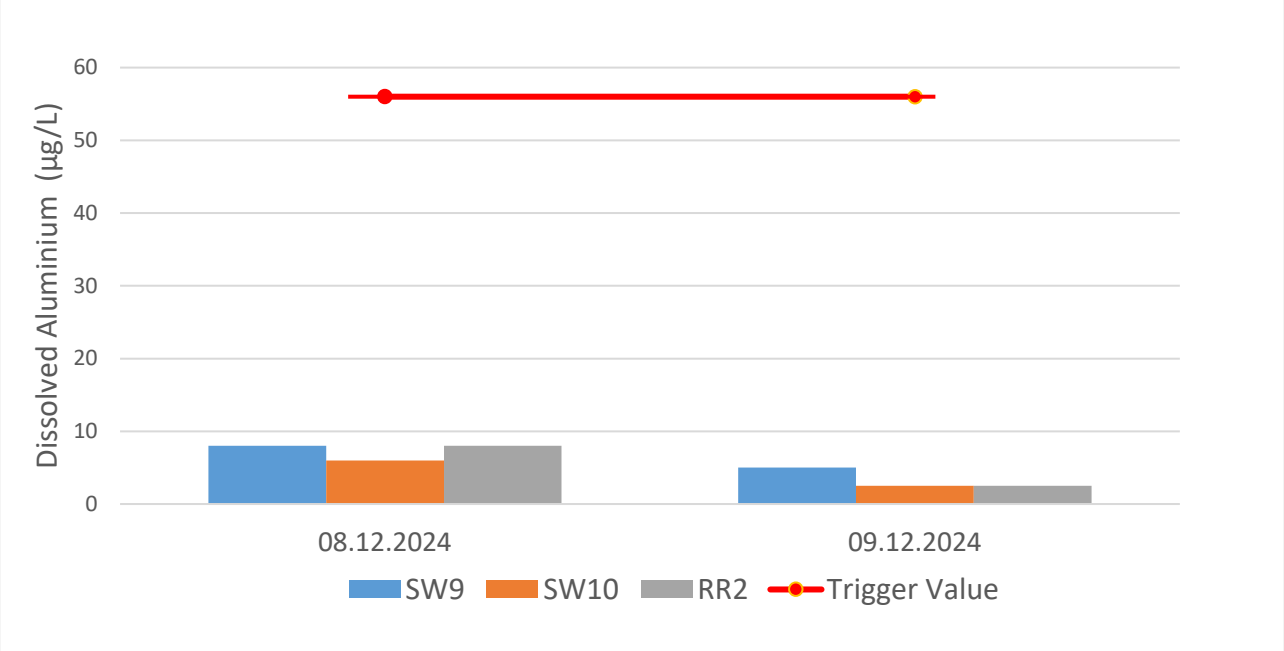


Figure 9 Dissolved aluminium concentrations at MZB sites for samples collected after the event at 14:30 PM, 8 December and 12:25 PM, 9 December 2024. Note that Dissolved aluminium for site SW10 and RR2 on 9 December were recorded at below the LOR.

The tides times and heights during the WCP event are provided in Figure 10 and Figure 11. The event occurred during a high tide.

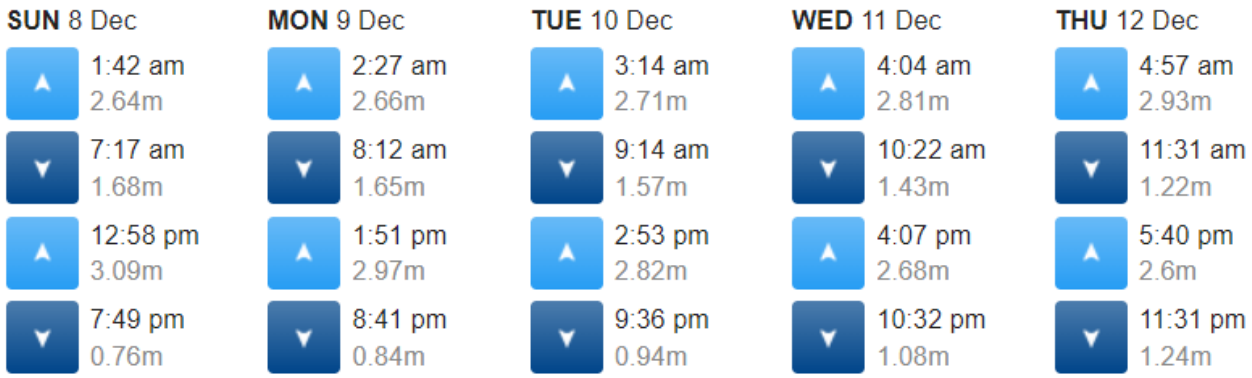
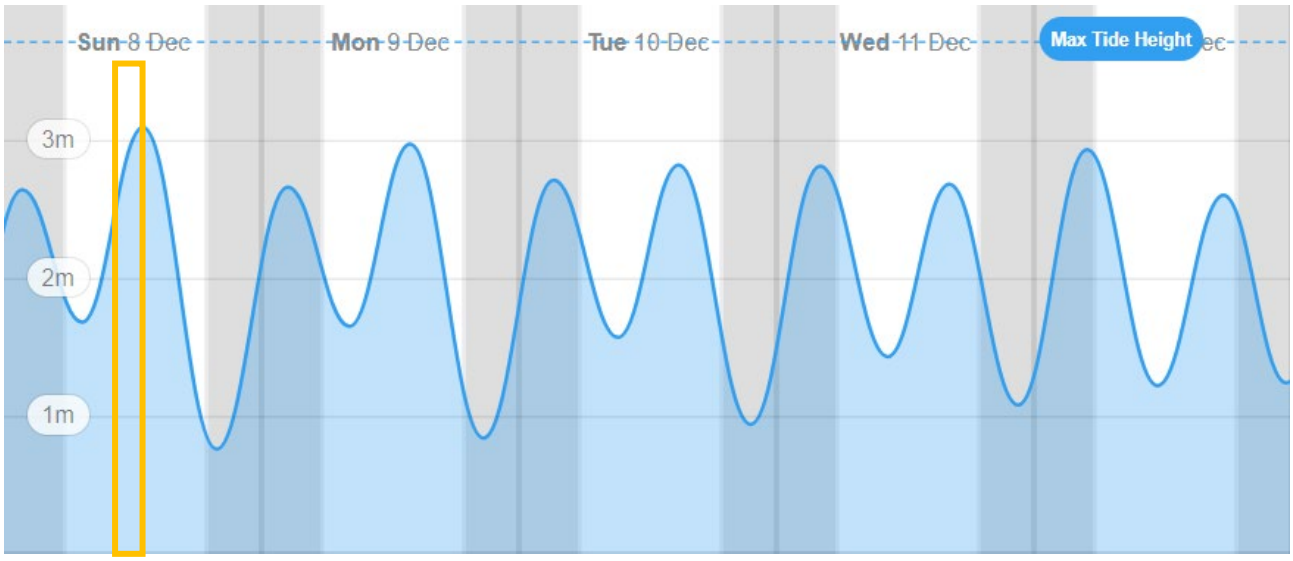


Figure 10 Tide Times from 8 to 12 December 2024. Source: WillyWeather



Event time period

Figure 11 Tide height from 8 to 12 December 2024.

The Australian Institute of Marine Science (AIMS) developed a hydrodynamic model of Melville Bay to assess the dilution and dispersion of the seawater channel discharge into inner Gove Harbour and Melville Bay (AIMS, 2020). The model predicted a minimum dilution rate of 1:25 for the three MZB compliance sites SW9, SW10 and RR2 at a discharge rate of 10,500 m^3/h. Concentrations at the MZB during the event are conservatively predicted by applying the minimum dilution rate from the hydrodynamic model at the MZB of 1:25 to S001 data (Appendix B, Table A5). The predicted concentrations of dissolved Al at the MZB sites are presented in Figure 12.

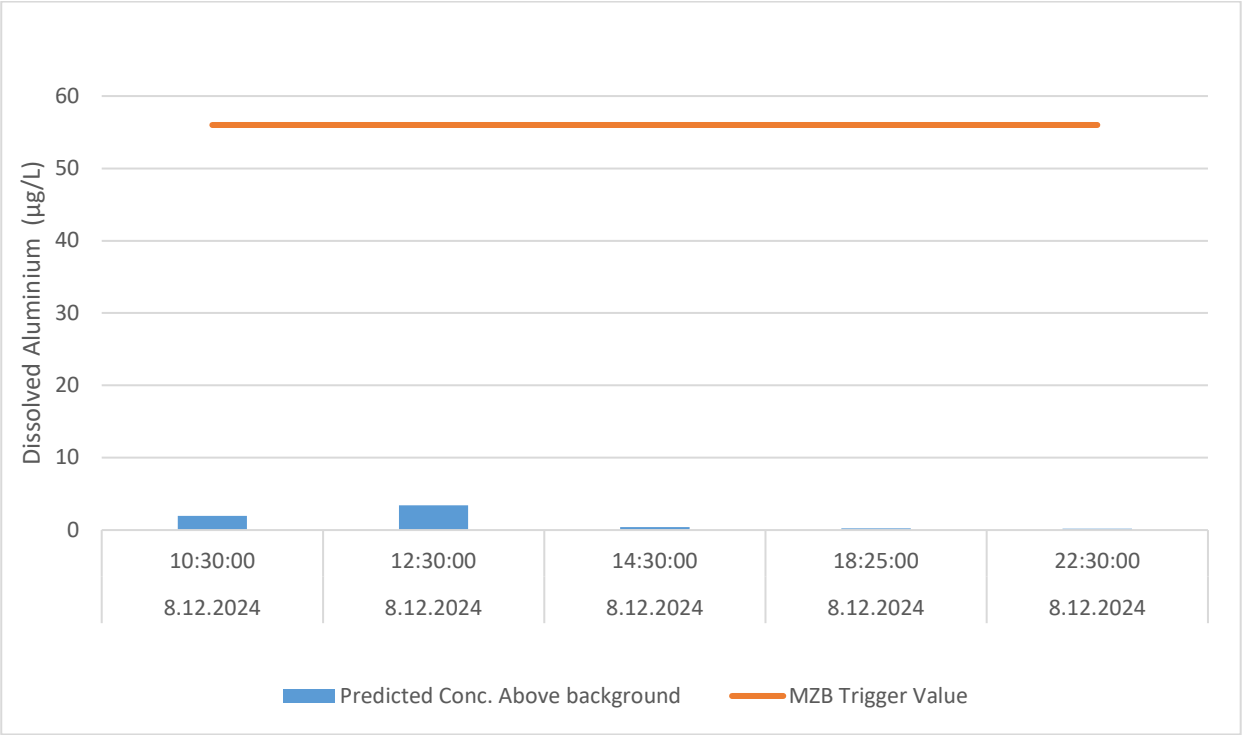


Figure 12 Predicted concentration of dissolved aluminium at the marine mixing zone boundary based on S001 concentrations from investigative samples.

From the Marine Health Monitoring Program (MHMP) data base, background concentration for dissolved Al in Melville Bay is 1.7 µg/L (80th percentile for the previous 24 months monthly samples). Predicted concentrations are above the background concentrations. Predicted concentrations of dissolved Al for the marine sites plus background concentrations are all substantially lower than TV' in the Licence for the MZB. Similarly predicted concentrations for dissolved As and V are well below corresponding TV's.

Conclusion

The results of the investigation sampling confirmed there were no exceedances of Licence TV's and/or Limits for the event. Turbidity remained well below the TV for the duration of the event on the 8 December 2024 reaching a maximum of 68.7 NTU at S001 and dropping to 8.4 NTU within 2 hours (Appendix A, Table A5). Overall, the data demonstrates that there was no environmental impact expected from the WCP overtopping on 8 December 2024.

References

Australian Institute of Marine Science, 2020, *Assessment of seawater channel dilution in inner Gove Harbour for development of discharge Trigger Values*. Report to Rio Tinto Aluminium Gove.

Appendix A – Analytical Results Tables

Table A2 Water quality results for site S004 seawater intake location from 8 to 11 December 2024 (onsite analysis).

Daily Operational Samples at site S004 Samples retrieved at 08:00 Hrs		8/12/2024	09/12/2024	10/12/2024	11/12/2024
Environmental Parameters					
pH		8.14	8.14	8.14	8.14
Electrical Conductivity	ms/cm	50.4	50.29	50.90	50.09
Turbidity	NTU	5.59	6.14	4.59	3.35
Alkalinity	mg/L	128.6	129.8	123.1	124.0
Dissolved Metals & Metalloids					
Aluminium	µg/L	8.64	10.02	8.06	7.95
Arsenic	µg/L	2.11	2.11	1.84	1.93
Gallium	µg/L	0.25	0.29	0.20	0.14
Manganese	µg/L	1.00	0.92	0.91	0.84
Molybdenum	µg/L	10.63	10.19	10.21	11.17
Vanadium	µg/L	2.80	3.27	2.23	2.20

Table A3 Daily Authorised Monitoring Site S001 Outfall Monitoring Station water quality results – 8 to 11 December 2024 (Onsite Analysis).

Daily Compliance Samples - S001 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	08/12/2024	09/12/2024	10/12/2024	11/12/2024
Environmental Parameters							
pH		9	9.5	8.74	8.16	8.78	8.70
Electrical Conductivity	ms/cm	-	-	49.09	50.59	51.50	50.50
Turbidity	NTU	75[t]	100	20.20	8.98	14.00	7.75
Alkalinity	mg/L	-	-	353.1	124.5	369.4	360.5
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	27.3	13.88	13.51	17.73
Arsenic	µg/L	-	200	14.61	2.17	10.18	12.43
Gallium	µg/L	-	8000	11.05	0.37	7.67	9.91
Manganese	µg/L	-	-	3.52	1.34	3.42	5.19
Molybdenum	µg/L	-	38800	29.24	9.99	25.16	32.30
Vanadium	µg/L	-	1000	36.22	3.63	29.22	36.39

Table A4 Daily water quality results – 24 hour Composite sample at Authorised Monitoring Site S074 – 8 to 11 December 2024 (Onsite Analysis)

Daily Compliance Samples - S074 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	8/12/2024	9/12/2024*	10/04/2024	11/12/2024
Environmental Parameters							
pH		9	9.5	8.89	8.46	8.76	8.84
Electrical Conductivity	ms/cm	-	-	46.09	47.5	45.70	46.79
Turbidity	NTU	75[‡]	100	17.1	25.79	4.4	2.92
Alkalinity	mg/L	-	-	330.2	150.10	256.95	308.75
Total Suspended Solids	mg/L	-	-				
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	19.98	24.83	10.98	13.93
Arsenic	µg/L	-	200	14.65	5.33	7.25	11.07
Gallium	µg/L	-	8000	10.28	1.91	3.50	8.21
Manganese	µg/L	-	-	1.93	1.20	3.49	2.6
Molybdenum	µg/L	-	38800	28.91	12.25	21.66	28.95
Vanadium	µg/L	-	1000	37.69	18.43	16.02	32.35

* Composite sample from channel water quality from 8am 8/12/2024 to 8am 9/12/2024, capturing WCP overtopping period.

Table A5 Event based external water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 8 December 2024 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S001		S001 Trigger value	S001 Limit	8/12/2024	8/12/2024	8/12/2024	8/12/2024	8/12/2024
			Time	10:30	12:30	14:30	18:25	22:30
Environmental Parameters								
pH		9	9.5	8.51	8.15	7.98	7.9	7.9
Electrical Conductivity	µs/cm	-	-	44300	48300	49800	50400	50400
Turbidity	NTU	75[t]	100	52.7	68.7	8.4	5.0	4.6
Total Alkalinity	mg/L	-	-	280	146	134	130	128
Total Suspended Solids	mg/L	-	-	23	67	38	24	16
Metals & Metalloids								
Dissolved Aluminium	µg/L	-	560	49	86	10	6	5
Dissolved Arsenic	µg/L	-	200	29.5	12.0	2.5	2.2	1.9
Dissolved Gallium	µg/L	-	8000	<10	<10	<10	<10	<10
Dissolved Iron	µg/L	-	-	<5	<5	<5	<5	<5
Dissolved Manganese	µg/L	-	-	2.1	1.6	1.7	1.2	1.2
Dissolved Molybdenum	µg/L	-	38800	22.8	11.6	9.6	9.4	9.9
Dissolved Vanadium	µg/L	-	1000	150	97.3	5.7	4.1	3.6
Total Aluminium	µg/L	-	-	775	3630	403	258	224
Total Arsenic	*µg/L*	-	-	30.0	21.7	3.2	2.7	2.4
Total Gallium	*µg/L*	-	-	<10	<10	<10	<10	<10
Total Iron	*µg/L*	-	-	486	3290	612	293	235
Total Manganese	*µg/L*	-	-	4.3	16.4	7.9	4.7	4.8
Total Molybdenum	*µg/L*	-	-	32.5	13.7	12.9	12.4	12.5
Total Vanadium	*µg/L*	-	-	160	117	7.6	4.6	4.0
Nutrients								
Total Dissolved Phosphorus	µg/L	-	140	12	22	11	10	10
Total Dissolved Nitrogen	µg/L	-	1700	260	210	140	130	140
Hydrocarbons								
Total Petroleum Hydrocarbons	µg/L	-	-	<50	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	-	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	-	<1	<1	<1	<1	<1
Toluene	µg/L	-	-	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	-	-	<2	<2	<2	<2	<2
Xylene	µg/L	-	-	<2	<2	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

Table A6 Event based internal water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 8 December 2024 (onsite analysis).

Event Operational samples - S001 Analysed onsite		S001 Trigger value	S001 Limit	8/12/2024	8/12/2024	8/12/2024	8/12/2024	8/12/2024
			Time	10:30	12:30	14:30	18:25	22:30
Environmental Parameters								
pH		9	9.5	8.86	8.38	8.19	8.17	8.27
Electrical Conductivity	ms/cm	-	-	43.9	47.3	50.1	50.5	48.2
Turbidity	NTU	75[t]	100	84.6	92.3	12.2	6.9	6.6
Alkalinity	mg/L	-	-	359.1	145.6	130.3	127.7	125.7
Dissolved Aluminium	µg/L	-	560	88.7	136.0	19.4	10.5	10.3
Dissolved Arsenic	µg/L	-	200	31.9	13.3	2.5	2.1	2.2
Dissolved Gallium	µg/L	-	8000	9.7	2.8	0.6	0.5	0.5
Dissolved Iron	µg/L	-	-	5.2	4.9	7.3	1.9	1.4
Dissolved Manganese	µg/L	-	-	2.9	1.9	2.8	1.2	1.3
Dissolved Molybdenum	µg/L	-	38800	29.5	12.2	10.0	9.6	9.9
Dissolved Vanadium	µg/L	-	1000	136.0	98.9	4.9	3.3	2.7

This data is event based – it does not form part of the WDL monitoring program.

Table A7 Event based external water quality results – Western Containment Pond site S030 – 8 December 2024 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S030		8/12/2024 10:25	8/12/2024 12:25	8/12/2024 14:25	8/12/2024 18:30
Environmental Parameters					
pH		10.8	10.4	10.4	10.6
Electrical Conductivity	µs/cm	1640	962	1000	1280
Turbidity	NTU	2410	1350	1660	2200
Alkalinity	mg/L	748	434	445	595
Total Suspended Solids	mg/L	779	418	553	683
Metals & Metalloids					
Dissolved Aluminium	µg/L	16200	9080	9460	12100
Dissolved Arsenic	µg/L	1020	541	555	610
Dissolved Gallium	µg/L	128	72	75	100
Dissolved Iron	µg/L	127	139	153	165
Dissolved Manganese	µg/L	0.9	<0.5	<0.5	<0.5
Dissolved Molybdenum	µg/L	42.8	20.5	20.1	30.2
Dissolved Vanadium	µg/L	5670	2880	3040	3290
Total Aluminium	µg/L	86400	67600	61400	74200
Total Arsenic	µg/L	1040	509	532	606
Total Gallium	µg/L	150	90	85	122
Total Iron	µg/L	27100	230000	19400	23000
Total Manganese	µg/L	86.7	68.7	60.1	82.6
Total Molybdenum	µg/L	37.7	17.7	18.4	25.8
Total Vanadium	µg/L	5680	3040	3190	3520

Table A8 Investigative water quality results - Marine Mixing Zone (MZB) sites – 8 and 9 December 2024 (External Analysis - NATA accredited laboratory).

		MZB Trigger Values	8/12/2024	8/12/2024	8/12/2024	9/12/2024	9/12/2024	9/12/2024
			SW9	SW10	RR2	SW9	SW10	RR2
		Time	14:30	14:40	14:50	12:30	12:35	12:25
Environmental Parameters								
pH		7.7 – 8.4	7.98	7.98	7.93	8.04	8.01	8.01
Electrical Conductivity	µS/cm	-	49900	49200	50000	48200	48100	48000
Total Suspended Solids (SS)	mg/L	-	<5	<5	<5	<5	<5	<5
Turbidity	NTU	20	1.9	1.7	3.2	1.6	0.7	0.6
Alkalinity	mg/L	-	142	135	131	122	118	118
Metals and Metalloids								
Dissolved Aluminium	µg/L	56	8	6	8	5	<5	<5
Dissolved Arsenic	µg/L	20	5.5	4.0	3.5	1.7	1.4	1.5
Dissolved Gallium	µg/L	800	<10	<10	<10	<10	<10	<10
Dissolved Iron	µg/L	-	<5	<5	<5	<5	<5	<5
Dissolved Manganese	µg/L	-	1.0	0.6	0.8	0.7	0.6	0.5
Dissolved Molybdenum	µg/L	3880	10.2	9.7	10.3	9.8	10.4	8.8
Dissolved Vanadium	µg/L	100	7.1	7.6	6.0	3.3	2.2	2.2
Nutrients								
Total Dissolved Phosphorus	µg/L	14	14	10	11	10	9	9
Total Dissolved Nitrogen	µg/L	170	120	120	120	120	110	110
Hydrocarbons								
Total Petroleum Hydrocarbons	µg/L	-	<50	<50	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	<1	<1	<1	<1	<1	<1
Toluene	µg/L	-	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	-	<2	<2	<2	<2	<2	<2
Xylene	µg/L	-	<2	<2	<2	<2	<2	<2

Notification of an Environmental Incident

☒ Incident ☐ Critical Incident ☐ Preliminary ☒ Final

Incident number:	**43180511_61246**
Name of mining site:	Rio Tinto - Gove operations
Name of operator:	RTA Gove Pty Limited
Date & time of detection:	Date: 22/12/2024 Time: 13:42 PM
Date & time of incident:	Date: 22/12/2024 Time: 13:42 AM
Name of person notifying:	Andrew Carmichael
Position/Title:	Environment Superintendent
Contact person:	Andrew Carmichael
Contact details:	Business: 08 8987 5233 Mobile: 0467 946 163
	E-mail: andrew.carmichael@riotinto.com
INCIDENT LOCATION (use GPS co-ordinates, attach map, etc. as appropriate)	Latitude -12.188147 Longitude 136.685306  WCP Overflow weir location into Seawater Channel

INCIDENT DESCRIPTION	Overflow of Western Containment Pond (WCP) into the Seawater Channel resulting in discharge via S001 (Schedule 1, Item 10 (f), Condition 25 & 26).	
Causes & contributing factors to the incident:	During a high rainfall event on the 22nd of December, the capacity of the Western Containment Pond (WCP) was exceeded, resulting in overflow from the WCP into the seawater channel. Overflow from the WCP commenced at approximately 13:42 PM and ceased at approximately 15:21 PM on the 22nd December.	
Potential causes & contributing factors to the incident:	A storm cell over the Gove Peninsula brought intense rainfall (47mm) over a short period (2.5 hours), which was preceded by 25mm rainfall in the previous 48 hrs. This resulted in stormwater inflow into the refinery catchments which caused the WCP to overtop its weir into the seawater channel.	
Action Taken:	YES ☒	NO ☐
If no, why?		
Corrective Actions that have/will be undertaken to ensure this does not reoccur:	Immediate corrective actions implemented to minimise the risk of overtopping included; • Continual operation of the WCP pumps. • Implementation of the Trigger Action Response Plan (TARP); WWNP shut down, response sampling taken, Marine sampling conducted • Both sea water pumps remaining in operation. Inspection and maintenance of erosion and sediment controls and surface water management controls across the refinery footprint once rainfall ceased on 23rd December 2024. Ongoing upstream mitigation measures within the WCP and refinery catchments. Further details of upstream mitigative measures are included in the appended EIA. The ultimate medium-term corrective action remains the demolition of the refinery and decontamination of the catchment. The demolition of the refinery has commenced and is over 50% progressed. Work to decommission and remove the WCP is scheduled to commence in 2025. The wider catchment is scheduled to be decontaminated and converted to clean stormwater catchment by 2026.	
Date when investigation report will be submitted to Administering Agency:	Submitted on 8 January 2025 – awaiting nutrient results from Queensland Health Laboratory results due to their laboratory closure period over the Christmas period – results expected on 18th January 2025. Resubmitted on 21 January 2025 with the inclusion of nutrient results.	

ENVIRONMENTAL DETAILS

Nature of impact and severity: (Volume of spillage, area impacted, wildlife/vegetation/ erosion, etc.)	Refer to attached Environmental Impact Assessment (EIA).
Emergency & remedial actions taken:	• The WWNP was shutdown at 13:38 PM as WCP capacity reached 90% on 22nd Dec 2024 • WCP pump continued to operate until pond levels are reduced to approximately 10%. • Inspection and maintenance of erosion and sediment controls and surface water management controls across the refinery in preparation of future rainfall events.
Current situation: (Potential / ongoing / ceased / etc.)	The WCP overtopping event commenced at 13:42 PM and ceased at approximately 15:21 PM on the 22nd December 2024. A total duration of 1 hour and 39 minutes. The WWNP was shutdown when the WCP reached 90% capacity at 13:38 PM prior to the WCP overtopping. The containment pond pumps remained in operation throughout the event and WCP levels returned to below 50% on the 23 December 2024. Upstream mitigation measures, including erosion and sediment controls are continuously monitored and managed across the refinery to help control and transfer water to the RDA for storage and future treatment.

Details of any samples taken: (when / where / type / number / time for results /etc) If incident is related to Total Nitrogen, refer to WDL171-11 section 38.8 for further analysis.	Samples and the compliance monitoring program in place; • A 2-hourly sampling regime at the WCP and S001 commenced at 14:30 PM. Severe weather (lightning) prohibited sampling from commencing earlier. • 4-hourly sampling regime commenced after the WCP ceased overflowing, with the final sample taken at 01:00 AM 23rd December 2024. • Continuous monitoring at S001 remained in operation. • Daily sample at S001. • Daily composite sample at S074 (see below for further details) • Marine incident investigation sampling at RR2, SW9 & SW10 compliance sites was completed at approximately 17:30 PM on the 22nd of December and 07:45 AM on the 23rd of December. Refer to EIA for further details.

OPERATOR INTERNAL REPORTING

Has the incident been reported internally?	☒ **YES**		☐ **NO**
If so, to whom:	**Name:**	Henry Hemana	
	Position:	Acting WWNP Superintendent	

Has the department been notified earlier?	☒ **YES**	☐ **NO**
Who was notified:	Chris Coombes, Environmental Officer Department of Lands, Planning and Environment	
How: (phone/email/fax)	Phone call and voicemail left, 23rd December 2024	
When: (date & time)	Phone call and voicemail left at 09:10 AM 23rd December and follow up email notification.	
By whom:	Andrew Carmichael	

Name: Andrew Carmichael

Signed *Andrew Carmichael* **Date:** 21 January 2025

Title: Environment Superintendent

OFFICE USE ONLY			
Received by:			
Date:		**Time:**	

Environmental Impact Assessment

Event #43180511_61246

22 December 2024

Executive Summary

Compliance monitoring and investigative (event based) sampling was conducted in response to the Western Containment Pond (WCP) overtopping into the Seawater Channel on 22 December 2024 following a heavy rainfall event across the Gove peninsula. The over topping of the WCP occurred for 1 hour and 39 minutes from 13:42 PM to 15:21 PM.

The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC and continuous operation of the autosampler (S074) to retrieve a composite sample.

The event was reported as #43180511_61246 to the Department of Lands, Planning and Environment (DLPE) on 23 December 2024. Immediate corrective action included continual operation of WCP pumps, implementation of the Trigger Action Response Plan (TARP); the Waste Water Neutralisation Plant (WWNP) was shutdown, and both sea water pumps remained operational. Overall, the data demonstrates that there was no environmental impact from this event.

The ultimate medium-term corrective action remains to complete demolition of the refinery and decontaminate the catchment, converting it to a clean stormwater catchment. The decommissioning and removal of the Western Containment Pond (WCP) is set to begin in 2025. As the demolition, decontamination, and disposal (DDD) project progresses, including detailed Contamination Site Assessment (CSA) and rehabilitation land forming, additional preventative and mitigation measures have been implemented to manage stormwater and sediment flow to the WCP.The Gove environment team continues to work closely with the Refinery demolition team as the DDD project further progresses to ensure continued effectiveness of mitigation and control measures.

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GLOSSARY

COPC	Contaminants of Potential Concern
LOR	Limit of reporting
MZB	Mixing Zone Boundary
RDA	Residue Disposal Area
NSNL	Neutralised Supernatant Liquor
SCP	Southern Containment Pond
STP	Sewerage Treatment Plant
TARP	Trigger Action Response Plan
TDN	Total Dissolved Nitrogen
TDP	Total Dissolved Phosphorous
TV	Trigger Value
UPS	Uninterrupted Power Source
WCP	Western Containment Pond
WDL	Waste Discharge Licence 'The Licence'
WWNP	Waste Water Neutralisation Plant

Introduction

A heavy rainfall event was experienced across the Gove Peninsula on 22 December 2024. The Stockpile Creek Rainfall Gauge recorded 47 mm of rainfall over a 2.5 hour period between 12:00PM to 14:30 PM on the 22 December 2024. A rainfall event the previous day was recorded 25 mm over a 2-hour period from 06:45 AM to 08:45 AM.

The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in stormwater overtopping the WCP weir into the seawater channel. Overflow from the WCP commenced at approximately 13:42 PM. The Waste Water Neutralisation Plant (WWNP) was shutdown at 13:38 PM as per TARP.

Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation and was not discharging into the seawater channel at the time of the overflow.

The WCP ceased overtopping its weir into the seawater channel at approximately 15:21 PM on 22 December 2024. Total duration of discharge from the WCP into the seawater channel was 1 hour and 39 minutes.

Operational and investigative (event based) samples were collected from Authorised Outfall Monitoring Station (S001) and Western Containment Pond (S030). Two sampling events from the marine mixing zone boundary (MZB) sites (SW9, SW10 and RR2) were undertaken on the afternoon of 22 December 2024 and the morning of the 23 December 2024 following the cessation of the WCP overtopping into the seawater channel. These results combined with the daily composite sample (S074) results provide the evidence to assess any impact from the event on the receiving environment.

Mitigation Measures

As the refinery demolition, decontamination and disposal (DDD) project progresses on multiple work fronts, mitigation measures have been implemented to divert, reduce and slow down stormwater and sediment reporting to the WCP and other containment ponds across the refinery. Decontamination activities over the 2024 dry season have also aimed to remove known contamination sources from the upstream refinery footprint in preparation for the 2024-25 wet season. As a concurrent contaminated site assessment (CSA) and rehabilitation program of the site continues the mitigation measures will evolve throughout the remainder of the project. Upon completion of the DDD activities across the refinery catchments, the ultimate medium-term corrective action remains the scheduled conversion to a clean stormwater catchment; with the decommissioning and removal of the Western Containment Pond (WCP) due to commence in 2025.

Post the 2023-24 wet season, improvements have been implemented to minimise the volume of water reporting to the Western Containment Pond (WCP). Figure 1 [Left] shows the location of the WCP, and associated changes made to the refinery catchments prior to the commencement of the 2024-25 wet season are shown in Figure 1 [Right].

The following combination of temporary erosion and sediment control measures have been executed to reduce the volume and stem the flow of water entering the WCP.

Surface water and drainage control

Flow diversion banks and drains have been implemented to divert surface waters away from active work areas to minimise contamination of water flowing into the WCP.

- The demolition and decontamination of areas 633, 645, 646, 649, 652, 653, 655, and 657, 662, 723 and 724 has removed high pH materials from the WCP catchment (Figure 1, right).
- Earth bunds have been placed in areas to minimise runoff reporting to WCP, by diverting flow to other areas with capacity such as newly installed retention basins within the the SCP or ECP catchments (Figure 1, right).
- Other catchment diversions include areas immediately west of the WCP which previously drained to the WCP. Recontouring of the area, and bunds located at the eastern and western boundary of scrapyard and oxy-cutting areas, southern fence line and moxy parking area divert flow to a large retention basin south of the WCP (Appendix B, Figure 17 & Figure 18).
- Earth bund installed around demolished calcination structure to contain light materials such as refractory bricks and synthetic mineral fibres (SMF) aim to contain flow and sediment loss to the WCP (Appendix B, Figure 16).
- Earth bund on southern and western corner of Area's 653, 657 installed (Figure 1, right) to prevent surface runoff flowing towards drains that report to the WCP (Appendix B, Figure 21)

Erosion control and surface stabilisation

Erosion control and stabilisation measures including environmentally certified & natural polymer binder and soil stabiliser (Dustex) have been applied to bunds and inactive areas across the upstream work fronts of the refinery.

Sediment control

Sediment fences, rock checks and coir logs have been installed to slow and trap sediment as close to the source as practicable.

- The installation of sediment fence and improved rock checks at WCP inlets (West inlet drain, Figure 13, and North drain, Figure 14 & 15) aims to improve quality of water inflow and reduce the velocity of flow and drainage reporting to the WCP.
- Silt fence installed on northern boundary of Area 662 (scrapyard).
- Coir logs, rock drain and silt fence installed between Area 653 and 710 and entrance to seawater channel.
- Coir logs placed at drainage pits along Road 6,15 and 24 to help reduce flow and minimise sediment reporting to the WCP (Figure 21 & 22).

Sediment basins

Water captured in sediment/retention basins during or following each storm/rainfall event are discharged directly into the containment ponds during dry periods to ensure capacity within the basin is available so far as reasonably practicable.

- Area 661 retention basin has been increased, resulting in increased catchment storage and slowing of surface water entering the WCP drainage system (Appendix B Figure 16).
- The demolition of areas 645, 646, 723 and 724 which previously reported to the WCP are now contained and diverted to the Southern Containment Pond (SCP) reducing the WCP catchment area by 1.9 hectares (ha) (Figure 1). The total catchment area diverted away from the WCP is

currently estimated to be 20.9 ha. A diversion of approximately 9% of the WCP catchment to the SCP. Catchment diversions throughout the remaining phases of the DDD and rehabilitation project are expected to adapt and change as work fronts progress.

- Sediment buildup removed, walls stabilised and improved rock drain created at retention basin in SW Area 662 (Scrapyard) (Appendix B Figure 17).

Dewatering basins and sumps

As part of the ongoing water management strategy and routine inspections carried out on the Refinery DDD project, contained water continues to be dewatered to the containment ponds between each rainfall event to maximise holding capacity of the catchments. This strategy also aims to remove potentially contaminated water from the site at appropriate times.

Dewatering and removal of water and sediment build up activities undertaken prior to the onset of the wet season were undertaken to remove sources of potential contamination and increase holding capacity across the refinery.

- The three main containment ponds across the refinery (WCP, SCP and ECP) are routinely kept at low levels (between 10-12%) depending on the sump & pump requirements.
- Any sediment build up contained in the containment ponds is assessed on an annual basis, (Dry season), to determine desilting requirements.
- For the WCP the pond, the level is reduced to the lowest pumping level (<10%). If the sediment build up exceeds a nominal point, of >8% at the WCP northern ramp where sediment initially builds up from inflows, the sediment is removed from the entire pond during the dry season.
- Sediment inside the WCP was removed prior to the 2022-23 wet season. Prior to the 2023-24 and 2024-25 wet season it was determined that no desilting of the WCP was required.
- Sediment build up in the Western Containment Pond northern inlet drain was removed and cleaned prior to the 2023-24 and again prior to the 2024-25 wet season (Appendix B, Figure 14).
- Sediment in the SCP was desilted prior to the 2024-25 wet season (Appendix B Figure 19).
- The sediment basin which captures run-off from the Refinery Steel Stockpile area (southwest of the WCP) was re-profiled, re-armoured with rock at inflow points and desilted prior to the 2024-25 wet season.
- Other smaller areas of potentially contaminated sources e.g. sumps, are also pumped and directed to the containment ponds during dry periods for disposal at the RDA.
- A large sump which historically functioned as part of the Refinery cooling towers, which is located adjacent to the Western Seawater channel (Road 3, Area 720), opposite the WCP, was dewatered in November 2024 in preparation of demolition activities. A pump is set up to maintain the ability to remove water after rainfall events (Appendix B, Figure 20).

Routine Inspections

A formalised routine inspection program for surface water, erosion and sediment controls effectiveness has been implemented on a weekly basis and daily when raining by the DDD project teams. This allows controls to be evaluated post rainfall event and rectification works conducted in preparation for the remainder of the 2024-25 wet season.

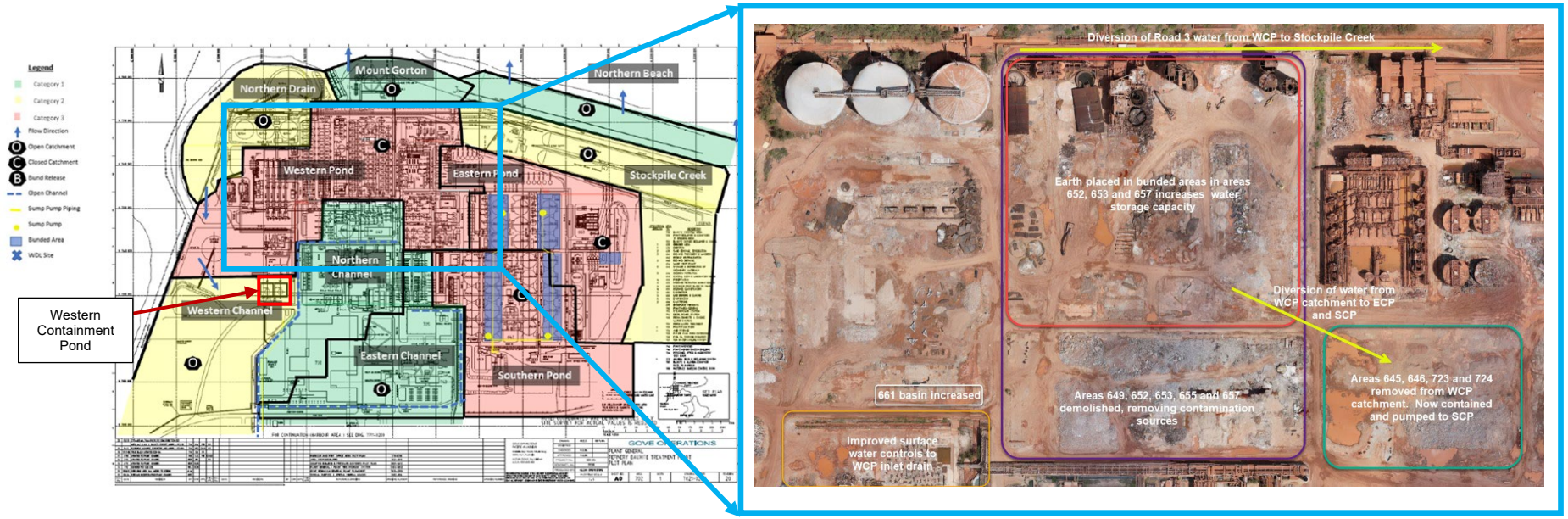


Figure 1 [Left] Refinery Catchments prior to 2023-24 wet season. [Right] Enlargement of boxed area showing aerial of bund outline to Refinery catchments commencement of 2024-25 wet season. There is still underground drainage along Road 15, Area 653 that still reports to the WCP. Sediment and flow control measures have been applied at each drain inlet aiming to slow and reduce sediment flow & velocity entering the WCP (See Appendix B, Figure 21).

Results

Tabulated results for event 43180511_61246 are provided in Appendix A. Operational results are samples analysed at the onsite laboratory. Investigative results are samples analysed offsite at a NATA accredited laboratory.

Results for operational samples for the intake site at S004 are summarised in Appendix A, Table A2.

Results for the daily compliance samples taken at 08:00 AM for 22 to 25 of December 2024 at the Authorised Discharge Site S001 are summarised in Appendix A, Table A3.

An automatic water sampler collects a 50 mL sample every 20 minutes resulting in a composite sample every 24 hours. Composite sample results over a 24-hour period provide a comprehensive representation of discharge quality into the receiving environment during the WCP overtopping event, providing weighted average results. The site S074 composite sample results for the 22 to the 25 of December 2024 were analysed onsite and are summarised in Appendix A, Table A4.

Investigation event-based samples (NATA laboratory offsite) for the 22 December 2024 at Authorised Discharge site S001 are summarised in Appendix A, Table A5.

Results for event based internally analysed samples on the 22 December at S001 are summarised in Appendix A, Table A6.

Results for the externally analysed Western Containment Pond Site (S030) are summarised in Appendix A, Table A7.

Marine sites SW9, SW10 and RR2 were sampled on the 22 and 23 December 2024, the results summarised in Appendix A, Table A8.

Figure 2 shows hourly rainfall (mm) recorded at Stockpile Creek and WCP storage capacity (%) for the 22 December 2024. Figure 3 shows continuous monitoring of the Outfall monitoring Station Site (S001) for pH and EC.

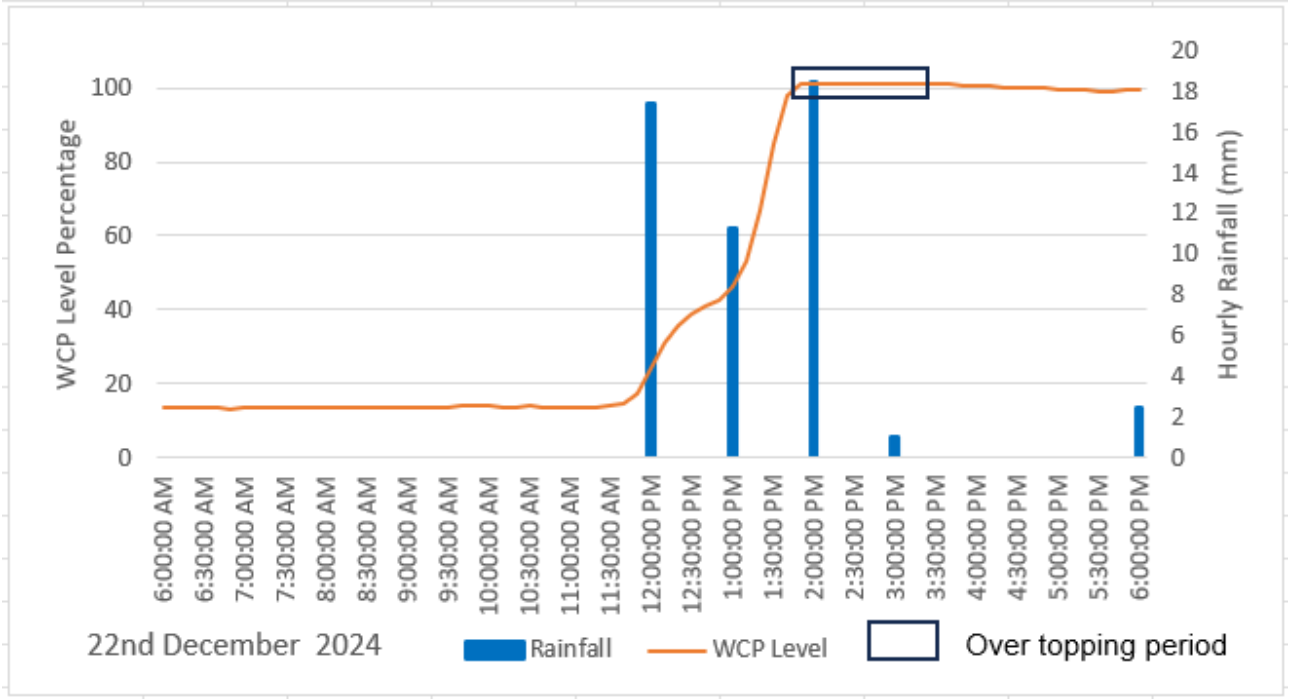


Figure 2 Measured hourly rainfall (mm) collected from Stockpile Creek Rain Gauge and WCP storage capacity (%) for the 22 December 2024.

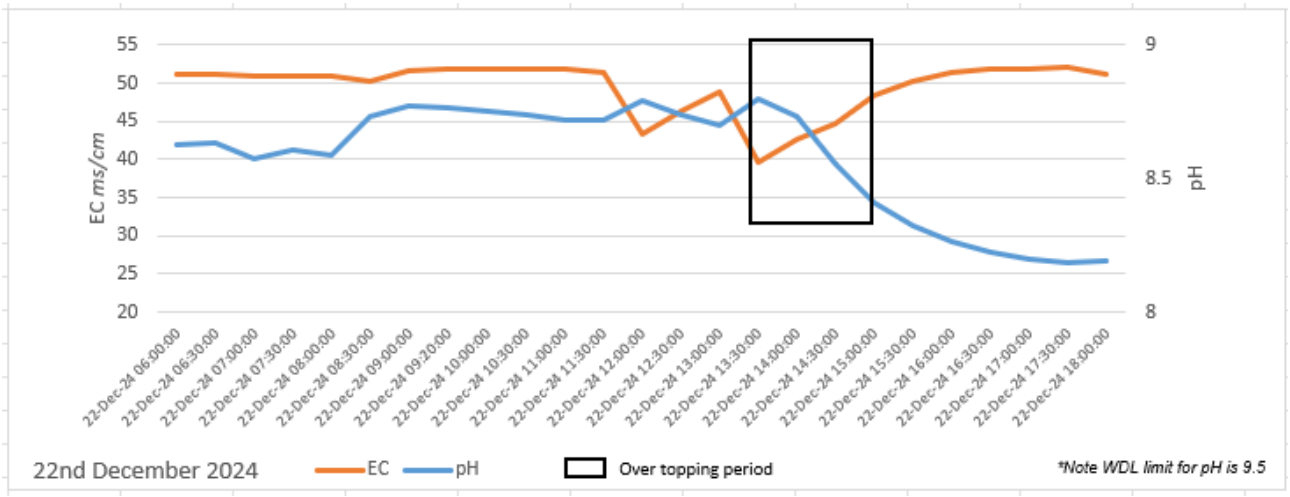


Figure 3 Continuous monitoring of pH and EC at the Outfall Monitoring Station (S001) on 22 December 2024.

Continuous monitoring of pH ranged from 8.32 – 8.80 during the period of 22 December 2024 as shown in Figure 3. Sample results retrieved as a part of the event sample regime on the 22 and 23 December 2024 showed pH results ranging from 8.03 - 8.20 throughout the overtopping event (Appendix A, Table A5). This is supported with the continuous data reporting no exceedance of the WDL pH TV (9.0) throughout the overtopping event.

Discussion

WWNP Operation

Figure 4 shows the duration in which the WWNP ceased operation and remained offline throughout the event on the 22 December 2024.

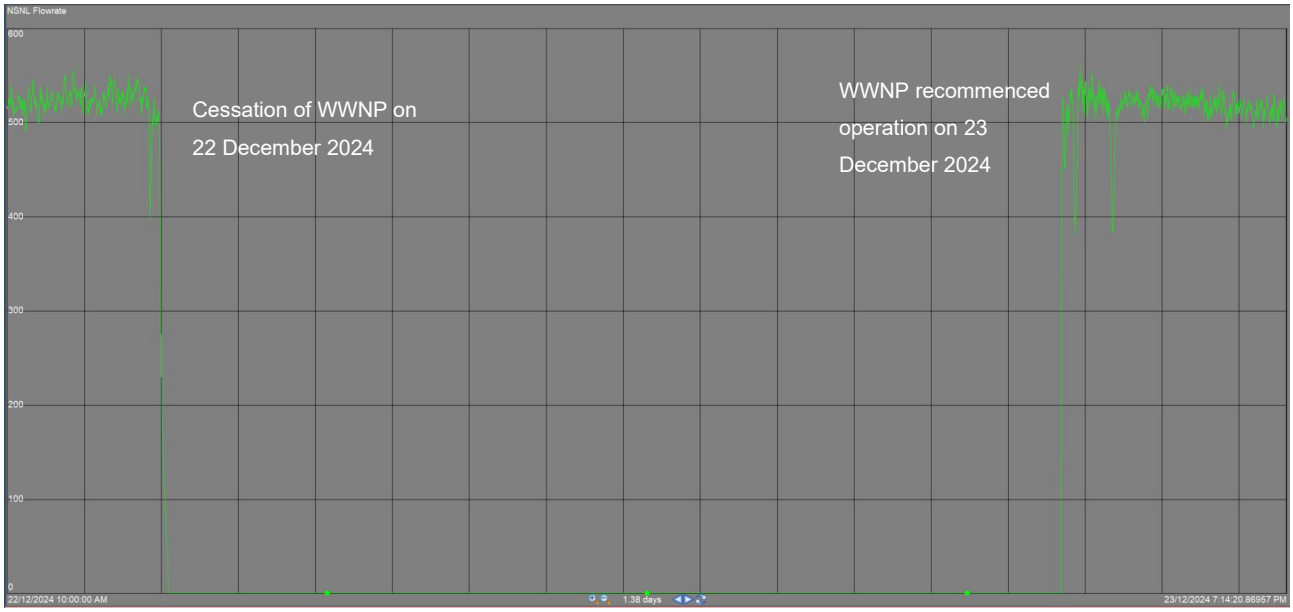


Figure 4 WWNP Operation 22 to 23 December ceasing operation on 22 December 2024 shown as Neutralised Supernatant Liquor (NSNL) flow rate (m3/hr) vs Time.

Alkalinity

Alkalinity concentrations are indicative of WWNP operation. Results for alkalinity concentrations from daily 08:00 AM operational (compliance) samples at site S001 for the period 22 to 25 December 2024 are summarised in Appendix A, Table A3. Alkalinity concentration on 23 December was at natural background seawater concentrations as WWNP was off-line.

WCP sample location

Water quality results of investigation samples (offsite analysis) for WCP site S030 are summarised in Appendix A, Table A7. Care should be taken when reviewing these results, as samples may not be representative of actual discharge of WCP water into the seawater channel. The sample location is collected from south-east corner of the WCP; therefore, this may not be representative of the discharge from the weir as shown in Figure 5. The location of the discharge weir is unable to be safely accessed for sampling.

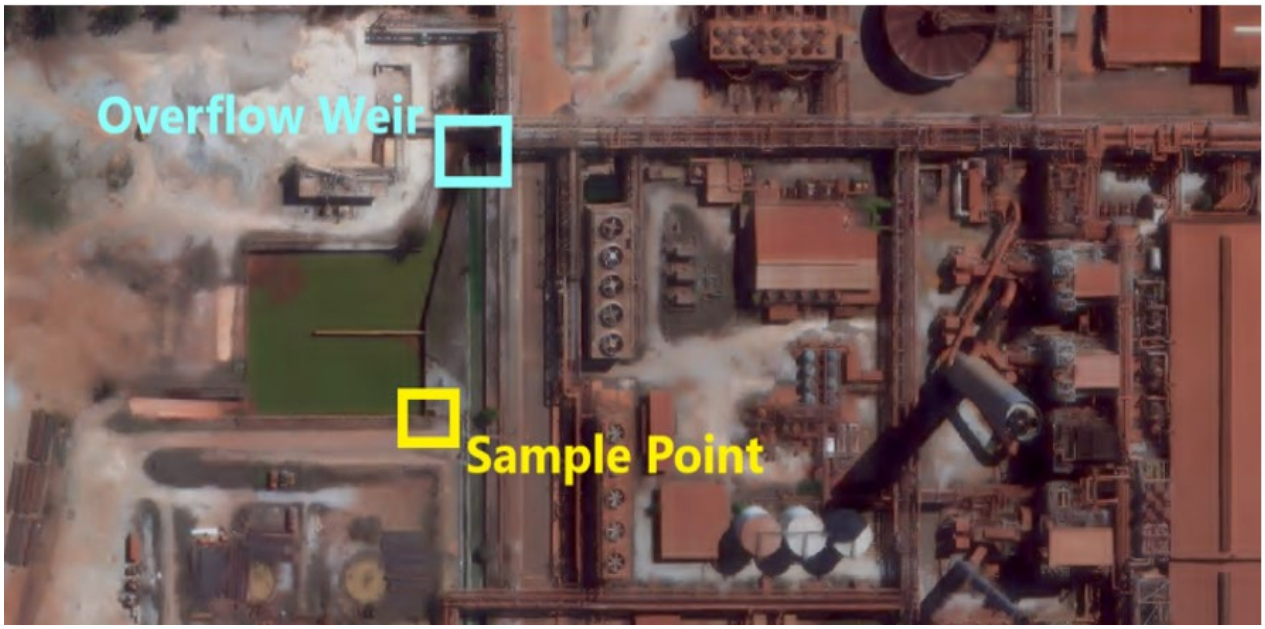


Figure 5 Sample point for the WCP site S030 is the pump located at the bottom of the pond, on the opposite side of the overflow weir location where discharge flows into the seawater channel.

Electrical Conductivity

Electrical conductivity (EC) is indicative of discharges of stormwater into the seawater channel. Background seawater has an EC of approximately 50 mS/cm. The seawater channel intake site S004 ranged from 49.2 mS/cm to 51.6 mS/cm for the period 22 to 25 December 2024. The outfall channel site S001 for the same period 22 to 25 December 2024 is also summarised in Table 1 (S001).

There is evidence of stormwater inputs into the channel from the WCP during the 22 December event. The EC value decreased to approximately 39.7 mS/cm at 13:30 on 22 December 2024 (Figure 3).

Table 1 Seawater channel intake site S004 and outfall channel site S001 showing EC from the 08:00 AM sample from 22 to 25 December 2024.

Date and Time	**EC (mS/cm) S004 intake**	**EC (mS/cm) S001 outfall**
22 December 2024 08:00	50.9	53.7
23 December 2024 08:00	49.2	51.4
24 December 2024 08:00	50.5	50.2
25 December 2024 08:00	51.6	50.9

Turbidity

Turbidity results from event-based samples from S001 during and following the WCP overtopping event on the 22 December 2024 are shown in Figure 6. Turbidity results from the external NATA accredited laboratory exceeded the S001 limit reaching 133 NTU during the WCP overtopping event. A strong correlation between the over topping event and an increase in turbidity at S001 is highlighted in Figure 6.

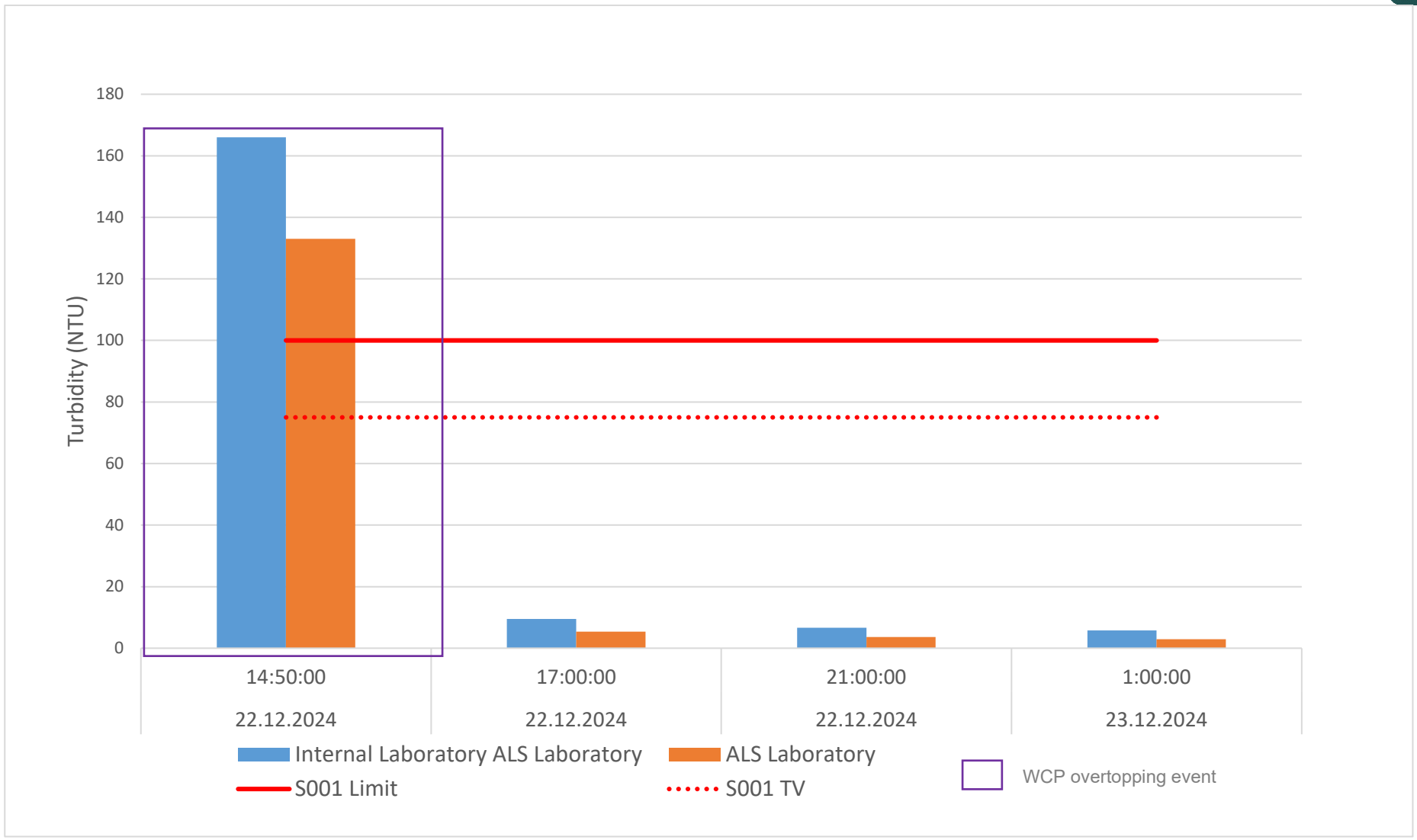


Figure 6 External NATA and internal laboratory Turbidity (NTU), for S001 investigative samples for 22 December 2024.

Nutrients

Nutrient results from event-based samples from S001 during and following the WCP overtopping event on 22 December 2024 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 22 and 23 of December 2024, with the results summarised in Appendix A, Table A8 (NATA analysis).

Nutrient concentrations at S001 and the MZB sites were at, or less than the Trigger Values for total dissolved nitrogen and total dissolved phosphorous. The STP was not discharging at the time of the event, and nutrient results are not considered to impact the overall environmental assessment.

Hydrocarbons

Hydrocarbon results from event-based samples from S001 and S030 during and following the WCP overtopping event on 22 December 2024 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 22 and 23 of December 2024, with the results summarised in Appendix A, Table A8 (NATA analysis).

All hydrocarbon concentrations at S001, S030 and the MZB sites were less than the laboratory limit of reporting (LOR) and considered to not be of concern.

Metals and Metalloids

Analysis of metals and metalloids at site S001 from investigative samples (NATA analysis) are summarised in Appendix Table A5 and Figures 7 and 8.

Investigation samples taken at S001 during the overtopping event on the 22 December 2024 recorded an elevated dissolved aluminium concentration of 149 µg/L during the overtopping event (Figure 7 & Table A5). This coincides with the observed large rainfall pulse event. The elevated concentration values were substantially lower than the Licence Limit of 560 µg/L. Successive samples taken from 17:00 PM, approximately 1.5 hours after the overtopping event ceased, decreased to 14 µg/L confirming the pulse event had ceased. Further consecutive samples indicated that dissolved aluminum concentrations had decreased to background seawater concentrations.

Investigation samples taken at S001 on 22 December 2024 during the overtopping event showed slightly elevated dissolved arsenic concentrations during the overtopping event with the concentration being 24.3 µg/L at 14:55 PM (Figure 8). The concentrations were significantly less than Licence Limit of 200 µg/L. Once the WCP overtopping event ceased the dissolved arsenic decreased to background seawater concentration of 2.0 µg/L at 17:00 PM on 22 December 2024.

Dissolved vanadium concentrations increased during the overtopping event, with the 14:55 PM S001 sample recording a concentration of 170 µg/L, below the Licence Limit of 1000 µg/L. The concentration decreased approaching background concentration (3.9 µg/L) at 21:00 PM (Appendix A, Table A5).

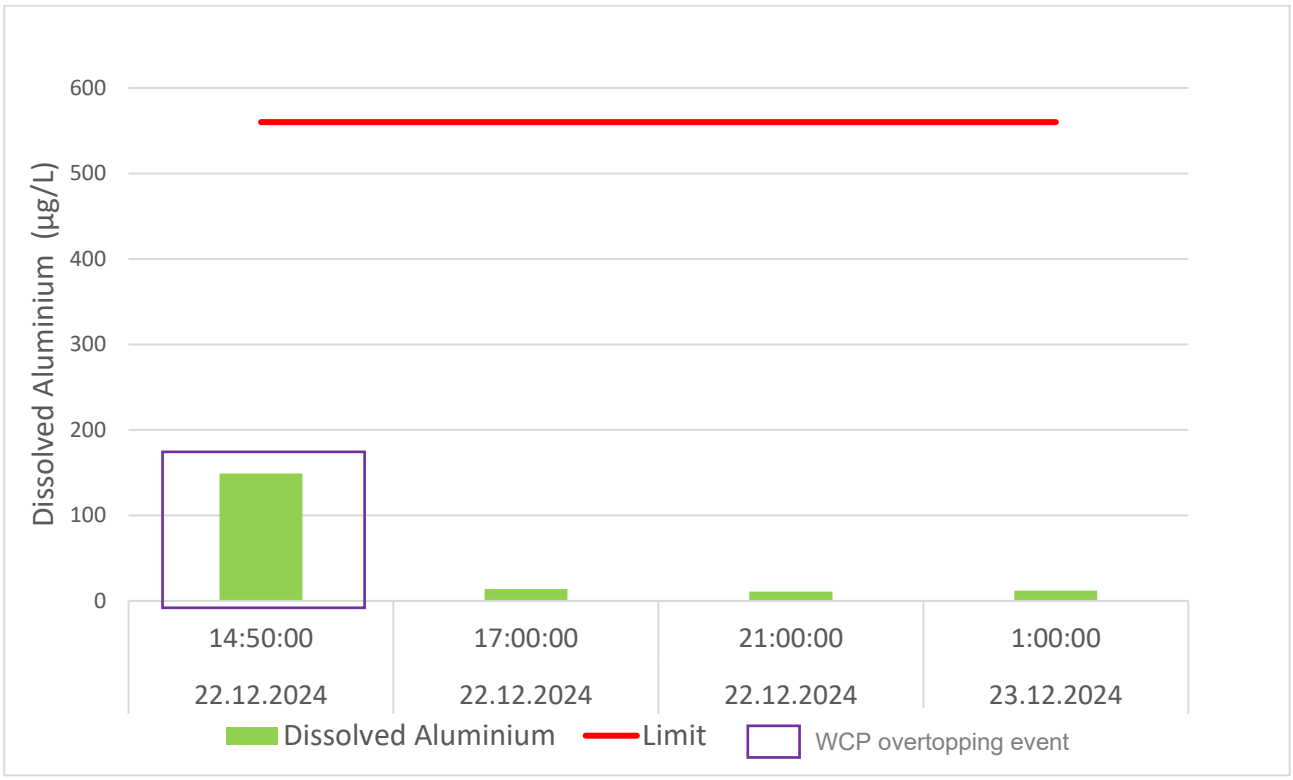


Figure 7 Dissolved aluminium (µg/L) and limit at S001 from event samples (NATA analysis) from 22 December 2024.

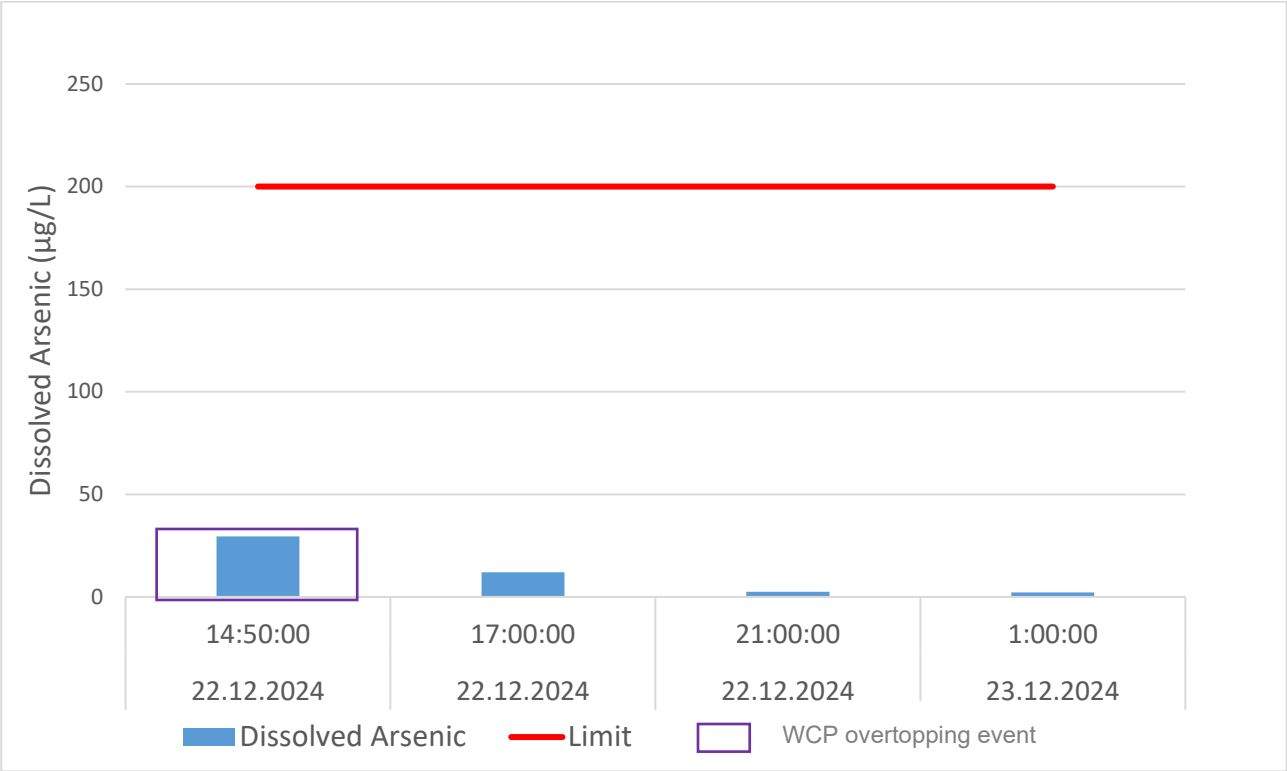


Figure 8 Dissolved arsenic (µg/L) and limit at S001 from event samples (NATA analysis) from 22 December 2024.

Composite Sample

The S074 composite sample results (Appendix A, Table A4) provide a time and volume weighted average over twenty-four hours, including when the unauthorised release was discharging into the eastern seawater channel. Composite samples are relevant to TVs and Limits to assess potential environmental impact. The composite sample collected at 08:00 AM on 23 December 2024 is representative of the preceding 24-hour period when the WCP overflowed. The concentrations recorded during this period were at or below those when the WWNP is operational, with the exception of slightly elevated dissolved Al concentrations. Results returned to typical concentrations representative of the WWNP once it was brought back online on the afternoon of the 23 December (Appendix A, Table A4). All analyte concentrations remained below WDL Limits and TVs.

Marine Results Discussion

Investigative sample results for dissolved aluminium (offsite NATA laboratory) from the MZB sites are shown in Figure 9. Sampling of the marine sites was completed at 18:00 PM, 22 December and 08:00 AM, 23 December 2024, after the overtopping event ceased. Results at the MZB sites for dissolved aluminium were recorded well below the license trigger value of 56 µg/L (Figure 9). Appendix A, Table A8 shows all analytes at the MZB were substantially lower than the corresponding TVs with concentrations returning to background concentrations on 23 December 2024.

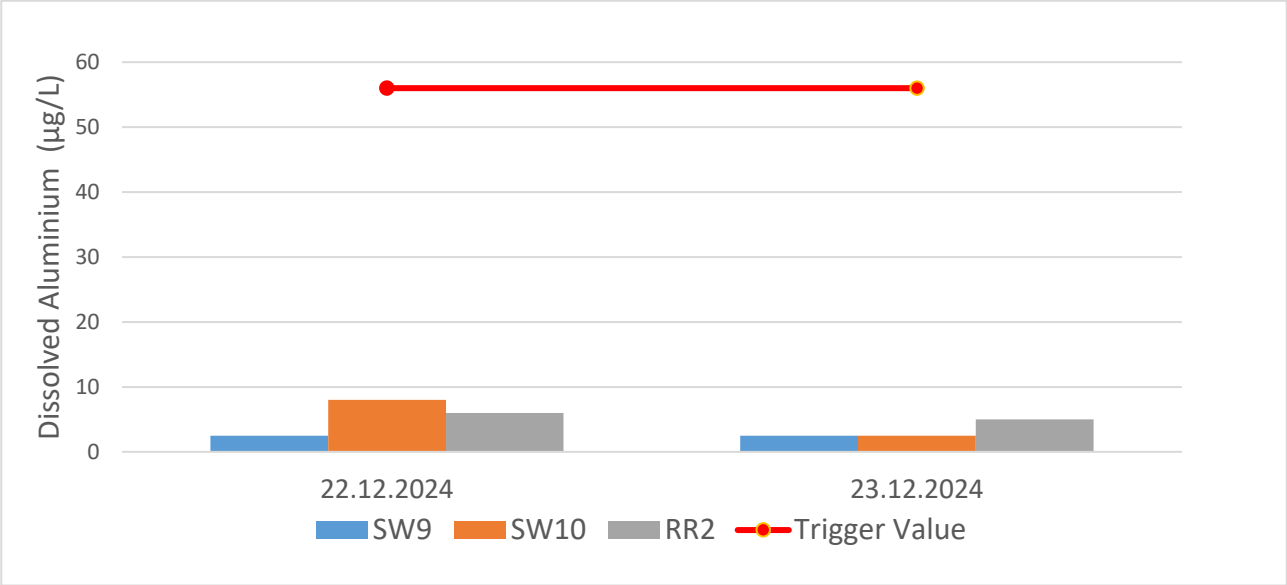


Figure 9 Dissolved aluminium concentrations at MZB sites for samples collected after the event at 18:00 PM, 22 December and 08:00 AM, 23 December 2024. Note that dissolved aluminium for site SW9 on 22-23 December and SW10 on 23 December were recorded at below the LOR (5µg/L).

The tides times and heights during the WCP event are provided in Figure 10 and Figure 11. The event occurred during a high tide.

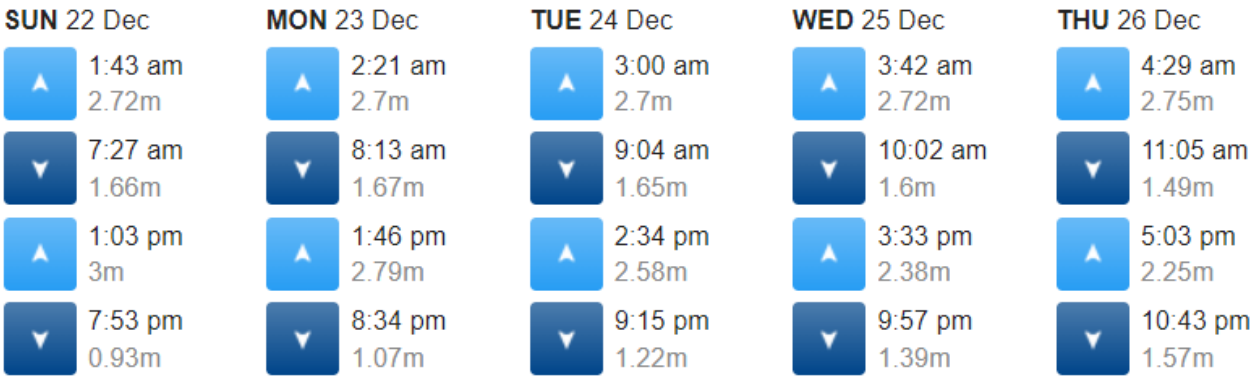
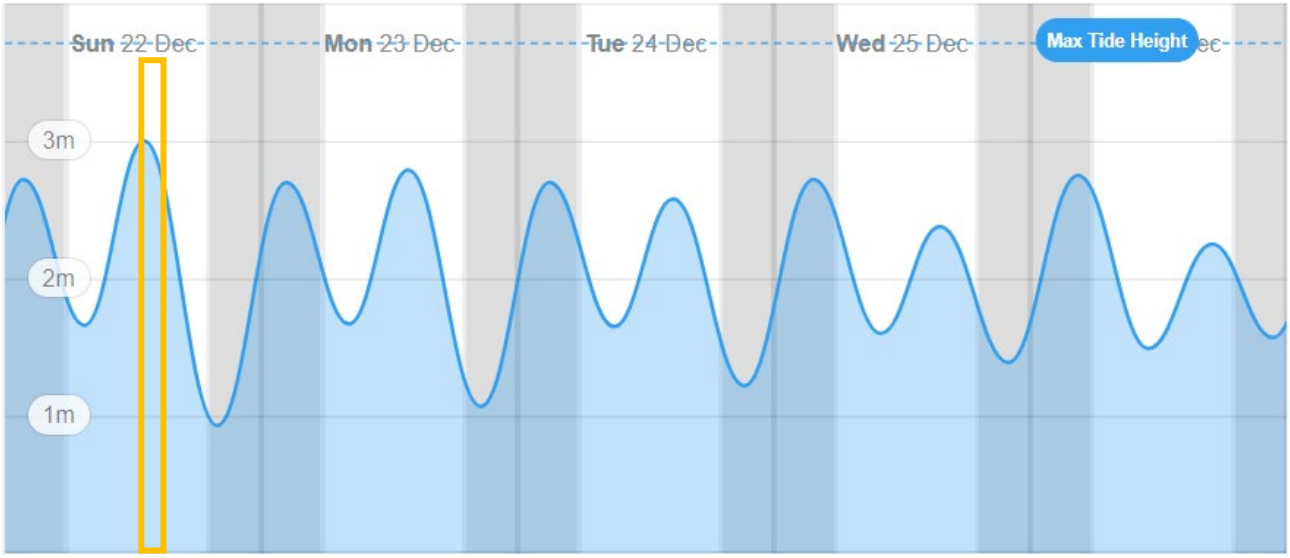


Figure 10 Tide Times from 22 to 26 December 2024. Source: WillyWeather



Event time period

Figure 11 Tide height from 22 to 26 December 2024.

The Australian Institute of Marine Science (AIMS) developed a hydrodynamic model of Melville Bay to assess the dilution and dispersion of the seawater channel discharge into inner Gove Harbour and Melville Bay (AIMS, 2020). The model predicted a minimum dilution rate of 1:25 for the three MZB compliance sites SW9, SW10 and RR2 at a discharge rate of 10,500 m^3/h. Concentrations at the MZB during the event are conservatively predicted by applying the minimum dilution rate from the hydrodynamic model at the MZB of 1:25 to S001 data (Appendix B, Table A5). The predicted concentrations of dissolved Al at the MZB sites are presented in Figure 12.

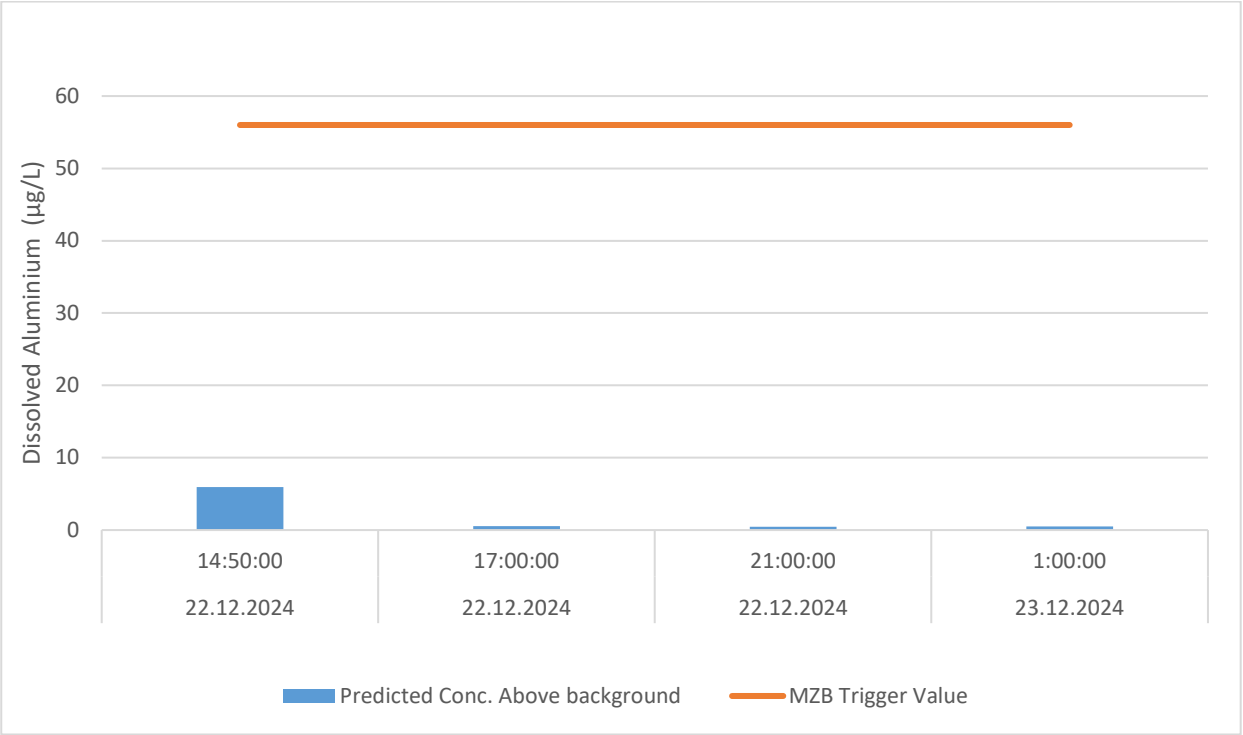


Figure 12 Predicted concentration of dissolved aluminium (above background) at the marine mixing zone boundary based on S001 concentrations from investigative samples.

From the Marine Health Monitoring Program (MHMP) data base, background concentration for dissolved Al in Melville Bay is 1.7 µg/L (80th percentile for the previous 24 months monthly samples). Predicted concentrations are above the background concentrations. Predicted concentrations of dissolved Al for the marine sites plus background concentrations are all substantially lower than TV's in the Licence for the MZB. Similarly predicted concentrations for dissolved As and V are well below corresponding TV's (Table A8).

Conclusion

The results of the investigation sampling confirmed turbidity was the only parameter to exceed a Licence Limit for the event sample taken at S001 at 14:50 PM on 22 December 2024, returning 133 NTU. Follow up samples taken after the event, returned a result of 5.4 NTU within 1.5 hours. This confirms that the spike was due to a pulse event with minimal impact.

Overall, the data demonstrates that there was no environmental impact expected from the WCP overtopping on 22 December 2024.

References

Australian Institute of Marine Science, 2020, *Assessment of seawater channel dilution in inner Gove Harbour for development of discharge Trigger Values*. Report to Rio Tinto Aluminium Gove.

Appendix A – Analytical Results Tables

Table A2 Water quality results for site S004 seawater intake location from 22 to 25 December 2024 (onsite analysis).

Daily Operational Samples at site S004 Samples retrieved at 08:00 Hrs		22/12/2024	23/12/2024	24/12/2024	25/12/2024
Environmental Parameters					
Ph		8.21	8.17	8.17	8.14
Electrical Conductivity	ms/cm	50.9	49.2	50.5	51.6
Turbidity	NTU	4.67	7.94	3.76	2.43
Alkalinity	mg/L	132.8	121.9	125.3	123.3
Dissolved Metals & Metalloids					
Aluminium	µg/L	9.28	13.85	9.49	8.81
Arsenic	µg/L	2.43	2.31	2.32	1.98
Gallium	µg/L	0.52	0.38	0.31	0.26
Manganese	µg/L	1.49	1.18	1.71	1.72
Molybdenum	µg/L	10.85	10.52	11.04	10.76
Vanadium	µg/L	4.87	4.75	4.16	3.35

Table A3 Daily Authorised Monitoring Site S001 Outfall Monitoring Station water quality results – 22 to 25 December 2024 (Onsite Analysis).

Daily Compliance Samples – S001 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	22/12/2024	23/12/2024	24/12/2024	25/12/2024
Environmental Parameters							
Ph		9	9.5	8.8	8.15	8.78	8.73
Electrical Conductivity	ms/cm	-	-	53.7	51.4	50.2	50.9
Turbidity	NTU	75[t]	100	9.60	4.06	9.93	8.30
Alkalinity	mg/L	-	-	369	127	377	356
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	18.72	14.69	22.71	20.45
Arsenic	µg/L	-	200	20.50	2.49	13.80	12.50
Gallium	µg/L	-	8000	13.97	0.52	10.84	9.88
Manganese	µg/L	-	-	3.75	1.22	3.54	3.80
Molybdenum	µg/L	-	38800	36.03	10.93	29.66	29.20
Vanadium	µg/L	-	1000	66.50	5.36	45.25	41.92

Table A4 Daily water quality results – 24 hour Composite sample at Authorised Monitoring Site S074 – 22 to 25 December 2024 (Onsite Analysis)

Daily Compliance Samples – S074 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	22/12/2024	23/12/2024*	24/04/2024	25/12/2024
Environmental Parameters							
Ph		9	9.5	8.87	8.56	8.79	8.84
Electrical Conductivity	ms/cm	-	-	45.79	48.90	47.59	48.79
Turbidity	NTU	75[ǂ]	100	24.4	36.70	9.35	35.40
Alkalinity	mg/L	-	-	329	180	258	319
Total Suspended Solids	mg/L	-	-	35.5	46.5	17.5	61.3
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	17.72	29.03	15.74	17.70
Arsenic	µg/L	-	200	14.02	7.77	9.46	12.33
Gallium	µg/L	-	8000	9.36	3.27	6.26	8.64
Manganese	µg/L	-	-	2.75	2.24	2.71	3.47
Molybdenum	µg/L	-	38800	28.31	15.99	24.08	29.62
Vanadium	µg/L	-	1000	46.05	31.23	31.77	42.90

* Composite sample from channel water quality from 8am 22/12/2024 to 8am 23/12/2024, capturing WCP overtopping period.

Table A5 Event based external water quality results – Authorised Monitoring Site S001 Outfall Monitoring Station – 22 and 23 December 2024 (External Analysis – NATA accredited laboratory).

Investigative / Event samples – S001		*S001 Trigger value*	*S001 Limit*	22/12/2024	22/12/2024	22/12/2024	23/12/2024
			Time	14:50	17:00	21:00	01:00
Environmental Parameters							
Ph		9	9.5	8.20	8.03	8.07	8.06
Electrical Conductivity	µs/cm	-	-	48100	51000	51200	51200
Turbidity	NTU	75[t]	100	133	5.4	3.6	2.9
Total Alkalinity	mg/L	-	-	142	123	130	128
Total Suspended Solids	mg/L	-	-	79	9	9	6
Metals & Metalloids							
Dissolved Aluminium	µg/L	-	560	149	14	11	12
Dissolved Arsenic	µg/L	-	200	24.3	2.0	2.2	2.3
Dissolved Gallium	µg/L	-	8000	<10	<10	<10	<10
Dissolved Iron	µg/L	-	-	6	6	<5	<5
Dissolved Manganese	µg/L	-	-	1.8	1.3	1.3	0.9
Dissolved Molybdenum	µg/L	-	38800	10.8	8.1	10.2	8.5
Dissolved Vanadium	µg/L	-	1000	2.3	2.2	2.2	2.0
Total Aluminium	µg/L	-	-	3690	109	60	72
Total Arsenic	*µg/L*	-	-	32.8	2.5	2.1	2.7
Total Gallium	*µg/L*	-	-	<10	<10	<10	<10
Total Iron	*µg/L*	-	-	2100	70	52	59
Total Manganese	*µg/L*	-	-	8.3	2.5	1.7	2.2
Total Molybdenum	*µg/L*	-	-	14.0	11.7	10.9	12.1
Total Vanadium	*µg/L*	-	-	184	5.5	4.3	6.2
Nutrients							
Total Dissolved Phosphorus	µg/L	-	140	28	14	12	12
Total Dissolved Nitrogen	µg/L	-	1700	200	150	190	140
Hydrocarbons							
Total Petroleum Hydrocarbons	µg/L	-	-	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	-	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	-	<1	<1	<1	<1
Toluene	µg/L	-	-	<2	<2	<2	<2
Ethylbenzene	µg/L	-	-	<2	<2	<2	<2
Xylene	µg/L	-	-	<2	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

Table A6 Event based internal water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 22 December 2024 (onsite analysis).

Event Operational samples - S001 Analysed onsite		S001 Trigger value	S001 Limit	22/12/2024	22/12/2024	22/12/2024	23/12/2024
			Time	14:50	17:00	21:00	01:00
Environmental Parameters							
pH		9	9.5	8.38	8.43	8.41	8.38
Electrical Conductivity	ms/cm	-	-	47.2	49.5	49.4	50
Turbidity	NTU	75[t]	100	166	9.51	6.65	5.77
Alkalinity	mg/L	-	-	149.1	123.9	131.8	128.4
Dissolved Aluminium	µg/L	-	560	222	21	15	17
Dissolved Arsenic	µg/L	-	200	29.9	2.9	2.7	3.0
Dissolved Gallium	µg/L	-	8000	4.30	0.35	0.59	0.60
Dissolved Iron	µg/L	-	-	10.00	1.52	2.14	2.00
Dissolved Manganese	µg/L	-	-	1.6	1.24	1.38	1.37
Dissolved Molybdenum	µg/L	-	38800	12.7	11.0	11.0	11.0
Dissolved Vanadium	µg/L	-	1000	208	6.9	5.41	7

This data is event based – it does not form part of the WDL monitoring program.

Table A7 Event based external water quality results – Western Containment Pond site S030 – 22 December 2024 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S030		22/12/2024 14:30	22/12/2024 16:30
Environmental Parameters			
pH		10.1	9.89
Electrical Conductivity	µs/cm	791	634
Turbidity	NTU	3480	1460
Alkalinity	mg/L	383	288
Total Suspended Solids	mg/L	726	566
Metals & Metalloids			
Dissolved Aluminium	µg/L	3180	2700
Dissolved Arsenic	µg/L	423	320
Dissolved Gallium	µg/L	14	11
Dissolved Iron	µg/L	256	231
Dissolved Manganese	µg/L	5.4	2.7
Dissolved Molybdenum	µg/L	31.9	25.3
Dissolved Vanadium	µg/L	2720	2160
Total Aluminium	µg/L	76000	45100
Total Arsenic	µg/L	396	302
Total Gallium	µg/L	65	44
Total Iron	µg/L	27000	15500
Total Manganese	µg/L	128	63.9
Total Molybdenum	µg/L	17.9	14.9
Total Vanadium	µg/L	2850	2220

Table A8 Investigative water quality results - Marine Mixing Zone (MZB) sites – 22 and 23 December 2024 (External Analysis - NATA accredited laboratory).

		MZB Trigger Values	22/12/2024	22/12/2024	22/12/2024	23/12/2024	23/12/2024	23/12/2024
			SW9	SW10	RR2	SW9	SW10	RR2
		Time	18:26	18:22	18:19	08:21	08:12	08:15
Environmental Parameters								
pH		7.7 – 8.4	8.06	8.04	8.09	8.04	7.99	8.05
Electrical Conductivity	µS/cm	-	51400	51100	51200	51800	51500	51500
Total Suspended Solids (SS)	mg/L	-	10	<5	<5	<5	<5	5
Turbidity	NTU	20	2.3	2.2	1.4	0.9	1.2	1.2
Alkalinity	mg/L	-	124	121	126	122	121	122
Metals and Metalloids								
Dissolved Aluminium	µg/L	56	<5	8	6	<5	<5	5
Dissolved Arsenic	µg/L	20	2.5	2.4	2.4	2.0	1.6	1.9
Dissolved Gallium	µg/L	800	<10	<10	<10	<10	<10	<10
Dissolved Iron	µg/L	-	<5	<5	<5	<5	<5	<5
Dissolved Manganese	µg/L	-	<0.5	0.9	0.6	1.1	1.0	1.0
Dissolved Molybdenum	µg/L	3880	8.2	8.2	9.8	9.0	9.2	8.4
Dissolved Vanadium	µg/L	100	3.4	6.7	3.8	3.5	2.7	3.2
Nutrients								
Total Dissolved Phosphorus	µg/L	14	14	13	12	11	14	11
Total Dissolved Nitrogen	µg/L	170	130	130	130	130	130	130
Hydrocarbons								
Total Petroleum Hydrocarbons	µg/L	-	<50	<50	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	<1	<1	<1	<1	<1	<1
Toluene	µg/L	-	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	-	<2	<2	<2	<2	<2	<2
Xylene	µg/L	-	<2	<2	<2	<2	<2	<2

Appendix B – Photographic Log of upstream surface water and erosion & sediment mitigation measures related to the WCP and refinery catchments



Figure 13 Rock Drain at western entrance to WCP ramp lined with coir logs, aiming to reduce flow velocities and allow sediment to settle.



Figure 14 Desilted & cleaned WCP northern drain with protective ballast material aiming to reduce flow velocities and allow sediment to settle.



Figure 15 Silt fence and limestone along the WCP northern drain and entrance to the WCP



Figure 16 Rock drain between retention basin in Area 661 & WCP



Figure 17 Sediment buildup removed, walls stabilized and rock drain created at retention basin in SW Area 662 (Scrapyard).



Figure 18 Earth bund diverting water runoff to the retention basin in SW Area 662 (Scrapyard)



Figure 19 Desilting of Southern Containment Pond during the 2024 dry period



Figure 20 Pumping of potentially contaminated water from the cooling tower sumps (Nov 2024) to the containment pond for redistribution to the RDA



Figure 21 Road 15, Area 653 rock checks and coir logs on each drain pit which drains to the WCP. Aims to slow and reduce sediment flow & velocity.



Figure 22 Rock check and silt fencing located at drainage point adjacent to the northern seawater channel inlet. Aims to protect the spoon drain adjacent to the seawater channel that diverts stormwater to the WCP.



Figure 23 Coir logs placed around drain inlets adjacent to the seawater channel along Road 3, Area 720.

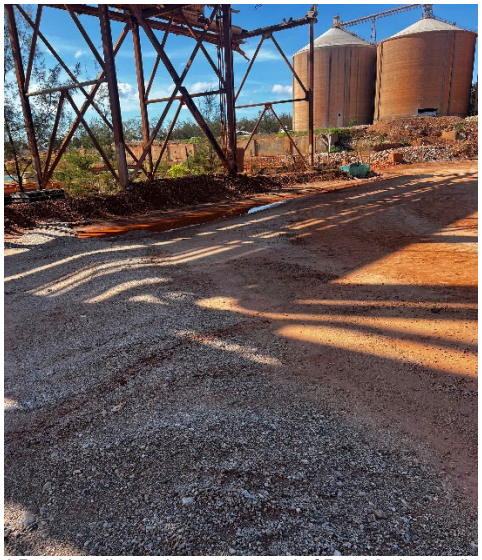


Figure 24 Road bunding at the northern end of Road 3 aims to divert potentially contaminated water flow back towards the WCP catchment and away from drain inlets adjacent to seawater channel.

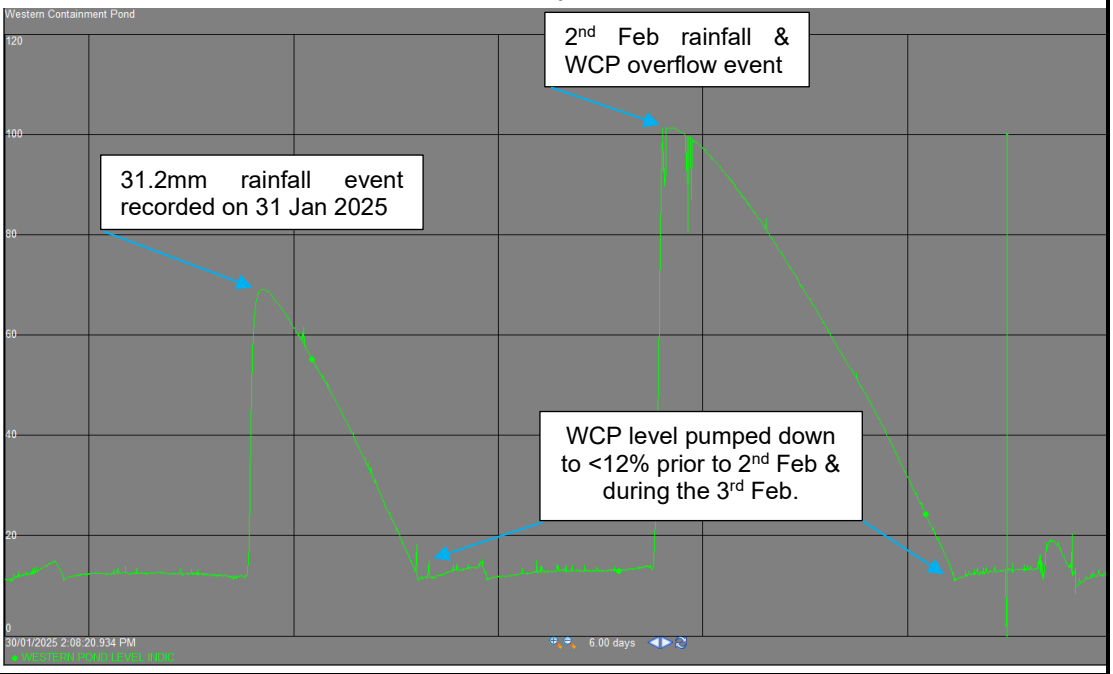
Notification of Environmental Incident

All notifiable incidents are to be reported in accordance with section 225 *Environment Protection Act 2019*

☒ Incident ☐ Critical Incident ☐ Preliminary ☒ Final

Incident details	
Incident number	**3667102533_65918**
Name of mining site	Rio Tinto - Gove operations
Licence number *If not known, provide Authorisation number*	WDL171-12 *0035-02 Authorisation*
Name of operator:	RTA Gove Pty Limited
Date & time of incident *And / or when you first became aware of it*	Detection Date: 2/02/2025 Time: 19:14 AM
	Incident Date: 2/02/2025 Time: 19:14 PM
Name of person notifying	Andrew Carmichael
Position/Title	Environment Superintendent
Contact person	Andrew Carmichael
Contact details	Business: 08 8987 5233 Mobile: 0467 946 163
	E-mail: andrew.carmichael@riotinto.com
Incident location *Use GPS co-ordinates, attach map, etc. as appropriate*	Latitude -12.188147 Longitude 136.685306  WCP Overflow weir location into Seawater Channel
Incident description	Overflow of Western Containment Pond (WCP) into the Seawater Channel resulting in discharge via S001 (Schedule 1, Item 10 (f)).

<table>
<tr><td>Attach photographs etc.</td><td colspan="4"></td></tr>
<tr><td>Nature of actual / potential impact
Volume of material (L, m3), area impacted (ha, m2), flora and fauna affected, erosion, duration of incident, etc. as relevant</td><td>A storm cell brought heavy rainfall of 33.4mm within an hour in the lead up to the event, with 47.6mm recorded over three hours (17:00 to 20:00 PM). A total of and 78.8mm of rainfall was recorded over a 51-hour period from 17:00 PM on 31 January to 20:00 PM on 2 February 2025.
Overflow from the WCP into the seawater channel commenced at approximately 19:14 PM and ceased at approximately 20:40 PM on 2 February.
Overall, the data demonstrates that there was no material environmental impact expected from the WCP overtopping on 02 February 2025.
Refer to EIA for further details.</td><td>Volume</td><td>NA
NA</td><td>m^3
L</td></tr>
<tr><td></td><td></td><td>Area</td><td>NA
NA</td><td>m^2
ha</td></tr>
<tr><td></td><td></td><td>Duration</td><td>1 hour, 26 minutes</td><td>hours</td></tr>
<tr><td>Immediate action taken
i.e., spill contained / stopped / location of disposal</td><td colspan="4">Immediate corrective actions implemented to minimise the risk of overtopping included;
Implementation of the Trigger Action Response Plan (TARP); WWNP shut down, responsive monitoring and Marine monitoring conducted;
WWNP was shutdown when the WCP reached 90% at approximately 19:00 PM as per the TARP.
Continual operation of the WCP pumps to reduce the volume and pond levels across the refinery.
Both sea water pumps remaining in operation.
Further corrective actions included immediate inspection and maintenance of erosion and sediment controls (ESCs), and surface water management controls across the refinery footprint, upstream of the WCP. Implementation of additional surface water and ESCs will also currently being assessed.
During an extended dry period, and in preparation to this recorded rainfall event (between 23rd December to 31st January), surface water and ESCs across the refinery footprint were maintained, and all surface water held within the refinery footprint was removed to maximise holding capacity in secondary basins. To remove potential sources of contamination, such as water held in footprints of demolished tanks, a pumping strategy was also implemented for water to be removed from the refinery, via the containment ponds, and pumped out to the RDA.
The ultimate medium-term corrective action remains the demolition of the refinery and decontamination of the catchment. The demolition of the refinery has commenced and is over 50% progressed. Work to decommission and remove the WCP is scheduled to commence in 2025. The wider catchment is scheduled to be decontaminated and converted to clean stormwater catchment by 2026.</td></tr>
</table>

Environmental details	
Emergency and remedial action taken	• The WWNP has been shutdown since approximately 19:00 PM on 2nd February as WCP capacity reached 90%, as per the TARP. • WCP pump continued to operate until pond levels are reduced to <15% (optimum sump pump level). • Inspection and maintenance of erosion and sediment controls and surface water management controls across the refinery in preparation of future rainfall events.
Current situation *Potential / ongoing / ceased etc. Include current location of contaminated material*	The WCP overtopping event commenced at 19:14 PM and ceased at approximately 20:40 PM on the 2 February 2025. A total duration of 1 hour and 26 minutes. The WWNP was shutdown when the WCP reached 90% capacity 19:00 PM prior to the WCP overtopping. The containment pond pumps remained operational throughout the event and WCP levels returned to below 50% on 3 February 2025. 
Details of any samples taken *When / where / type / number / time for availability of results etc. Include plans of sampling locations where possible*	Samples and the compliance monitoring program in place; • A sampling regime at the WCP and S001 commenced at 20:05 PM during the event and was impacted by severe weather (lightning) which prohibited sampling from commencing earlier. • Continuous monitoring at S001 remained in operation. • Daily sample at S001. • Daily composite sample at S074 • Marine incident investigation sampling at RR2, SW9 & SW10 compliance sites was completed at approximately 09:00 AM on the 3 February 2025.
Future actions (if any) including	Update of the certified erosion and sediment control plan (ESCP) to manage the interim landform of the refinery as it is being demolished.

timeframe			
Operator internal reporting			
Has the incident been reported internally? *If so, to whom*	YES ☒ NO ☐		
Name	Henry Hemana		
Position	Water treatment Superintendent (acting)		
Operator reference number *Where applicable / available*	NA		
Has the department been notified earlier?	YES ☒ NO ☐		
Who was notified	Chris Combes		
How *(phone / email)*	Phone call and follow email with initial notification.		
When *(date and time)*	Phone call on 3/02/2025 at 9:20 AM, and email on 3/02/2025 at 14:00 PM		
By whom	Andrew Carmichael		
Signed	*Andrew Carmichael*	Date & Time	20 February 2025, 08:25 AM
Name	**Andrew Carmichael**	Position	Environment Superintendent

Forward completed form to:
Mining Division
Department of Environment, Parks & Water Security
Email: mineralinfo.DEPWS@nt.gov.au

Environmental Impact Assessment

Event #3667102533_65918

02 February 2025

Executive Summary

Compliance monitoring and investigative (event based) sampling was conducted in response to the Western Containment Pond (WCP) overtopping into the Seawater Channel on 02 February 2025 following a heavy rainfall event across the Gove peninsula. The over topping of the WCP occurred for 1 hour and 26 minutes from 19:14 PM to 20:40 PM.

The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC and continuous operation of the autosampler (S074) to retrieve a composite sample.

The event was reported as #3667102533_65918 to the Department of Lands, Planning and Environment (DLPE) on 03 February 2025. Immediate corrective action included continual operation of WCP pumps, implementation of the Trigger Action Response Plan (TARP); the Waste Water Neutralisation Plant (WWNP) was shutdown, and both sea water pumps remained operational. Overall, the data demonstrates that there was no material environmental impact from this event.

The ultimate medium-term corrective action remains to complete demolition of the refinery and decontaminate the catchment, converting it to a clean stormwater catchment. The decommissioning and removal of the Western Containment Pond (WCP) is set to begin in 2025. As the demolition, decontamination, and disposal (DDD) project progresses, including detailed Contamination Site Assessment (CSA) and rehabilitation land forming, additional preventative and mitigation measures have been implemented to manage stormwater and sediment flow to the WCP. The Gove environment team continues to work closely with the Refinery demolition team as the DDD project further progresses to ensure continued effectiveness of mitigation and control measures.

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GLOSSARY

COPC	Contaminants of Potential Concern
LOR	Limit of reporting
MZB	Mixing Zone Boundary
RDA	Residue Disposal Area
NSNL	Neutralised Supernatant Liquor
SCP	Southern Containment Pond
STP	Sewerage Treatment Plant
TARP	Trigger Action Response Plan
TDN	Total Dissolved Nitrogen
TDP	Total Dissolved Phosphorous
TV	Trigger Value
UPS	Uninterrupted Power Source
WCP	Western Containment Pond
WDL	Waste Discharge Licence 'The Licence'
WWNP	Waste Water Neutralisation Plant

Introduction

A heavy rainfall event was experienced across the Gove Peninsula on 02 February 2025. The Stockpile Creek Rainfall Gauge recorded 47.6 mm of rainfall over a 3-hour period between 17:00 PM to 20:00 PM on the 02 February 2025. A total of 78.8 mm of rainfall was recorded over a 51-hour period from 18:00 PM on 31 January 2025 to 20:00 PM on 2 February 2025.

The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in stormwater overtopping the WCP weir into the seawater channel. Overflow from the WCP commenced at approximately 19:14 PM. The Waste Water Neutralisation Plant (WWNP) was shutdown at 19:00 PM as per the TARP. The WCP ceased overtopping its weir into the seawater channel at approximately 20:40 PM on 02 February 2025. Total duration of discharge from the WCP into the seawater channel was 1 hour and 26 minutes.

Treated water from the Sewage Treatment Plant (STP) was intermittently discharging between the channel and a rehabilitation area for irrigation at the time of the overflow.

Operational and investigative (event based) samples were collected from Authorised Outfall Monitoring Station (S001) and Western Containment Pond (S030). A sampling event from the marine mixing zone boundary (MZB) sites (SW9, SW10 and RR2) was undertaken on the morning of 03 February 2025 following the cessation of the WCP overtopping into the seawater channel. These results combined with the daily composite sample (S074) results provide the evidence to assess any impact from the event on the receiving environment.

Mitigation Measures

As the refinery demolition, decontamination and disposal (DDD) project progresses on multiple work fronts, mitigation measures have been implemented to divert, reduce and slow down stormwater and sediment reporting to the WCP and other containment ponds across the refinery. Decontamination activities over the 2024 dry season have also aimed to remove known contamination sources from the upstream refinery footprint in preparation for the 2024-25 wet season. This strategy of removing source material and diverting water has continued through the early part of 2025 as work fronts within the DDD footprint advance with concrete footing removal. As a concurrent contaminated site assessment (CSA) and rehabilitation program of the site continues the mitigation measures will also evolve throughout the remainder of the project. Upon completion of the DDD activities across the refinery catchments, the ultimate medium-term corrective action remains the scheduled conversion to a clean stormwater catchment; with the decommissioning and removal of the Western Containment Pond (WCP) due to commence in 2025.

Post the 2023-24 wet season, improvements have been implemented to minimise the volume of water reporting to the Western Containment Pond (WCP). Figure 1 [Left] shows the location of the WCP, and associated changes made to the refinery catchments prior to the commencement of the 2024-25 wet season are shown in Figure 1 [Right].

The following combination of temporary erosion and sediment control measures to reduce the volume and stem the flow of water entering the WCP remain in place and are effective. Routine inspections have been utilised to monitor effectiveness of controls and address defects (Appendix C).

Surface water and drainage control

Flow diversion banks and drains have been implemented to divert surface waters away from active work areas to minimise contamination of water flowing into the WCP.

- The demolition and decontamination of areas 633, 645, 646, 649, 652, 653, 655, and 657, 662, 723 and 724 has removed high pH materials from the WCP catchment (Figure 1, right).
- Earth bunds have been placed in areas to minimise runoff reporting to WCP, by diverting flow to other areas with capacity such as newly installed retention basins within the SCP or ECP catchments (Figure 1, right).
- Other catchment diversions include areas immediately west of the WCP which previously drained to the WCP. Recontouring of the area, and bunds located at the eastern and western boundary of scrapyard and oxy-cutting areas, southern fence line and moxy parking area divert flow to a large retention basin south of the WCP (Appendix B, Figure 17 & Figure 18).
- Earth bund installed around demolished calcination structure to contain light materials such as refractory bricks and synthetic mineral fibres (SMF) aim to contain flow and sediment loss to the WCP (Appendix B, Figure 16).
- Earth bund on southern and western corner of Area's 653, 657 installed (Figure 1, right) to prevent surface runoff flowing towards drains that report to the WCP (Appendix B, Figure 21).

A certified erosion and sediment control plan (ESCP) to manage the interim landform across the WCP, ECP and SCP catchment is currently being updated by. The ESCP includes landform shaping and additional retention basins within the WCP catchment.

Erosion control and surface stabilisation

Erosion control and stabilisation measures including environmentally certified & natural polymer binder and soil stabiliser (Dustex) have been applied to bunds and inactive areas across the upstream work fronts of the refinery.

Sediment control

Sediment fences, rock checks and coir logs have been installed to slow and trap sediment as close to the source as practicable.

- The installation of sediment fence and improved rock checks at WCP inlets (West inlet drain, Figure 13, and North drain, Figure 14 & 15) aims to improve quality of water inflow and reduce the velocity of flow and drainage reporting to the WCP.
- Silt fence installed on northern boundary of Area 662 (scrapyard).
- Coir logs, rock drain and silt fence installed between Area 653 and 710 and entrance to seawater channel.
- Coir logs placed at drainage pits along Road 6,15 and 24 to help reduce flow and minimise sediment reporting to the WCP (Figure 21 & 22). Inspections of these controls since the 2024-25 wet season commenced has triggered cleaning and removal of sediment build up from these drain inlets to the WCP after the rainfall recorded from 31 January to 2 February 2025.

Sediment basins

Water captured in sediment/retention basins during or following each storm/rainfall event are discharged directly into the containment ponds during dry periods to ensure capacity within the basin is available so far as reasonably practicable.

- Area 661 retention basin has been increased, resulting in increased catchment storage and slowing of surface water entering the WCP drainage system (Appendix B Figure 16). As the removal of structure footings, located in Area 661, commence towards the end of February, the holding capacity of stormwater and control of sediment within Area 661, immediately north of the WCP, is expected to increase and improve.
- The demolition of areas 645, 646, 723 and 724 which previously reported to the WCP are now contained and diverted to the Southern Containment Pond (SCP) reducing the WCP catchment area by 1.9 hectares (ha) (Figure 1). The total catchment area diverted away from the WCP is currently estimated to be 20.9 ha. A diversion of approximately 9% of the WCP catchment to the SCP. Catchment diversions throughout the remaining phases of the DDD and rehabilitation project are expected to adapt and change as work fronts progress.
- Sediment buildup removed, walls stabilised and improved rock drain created at retention basin in SW Area 662 (Scrapyard) (Appendix B Figure 17).

Dewatering basins and sumps

As part of the ongoing water management strategy and routine inspections carried out on the Refinery DDD project, contained water continues to be dewatered to the containment ponds between each rainfall event to maximise holding capacity of the catchments. Aerial imagery from 31 January 2025, shows minimal presence of contained water prior to the onset of the 51-hour rainfall event (Appendix D).

This strategy also aims to remove potentially contaminated water from the site at appropriate times. On the 23 January 2025, a routine inspection identified potentially contaminated water located in Area 653 and action was taken to remove the suspected contaminated source whilst dry conditions sustained (Appendix D).

Dewatering and removal of water and sediment build up activities undertaken prior to the onset of the wet season were undertaken to remove sources of potential contamination and increase holding capacity across the refinery.

- The three main containment ponds across the refinery (WCP, SCP and ECP) are routinely kept at low levels (between 10-12%) depending on the sump & pump requirements.
- Any sediment build up contained in the containment ponds is assessed on an annual basis, (Dry season), to determine desilting requirements.
- For the WCP the pond, the level is reduced to the lowest pumping level (<10%). If the sediment build up exceeds a nominal point, of >8% at the WCP northern ramp where sediment initially builds up from inflows, the sediment is removed from the entire pond during the dry season.
- Sediment inside the WCP was removed prior to the 2022-23 wet season. Prior to the 2023-24 and 2024-25 wet season it was determined that no desilting of the WCP was required.
- Sediment build up in the Western Containment Pond northern inlet drain was removed and cleaned prior to the 2023-24 and again prior to the 2024-25 wet season (Appendix B, Figure 14).
- Sediment in the SCP was desilted prior to the 2024-25 wet season (Appendix B Figure 19).
- The sediment basin which captures run-off from the Refinery Steel Stockpile area (southwest of the WCP) was re-profiled, re-armoured with rock at inflow points and desilted prior to the 2024-25 wet season.
- Other smaller areas of potentially contaminated sources e.g. sumps, are also pumped and directed to the containment ponds during dry periods for disposal at the RDA.
- A large sump which historically functioned as part of the Refinery cooling towers, which is located adjacent to the Western Seawater channel (Road 3, Area 720), opposite the WCP, was dewatered

in November 2024 in preparation of demolition activities. A pump is set up to maintain the ability to remove water after rainfall events (Appendix B, Figure 20).

Routine Inspections

A formalised routine inspection program for surface water, erosion and sediment controls effectiveness has been implemented on a weekly basis and daily when raining by the DDD project teams. This allows controls to be evaluated post rainfall event and rectification works conducted in preparation for the remainder of the 2024-25 wet season. Routine inspections carried out weekly and additionally when >25mm of rainfall is recorded. The following inspection reports are included in Appendix C.

- 25 January 2025 weekly inspection pre-overflow event.
- 01 February 2025 inspection triggered by >25mm of rainfall.
- 03 February 2025 inspection triggered by >25mm of rainfall.
- 08 February 2025 weekly inspection post rainfall.

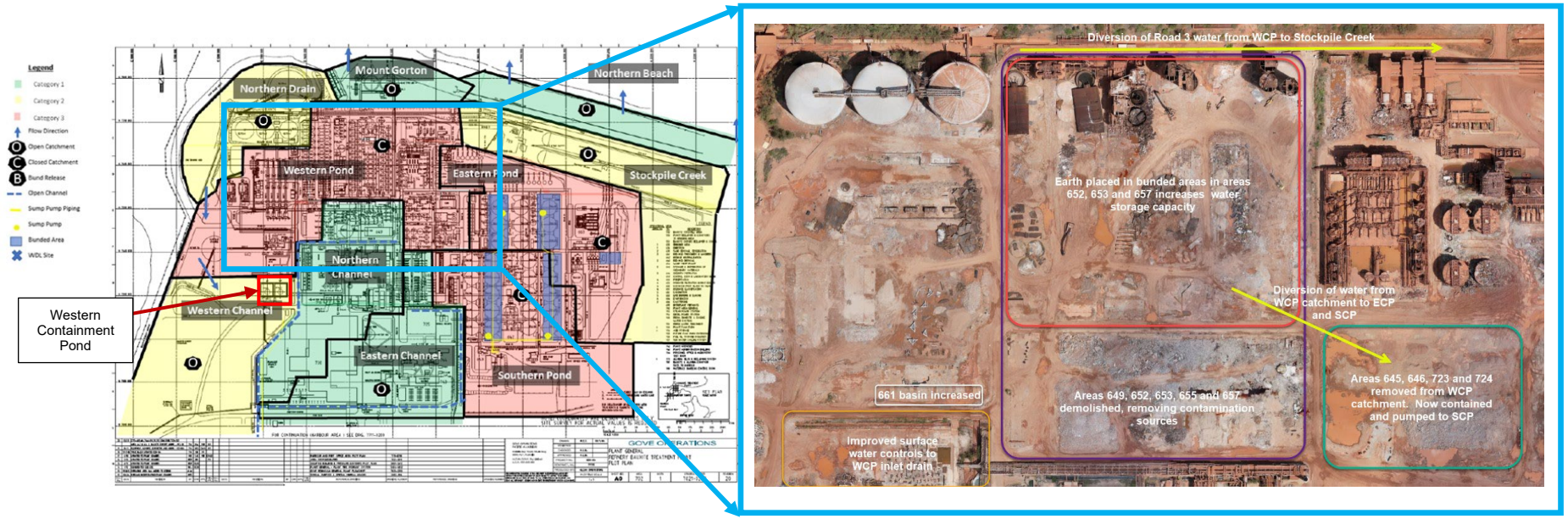


Figure 1 [Left] Refinery Catchments prior to 2023-24 wet season. [Right] Enlargement of boxed area showing aerial of bund outline to Refinery catchments commencement of 2024-25 wet season. There is still underground drainage along Road 15, Area 653 that still reports to the WCP. Sediment and flow control measures have been applied at each drain inlet aiming to slow and reduce sediment flow & velocity entering the WCP (See Appendix B, Figure 21).

Results

Tabulated results for event 3667102533_65918 are provided in Appendix A. Operational results are samples analysed at the onsite laboratory. Investigative results are samples analysed offsite at a NATA accredited laboratory.

Results for operational samples for the intake site at S004 are summarised in Appendix A, Table A2.

Results for the daily compliance samples taken at 08:00 AM for 02 to 05 of February 2025 at the Authorised Discharge Site S001 are summarised in Appendix A, Table A3.

An automatic water sampler collects a 50 mL sample every 20 minutes resulting in a composite sample every 24 hours. Composite sample results over a 24-hour period provide a comprehensive representation of discharge quality into the receiving environment during the WCP overtopping event, providing weighted average results. The site S074 composite sample results for the 02 to the 05 of February 2025 were analysed onsite and are summarised in Appendix A, Table A4.

Investigation event-based samples (NATA laboratory offsite) for the 02 February 2025 at Authorised Discharge site S001 are summarised in Appendix A, Table A5.

Results for event based internally analysed samples on the 02 February 2025 at S001 are summarised in Appendix A, Table A6.

Results for the externally analysed Western Containment Pond Site (S030) are summarised in Appendix A, Table A7.

Marine sites SW9, SW10 and RR2 were sampled on the 03 and 04 February 2025, the results summarised in Appendix A, Table A8.

Figure 2 shows hourly rainfall (mm) recorded at Stockpile Creek and WCP storage capacity (%) for the 02 February 2025. Figure 3 shows continuous monitoring of the Outfall monitoring Station Site (S001) for pH and EC.

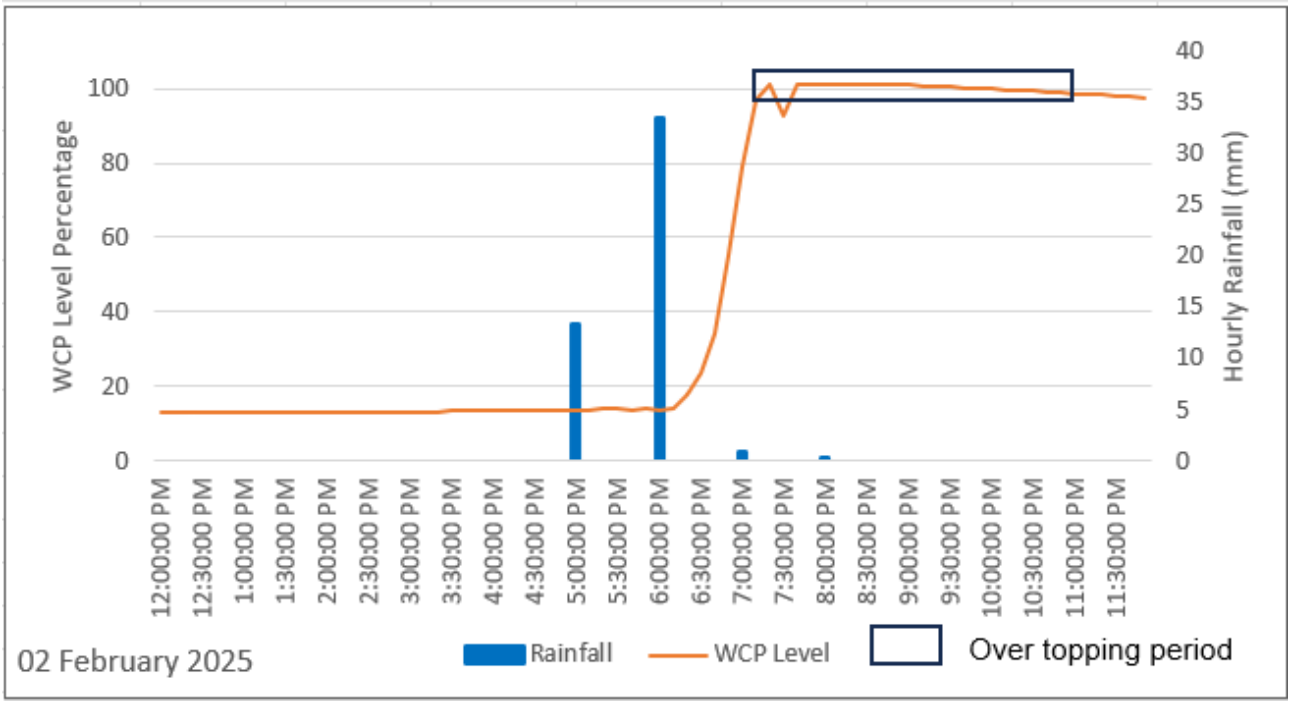


Figure 2 Measured hourly rainfall (mm) collected from Stockpile Creek Rain Gauge and WCP storage capacity (%) for the 02 February 2025.

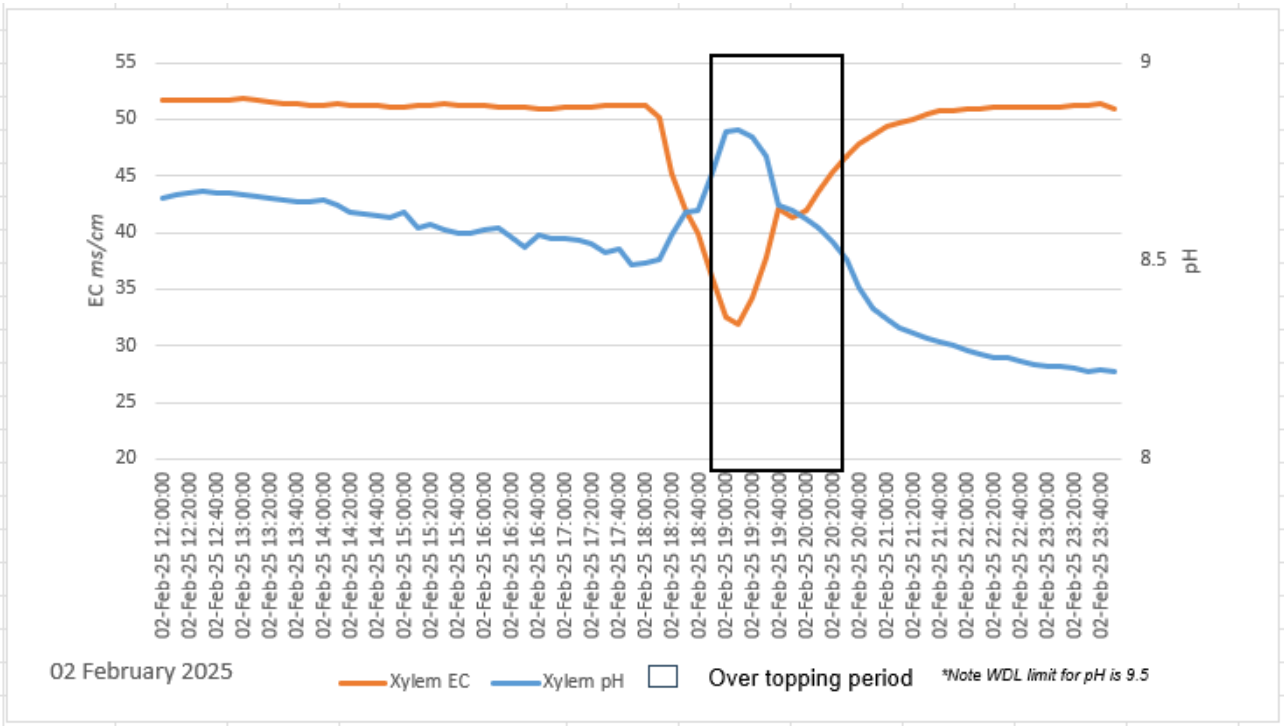


Figure 3 Continuous monitoring of pH and EC at the Outfall Monitoring Station (S001) on 02 February 2025.

Continuous monitoring of pH ranged from 8.22 – 8.82 during the period of 02 February 2025 as shown in Figure 3. Sample results retrieved as a part of the event sample regime on the 02 and 03 February 2025 showed pH results ranging from 8.05 - 8.56 throughout the overtopping event (Appendix A, Table A5). This is supported with the continuous data reporting no exceedance of the WDL pH TV (9.0) throughout the overtopping event.

Discussion

WWNP Operation

Figure 4 shows the duration in which the WWNP ceased operation and remained offline throughout the event on the 02 February 2025.

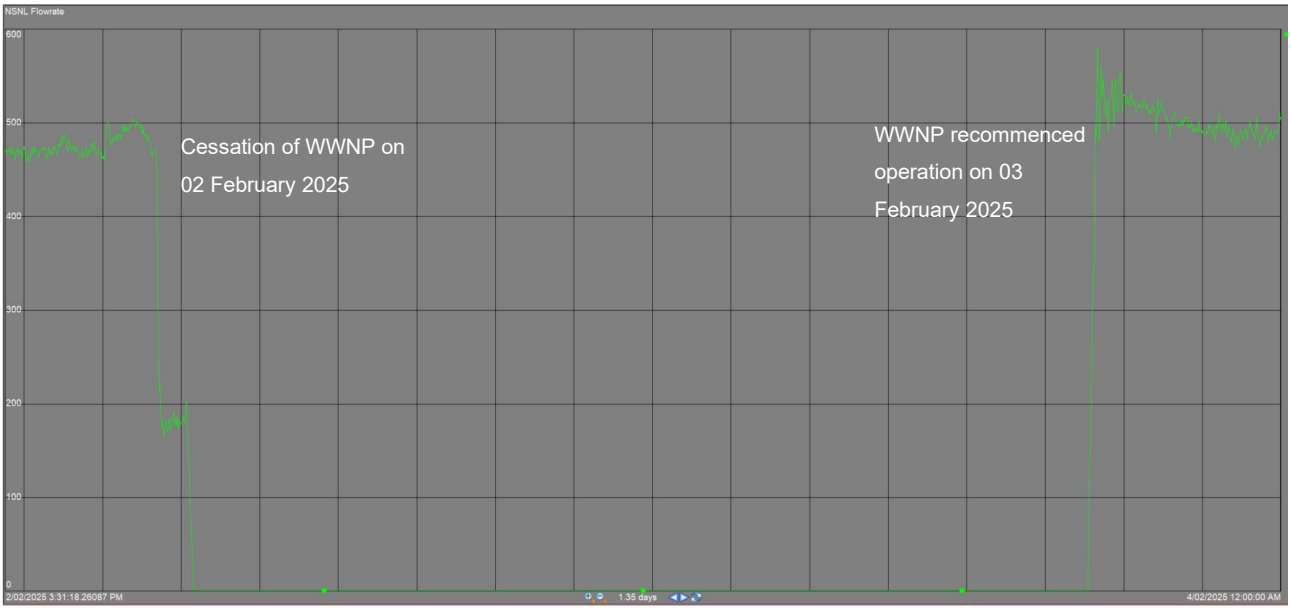


Figure 4 WWNP Operation 02 to 03 February 2025 ceasing operation on 02 February 2025 shown as Neutralised Supernatant Liquor (NSNL) flow rate (m3/hr) vs Time.

Alkalinity

Alkalinity concentrations are indicative of WWNP operation. Results for alkalinity concentrations from daily 08:00 AM operational (compliance) samples at site S001 for the period 02 to 05 February 2025 are summarised in Appendix A, Table A3. Alkalinity concentration on 02 February was at natural background seawater concentrations as WWNP was off-line.

WCP sample location

Water quality results of investigation samples (offsite analysis) for WCP site S030 are summarised in Appendix A, Table A7. Care should be taken when reviewing these results, as samples may not be representative of actual discharge of WCP water into the seawater channel. The sample location is collected from south-east corner of the WCP; therefore, this may not be representative of the discharge from the weir as shown in Figure 5. The location of the discharge weir is unable to be safely accessed for sampling.

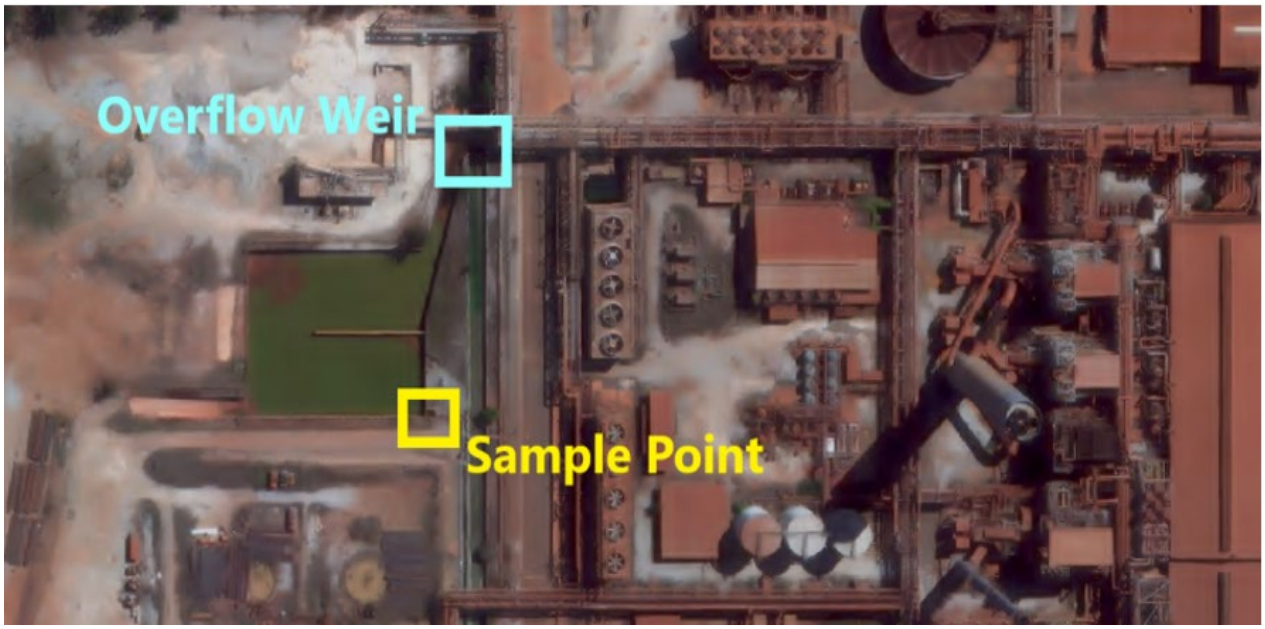


Figure 5 Sample point for the WCP site S030 is the pump located at the bottom of the pond, on the opposite side of the overflow weir location where discharge flows into the seawater channel.

Electrical Conductivity

Electrical conductivity (EC) is indicative of discharges of stormwater into the seawater channel. Background seawater has an EC of approximately 50 mS/cm. The seawater channel intake site S004 ranged from 50.6 mS/cm to 53.7 mS/cm for the period 02 to 05 February 2025. The outfall channel site S001 for the same period 02 to 05 February 2025 is also summarised in Table 1 (S001).

There is evidence of stormwater inputs into the channel from the WCP during the 02 February event. The EC value decreased to approximately 31.9 mS/cm at 19:20 on 02 February 2025 (Figure 3).

Table 1 Seawater channel intake site S004 and outfall channel site S001 showing EC from the 08:00 AM sample from 02 to 05 February 2025.

Date and Time	**EC (mS/cm) S004 intake**	**EC (mS/cm) S001 outfall**
02 February 2025 08:00	52.00	50.79
03 February 2025 08:00	50.59	51.09
04 February 2025 08:00	53.70	52.00
05 February 2025 08:00	52.09	53.70

Turbidity

Turbidity results from event-based samples from S001 during and following the WCP overtopping event on the 02 February 2025 are shown in Figure 6. Turbidity results from the external NATA accredited laboratory exceeded the S001 limit reaching 231 NTU during the WCP overtopping event. A strong correlation between the over topping event and an increase in turbidity at S001 is highlighted in Figure 6.

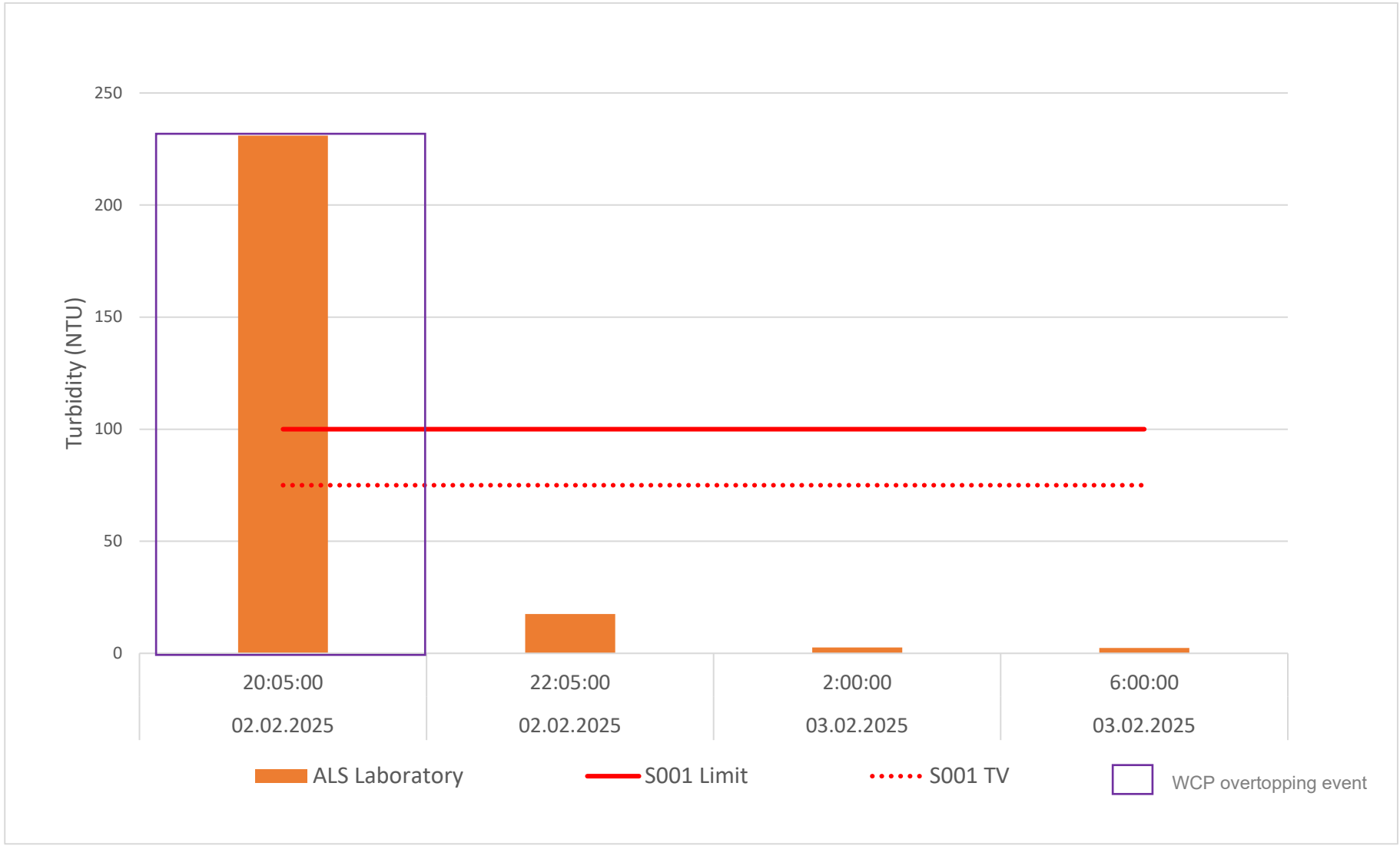


Figure 6 External NATA and internal laboratory Turbidity (NTU), for S001 investigative samples for 02 to 03 February 2025.

Nutrients

Treated water from the Sewage Treatment Plant (STP) was intermittently discharging between the channel and a rehabilitation area for irrigation at the time of the overflow.

Nutrient results taken from S001 on 03 February following the WCP overtopping event on 02 February 2025 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 03 February 2025, with the results summarised in Appendix A, Table A8 (NATA analysis).

Nutrient concentrations at S001 and the MZB sites were less than the Trigger Values for total dissolved nitrogen and total dissolved phosphorous and are not considered to impact overall environmental assessment.

Hydrocarbons

Hydrocarbon results from event-based samples from S001 during and following the WCP overtopping event on 02 to 03 February 2025 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 03 February 2025, with the results summarised in Appendix A, Table A8 (NATA analysis).

Hydrocarbon concentrations at S001 and the MZB sites were less than the laboratory limit of reporting (LOR) and considered to not be of concern.

Metals and Metalloids

Analysis of metals and metalloids at site S001 from investigative samples (NATA analysis) are summarised in Appendix Table A5 and Figures 7 and 8.

Investigation samples taken at S001 during the overtopping event on the 02 February 2025 recorded an elevated dissolved aluminium concentration of 46 µg/L during the overtopping event (Figure 7 & Table A5). This coincides with the observed large rainfall pulse event. The elevated concentration values were substantially lower than the Licence Limit of 560 µg/L. Successive samples taken from 02:00 AM, approximately 4 hours after the overtopping event ceased, decreased to 8 µg/L confirming the pulse event had ceased and that dissolved aluminum concentrations had decreased to background seawater concentrations.

Investigation samples taken at S001 on 02 February 2025 during the overtopping event showed elevated dissolved arsenic concentrations during the overtopping event with the concentration being 165 µg/L at 20:05 PM (Figure 8). The concentrations were less than Licence Limit of 200 µg/L. Once the WCP overtopping event ceased the dissolved arsenic decreased to background seawater concentration of 3.0 µg/L at 02:00 AM on 03 February 2025.

Dissolved vanadium concentrations increased during the overtopping event, with the 20:05 PM S001 sample recording a concentration of 786 µg/L, below the Licence Limit of 1000 µg/L. The concentration decreased approaching background concentration (4.7 µg/L) at 02:00 AM (Appendix A, Table A5).

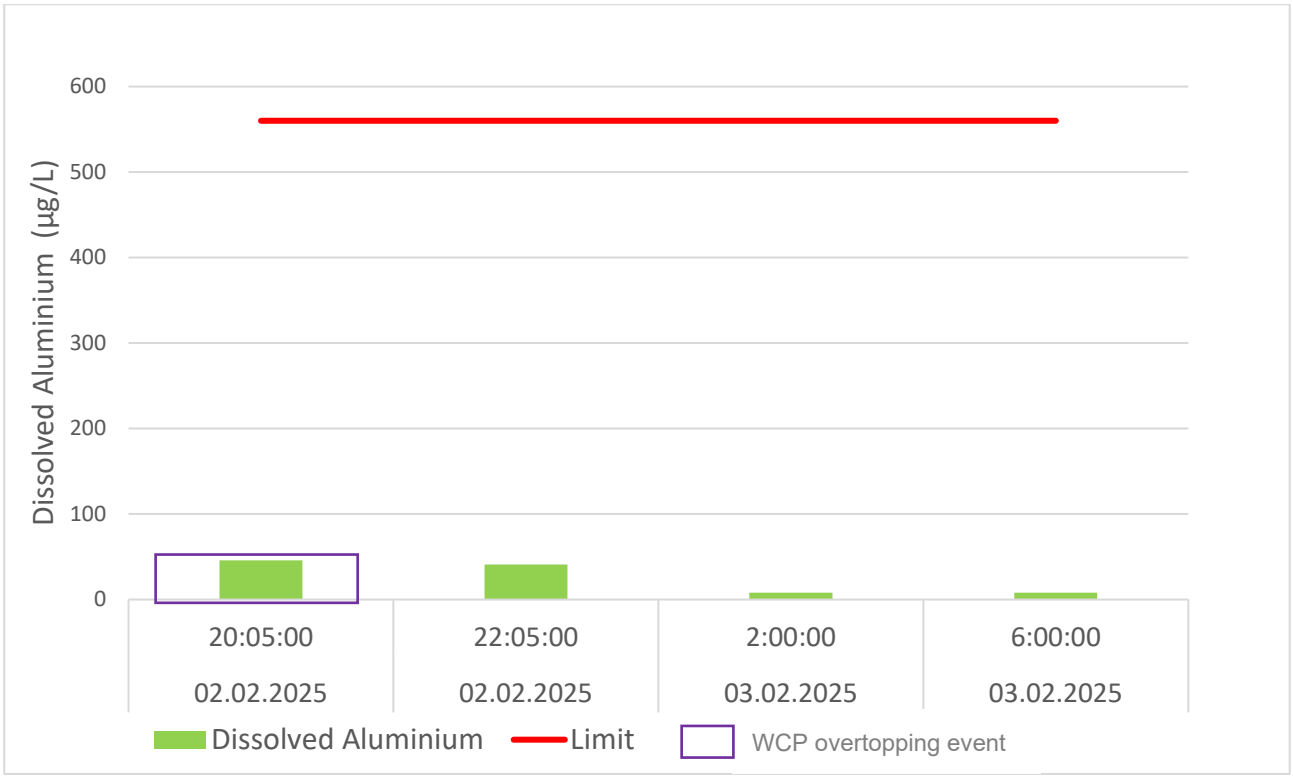


Figure 7 Dissolved aluminium (µg/L) and limit at S001 from event samples (NATA analysis) from 02 to 03 February 2025.

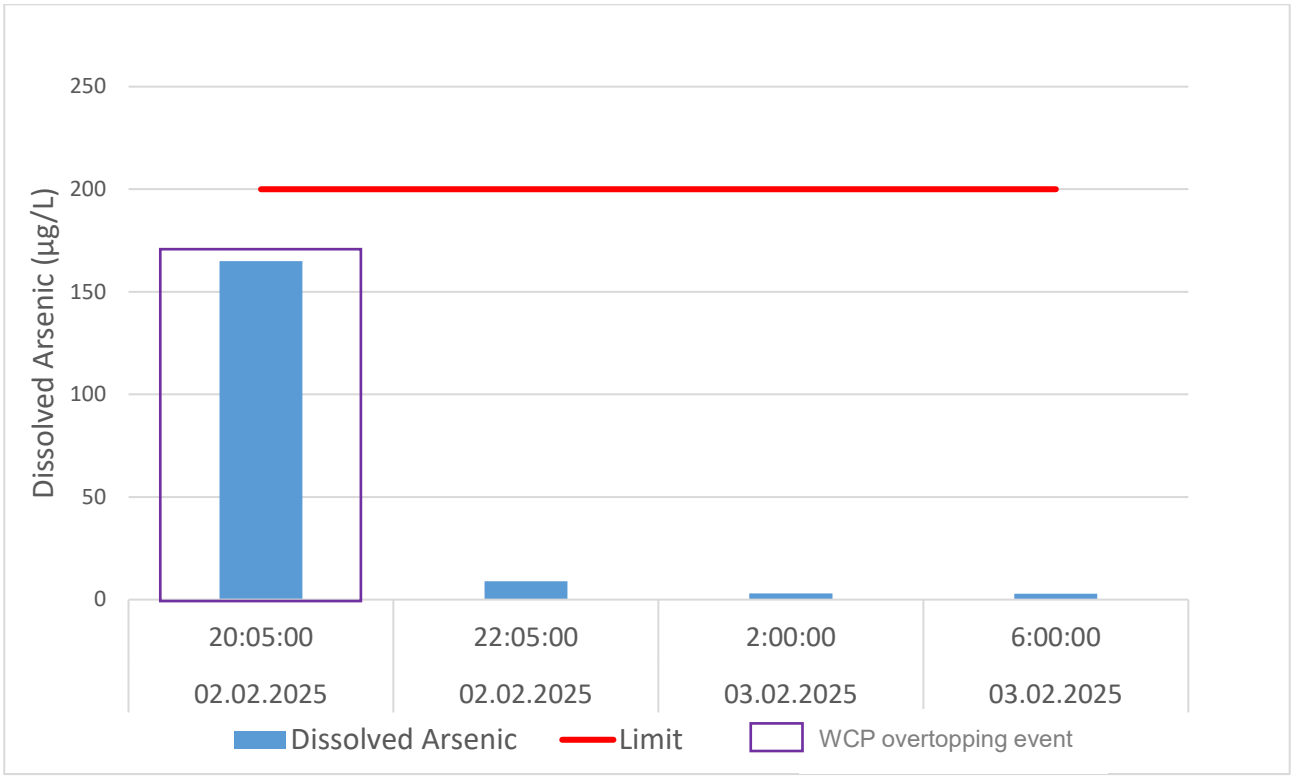


Figure 8 Dissolved arsenic (µg/L) and limit at S001 from event samples (NATA analysis) from 02 to 03 February 2025.

Composite Sample

The S074 composite sample results (Appendix A, Table A4) provide a time and volume weighted average over twenty-four hours, including when the unauthorised release was discharging into the eastern seawater channel. Composite samples are relevant to TVs and Limits to assess potential environmental impact. The composite sample collected at 08:00 AM on 03 February 2025 is representative of the preceding 24-hour period when the WCP overflowed. The concentrations recorded during this period were at or below those when the WWNP is operational. All analyte concentrations remained below WDL Limits and TVs.

Marine Results Discussion

Investigative sample results for dissolved aluminium (offsite NATA laboratory) from the MZB sites are shown in Figure 9. Sampling of the marine sites was completed at 09:00 AM, 03 February 2025, after the overtopping event ceased. Results at the MZB sites for dissolved aluminium were recorded well below the license trigger value of 56 µg/L (Figure 9). Appendix A, Table A8 shows all analytes at the MZB were substantially lower than the corresponding TVs with concentrations returning to background concentrations on 03 February 2025.

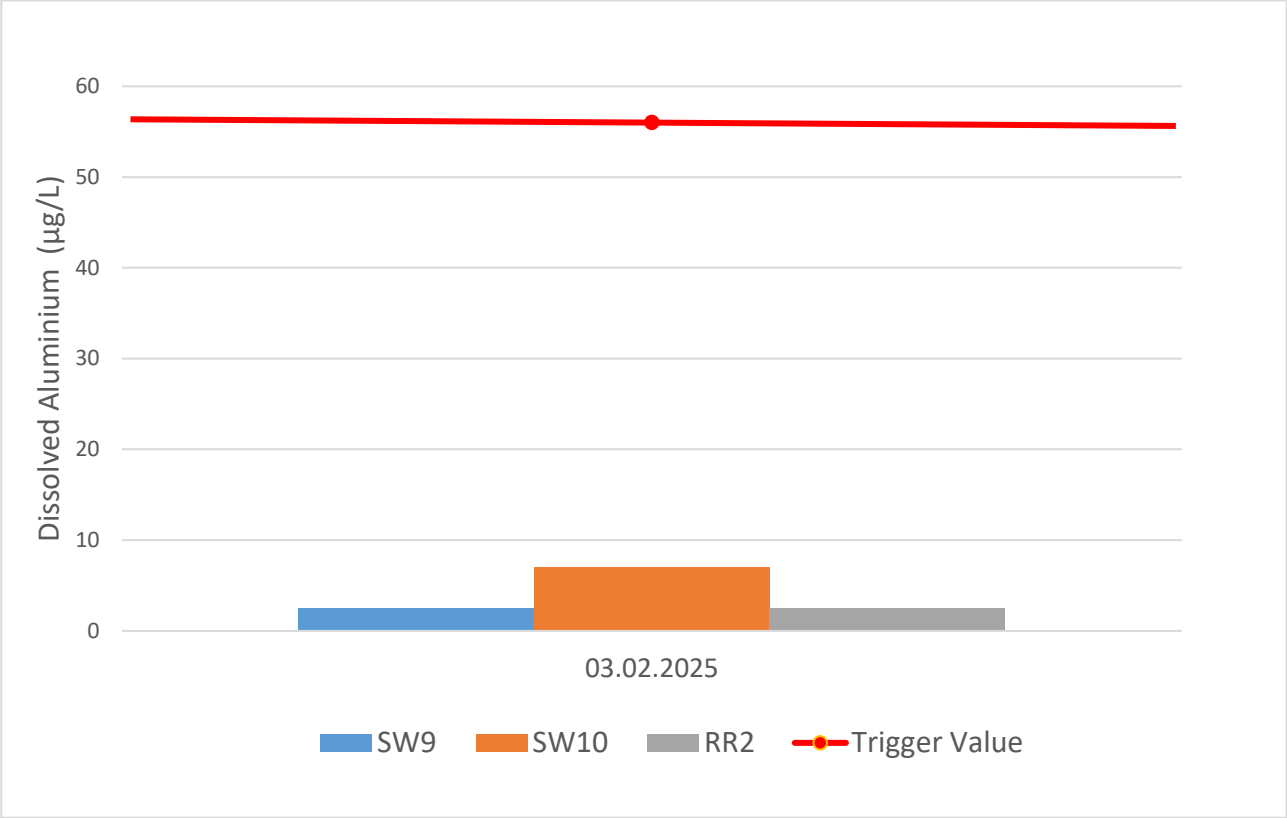
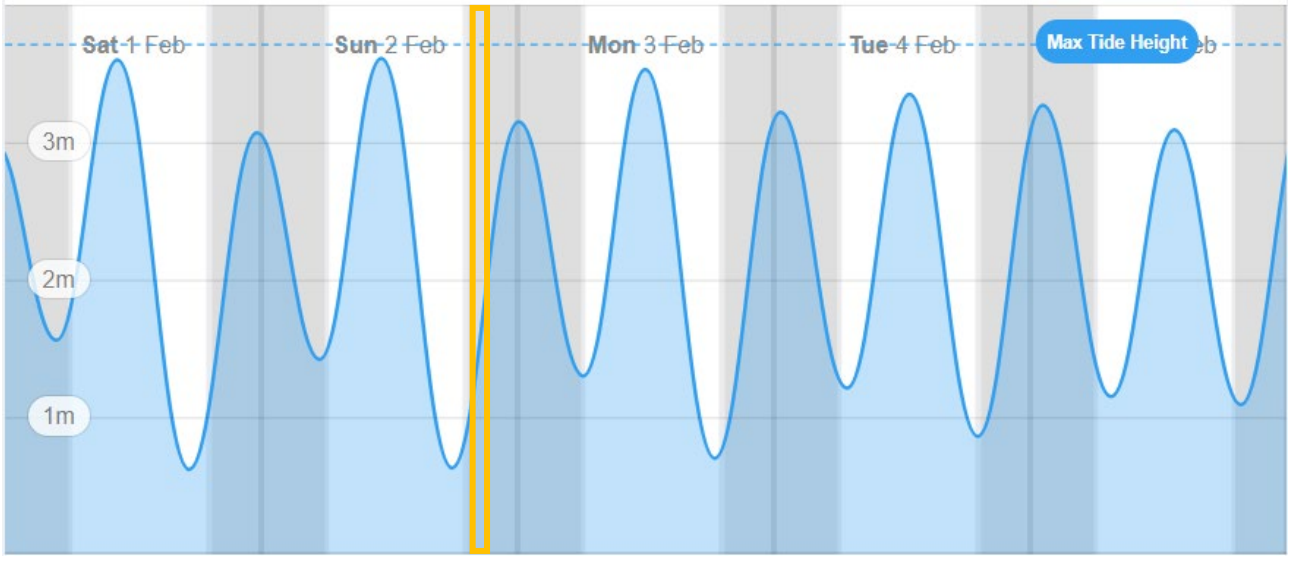


Figure 9 Dissolved aluminium concentrations at MZB sites for samples collected after the event at 09:00 AM, 03 February2025. Note that dissolved aluminium for site SW9 and RR2 were below the LOR (5µg/L).

The tides times and heights during the WCP event are provided in Figure 10 and Figure 11. The event occurred during a high tide.

SAT 1 Feb	SUN 2 Feb	MON 3 Feb	TUE 4 Feb	WED 5 Feb
4:50 am 1.56m	5:29 am 1.42m	12:07 am 3.15m	12:38 am 3.22m	1:11 am 3.27m
10:32 am 3.6m	11:15 am 3.61m	6:09 am 1.3m	6:51 am 1.21m	7:35 am 1.15m
5:15 pm 0.62m	5:52 pm 0.63m	11:58 am 3.53m	12:42 pm 3.35m	1:30 pm 3.09m
11:36 pm 3.07m		6:28 pm 0.7m	7:06 pm 0.86m	7:44 pm 1.09m

Figure 10 Tide Times from 01 to 05 February 2025. Source: WillyWeather



Event time period

Figure 11 Tide height from 01 to 05 February 2025.

The Australian Institute of Marine Science (AIMS) developed a hydrodynamic model of Melville Bay to assess the dilution and dispersion of the seawater channel discharge into inner Gove Harbour and Melville Bay (AIMS, 2020). The model predicted a minimum dilution rate of 1:25 for the three MZB compliance sites SW9, SW10 and RR2 at a discharge rate of 10,500 m^3/h. Concentrations at the MZB during the event are conservatively predicted by applying the minimum dilution rate from the hydrodynamic model at the MZB of 1:25 to S001 data (Appendix B, Table A5). The predicted concentrations of dissolved Al at the MZB sites are presented in Figure 12.

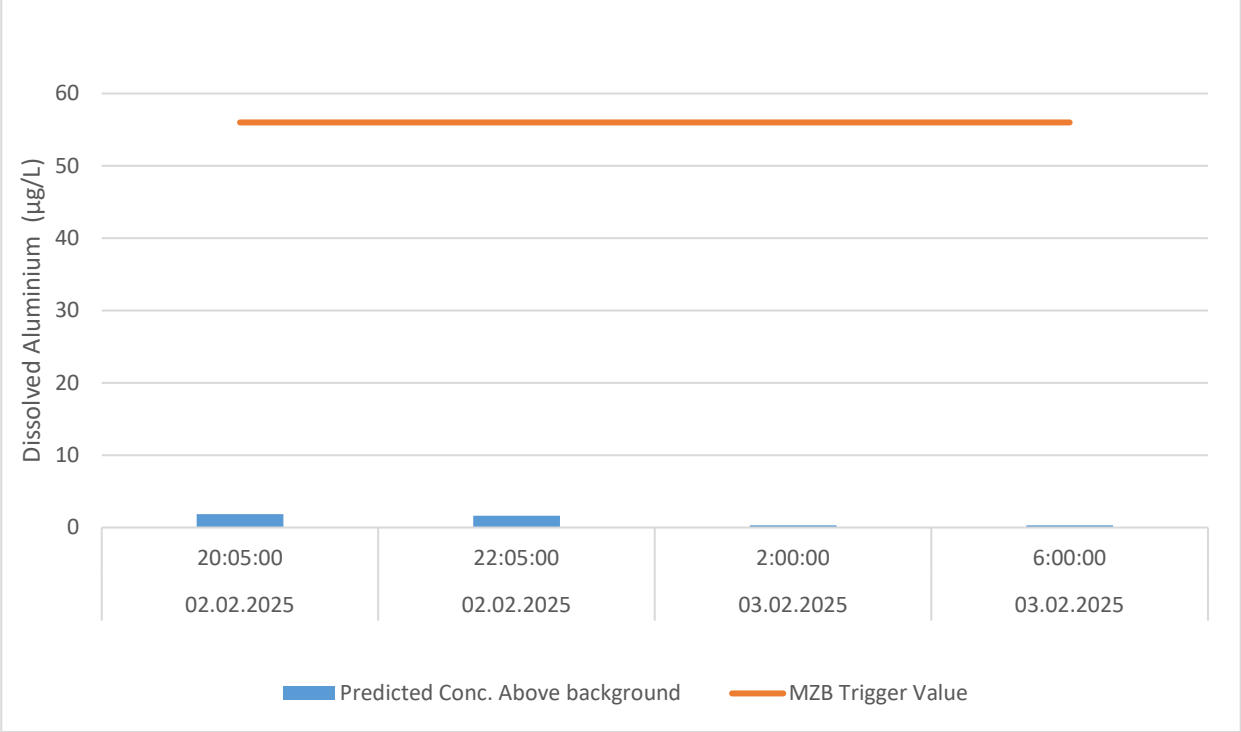


Figure 12 Predicted concentration of dissolved aluminium (above background) at the marine mixing zone boundary based on S001 concentrations from investigative samples.

From the Marine Health Monitoring Program (MHMP) data base, background concentration for dissolved Al in Melville Bay is 1.7 µg/L (80th percentile for the previous 24 months monthly samples). Predicted concentrations are above the background concentrations. Predicted concentrations of dissolved Al for the marine sites plus background concentrations are all substantially lower than TV's in the Licence for the MZB. Similarly predicted concentrations for dissolved As and V are well below corresponding TV's (Table A8).

Conclusion

The results of the investigation sampling confirmed turbidity was the only parameter to exceed a Licence Limit for the event sample taken at S001 at 20:05 PM on 02 February 2025, returning 231 NTU. Follow up samples taken after the event, returned a result of 17.5 NTU within 2 hours. This confirms that the spike was due to a pulse event with minimal impact.

Overall, the data demonstrates that there was no material environmental impact expected from the WCP overtopping on 02 February 2025.

References

Australian Institute of Marine Science, 2020, *Assessment of seawater channel dilution in inner Gove Harbour for development of discharge Trigger Values*. Report to Rio Tinto Aluminium Gove.

Appendix A – Analytical Results Tables

Table A2 Water quality results for site S004 seawater intake location from 02 - 05 February 2025 (onsite analysis).

Daily Operational Samples at site S004 Samples retrieved at 08:00 Hrs		02/02/2025	03/02/2025	04/02/2025	05/02/2025
Environmental Parameters					
Ph		8.06	8.10	8.13	8.14
Electrical Conductivity	ms/cm	52.00	50.59	53.70	52.09
Turbidity	NTU	5.34	4.13	3.09	2.76
Alkalinity	mg/L	122.9	122.9	126.6	127.5
Dissolved Metals & Metalloids					
Aluminium	µg/L	6.29	7.38	7.58	6.44
Arsenic	µg/L	2.03	2.00	1.99	2.14
Gallium	µg/L	0.07	0.19	0.26	0.32
Manganese	µg/L	2.09	2.14	1.56	2.22
Molybdenum	µg/L	10.42	10.29	10.24	10.31
Vanadium	µg/L	2.61	3.31	3.09	3.67

Table A3 Daily Authorised Monitoring Site S001 Outfall Monitoring Station water quality results – 02 to 05 February 2025 (Onsite Analysis).

Daily Compliance Samples – S001 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	02/02/2025	03/02/2025	04/02/2025	05/02/2025
Environmental Parameters							
Ph		9	9.5	8.74	8.12	8.79	8.84
Electrical Conductivity	ms/cm	-	-	50.79	51.09	52.00	53.70
Turbidity	NTU	75[t]	100	10.7	3.88	6.07	5.25
Alkalinity	mg/L	-	-	385.2	125.3	383.8	388.1
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	16.41	14.01	22.51	19.90
Arsenic	µg/L	-	200	13.27	2.32	12.63	12.74
Gallium	µg/L	-	8000	11.85	0.355	11.68	12.23
Manganese	µg/L	-	-	3.60	2.54	4.10	3.57
Molybdenum	µg/L	-	38800	29.96	10.75	29.34	28.78
Vanadium	µg/L	-	1000	46.06	3.95	43.74	44.42

Table A4 Daily water quality results – 24 hour Composite sample at Authorised Monitoring Site S074 – 02 to 05 February 2025 (Onsite Analysis)

Daily Compliance Samples – S074 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	02/02/2025	03/02/2025*	04/02/2025	05/02/2025
Environmental Parameters							
Ph		9	9.5	8.81	8.60	8.64	8.86
Electrical Conductivity	ms/cm	-	-	47.2	43.5	45.0	46.0
Turbidity	NTU	75[‡]	100	7.78	20.50	10.70	3.97
Alkalinity	mg/L	-	-	322.5	213.8	211.9	326.1
Total Suspended Solids	mg/L	-	-	49.59	36.29	4.59	13.50
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	17.21	23.88	14.63	18.36
Arsenic	µg/L	-	200	12.93	12.50	7.32	12.19
Gallium	µg/L	-	8000	9.58	5.72	5.32	11.39
Manganese	µg/L	-	-	2.36	1.70	1.61	2.77
Molybdenum	µg/L	-	38800	30.67	19.64	19.55	28.46
Vanadium	µg/L	-	1000	44.61	48.13	21.05	41.91

* Composite sample from channel water quality from 8am 02/02/2025 to 8am 03/02/2025, capturing WCP overtopping period.

Table A5 Event based external water quality results – Authorised Monitoring Site S001 Outfall Monitoring Station – 02 and 03 February 2025 (External Analysis – NATA accredited laboratory).

Investigative / Event samples – S001		*S001 Trigger value*	*S001 Limit*	02/02/2025	02/02/2025	03/02/2025	03/02/2025
			Time	20:05	22:05	02:00	06:00
Environmental Parameters							
Ph		9	9.5	8.56	8.18	8.07	8.05
Electrical Conductivity	µs/cm	-	-	42200	52200	52000	51800
Turbidity	NTU	75[t]	100	231	17.5	2.6	2.4
Total Alkalinity	mg/L	-	-	194	136	124	122
Total Suspended Solids	mg/L	-	-	199	56	<5	<5
Metals & Metalloids							
Dissolved Aluminium	µg/L	-	560	46	41	8	8
Dissolved Arsenic	µg/L	-	200	165	8.9	3.0	2.9
Dissolved Gallium	µg/L	-	8000	<10	<10	<10	<10
Dissolved Iron	µg/L	-	-	7	<5	<5	<5
Dissolved Manganese	µg/L	-	-	1.6	1.7	1.8	2.7
Dissolved Molybdenum	µg/L	-	38800	19.6	13.4	11.4	11.5
Dissolved Vanadium	µg/L	-	1000	786	27.7	4.7	4.0
Total Aluminium	µg/L	-	-	20300	802	99	100
Total Arsenic	*µg/L*	-	-	173	8.0	2.6	3.8
Total Gallium	*µg/L*	-	-	<10	<10	<10	<10
Total Iron	*µg/L*	-	-	10700	509	73	67
Total Manganese	*µg/L*	-	-	29.0	6.0	3.2	5.0
Total Molybdenum	*µg/L*	-	-	18.2	13.6	11.6	19.1
Total Vanadium	*µg/L*	-	-	802	29.0	4.3	6.8
Nutrients[1]							
Total Dissolved Phosphorus	µg/L	-	140	6			
Total Dissolved Nitrogen	µg/L	-	1700	630			
Hydrocarbons							
Total Petroleum Hydrocarbons	µg/L	-	-	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	-	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	-	<1	<1	<1	<1
Toluene	µg/L	-	-	<2	<2	<2	<2
Ethylbenzene	µg/L	-	-	<2	<2	<2	<2
Xylene	µg/L	-	-	<2	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

[1] Sample results from S001 03/02/2025

Table A6 Event based internal water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 02 and 03 February 2025 (onsite analysis).

Event Operational samples - S001 Analysed onsite		S001 Trigger value	S001 Limit	02/02/2025	02/02/2025	03/02/2025	03/02/2025
			Time	20:05	22:05	02:00	06:00
Environmental Parameters							
pH		9	9.5	8.77	8.35	8.23	8.19
Electrical Conductivity	ms/cm	-	-	40.90	49.50	50.29	50.59
Turbidity	NTU	75[t]	100	459	18.4	5.05	5.21
Alkalinity	mg/L	-	-	191.7	141.0	128.1	127.0
Dissolved Aluminium	µg/L	-	560	136.42	42.37	11.70	12.07
Dissolved Arsenic	µg/L	-	200	140.63	6.87	2.66	2.69
Dissolved Gallium	µg/L	-	8000	4.48	1.16	0.51	0.46
Dissolved Iron	µg/L	-	-	72.02	5.42	2.10	2.66
Dissolved Manganese	µg/L	-	-	1.27	1.17	1.37	2.54
Dissolved Molybdenum	µg/L	-	38800	16.97	11.81	11.11	11.54
Dissolved Vanadium	µg/L	-	1000	741.68	25.94	4.75	4.57

This data is event based – it does not form part of the WDL monitoring program.

Table A7 Event based external water quality results – Western Containment Pond site S030 – 02 February 2025 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S030		02/02/2025 20:00	02/02/2025 22:00
Environmental Parameters			
pH		9.92	9.55
Electrical Conductivity	µs/cm	586	562
Turbidity	NTU	3540	3650
Alkalinity	mg/L	243	242
Total Suspended Solids	mg/L	668	718
Metals & Metalloids			
Dissolved Aluminium	µg/L	6020	6030
Dissolved Arsenic	µg/L	483	517
Dissolved Gallium	µg/L	33	18
Dissolved Iron	µg/L	570	590
Dissolved Manganese	µg/L	16	18
Dissolved Molybdenum	µg/L	14	13
Dissolved Vanadium	µg/L	1930	2100
Total Aluminium	µg/L	57000	63600
Total Arsenic	µg/L	454	492
Total Gallium	µg/L	56	48
Total Iron	µg/L	12000	13600
Total Manganese	µg/L	100	105
Total Molybdenum	µg/L	10	10
Total Vanadium	µg/L	2110	2260

Table A8 Investigative water quality results - Marine Mixing Zone (MZB) sites – 03 and 04 February 2025 (External Analysis - NATA accredited laboratory).

		MZB Trigger Values	03/02/2025	03/02/2025	03/02/2025
			SW9	SW10	RR2
		Time	0915	0900	08:40
Environmental Parameters					
pH		7.7 – 8.4	7.95	7.91	7.94
Electrical Conductivity	µS/cm	-	52700	53300	52900
Total Suspended Solids (SS)	mg/L	-	<5	<5	<5
Turbidity	NTU	20	2.4	2.6	1.2
Alkalinity	mg/L	-	126	122	122
Metals and Metalloids					
Dissolved Aluminium	µg/L	56	<5	7	<5
Dissolved Arsenic	µg/L	20	2.1	2.0	1.2
Dissolved Gallium	µg/L	800	<10	<10	<10
Dissolved Iron	µg/L	-	<5	7	<5
Dissolved Manganese	µg/L	-	1.3	1.4	0.6
Dissolved Molybdenum	µg/L	3880	11.2	10.8	6.2
Dissolved Vanadium	µg/L	100	3.3	2.5	1.4
Nutrients					
Total Dissolved Phosphorus	µg/L	14	8	11	9
Total Dissolved Nitrogen	µg/L	170	110	120	110
Hydrocarbons					
Total Petroleum Hydrocarbons	µg/L	-	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	<0.5	<0.5	<0.5
Benzene	µg/L	-	<1	<1	<1
Toluene	µg/L	-	<2	<2	<2
Ethylbenzene	µg/L	-	<2	<2	<2
Xylene	µg/L	-	<2	<2	<2

Appendix B – Photographic Log of upstream surface water and erosion & sediment mitigation measures related to the WCP and refinery catchments



Figure 13 Rock Drain at western entrance to WCP ramp lined with coir logs, aiming to reduce flow velocities and allow sediment to settle.



Figure 14 Desilted & cleaned WCP northern drain with protective ballast material aiming to reduce flow velocities and allow sediment to settle.



Figure 15 Silt fence and limestone along the WCP northern drain and entrance to the WCP



Figure 16 Rock drain between retention basin in Area 661 & WCP.



Figure 17 Sediment buildup removed, walls stabilized and rock drain created at retention basin in SW Area 662 (Scrapyard).



Figure 18 Earth bund diverting water runoff to the retention basin in SW Area 662 (Scrapyard)



Figure 19 Desilting of Southern Containment Pond during the 2024 dry period



Figure 20 Pumping of potentially contaminated water from the cooling tower sumps (Nov 2024) to the containment pond for redistribution to the RDA



Figure 21 Road 15, Area 653 rock checks and coir logs on each drain pit which drains to the WCP. Aims to slow and reduce sediment flow & velocity.



Figure 22 Rock check and silt fencing located at drainage point adjacent to the northern seawater channel inlet. Aims to protect the spoon drain adjacent to the seawater channel that diverts stormwater to the WCP.



Figure 23 Coir logs placed around drain inlets adjacent to the seawater channel along Road 3, Area 720.

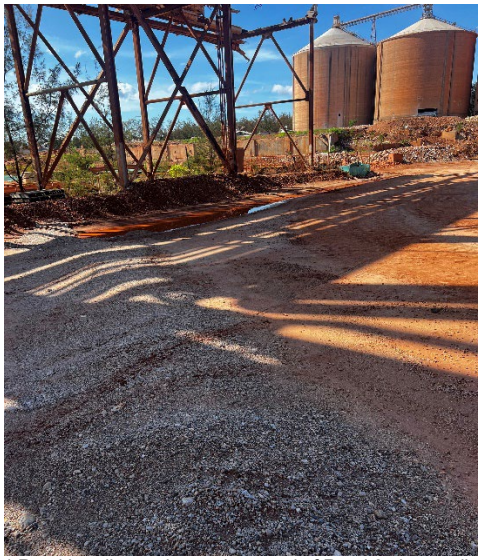


Figure 24 Road bunding at the northern end of Road 3 aims to divert potentially contaminated water flow back towards the WCP catchment and away from drain inlets adjacent to seawater channel.

Appendix C – Routine Inspection Reports – Control Effectiveness

Surface Water Checklist Refinery 2024/2025

Charles Dike

Complete

Score	6 / 6 (100%)	**Flagged items**	0	**Actions**	0

Date & Time		25.01.2025 13:36 ACST
Site conducted		Refinery
Inspection type:	**Weekly check**	Yes
Inspection type:	**> 25mm Rain Check**	N/A
Prepared by		Charles Dike

Checklist	6 / 6 (100%)
AREA_662 - SCRAPYARD SEDIMENT BASIN - #1	1 / 1 (100%)
Are pond walls adequate and without any major visible damage?	Yes


Photo 1


Photo 2


Photo 3


Photo 4


Photo 5

Are water inflows clear of debris?	Yes


Photo 6


Photo 7

Was inflow water sampling conducted on first flush at start of runoff?	N/A
Has sampling continued every 24 hrs until the end of the event?	N/A
Overflow water quality sample been taken at first overflow and continued sampling conducted every 4 hrs until the end of the event?	N/A
Are controls in place on the fence line to ensure water does not exit the blue line?	Yes


Photo 8


Photo 9

Has there been any discharge to the Western Containment Pond in the last 7 days	No
Is the sediment basin >50% capacity and requires pump out?	No
AREA_662-SWTP - #2	
Is the open rock strip on the entrance to the WCP in good shape?	Yes


Photo 10


Photo 11


Photo 12

AREA_661 - #3

1 / 1 (100%)

Are the silt fences and earth bunds on the north-western boundary in place and preventing runoff leaving the blue line?

Yes


Photo 13


Photo 14


Photo 15


Photo 16

Are the rock drains on the channel on the entrance to the scrap yard in place and adequate (Road 23)

Yes


Photo 17


Photo 18


Photo 19

Is the channel silted up and does it require cleaning?

No

Are the silt fences on the southern boundary in place and adequate?

Yes


Photo 20

Is the catchment in 661 working as intended with no maintenance issues

Yes


Photo 21


Photo 22


Photo 23

AREA_720 - ROAD 6 - GATE 3 - #4

1 / 1 (100%)

Are all coir logs along the roadway in place?

Yes



Photo 24

Are there any signs of site water from area 657 running down the road towards gate 3? — No

Are all diversions in place for water to be diverted from area 657 to the western containment pond? — Yes



Photo 25



Photo 26



Photo 27

Is the entry to the western containment pond clear and free of debris? — Yes



Photo 28



Photo 29



Photo 30

Is the silt fence along road 6 in place and without damage — Yes



Photo 31



Photo 32

AREA_716 OWTP - #5 — 1 / 1 (100%)

Is the bund around the OWTP in place and adequate? — Yes



Photo 33



Photo 34



Photo 35



Photo 36



Photo 37



Photo 38



Photo 39

Does the rock drain require any maintenance? No


Photo 40


Photo 41

Are the coir logs behind the earth bund in good condition? Yes


Photo 42


Photo 43

AREA_657 - ROAD 15 - #6

Are all coir logs in place on the entire road? Yes


Photo 44


Photo 45


Photo 46

Are all drains along the road clear of silt? Yes


Photo 47

AREA 653/657 & Road 25_ TEMPORARY CONCRETE CRUSHING AREA - #7 1 / 1 (100%)

Is the earth bund around the concrete crushing are in place and adequate? Yes


Photo 48


Photo 49


Photo 50


Photo 51

Are there rock drains at appropriate locations around the concrete crushing area and are they adequate? Yes

Is the rock drain and silt fence along Road 25 preventing Yes

runoff from getting in the seawater channel?	


Photo 52


Photo 53

AREA 723/646 - ROAD 24 BUND - #8 — 1 / 1 (100%)

Is the windrow around the catchment in place and adequate?	Yes


Photo 54


Photo 55

Has there been any discharge from the catchment into the drains on Road 15 in the last 7 days?	No
Does the catchment require pump out / discharge?	No

AREA_664 - BUND - #9

Is earth bund around 664 in place, adequate and without damage?	Yes


Photo 56


Photo 57


Photo 58

AREA_664 - ROAD 24 - GATE 4 - #10

Are coir logs into drains are in place?	Yes


Photo 59

Are coir logs on the roadway in place?	Yes

AREA_663 - ROAD 3 - GATE 6 - #11

Is drive over bund in place and in good condition	Yes

Are coir logs in place on open rock drain?	Yes


Photo 60


Photo 61

AREA_652 - 633 - ROAD 3 - #12

Is the earth bund in place and adequate?	Yes
GENERAL	1 / 1 (100%)
Check all bund walls on site for damage, do any require repair?	No

Media summary



Photo 1



Photo 2



Photo 3



Photo 4

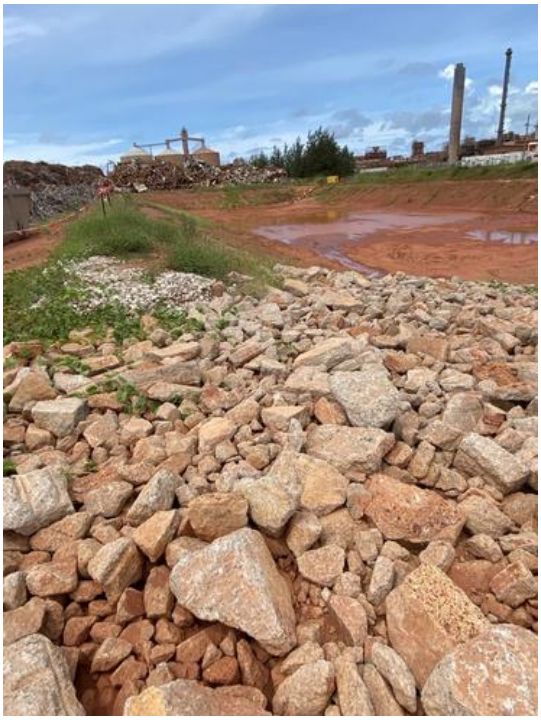


Photo 5

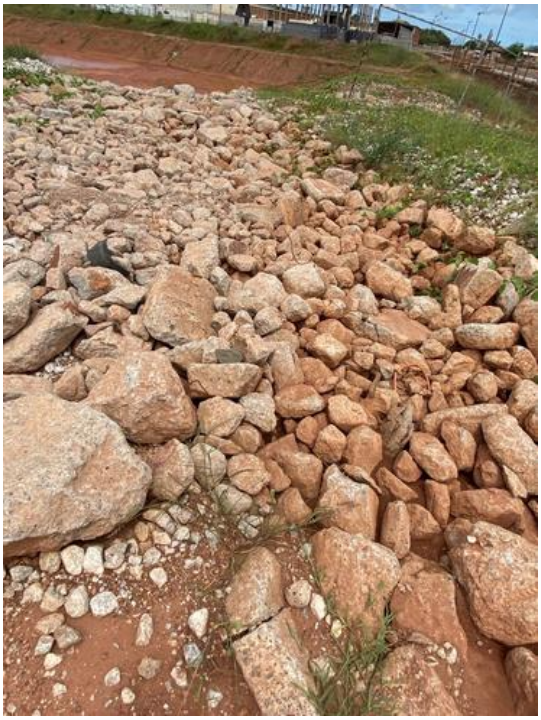


Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18



Photo 19



Photo 20



Photo 21



Photo 22



Photo 23



Photo 24



Photo 25



Photo 26



Photo 27



Photo 28



Photo 29



Photo 30



Photo 31



Photo 32



Photo 33



Photo 34



Photo 35



Photo 36



Photo 37



Photo 38



Photo 39



Photo 40



Photo 41



Photo 42



Photo 43



Photo 44



Photo 45



Photo 46



Photo 47



Photo 48



Photo 49



Photo 50



Photo 51



Photo 52



Photo 53



Photo 54



Photo 55



Photo 56



Photo 57



Photo 58



Photo 59



Photo 60



Photo 61

Surface Water Checklist Refinery 2024/2025

Peter Thomas

Complete

Score	6 / 6 (100%)	Flagged items	0	Actions	0

Date & Time	01.02.2025 09:31 ACST
Site conducted	Refinery
Inspection type: Weekly check	Yes
Inspection type: > 25mm Rain Check	Yes

Last night rainfall event, checked our rainfall gauge this morning 7:00am is about 38mm

Prepared by	Peter Thomas

Checklist	6 / 6 (100%)
AREA_662 - SCRAPYARD SEDIMENT BASIN - #1	1 / 1 (100%)
Are pond walls adequate and without any major visible damage?	Yes


Photo 1


Photo 2

Are water inflows clear of debris?	Yes


Photo 3


Photo 4

Was inflow water sampling conducted on first flush at start of runoff?	N/A

It was raining overnight and the sampling was conducted in the morning

Has sampling continued every 24 hrs until the end of the event?	N/A
Overflow water quality sample been taken at first overflow and continued sampling conducted every 4 hrs until the end of the event?	N/A
Are controls in place on the fence line to ensure water does not exit the blue line?	Yes


Photo 5


Photo 6

Has there been any discharge to the Western Containment Pond in the last 7 days	No
Is the sediment basin >50% capacity and requires pump out?	No
AREA_662-SWTP - #2	
Is the open rock strip on the entrance to the WCP in good shape?	Yes


Photo 7


Photo 8

AREA_661 - #3

1 / 1 (100%)

Are the silt fences and earth bunds on the north-western boundary in place and preventing runoff leaving the blue line?

Yes


Photo 9


Photo 10

Are the rock drains on the channel on the entrance to the scrap yard in place and adequate (Road 23)

Yes


Photo 11


Photo 12

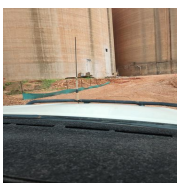
Is the channel silted up and does it require cleaning?

No


Photo 13

Are the silt fences on the southern boundary in place and adequate?

Yes


Photo 14

Is the catchment in 661 working as intended with no maintenance issues

Yes


Photo 15


Photo 16

AREA_720 - ROAD 6 - GATE 3 - #4

1 / 1 (100%)

Are all coir logs along the roadway in place?

Yes


Photo 17

Are there any signs of site water from area 657 running down the road towards gate 3?

No


Photo 18


Photo 19

Are all diversions in place for water to be diverted from area 657 to the western containment pond?

Yes


Photo 20

Is the entry to the western containment pond clear and free of debris?

Yes


Photo 21

Is the silt fence along road 6 in place and without damage

Yes


Photo 22


Photo 23

AREA_716 OWTP - #5 1 / 1 (100%)

Is the bund around the OWTP in place and adequate? Yes


Photo 24


Photo 25

Does the rock drain require any maintenance? No


Photo 26

Are the coir logs behind the earth bund in good condition? Yes


Photo 27


Photo 28


Photo 29

AREA_657 - ROAD 15 - #6

Are all coir logs in place on the entire road? Yes

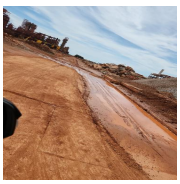

Photo 30


Photo 31


Photo 32


Photo 33

Are all drains along the road clear of silt? Yes


Photo 34

AREA 653/657 & Road 25_ TEMPORARY CONCRETE CRUSHING AREA - #7 1 / 1 (100%)

Is the earth bund around the concrete crushing are in place and adequate? Yes


Photo 35


Photo 36


Photo 37

Are there rock drains at appropriate locations around the concrete crushing area and are they adequate?

Yes


Photo 38


Photo 39

Is the rock drain and silt fence along Road 25 preventing runoff from getting in the seawater channel?

Yes


Photo 40


Photo 41


Photo 42

AREA 723/646 - ROAD 24 BUND - #8

1 / 1 (100%)

Is the windrow around the catchment in place and adequate?

Yes


Photo 43


Photo 44


Photo 45

Has there been any discharge from the catchment into the drains on Road 15 in the last 7 days?

Yes

Does the catchment require pump out / discharge?

No

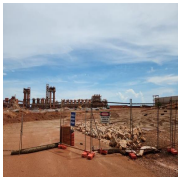
AREA_664 - BUND - #9

Is earth bund around 664 in place, adequate and without damage?

Yes


Photo 46


Photo 47


Photo 48

AREA_664 - ROAD 24 - GATE 4 - #10

Are coir logs into drains are in place? Yes


Photo 49


Photo 50

Are coir logs on the roadway in place? Yes


Photo 51


Photo 52

AREA_663 - ROAD 3 - GATE 6 - #11

Is drive over bund in place and in good condition Yes


Photo 53

Are coir logs in place on open rock drain? Yes


Photo 54


Photo 55

AREA_652 - 633 - ROAD 3 - #12

Is the earth bund in place and adequate? Yes


Photo 56


Photo 57

GENERAL 1 / 1 (100%)

Check all bund walls on site for damage, do any require No

repair?

Media summary



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13

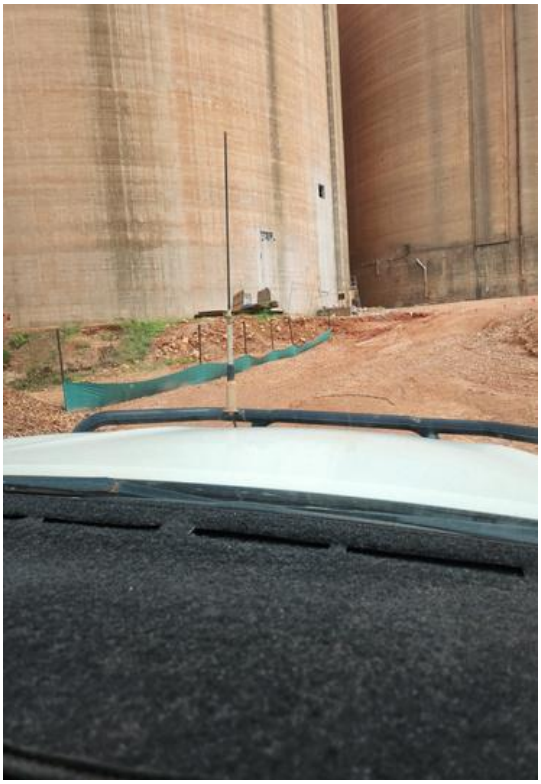


Photo 14



Photo 15



Photo 16

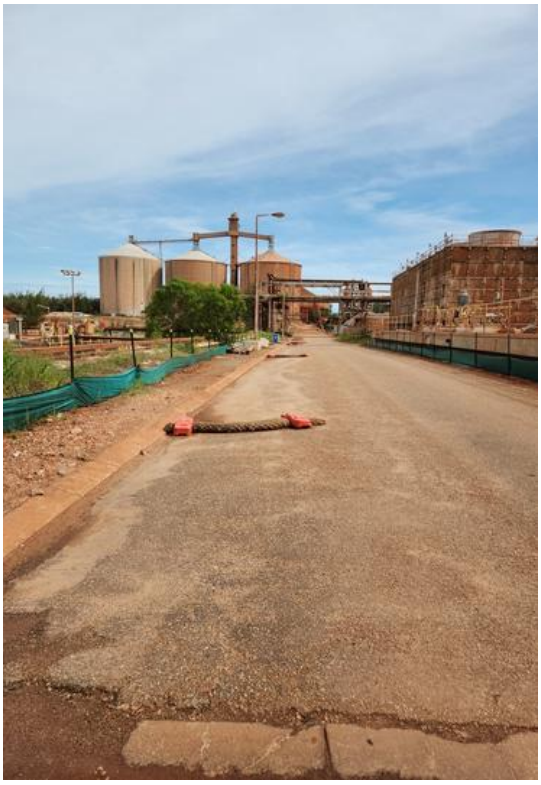


Photo 17

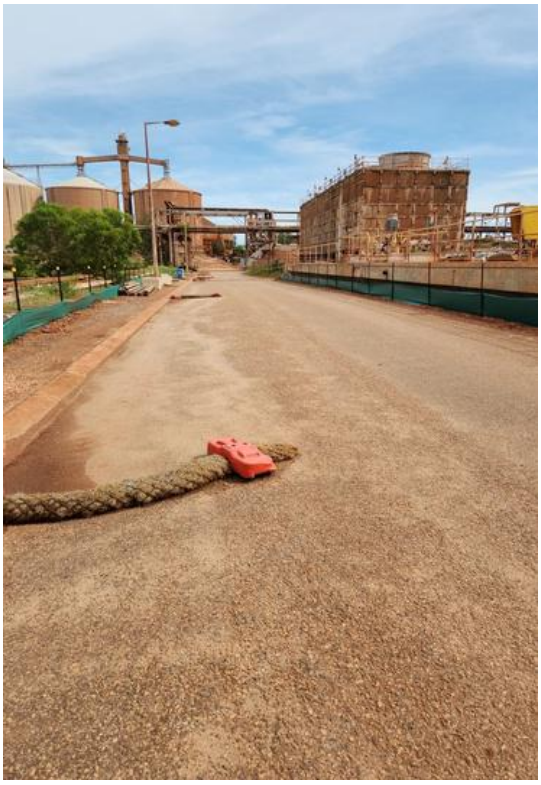


Photo 18



Photo 19



Photo 20

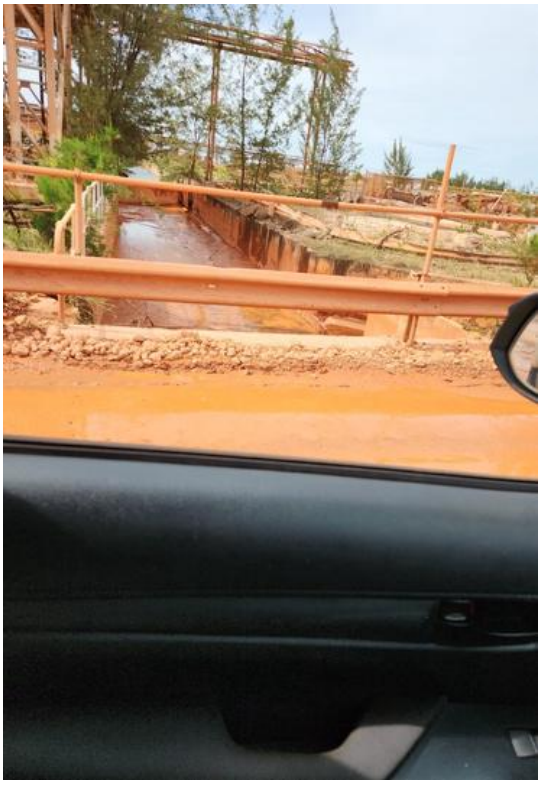


Photo 21



Photo 22



Photo 23



Photo 24



Photo 25



Photo 26



Photo 27



Photo 28



Photo 29



Photo 30

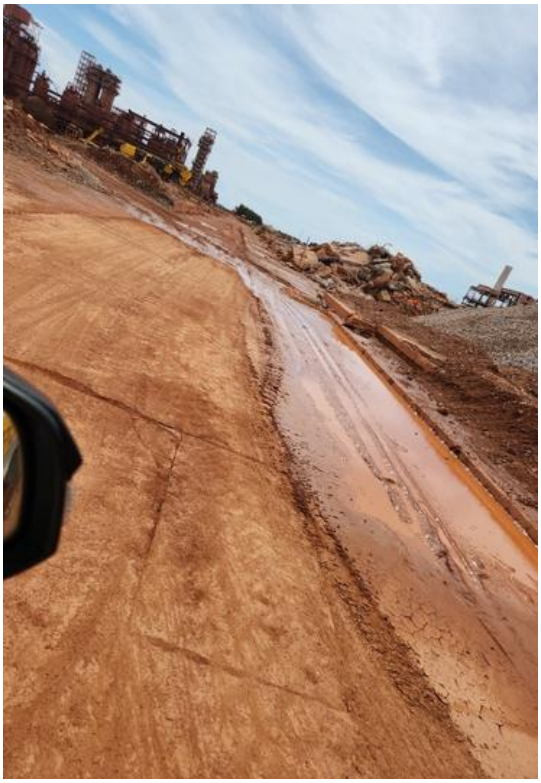


Photo 31

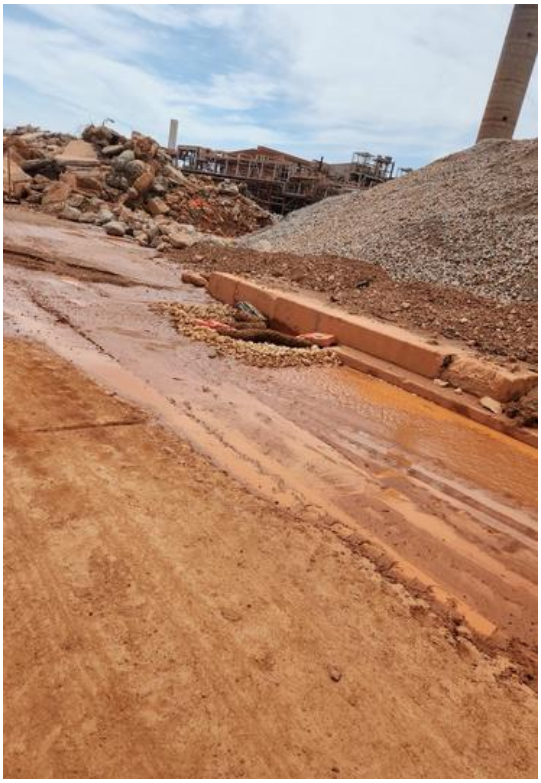


Photo 32



Photo 33



Photo 34



Photo 35



Photo 36



Photo 37



Photo 38



Photo 39



Photo 40



Photo 41



Photo 42



Photo 43



Photo 44



Photo 45



Photo 46



Photo 47



Photo 48



Photo 49



Photo 50



Photo 51



Photo 52



Photo 53



Photo 54



Photo 55



Photo 56



Photo 57

Surface Water Checklist Refinery 2024/2025

Peter Thomas

Complete

Score	6 / 6 (100%)	Flagged items	3	Actions	0

Date & Time	03.02.2025 09:49 ACST
Site conducted	Refinery
Inspection type: Weekly check	Yes
Inspection type: > 25mm Rain Check	Yes

Last night rainfall event 54mm

Prepared by	Peter Thomas

Flagged items

3 flagged

Checklist / AREA_662 - SCRAPYARD SEDIMENT BASIN - #1

Was inflow water sampling conducted on first flush at start of runoff?

No

It was raining in the night and the sample was done in the morning

Checklist / AREA_662 - SCRAPYARD SEDIMENT BASIN - #1

Has sampling continued every 24 hrs until the end of the event?

No

Last night rainfall event

Checklist / AREA_662 - SCRAPYARD SEDIMENT BASIN - #1

Overflow water quality sample been taken at first overflow and continued sampling conducted every 4 hrs until the end of the event?

No

No overflow

Checklist	3 flagged, 6 / 6 (100%)
AREA_662 - SCRAPYARD SEDIMENT BASIN - #1	3 flagged, 1 / 1 (100%)

Are pond walls adequate and without any major visible damage? — Yes


Photo 1


Photo 2


Photo 3

Are water inflows clear of debris? — Yes


Photo 4

Was inflow water sampling conducted on first flush at start of runoff? — No

It was raining in the night and the sample was done in the morning

Has sampling continued every 24 hrs until the end of the event? — No

Last night rainfall event

Overflow water quality sample been taken at first overflow and continued sampling conducted every 4 hrs until the end of the event? — No

No overflow

Are controls in place on the fence line to ensure water does not exit the blue line? — Yes


Photo 5

Has there been any discharge to the Western Containment Pond in the last 7 days — No

Is the sediment basin >50% capacity and requires pump out? — No

AREA_662-SWTP - #2

Is the open rock strip on the entrance to the WCP in good shape?

Yes


Photo 6


Photo 7


Photo 8

AREA_661 - #3

1 / 1 (100%)

Are the silt fences and earth bunds on the north-western boundary in place and preventing runoff leaving the blue line?

Yes


Photo 9

Are the rock drains on the channel on the entrance to the scrap yard in place and adequate (Road 23)

Yes


Photo 10


Photo 11

Is the channel silted up and does it require cleaning?

No


Photo 12


Photo 13

Are the silt fences on the southern boundary in place and adequate?

Yes


Photo 14

Is the catchment in 661 working as intended with no maintenance issues

Yes

AREA_720 - ROAD 6 - GATE 3 - #4

1 / 1 (100%)

Are all coir logs along the roadway in place?

Yes



Photo 15



Photo 16

Are there any signs of site water from area 657 running down the road towards gate 3?

No



Photo 17

Are all diversions in place for water to be diverted from area 657 to the western containment pond?

Yes



Photo 18

Is the entry to the western containment pond clear and free of debris?

Yes



Photo 19



Photo 20



Photo 21

Is the silt fence along road 6 in place and without damage

Yes



Photo 22



Photo 23

AREA_716 OWTP - #5

1 / 1 (100%)

Is the bund around the OWTP in place and adequate?

Yes


Photo 24


Photo 25


Photo 26

Does the rock drain require any maintenance? No


Photo 27

Are the coir logs behind the earth bund in good condition? Yes


Photo 28


Photo 29

AREA_657 - ROAD 15 - #6

Are all coir logs in place on the entire road? Yes


Photo 30


Photo 31

Are all drains along the road clear of silt? Yes


Photo 32


Photo 33

AREA 653/657 & Road 25_ TEMPORARY CONCRETE CRUSHING AREA - #7 1 / 1 (100%)

Is the earth bund around the concrete crushing are in place and adequate? Yes


Photo 34

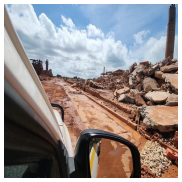

Photo 35


Photo 36

Are there rock drains at appropriate locations around the concrete crushing area and are they adequate?

Yes


Photo 37

Is the rock drain and silt fence along Road 25 preventing runoff from getting in the seawater channel?

Yes


Photo 38


Photo 39

AREA 723/646 - ROAD 24 BUND - #8

1 / 1 (100%)

Is the windrow around the catchment in place and adequate?

Yes


Photo 40


Photo 41


Photo 42

Has there been any discharge from the catchment into the drains on Road 15 in the last 7 days?

No

Does the catchment require pump out / discharge?

No

AREA_664 - BUND - #9

Is earth bund around 664 in place, adequate and without damage?

Yes


Photo 43


Photo 44


Photo 45

AREA_664 - ROAD 24 - GATE 4 - #10

Are coir logs into drains are in place? Yes



Photo 46

Are coir logs on the roadway in place? Yes



Photo 47



Photo 48

AREA_663 - ROAD 3 - GATE 6 - #11

Is drive over bund in place and in good condition Yes



Photo 49



Photo 50

Are coir logs in place on open rock drain? Yes



Photo 51



Photo 52



Photo 53

AREA_652 - 633 - ROAD 3 - #12

Is the earth bund in place and adequate? Yes



Photo 54



Photo 55



Photo 56

GENERAL 1 / 1 (100%)

Check all bund walls on site for damage, do any require No

repair?

Media summary



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18



Photo 19



Photo 20

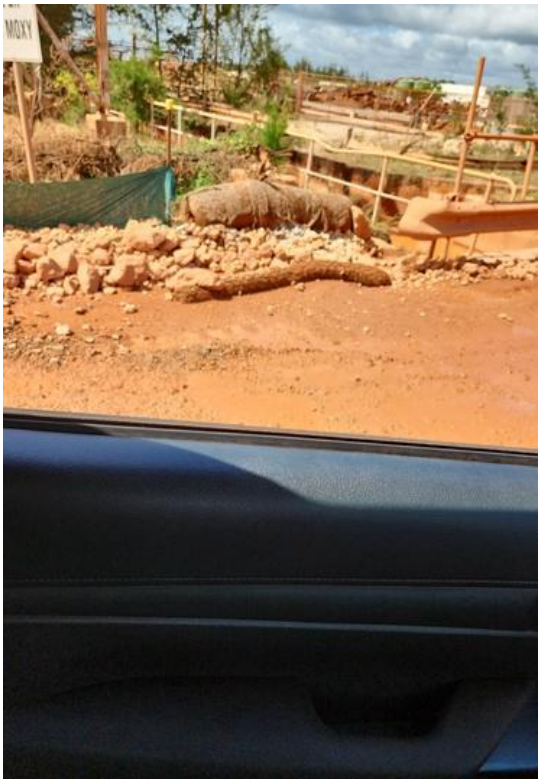


Photo 21



Photo 22



Photo 23



Photo 24



Photo 25



Photo 26



Photo 27



Photo 28



Photo 29



Photo 30



Photo 31



Photo 32



Photo 33



Photo 34



Photo 35



Photo 36



Photo 37



Photo 38



Photo 39



Photo 40



Photo 41



Photo 42



Photo 43



Photo 44



Photo 45



Photo 46



Photo 47



Photo 48



Photo 49



Photo 50



Photo 51



Photo 52



Photo 53



Photo 54



Photo 55



Photo 56

Surface Water Checklist Refinery 2024/2025

Charles Dike

Complete

Score	6 / 6 (100%)	Flagged items	1	Actions	1

Date & Time		08.02.2025 09:56 ACST
Site conducted		Refinery
Inspection type:	**Weekly check**	Yes
Inspection type:	**> 25mm Rain Check**	No
Prepared by		Charles Dike

Flagged items & Actions

1 flagged, 1 action

Flagged items

1 flagged, 0 actions

Checklist / AREA_662 - SCRAPYARD SEDIMENT BASIN - #1

Was inflow water sampling conducted on first flush at start of runoff?

No

The rainfall started last night

Other actions

1 action

Checklist / AREA_657 - ROAD 15 - #6

Are all drains along the road clear of silt?

Yes

Sediment to be cleaned off from the drains



Photo 42



Photo 43

To do | Assignee: Shane Alcott | Priority: Low | Due: 15.02.2025 10:30 ACST | Created by: Charles Dike

Sediment to be cleaned off from the drains

Checklist

1 flagged, 1 action, 6 / 6 (100%)

AREA_662 - SCRAPYARD SEDIMENT BASIN - #1

1 flagged, 1 / 1 (100%)

Are pond walls adequate and without any major visible damage?

Yes


Photo 1


Photo 2


Photo 3

Are water inflows clear of debris?

Yes


Photo 4

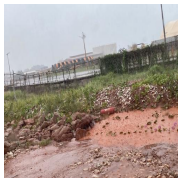

Photo 5


Photo 6


Photo 7

Was inflow water sampling conducted on first flush at start of runoff?

No

The rainfall started last night

Has sampling continued every 24 hrs until the end of the event?

Yes

Overflow water quality sample been taken at first overflow and continued sampling conducted every 4 hrs until the end of the event?

N/A

Are controls in place on the fence line to ensure water does not exit the blue line?

Yes


Photo 8


Photo 9

Has there been any discharge to the Western Containment Pond in the last 7 days

No

No discharge so far

Is the sediment basin >50% capacity and requires pump out?

No

AREA_662-SWTP - #2

Is the open rock strip on the entrance to the WCP in good shape?

Yes


Photo 10


Photo 11

AREA_661 - #3

1 / 1 (100%)

Are the silt fences and earth bunds on the north-western boundary in place and preventing runoff leaving the blue line?

Yes

Silt maintenance required.


Photo 12

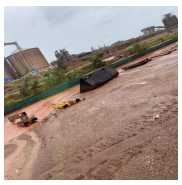

Photo 13


Photo 14

Are the rock drains on the channel on the entrance to the scrap yard in place and adequate (Road 23)

Yes


Photo 15


Photo 16

Is the channel silted up and does it require cleaning?

No


Photo 17


Photo 18

Are the silt fences on the southern boundary in place and adequate?

Yes

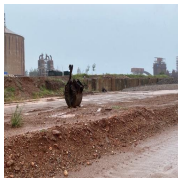

Photo 19


Photo 20

Is the catchment in 661 working as intended with no maintenance issues

Yes


Photo 21


Photo 22

AREA_720 - ROAD 6 - GATE 3 - #4 1 / 1 (100%)

Are all coir logs along the roadway in place? Yes


Photo 23


Photo 24

Are there any signs of site water from area 657 running down the road towards gate 3? No


Photo 25

Are all diversions in place for water to be diverted from area 657 to the western containment pond? Yes


Photo 26


Photo 27


Photo 28

Is the entry to the western containment pond clear and free of debris? Yes


Photo 29


Photo 30

Is the silt fence along road 6 in place and without damage Yes


Photo 31


Photo 32

AREA_716 OWTP - #5 1 / 1 (100%)

Is the bund around the OWTP in place and adequate? Yes


Photo 33


Photo 34


Photo 35


Photo 36

Does the rock drain require any maintenance? No


Photo 37

Are the coir logs behind the earth bund in good condition? Yes


Photo 38


Photo 39

AREA_657 - ROAD 15 - #6 1 action

Are all coir logs in place on the entire road? Yes


Photo 40


Photo 41

Are all drains along the road clear of silt? Yes

Sediment to be cleaned off from the drains


Photo 42


Photo 43

To do | Assignee: Shane Alcott | Priority: Low | Due: 15.02.2025 10:30 ACST | Created by: Charles Dike

Sediment to be cleaned off from the drains

AREA 653/657 & Road 25_ TEMPORARY CONCRETE CRUSHING AREA - #7 — 1 / 1 (100%)

Is the earth bund around the concrete crushing are in place and adequate? — Yes


Photo 44


Photo 45


Photo 46

Are there rock drains at appropriate locations around the concrete crushing area and are they adequate? — Yes


Photo 47

Is the rock drain and silt fence along Road 25 preventing runoff from getting in the seawater channel? — Yes


Photo 48


Photo 49

AREA 723/646 - ROAD 24 BUND - #8 — 1 / 1 (100%)

Is the windrow around the catchment in place and adequate? — Yes


Photo 50


Photo 51

Has there been any discharge from the catchment into the drains on Road 15 in the last 7 days? — No

Does the catchment require pump out / discharge? — No

AREA_664 - BUND - #9

Is earth bund around 664 in place, adequate and without damage? — Yes


Photo 52


Photo 53


Photo 54

AREA_664 - ROAD 24 - GATE 4 - #10

Are coir logs into drains are in place? Yes


Photo 55


Photo 56

Are coir logs on the roadway in place? Yes


Photo 57


Photo 58

AREA_663 - ROAD 3 - GATE 6 - #11

Is drive over bund in place and in good condition Yes


Photo 59


Photo 60

Are coir logs in place on open rock drain? Yes


Photo 61


Photo 62

AREA_652 - 633 - ROAD 3 - #12

Is the earth bund in place and adequate? Yes


Photo 63


Photo 64


Photo 65


Photo 66


Photo 67

GENERAL

1 / 1 (100%)

Check all bund walls on site for damage, do any require repair?	No

Media summary



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18



Photo 19



Photo 20



Photo 21



Photo 22



Photo 23



Photo 24



Photo 25



Photo 26



Photo 27



Photo 28



Photo 29



Photo 30



Photo 31



Photo 32



Photo 33



Photo 34



Photo 35



Photo 36



Photo 37



Photo 38



Photo 39



Photo 40



Photo 41

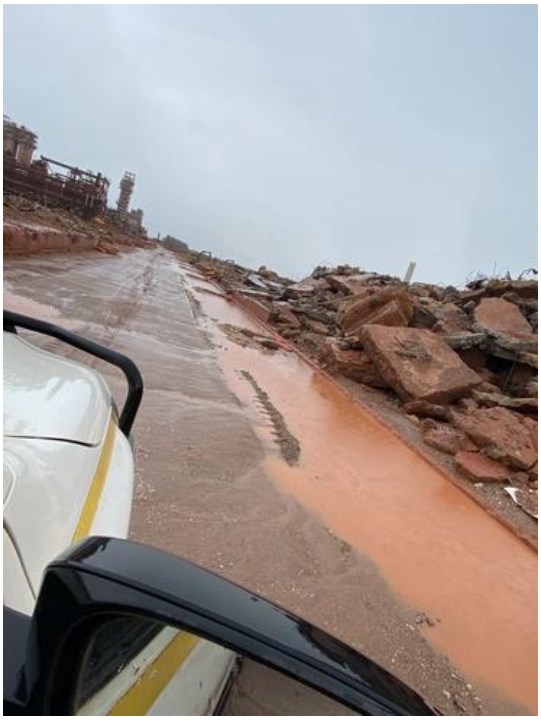


Photo 42

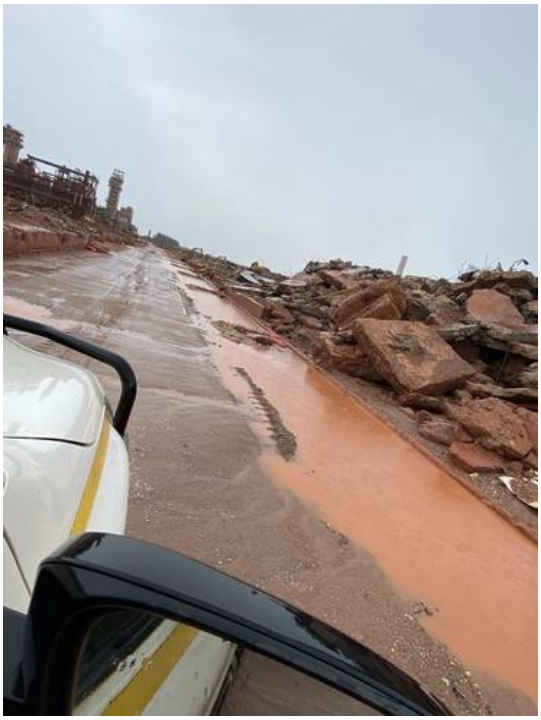


Photo 43



Photo 44



Photo 45



Photo 46



Photo 47



Photo 48



Photo 49



Photo 50



Photo 51



Photo 52



Photo 53



Photo 54



Photo 55



Photo 56



Photo 57



Photo 58



Photo 59



Photo 60



Photo 61



Photo 62



Photo 63



Photo 64



Photo 65



Photo 66



Photo 67

Appendix D – Aerial imagery of refinery footprint (31 January 2025)



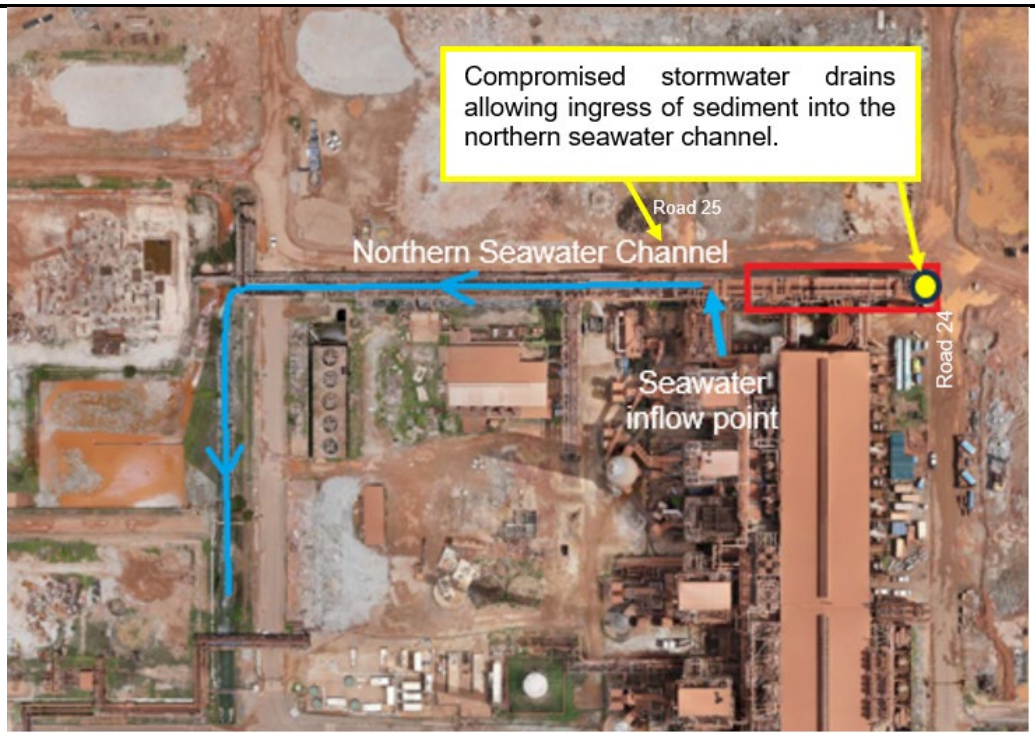
Figure 25 Aerial imagery 31 January 2025 prior to heavy rainfall event across the Gove Peninsula where 78.8 mm of rainfall was recorded over a 51-hour period from 18:00 PM on 31 January 2025 to 20:00 PM on 2 February 20252025 [Inset] Aerial imagery of Area 653 from 23 January 2025 showing potentially contaminated water that was removed via pumping to the containment pond and redistribution to the RDA whilst dry conditions sustained.

Notification of Environmental Incident

All notifiable incidents are to be reported in accordance with section 225 *Environment Protection Act 2019*

☒ Incident ☐ Critical Incident ☐ Preliminary ☒ Final

Incident details	
Incident number	**846817585_68026**
Name of mining site	Rio Tinto - Gove operations
Licence number *If not known, provide Authorisation number*	WDL171-12 *0035-02 Authorisation*
Name of operator:	RTA Gove Pty Limited
Date & time of incident *And / or when you first became aware of it*	Detection Date: 19/02/2025 Time: 12:00 PM
	Incident Date: 19/02/2025 Time: 12:00 PM
Name of person notifying	Andrew Carmichael
Position/Title	Environment Superintendent
Contact person	Andrew Carmichael
Contact details	Business: 08 8987 5233 Mobile: 0467 946 163
	E-mail: andrew.carmichael@riotinto.com
Incident location *Use GPS co-ordinates, attach map, etc. as appropriate*	Latitude 12.188141 S Longitude 136.687700 E



Release of seawater mixed with highly turbid water from within the red-outlined 'dead-leg' section of the northern channel. This section of the channel is usually a contained section due to the back flow force of the seawater inflow point (dead leg). An eddy effect retains seawater in this section of the channel. Two compromised stormwater drains were identified to be casual factors allowing sediment to enter the northern seawater channel over a period of time prior to the release after a power outage.

Incident description

Attach photographs etc.

Exceedance of a limit specified in Item 9 and Item 10 (a) (Schedule 1).

Item 9; Limitations on discharge (Condition 21) Exceedance of the Limits specified in Appendix 2, Table 1.

Nature of actual / potential impact

Volume of material (L, m3), area impacted (ha, m2), flora and fauna affected, erosion, duration of incident, etc. as relevant

Surface water flow from the surrounding refinery footprint infiltrated 2 compromised stormwater drains which had historically drained into a section of the northern seawater channel. This has resulted in a build-up of highly turbid water discharging via authorised discharge point S001 caused by the stopping and starting of the seawater channel.

- A Peninsula wide power outage resulted in the seawater circuit & WWNP shutting down.
- No rainfall has occurred during the day, however the Refinery peninsula has experience high rainfall in the last 10 days.
- With the seawater pumps offline, the seawater circuit had drained out with no observed plume or sediment at the time.
- Two drain inlets, which had previously been plugged with a cement grout mix in order to prevent disturbed stormwater entering the channel, were identified to have been

Volume	NA	m^3
	NA	L
Area	NA	m^2
	NA	ha
Duration	30-45 minutes	Mins

	compromised. • A damaged stormwater drain inlet on Road 24 allowed sediment to enter the northern seawater channel and accumulate in a low-flow section. • Additionally, a damaged stormwater drain inlet on Road 25 also allowed sediment to enter the stormwater pipeline. • This has resulted in potentially highly turbid water entering the seawater channel into the eastern most section of the northern channel during previous weeks rainfall events. • The dead-leg section remains relatively stagnant due to a back flow force from where the seawater inlet enters the northern channel further downstream. • As the seawater circuit had been offline, the seawater mixed with a highly turbid plume, has free drained further down gradient in the channel, migrating towards the western seawater channel. • As the seawater circuit has come back online at approximately 11:30AM, prior to recommencing WWNP operation, a plume has been flushed out via S001 and into the inner Gove harbour. • The plume was observed and monitored over a short occurrence of up to 30 to 45 minutes from approximately 12:00 PM to 12:45 PM. • Prior to the seawater channel being offline, the seawater and sediment has likely been held back by the channels operational flow and 'dead-leg' effect in the low flow section of the northern channel. • The release of turbid water through the authorized discharge point S001 was recorded at 575 NTU, exceeding the Waste Discharge Licence (WDL) limit for Nephelometric Turbidity Units (NTU). • Follow up samples taken after the event, returned a result of 4.0 NTU within 24 minutes. This confirms that the spike was due to a pulse event with minimal impact. See the attached environmental impact assessment for further details.			
Immediate action taken *i.e., spill contained / stopped / location of disposal*	Immediate corrective actions implemented was to reinstate power to the peninsula and recommence the sea water pumps. Reseal stormwater drain inlets on road 24 and 25 to prevent surface water runoff entering the northern seawater channel – Completed 19.02.2025 and 26.02.2025			

Environmental details	
Emergency and remedial action taken	Power was returned to the peninsula at approximately 09:30 AM and the sea water pumps were online by approximately 11:30 AM. Resealed stormwater inlet drains on Road 24 and 25 to prevent infiltration of surface water into the northern seawater channel section.
Current situation *Potential / ongoing / ceased etc. Include current location of contaminated material*	The observed plume of high turbid water ceased discharging by approximately 12:45 PM. Follow up samples collected at 12:24 PM and 12:52 PM confirmed the discharge had ceased.
Details of any samples taken *When / where / type / number / time for availability of results etc. Include plans of sampling locations where possible*	Samples and the compliance monitoring program in place; • An initial sample was taken at S001 12:00pm as soon as high turbidity within the seawater circuit was observed. • Two follow up samples were taken at S001 at 12:24 PM as the channel became less visibly turbid. A sample collected at 12:52 PM confirmed the plume had stopped discharging and only seawater was discharging via S001. • Marine investigative samples at SW9, SW10 and RR2 were completed at 17:30 PM as soon as a vessel was available. • Continuous monitoring at S001 remained in operation. • Daily sample at S001. • Daily composite sample at S074. A full assessment included in the environment impact assessment attached.
Future actions (if any) including timeframe	Refer to the attached EIA.
Operator internal reporting	
Has the incident been reported internally? *If so, to whom*	YES ☒ NO ☐
Name	Andrew Carmichael

Position	Environment Superintendent		
Operator reference number *Where applicable / available*	NA		
Has the department been notified earlier?	YES ☒ NO ☐		
Who was notified	Kirsten Davison		
How *(phone / email)*	Phone call and follow email with initial notification.		
When *(date and time)*	Phone call on 19/02/2025 at 15:00 PM, and email on 19/02/2025 at 18:30 PM		
By whom	Andrew Carmichael		
Signed	*Andrew Carmichael*	Date & Time	05 March 2025, 14:30 PM
Name	**Andrew Carmichael**	Position	Environment Superintendent

Forward completed form to:
Mining Division
Department of Environment, Parks & Water Security
Email: mineralinfo.DEPWS@nt.gov.au

Environmental Impact Assessment

Event #84681785_68026

19 February 2025

Executive Summary

Compliance monitoring and investigative (event based) sampling was conducted in response to an observed plume of turbid water at authorised discharge point S001. The observed plume of turbid water was observed from 12:00 PM – 12:24 PM on 19 February 2025. The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC and continuous operation of the autosampler (S074) to retrieve a composite sample. Overall, the data demonstrates that there was no material environmental impact from this event

The event was reported as #84681785_68026 to the Department of Lands, Planning and Environment (DLPE) on 20 February 2025. Immediate corrective action included reinstating power to the peninsula, recommence the seawater pumps and repair compromised stormwater network.

As the refinery's demolition, decontamination, and disposal (DDD) project progresses on multiple fronts, heavy machinery equipment (HME) has compromised the integrity of the stormwater network allowing ingress of turbid water into the seawater channel. The Gove environment team continues to work closely with the Refinery demolition team as the DDD project further progresses to ensure continued effectiveness of mitigation and control measures for surface water management.

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GLOSSARY

LOR	Limit of reporting
MZB	Mixing Zone Boundary
NSNL	Neutralised Supernatant Liquor
TDN	Total Dissolved Nitrogen
TDP	Total Dissolved Phosphorous
TV	Trigger Value
UPS	Uninterrupted Power Source
WDL	Waste Discharge Licence 'The Licence'
WWNP	Waste Water Neutralisation Plant

Introduction

On February 19, 2024, at 07:26, a power outage occurred across the Gove Peninsula, causing the seawater pumps in the refinery to cease operation. When the pumps were restarted, sediment in the seawater channel led to the release of turbid water through the authorized discharge point S001, exceeding the Waste Discharge Licence (WDL) limit for Nephelometric Turbidity Units (NTU).

As the refinery's demolition, decontamination, and disposal (DDD) project progresses on multiple fronts, heavy machinery equipment has compromised the integrity of the stormwater network. A damaged stormwater drain inlet on Road 24 allowed sediment to enter the northern seawater channel and accumulate in a low-flow section (Figure 1). When the seawater pumps ceased operation, it caused sediment in this low-flow area to migrate down the northern seawater channel as it drained. Additionally, a damaged stormwater drain inlet on Road 25 allowed sediment to enter the stormwater pipeline (Figure 1). The power outage caused a change in pressure within the pipeline, allowing sediment buildup to flow into the northern seawater channel. When the pumps were restarted, sediment from the damaged stormwater drain inlets was flushed down the northern and western seawater channels, discharging turbid water at S001 into the receiving environment.

The investigation identified the following key factors in the incident that are controllable:

1. Stormwater network integrity compromised on road 24 and 25.
2. Weekly sediment and erosion control inspection does not detail integrity checks of historical sealed stormwater drain inlets/networks

The following actions have been made to address these key factors:

1. Reseal stormwater drain inlets on road 24 and 25 to prevent surface water runoff entering the northern seawater channel – Completed 19.02.2025 and 26.02.2025
2. Decommission northern seawater channel – Scheduled 2025
3. Document integrity checks of historical sealed stormwater drain inlets / networks within the Weekly sediment and erosion control inspection – Due 15.03.2025.

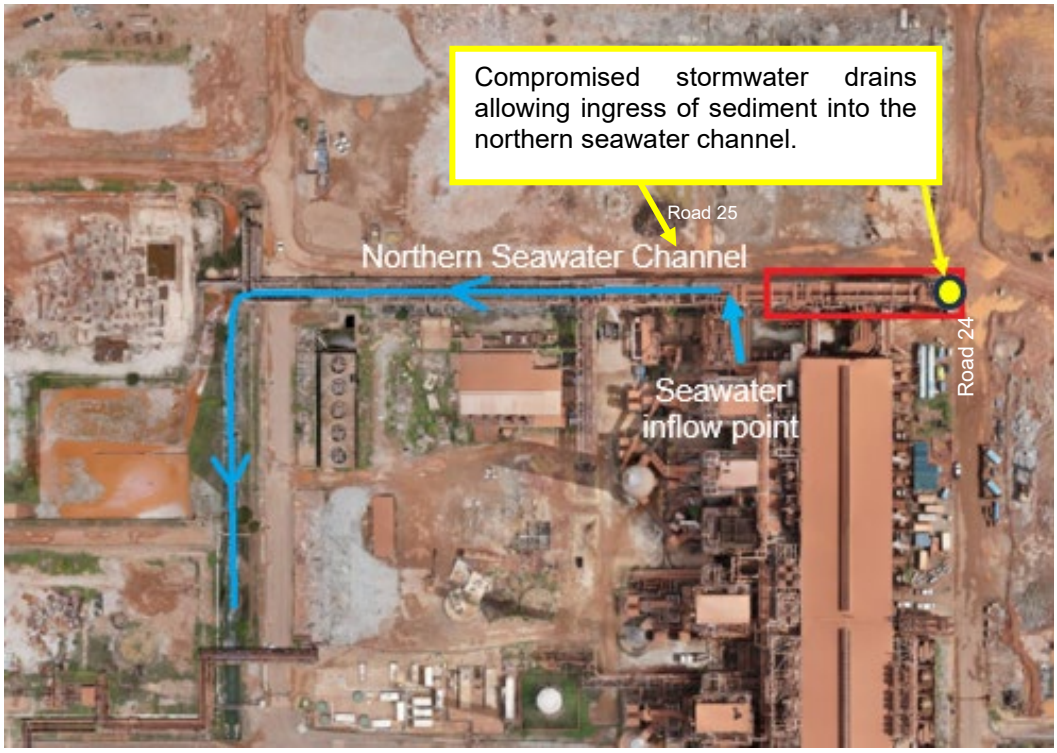


Figure 1 Ingress of sediment from compromised stormwater drains that entered the northern seawater channel.

Results

Tabulated results for event 84681785_68026 are provided in Appendix A. Operational results are samples analysed at the onsite laboratory. Investigative results are samples analysed offsite at a NATA accredited laboratory.

Results for operational samples for the intake site at S004 are summarised in Appendix A, Table A2.

Results for the daily compliance samples taken at 08:00 AM for 19 to 21 of February 2025 at the Authorised Discharge Site S001 are summarised in Appendix A, Table A3.

An automatic water sampler collects a 50 mL sample every 20 minutes resulting in a composite sample every 24 hours. Composite sample results over a 24-hour period provide a comprehensive representation of discharge quality into the receiving environment during the event, providing weighted average results. The site S074 composite sample results for the 19 to the 21 of February 2025 were analysed onsite and are summarised in Appendix A, Table A4.

Investigation event-based samples (NATA laboratory offsite) for the 19 February 2025 at Authorised Discharge site S001 are summarised in Appendix A, Table A5.

Results for event based internally analysed samples on the 19 February 2025 at S001 are summarised in Appendix A, Table A6.

Marine sites SW9, SW10 and RR2 were sampled on the 19 February 2025, the results are summarised in Appendix A, Table A7.

Hydrocarbon and nutrient analysis was conducted for investigations samples, however results were below the Laboratory limit or reporting for hydrocarbons and not of concern for nutrients.

Discussion

WWNP and Seawater Pump Operation

Figure 2 shows when the seawater pumps ceased operation and remained offline until power was reinstated at 10:59 AM on the 19 February 2025. Figure 3 shows channel flow at S001 recommencing at approximately 11:30 AM upon the restarting of the seawater pumps & WWNP.

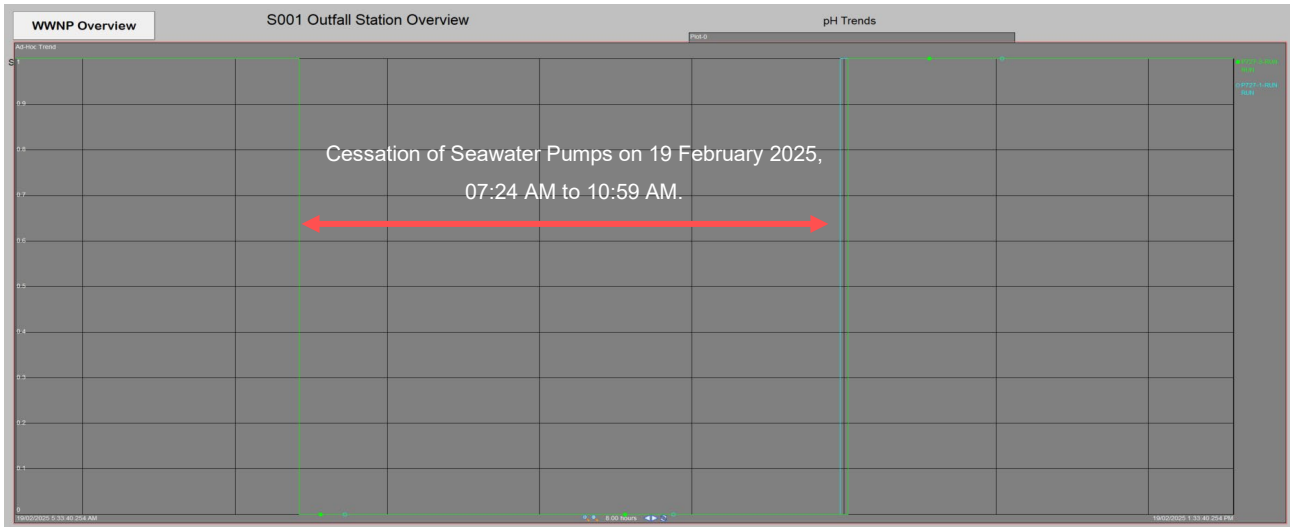


Figure 2 Seawater pumps 19 February 2025 ceasing operation at 07:24 AM during the power outage and restarting 10:59 AM.

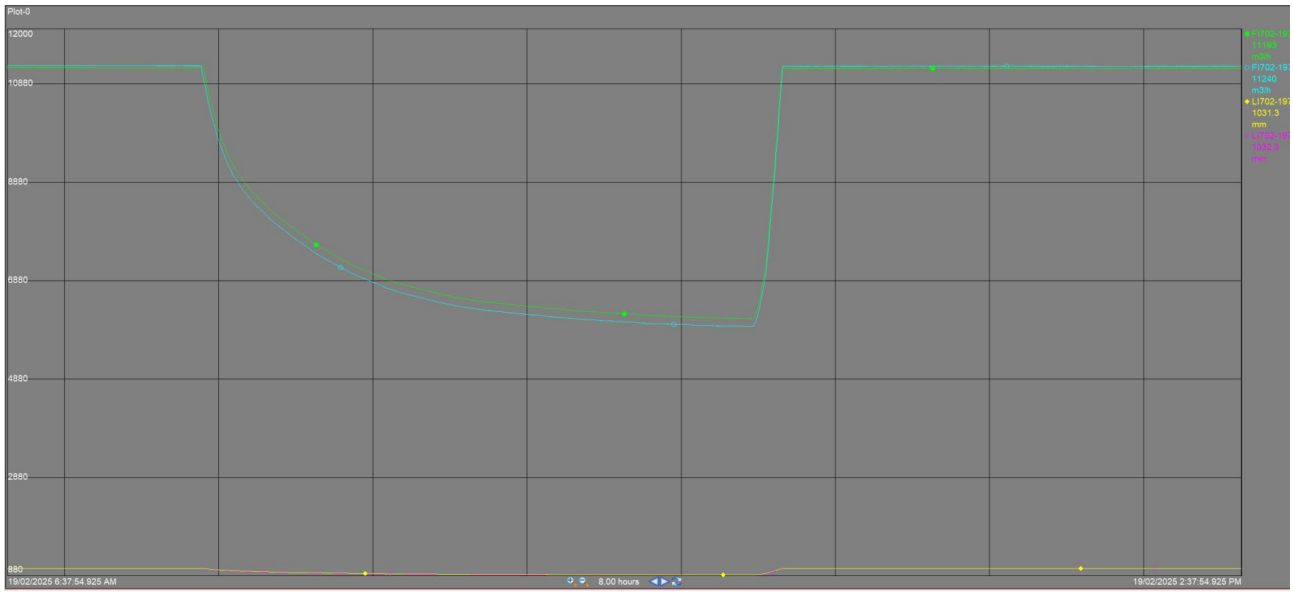


Figure 3 Flow at S001 recorded on 19 February 2025 reducing at aproximately 07:24 AM during the power outage and increasing at approximately 11:30 AM after the seawater pumps came online at 10:59 AM.

Electrical Conductivity

Electrical conductivity (EC) is indicative of discharges of stormwater into the seawater channel. Background seawater has an EC of approximately 50 mS/cm. The seawater channel intake site S004 ranged from 50.7 mS/cm to 52.3 mS/cm for the period 19 to 21 February 2025. The outfall channel site S001 for the same period is also summarised in Table 1 (S001). There is no evidence of stormwater inputs into the channel during the event. The EC value remained at background seawater EC levels on the 19 February 2025.

Table 1 Seawater channel intake site S004 and outfall channel site S001 showing EC from the 08:00 AM sample from 19 to 21 February 2025.

Date and Time	EC (mS/cm) S004 intake	EC (mS/cm) S001 outfall
19 February 2025 12:00	50.7	49.0
20 February 2025 08:00	49.8	48.8
21 February 2025 08:00	52.3	50.9

Turbidity

Turbidity results from event-based sampling from S001 during and following the event on the 19 February 2025 are shown in Figure 4. Turbidity results from the external NATA accredited laboratory exceeded the S001 limit reaching 575 NTU during the event. A correlation between the seawater pumps restarting and an increase in turbidity at S001 is highlighted in Figure 4. By 12:24 PM turbidity had decreased to 4 NTU, background levels of seawater.

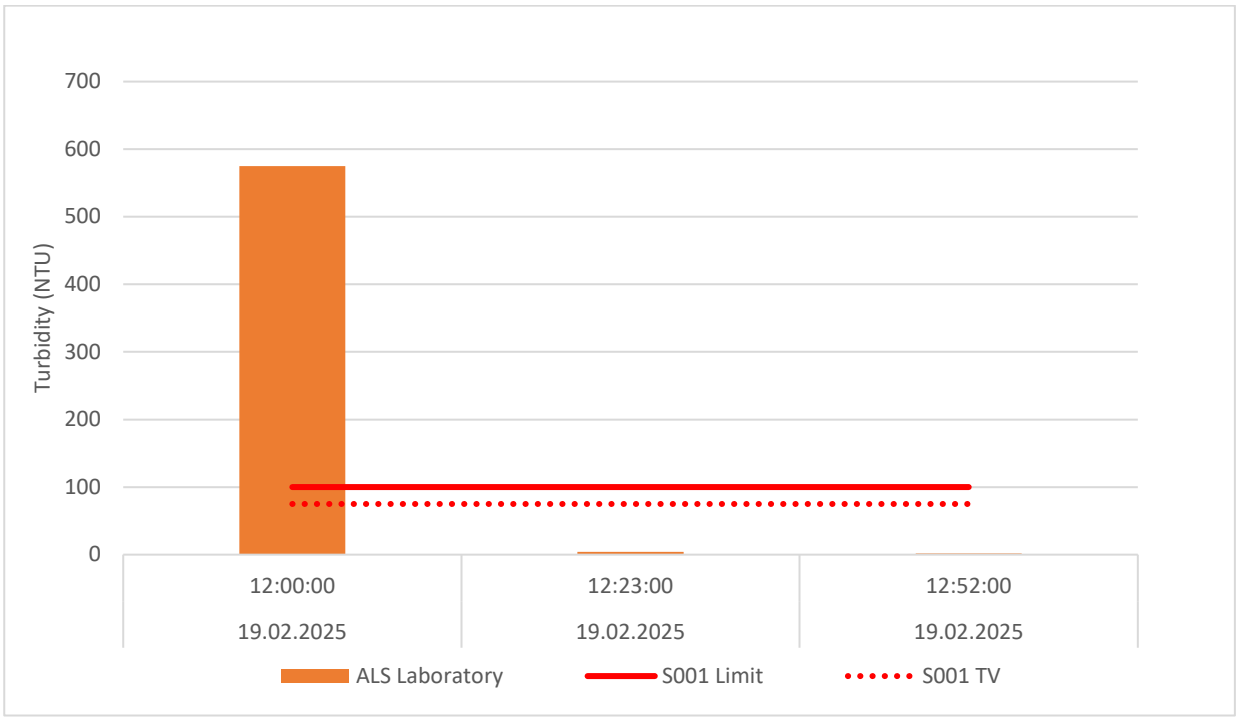


Figure 4 External NATA results for Turbidity (NTU), for S001 investigative samples for 19 February 2025.

Metals and Metalloids

Analysis of metals and metalloids at site S001 from investigative samples (NATA analysis) are summarised in Appendix Table A5.

Investigation samples taken at S001 at the time of the observed plume on the 19 February 2025 recorded an elevated dissolved aluminium concentration of 94 µg/L. This coincides with the observed plume discharging at S001. The elevated concentration values were substantially lower than the Licence Limit of 560 µg/L. Successive samples taken at 12:24 PM, approximately 20 minutes following the event, decreased to 12 µg/L confirming the pulse event had ceased and that dissolved aluminum concentrations had decreased to background seawater concentrations.

Composite Sample

The S074 composite sample results (Appendix A, Table A4) provide a time and volume weighted average over twenty-four hours, including when the unauthorised release was discharging into the western seawater channel. Composite samples are relevant to TVs and Limits to assess potential environmental impact. The composite sample collected at 08:00 AM on 20 February 2025 is representative of the preceding 24-hour period when the observed plume event occurred. The concentrations recorded during this period were at or below those when the WWNP is operational. All analyte concentrations remained below WDL Limits and TVs.

Marine Results Discussion

Investigative sample results for dissolved aluminium (offsite NATA laboratory) from the MZB sites are shown in Figure 9. Sampling of the marine sites was completed by 17:26 PM, 19 February 2025, after the power had been reinstated and the event had ceased. Results at the MZB sites for dissolved aluminium were recorded well below the license trigger value of 56 µg/L. Appendix A, Table A7 shows all analytes at the MZB were substantially lower than the corresponding TVs with concentrations remaining at background concentrations within 5.5 hours post the event.

Conclusion

The results of the investigation sampling confirmed turbidity was the only parameter to exceed a Licence Limit for the event sample taken at S001 at 12:00 PM on 19 February 2025, returning 575 NTU. Follow up samples taken after the event, returned a result of 4.0 NTU within 24 minutes. This confirms that the spike was due to a pulse event with minimal impact. Follow up marine based monitoring also confirmed the short term nature of the incident.

Overall, the data demonstrates that there was no material environmental impact expected from the event on the 19 February 2025.

Appendix A – Analytical Results Tables

Table A2 Water quality results for site S004 seawater intake location from 19 - 21 February 2025 (onsite analysis).

Daily Operational Samples at site S004 Samples retrieved at 08:00 Hrs		19/02/2025	20/02/2025	21/02/2025
Environmental Parameters				
Ph		8.16	8.08	8.04
Electrical Conductivity	ms/cm	50.7	49.8	52.3
Turbidity	NTU	2.73	3.67	3.20
Alkalinity	mg/L	128.6	128.2	121.7
Dissolved Metals & Metalloids				
Aluminium	µg/L	6.946	7.083	5.620
Arsenic	µg/L	2.146	2.237	1.896
Gallium	µg/L	0.708	0.556	0.146
Manganese	µg/L	1.741	2.712	3.403
Molybdenum	µg/L	10.248	10.673	9.754
Vanadium	µg/L	3.672	3.479	1.994

Table A3 Daily Authorised Monitoring Site S001 Outfall Monitoring Station water quality results – 19 to 21 February 2025 (Onsite Analysis).

Daily Compliance Samples – S001 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	19/02/2025	20/02/2025	21/02/2025
Environmental Parameters						
Ph		9	9.5	8.72	8.73	8.72
Electrical Conductivity	ms/cm	-	-	49.0	48.8	50.9
Turbidity	NTU	75[‡]	100	7.37	6.37	3.12
Alkalinity	mg/L	-	-	357.3	386.5	367.7
Dissolved Metals & Metalloids						
Aluminium	µg/L	-	560	25.327	25.159	24.815
Arsenic	µg/L	-	200	13.767	13.856	13.142
Gallium	µg/L	-	8000	15.6	14.597	14.437
Manganese	µg/L	-	-	3.558	4.383	4.849
Molybdenum	µg/L	-	38800	27.86	26.911	27.611
Vanadium	µg/L	-	1000	45.825	42.197	40.793

Table A4 Daily water quality results – 24 hour Composite sample at Authorised Monitoring Site S074 – 19 to 21 February 2025 (Onsite Analysis)

Daily Compliance Samples – S074 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	19/02/2025	20/02/2025*	21/02/2025
Environmental Parameters						
Ph		9	9.5	8.79	8.83	8.86
Electrical Conductivity	ms/cm	-	-	47.4	47.1	46.2
Turbidity	NTU	75[t]	100	8.86	7.95	8.38
Alkalinity	mg/L	-	-	339.35	332.5	339.0
Total Suspended Solids	mg/L	-	-	3.5	17.6	12.5
Dissolved Metals & Metalloids						
Aluminium	µg/L	-	560	21.15	22.167	19.166
Arsenic	µg/L	-	200	12.534	12.81	12.87
Gallium	µg/L	-	8000	13.43	12.191	13.084
Manganese	µg/L	-	-	3.335	4.087	3.364
Molybdenum	µg/L	-	38800	27.615	25.75	26.704
Vanadium	µg/L	-	1000	41.951	38.887	39.845

* Composite sample from channel water quality from 8am 19/02/2025 to 8am 20/02/2025, capturing NTU exceedance period.

Table A5 Event based external water quality results – Authorised Monitoring Site S001 Outfall Monitoring Station – 19 February 2025 (External Analysis – NATA accredited laboratory).

Investigative / Event sample – S001		S001 Trigger value	S001 Limit	19/02/2025	19/02/2025	19/02/2025
			Time	12:00	12:24	12.52
Environmental Parameters						
Ph		9	9.5	8.11	8.17	8.60
Electrical Conductivity	µs/cm	-	-			
Turbidity	NTU	75[4]	100	575	4.0	1.8
Total Alkalinity	mg/L	-	-	176	141	255
Total Suspended Solids	mg/L	-	-	<5	<5	<5
Metals & Metalloids						
Dissolved Aluminium	µg/L	-	560	94	12	11
Dissolved Arsenic	µg/L	-	200	4.4	3.2	7.8
Dissolved Gallium	µg/L	-	8000	<10	<10	<10
Dissolved Iron	µg/L	-	-	36	<5	<5
Dissolved Manganese	µg/L	-	-	31.7	4.6	3.8
Dissolved Molybdenum	µg/L	-	38800	12.5	11.9	19.5
Dissolved Vanadium	µg/L	-	1000	13.9	6.8	26.5
Total Aluminium	µg/L	-	-	27800	314	186
Total Arsenic	*µg/L*	-	-	11.5	3.3	8.2
Total Gallium	*µg/L*	-	-	<10	<10	<10
Total Iron	*µg/L*	-	-	16300	253	176
Total Manganese	*µg/L*	-	-	106	6.4	6.8
Total Molybdenum	*µg/L*	-	-	14.6	13.0	21.2
Total Vanadium	*µg/L*	-	-	73.0	8.2	28.4
Nutrients						
Total Dissolved Phosphorus	µg/L	-	140	63	26	19
Total Dissolved Nitrogen	µg/L	-	1700	950	230	270

Hydrocarbons						
Total Petroleum Hydrocarbons	µg/L	-	-	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	-	<0.5	<0.5	<0.5
Benzene	µg/L	-	-	<1	<1	<1
Toluene	µg/L	-	-	<2	<2	<2
Ethylbenzene	µg/L	-	-	<2	<2	<2
Xylene	µg/L	-	-	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

Table A6 Event based internal water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 19 February 2025 (onsite analysis).

Event Operational samples - S001 Analysed onsite		S001 Trigger value	S001 Limit	19/02/2025	19/02/2025	19/02/2025
			Time	12:00	12:24	12:52
Environmental Parameters						
pH		9	9.5	8.1	7.97	7.99
Electrical Conductivity	ms/cm	-	-		53.27	52.58
Turbidity	NTU	75[t]	100	588	15.12	13.91
Dissolved Aluminium	µg/L	-	560	76.7	No onsite analysis	
Dissolved Arsenic	µg/L	-	200	3.89		
Dissolved Gallium	µg/L	-	8000	1.06		
Dissolved Iron	µg/L	-	-	23.8		
Dissolved Manganese	µg/L	-	-	31.1		
Dissolved Molybdenum	µg/L	-	38800	12.5		
Dissolved Vanadium	µg/L	-	1000	11.6		

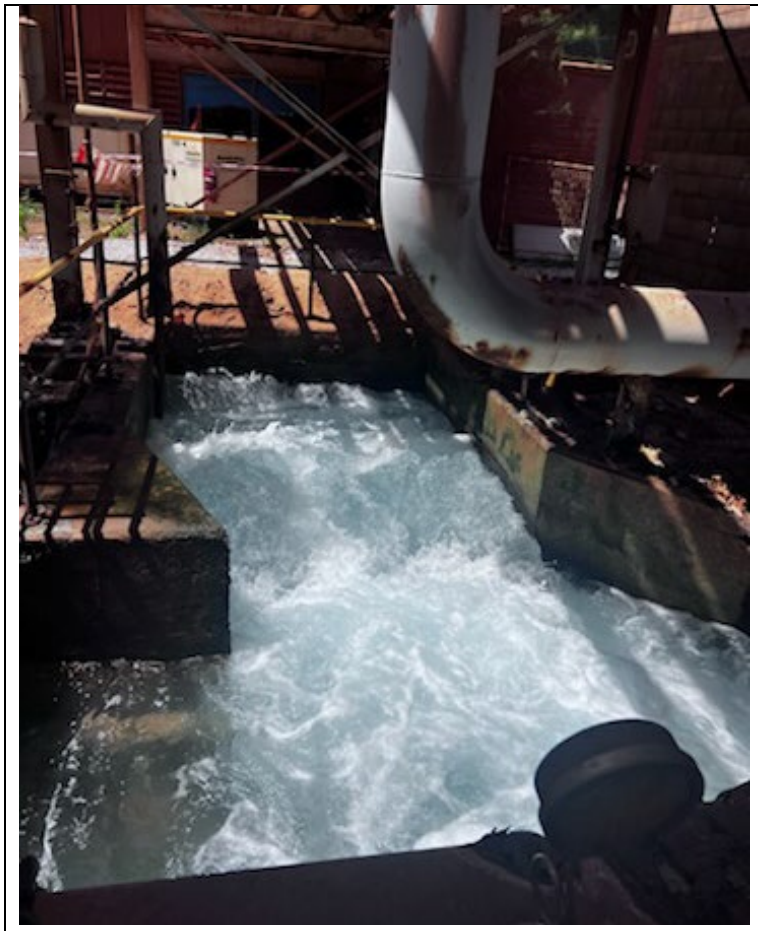
This data is event based – it does not form part of the WDL monitoring program.

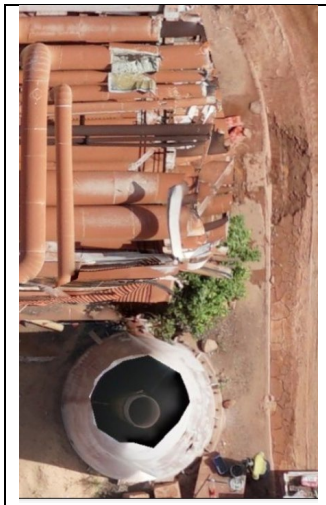
Table A7 Investigative water quality results - Marine Mixing Zone (MZB) sites – 20 February 2025 (External Analysis - NATA accredited laboratory).

		MZB Trigger Values	20/02/2025	20/02/2025	20/02/2025
			SW9	SW10	RR2
		Time	17:26	17:20	17:23
Environmental Parameters					
pH		7.7 – 8.4	8.16	8.04	8.03
Electrical Conductivity	µS/cm	-			
Total Suspended Solids (SS)	mg/L	-	<5	<5	<5
Turbidity	NTU	20	0.5	0.5	0.5
Alkalinity	mg/L	-	131	117	121
Metals and Metalloids					
Dissolved Aluminium	µg/L	56	<5	<5	<5
Dissolved Arsenic	µg/L	20	2.6	1.9	1.8
Dissolved Gallium	µg/L	800	<10	<10	<10
Dissolved Iron	µg/L	-	<5	<5	<5
Dissolved Manganese	µg/L	-	0.8	0.6	0.7
Dissolved Molybdenum	µg/L	3880	10.9	9.4	9.7
Dissolved Vanadium	µg/L	100	5.2	2.4	2.6
Nutrients					
Total Dissolved Phosphorus	µg/L	14	10	12	12
Total Dissolved Nitrogen	µg/L	170	120	120	120
Hydrocarbons					
Total Petroleum Hydrocarbons	µg/L	-	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	<0.5	<0.5	<0.5
Benzene	µg/L	-	<1	<1	<1
Toluene	µg/L	-	<2	<2	<2
Ethylbenzene	µg/L	-	<2	<2	<2
Xylene	µg/L	-	<2	<2	<2

Appendix B – Photo log of event and remedial actions

	
Western and Eastern Channel confluence showing turbid water at 12:08 PM on the 19 Feb 2025.	Authorised discharge point (S001) showing no observed plum in the harbour, ~14:00 PM on the 19 Feb 2025

	
Seawater pumps in operation (northern seawater channel). Low flow section is located to the left of the photo.	Low flow section of northern seawater channel on the 19 Feb 2025 showing turbid water.

 	 
[Left] Road 24 showing compromised stormwater drain inlet. [Right] Resealed stormwater drain inlet Road 24 completed on 19 Feb 2025	[Left] Road 25 showing damaged stormwater drain inlet. [Right] Road 25 Resealed stormwater drain inlet completed on 26 Feb 2025

Notification of Environmental Incident

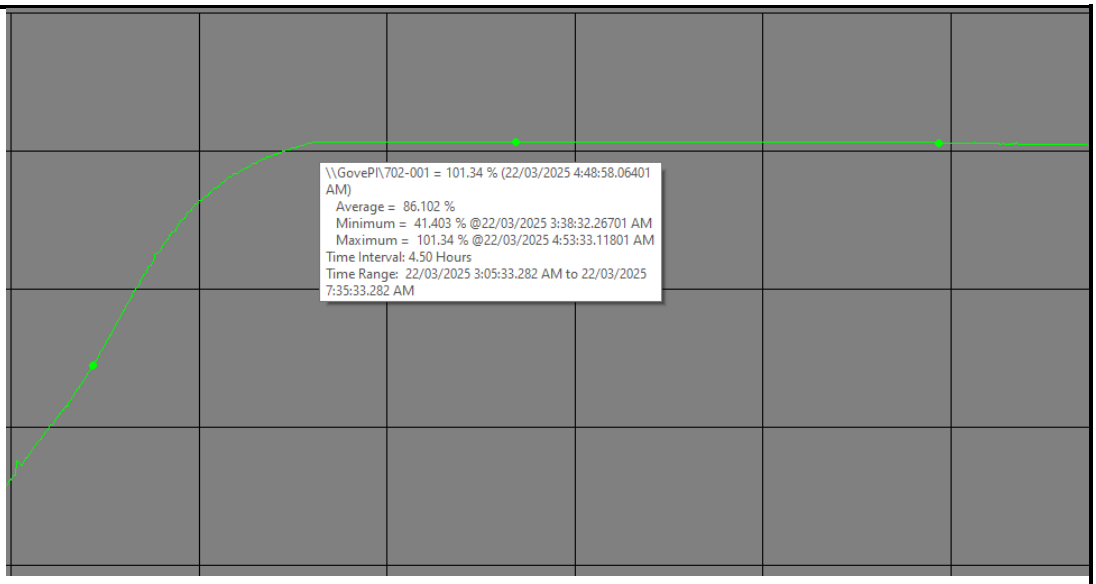
All notifiable incidents are to be reported in accordance with section 225 *Environment Protection Act 2019*

☒ Incident ☐ Critical Incident ☐ Preliminary ☒ Final

Incident details	
Incident number	**3459278952_71855**
Name of mining site	Rio Tinto - Gove operations
Licence number *If not known, provide Authorisation number*	WDL171-12 *0035-02 Authorisation*
Name of operator:	RTA Gove Pty Limited
Date & time of incident *And / or when you first became aware of it*	Detection Date: 22/03/2025 Time: 04:48 AM
	Incident Date: 22/03/2025 Time: 04:48 PM
Name of person notifying	Andrew Carmichael
Position/Title	Environment Superintendent
Contact person	Andrew Carmichael
Contact details	Business: 08 8987 5233 Mobile: 0467 946 163
	E-mail: andrew.carmichael@riotinto.com
Incident location *Use GPS co-ordinates, attach map, etc. as appropriate*	Latitude -12.188147 Longitude 136.685306  WCP Overflow weir location into Seawater Channel
Incident description *Attach photographs etc.*	Overflow of Western Containment Pond (WCP) into the Seawater Channel resulting in discharge via S001 (Schedule 1, Item 10 (f), Condition 25 & 26).

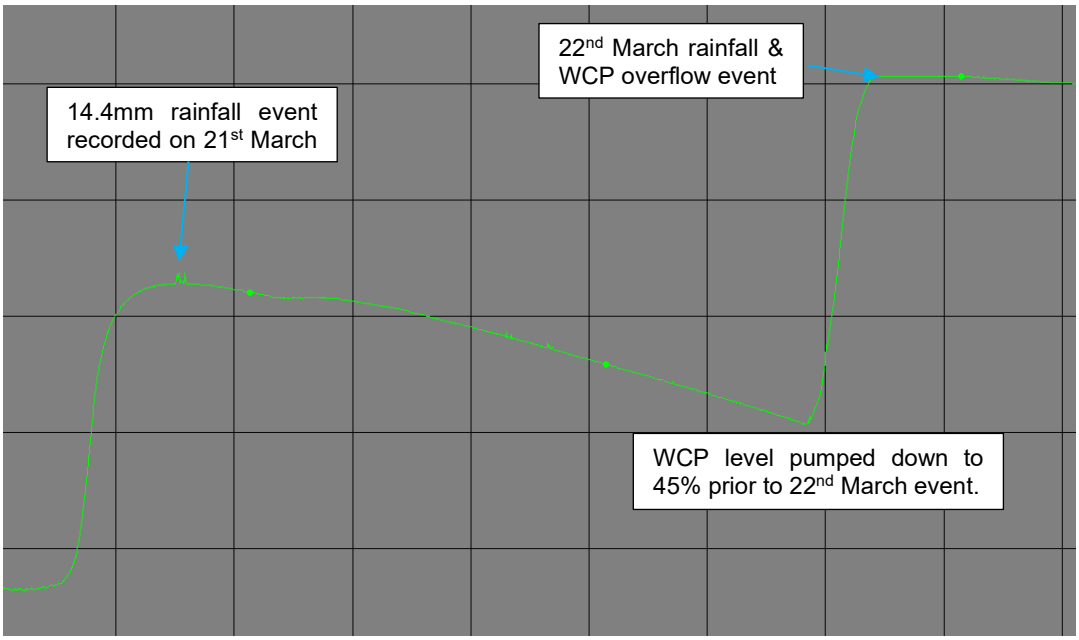
Nature of actual / potential impact *Volume of material (L, m3), area impacted (ha, m2), flora and fauna affected, erosion, duration of incident, etc. as relevant*	A storm cell brought heavy rainfall of 27.4mm within 2 hours in the lead up to the event, with a total of 45.8mm recorded in the 24hours prior to the event. Overflow from the WCP into the seawater channel commenced at approximately 04:48 PM and ceased at approximately 06:21 AM on the 22nd of March. Overall, the data demonstrates there was no material environmental impact expected from the WCP overtopping on 22 March 2025. Refer to EIA for further details.	**Volume**	NA	m^3
			NA	L
		Area	NA	m^2
			NA	ha
		Duration	1 hour, 33 minutes	hours
Immediate action taken *i.e., spill contained / stopped / location of disposal*	Immediate corrective actions implemented to minimise the risk of overtopping included; • Implementation of the Trigger Action Response Plan (TARP); WWNP shut down, responsive monitoring and Marine monitoring conducted; • WWNP was shutdown when the WCP reached 90% at approximately 04:35 AM as per the TARP. • Continual operation of the WCP pumps to reduce the volume and pond levels across the refinery. • Both sea water pumps remaining in operation.			

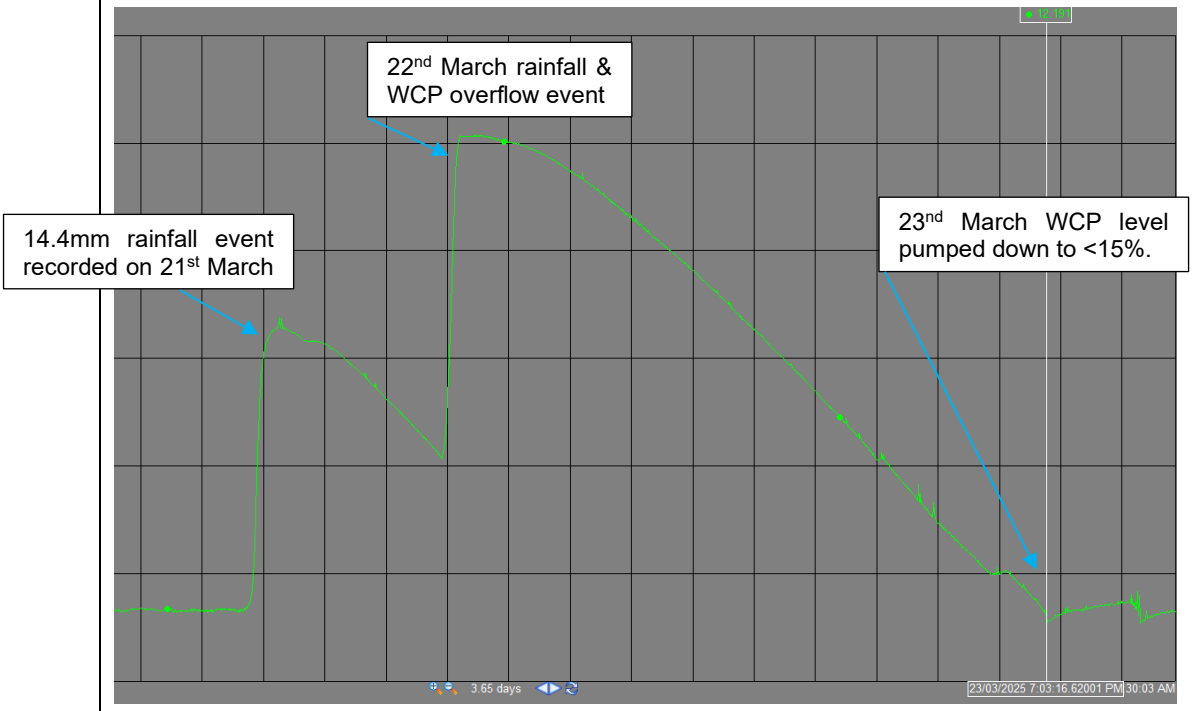
Environmental details	
Emergency and remedial action taken	• The WWNP was shutdown since approximately 04:35 AM on 22nd March as WCP capacity reached 90%, as per the TARP. • WCP pump continued to operate until pond levels reduced to <15% (optimum sump pump level). • Inspection and maintenance of erosion and sediment controls and surface water management controls across the refinery in preparation of future rainfall events.
Current situation *Potential / ongoing / ceased etc. Include current location of contaminated material*	The WWNP will remained shutdown until the WCP level is reduced to <50% capacity, all monitoring requirements were completed and future weather conditions assessed. The containment pond pumps remained in operation and continued to drain the pond level until they returned to <15%. Below shows the WCP overflow level at 101.34% at 04:48 AM on 22nd February.



The pond level reduced to below 101.34% at 6:21 PM, approximately 1 hour and 33 minutes after it commenced overflowing and steadily reduced.

An increase in the WCP level to 65% was also recorded at 4:50pm 21 March 2025 when a 14.4mm rainfall event was recorded. The WCP was subsequently pumped back to 41% prior to further rainfall being recorded on 22nd March 2025. See below WCP level data over a 24-hour period (21 to 22 March 2025). The sharp increase in WCP level recorded on the 22nd March from approximately 45% to 101.34% occurred in approximately 1 hours, 08 minutes from 03:40AM to 04:48 AM.



	The below extract shows the WCP level being pumped out to <15% by 19:03 PM on 23 March 2025 before further rainfall was recorded on the 24 March. 
Details of any samples taken *When / where / type / number / time for availability of results etc. Include plans of sampling locations where possible*	Samples and the compliance monitoring program in place; • A sampling regime at the WCP and S001 commenced at 4:50 AM during the event, and continued until 10:45 AM. • Continuous monitoring at S001 remained in operation. • Daily sample at S001. • Daily composite sample at S074 • Marine incident investigation sampling at RR2, SW9 & SW10 compliance sites was completed at approximately 10:10 AM on the 22 March 2025.
Future actions (if any) including timeframe	Update of the certified erosion and sediment control plan (ESCP) to manage the transitional & interim landform of the refinery as it is being demolished. As presented to the Environmental & Mining Division on the 25th March in Darwin.
Operator internal reporting	
Has the incident been reported internally? *If so, to whom*	YES ☒ NO ☐
Name	Mo Dialami
Position	WWNP Process Engineer
Operator reference number	NA

Has the department been notified earlier?	YES ☒ NO ☐		
Who was notified	Stacey Kopf		
How *(phone / email)*	Email with initial notification.		
When *(date and time)*	13:30 PM		
By whom	Andrew Carmichael		
Signed	*Andrew Carmichael*	Date & Time	4 April 2025, 15:00 PM
Name	**Andrew Carmichael**	Position	Environment Superintendent

Forward completed form to:
Mining Division
Department of Environment, Parks & Water Security
Email: mineralinfo.DEPWS@nt.gov.au

Environmental Impact Assessment

Event #3459278952_71855

22 March 2025

Executive Summary

Compliance monitoring and investigative (event based) sampling was conducted in response to the Western Containment Pond (WCP) overtopping into the Seawater Channel on 22 March 2025 following a heavy rainfall event across the Gove peninsula. The over topping of the WCP occurred for 1 hour and 33 minutes from 04:48 AM to 06:21 AM.

The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC and continuous operation of the autosampler (S074) to retrieve a composite sample.

The event was reported as #3459278952_71855 to the Department of Lands, Planning and Environment (DLPE) on 22 March 2025. Immediate corrective action included continual operation of WCP pumps, implementation of the Trigger Action Response Plan (TARP); the Waste Water Neutralisation Plant (WWNP) was shutdown, and both sea water pumps remained operational. Overall, the data demonstrates that there was no material environmental impact from this event.

The ultimate medium-term corrective action remains to complete demolition of the refinery and decontaminate the catchment, converting it to a clean stormwater catchment. The decommissioning and removal of the Western Containment Pond (WCP), and associated catchment drainage infrastructure, is set to commence May 2025. As the demolition, decontamination, and disposal (DDD) project progresses, including detailed Contamination Site Assessment (CSA) and rehabilitation land forming, additional preventative and mitigation measures have been implemented to manage stormwater and sediment flow to the WCP. The Gove environment team continues to work closely with the Refinery demolition team as the DDD project further progresses to ensure continued effectiveness of mitigation and control measures.

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GLOSSARY

COPC	Contaminants of Potential Concern
LOR	Limit of reporting
MZB	Mixing Zone Boundary
RDA	Residue Disposal Area
NSNL	Neutralised Supernatant Liquor
SCP	Southern Containment Pond
STP	Sewerage Treatment Plant
TARP	Trigger Action Response Plan
TDN	Total Dissolved Nitrogen
TDP	Total Dissolved Phosphorous
TV	Trigger Value
UPS	Uninterrupted Power Source
WCP	Western Containment Pond
WDL	Waste Discharge Licence 'The Licence'
WWNP	Waste Water Neutralisation Plant

Introduction

A heavy rainfall event was experienced across the Gove Peninsula on 22 March 2025. The Stockpile Creek Rainfall Gauge recorded 27.4 mm of rainfall over a 2-hour period between 02:00 AM to 04:00 AM on the 22 March 2025. A total of 45.8 mm of rainfall was recorded over a 24-hour period prior to the event.

The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in stormwater overtopping the WCP weir into the seawater channel. Overflow from the WCP commenced at approximately 04:48 AM. The Waste Water Neutralisation Plant (WWNP) was shutdown at 04:35 AM as per the TARP. The WCP ceased overtopping its weir into the seawater channel at approximately 06:21 AM on 22 March 2025. Total duration of discharge from the WCP into the seawater channel was 1 hour and 33 minutes.

Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation and was not discharging into the seawater channel at the time of the overflow.

Operational and investigative (event based) samples were collected from Authorised Outfall Monitoring Station (S001) and Western Containment Pond (S030). A sampling event from the marine mixing zone boundary (MZB) sites (SW9, SW10 and RR2) was undertaken on the morning of 22 March 2025 following the cessation of the WCP overtopping into the seawater channel. These results combined with the daily composite sample (S074) results provide the evidence to assess any impact from the event on the receiving environment.

Mitigation Measures

As the refinery demolition, decontamination and disposal (DDD) project progresses on multiple work fronts, mitigation measures have been implemented to divert, reduce and slow down stormwater and sediment reporting to the WCP and other containment ponds across the refinery. Decontamination activities over the 2024 dry season have also aimed to remove known contamination sources from the upstream refinery footprint in preparation for the 2024-25 wet season. This strategy of removing source material and diverting water has continued through the early part of 2025 as work fronts within the DDD footprint advance with concrete footing removal. As a concurrent contaminated site assessment (CSA) and rehabilitation program of the site continues the mitigation measures will also evolve throughout the remainder of the project. Upon completion of the DDD activities across the refinery catchments, the ultimate medium-term corrective action remains the scheduled conversion to a clean stormwater catchment; with the decommissioning and removal of the Western Containment Pond (WCP) due to commence in 2025.

Post the 2023-24 wet season, improvements have been implemented to minimise the volume of water reporting to the Western Containment Pond (WCP). Figure 1 [Left] shows the location of the WCP, and associated changes made to the refinery catchments prior to the commencement of the 2024-25 wet season are shown in Figure 1 [Right].

The following combination of temporary erosion and sediment control measures to reduce the volume and stem the flow of water entering the WCP remain in place and are effective. Routine inspections have been utilised to monitor effectiveness of controls and address defects (Appendix C).

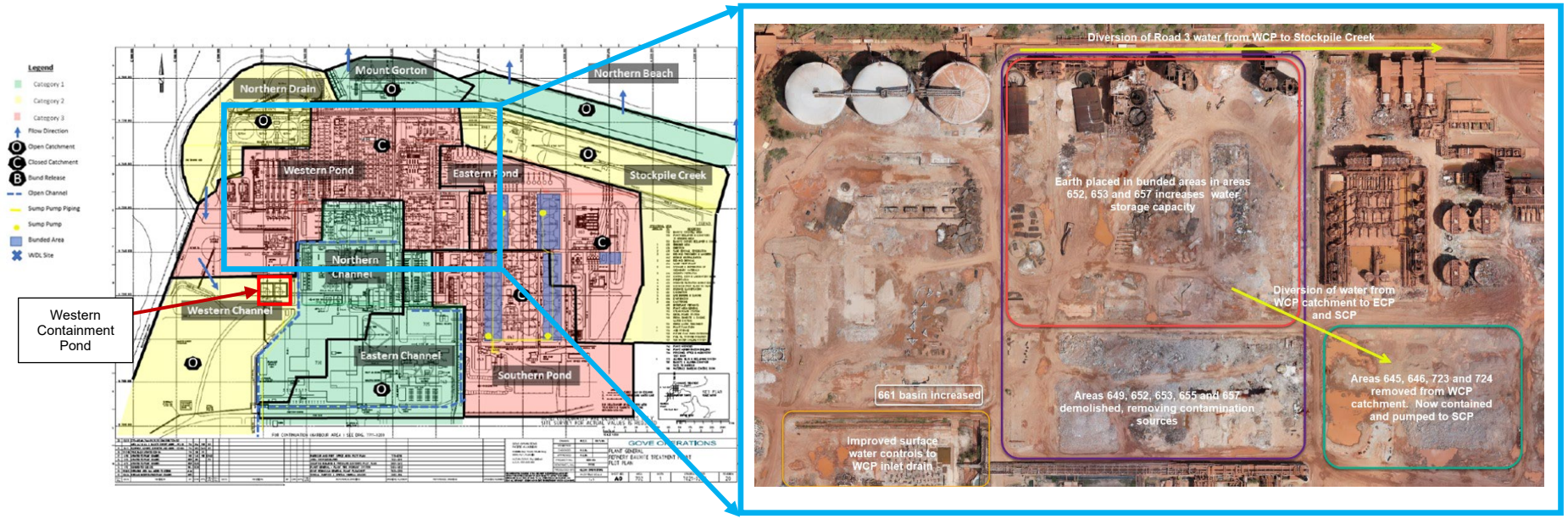


Figure 1 [Left] Refinery Catchments prior to 2023-24 wet season. [Right] Enlargement of boxed area showing aerial of bund outline to Refinery catchments commencement of 2024-25 wet season. There is still underground drainage along Road 15, Area 653 that still reports to the WCP. Sediment and flow control measures have been applied at each drain inlet aiming to slow and reduce sediment flow & velocity entering the WCP (See Appendix B, Figure 21).

Surface water and drainage control

Flow diversion banks and drains have been implemented to divert surface waters away from active work areas to minimise contamination of water flowing into the WCP.

- The demolition and decontamination of areas 633, 645, 646, 649, 652, 653, 655, and 657, 662, 723 and 724 has removed high pH materials from the WCP catchment (Figure 1, right).
- Earth bunds have been placed in areas to minimise runoff reporting to WCP, by diverting flow to other areas with capacity such as newly installed retention basins within the SCP or ECP catchments (Figure 1, right).
- Other catchment diversions include areas immediately west of the WCP which previously drained to the WCP. Recontouring of the area, and bunds located at the eastern and western boundary of scrapyard and oxy-cutting areas, southern fence line and moxy parking area divert flow to a large retention basin south of the WCP (Appendix B, Figure 17 & Figure 18).
- Earth bund installed around demolished calcination structure to contain light materials such as refractory bricks and synthetic mineral fibres (SMF) aim to contain flow and sediment loss to the WCP (Appendix B, Figure 16).
- Earth bund on southern and western corner of Area's 653, 657 installed (Figure 1, right) to prevent surface runoff flowing towards drains that report to the WCP (Appendix B, Figure 21).

A certified erosion and sediment control plan (ESCP) to manage the transitional and interim landform across the WCP, ECP and SCP catchment is currently being updated. The ESCP includes landform shaping and additional retention basins within the WCP catchment.

Erosion control and surface stabilisation

Erosion control and stabilisation measures including environmentally certified & natural polymer binder and soil stabiliser (Dustex) have been applied to bunds and inactive areas across the upstream work fronts of the refinery.

Sediment control

Sediment fences, rock checks and coir logs have been installed to slow and trap sediment as close to the source as practicable.

- The installation of sediment fence and improved rock checks at WCP inlets (West inlet drain, Figure 13, and North drain, Figure 14 & 15) aims to improve quality of water inflow and reduce the velocity of flow and drainage reporting to the WCP.
- Silt fence installed on northern boundary of Area 662 (scrapyard).
- Coir logs, rock drain and silt fence installed between Area 653 and 710 and entrance to seawater channel.
- Coir logs placed at drainage pits along Road 6,15 and 24 to help reduce flow and minimise sediment reporting to the WCP (Figure 21 & 22).

Sediment basins

Water captured in sediment/retention basins during or following each storm/rainfall event are discharged directly into the containment ponds during dry periods to ensure capacity within the basin is available so far as reasonably practicable.

- Area 661 retention basin has been increased, resulting in increased catchment storage and slowing of surface water entering the WCP drainage system (Appendix B Figure 16). As the removal of structure footings, located in Area 661, commence towards the end of Q1, 2025 the holding capacity of stormwater and control of sediment within Area 661, immediately north of the WCP, is expected to increase and improve.
- The demolition of areas 645, 646, 723 and 724 which previously reported to the WCP are now contained and diverted to the Southern Containment Pond (SCP) reducing the WCP catchment area

by 1.9 hectares (ha) (Figure 1). The total catchment area diverted away from the WCP is currently estimated to be 20.9 ha. A diversion of approximately 9% of the WCP catchment to the SCP. Catchment diversions throughout the remaining phases of the DDD and rehabilitation project are expected to adapt and change as work fronts progress.

- Sediment buildup removed, walls stabilised and improved rock drain created at retention basin in SW Area 662 (Scrapyard) (Appendix B Figure 17).

Dewatering basins and sumps

As part of the ongoing water management strategy and routine inspections carried out on the Refinery DDD project, contained water continues to be dewatered to the containment ponds between each rainfall event to maximise holding capacity of the catchments. Aerial imagery from 10 March 2025, shows minimal presence of contained water prior to the onset of the 24-hour rainfall event on the 22 March 2025 (Appendix D).

Dewatering and removal of water and sediment build up activities undertaken prior to the onset of the wet season were undertaken to remove sources of potential contamination and increase holding capacity across the refinery.

- The three main containment ponds across the refinery (WCP, SCP and ECP) are routinely kept at low levels (between 10-12%) depending on the sump & pump requirements.
- Any sediment build up contained in the containment ponds is assessed on an annual basis, (Dry season), to determine desilting requirements.
- For the WCP the pond, the level is reduced to the lowest pumping level (<10%). If the sediment build up exceeds a nominal point, of >8% at the WCP northern ramp where sediment initially builds up from inflows, the sediment is removed from the entire pond during the dry season.
- Sediment inside the WCP was removed prior to the 2022-23 wet season. Prior to the 2023-24 and 2024-25 wet season it was determined that no desilting of the WCP was required.
- Sediment build up in the Western Containment Pond northern inlet drain was removed and cleaned prior to the 2023-24 and again prior to the 2024-25 wet season (Appendix B, Figure 14).
- Sediment in the SCP was desilted prior to the 2024-25 wet season (Appendix B Figure 19).
- The sediment basin which captures run-off from the Refinery Steel Stockpile area (southwest of the WCP) was re-profiled, re-armoured with rock at inflow points and desilted prior to the 2024-25 wet season.
- Other smaller areas of potentially contaminated sources e.g. sumps, are also pumped and directed to the containment ponds during dry periods for disposal at the RDA.
- A large sump which historically functioned as part of the Refinery cooling towers, which is located adjacent to the Western Seawater channel (Road 3, Area 720), opposite the WCP, was dewatered in November 2024 in preparation of demolition activities. A pump is set up to maintain the ability to remove water after rainfall events (Appendix B, Figure 20).

Routine Inspections

A formalised routine inspection program for surface water, erosion and sediment controls effectiveness has been implemented on a weekly basis and daily when raining by the DDD project teams. This allows controls to be evaluated post rainfall event and rectification works conducted in preparation for the remainder of the 2024-25 wet season. Routine inspections carried out weekly and additionally when >25mm of rainfall is recorded. The following inspection reports are included in Appendix C.

- 22 March 2025 inspection triggered by >25mm of rainfall.
- 23 March 2025 weekly inspection post rainfall.

Results

Tabulated results for event 3459278952_71855 are provided in Appendix A. Operational results are samples analysed at the onsite laboratory. Investigative results are samples analysed offsite at a NATA accredited laboratory.

Results for operational samples for the intake site at S004 are summarised in Appendix A, Table A2. Results for the daily compliance samples taken at 08:00 AM for 22 to 25 of March 2025 at the Authorised Discharge Site S001 are summarised in Appendix A, Table A3.

An automatic water sampler collects a 50 mL sample every 20 minutes resulting in a composite sample every 24 hours. Composite sample results over a 24-hour period provide a comprehensive representation of discharge quality into the receiving environment during the WCP overtopping event, providing weighted average results. The site S074 composite sample results for the 22 to the 25 of March 2025 were analysed onsite and are summarised in Appendix A, Table A4.

Investigation event-based samples (NATA laboratory offsite) for the 22 March 2025 at Authorised Discharge site S001 are summarised in Appendix A, Table A5.

Results for event based internally analysed samples on the 22 March 2025 at S001 are summarised in Appendix A, Table A6.

Results for the externally analysed Western Containment Pond Site (S030) are summarised in Appendix A, Table A7.

Marine sites SW9, SW10 and RR2 were sampled on the 22 March 2025, the results summarised in Appendix A, Table A8.

Figure 2 shows hourly rainfall (mm) recorded at Stockpile Creek and WCP storage capacity (%) for the 22 March 2025. Figure 3 shows continuous monitoring of the Outfall monitoring Station Site (S001) for pH and EC.

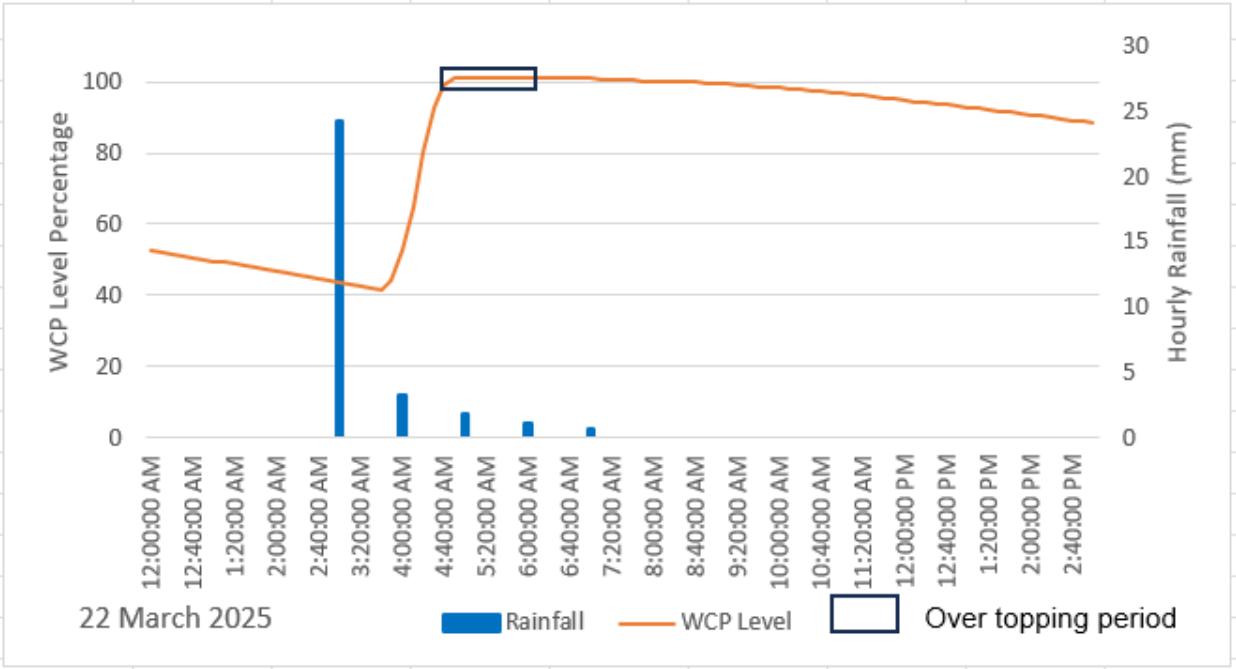


Figure 2 Measured hourly rainfall (mm) collected from Stockpile Creek Rain Gauge and WCP storage capacity (%) for the 22 March 2025.

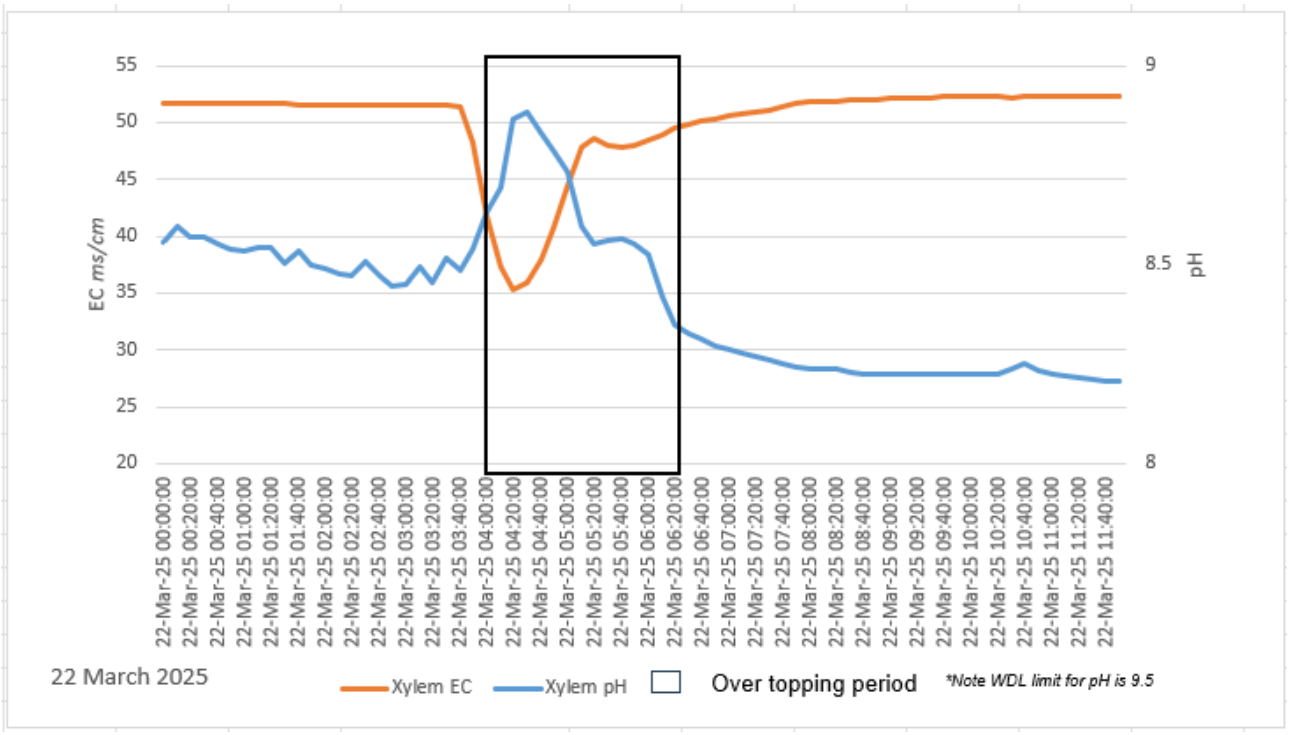


Figure 3 Continuous monitoring of pH and EC at the Outfall Monitoring Station (S001) on 22 March 2025.

Continuous monitoring of pH ranged from 8.12 – 8.88 during the overtopping period of 22 March 2025 as shown in Figure 3. Sample results retrieved as a part of the event sample regime on the 22 March 2025 showed pH results ranging from 8.10 - 8.63 throughout the overtopping event (Appendix A, Table A5). This is supported with the continuous data reporting no exceedance of the S001 WDL pH TV (9.0) throughout the overtopping event.

Discussion

WWNP Operation

Figure 4 shows the duration in which the WWNP ceased operation and remained offline throughout the event on the 22 March 2025.

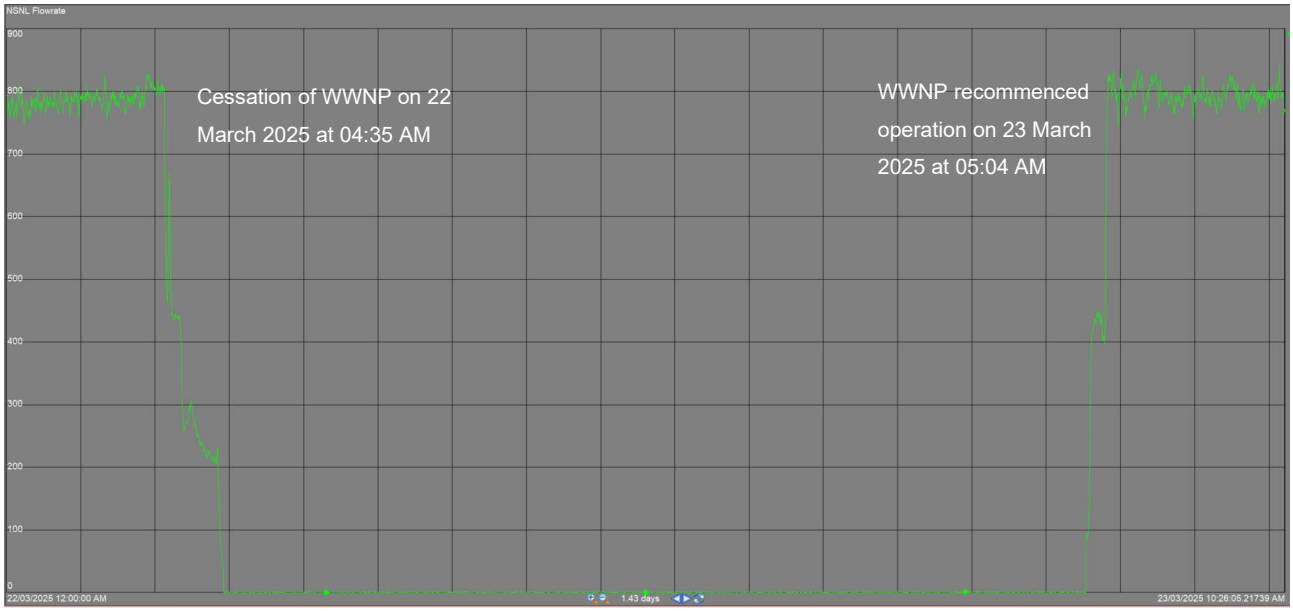


Figure 4 WWNP Operation 22 March 2025 ceasing operation on 22 February 2025 shown as Neutralised Supernatant Liquor (NSNL) flow rate (m3/hr) vs Time.

Alkalinity

Alkalinity concentrations are indicative of WWNP operation. Results for alkalinity concentrations from daily 08:00 AM operational (compliance) samples at site S001 for the period 22 to 25 March 2025 are summarised in Appendix A, Table A3. Alkalinity concentration on 22 March was at natural background seawater concentrations as WWNP was off-line.

WCP sample location

Water quality results of investigation samples (offsite analysis) for WCP site S030 are summarised in Appendix A, Table A7. Care should be taken when reviewing these results, as samples may not be representative of actual discharge of WCP water into the seawater channel. The sample location is collected from south-east corner of the WCP; therefore, this may not be representative of the discharge from the weir as shown in Figure 5. The location of the discharge weir is unable to be safely accessed for sampling.

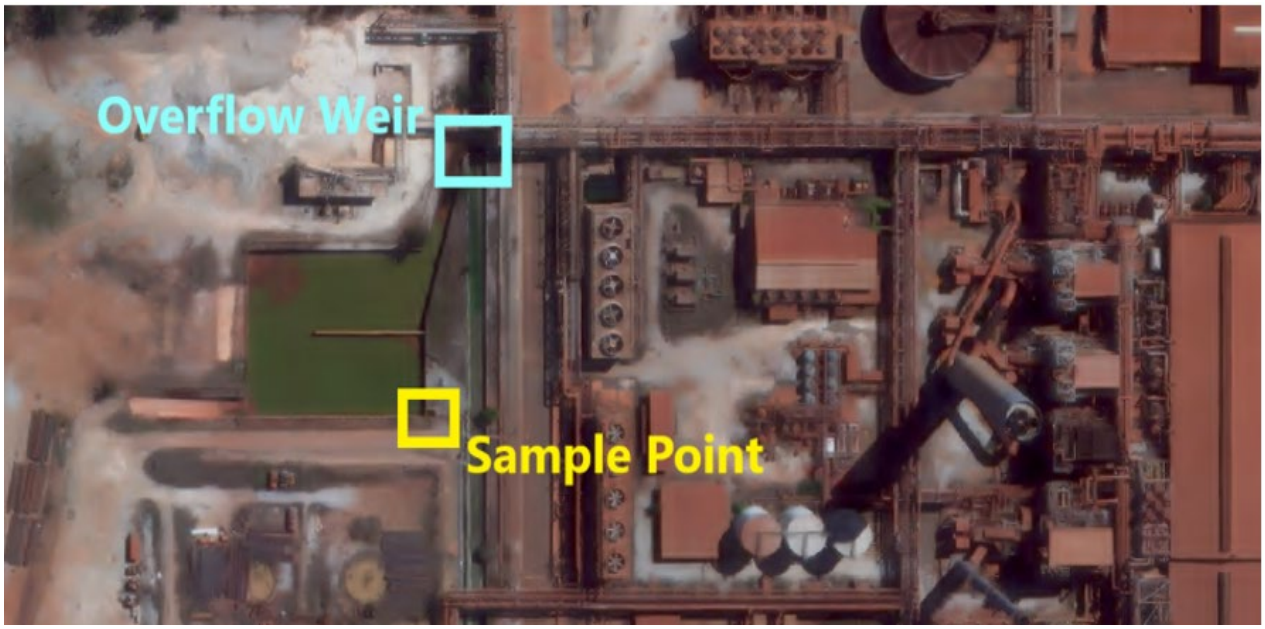


Figure 5 Sample point for the WCP site S030 is the pump located at the bottom of the pond, on the opposite side of the overflow weir location where discharge flows into the seawater channel.

Electrical Conductivity

Electrical conductivity (EC) is indicative of discharges of stormwater into the seawater channel. Background seawater has an EC of approximately 50 mS/cm. The seawater channel intake site S004 ranged from 48.6 mS/cm to 51.0 mS/cm for the period 22 to 25 March 2025. The outfall channel site S001 for the same period 22 to 25 March 2025 is also summarised in Table 1 (S001).

There is evidence of stormwater inputs into the channel from the WCP during the 22 March event. The EC value decreased to approximately 35.28 mS/cm at 04:20 on 22 March 2025 (Figure 3).

Table 1 Seawater channel intake site S004 and outfall channel site S001 showing EC from the 08:00 AM sample from 22 to 25 March 2025.

Date and Time	**EC (mS/cm) S004 intake**	**EC (mS/cm) S001 outfall**
22 March 2025 08:00	48.60	45.29
23 March 2025 08:00	50.60	50.09
24 March 2025 08:00	50.50	49.70
25 March 2025 08:00	51.00	52.20

Turbidity

Turbidity results from event-based samples from S001 during and following the WCP overtopping event on the 22 March 2025 are shown in Figure 6. Turbidity results from the external NATA accredited laboratory were below the S001 trigger value and limit during the WCP overtopping event. A strong correlation between the over topping event and an increase in turbidity at S001 is highlighted in Figure 6.

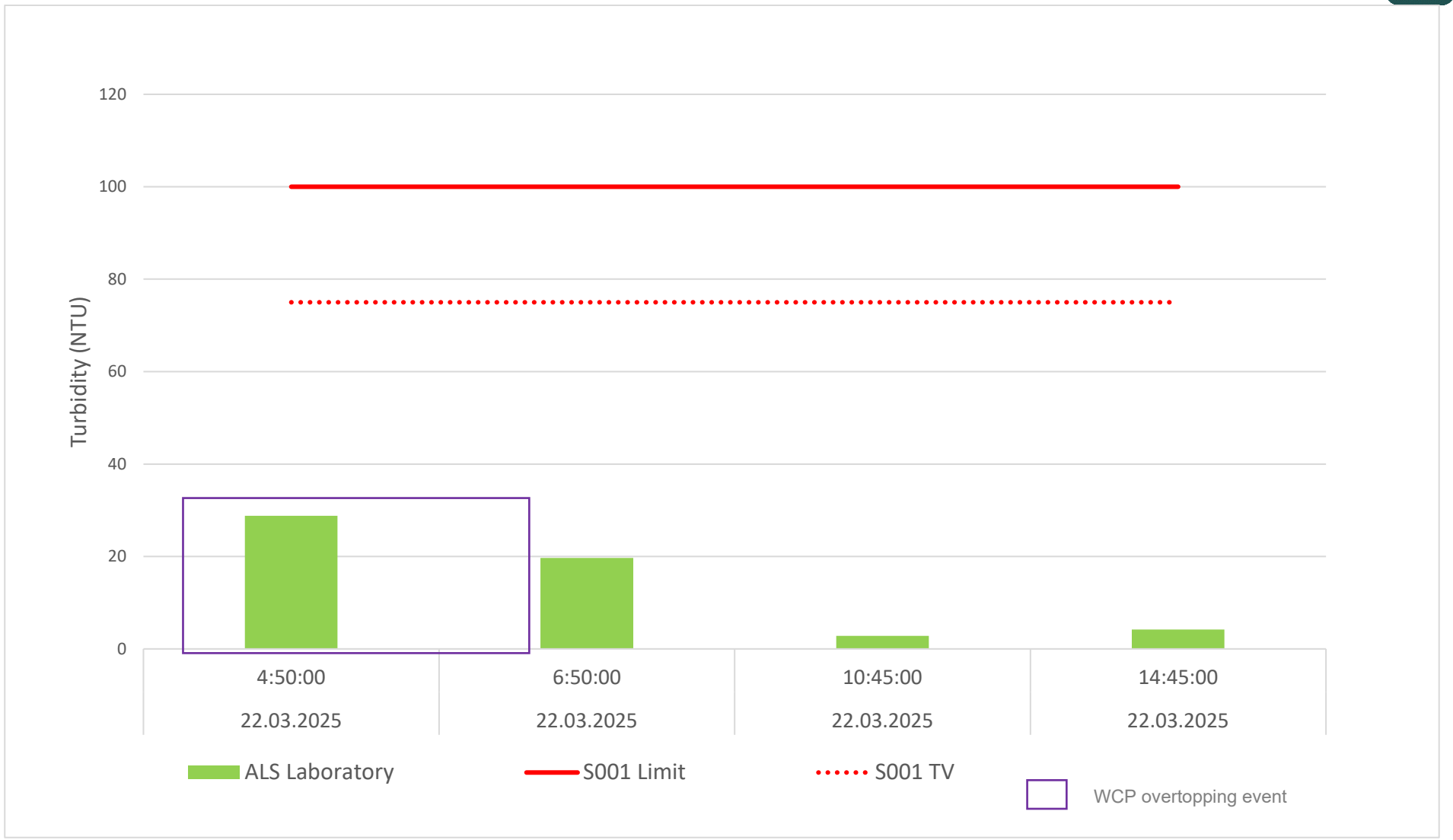


Figure 6 External NATA laboratory Turbidity (NTU), for S001 investigative samples for 22 March 2025.

Nutrients

Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation and was not discharging into the seawater channel at the time of the overflow.

Nutrient results taken from S001 on 22 March following the WCP overtopping event on 22 March 2025 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on the 22 March 2025, with the results summarised in Appendix A, Table A8 (NATA analysis).

Nutrient concentrations at S001 and the MZB sites were less than the Trigger Values for total dissolved nitrogen and total dissolved phosphorous and are not considered to impact overall environmental assessment.

Hydrocarbons

Hydrocarbon results from event-based samples from S001 during and following the WCP overtopping event on 22 March 2025 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 22 March 2025, with the results summarised in Appendix A, Table A8 (NATA analysis).

Hydrocarbon concentrations at S001 and the MZB sites were less than the laboratory limit of reporting (LOR) and considered to not be of concern.

Metals and Metalloids

Analysis of metals and metalloids at site S001 from investigative samples (NATA analysis) are summarised in Appendix Table A5 and Figures 7 and 8.

Investigation samples taken at S001 during the overtopping event on the 22 March 2025 recorded an elevated dissolved aluminium concentration of 64 µg/L during the overtopping event (Figure 7 & Table A5). This coincides with the observed large rainfall pulse event. The elevated concentration values were substantially lower than the Licence Limit of 560 µg/L. Successive samples taken from 14:45 PM, approximately 4 hours after the overtopping event ceased, decreased to 11 µg/L confirming the pulse event had ceased and that dissolved aluminum concentrations were approaching background seawater concentrations.

Investigation samples taken at S001 on 22 March 2025 during the overtopping event showed elevated dissolved arsenic concentrations during the overtopping event with the concentration being 8.4 µg/L at 04:50 AM (Figure 8). The concentrations were less than Licence Limit of 200 µg/L. Once the WCP overtopping event ceased the dissolved arsenic decreased to background seawater concentration of 2.4 µg/L at 14:45 PM on 22 March 2025.

Dissolved vanadium concentrations increased during the overtopping event, with the 04:50 AM S001 sample recording a concentration of 40.4 µg/L, below the Licence Limit of 1000 µg/L. The concentration decreased to 6.2 µg/L approaching background concentration at 14:45 PM (Appendix A, Table A5).

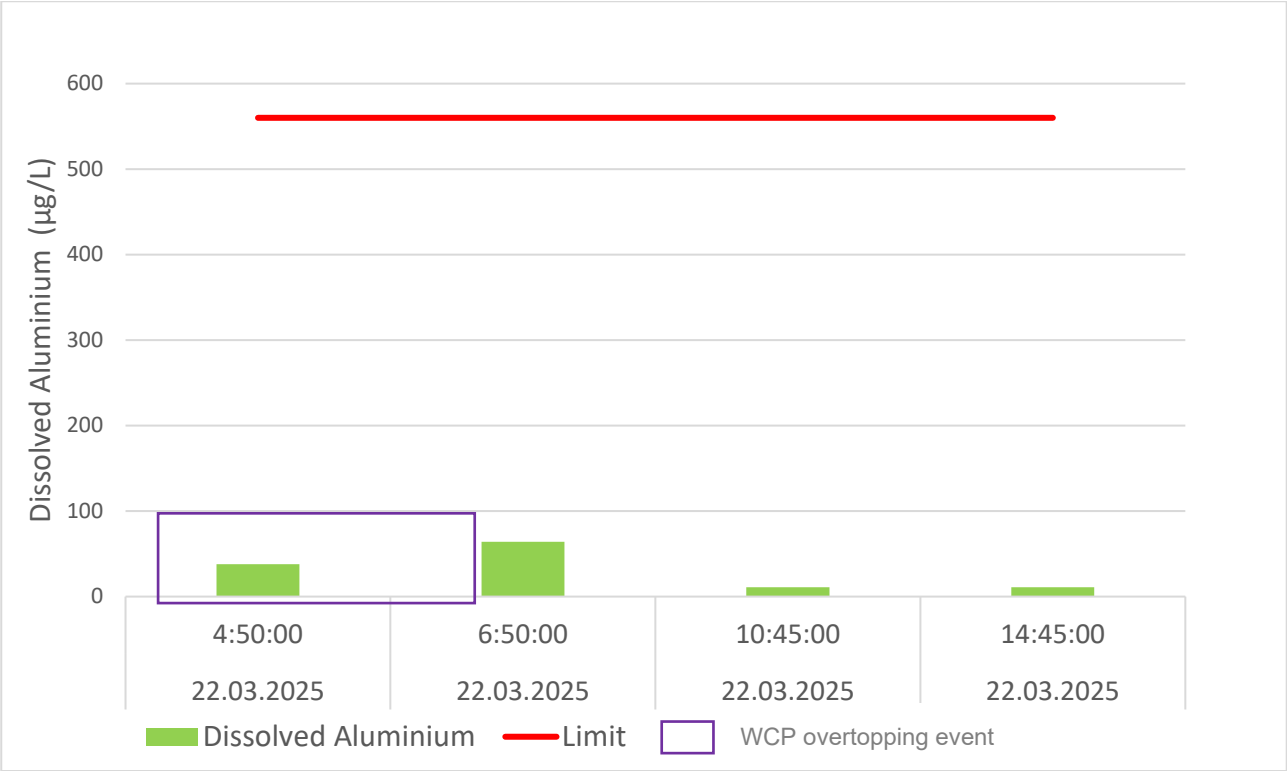


Figure 7 Dissolved aluminium (µg/L) and limit at S001 from event samples (NATA analysis) from 22 March 2025. WCP commenced overtopping at 04:48 AM and ceased overtopping at 06:21 AM on 22 March.

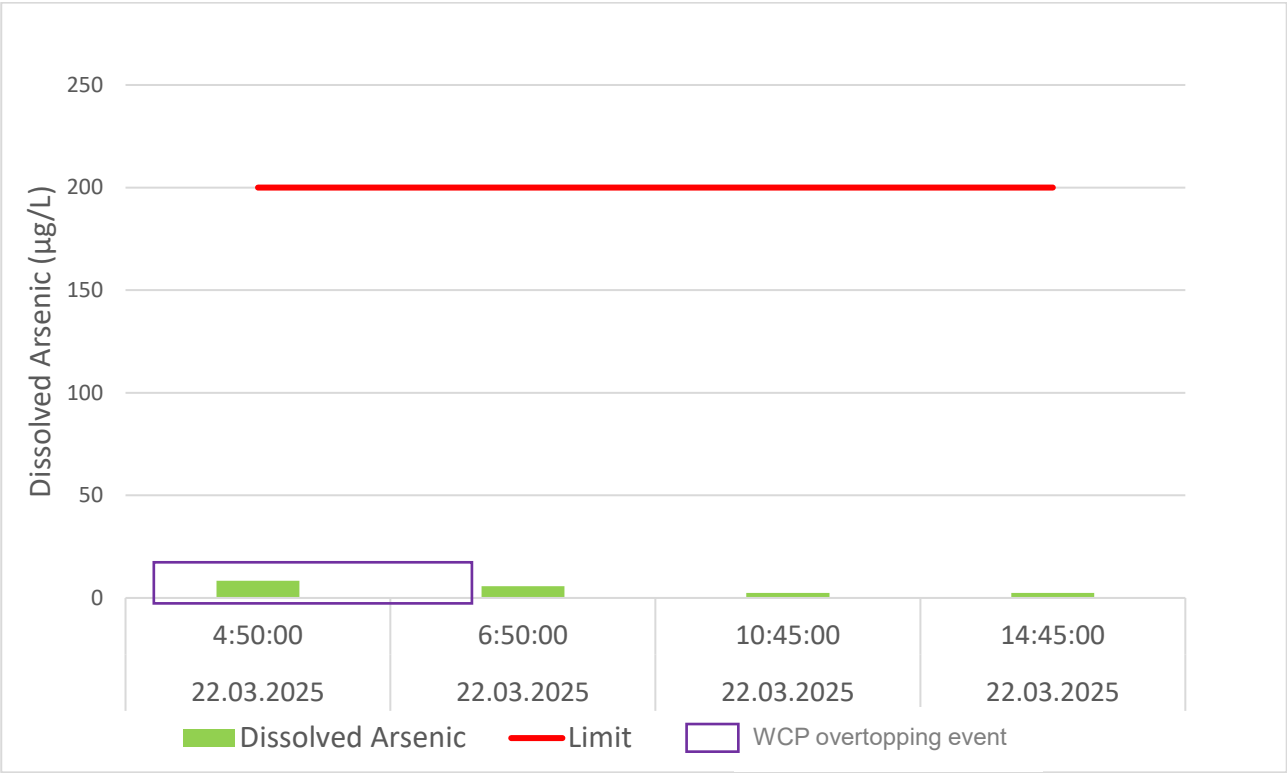


Figure 8 Dissolved arsenic (µg/L) and limit at S001 from event samples (NATA analysis) from 22 March 2025.

Composite Sample

The S074 composite sample results (Appendix A, Table A4) provide a time and volume weighted average over twenty-four hours, including when the unauthorised release was discharging into the eastern seawater channel. Composite samples are relevant to TVs and Limits to assess potential environmental impact. The composite sample collected at 08:00 AM on 22 March 2025 is representative of the preceding 24-hour period when the WCP overflowed. The concentrations recorded during this period were at or below those when the WWNP is operational. All analyte concentrations remained below WDL Limits and TVs.

Marine Results Discussion

Investigative sample results for dissolved aluminium (offsite NATA laboratory) from the MZB sites are shown in Figure 9. Sampling of the marine sites was completed at 10:00 AM, 22 March 2025 after the overtopping event ceased. Results at the MZB sites for dissolved aluminium were recorded well below the license trigger value of 56 µg/L (Figure 9). Appendix A, Table A8 shows all analytes at the MZB were substantially lower than the corresponding TVs with concentrations returning to background concentrations on 22 March 2025.

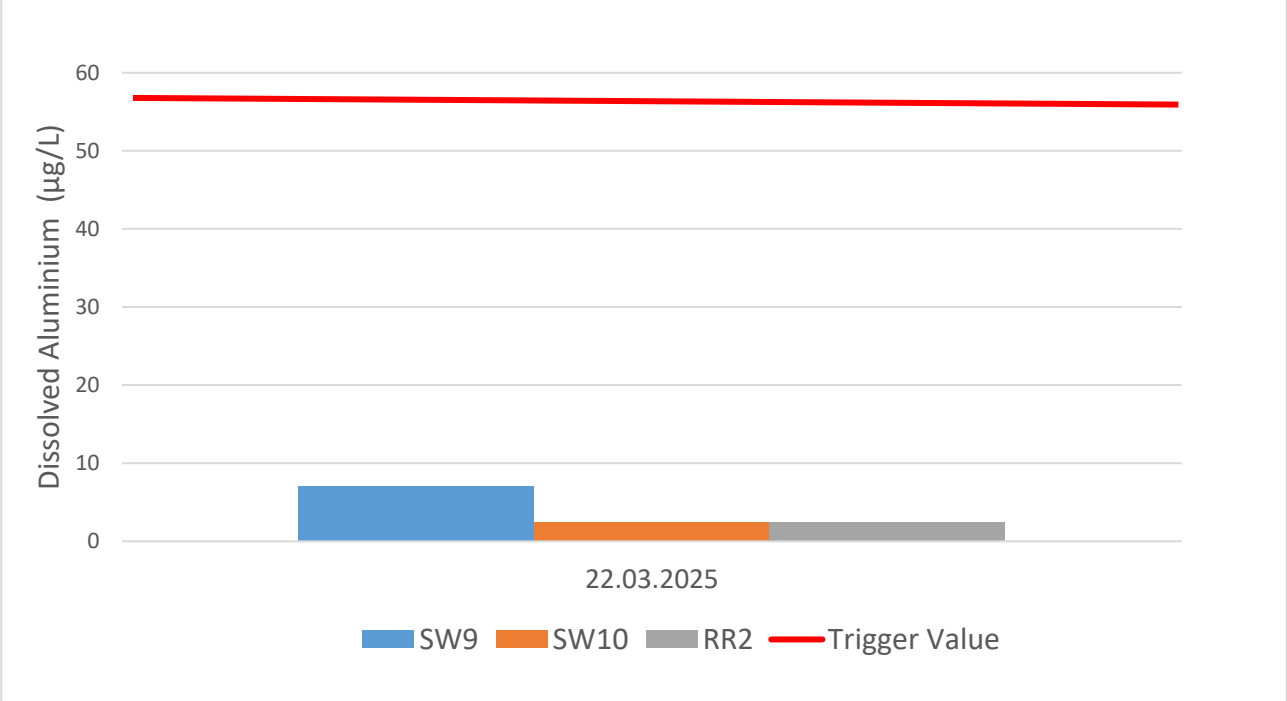
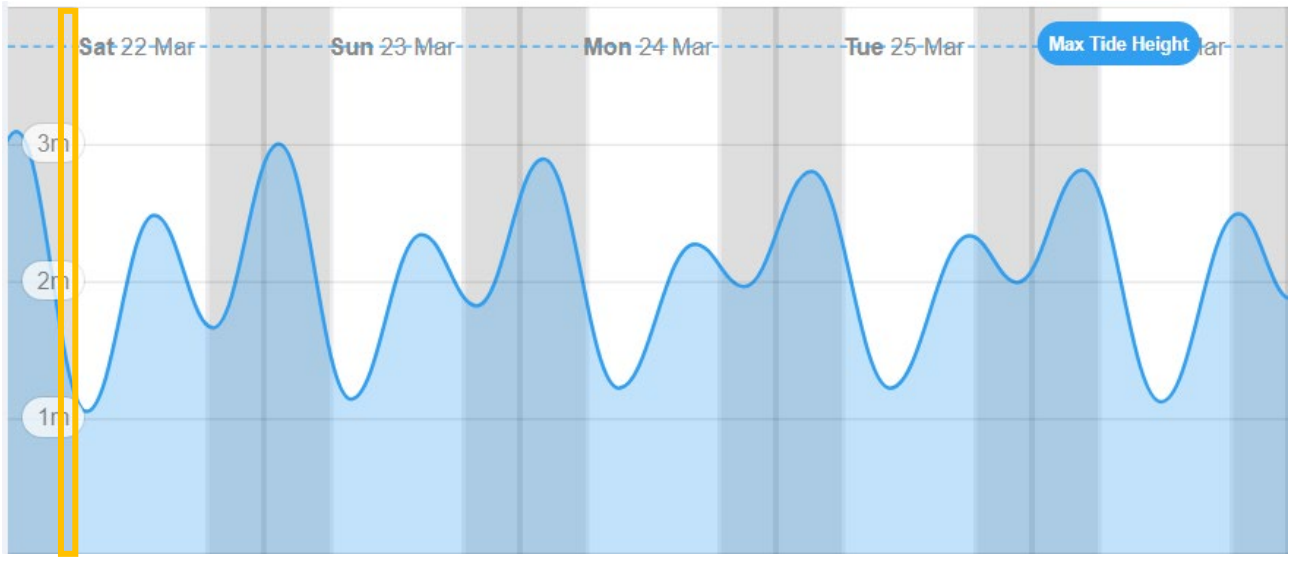


Figure 9 Dissolved aluminium concentrations at MZB sites for samples collected after the event at 10:00 AM, 22 March 2025. Note that dissolved aluminium for site SW10 and RR2 were below the LOR (5µg/L).

The tides times and heights during the WCP event are provided in Figure 10 and Figure 11. The event occurred the back end of the ebb tide, approaching the low tide.

SAT 22 Mar	SUN 23 Mar	MON 24 Mar	TUE 25 Mar	WED 26 Mar
12:48 am 3.09m	1:24 am 3m	2:12 am 2.89m	3:20 am 2.8m	4:43 am 2.81m
7:24 am 1.05m	8:10 am 1.14m	9:16 am 1.22m	10:42 am 1.22m	12:07 pm 1.12m
1:44 pm 2.48m	2:47 pm 2.34m	4:23 pm 2.27m	6:08 pm 2.33m	7:22 pm 2.49m
7:15 pm 1.66m	7:57 pm 1.82m	9:02 pm 1.96m	10:38 pm 1.99m	

Figure 10 Tide Times from 22 to 26 March 2025. Source: WillyWeather



Event time period

Figure 11 Tide height from 22 to 26 March 2025.

The Australian Institute of Marine Science (AIMS) developed a hydrodynamic model of Melville Bay to assess the dilution and dispersion of the seawater channel discharge into inner Gove Harbour and Melville Bay (AIMS, 2020). The model predicted a minimum dilution rate of 1:25 for the three MZB compliance sites SW9, SW10 and RR2 at a discharge rate of 10,500 m^3/h. Concentrations at the MZB during the event are conservatively predicted by applying the minimum dilution rate from the hydrodynamic model at the MZB of 1:25 to S001 data (Appendix B, Table A5). The predicted concentrations of dissolved Al at the MZB sites are presented in Figure 12.

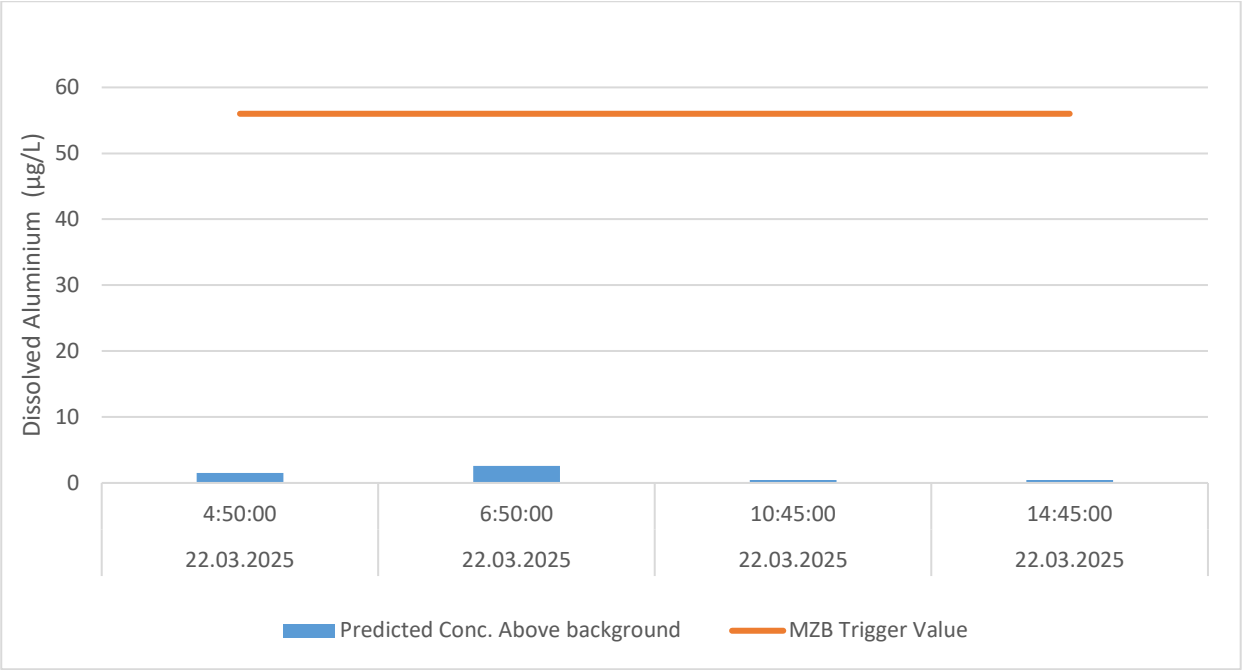


Figure 12 Predicted concentration of dissolved aluminium (above background) at the marine mixing zone boundary based on S001 concentrations from investigative samples.

From the Marine Health Monitoring Program (MHMP) data base, background concentration for dissolved Al in Melville Bay is 1.7 µg/L (80th percentile for the previous 24 months monthly samples). Predicted concentrations are above the background concentrations. Predicted concentrations of dissolved Al for the marine sites plus background concentrations are all substantially lower than TV's in the Licence for the MZB. Similarly predicted concentrations for dissolved As and V are well below corresponding TV's (Table A8).

Conclusion

The results of the investigation sampling confirmed there were no exceedances of Licence TV's and/or Limits for the event. Turbidity remained well below the TV for the duration of the event on the 22 March 2025 reaching a maximum of 28.8 NTU at S001 and dropping to 2.8 NTU within 5 hours (Appendix A, Table A5). Overall, the data demonstrates that there was no material environmental impact expected from the WCP overtopping on 22 March 2025.

References

Australian Institute of Marine Science, 2020, *Assessment of seawater channel dilution in inner Gove Harbour for development of discharge Trigger Values*. Report to Rio Tinto Aluminium Gove.

Appendix A – Analytical Results Tables

Table A2 Water quality results for site S004 seawater intake location from 22 - 25 March 2025 (onsite analysis).

Daily Operational Samples at site S004 Samples retrieved at 08:00 Hrs		22/03/2025	23/03/2025	24/03/2025	25/03/2025
Environmental Parameters					
pH		8.31	8.14	8.17	8.17
Electrical Conductivity	ms/cm	48.6	50.6	50.5	51.0
Turbidity	NTU	13.10	6.17	4.42	7.11
Alkalinity	mg/L	134.7	126.2	124.2	125.0
Dissolved Metals & Metalloids					
Aluminium	µg/L	15.51	11.86	8.49	9.41
Arsenic	µg/L	2.78	2.1	1.9	2.03
Gallium	µg/L	1.074	0.352	0.369	0.366
Manganese	µg/L	1.13	1.15	1.03	1.27
Molybdenum	µg/L	11.49	10.33	10.63	10.16
Vanadium	µg/L	6.34	3.6	3.47	3.66

Table A3 Daily Authorised Monitoring Site S001 Outfall Monitoring Station water quality results – 22 to 25 March 2025 (Onsite Analysis).

Daily Compliance Samples – S001 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	22/03/2025	23/03/2025	24/03/2025	25/03/2025[1]
Environmental Parameters							
pH		9	9.5	8.31	8.69	8.71	8.18
Electrical Conductivity	ms/cm	-	-	45.29	50.09	49.70	52.20
Turbidity	NTU	75[t]	100	18.29	9.09	10.3	5.46
Alkalinity	mg/L	-	-	140.5	315.1	359.2	124.8
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	57.82	25.45	23.20	13.916
Arsenic	µg/L	-	200	4.63	15.02	14.304	2.26
Gallium	µg/L	-	8000	1.79	12.82	15.20	0.49
Manganese	µg/L	-	-	1.20	2.50	2.39	1.45
Molybdenum	µg/L	-	38800	12.194	25.205	30.795	10.768
Vanadium	µg/L	-	1000	35.93	35.93	58.49	4.31

[1] WWNP offline between 12:11 PM, 24.03.2025 and 12:33 PM, 25.03.2025

Table A4 Daily water quality results – 24 hour Composite sample at Authorised Monitoring Site S074 – 22 to 25 March 2025 (Onsite Analysis)

Daily Compliance Samples – S074 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	22/03/2025*	23/03/2025	24/03/2025	25/03/2025
Environmental Parameters							
pH		9	9.5	8.86	8.40	8.72	8.56
Electrical Conductivity	ms/cm	-	-	46.00	45.29	46.20	46.40
Turbidity	NTU	75[‡]	100	10.5	8.0	23.0	19.3
Alkalinity	mg/L	-	-	319.20	145.39	313.5	175.65
Total Suspended Solids	mg/L	-	-	145.6	14.4	18.4	19
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	29.63	18.15	18.52	26.35
Arsenic	µg/L	-	200	13.97	3.60	13.69	5.72
Gallium	µg/L	-	8000	13.12	1.71	12.46	3.90
Manganese	µg/L	-	-	1.89	1.35	1.67	2.51
Molybdenum	µg/L	-	38800	28.67	12.00	30.30	15.46
Vanadium	µg/L	-	1000	54.14	8.42	53.57	18.75

* Composite sample from channel water quality from 8am 21/03/2025 to 8am 22/03/2025, capturing WCP overtopping period.

Table A5 Event based external water quality results – Authorised Monitoring Site S001 Outfall Monitoring Station – 22 March 2025 (External Analysis – NATA accredited laboratory).

Investigative / Event samples – S001		S001 Trigger value	S001 Limit	22/03/2025	22/03/2025	22/03/2025	22/03/2025
			Time	04:50	06:50	10:45	14:45
Environmental Parameters							
pH		9	9.5	8.63	8.20	8.14	8.10
Electrical Conductivity	µs/cm	-	-	41700	48900	50600	50500
Turbidity	NTU	75[t]	100	28.8	19.7	2.8	4.2
Total Alkalinity	mg/L	-	-	244	141	135	131
Total Suspended Solids	mg/L	-	-	26	14	<5	22
Metals & Metalloids							
Dissolved Aluminium	µg/L	-	560	38	64	11	11
Dissolved Arsenic	µg/L	-	200	8.4	5.8	2.4	2.4
Dissolved Gallium	µg/L	-	8000	<10	<10	<10	<10
Dissolved Iron	µg/L	-	-	<5	7	<5	<5
Dissolved Manganese	µg/L	-	-	2.2	0.8	0.8	0.9
Dissolved Molybdenum	µg/L	-	38800	20.9	12.2	11.5	12.1
Dissolved Vanadium	µg/L	-	1000	40.4	25.2	6.5	6.2
Total Aluminium	µg/L	-	-	253	774	246	276
Total Arsenic	*µg/L*	-	-	9.0	4.8	2.4	2.5
Total Gallium	*µg/L*	-	-	<10	<10	<10	<10
Total Iron	*µg/L*	-	-	113	421	201	226
Total Manganese	*µg/L*	-	-	2.6	3.2	3.6	4.9
Total Molybdenum	*µg/L*	-	-	23.0	10.2	11.6	12.8
Total Vanadium	*µg/L*	-	-	42.3	23.2	7.1	6.6
Nutrients							
Total Dissolved Phosphorus	µg/L	-	140	13	15	12	13
Total Dissolved Nitrogen	µg/L	-	1700	240	180	180	190
Hydrocarbons							
Total Petroleum Hydrocarbons	µg/L	-	-	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	-	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	-	<1	<1	<1	<1
Toluene	µg/L	-	-	<2	<2	<2	<2
Ethylbenzene	µg/L	-	-	<2	<2	<2	<2
Xylene	µg/L	-	-	<2	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

Table A6 Event based internal water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 22 March 2025 (onsite analysis).

Event Operational samples - S001 Analysed onsite		S001 Trigger value	S001 Limit	22/03/2025	22/03/2025	22/03/2025	22/03/2025
			Time	04:50	06:50	10:45	14:45
Environmental Parameters							
pH		9	9.5	8.97	8.39	8.30	8.24
Electrical Conductivity	ms/cm	-	-	40.20	48.20	50.79	51.59
Turbidity	NTU	75[t]	100	50.20	28.29	6.57	9.25
Alkalinity	mg/L	-	-	270.7	143.60	135.5	132.10
Dissolved Aluminium	µg/L	-	560	36.30	53.13	16.18	12.80
Dissolved Arsenic	µg/L	-	200	9.94	6.53	2.91	2.60
Dissolved Gallium	µg/L	-	8000	8.55	1.84	1.25	1.04
Dissolved Iron	µg/L	-	-	2.24	2.52	2.38	2.08
Dissolved Manganese	µg/L	-	-	0.66	0.302	0.99	1.05
Dissolved Molybdenum	µg/L	-	38800	21.49	11.42	11.52	10.96
Dissolved Vanadium	µg/L	-	1000	39.93	25.29	7.43	5.82

This data is event based – it does not form part of the WDL monitoring program.

Table A7 Event based external water quality results – Western Containment Pond site S030 – 22 March 2025 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S030		22/03/2025 04:45	22/03/2025 06:45
Environmental Parameters			
pH		10.2	9.94
Electrical Conductivity	µs/cm	929	600
Turbidity	NTU	2610	1590
Alkalinity	mg/L	416	251
Total Suspended Solids	mg/L	631	280
Metals & Metalloids			
Dissolved Aluminium	µg/L	3460	2270
Dissolved Arsenic	µg/L	356	216
Dissolved Gallium	µg/L	58	36
Dissolved Iron	µg/L	360	230
Dissolved Manganese	µg/L	1	<1
Dissolved Molybdenum	µg/L	33	19
Dissolved Vanadium	µg/L	1470	920
Total Aluminium	µg/L	28100	34200
Total Arsenic	µg/L	315	189
Total Gallium	µg/L	74	50
Total Iron	µg/L	7090	12000
Total Manganese	µg/L	57	76
Total Molybdenum	µg/L	26	16
Total Vanadium	µg/L	1570	990

Table A8 Investigative water quality results - Marine Mixing Zone (MZB) sites – 22 March 2025 (External Analysis - NATA accredited laboratory).

		MZB Trigger Values	22/03/2025	22/03/2025	22/03/2025
			SW9	SW10	RR2
		Time	10:25	10:21	10:12
Environmental Parameters					
pH		7.7 – 8.4	8.09	7.99	8.00
Electrical Conductivity	µS/cm	-	50800	50300	50200
Total Suspended Solids (SS)	mg/L	-	14	<5	<5
Turbidity	NTU	20	3.1	1.7	2.3
Alkalinity	mg/L	-	131	116	115
Metals and Metalloids					
Dissolved Aluminium	µg/L	56	7	<5	<5
Dissolved Arsenic	µg/L	20	2.2	1.4	1.5
Dissolved Gallium	µg/L	800	<10	<10	<10
Dissolved Iron	µg/L	-	<5	<5	<5
Dissolved Manganese	µg/L	-	0.6	<0.5	0.5
Dissolved Molybdenum	µg/L	3880	11.8	10.2	10.6
Dissolved Vanadium	µg/L	100	6.5	2.1	2.2
Nutrients					
Total Dissolved Phosphorus	µg/L	14	8	9	9
Total Dissolved Nitrogen	µg/L	170	130	140	120
Hydrocarbons					
Total Petroleum Hydrocarbons	µg/L	-	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	<0.5	<0.5	<0.5
Benzene	µg/L	-	<1	<1	<1
Toluene	µg/L	-	<2	<2	<2
Ethylbenzene	µg/L	-	<2	<2	<2
Xylene	µg/L	-	<2	<2	<2

Appendix B – Photographic Log of upstream surface water and erosion & sediment mitigation measures related to the WCP and refinery catchments



Figure 13 Rock Drain at western entrance to WCP ramp lined with coir logs, aiming to reduce flow velocities and allow sediment to settle.



Figure 14 Desilted & cleaned WCP northern drain with protective ballast material aiming to reduce flow velocities and allow sediment to settle.



Figure 15 Silt fence and limestone along the WCP northern drain and entrance to the WCP



Figure 16 Rock drain between retention basin in Area 661 & WCP.



Figure 17 Sediment buildup removed, walls stabilized and rock drain created at retention basin in SW Area 662 (Scrapyard).



Figure 18 Earth bund diverting water runoff to the retention basin in SW Area 662 (Scrapyard)



Figure 19 Desilting of Southern Containment Pond during the 2024 dry period



Figure 20 Pumping of potentially contaminated water from the cooling tower sumps (Nov 2024) to the containment pond for redistribution to the RDA



Figure 21 Road 15, Area 653 rock checks and coir logs on each drain pit which drains to the WCP. Aims to slow and reduce sediment flow & velocity.



Figure 22 Rock check and silt fencing located at drainage point adjacent to the northern seawater channel inlet. Aims to protect the spoon drain adjacent to the seawater channel that diverts stormwater to the WCP.



Figure 23 Coir logs placed around drain inlets adjacent to the seawater channel along Road 3, Area 720.

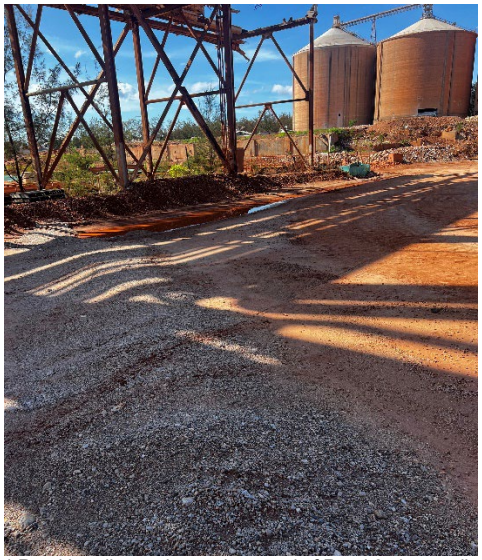


Figure 24 Road bunding at the northern end of Road 3 aims to divert potentially contaminated water flow back towards the WCP catchment and away from drain inlets adjacent to seawater channel.

Appendix C – Routine Inspection Reports – Control Effectiveness

LPI 23. Environment

22 Mar 2025 / Kieran Brocx

Complete

Score	10 / 12 (83.33%)	Flagged items	1	Actions	1

Site conducted	Refinery
Conducted on	22.03.2025 15:36 ACST
Prepared by	Kieran Brocx
Location	Nhulunbuy NT 0880 Australia (-12.188861037815503, 136.69196677573473)

No signs of spills in the area & equipment are free of drips/seepage.	Compliant
Spill kits are available, adequately stocked & easily accessible, as per itemised list of contents.	Compliant
Appropriate waste disposal containers with relevant signage available.	N/A
Litter control & waste segregation measures in place & containers not contaminated.	N/A
Hazardous materials managed as per site requirements including placement of storage facilities setback from sensitive areas as required by the Environmental Management Plan or risk assessment.	Compliant
Water drainage features & erosion controls adequate & correctly installed.	N/A
Area is free draining & no ponding water observed.	Non-Compliant

Caustic ponded water in 652. One photo is pre rains, other photos are post rain. pH tested at ~11


Photo 1


Photo 2


Photo 3

Done | Assignee: Webby Manu, Charles Dike, Darren Carstairs, Shane Alcott, Deji Awopetu, Kieran Brocx, Peter Thomas | Priority: Medium | Due: 27.03.2025 15:39 ACST | Created by: Kieran Brocx

Please pump/vac out - 652

652 north west (next to 775 tanks). Source of caustic unknown as area has concrete bund. Possibly due to demo activities (tanks).

Include photos when the action is closed out please

Dust control measures in place.	Compliant
Adequate containment/separation in place during activities which may contribute to spillage or release of liquids.	Compliant
All appropriate controls installed prior to starting work.	Compliant
Appropriate bunding in place for plant/equipment in the area.	Compliant
Appropriate bunding in place for temporary hazardous materials.	Compliant
Overall housekeeping is kept up to a good standard.	Compliant
No mud being tracked onto public roads or areas.	Compliant

Flagged items & Actions

1 flagged, 1 action

Flagged items

1 flagged, 1 action

Title Page

Area is free draining & no ponding water observed.

Non-Compliant

Caustic ponded water in 652. One photo is pre rains, other photos are post rain. pH tested at ~11


Photo 1


Photo 2


Photo 3

Done | Assignee: Webby Manu, Charles Dike, Darren Carstairs, Shane Alcott, Deji Awopetu, Kieran Brocx, Peter Thomas | Priority: Medium | Due: 27.03.2025 15:39 ACST | Created by: Kieran Brocx

Please pump/vac out - 652

652 north west (next to 775 tanks). Source of caustic unknown as area has concrete bund. Possibly due to demo activities (tanks).

Include photos when the action is closed out please

Other actions

0 actions

correctly installed.	
Area is free draining & no ponding water observed.	N/A
Dust control measures in place.	Compliant
Adequate containment/separation in place during activities which may contribute to spillage or release of liquids.	Compliant
All appropriate controls installed prior to starting work.	Compliant
Appropriate bunding in place for plant/equipment in the area.	Compliant
Appropriate bunding in place for temporary hazardous materials.	Compliant
Overall housekeeping is kept up to a good standard.	Compliant
No mud being tracked onto public roads or areas.	N/A

LPI 23. Environment

23 Mar 2025 / Kieran Brocx

Complete

Score	8 / 10 (80%)	Flagged items	1	Actions	1

Site conducted	Refinery
Conducted on	23.03.2025 10:34 ACST
Prepared by	Kieran Brocx
Location	RM6Q+9M Nhulunbuy NT, Australia (-12.1891, 136.6892)

No signs of spills in the area & equipment are free of drips/seepage. — Non-Compliant

HC sheen was noticed on the Sed basin aerial 23/03/25. No obvious source



Photo 1

Done | Assignee: Charles Dike, Darren Carstairs, Shane Alcott, Bryan Rondilla, Kieran Brocx, Peter Thomas | Priority: Medium | Due: 29.03.2025 07:37 ACST | Created by: Kieran Brocx

Investigate Source of HC Sheen

HC Sheen was noticed on the Sed Basin in the 23/03/25 aerial. Recent heavy rains may have mobilised HC from within the Scrapyard footprint. Check for any obvious sources. I have uploaded a photo of a HC spill identified during an inspection on the 10th of Feb. Not suggesting this is the source, but just a place to start. As far as i am aware, the spill on the 10th of Feb was cleaned up by LI.

Spill kits are available, adequately stocked & easily accessible, as per itemised list of contents.	Compliant
Appropriate waste disposal containers with relevant signage available.	N/A
Litter control & waste segregation measures in place & containers not contaminated.	N/A
Hazardous materials managed as per site requirements including placement of storage facilities setback from sensitive areas as required by the Environmental Management Plan or risk assessment.	Compliant
Water drainage features & erosion controls adequate &	N/A

Flagged items & Actions

1 flagged, 1 action

Flagged items

1 flagged, 1 action

Title Page

No signs of spills in the area & equipment are free of drips/seepage.

Non-Compliant

HC sheen was noticed on the Sed basin aerial 23/03/25. No obvious source



Photo 1

Done | Assignee: Charles Dike, Darren Carstairs, Shane Alcott, Bryan Rondilla, Kieran Brocx, Peter Thomas | Priority: Medium | Due: 29.03.2025 07:37 ACST | Created by: Kieran Brocx

Investigate Source of HC Sheen

HC Sheen was noticed on the Sed Basin in the 23/03/25 aerial. Recent heavy rains may have mobilised HC from within the Scrapyard footprint. Check for any obvious sources. I have uploaded a photo of a HC spill identified during an inspection on the 10th of Feb. Not suggesting this is the source, but just a place to start. As far as i am aware, the spill on the 10th of Feb was cleaned up by LI.

Other actions

0 actions

Untitled Page 0 / 1 (0%)

Media summary



Photo 1

Appendix D – Aerial imagery of refinery footprint (10 March 2025)



Figure 25 Aerial imagery 10 March 2025 prior to heavy rainfall event across the Gove Peninsula where 45.8 mm of rainfall was recorded over a 24-hour period from 22 March 2025, of which 27.4 mm fell within a 2-hour period between 02:00 AM to 04:00 AM.

Notification of Environmental Incident

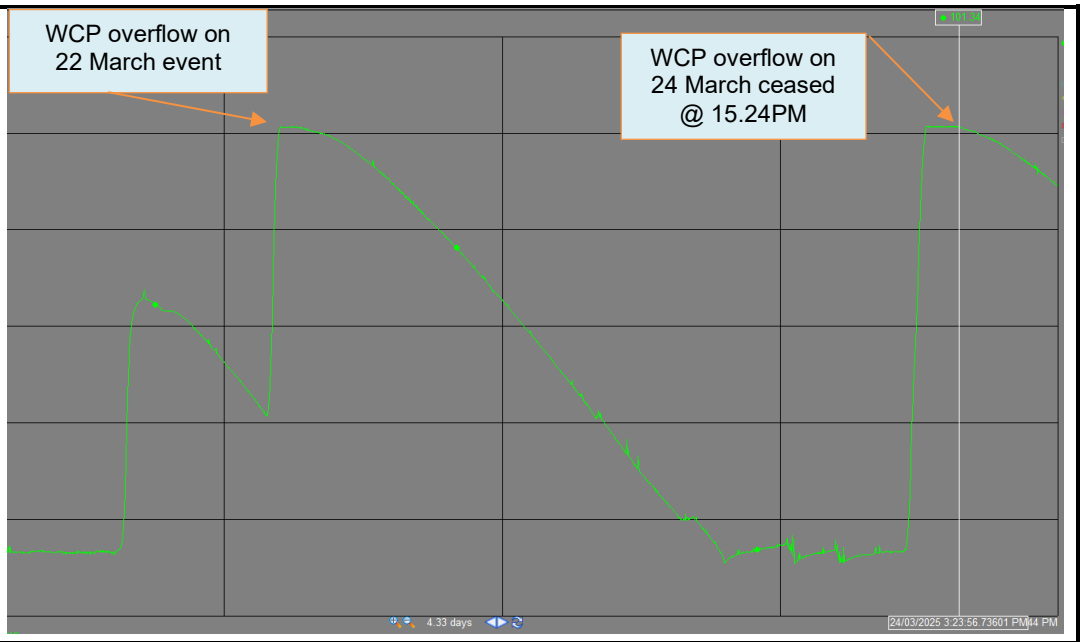
All notifiable incidents are to be reported in accordance with section 225 *Environment Protection Act 2019*

☒ Incident ☐ Critical Incident ☐ Preliminary ☒ Final

Incident details	
Incident number	**3635805760_72045**
Name of mining site	Rio Tinto - Gove operations
Licence number *If not known, provide Authorisation number*	WDL171-12 *0035-02 Authorisation*
Name of operator:	RTA Gove Pty Limited
Date & time of incident *And / or when you first became aware of it*	Detection Date: 24/03/2025 Time: 12:32 PM
	Incident Date: 24/03/2025 Time: 12:32 PM
Name of person notifying	Andrew Carmichael
Position/Title	Environment Superintendent
Contact person	Andrew Carmichael
Contact details	Business: 08 8987 5233 Mobile: 0467 946 163
	E-mail: andrew.carmichael@riotinto.com
Incident location *Use GPS co-ordinates, attach map, etc. as appropriate*	Latitude -12.188147 Longitude 136.685306  WCP Overflow weir location into Seawater Channel
Incident description *Attach photographs etc.*	Overflow of Western Containment Pond (WCP) into the Seawater Channel resulting in discharge via S001 (Schedule 1, Item 10 (a)(f), Condition 25 & 26)(Schedule 1, Item 9 (a), Condition 21).

Nature of actual / potential impact *Volume of material (L, m3), area impacted (ha, m2), flora and fauna affected, erosion, duration of incident, etc. as relevant*	A storm cell brought heavy rainfall of 35.6mm within 2 hours in the lead up to the event. Overflow from the WCP into the seawater channel commenced at approximately 12:32 PM 24th of March. The WCP ceased overtopping its weir into the seawater channel at approximately 15:24 PM on 24 March 2025. Overall, the data demonstrates there was no material environmental impact expected from the WCP overtopping on 24 March 2025. Refer to EIA for further details.	**Volume**	TBC	m^3
			TBC	L
		Area	NA	m^2
			NA	ha
		Duration	2 hours 52 minutes	hours
Immediate action taken *i.e., spill contained / stopped / location of disposal*	Immediate corrective actions implemented to minimise the risk of overtopping included; • Implementation of the Trigger Action Response Plan (TARP); WWNP shut down, responsive monitoring and Marine monitoring conducted; • WWNP was shutdown when the WCP reached 90% at approximately 12:11 PM as per the TARP. • Continual operation of the WCP pumps to reduce the volume and pond levels across the refinery. • Both sea water pumps remaining in operation.			

Environmental details	
Emergency and remedial action taken	• The WWNP has been shutdown since approximately 12:11 PM on 24th March as WCP capacity reached 90%, as per the TARP. • WCP pump will continue to operate until pond levels are reduced to <15% (optimum sump pump level). • Inspection and maintenance of erosion and sediment controls and surface water management controls across the refinery in preparation of future rainfall events.
Current situation *Potential / ongoing / ceased etc. Include current location of contaminated material*	The WWNP remained shutdown until the WCP level reduced and all monitoring requirements were completed. The containment pond pumps remained in operation continue to drain the pond levels. Below shows the WCP overflow level at 101.34% at 12:32 PM on 24th March.

	
Details of any samples taken *When / where / type / number / time for availability of results etc. Include plans of sampling locations where possible*	Samples and the compliance monitoring program in place; • A sampling regime at the WCP and S001 commenced at 12:32 PM during the event and continued to 06:30, 25 March 2025. • Continuous monitoring at S001 remained in operation. • Daily sample at S001. • Daily composite sample at S074 • Marine incident investigation sampling at RR2, SW9 & SW10 compliance sites was completed on the 24th March 2025 and the 25th March 2025.
Future actions (if any) including timeframe	Update of the certified erosion and sediment control plan (ESCP) to manage the transitional & interim landform of the refinery as it is being demolished. As presented to the Environmental & Mining Division on the 25th March in Darwin.
Operator internal reporting	
Has the incident been reported internally? *If so, to whom*	YES ☒ NO ☐
Name	Mo Dialami
Position	WWNP Process Engineer
Operator reference number *Where applicable / available*	NA
Has the department	YES ☒ NO ☐

been notified earlier?			
Who was notified	Stacey Kopf		
How *(phone / email)*	Email with initial notification.		
When *(date and time)*			
By whom	Andrew Carmichael		
Signed	*Andrew Carmichael*	Date & Time	7 April 2025
Name	**Andrew Carmichael**	Position	Environment Superintendent

Forward completed form to:
Mining Division
Department of Environment, Parks & Water Security
Email: mineralinfo.DEPWS@nt.gov.au

Environmental Impact Assessment

Event #3635805760_72045

24 March 2025

Executive Summary

Compliance monitoring and investigative (event based) sampling was conducted in response to the Western Containment Pond (WCP) overtopping into the Seawater Channel on 24 March 2025 following a heavy rainfall event across the Gove peninsula. The over topping of the WCP occurred for 2 hours and 52 minutes from 12:32 PM to 15:24 PM.

The uninterrupted power supply (UPS) at the Authorised Outfall Monitoring Station S001 enabled continuous monitoring of pH and EC and continuous operation of the autosampler (S074) to retrieve a composite sample.

The event was reported as #3635805760_72045 to the Department of Lands, Planning and Environment (DLPE) on 24 March 2025. Immediate corrective action included continual operation of WCP pumps, implementation of the Trigger Action Response Plan (TARP); the Waste Water Neutralisation Plant (WWNP) was shutdown, and both sea water pumps remained operational. Overall, the data demonstrates that there was no material environmental impact from this event.

The ultimate medium-term corrective action remains to complete demolition of the refinery and decontaminate the catchment, converting it to a clean stormwater catchment. The decommissioning and removal of the Western Containment Pond (WCP) and associated drainage infrastructure is set to begin in 2025. As the demolition, decontamination, and disposal (DDD) project progresses, including detailed Contamination Site Assessment (CSA) and rehabilitation land forming, additional preventative and mitigation measures have been implemented to manage stormwater and sediment flow to the WCP. The Gove environment team continues to work closely with the Refinery demolition team as the DDD project further progresses to ensure continued effectiveness of mitigation and control measures.

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GLOSSARY

COPC	Contaminants of Potential Concern
LOR	Limit of reporting
MZB	Mixing Zone Boundary
RDA	Residue Disposal Area
NSNL	Neutralised Supernatant Liquor
SCP	Southern Containment Pond
STP	Sewerage Treatment Plant
TARP	Trigger Action Response Plan
TDN	Total Dissolved Nitrogen
TDP	Total Dissolved Phosphorous
TV	Trigger Value
UPS	Uninterrupted Power Source
WCP	Western Containment Pond
WDL	Waste Discharge Licence 'The Licence'
WWNP	Waste Water Neutralisation Plant

Introduction

A heavy rainfall event was experienced across the Gove Peninsula on 24 March 2025. The Stockpile Creek Rainfall Gauge recorded 42.4 mm of rainfall over a 6-hour period between 09:00 AM to 15:00 PM on the 24 March 2025. In the lead up to the event a total of 30.8 mm of rainfall was recorded over 22-23 March 2025.

The stormwater inflows from the Western Containment Pond (WCP) catchment exceeded the capacity of the WCP, resulting in stormwater overtopping the WCP weir into the seawater channel. Overflow from the WCP commenced at approximately 12:32 PM. The Waste Water Neutralisation Plant (WWNP) was shutdown at 12:11 PM as per the TARP. The WCP ceased overtopping its weir into the seawater channel at approximately 15:24 PM on 24 March 2025. Total duration of discharge from the WCP into the seawater channel was 2 hours and 52 minutes.

Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation and was not discharging into the seawater channel at the time of the overflow.

Operational and investigative (event based) samples were collected from Authorised Outfall Monitoring Station (S001) and Western Containment Pond (S030). Two sampling events from the marine mixing zone boundary (MZB) sites (SW9, SW10 and RR2) were undertaken. At 16:00 on 24 March 2025 and on the morning of 25 March 2025 following the cessation of the WCP overtopping into the seawater channel. These results combined with the daily composite sample (S074) results provide the evidence to assess any impact from the event on the receiving environment.

Mitigation Measures

As the refinery demolition, decontamination and disposal (DDD) project progresses on multiple work fronts, mitigation measures have been implemented to divert, reduce and slow down stormwater and sediment reporting to the WCP and other containment ponds across the refinery. Decontamination activities over the 2024 dry season have also aimed to remove known contamination sources from the upstream refinery footprint in preparation for the 2024-25 wet season. This strategy of removing source material and diverting water has continued through the early part of 2025 as work fronts within the DDD footprint advance with concrete footing removal. As a concurrent contaminated site assessment (CSA) and rehabilitation program of the site continues the mitigation measures will also evolve throughout the remainder of the project. Upon completion of the DDD activities across the refinery catchments, the ultimate medium-term corrective action remains the scheduled conversion to a clean stormwater catchment; with the decommissioning and removal of the Western Containment Pond (WCP) and associated drainage infrastructure due to commence in 2025.

Post the 2023-24 wet season, improvements have been implemented to minimise the volume of water reporting to the Western Containment Pond (WCP). Figure 1 [Left] shows the location of the WCP, and associated changes made to the refinery catchments prior to the commencement of the 2024-25 wet season are shown in Figure 1 [Right].

The following combination of temporary erosion and sediment control measures to reduce the volume and stem the flow of water entering the WCP remain in place and are effective. Routine inspections have been utilised to monitor effectiveness of controls and address defects (Appendix C).

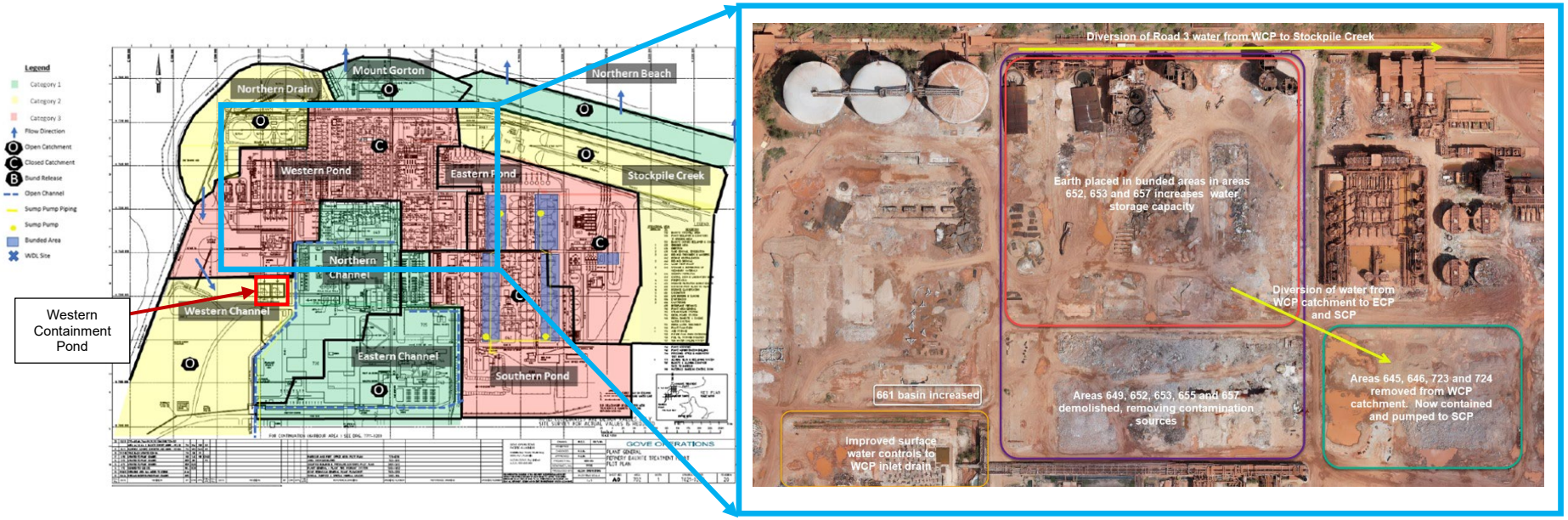


Figure 1 [Left] Refinery Catchments prior to 2023-24 wet season. [Right] Enlargement of boxed area showing aerial of bund outline to Refinery catchments commencement of 2024-25 wet season. There is still underground drainage along Road 15, Area 653 that still reports to the WCP. Sediment and flow control measures have been applied at each drain inlet aiming to slow and reduce sediment flow & velocity entering the WCP (See Appendix B, Figure 21).

Surface water and drainage control

Flow diversion banks and drains have been implemented to divert surface waters away from active work areas to minimise contamination of water flowing into the WCP.

- The demolition and decontamination of areas 633, 645, 646, 649, 652, 653, 655, and 657, 662, 723 and 724 has removed high pH materials from the WCP catchment (Figure 1, right).
- Earth bunds have been placed in areas to minimise runoff reporting to WCP, by diverting flow to other areas with capacity such as newly installed retention basins within the SCP or ECP catchments (Figure 1, right).
- Other catchment diversions include areas immediately west of the WCP which previously drained to the WCP. Recontouring of the area, and bunds located at the eastern and western boundary of scrapyard and oxy-cutting areas, southern fence line and moxy parking area divert flow to a large retention basin south of the WCP (Appendix B, Figure 17 & Figure 18).
- Earth bund installed around demolished calcination structure to contain light materials such as refractory bricks and synthetic mineral fibres (SMF) aim to contain flow and sediment loss to the WCP (Appendix B, Figure 16).
- Earth bund on southern and western corner of Area's 653, 657 installed (Figure 1, right) to prevent surface runoff flowing towards drains that report to the WCP (Appendix B, Figure 21).

A certified erosion and sediment control plan (ESCP) to manage the interim landform across the WCP, ECP and SCP catchment is currently being updated. The ESCP includes landform shaping and additional retention basins within the WCP catchment.

Erosion control and surface stabilisation

Erosion control and stabilisation measures including environmentally certified & natural polymer binder and soil stabiliser (Dustex) have been applied to bunds and inactive areas across the upstream work fronts of the refinery.

Sediment control

Sediment fences, rock checks and coir logs have been installed to slow and trap sediment as close to the source as practicable.

- The installation of sediment fence and improved rock checks at WCP inlets (West inlet drain, Figure 13, and North drain, Figure 14 & 15) aims to improve quality of water inflow and reduce the velocity of flow and drainage reporting to the WCP.
- Silt fence installed on northern boundary of Area 662 (scrapyard).
- Coir logs, rock drain and silt fence installed between Area 653 and 710 and entrance to seawater channel.
- Coir logs placed at drainage pits along Road 6,15 and 24 to help reduce flow and minimise sediment reporting to the WCP (Figure 21 & 22).

Sediment basins

Water captured in sediment/retention basins during or following each storm/rainfall event are discharged directly into the containment ponds during dry periods to ensure capacity within the basin is available so far as reasonably practicable.

- Area 661 retention basin has been increased, resulting in increased catchment storage and slowing of surface water entering the WCP drainage system (Appendix B Figure 16). As the removal of structure footings, located in Area 661, commence towards the end of Q1, 2025 the holding capacity of stormwater and control of sediment within Area 661, immediately north of the WCP, is expected to increase and improve.
- The demolition of areas 645, 646, 723 and 724 which previously reported to the WCP are now contained and diverted to the Southern Containment Pond (SCP) reducing the WCP catchment area

by 1.9 hectares (ha) (Figure 1). The total catchment area diverted away from the WCP is currently estimated to be 20.9 ha. A diversion of approximately 9% of the WCP catchment to the SCP. Catchment diversions throughout the remaining phases of the DDD and rehabilitation project are expected to adapt and change as work fronts progress.

- Sediment buildup removed, walls stabilised and improved rock drain created at retention basin in SW Area 662 (Scrapyard) (Appendix B Figure 17).

Dewatering basins and sumps

As part of the ongoing water management strategy and routine inspections carried out on the Refinery DDD project, contained water continues to be dewatered to the containment ponds between each rainfall event to maximise holding capacity of the catchments. Aerial imagery from 28 March 2025, shows minimal presence of contained water following the 24-hour rainfall event on the 24 March 2025 (Appendix D).

Dewatering and removal of water and sediment build up activities undertaken prior to the onset of the wet season were undertaken to remove sources of potential contamination and increase holding capacity across the refinery.

- The three main containment ponds across the refinery (WCP, SCP and ECP) are routinely kept at low levels (between 10-12%) depending on the sump & pump requirements.
- Any sediment build up contained in the containment ponds is assessed on an annual basis, (Dry season), to determine desilting requirements.
- For the WCP the pond, the level is reduced to the lowest pumping level (<10%). If the sediment build up exceeds a nominal point, of >8% at the WCP northern ramp where sediment initially builds up from inflows, the sediment is removed from the entire pond during the dry season.
- Sediment inside the WCP was removed prior to the 2022-23 wet season. Prior to the 2023-24 and 2024-25 wet season it was determined that no desilting of the WCP was required.
- Sediment build up in the Western Containment Pond northern inlet drain was removed and cleaned prior to the 2023-24 and again prior to the 2024-25 wet season (Appendix B, Figure 14).
- Sediment in the SCP was desilted prior to the 2024-25 wet season (Appendix B Figure 19).
- The sediment basin which captures run-off from the Refinery Steel Stockpile area (southwest of the WCP) was re-profiled, re-armoured with rock at inflow points and desilted prior to the 2024-25 wet season.
- Other smaller areas of potentially contaminated sources e.g. sumps, are also pumped and directed to the containment ponds during dry periods for disposal at the RDA.
- A large sump which historically functioned as part of the Refinery cooling towers, which is located adjacent to the Western Seawater channel (Road 3, Area 720), opposite the WCP, was dewatered in November 2024 in preparation of demolition activities. A pump is set up to maintain the ability to remove water after rainfall events (Appendix B, Figure 20).

Routine Inspections

A formalised routine inspection program for surface water, erosion and sediment controls effectiveness has been implemented on a weekly basis and daily when raining by the DDD project teams. This allows controls to be evaluated post rainfall event and rectification works conducted in preparation for the remainder of the 2024-25 wet season. Routine inspections carried out weekly and additionally when >25mm of rainfall is recorded. The following inspection report is included in Appendix C.

- 24 March 2025 inspection triggered by >25mm of rainfall.

Results

Tabulated results for event 3635805760_72045 are provided in Appendix A. Operational results are samples analysed at the onsite laboratory. Investigative results are samples analysed offsite at a NATA accredited laboratory.

Results for operational samples for the intake site at S004 are summarised in Appendix A, Table A2.

Results for the daily compliance samples taken at 08:00 AM for 24 to 27 of March 2025 at the Authorised Discharge Site S001 are summarised in Appendix A, Table A3.

An automatic water sampler collects a 50 mL sample every 20 minutes resulting in a composite sample every 24 hours. Composite sample results over a 24-hour period provide a comprehensive representation of discharge quality into the receiving environment during the WCP overtopping event, providing weighted average results. The site S074 composite sample results for the 24 to the 27 of March 2025 were analysed onsite and are summarised in Appendix A, Table A4.

Investigation event-based samples (NATA laboratory offsite) for the 24 March 2025 at Authorised Discharge site S001 are summarised in Appendix A, Table A5.

Results for event based internally analysed samples on the 24 March 2025 at S001 are summarised in Appendix A, Table A6.

Results for the externally analysed Western Containment Pond Site (S030) are summarised in Appendix A, Table A7.

Marine sites SW9, SW10 and RR2 were sampled on the 24 and 25 March 2025, the results summarised in Appendix A, Table A8.

Figure 2 shows hourly rainfall (mm) recorded at Stockpile Creek and WCP storage capacity (%) for the 24 March 2025. Figure 3 shows continuous monitoring of the Outfall monitoring Station Site (S001) for pH and EC.

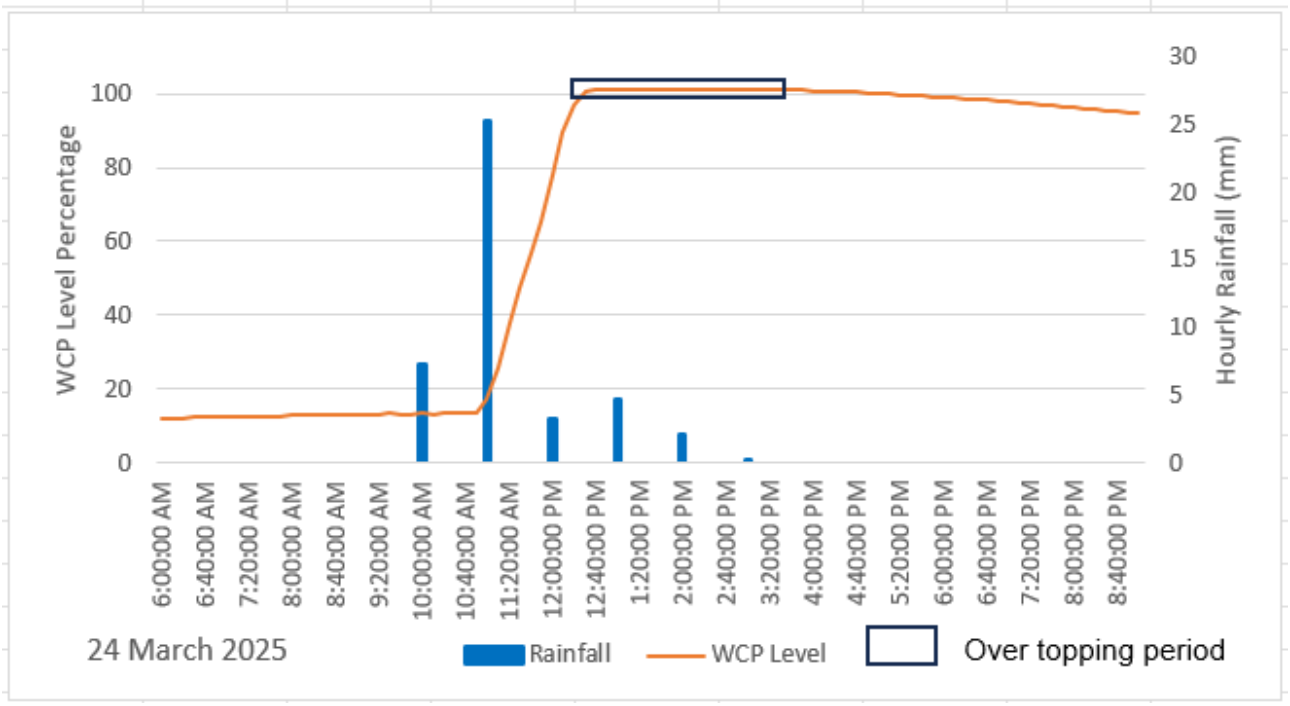


Figure 2 Measured hourly rainfall (mm) collected from Stockpile Creek Rain Gauge and WCP storage capacity (%) for the 24 March 2025.

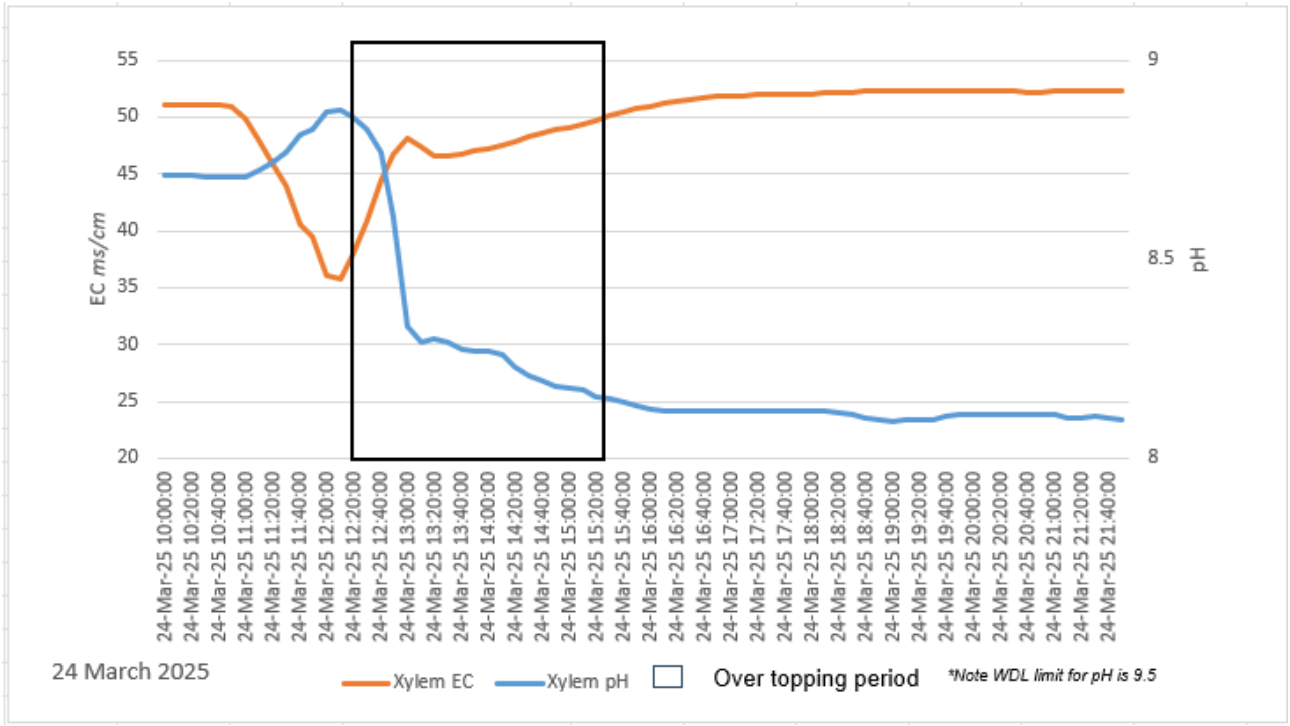


Figure 3 Continuous monitoring of pH and EC at the Outfall Monitoring Station (S001) on 24 March 2025.

Continuous monitoring of pH ranged from 8.09 – 8.87 during the period of 24 March 2025 as shown in Figure 3. Sample results retrieved as a part of the event sample regime on the 24 March 2025 showed pH results ranging from 8.02 - 8.43 throughout the overtopping event (Appendix A, Table A5). This is supported with the continuous data reporting no exceedance of the S001 WDL pH TV (9.0) throughout the overtopping event.

Discussion

WWNP Operation

Figure 4 shows the duration in which the WWNP ceased operation and remained offline throughout the event on the 24 March 2025.

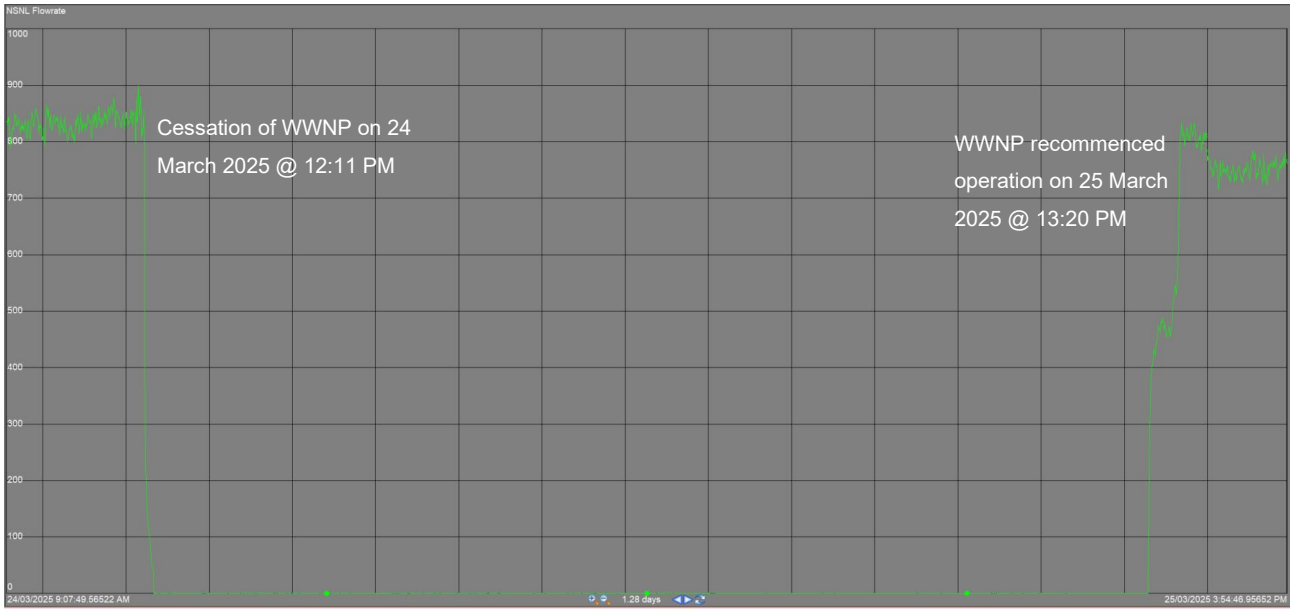


Figure 4 WWNP Operation 24 March 2025 ceasing operation and recommencing operation on 25 February 2025 shown as Neutralised Supernatant Liquor (NSNL) flow rate (m3/hr) vs Time.

Alkalinity

Alkalinity concentrations are indicative of WWNP operation. Results for alkalinity concentrations from daily 08:00 AM operational (compliance) samples at site S001 for the period 24 to 27 March 2025 are summarised in Appendix A, Table A3. Alkalinity concentration on 24 March was at natural background seawater concentrations as WWNP was off-line.

WCP sample location

Water quality results of investigation samples (offsite analysis) for WCP site S030 are summarised in Appendix A, Table A7. Care should be taken when reviewing these results, as samples may not be representative of actual discharge of WCP water into the seawater channel. The sample location is collected from south-east corner of the WCP; therefore, this may not be representative of the discharge from the weir as shown in Figure 5. The location of the discharge weir is unable to be safely accessed for sampling.

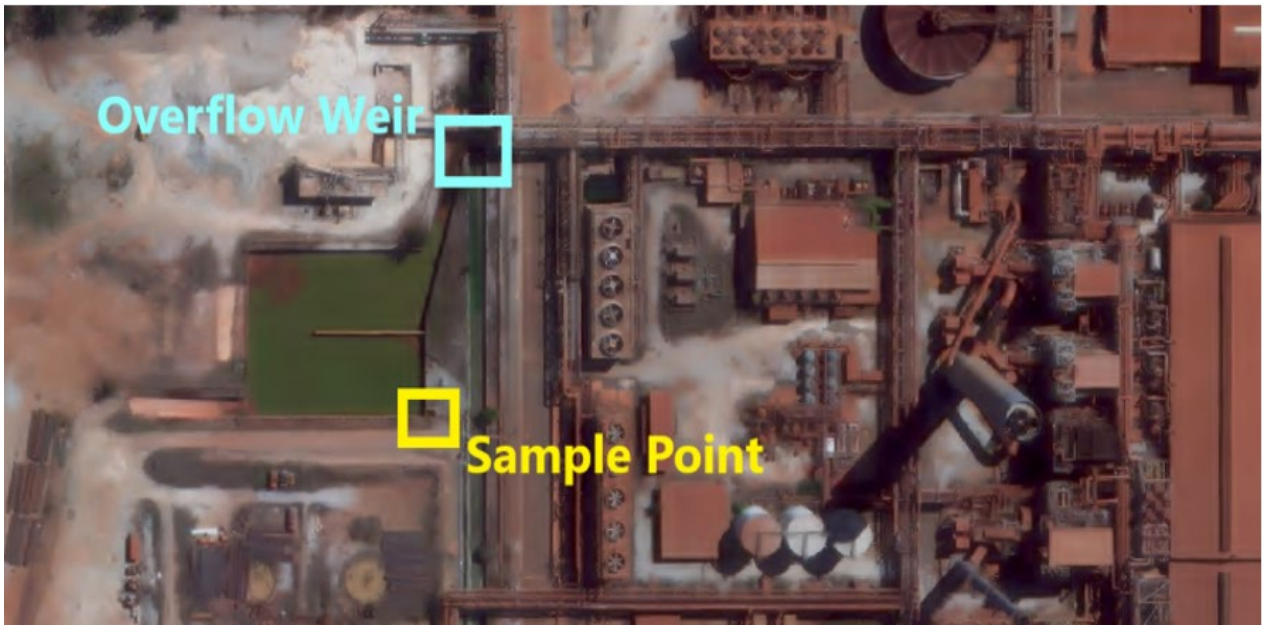


Figure 5 Sample point for the WCP site S030 is the pump located at the bottom of the pond, on the opposite side of the overflow weir location where discharge flows into the seawater channel.

Electrical Conductivity

Electrical conductivity (EC) is indicative of discharges of stormwater into the seawater channel. Background seawater has an EC of approximately 50 mS/cm. The seawater channel intake site S004 ranged from 50.5 mS/cm to 51.0 mS/cm for the period 24 to 27 March 2025. The outfall channel site S001 for the same period 24 to 27 March 2025 is also summarised in Table 1 (S001).

There is evidence of stormwater inputs into the channel from the WCP during the 24 March event. The EC value decreased to approximately 35.76 mS/cm at 12:10 PM on 24 March 2025 (Figure 3).

Table 1 Seawater channel intake site S004 and outfall channel site S001 showing EC from the 08:00 AM sample from 24 to 27 March 2025.

Date and Time	**EC (mS/cm) S004 intake**	**EC (mS/cm) S001 outfall**
24 March 2025 08:00	50.5	49.70
25 March 2025 08:00	51.0	52.20
26 March 2025 08:00	50.9	50.70
27 March 2025 08:00	50.9	49.59

Turbidity

Turbidity results from event-based samples from S001 during and following the WCP overtopping event on the 24 March 2025 are shown in Figure 6. Turbidity results from the external NATA accredited laboratory exceeded the S001 limit on two occasions reaching a maximum of 148 NTU during the WCP overtopping event. A strong correlation between the over topping event and an increase in turbidity at S001 is highlighted in Figure 6.

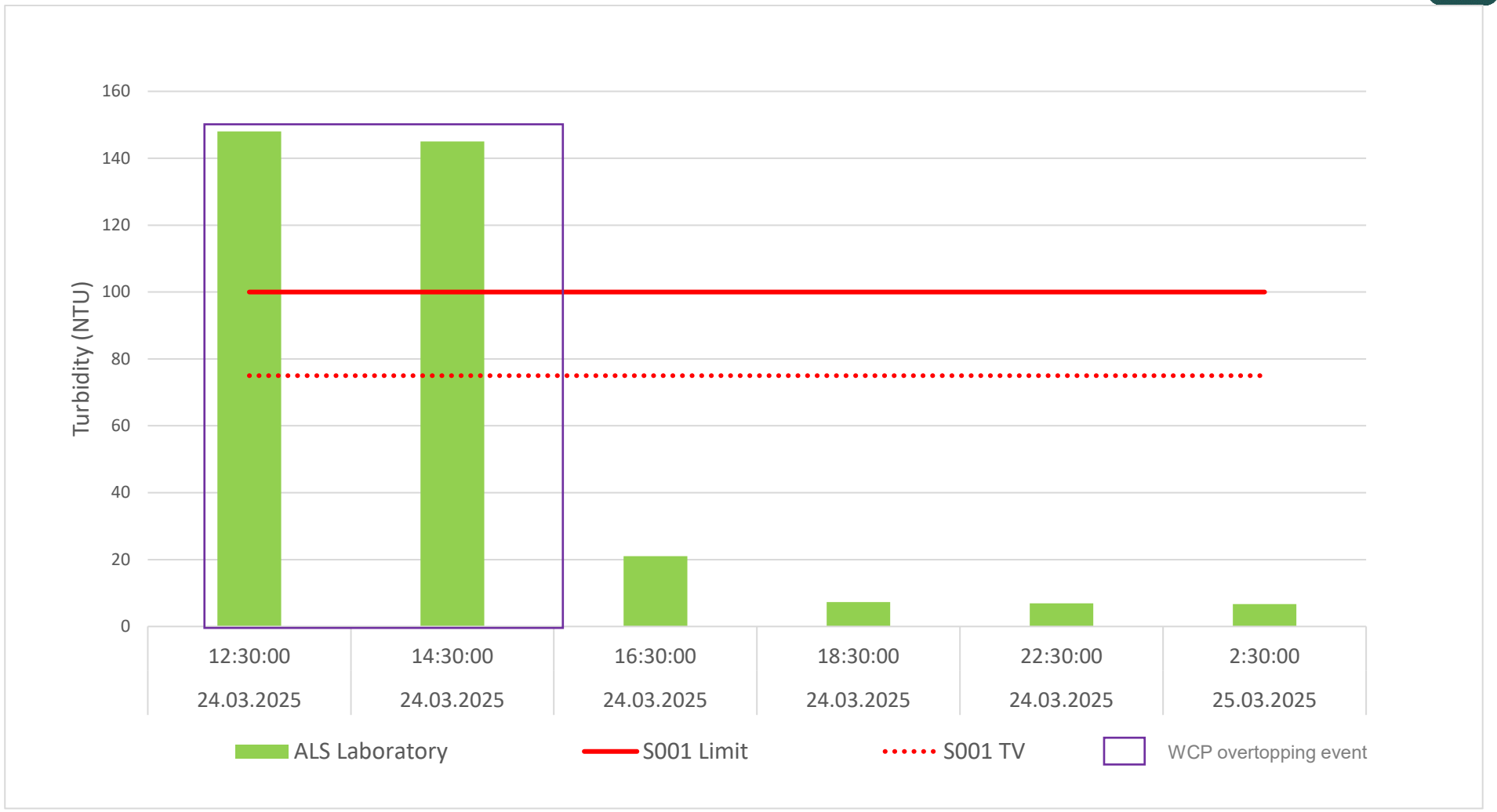


Figure 6 External NATA and internal laboratory Turbidity (NTU), for S001 investigative samples for 24 March 2025.

Nutrients

Treated water from the Sewage Treatment Plant (STP) is currently being directed to a rehabilitation area for irrigation and was not discharging into the seawater channel at the time of the overflow.

Nutrient results taken from S001 on 24 March following the WCP overtopping event on 24 March 2025 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on the 24 and 25 March 2025, with the results summarised in Appendix A, Table A8 (NATA analysis).

Nutrient concentrations at S001 and the MZB sites were less than the Trigger Values for total dissolved nitrogen and total dissolved phosphorous and are not considered to impact overall environmental assessment.

Hydrocarbons

Hydrocarbon results from event-based samples from S001 during and following the WCP overtopping event on 24 March 2025 (NATA Results) are provided in Appendix A, Table A5. The marine MZB sites were sampled on 24 and 25 March 2025, with the results summarised in Appendix A, Table A8 (NATA analysis).

Hydrocarbon concentrations at S001 and the MZB sites were less than the laboratory limit of reporting (LOR) and considered to not be of concern.

Metals and Metalloids

Analysis of metals and metalloids at site S001 from investigative samples (NATA analysis) are summarised in Appendix Table A5 and Figures 7 and 8.

Investigation samples taken at S001 during the overtopping event on the 24 March 2025 recorded an elevated dissolved aluminium concentration of 140 µg/L during the overtopping event (Figure 7 & Table A5). This coincides with the observed large rainfall pulse event. The elevated concentration values were substantially lower than the Licence Limit of 560 µg/L. Successive samples taken from 18:30 PM, approximately 4 hours after the overtopping event ceased, decreased to 11 µg/L confirming the pulse event had ceased and that dissolved aluminum concentrations were approaching background seawater concentrations.

Investigation samples taken at S001 on 24 March 2025 during the overtopping event showed elevated dissolved arsenic concentrations during the overtopping event with the concentration being 13 µg/L at 12:30 PM (Figure 8). The concentrations were substantially less than Licence Limit of 200 µg/L. Once the WCP overtopping event ceased the dissolved arsenic decreased to background seawater concentration of 2.3 µg/L at 18:30 PM on 24 March 2025.

Dissolved vanadium concentrations increased during the overtopping event, with the 12:30 PM S001 sample recording a concentration of 49.2 µg/L, below the Licence Limit of 1000 µg/L. The concentration decreased approaching background concentration (4.7 µg/L) at 18:30 PM (Appendix A, Table A5).

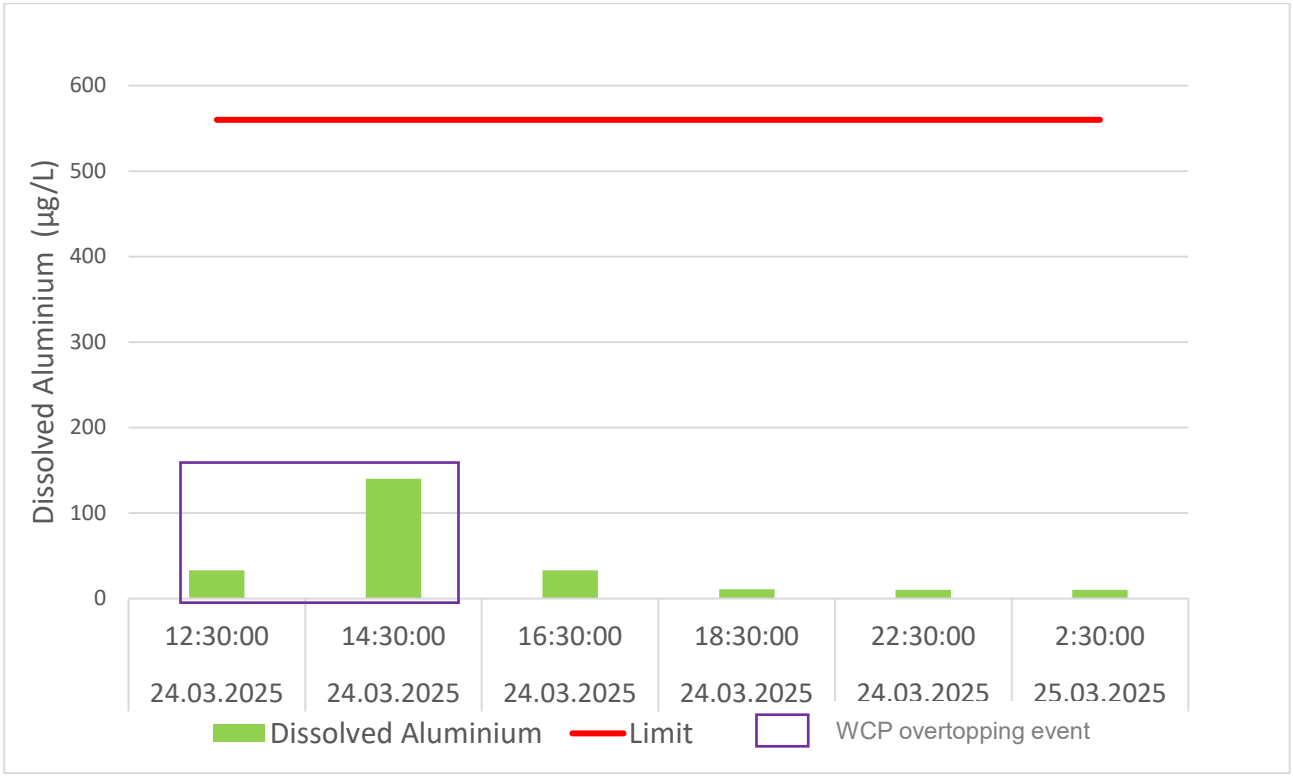


Figure 7 Dissolved aluminium (µg/L) and limit at S001 from event samples (NATA analysis) from 24 March 2025.

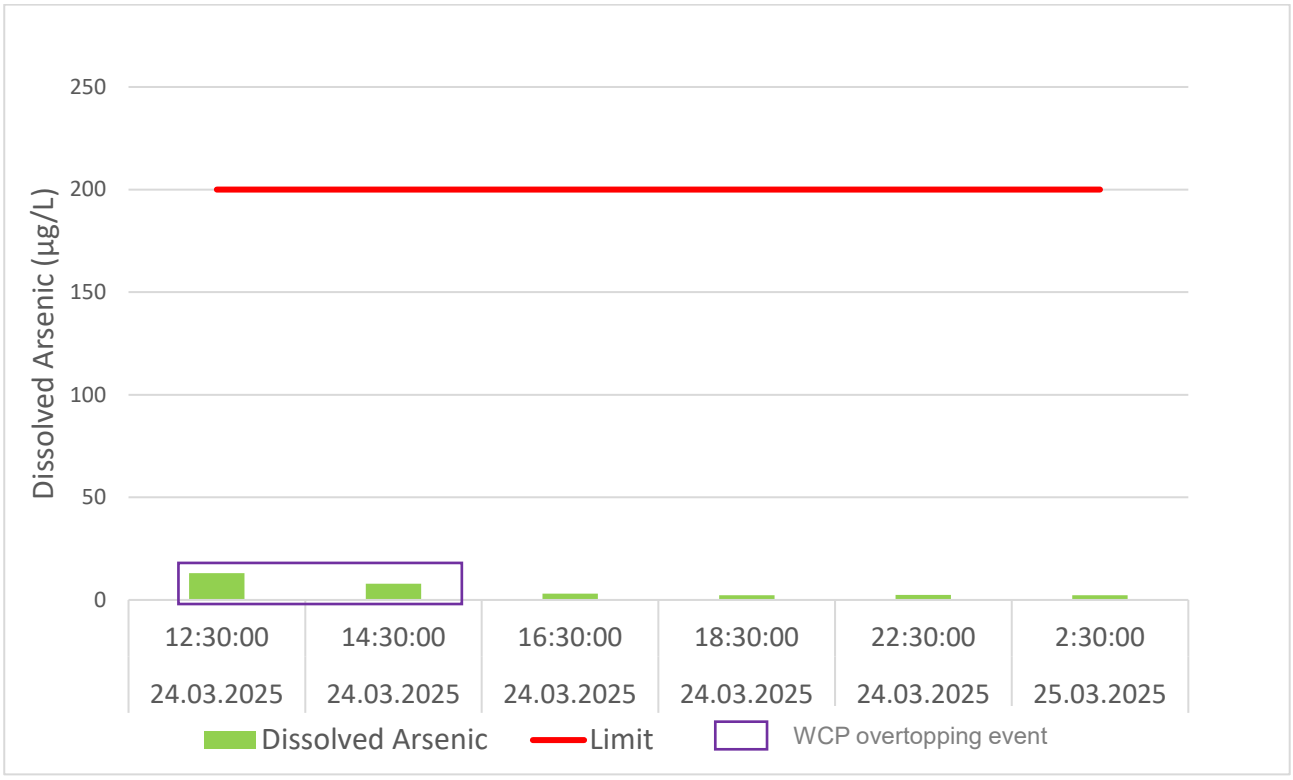


Figure 8 Dissolved arsenic (µg/L) and limit at S001 from event samples (NATA analysis) from 24 March 2025.

Composite Sample

The S074 composite sample results (Appendix A, Table A4) provide a time and volume weighted average over twenty-four hours, including when the unauthorised release was discharging into the eastern seawater channel. Composite samples are relevant to TVs and Limits to assess potential environmental impact. The composite sample collected at 08:00 AM on 25 March 2025 is representative of the preceding 24-hour period when the WCP overflowed. The concentrations recorded during this period were at or below those when the WWNP is operational. All analyte concentrations remained below WDL Limits and TVs.

Marine Results Discussion

Investigative sample results for dissolved aluminium (offsite NATA laboratory) from the MZB sites are shown in Figure 9. Sampling of the marine sites was completed at 16:00 PM, 24 March 2025 during the overtopping event and again on 25 March after the overtopping event ceased. Results at the MZB sites for dissolved aluminium were recorded well below the license trigger value of 56 µg/L (Figure 9). Appendix A, Table A8 shows all analytes at the MZB were substantially lower than the corresponding TVs with concentrations returning to background concentrations on 25 March 2025.

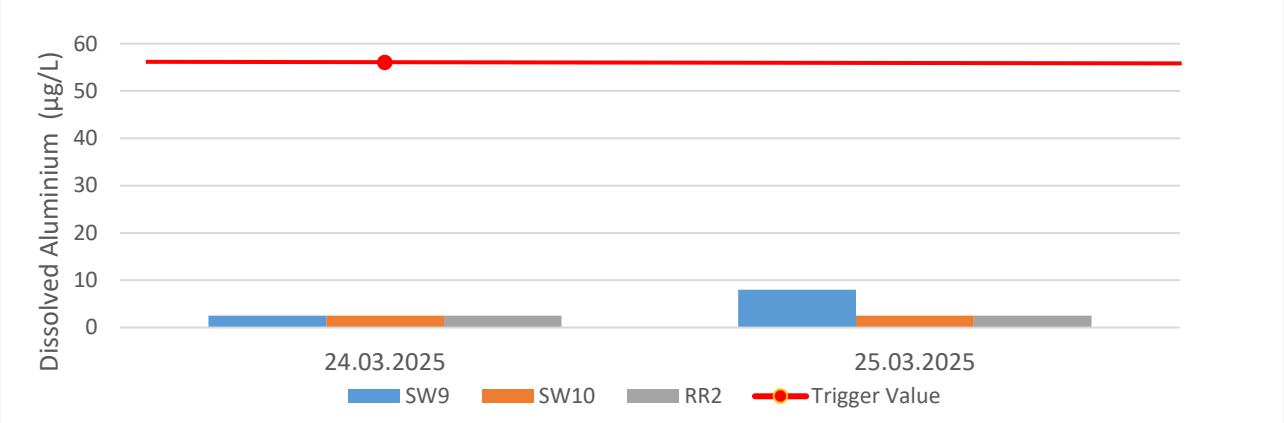


Figure 9 Dissolved aluminium concentrations at MZB sites for samples collected during and after the event, 24 & 25 March 2025. Note that dissolved aluminium for siteSW9, SW10 and RR2 were below the LOR (5µg/L).

The tides times and heights during the WCP event are provided in Figure 10 and Figure 11. The event occurred during an incoming tide.

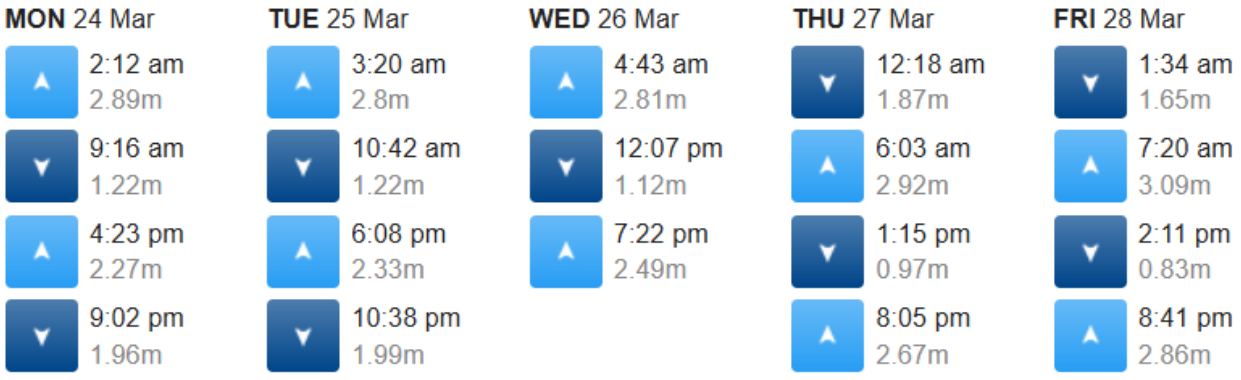
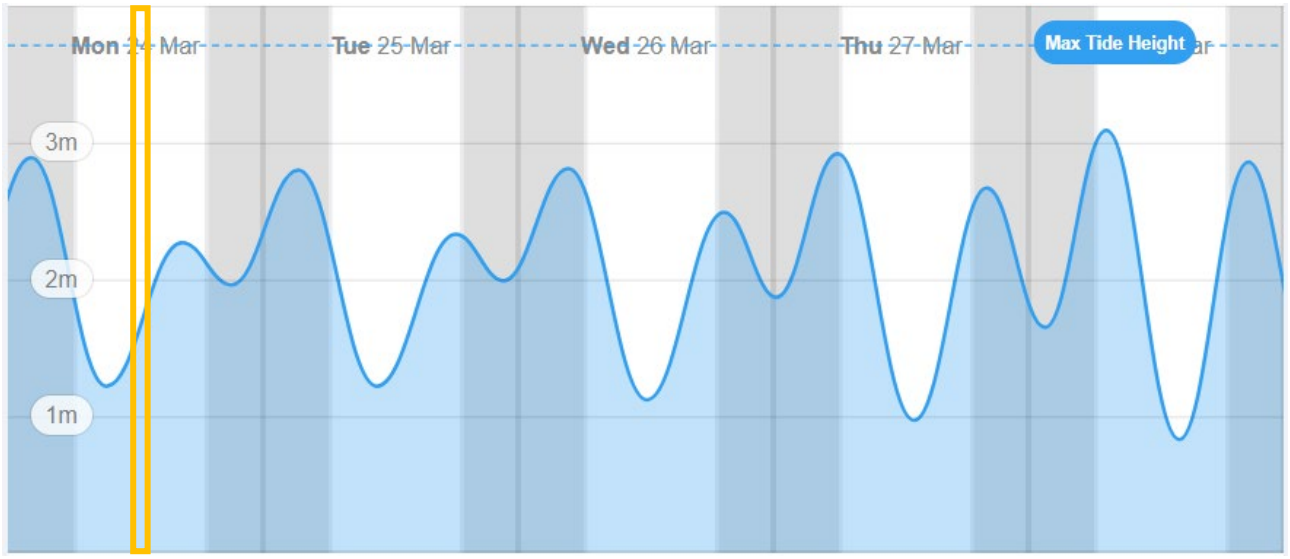


Figure 10 Tide Times from 24 to 28 March 2025. Source: WillyWeather



Event time period

Figure 11 Tide height from 24 to 28 March 2025.

The Australian Institute of Marine Science (AIMS) developed a hydrodynamic model of Melville Bay to assess the dilution and dispersion of the seawater channel discharge into inner Gove Harbour and Melville Bay (AIMS, 2020). The model predicted a minimum dilution rate of 1:25 for the three MZB compliance sites SW9, SW10 and RR2 at a discharge rate of 10,500 m^3/h. Concentrations at the MZB during the event are conservatively predicted by applying the minimum dilution rate from the hydrodynamic model at the MZB of 1:25 to S001 data (Appendix B, Table A5). The predicted concentrations of dissolved Al at the MZB sites are presented in Figure 12.

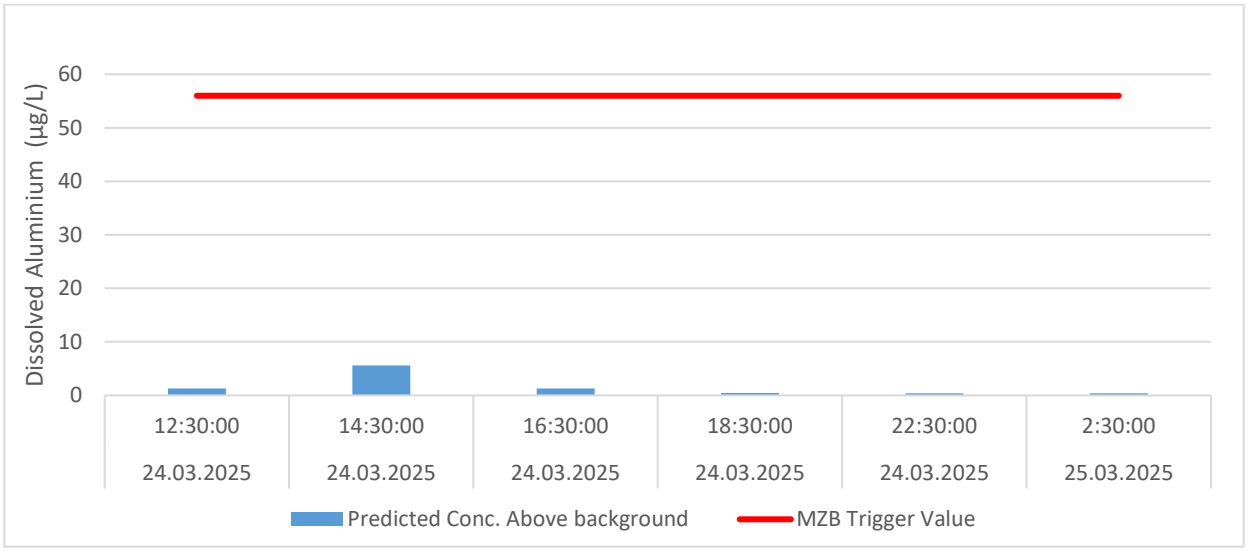


Figure 12 Predicted concentration of dissolved aluminium (above background) at the marine mixing zone boundary based on S001 concentrations from investigative samples.

From the Marine Health Monitoring Program (MHMP) data base, background concentration for dissolved Al in Melville Bay is 1.7 µg/L (80th percentile for the previous 24 months monthly samples). Predicted concentrations

are above the background concentrations. Predicted concentrations of dissolved Al for the marine sites plus background concentrations are all substantially lower than TV's in the Licence for the MZB. Similarly predicted concentrations for dissolved As and V are well below corresponding TV's (Table A8).

Conclusion

The results of the investigation sampling confirmed turbidity was the only parameter to exceed a Licence Limit for event samples taken at S001 at 12:30 PM and 14:30 PM on 24 March 2025, returning 148 NTU and 145 NTU. Follow up samples taken after the event, returned a result of 21 NTU within 2 hours. This confirms that the spike was due to a short duration pulse event which would not have resulted in any impact in the marine receiving environment.

Overall, the data demonstrates that there was no material environmental impact expected from the WCP overtopping on 24 March 2025.

References

Australian Institute of Marine Science, 2020, *Assessment of seawater channel dilution in inner Gove Harbour for development of discharge Trigger Values*. Report to Rio Tinto Aluminium Gove.

Appendix A – Analytical Results Tables

Table A2 Water quality results for site S004 seawater intake location from 24 - 27 March 2025 (onsite analysis).

Daily Operational Samples at site S004 Samples retrieved at 08:00 Hrs		24/03/2025	25/03/2025	26/03/2025	27/03/2025
Environmental Parameters					
pH		8.14	8.17	8.18	8.18
Electrical Conductivity	ms/cm	50.5	51.0	50.9	50.9
Turbidity	NTU	4.42	7.11	4.73	4.94
Alkalinity	mg/L	124.2	125	129.2	126.4
Dissolved Metals & Metalloids					
Aluminium	µg/L	8.49	9.41	7.15	8.25
Arsenic	µg/L	1.93	2.03	2.22	1.98
Gallium	µg/L	0.36	0.36	0.48	0.44
Manganese	µg/L	1.03	1.27	0.64	0.99
Molybdenum	µg/L	10.63	10.16	10.55	10.19
Vanadium	µg/L	3.47	3.66	4.33	3.85

Table A3 Daily Authorised Monitoring Site S001 Outfall Monitoring Station water quality results – 24 to 27 March 2025 (Onsite Analysis).

Daily Compliance Samples – S001 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	24/03/2025	25/03/2025	26/03/2025	27/03/2025
Environmental Parameters							
pH		9	9.5	8.71	8.18	8.80	8.79
Electrical Conductivity	ms/cm	-	-	49.70	52.20	50.70	49.59
Turbidity	NTU	75[t]	100	10.3	5.4	12.0	13.0
Alkalinity	mg/L	-	-	359.2	124.8	395.0	383.3
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	23.20	13.92	21.50	20.15
Arsenic	µg/L	-	200	14.30	2.26	14.58	13.41
Gallium	µg/L	-	8000	15.20	0.49	13.48	13.64
Manganese	µg/L	-	-	2.39	1.45	2.36	2.50
Molybdenum	µg/L	-	38800	30.79	10.76	29.07	28.85
Vanadium	µg/L	-	1000	58.49	4.31	49.80	51.85

Table A4 Daily water quality results – 24 hour Composite sample at Authorised Monitoring Site S074 – 24 to 27 March 2025 (Onsite Analysis)

Daily Compliance Samples – S074 Samples retrieved at 08:00 Hrs		S001 Trigger value	S001 Limit	24/03/2025	25/03/2025*	26/03/2025	27/03/2025
Environmental Parameters							
pH		9	9.5	8.72	8.56	8.82	8.84
Electrical Conductivity	ms/cm	-	-	46.20	46.40	46.00	46.20
Turbidity	NTU	75[‡]	100	23.0	19.2	6.3	6.8
Alkalinity	mg/L	-	-	313.5	175.6	294.3	327.3
Total Suspended Solids	mg/L	-	-	18.4	19.2	33.7	44.5
Dissolved Metals & Metalloids							
Aluminium	µg/L	-	560	18.52	26.35	15.15	16.27
Arsenic	µg/L	-	200	13.69	5.72	10.86	13.40
Gallium	µg/L	-	8000	12.46	3.90	8.98	12.60
Manganese	µg/L	-	-	1.67	2.51	2.15	2.59
Molybdenum	µg/L	-	38800	30.30	15.46	24.37	29.16
Vanadium	µg/L	-	1000	53.57	18.75	37.33	50.33

* Composite sample from channel water quality from 8am 24/03/2025 to 8am 25/03/2025, capturing WCP overtopping period.

Table A5 Event based external water quality results – Authorised Monitoring Site S001 Outfall Monitoring Station – 24 & 25 March 2025 (External Analysis – NATA accredited laboratory).

Investigative / Event samples – S001		S001 Trigger value	S001 Limit	24/03/2025	24/03/2025	24/03/2025	24/03/2025	24/03/2025	25/03/2025
			Time	1230	1430	1630	1830	2230	0230
Environmental Parameters									
pH		9	9.5	8.43	8.10	8.04	8.04	8.02	8.03
Electrical Conductivity	µs/cm	-	-	42600	47000	49700	50400	50400	50400
Turbidity	NTU	75[t]	100	148.0	145.0	21.0	7.3	6.9	6.7
Total Alkalinity	mg/L	-	-	241	130	123	123	122	124
Total Suspended Solids	mg/L	-	-	140	74	11	<5	<5	<5
Metals & Metalloids									
Dissolved Aluminium	µg/L	-	560	33	140	33	11	10	10
Dissolved Arsenic	µg/L	-	200	13.0	7.9	3.1	2.3	2.5	2.3
Dissolved Gallium	µg/L	-	8000	<10	<10	<10	<10	<10	<10
Dissolved Iron	µg/L	-	-	<5	36	5	<5	<5	<5
Dissolved Manganese	µg/L	-	-	2.6	2.4	1.1	0.8	1.1	0.7
Dissolved Molybdenum	µg/L	-	38800	22.4	11.4	10.9	10.6	10.7	10.7
Dissolved Vanadium	µg/L	-	1000	49.2	36.8	7.8	4.7	3.9	4.3
Total Aluminium	µg/L	-	-	4380	3040	361	202	221	95
Total Arsenic	*µg/L*	-	-	14.8	9.7	3.2	2.4	2.3	2.4
Total Gallium	*µg/L*	-	-	<10	<10	<10	<10	<10	<10
Total Iron	*µg/L*	-	-	3290	2110	243	161	190	74
Total Manganese	*µg/L*	-	-	11.8	14.2	4.5	3.9	4.4	2.3
Total Molybdenum	*µg/L*	-	-	28.1	11.5	11.1	11.1	11.4	11.2
Total Vanadium	*µg/L*	-	-	62.1	45.5	9.5	4.8	4.4	4.4
Nutrients									
Total Dissolved Phosphorus	µg/L	-	140	10	17	17	15	15	13
Total Dissolved Nitrogen	µg/L	-	1700	290	210	200	180	190	170
Hydrocarbons									
Total Petroleum Hydrocarbons	µg/L	-	-	<50	<50	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	-	<1	<1	<1	<1	<1	<1
Toluene	µg/L	-	-	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	-	-	<2	<2	<2	<2	<2	<2
Xylene	µg/L	-	-	<2	<2	<2	<2	<2	<2

This data is event based – it does not form part of the WDL monitoring program.

Table A6 Event based internal water quality results - Authorised Monitoring Site S001 Outfall Monitoring Station – 24 & 25 March 2025 (onsite analysis).

Event Operational samples - S001 Analysed onsite		S001 Trigger value	S001 Limit	24/03/2025	24/03/2025	24/03/2025	24/03/2025	24/03/2025	25/03/2025
			Time	1230	1430	1630	1830	2230	0230
Environmental Parameters									
pH		9	9.5	8.81	8.24	8.14	8.23	8.22	8.23
Electrical Conductivity	ms/cm	-	-	43.70	47.59	50.09	50.59	50.79	50.70
Turbidity	NTU	75[t]	100	93.59	152.0	27.20	11.00	7.05	5.79
Alkalinity	mg/L	-	-	320.39	132.00	124.7	126.1	125.3	125.8
Dissolved Aluminium	µg/L	-	560	64.90	314.73	50.22	15.24	13.57	14.91
Dissolved Arsenic	µg/L	-	200	13.20	9.98	3.25	2.39	2.26	2.34
Dissolved Gallium	µg/L	-	8000	10.98	1.54	0.70	0.56	0.55	0.54
Dissolved Iron	µg/L	-	-	6.89	88.06	8.83	2.27	2.34	2.50
Dissolved Manganese	µg/L	-	-	2.72	3.26	1.57	0.94	1.18	0.93
Dissolved Molybdenum	µg/L	-	38800	25.52	11.55	11.52	10.66	10.42	10.58
Dissolved Vanadium	µg/L	-	1000	48.74	36.49	9.43	4.78	4.09	4.33

This data is event based – it does not form part of the WDL monitoring program.

Table A7 Event based external water quality results – Western Containment Pond site S030 – 24 & 25 March 2025 (External Analysis - NATA accredited laboratory).

Investigative / Event samples - S030		24/03/2025	24/03/2025	24/03/2025	24/03/2025	25/03/2025
		1230	1430	1630	1830	0630
Environmental Parameters						
pH		9.66	9.76	9.38	9.63	8.49
Electrical Conductivity	µs/cm	587	325	332	360	544
Turbidity	NTU	3880	2790	2360	2360	270
Alkalinity	mg/L	304	200	186	197	133
Total Suspended Solids	mg/L	1400	814	697	753	97
Metals & Metalloids						
Dissolved Aluminium	µg/L	1270	1240	1140	1330	1040
Dissolved Arsenic	µg/L	104	94	85	105	53
Dissolved Gallium	µg/L	10	9	10	11	7
Dissolved Iron	µg/L	160	150	140	170	220
Dissolved Manganese	µg/L	<1	<1	<1	<1	<1
Dissolved Molybdenum	µg/L	10	10	10	10	13
Dissolved Vanadium	µg/L	480	440	400	480	300
Total Aluminium	µg/L	63600	46100	24000	56900	8980
Total Arsenic	µg/L	90	82	78	90	52
Total Gallium	µg/L	32	26	18	26	13
Total Iron	µg/L	23700	17200	7790	20300	3600
Total Manganese	µg/L	88	81	41	82	15
Total Molybdenum	µg/L	6	5	7	7	16
Total Vanadium	µg/L	570	510	440	550	300

Table A8 Investigative water quality results - Marine Mixing Zone (MZB) sites – 24 & 25 March 2025 (External Analysis - NATA accredited laboratory).

		MZB Trigger Values	24/03/2025	24/03/2025	24/03/2025	25/03/2025	25/03/2025	25/03/2025
			SW9	SW10	RR2	SW9	SW10	RR2
		Time	1426	1431	1434	0840	0832	0834
Environmental Parameters								
pH		7.7 – 8.4	8.05	8.01	8.05	8.02	7.99	7.99
Electrical Conductivity	µS/cm	-	49600	50400	50000	50000	49300	49500
Total Suspended Solids (SS)	mg/L	-	6	<5	<5	<5	<5	<5
Turbidity	NTU	20	1.2	1.3	1.5	1.1	1.1	0.8
Alkalinity	mg/L	-	123	117	119	118	113	114
Metals and Metalloids								
Dissolved Aluminium	µg/L	56	<5	<5	<5	<5	<5	8
Dissolved Arsenic	µg/L	20	1.9	1.6	1.8	1.9	1.6	1.2
Dissolved Gallium	µg/L	800	<10	<10	<10	<10	<10	<10
Dissolved Iron	µg/L	-	<5	<5	<5	<5	<5	<5
Dissolved Manganese	µg/L	-	0.8	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Molybdenum	µg/L	3880	10.3	9.4	10.6	10.5	9.7	7.7
Dissolved Vanadium	µg/L	100	4.0	2.4	2.4	2.6	2.0	1.5
Nutrients								
Total Dissolved Phosphorus	µg/L	14	10	9	9	9	9	8
Total Dissolved Nitrogen	µg/L	170	130	120	130	130	170	120
Hydrocarbons								
Total Petroleum Hydrocarbons	µg/L	-	<50	<50	<50	<50	<50	<50
Polycyclic Aromatic Hydrocarbons	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	-	<1	<1	<1	<1	<1	<1
Toluene	µg/L	-	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	-	<2	<2	<2	<2	<2	<2
Xylene	µg/L	-	<2	<2	<2	<2	<2	<2

Appendix B – Photographic Log of upstream surface water and erosion & sediment mitigation measures related to the WCP and refinery catchments



Figure 13 Rock Drain at western entrance to WCP ramp lined with coir logs, aiming to reduce flow velocities and allow sediment to settle.



Figure 14 Desilted & cleaned WCP northern drain with protective ballast material aiming to reduce flow velocities and allow sediment to settle.



Figure 15 Silt fence and limestone along the WCP northern drain and entrance to the WCP



Figure 16 Rock drain between retention basin in Area 661 & WCP.



Figure 17 Sediment buildup removed, walls stabilized and rock drain created at retention basin in SW Area 662 (Scrapyard).



Figure 18 Earth bund diverting water runoff to the retention basin in SW Area 662 (Scrapyard)



Figure 19 Desilting of Southern Containment Pond during the 2024 dry period



Figure 20 Pumping of potentially contaminated water from the cooling tower sumps (Nov 2024) to the containment pond for redistribution to the RDA



Figure 21 Road 15, Area 653 rock checks and coir logs on each drain pit which drains to the WCP. Aims to slow and reduce sediment flow & velocity.



Figure 22 Rock check and silt fencing located at drainage point adjacent to the northern seawater channel inlet. Aims to protect the spoon drain adjacent to the seawater channel that diverts stormwater to the WCP.



Figure 23 Coir logs placed around drain inlets adjacent to the seawater channel along Road 3, Area 720.

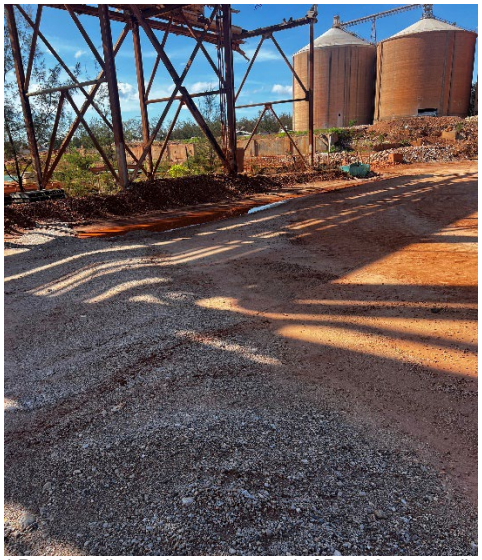


Figure 24 Road bunding at the northern end of Road 3 aims to divert potentially contaminated water flow back towards the WCP catchment and away from drain inlets adjacent to seawater channel.

Appendix C – Routine Inspection Reports – Control Effectiveness

Surface Water Checklist Refinery 2024/2025

Charles Dike

Complete

Score	6 / 7 (85.71%)	**Flagged items**	4	**Actions**	5

Date & Time		24.03.2025 14:07 ACST
Site conducted		Refinery
Inspection type:	**Weekly check**	No
Inspection type:	**> 25mm Rain Check**	Yes
Prepared by		Charles Dike

Flagged items & Actions

4 flagged, 5 actions

Flagged items

4 flagged, 5 actions

Checklist / AREA_720 - ROAD 6 - GATE 3 - #4

Are all diversions in place for water to be diverted from area 657 to the western containment pond?

No

Increase in height of diversion in progress


Photo 36


Photo 37

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Low | Due: 31.03.2025 16:42 ACST | Created by: Charles Dike

Increase height of diversion

Checklist / AREA_720 - ROAD 6 - GATE 3 - #4

Is the silt fence along road 6 in place and without damage

No

Minor maintenance of silt fence required


Photo 40

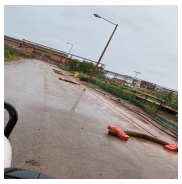

Photo 41


Photo 42

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Low | Due: 31.03.2025 15:23 ACST | Created by: Charles Dike

Minor maintenance of silt fence required

No action required. Silt fence is ok.

Checklist / AREA_716 OWTP - #5

Is the bund around the OWTP in place and adequate?

No

Minor Maintenance required


Photo 43

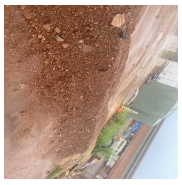

Photo 44


Photo 45


Photo 46


Photo 47


Photo 48



Photo 49

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Low | Due: 16.04.2025 15:25 ACST | Created by: Charles Dike

Bund maintenance required

Checklist / AREA 653/657 & Road 25_ TEMPORARY CONCRETE CRUSHING AREA - #7

Is the rock drain and silt fence along Road 25 preventing runoff from getting in the seawater channel?

No

Maintenance required on silt fence



Photo 71



Photo 72

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Medium | Due: 29.03.2025 07:59 ACST | Created by: Kieran Brocx

Silt fence along road 25 south

Rain event has compromised previous repair. Section of silt fence may need to be replaced, or additional support put in.

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Low | Due: 31.03.2025 14:27 ACST | Created by: Charles Dike

Maintenance required for silt fence

Other actions 0 actions

Checklist	4 flagged, 5 actions, 6 / 7 (85.71%)
AREA_662 - SCRAPYARD SEDIMENT BASIN - #1	2 / 2 (100%)

Are pond walls adequate and without any major visible damage? — Yes


Photo 1


Photo 2

Are water inflows clear of debris? — Yes


Photo 3


Photo 4

Was inflow water sampling conducted on first flush at start of runoff? — Yes

Has sampling continued every 24 hrs until the end of the event? — Yes

Overflow water quality sample been taken at first overflow and continued sampling conducted every 4 hrs until the end of the event? — N/A

Are controls in place on the fence line to ensure water does not exit the blue line? — Yes


Photo 5


Photo 6


Photo 7


Photo 8


Photo 9

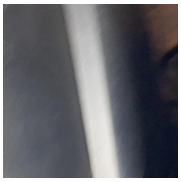
Has there been any discharge to the Western Containment Pond in the last 7 days — No

Is the sediment basin >50% capacity and requires pump out? — No

Greater than 50


Photo 10


Photo 11


Photo 12

AREA_662-SWTP - #2

Is the open rock strip on the entrance to the WCP in good shape?

Yes


Photo 13


Photo 14


Photo 15

AREA_661 - #3

1 / 1 (100%)

Are the silt fences and earth bunds on the north-western boundary in place and preventing runoff leaving the blue line?

Yes

Minor maintenance required


Photo 16


Photo 17

Are the rock drains on the channel on the entrance to the scrap yard in place and adequate (Road 23)

Yes


Photo 18


Photo 19

Is the channel silted up and does it require cleaning?

No


Photo 20


Photo 21


Photo 22

Are the silt fences on the southern boundary in place and adequate?

Yes


Photo 23


Photo 24


Photo 25


Photo 26

Is the catchment in 661 working as intended with no maintenance issues

Yes


Photo 27


Photo 28


Photo 29


Photo 30

AREA_720 - ROAD 6 - GATE 3 - #4

2 flagged, 2 actions, 1 / 1 (100%)

Are all coir logs along the roadway in place?

Yes


Photo 31


Photo 32


Photo 33

Are there any signs of site water from area 657 running down the road towards gate 3?

No


Photo 34


Photo 35

Are all diversions in place for water to be diverted from area 657 to the western containment pond?

No

Increase in height of diversion in progress


Photo 36


Photo 37

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Low | Due: 31.03.2025 16:42 ACST | Created by: Charles Dike

Increase height of diversion

Is the entry to the western containment pond clear and free

Yes

of debris?


Photo 38


Photo 39

Is the silt fence along road 6 in place and without damage

No

Minor maintenance of silt fence required


Photo 40


Photo 41


Photo 42

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Low | Due: 31.03.2025 15:23 ACST | Created by: Charles Dike

Minor maintenance of silt fence required

No action required. Silt fence is ok.

AREA_716 OWTP - #5

1 flagged, 1 action, 1 / 1 (100%)

Is the bund around the OWTP in place and adequate?

No

Minor Maintenance required


Photo 43

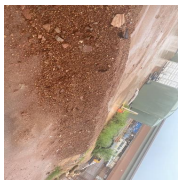

Photo 44


Photo 45


Photo 46


Photo 47


Photo 48

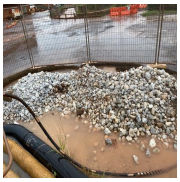

Photo 49

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Low | Due: 16.04.2025 15:25 ACST | Created by: Charles Dike

Bund maintenance required

Does the rock drain require any maintenance?

No


Photo 50

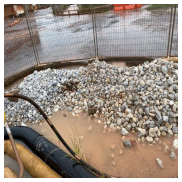

Photo 51


Photo 52

Are the coir logs behind the earth bund in good condition? Yes


Photo 53


Photo 54


Photo 55


Photo 56


Photo 57

AREA_657 - ROAD 15 - #6

Are all coir logs in place on the entire road? Yes


Photo 58


Photo 59


Photo 60

Are all drains along the road clear of silt? Yes


Photo 61


Photo 62


Photo 63


Photo 64

AREA 653/657 & Road 25_ TEMPORARY CONCRETE CRUSHING AREA - #7

1 flagged, 2 actions, 1 / 2 (50%)

Is the earth bund around the concrete crushing are in place and adequate? Yes


Photo 65


Photo 66


Photo 67


Photo 68

Are there rock drains at appropriate locations around the concrete crushing area and are they adequate? Yes


Photo 69


Photo 70

Is the rock drain and silt fence along Road 25 preventing runoff from getting in the seawater channel?

No

Maintenance required on silt fence


Photo 71


Photo 72

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Medium | Due: 29.03.2025 07:59 ACST | Created by: Kieran Brocx

Silt fence along road 25 south

Rain event has compromised previous repair. Section of silt fence may need to be replaced, or additional support put in.

Done | Assignee: Deji Awopetu, Peter Thomas | Priority: Low | Due: 31.03.2025 14:27 ACST | Created by: Charles Dike

Maintenance required for silt fence

AREA 723/646 - ROAD 24 - #8

1 / 2 (50%)

Is the windrow around the catchment in place and adequate?

Yes


Photo 73


Photo 74


Photo 75

Has there been any discharge from the catchment into the drains on Road 15 in the last 7 days?

Yes

Discharge occurred

Does the catchment require pump out / discharge?

No


Photo 76


Photo 77

AREA_664 - BUND - #9

Is earth bund around 664 in place, adequate and without damage?

N/A

Non accessible due to ongoing work


Photo 78

AREA_664 - ROAD 24 - GATE 4 - #10

Are coir logs into drains are in place?

Yes

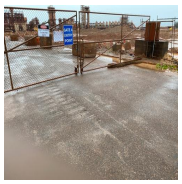

Photo 79


Photo 80

Are coir logs on the roadway in place?

Yes


Photo 81


Photo 82

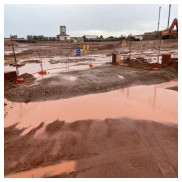
Is the integrity of the concrete plug for the drain on the corner of road 24 and road 25 in good condition?

AREA_663 - ROAD 3 - GATE 6 - #11

Is drive over bund in place and in good condition

Yes


Photo 83


Photo 84

Are coir logs in place on open rock drain?

Yes


Photo 85

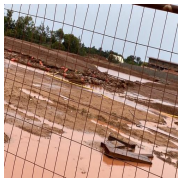

Photo 86


Photo 87

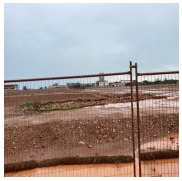

Photo 88


Photo 89


Photo 90


Photo 91

AREA_652 - 633 - ROAD 3 - #12

Is the earth bund in place and adequate?

Yes


Photo 92

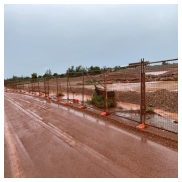

Photo 93


Photo 94

GENERAL

Check all bund walls on site for damage, do any require repair?

N/A

Areas requiring maintenance have been flagged

Media summary



Photo 1



Photo 2

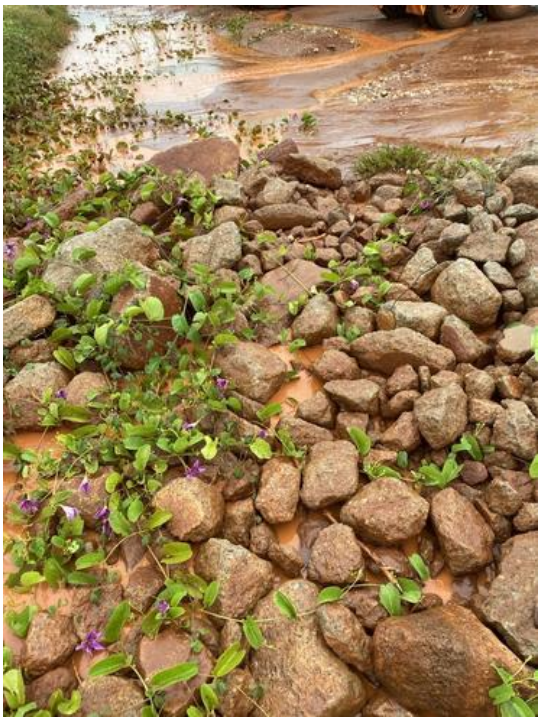


Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11

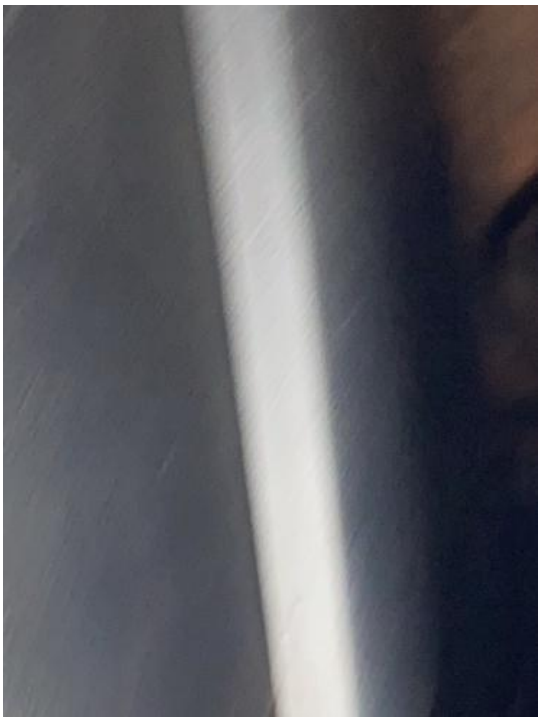


Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18



Photo 19



Photo 20



Photo 21



Photo 22



Photo 23



Photo 24



Photo 25



Photo 26



Photo 27



Photo 28



Photo 29



Photo 30



Photo 31



Photo 32



Photo 33



Photo 34



Photo 35



Photo 36



Photo 37



Photo 38



Photo 39



Photo 40



Photo 41



Photo 42



Photo 43



Photo 44



Photo 45



Photo 46



Photo 47



Photo 48



Photo 49



Photo 50



Photo 51



Photo 52



Photo 53



Photo 54



Photo 55



Photo 56



Photo 57



Photo 58



Photo 59



Photo 60



Photo 61



Photo 62



Photo 63



Photo 64



Photo 65



Photo 66



Photo 67



Photo 68



Photo 69



Photo 70



Photo 71



Photo 72



Photo 73



Photo 74



Photo 75



Photo 76



Photo 77



Photo 78



Photo 79



Photo 80



Photo 81

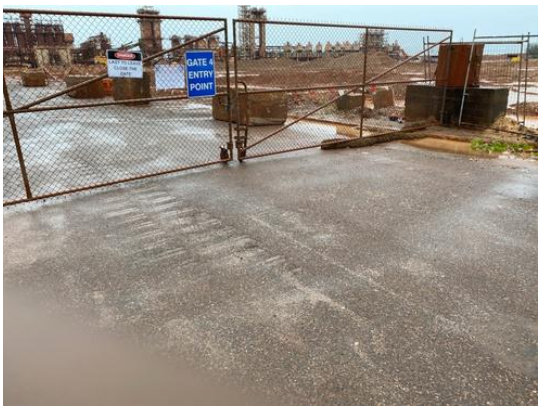


Photo 82



Photo 83



Photo 84



Photo 85



Photo 86



Photo 87



Photo 88



Photo 89



Photo 90



Photo 91



Photo 92



Photo 93



Photo 94

Appendix D – Aerial imagery of refinery footprint (28 March 2025)



Figure 25 Aerial imagery 28 March 2025 post heavy rainfall event across the Gove Peninsula on 24 March 2025 where 42.4 mm of rainfall was recorded within a 6-hour period on 24 March 2025.

APPENDIX G LICENCE TRIGGER VALUES AND LIMITS

Trigger Values and Limits - Authorised Discharge Point Trigger Values and Limits

		Location	S001		S044	
Parameter	**Unit**	**Analysis**	**T.V**	**Limit**	**T.V**	**Limit**
Environmental Parameters						
pH	pH		9.0	9.5	9.0	9.5
Turbidity	NTU		20[1] or 75[2]	100	-	-
Metals & Metalloids[3]						
Aluminium	µg/L	Total and Filtered (0.45µm)	-	560	-	-
Arsenic	µg/L		-	200	-	-
Gallium	µg/L		-	8000	-	-
Molybdenum	µg/L		-	38800	-	-
Vanadium	µg/L		-	1000	-	-
Nutrient Indicators & Bacteriological						
Total Dissolved Phosphorus	µg/L	Filtered (0.45µm)	-	140	-	-
Total Dissolved Nitrogen	µg/L		-	1700^	-	-
Enterococci	cfu/100ML	Total	-	-	-	-
Hydrocarbons						
Total Petroleum Hydrocarbons	µg/L	Total	100	600	100	600

Key

T.V = Trigger Value
^ = where a notifiable incident relates to an exceedance of Total Nitrogen, further analysis to speciate for Nitrate or Nitrite must be conducted and provided as part of the incident investigation report.

[1] = Dry conditions – unaffected by rainfall-runoff processes associated with a storm event

[2] = Storm event – includes the actual rainfall event and the time it takes for the rain that fell at the furthest areas of the catchment to travel through the catchment to the discharge point

Trigger Values – Compliance Points

Parameter	Unit	Analysis Type	SW9, SW10 and RR2 Trigger Value
Field Measurements			
pH	pH	In situ	7.7 – 8.4[1]
Turbidity	NTU		20[2]
Dissolved oxygen	mg/L		5.8*[1]
Metals & Metalloids[6]			
Aluminium	µg/L	Total & Filtered (0.45um)	56[3]
Arsenic	µg/L		20[4]
Gallium	µg/L		800[3]
Molybdenum	µg/L		3880[3]
Vanadium	µg/L		100[5]
Nutrient Indicators			
Total Dissolved Phosphorus	µg/L	Filtered (0.45um)	14^[1]
Total Dissolved Nitrogen	µg/L		170^#[1]

Key:

[1] = site specific trigger value derived based on 15 years of monthly data collected from Melville Bay

[2] = Default trigger values for chemical stressors for inshore marine, slightly disturbed ecosystem, ANZG 2018

[3] = 95% species protection trigger levels from van Dam, J.W., Trenfield, M.A., Streten, C. Harford, A.J., Parry, D., van Dam, R.A. (2018) Water quality guideline values for aluminium, gallium and molybdenum in marine environments. Environmental Science Pollution Research, 25: 26592-26602. https://doi.org/10.1007/s11356-018-2702-y

[4] = based on 95% protection trigger value for AS(V) from van Dam J.W. 2017. Assessing the biological effects of arsenate on tropical marine biota. Report prepared for Rio Tinto. Australian Institute of Marine Science, Darwin. (49 pp)

[5] = 95% species protection trigger levels, ANZG 2018

[6] = Trigger Values apply to filtered (0.45µm) concentrations

= where a notifiable incident relates to an exceedance of Total Nitrogen, further analysis to speciate for Nitrate or Nitrite must be conducted and provided as part of the incident investigation report;

* = 20th %ile based on 4 background sites: applied as a minimum value.

^ = 80th %ile based on 4 background sites. The annual median of each compliance point is compared to the Trigger Value per Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) methodology for site specific trigger values.