



**DARWIN LNG ANNUAL
ENVIRONMENTAL
MONITORING REPORT**

1 January 2025 – 31 December 2025
EPL217-05

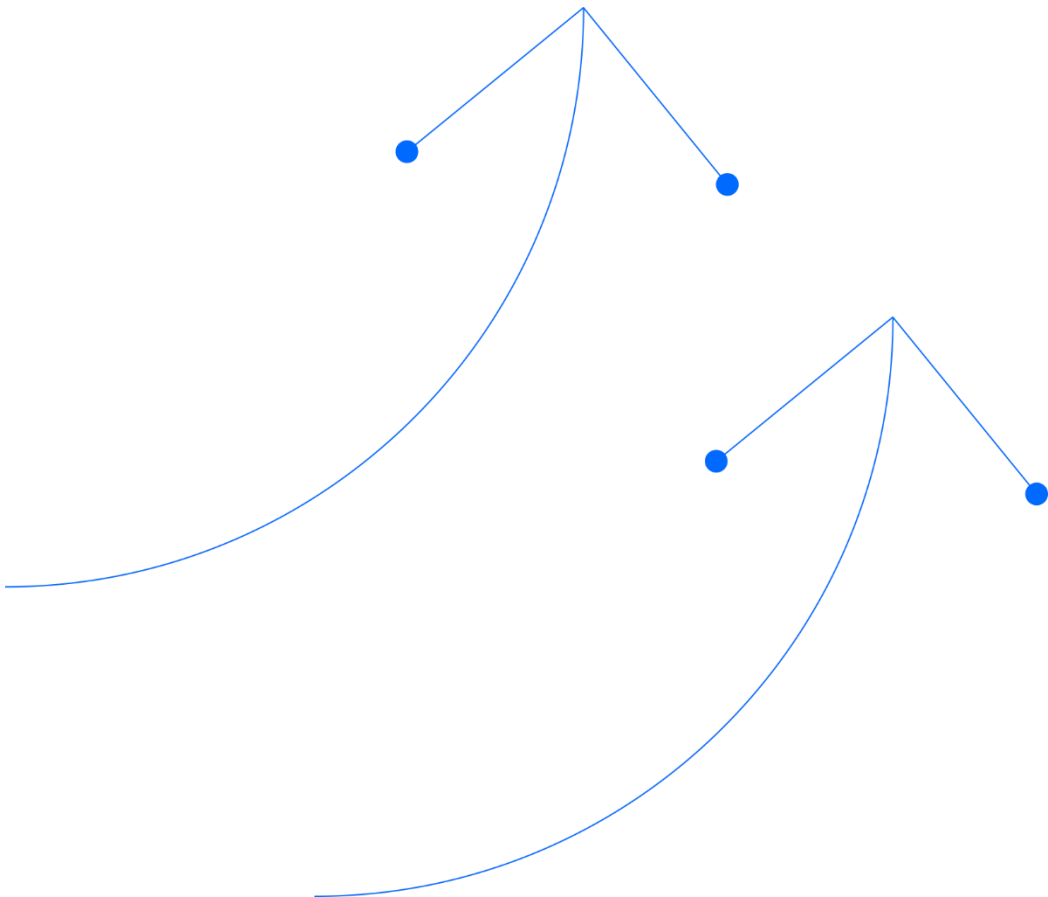


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Date	Rev	Reason For Issue	Author	Checked	Approved
24/03/2026	A	Draft	BH	JS	PK
01/04/2026	0	Final	BH	JS	JM
09/09/2026	1	Final	JS	PK	DH

Abbreviation Table

Term	Definition
AEMR	Annual Environmental Monitoring Report
AGI	Acid Gas Incinerator
AGMS	Acid Gas Management System
AGV	Acid Gas Vent
Air EPP	Environmental Protection (Air) Policy 2019 (QLD)
ANZG	Australian and New Zealand Guidelines
AQAC	Air Quality Assessment Criteria
BOD	Biochemical Oxygen Demand
CPI/DAFF	Corrugated Plate Interceptor/Dissolved Air Filtration Flotation
DEPWS	Department of Environment, Parks and Water Security
DGV	Default Guideline Value
DHWQO	Darwin Harbour Water Quality Objectives
DLE	Darwin Life Extension
DLNG	Darwin Liquefied Natural Gas
DO	Dissolved Oxygen
DPD	Darwin Pipeline Duplication
DRP	Dissolved Reactive Phosphorus
EC	Electrical Conductivity
ENVID	Environmental Impact Identification
EPA	Environment Protection Authority
EPA378	Environment Protection Approval 378
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPL217	Environment Protection Licence 217
FSANZ	Food Standards Australia New Zealand guidelines 2005
GELs	Generally Expected Levels
GEP	Gas Export Pipeline
GME	Ground Water Monitoring Event
GV-high	'Upper' guideline values
H ₂ S	Hydrogen sulfide
kPa	kiloPascals
LDAR	Leak Detection and Repair
LNG	Liquefied Natural Gas
LOR	Limit of Reporting

Term	Definition
mg/Nm ³	Milligrams per normal cubic metre
MK analysis	Mann–Kendall analysis
ML	Megalitre
MLs	Maximum Levels
MZ	Mixing Zone
NATA	National Association of Testing Authorities
NGERS	National Greenhouse and Energy Reporting Scheme
NO ₂	Oxides of Nitrogen as Nitrogen Dioxide equivalent
NPI	National Pollutant Inventory
NRU	Nitrogen Rejection Unit
NSW	New South Wales
NT	Northern Territory
NT EPA	Northern Territory Environment Protection Authority
O ₂	Oxygen
OEMP	Operations Environmental Monitoring Plan
ORP	Oxidation Reduction Potential
OSPG	Onsite Power Generation Turbines
PDS	Particle Size Distribution
PLSC	Pipeline Shore Crossing
ppm	Parts per million (volume)
PWC	Power and Water Corporation
QA	Quality Assurance
QC	Quality Control
RPD	Relative percentage difference
RO	Reverse Osmosis
RPAS	Remotely Piloted Aircraft System
RTO	Recuperative Thermal Oxidiser
Santos Barossa	Santos NA Barossa Pty Ltd
Santos Limited	Santos Limited including its related bodies corporate
Santos NA	Santos NA Darwin Pipeline Pty Ltd
SO ₂	Sulphur Dioxide
STP	Sanitary Treatment Plant
SWL	Standing Water Level
TDS	Total Dissolved Solids
TRH	Total Recoverable Hydrocarbons



Term	Definition
TSS	Total Suspended Solids
V-1206	Solvent Regenerator Reflex Drum
VOC	Volatile Organic Compounds
WMPC Act	Waste Management and Pollution Control Act 1998

1. Executive Summary

Santos NA Darwin Pipeline Pty Ltd (**Santos NA**) is the operator of the Darwin Liquefied Natural Gas facility (DLNG) at Wickham Point, near Darwin, in the Northern Territory (**NT**) of Australia. DLNG previously received dry natural gas from the Bayu-Undan field located in Timor-Leste offshore waters. Due to declining production rates from the Bayu-Undan field, DLNG ceased the production of Liquefied Natural Gas (**LNG**) in November 2023. DLNG had been in a shutdown phase during the execution of the Darwin Life Extension (**DLE**) Project and Darwin Pipeline Duplication (**DPD**) Projects and subsequently re-started LNG production in October 2025.

The DLNG facility receives dry natural gas from the Santos NA Barossa Pty Ltd (**Santos Barossa**) operated Barossa Field (located within Commonwealth petroleum production licence NT/L1) via the 385 kilometre (km) long Barossa Gas Export Pipeline.

In accordance with Schedule 2 of the *NT Waste Management and Pollution Control Act 1998*, DLNG is required to have an environment protection licence. Santos was issued Environment Protection Licence 217-03 (**EPL217-03**), which commenced on 19 September 2022. EPL217-03 was amended and EPL217-04 was approved on 10-Jan-2025 with changes to air emission limits (following construction of a new thermal oxidiser) and speciated nutrients removed from the irrigation discharge. EPL217-04 expired on 18 September 2025 and EPL217-05 (the "Licence") was approved with numerous condition changes to the Licence.

Santos is required by the Licence to undertake environmental monitoring of field parameters, environmental indicators and specific potential contaminants of interest; and provide an Annual Environmental Monitoring Report (**AEMR**) to the NT Environment Protection Authority (**NT EPA**), by 01 April each year. For this AEMR (this report), the reporting period is defined as 1 January 2025 to 31 December 2025. This report has been developed in accordance with Condition 60 of the Licence and the NT EPA Guideline for Reporting on Environmental Monitoring.

Environmental monitoring programs undertaken during the reporting period included:

- Discharges to water: Water quality (Jetty Outfall discharge and Sediment Pond discharge) and Mangrove monitoring.
- Discharges to air: As DLNG was in shutdown and, or commissioning, no monitoring of discharges to air (stack emissions monitoring) were undertaken, however flaring and venting volumes were calculated and reported.
- Discharges to land and surrounding environment: Irrigation discharge and groundwater monitoring.

It is important to note that for much of 2025, DLNG was in shutdown with no LNG production. Monitoring results should be considered in this context when compared to past years of 'normal' operation.

Water quality monitoring undertaken during the reporting period found irrigation discharge, jetty outfall discharge (including mixing zone) and groundwater were generally within the limits of the Licence trigger values, indicating the risk of environmental impact to Darwin Harbour as low.

Results of water quality monitoring at Sediment Ponds 1, 2 and 3 were consistent with historical ranges, however during discharge events there were exceedances of turbidity, total suspended solids (TSS), *E.coli*, *Enterococci*, zinc and copper. The exceedances of turbidity and TSS were likely a result of construction activities on-site and the *E. coli* and *Enterococci* exceedances a result of the presence of wildlife. Zinc and copper likely resulted from run-off from process areas within the facility. Given, the exceedances are typically of short duration and coinciding with wet season and rainfall events, it is considered that the quality of the water discharged from the sediment ponds presents a low environmental risk to Darwin Harbour.

Mangrove monitoring results were compliant with the Licence, with exception of metal exceedances in sediment (zinc) and mudwhelks (copper). These exceedances are consistent with historical monitoring events. Overall, surface water discharged from DLNG has not had a significant impact on mangrove sediment and biota surrounding the facility.

During the reporting period, the total flaring volume from routine and non-routine sources was low due to the plant being in shutdown for most of 2025. Given that DLNG was in a period of shutdown, followed by start-up and commissioning, monitoring of stack emissions sources by a third-party was not undertaken. Continuous monitoring of the acid gas hot vent was implemented in 2025. As the facility re-started in October 2025, the total hot venting and subsequent emissions of H₂S and benzene remained low and presented no discernible risk on the ambient air quality of the Darwin region.

2. Introduction

2.1. Overview

Santos NA Darwin Pipeline Pty Ltd (**Santos NA**) operates the Darwin Liquefied Natural Gas (**DLNG**) facility on behalf of Darwin LNG Pty Ltd. The DLNG facility receives dry natural gas from the Santos NA Barossa Pty Ltd (**Santos Barossa**) operated Barossa Field (located within Commonwealth petroleum production licence NT/L1) via the 385 kilometre (km) long Barossa Gas Export Pipeline.

The DLNG facility is located at Wickham Point on the Middle Arm Peninsula in Darwin Harbour, approximately six kms south to south-east of Darwin (**Figure 2-1**). The DLNG facility has a production capacity of 3.7 Mtpa from a single LNG train that utilises the Optimized Cascade® process.

DLNG operates under Environment Protection Licence 217-05 (**EPL217-05**) (the "Licence") issued under Section 34 of the NT) *Waste Management and Pollution Control Act 1998*. This Act is administered by the NT EPA with departmental support provided by the Department of Lands, Planning and Environment (**DLPE**). For the 2025 reporting year, Santos held the following Environment Protection Licences:

- EPL217-03 – in-force at commencement of the reporting year
- EPL217-04 – commenced 10-Jan-2025
- EPL217-05 – commenced 19-Sep-2025

The Licence requires Santos to undertake environmental monitoring of parameters listed in the Licence (e.g. field parameters, environmental indicators and specific potential contaminants of interest) and provide the NT EPA with an Annual Monitoring Report by 1 April annually and relate to the period of 1 January to 31 December of the preceding year. This report includes the environmental monitoring results in relation to the Licence for the period between 1 January 2025 and 31 December 2025 (herein referred to as the reporting period).

As per the requirements of Condition 61 of the Licence, this report:

- has been prepared in accordance with the requirements of the NT EPA 'Guideline for Reporting on Environmental Monitoring'(or any other guideline as adopted by the NT EPA from time to time);
- includes a tabulation, in Microsoft® Excel® format, of all monitoring data required as a condition of this licence;
- includes long term trend analysis, including statistical analysis, of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of 5 years;
- summarises performance of the authorised discharges to water and air emissions compared to the limits and values specified in Appendix B;
- highlights all instances of exceedances of trigger values and limits specified in Appendix B;
- reports the frequency and volume of wastewater discharges via the Irrigation Water and Jetty Outfall authorised discharge point points for the reporting period;
- provides the total emissions to air in tonnes per year, with respect to the parameters listed in Appendix B;
- includes analysis of environmental impacts and measures taken to reduce environmental impacts arising from Scheduled Activity, including wastewater and ambient air quality improvements;
- summarises measures taken to reduce waste; and
- was prepared by a Qualified Professional.

As the Fugitive Emissions Management Plan and leak detection and repair program had not been submitted and approved for use by the NT EPA during the reporting year, this AEMR has not included the outcomes of the leak detection and repair program as required by condition 44 and 61.10 of EPL217-05.

DLNG was in a shutdown phase with no LNG produced between November 2023 and October 2025 while the Darwin Life Extension and Darwin Pipeline Duplication Projects were in execution.

During much of the reporting period DLNG was in shutdown mode to accommodate construction works and maintenance activities being undertaken to extend the production life of DLNG. DLNG restarted operations in October 2025, however no stack emissions monitoring was undertaken during 2025 due to commissioning activities (detailed further in **Section 4**). Low LNG production also resulted in a reduction in the generation and subsequent discharge of process related wastewater (detailed further in **Sections 3** and **Section 5**).

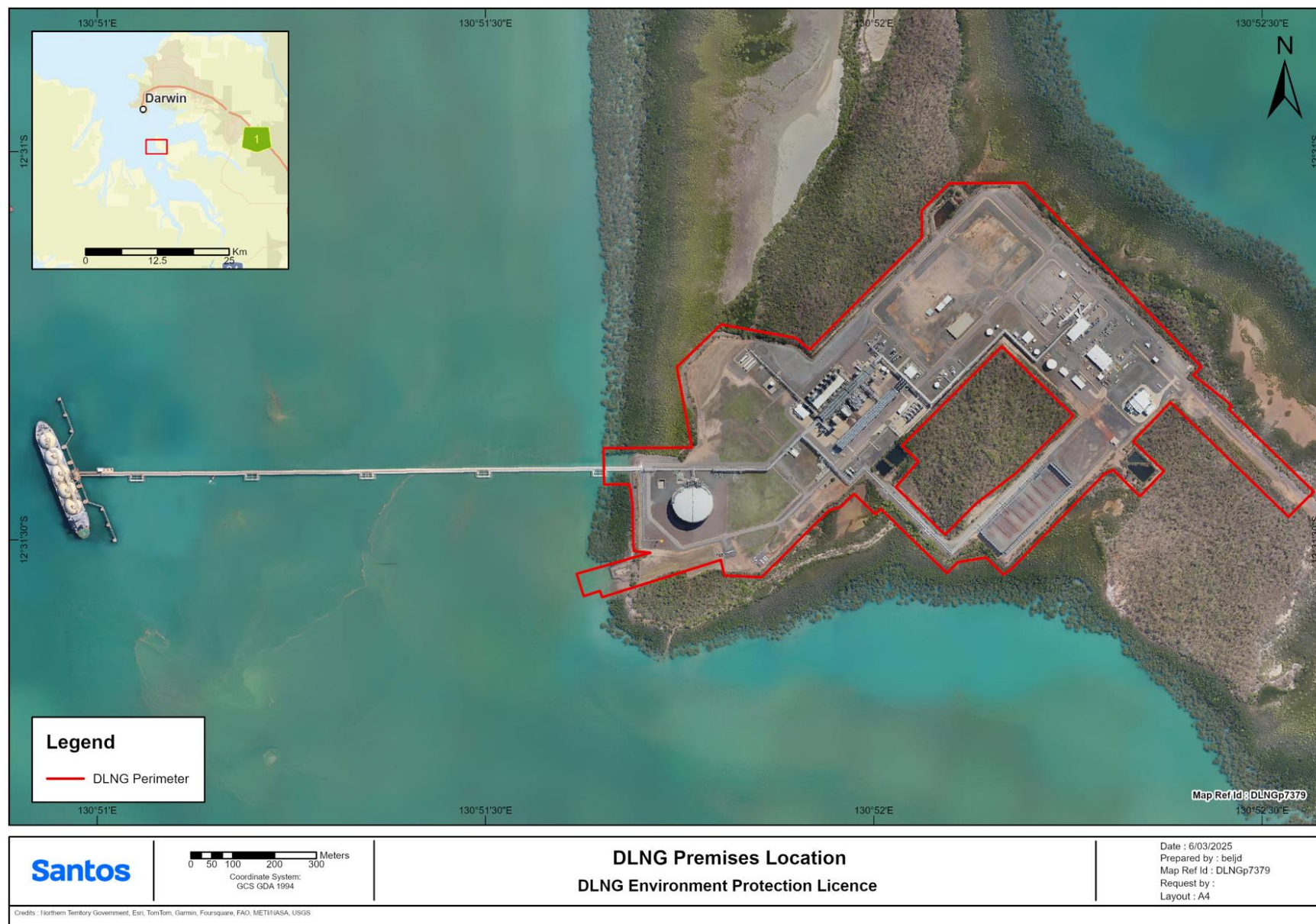


Figure 2-1: DLNG locality map

2.2. Environment Protection Licence 217-05

During the reporting period, Santos NA operated under EPL217-03 until 10-Jan-2025. EPL217-04 then commenced and up until 18 September 2025. The licence was subsequently renewed and amended and EPL217-05 commenced on 19 September 2025 and will expire on 18 September 2030. The boundary of the Licence is shown in **Figure 2-1**. The Licence is published on the [NT EPA website](#).

Licence conditions 58 to 72 (EPL217-04) and 49 to 58 (EPL217-05) outline the requirements for monitoring discharges to the environment. The sections of this report which correspond to these requirements, are summarised in **Table 2-1**.

Table 2-1: Summary of monitoring-related Licence conditions and relevant report sections

EPL217-04 Condition	EPL217-05 Condition	Summary	Relevant sections within this report
General (Conditions 58 and 59)	General (Conditions 49 and 50)	- Monitoring sample collection must provide for sample chain of custody documentation. - Monitoring equipment must measure the parameters of interest and results must be stored appropriately.	The sample collection points, and monitoring equipment used are dependent on the discharge stream and parameters being monitored. Information relating to these conditions is included in each of the discharge monitoring sections: - Monitoring discharges to water (Section 3), - Monitoring air discharges (Section 4), and - Monitoring discharges to land and Surrounding Areas (Section 5).
Monitoring discharges to water (Conditions 60 to 66)	Monitoring discharges to water (Conditions 51 to 55)	Water Quality - Water quality monitoring must be in accordance with the conditions and tables appended to the Licence, which specify monitoring locations and parameters. - Water quality monitoring locations must be clearly labelled and able to be accessed. - Samples and environmental data to be collected in accordance with Australian Standards and guidelines. - Water quality sampling must be carried out in accordance with specified in New South Wales (NSW) EPA methods. Mangrove Monitoring - Mangrove monitoring must be in accordance with the tables appended to the Licence, which specify monitoring locations and parameters. - Revisions to the mangrove monitoring program must be reviewed by a suitably qualified professional and provided to the NT EPA. - The NT EPA may require Santos to revise or amend and resubmit the mangrove monitoring program.	Water quality monitoring objectives, methods, results and discussion are presented in the following section: - Jetty outfall discharge and mixing zone – Section 3.1.3, - Sediment ponds 1, 2 and 3 discharge – Section 3.1.4, and - Mangrove monitoring – Section 3.2.

EPL217-04 Condition	EPL217-05 Condition	Summary	Relevant sections within this report
Monitoring air discharges (Conditions 67 to 69)	Monitoring air discharges (Conditions 56 to 58)	- Air quality monitoring program must be in accordance with the tables appended to the Licence, which specify monitoring locations and parameters. - Air quality sampling and analysis must be carried out in accordance with specified in NSW EPA methods. - Monitoring must be undertaken at least once per year under steady-state operational conditions.	No monitoring of discharges (third-party stack emissions monitoring) to air was undertaken during 2025. Air quality monitoring is typically presented in Section 4 of this report, and includes results from these locations specified in the Licence: - Power generation turbines - Compressor turbines - Thermal Oxidiser - Acid Gas Vent (solvent regenerator reflux drum), and - Boiler. However, as DLNG was in shutdown for most of 2025 and/or in a start-up commissioning phase, no monitoring of air discharges (stack emissions monitoring) was undertaken. Continuous monitoring of the acid gas flow to the Thermal Oxidiser and/or Acid Gas Hot Vent was undertaken.
Monitoring discharges to land and surrounding environment (Conditions 70 to 72)	Monitoring discharges to land and surrounding environment (Conditions 6, 49 and 53)	- Maintain and implement the monitoring program in accordance with the tables appended to the Licence and the DLNG groundwater monitoring plan. - Groundwater sampling and analysis must be carried out in accordance with specified in NSW EPA methods. - Sampling undertaken by a qualified sampler.	Monitoring objectives, methods, results and discussion are presented in the following section: Groundwater and irrigation discharge monitoring is presented in Section 5, which includes results from monitoring and control bores at the locations specified in the Licence.

2.3. DLNG Environmental Monitoring

The operation of DLNG has the potential to impact upon the environment. A conceptual model of how impacts to the environment could potentially occur is provided in **Figure 2-2**.

The Licence requires that Santos monitor potential environmental impacts. The methods of monitoring potential environmental impacts are outlined in the DLNG Operations Environmental Management Plan (**OEMP**).

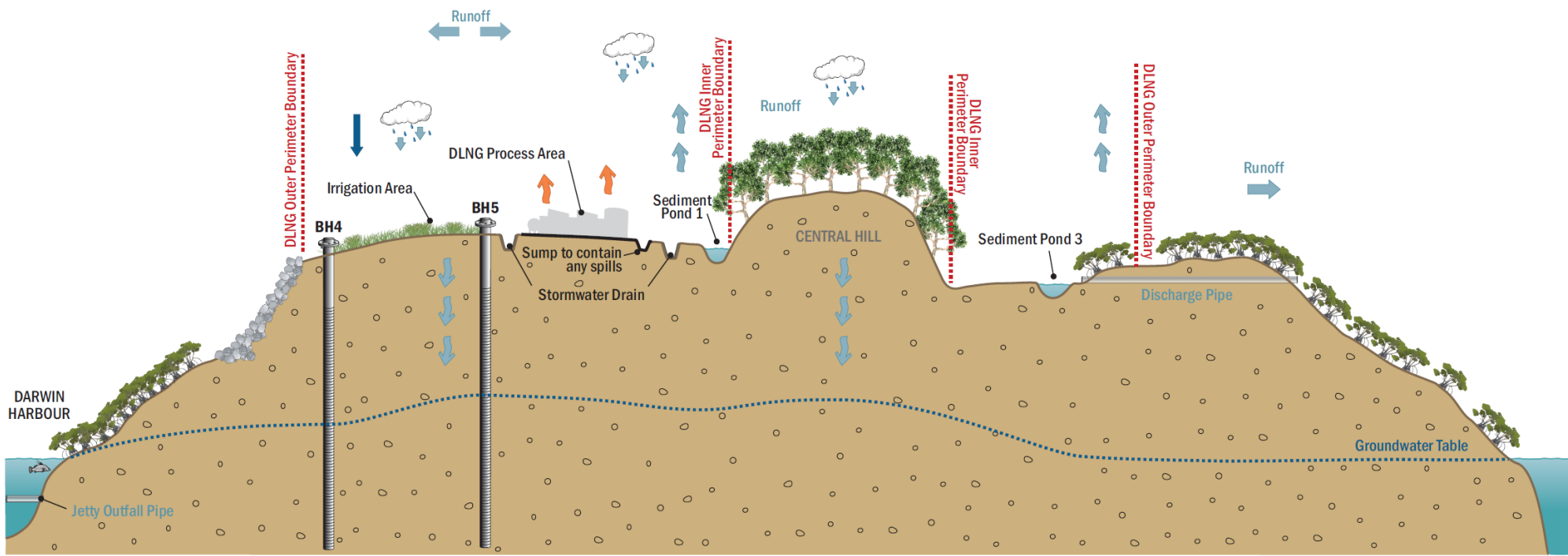
The OEMP includes monitoring of:

- Discharges to water, including:
 - Jetty outfall monitoring
 - Sediment pond discharge monitoring
 - Mangrove monitoring
- Discharges to air, including:
 - Stack emission monitoring
 - Ambient air quality monitoring
 - Flaring and venting monitoring
- Discharges to land and the surrounding environment, including
 - Groundwater monitoring, and

- Irrigation monitoring.

Santos has developed and implemented monitoring programs in accordance with the Licence, to assess and manage risks to the environment from DLNG operations.

The objectives, methods and results of these monitoring programs have been included in the relevant sections of this report.



NOTE:
Vertical Axis = SCALE EXAGGERATED
Horizontal Axis = NOT TO SCALE

LEGEND

Evaporation
Infiltration



Rainfall

Runoff

Intermittent Irrigation

Air Emissions

Source	Emission or Discharge (Risk Factor)	Pathway	Receptor			
			Human Health and Community (Including Recreational Values)	Marine Waters (Darwin Harbour) and Wetlands (Port Darwin)	Vegetation and Flora	Fauna
Stack emissions from operation of LNG processing and onsite power generation equipment	Air pollutants and GHG emissions (as per EPL217)	Air	✓		✓	✓
Flaring – marine, ground and NGL flare						
Venting from operation of LNG processing equipment and acid gas venting						
Fugitive air emissions from storage tanks, and the operation of equipment and vehicles	Air pollutants, GHG emissions and ozone depleting substances	Air	✓			✓
Failure, rupture, leaks or release from gas or HVAC systems						
Operation of LNG processing, onsite power generation equipment and marine vessel activities generating noise, heat and light emissions	Noise, heat and light	Air	✓			✓
Onsite irrigation of plant wastewater	Wastewater discharged (as per EPL217)	Surface water	✓	✓	✓	✓
Discharge of reverse osmosis reject wate via the jetty outfall						
Discharge of stormwater runoff (collected from hardstand areas and onsite stormwater drains) from the sedimentation ponds						
Accidental contamination of stormwater from overflow of process area spill containment	Hydrocarbons and process chemicals	Surface water	✓	✓	✓	✓
Accidental hydrocarbon/chemical spills and unplanned releases (due to failure, rupture or leaks) from equipment, process area or jetty	Hydrocarbons, amine, LNG, process chemicals and hydraulic fluid					
Onsite irrigation of Plant wastewater	Wastewater discharged (as per EPL217)	Groundwater	✓	✓	✓	
Accidental hydrocarbon/chemical spill and unplanned release (due to failure, rupture or leaks) from equipment and process area	Hydrocarbons, process chemicals, diesel fuel and hydraulic fluid					
Onsite irrigation of Plant wastewater	Wastewater discharged (as per EPL217)	Land	✓	✓	✓	
Operation of LNG processing and onsite power generation equipment generating vibrations	Ground vibrations		✓			✓
Discharge of stormwater runoff from stormwater drains	Sediment			✓	✓	
Accidental hydrocarbon/chemical spill and unplanned release (due to failure, rupture or leaks) from equipment and process area	Hydrocarbons, process chemicals, diesel fuel and hydraulic fluid		✓	✓	✓	✓
Fire/explosion from operation of LNG processing and onsite power generation equipment	Explosion, loss of vegetation and fauna				✓	✓
Unauthorised access within the site perimeter	Introduction and/or propagation of weeds, disturbance to vegetation				✓	✓
Consumables and general waste generated from Plant operations	Non-hazardous and hazardous solid and liquid waste		✓	✓	✓	

Figure 2-2: DLNG environmental conceptual model

3. Monitoring Discharges to Water

Conditions 60 to 66 of EPL217-04 (and conditions 31 to 36 and 49 to 55 of EPL217-05) outline requirements to monitor a range of wastewater discharges, including:

- Jetty outfall discharge and mixing zone (**Section 3.1**).
- Sediment ponds discharge (**Section 3.1**).
- Mangrove monitoring (**Section 3.2**).

The objectives, methods, analysis, and discussion of results for each of these monitoring programs are provided herein.

3.1. Jetty Outfall and Sediment Pond Discharge

As part of DLNG operations, several water and wastewater streams are authorised to be discharged from DLNG under the Licence. Authorised discharge occurs via the jetty outfall, and Sediment Ponds 1, 2 and 3. A schematic of processes associated with discharge streams is shown in **Figure 3-1**.

The jetty outfall discharge comprises reject water from the Reverse Osmosis (**RO**) process, which uses water supplied by the Power and Water Corporation (**PWC**) as feed water. The jetty outfall pipe is shown in **Figure 3-2**. The estuarine waters of Darwin Harbour surrounding the discharge pipe were sampled as part of the jetty outfall mixing zone monitoring program in EPL217-04.

Three sediment ponds within the DLNG boundary collect stormwater runoff prior to discharge into the intertidal mangroves of Darwin Harbour. Sediment Pond 1 adjacent to DLNG's onsite power generation facility also receives backwash water from the greensand filter (a component of the water RO plant). Overflow water from the three sediment ponds are passively discharged to Darwin Harbour. A typical view of a sediment pond is provided in **Figure 3-3**.

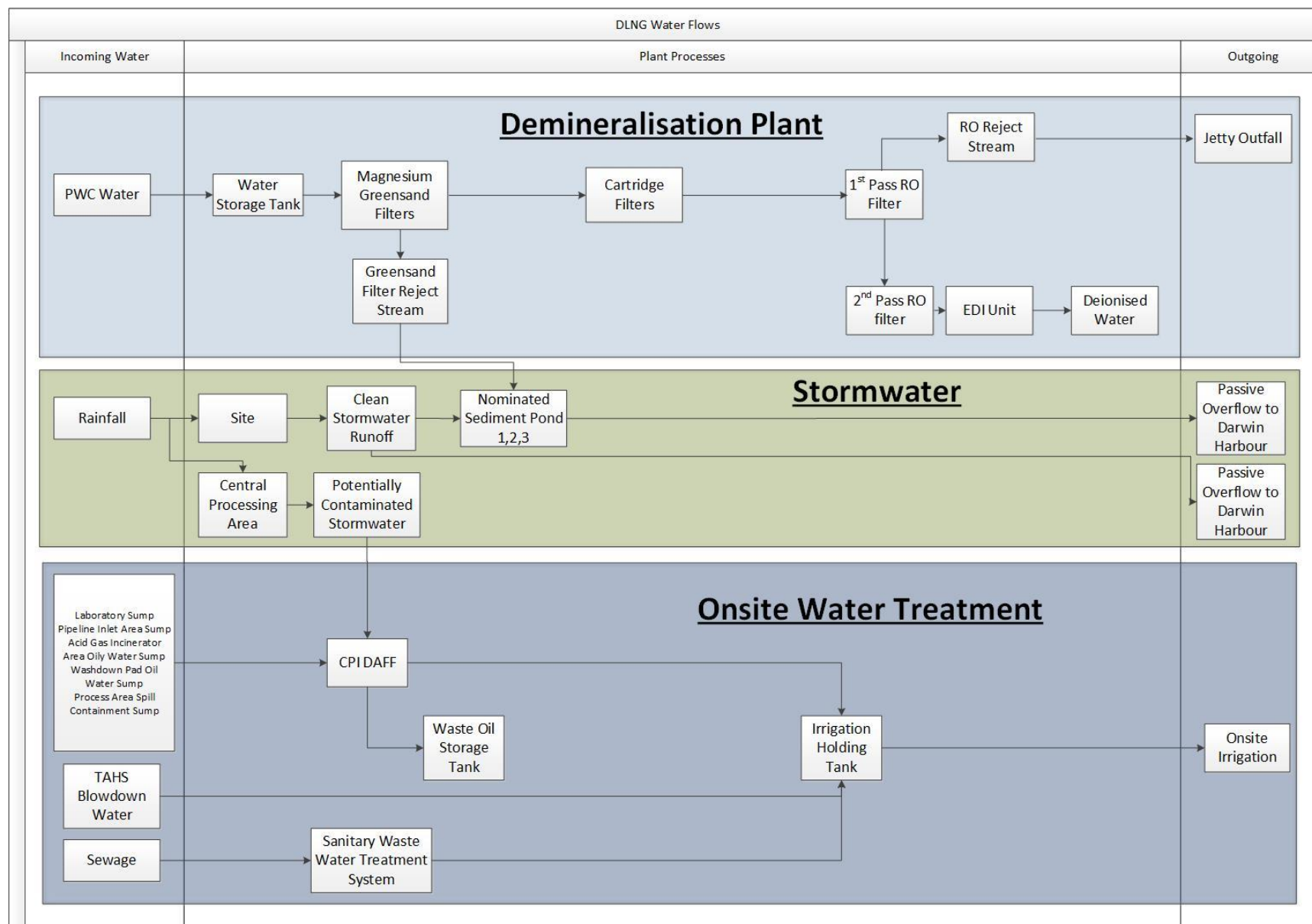


Figure 3-1: Schematic of water inputs, processes, and discharge points at DLNG



Figure 3-2: DLNG jetty outfall pipe (secured to pylon)



Figure 3-3: DLNG sediment pond outflow sampling location

3.1.1. Monitoring Objective

The objectives of the jetty outfall and sediment pond discharge monitoring programs are to:

- Characterise the quality and quantity (jetty outfall only) of the discharge water; and
- Assess compliance with the trigger values in the Licence (refer to Appendix B Table 2 within the Licence).

Characterising the quality of discharge water allows Santos to assess potential for discharged water to impact the environment. As outlined in the conceptual model (**Figure 2-2**), discharged water may interact with groundwater and Darwin Harbour.

The results of the jetty outfall discharge, mixing zone and sediment pond discharge monitoring programs are also used to interpret results from other monitoring programs, such as the mangrove monitoring program (**Section 3.2**).

3.1.2. Monitoring Methods

The location of discharges to water are stipulated in the Licence (EPL217-04 only). These locations are shown in **Figure 3-4** and **Figure 3-5**. Monitoring occurs throughout the year, the coordinates, sampling frequencies and the discharge sources are provided within the Licence (Appendix B Table 1 and Table 2 and Condition 60, Table 2).

Field measurements and samples are collected by DLNG laboratory staff and/or environmental consultants who are suitably trained and experienced with the methodologies used. The sample locations for the jetty outfall discharge, jetty outfall mixing zone, and sediment ponds are provided below:

- Jetty outfall: Water quality samples from the jetty outfall discharge are collected via a flow meter sample valve positioned along the discharge pipe within the plant.
- Jetty outfall Mixing Zone: Water quality samples from within the outfall mixing zone (in Darwin Harbour and adjacent to the DLNG jetty) are obtained by boat. These locations are shown in **Figure 3-5**.
- Sediment ponds: Water quality samples from the sediment ponds are collected from the overflow weirs. Sediment Ponds are only sampled when they are actively discharging to the environment (inter-tidal area > Darwin Harbour).

Samples are sent to analytical laboratories for analysis. All laboratories used maintain National Association of Testing Authorities (**NATA**) accreditation for the analyses being carried out.

Concentrations of the parameters analysed at laboratories are often very low and many parameters are not identified at concentrations above laboratory limits of reporting (**LOR**). Where analytical results have not been identified at concentrations above the LOR, as a conservative approach the analyte was assumed to be present at a concentration equal to the LOR for the purpose of statistical analysis.

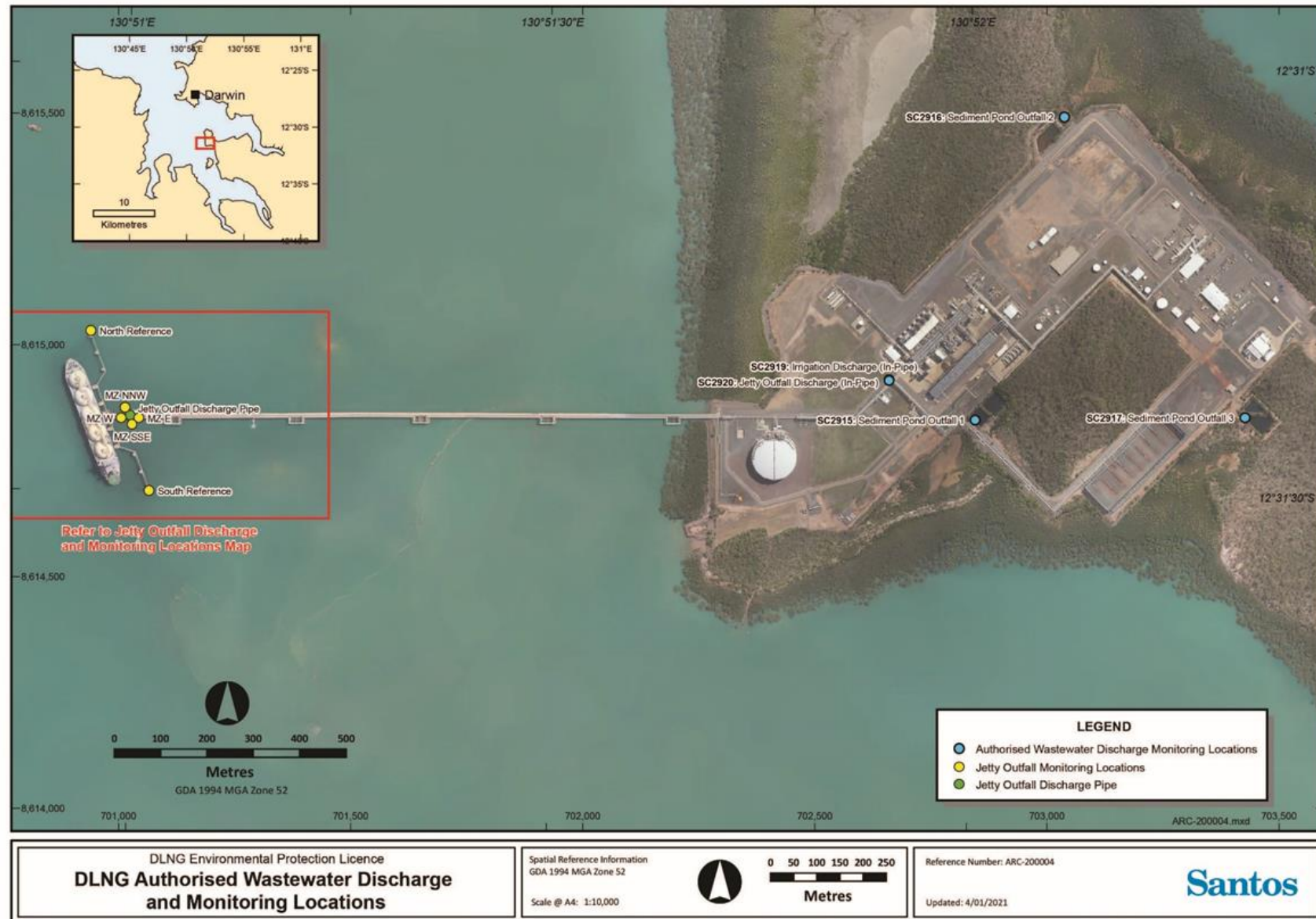


Figure 3-4: Map of authorised wastewater discharge locations

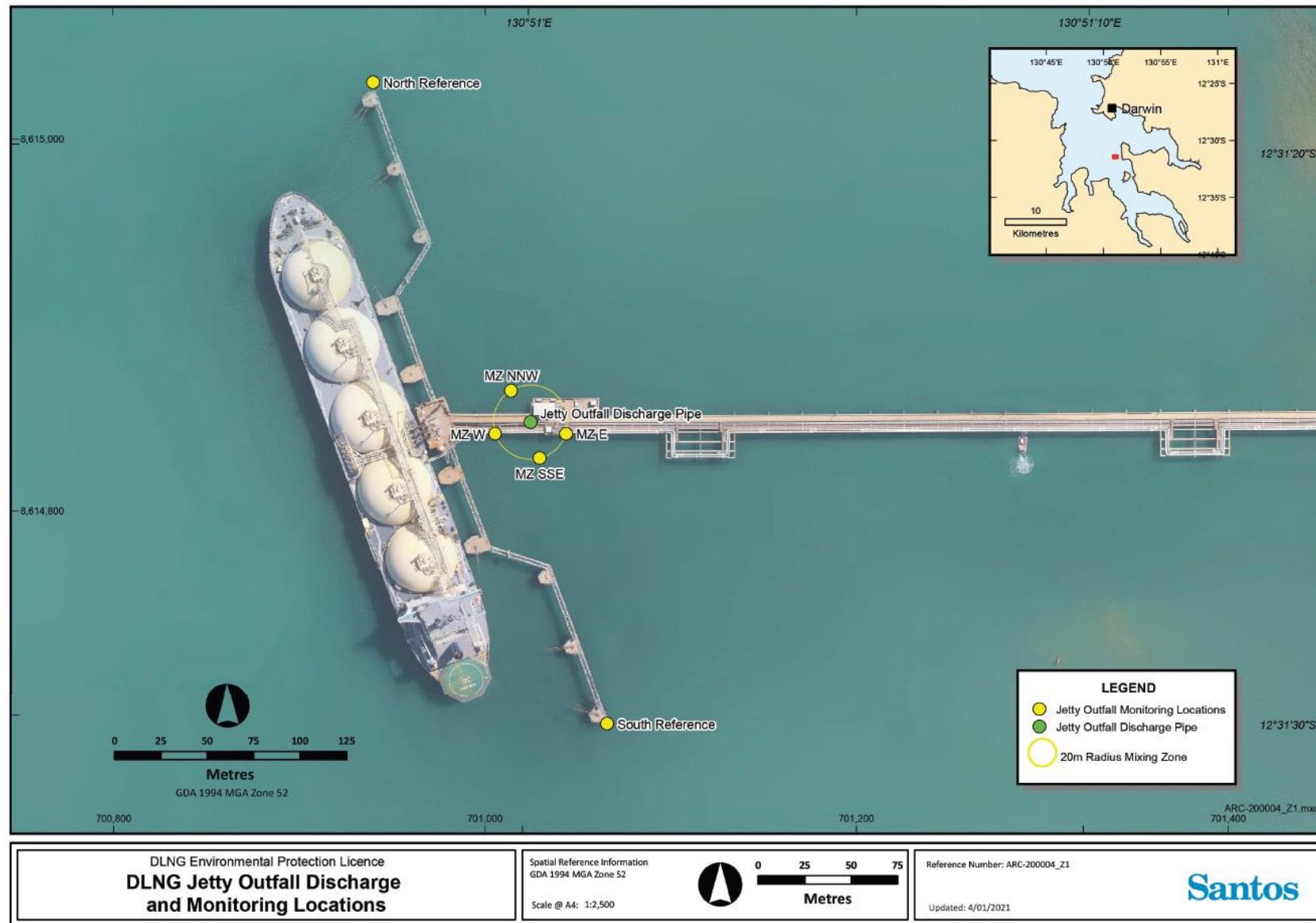


Figure 3-5: Map of jetty outfall discharge and monitoring location

3.1.3. Monitoring Results – Jetty Outfall

3.1.3.1. Volume discharged

A total of 2,185.8 m³ was discharged from the jetty outfall during the reporting period (**Figure 3-6**). This is approximately 3.6% of the 61 ML Licence limit. This volume is marginally higher than that recorded for 2024 which was the lowest annual discharge volume recorded for DLNG. The low quantities discharged in 2024 and 2025 was expected due to the decreased outflow from the Demineralisation Plant, which has been running at minimum rates since LNG production ceased in November 2023.

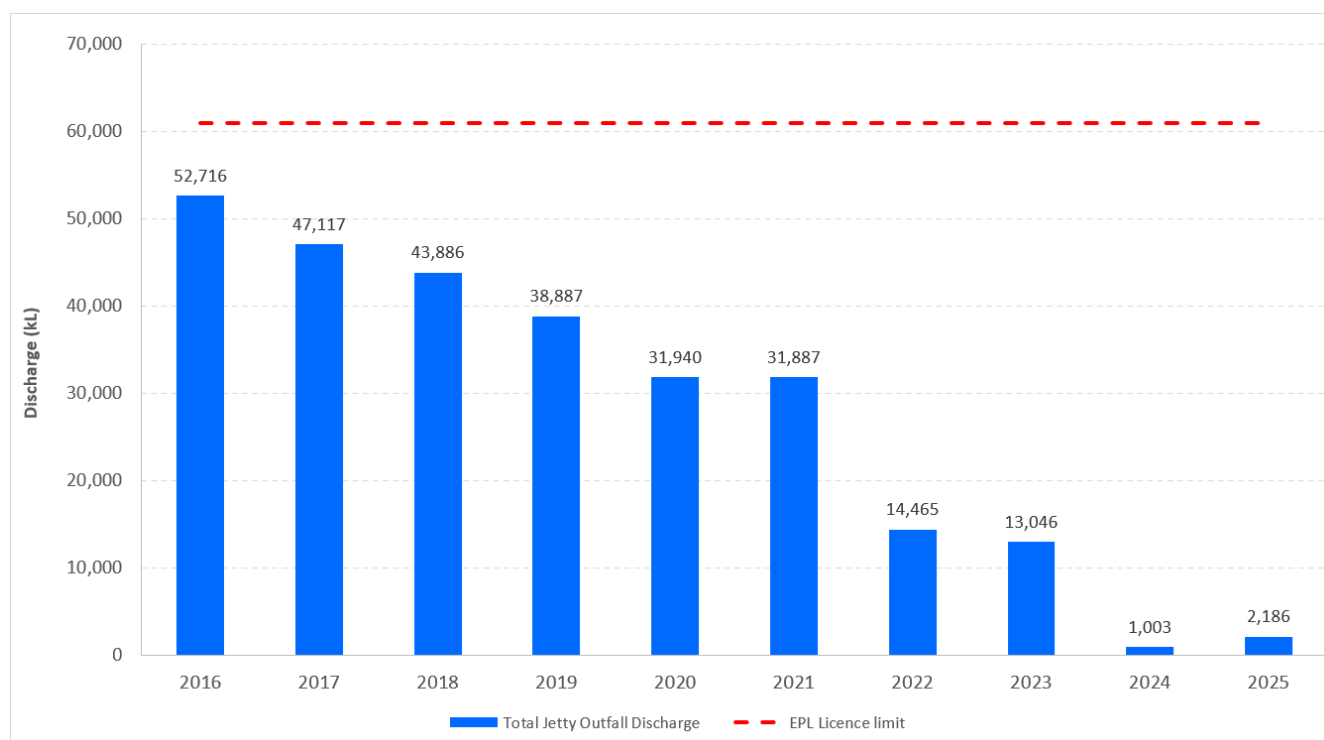


Figure 3-6: Water volume discharged to jetty outfall

3.1.3.2. Water quality monitoring results

The biannual monitoring suite of environmental indicators was undertaken in May 2025. Two additional monitoring events occurred in March and August 2025 for quarterly indicators (**Table 3-1**). The biannual sampling event in November was not reported on due to amendments to the EPL, which negated the requirement for ongoing monitoring.

The historical dataset of jetty outfall discharge water quality monitoring results is provided in **Attachment A – Irrigation, Jetty Outfall and Sediment Pond data**; values exceeding current Licence trigger values are bolded. An exceedance of the Licence trigger values is not a reportable non-conformance as per Conditions 38, 39 and 78 of the Licence (EPL217-04), however can constitute a non-compliance under EPL217-05 that came into effect in September 2025.

Key findings from a review of the results of the water quality monitoring for the jetty outfall discharge include:

- Field parameters recorded for the jetty outfall discharge during 2025 (**Table 3-1**) generally did not exceed the Licence trigger values [with the exception of Dissolved Reactive Phosphorous (**DRP**) and metals (copper, chromium, nickel, zinc and silver as described below)] and were consistent with or less than the long-term averages derived from previous monitoring event results.
- Analytical results for **DRP (PO₄-P)** exceeded the EPL217-04 trigger level for all sampling events in 2025, however total phosphorus remained low compared to the discharge trigger value. The trigger value for **DRP (PO₄-P)** was removed from EPL217-05.
- Metals copper, chromium, nickel, zinc and silver exceeded the respective trigger level on several occasions. However, did not trigger a non-compliance event.

- Except for DRP and metals, these results are consistent with what has been reported in previous annual monitoring event results. The elevated DRP was likely associated with the reduced flows from the jetty outfall. The higher levels of metals is believed to be related to corrosion in the reverse osmosis system and continues to be investigated and rectified. The jetty outfall discharge water quality monitoring generally met the Licence trigger values, and the risk of environmental impact from the jetty outfall discharge is low.

Table 3-1: Summary of 2025 jetty outfall discharge monitoring results

Parameter	Units	Monitoring Frequency	Licence Trigger Value	2025 Maximum	2025 Minimum	2025 Average	Long-term Average (2016-2025)	2025 Reportable Non-Conformance ^[1]
Field Parameters								
pH	pH units	Monthly	7 – 8.5	8.20	7.67	7.95	7.83	No
Electrical conductivity	µs/cm	Monthly	No trigger	878.40	648.70	806.65	746.54	N/A
TSS	mg/L	Monthly	≤ 30	7.00	0.00	2.68	0.71	No
Turbidity	NTU	Monthly	20	2.15	0.56	1.18	1.12	No
DO	mg/L	Monthly	No trigger	73.4	19.4	44.19	7.17	N/A
Temperature	°C	Monthly	No trigger	33.9	24.9	29.27	31.84	N/A
Environmental Indicators								
Ammonium nitrogen (NH ₃ -N)	µg/L	Quarterly	337	36	0.01	12.22	274.78	No
Nitrate (NO ₃ -N)	µg/L	Quarterly	764	266	0.17	141.49	301.87	No
Nitrite (NO ₂ -N)	µg/L	Quarterly	27	13	0.00	3.34	19.97	No
DRP (PO ₄ -P)	µg/L	Biannually	51	139	0.00	71.48	28.19	No ^[4]
Total Nitrogen	mg/L	Quarterly	≤ 40	9.00	0.58	1.84	1.68	No
Total Phosphorous	mg/L	Biannually	≤ 10	0.99	0.03	0.27	0.09	No
BOD	mg/L	Biannually	≤ 25	N/A ^[2]	N/A ^[2]	N/A ^[2]	6.20	No
TRH	mg/L	Biannually	< 6	N/A ^[2]	N/A ^[2]	N/A ^[2]	0.12	No
<i>E. coli</i>	MPN/100 mL	Biannually	≤ 75	N/A ^[2]	N/A ^[2]	N/A ^[2]	52.00 ³	No
<i>Enterococci</i>	MPN/100 mL	Biannually	50	N/A ^[2]	N/A ^[2]	N/A ^[2]	334.5	No
Metals & BTEX								
Arsenic	µg/L	Biannually	No trigger	N/A ^[2]	N/A ^[2]	N/A ^[2]	1.0	N/A
Cadmium	µg/L	Quarterly	5.5	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Chromium	µg/L	Biannually	4.4	7.00	1.00	2.71	2.18	No
Copper	µg/L	Quarterly	3.0	4.0	2.0	3.00	2.23	No
Iron	µg/L	Biannually	No trigger	160.00	11.00	99.38	164.29	N/A

Parameter	Units	Monitoring Frequency	Licence Trigger Value	2025 Maximum	2025 Minimum	2025 Average	Long-term Average (2016-2025)	2025 Reportable Non-Conformance ^[1]
Lead	µg/L	Biannually	4.4	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Manganese	µg/L	Biannually	No trigger	1,800	18.00	332.88	58.66	N/A
Mercury	µg/L	Biannually	0.4	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Nickel	µg/L	Quarterly	70	360.00	2.00	67.13	12.07	No
Silver	µg/L	Biannually	1.4	2.0	<1.0	2.0 ^[6]	2.0 ^[6]	No
Zinc	µg/L	Quarterly	15	130.0	10.0	36.38	16.97	No ^[4]
BTEX	µg/L	Biannually	700	N/A ^[2]	N/A ^[2]	N/A ^[2]	3.60	No

Notes:

1. Results from mandatory sampling are only considered when determining reportable non-conformances under the Licence
2. All results were less than the LOR.
3. Average based on a single detection in 2022.
4. Not reportable due to Conditions 38, 39 and 78 of EPL217-04.
5. Average based on two detections in 2016.
6. Average based on a single detection in 2025.

*Yellow shading denotes values that exceed / are outside of the EPL 217-04 Jetty Outfall Mixing Zone Trigger Value.

3.1.3.3. Mixing zone water quality monitoring results

Condition 61 (EPL217-04) of the Licence required the 20 m mixing zone around the jetty outfall to be monitored quarterly and compared against the trigger values detailed in Appendix B Table 2 of the Licence.

EPL217-04 did not specify how to assess results from the mixing zone sites against the reference sites¹ in relation to select physicochemical parameters. In response, the following trigger value definitions have been developed to assess mixing zone conditions. These values (or assessment criteria) are based on the reference values and are summarised in **Table 3-2**.

Table 3-2: Internal assessment criteria for physiochemical parameters

Parameter	Trigger Value (TV) – Relative to Upstream Reference Location
pH	If median of mixing zone (MZ) value is greater or less than + / - 0.5 units of the reference value
Temperature	If median of MZ value is greater or less than + / - 1 °C of the reference value
Electrical Conductivity (EC)	If median of MZ value is greater or less than + / - 5% of the reference value
Total Suspended Solids (TSS)	If median of MZ value is greater than the reference value
Total Dissolved Solids (TDS)	If median of MZ value is greater than the reference value
Dissolved Oxygen (DO)	If median of MZ value is less than - 5 % saturation of the reference value
Biochemical Oxygen Demand (BOD)	If median of MZ value is greater than the reference value

A summary of results from the quarterly Jetty Outfall Monitoring Reports (CDM Smith 2025a, b, c, and d) for 2025 are presented in **Table 3-3**. The full 2025 dataset of the mixing zone water quality results is provided in **Attachment A** – Irrigation, Jetty Outfall and Sediment Pond data. Values exceeding current Licence trigger values are bolded and/or shaded.

The key findings from a review of the jetty outfall mixing zone water quality monitoring results include:

- The median concentration in the mixing zone for Dissolved Oxygen exceeded the trigger value detailed in Appendix B, Table 2 of the Licence, however the concentrations were consistent with that of the reference sites (although marginally exceeded in two instances). All other parameters were below the trigger values.
- The median pH value for the boundary of the mixing zone did not exceed the Licence trigger value however did exceed the internal assessment criteria for all three sampling events (refer to **Table 3-3**).
- The median temperature value for the boundary of the mixing zone for all sampling events was lower than the references site value (no Licence trigger) and did exceed the internal assessment criteria on two sampling events (refer to **Table 3-3**).
- The median electrical conductivity value for the boundary of the mixing zone for all sampling events was greater than the references site value (no Licence trigger) and did exceed the internal assessment criteria on two sampling events (refer to **Table 3-3**).
- The median Total Suspended Solids (**TSS**) value for the boundary of the mixing zone for the Q3 sampling events was greater than the references site value and trigger value (refer to **Table 3-3**). This also triggered a non-compliance which was communicated to the DLPE. At the time of the non-compliance a representative sample was also taken from the jetty outfall flowing stream (pipe which discharges into the receiving environment) that produced a result of 3 mg/L TSS. This demonstrated that the water being discharged into the receiving environment was very low in TSS and therefore unlikely that the discharge was the cause of the non-compliance.
- The median Chlorophyll-a value for the boundary of the mixing zone for the Q1 sampling events was greater than the references site value and trigger value (refer to **Table 3-3**). This also triggered a non-compliance which was communicated to the DLPE. The investigation suggested that there may have been some photosynthetic algae growth in the discharge tank, however the risk of environmental harm arising from this

¹ Reference sites are located on Northern and Southern ends of the jetty and provide a measurement to account for environmental factors outside of DLNG. Location of reference sites in Figure 3-5.

exceedance was considered negligible given the value of 2 µg/L for Chlorophyll-a is consistent with the 80th percentile value for the mid estuary detailed in the Water Quality Objectives for the Darwin Harbour Region.

- The median turbidity value for the boundary of the mixing zone was greater than the references site value during the Q2 sampling event, however did not exceed the Licence trigger. Refer to **Table 3-3**.

Table 3-3: Summary of 2025 jetty outfall mixing zone monitoring results

Parameter	Units	EPL 217-04 Jetty Outfall Mixing Zone Trigger Values	Q1 2025		Q2 2025		Q3 2025		Q4 2025	
			North Reference (NORTHERN)	Median of	North Reference (NORTHERN)	Median of	North Reference (NORTHERN)	Median of	North Reference (NORTHERN)	Median of
				Sites 1-3		Sites 1-3		Sites 1-3		Sites 1-3
pH	pH units	7 – 8.5	6.30 (5.80-6.80) ¹	7.52	6.56 (6.06-7.06) ¹	7.09	7.00 (6.50-7.5) ¹	7.55	NR	NR
Temperature ²	°C	NA	31.9 (30.9-32.9)	31.2	29.35 (28.35 – 30.35)	28.2	26.1 (25.1- 27.1)	24.1	NR	NR
Electrical Conductivity	µs/cm	NA	55,070 (52,317- 57,824)	55,770	52,270 (49,657-54,884)	69,830	60,980 (57,931 – 64,029)	67,230	NR	NR
Total Suspended Solids (TSS)	mg/L	≤10	26	26	<5 (>5)	<5	<5	22	NR	NR
Turbidity	NTU	20	13 (>13)	11	1.40 (>1.40)	1.70	2.1 (>2.1)	1.90	NR	NR
Total Dissolved Solids (TDS)	mg/L	N/A	NR	NR	NR	NR	NR	NR	NR	NR
Dissolved Oxygen (DO) ²	%	80-100	106 (>100.95)	103.3	106 (>100.7)	107	104 (>99.05)	105	NR	NR
Biological Oxygen Demand (BOD)	mg/L	N/A	N/A	N/A	<2 (>2)	<2	N/A	N/A	NR	NR
Total Nitrogen	mg/L	<0.27	0.130	0.110	0.117	0.116	0.169	0.165	NR	NR
Total Phosphorus (P)	mg/L	<0.02	N/A	N/A	0.012	0.012	N/A	N/A	NR	NR
Ammonia	mg/L	<0.02	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	NR	NR
Nitrate (NO ₃)	mg/L	0.7	0.003	0.010	0.004	0.004	0.006	0.003	NR	NR
Nitrite (NO ₂)	mg/L	N/A	0.004	0.003	<0.002	<0.002	<0.002	<0.002	NR	NR
Dissolved reactive phosphorus (PO ₄ -P)	mg/L	0.005	N/A	N/A	<0.001	<0.001	N/A	N/A	NR	NR
Total Kjeldahl Nitrogen	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NR	NR
Chlorophyll a	mg/L	<0.002	0.001	0.002	<0.001	<0.001	<0.001	<0.001	NR	NR
Escherichia coli (E. coli)	CFU /100mL	<200	N/A	N/A	<1	<1	N/A	N/A	NR	NR
Enterococci	CFU /100mL	50	N/A	N/A	<1	<1	N/A	N/A	NR	NR
Arsenic ²	µg/L	N/A	N/A	N/A	1.2	1.1	N/A	N/A	NR	NR
Cadmium ³	µg/L	5.5	<0. 2	<0.2	<0.2	<0.2	<0.2	<0.2	NR	NR
Chromium ³	µg/L	4.4	N/A	N/A	<0.5	<0.5	N/A	N/A	NR	NR
Copper ³	µg/L	1.3	<1	<1	<1	<1	<1	<1	NR	NR
Iron ³	µg/L	N/A	N/A	N/A	<5	<5	NA	N/A	NR	NR
Lead ³	µg/L	4.4	N/A	N/A	<0.2	<0.2	N/A	N/A	NR	NR
Manganese ³	µg/L	N/A	N/A	N/A	1.2	1.2	N/A	N/A	NR	NR
Mercury ³	µg/L	0.4	N/A	N/A	<0.1	<0.1	N/A	N/A	NR	NR
Nickel ³	µg/L	70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NR	NR
Silver ³	µg/L	1.4	N/A	N/A	<0.1	<0.1	N/A	N/A	NR	NR
Zinc ³	µg/L	15	<0.5	<0.5	<5	<5	<5	<5	NR	NR
BTEX	µg/L	700	N/A	N/A	<1	<1	N/A	N/A	NR	NR
Total Recoverable Hydrocarbons (TRH)	mg/L	LOR (<0.1)	N/A	N/A	<0.1	<0.1	N/A	N/A	NR	NR

Notes:
NA indicates no Trigger Values available.
LOR indicates trigger value or detection below limit of reporting.

Yellow shading denotes values that exceed / are outside of the EPL 217-04 Jetty Outfall Mixing Zone Trigger Value (where exceedance is also not present at the upstream reference site) – i.e. constitutes a non-compliance
Underline denotes a median value that exceeds the internal Assessment Criteria for Physio-chemical Parameters.

Red denotes medians that exceed the EPL 217-04 Jetty Outfall Mixing Zone Trigger Value and Reference Site value.
Bold denotes values that exceed Reference Site Value

¹ Criteria based on internal assessment criteria for physio-chemical parameters
² Represents dissolved fraction.

3.1.4. Monitoring Results – Sediment Ponds

3.1.4.1. Sediment Ponds discharge water quality monitoring results

A summary of the sediment water quality results for 2025 for Sediment Ponds 1, 2 and 3 is provided herein. The summary addresses trend analysis for relevant parameters over the period 2015 to 2025, and the comparison of results against Licence trigger values. The results are presented in **Table 3-4**, **Table 3-5**, and **Table 3-6**.

Discharges from sediment ponds vary with rainfall, except for Sediment Pond 1 which also receives greensands filter backwash discharge from the Demineralisation Plant year-round. The following is a summary of the sediment pond discharge and sampling undertaken in 2025:

- Sediment Pond no. 1 (**SP1**): Discharges only occurred from January to May and then in November and December. Monthly samples were collected during these months. No compliance samples were collected from June to October when there was no discharge from SP1.
- Sediment Pond no. 2 (**SP2**): Discharges only occurred from January to May and then in November and December. Monthly samples were collected during these months. No compliance samples were collected from June to October when there was no discharge from SP2.
- Sediment Pond no. 3 (**SP3**): Discharges only occurred from January to May and then in November and December. Monthly samples were collected during these months. No compliance samples were collected from June to October when there was no discharge from SP3.

The 2015 to 2025 dataset of both compliance and voluntary sediment pond water quality monitoring results is provided in **Attachment A – Irrigation, Jetty Outfall and Sediment Pond data**. Values in **Table 3-4**, **Table 3-5**, and **Table 3-6** that exceed Licence trigger values are shaded and values that trigger a non-compliance are shaded and bolded red. Key findings from a review of the water quality results for the discharge from the sediment ponds include:

- Field parameter measurements were generally consistent with the 2015-2025 averages, with the exception of TSS, Turbidity and DO being slightly elevated due to construction activities onsite during wet season flows.
- Analytical results for discharge samples were below the Licence trigger values except for:
 - Sediment Pond 1
 - Turbidity recorded 8 January 2025, 5 February 2025 and 2 April 2025
 - TSS recorded 5 February 2025, 2 April 2025 and 5 November 2025
 - E. coli recorded 5 February 2025
 - Enterococci recorded 5 February 2025
 - Zinc recorded 5 November 2025
 - Sediment Pond 2
 - Turbidity recorded 8 January 2025, 5 February 2025 and 2 April 2025
 - TSS recorded 5 November 2025 and 9 December 2025
 - E. coli recorded 5 February 2025
 - Enterococci recorded 5 February 2025
 - Nitrate recorded 5 February 2025
 - Copper recorded 5 November 2025 and 9 December 2025
 - Zinc recorded 13 November 2025 (exceedance from non-scheduled follow up sample)
 - Sediment Pond 3
 - Turbidity recorded 8 January 2025, 5 February 2025 and 2 April 2025
 - TSS recorded 5 November 2025
 - E. coli recorded 5 February 2025
 - Enterococci recorded 5 February 2025
 - Copper recorded 5 November 2025



Table 3-4: Summary of 2025 Sediment Pond 1 water quality monitoring results

Parameter	Units	Monitoring Frequency	Licence Trigger Value (217-04) ^[1]	Licence Trigger Value (217-05) ^[1]	2025 Maximum	2025 Minimum	2025 Average	Long-term Average (2015-2025)	2025 Reportable Non-Conformance ^[1]
Field Parameters									
pH	pH units	Monthly	6 - 8.5		7.10	6.62	6.82	6.67	No
Electrical conductivity	µs/cm	Monthly	No trigger		172.70	57.00	104.15	131.43	N/A
TSS	mg/L	Monthly	≤ 75	75	132.00 ³	6.40	54.30	2.79	No
Turbidity	NTU	Monthly	28.0	No trigger	380.00 ³	4.54	116.10	11.04	Yes
DO	mg/L	Monthly	No trigger		65.50	5.87	23.26	6.62	N/A
Temperature	°C	Monthly	No trigger		30.80	22.80	26.04	28.70	N/A
Environmental Indicators									
Ammonia (NH ₃ -N)	µg/L	Monthly	94.0	No trigger	110.00	5.00	40.33	23.58	No
Nitrate (NO ₃ -N)	µg/L	Monthly	145	No trigger	820.00	5.00	322.33	49.52	No
Nitrite (NO ₂ -N)	µg/L	Monthly	17	No trigger	11.00	5.00	7.00	2.63	No
DRP (PO ₄ -P)	µg/L	Monthly	5	No trigger	5.00	1.00	3.67	2.64	No
Total Nitrogen	mg/L	Monthly	≤ 40	40	1.70	0.19	0.76	1.10	No
Total Phosphorous	mg/L	Monthly	≤ 10	10	0.06	0.04	0.05	0.30	No
BOD	µg/L	Monthly	≤ 25	No trigger	3.00	1.00	1.40	1.61	No
TRH	µg/L	Monthly	< 6.0	>0.32	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
<i>E. coli</i>	MPN/100 mL	Not required	≤ 305	No trigger	833.00 ³	833.00	833.00	72.14	No
<i>Enterococci</i>	MPN/100 mL	Not required	261	No trigger	4611.00 ³	4611.00	4611.00	126.72	Yes
Metals & BTEX									
Arsenic	µg/L	Monthly	No trigger		1.00	1.00	1.00	0.99	N/A
Cadmium	µg/L	Monthly	5.5		1.10	0.10	0.25	0.17	No
Chromium	µg/L	Monthly	4.4		N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Copper	µg/L	Monthly	2.0		3.00 ⁴	1.00	1.38	1.21	No
Iron	µg/L	Monthly	No trigger		760.00	110.00	354.00	162.46	N/A
Lead	µg/L	Monthly	4.4		2.00	1.00	1.20	1.00	No
Manganese	µg/L	Monthly	No trigger		750.00	6.00	369.00	302.77	N/A
Mercury	µg/L	Monthly	0.4		N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Nickel	µg/L	Monthly	70		3.00	1.00	1.40	1.20	No
Silver	µg/L	Monthly	1.4		N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Zinc	µg/L	Monthly	1,000	130	400.00 ⁴	6.00	103.88	97.19	Yes
BTEX	µg/L	Monthly	700	>3.0	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No

Note:

- 1. Results from mandatory sampling are only considered when determining reportable non-conformances under the Licence.
- 2. No samples above LOR in the period.
- 3. Exceedance against EPL217-04
- 4. Exceedance against EPL217-05

* Yellow shading denotes exceedances of the Licence trigger values.
* Red text indicates a non-compliance
*where a value is below LOR the LOR is used to determine the average of the dataset



Table 3-5: Summary of 2025 Sediment Pond 2 water quality monitoring results

Parameter	Units	Monitoring Frequency	Licence Trigger Value (217-04) ^[1]	Licence Trigger Value (217-05) ^[1]	2025 Maximum	2025 Minimum	2025 Average	Long-term Average (2015-2025)	2025 Reportable Non-Conformance ^[1]
Field Parameters									
pH	pH units	Monthly	6-8.5		8.42	7.18	7.64	6.65	No
Electrical conductivity	µs/cm	Monthly	No trigger		524.90	19.60	189.00	189.33	N/A
TSS	mg/L	Monthly	≤ 75.0	75	216.00 ⁴	5.00	62.13	13.92	No
Turbidity	NTU	Monthly	28.0	No trigger	180.00 ³	8.38	78.83	29.89	Yes
DO	mg/L	Monthly	No trigger		78.20	6.41	26.07	8.35	N/A
Temperature	°C	Monthly	No trigger		29.40	23.40	25.64	28.49	N/A
Environmental Indicators									
Ammonia (NH ₃ -N)	µg/L	Monthly	94.0	No trigger	24.00	5.00	13.00	56.66	No
Nitrate (NO ₃ -N)	µg/L	Monthly	145	No trigger	790.00	179.00	419.67	172.00	No
Nitrite (NO ₂ -N)	µg/L	Monthly	17	No trigger	16.00	5.00	8.67	6.24	No
DRP (PO ₄ -P)	µg/L	Monthly	5	No trigger	10.00	1.00	5.33	3.14	No
Total Nitrogen	mg/L	Monthly	≤ 40	40	1.50	0.42	0.78	0.83	No
Total Phosphorous	mg/L	Monthly	≤ 10	10	0.06	0.02	0.04	0.02	No
BOD	µg/L	Monthly	≤ 25	No trigger	3.00	1.00	1.40	2.48	No
TRH	µg/L	Monthly	< 6.0	>0.32	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
<i>E. coli</i>	MPN/100 mL	Not required	≤ 305	No trigger	373.00 ³	373.00	373.00	162.00	No
<i>Enterococci</i>	MPN/100 mL	Not required	261	No trigger	880.00 ³	880.00	880.00	909.24	Yes
Metals & BTEX									
Arsenic	µg/L	Monthly	No trigger		2.0	1.00	1.25	1.04	N/A
Cadmium	µg/L	Monthly	5.5		0.50	0.10	0.19	0.14	No
Chromium	µg/L	Monthly	4.4		N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Copper	µg/L	Monthly	2.0		8.00 ⁴	1.00	2.13	1.83	Yes
Iron	µg/L	Monthly	No trigger		340.00	55.00	177.00	129.85	N/A
Lead	µg/L	Monthly	4.4		4.00	1.00	1.60	1.12	No
Manganese	µg/L	Monthly	No trigger		1200.00	69.00	413.80	473.12	N/A
Mercury	µg/L	Monthly	0.4		N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Nickel	µg/L	Monthly	70		4.00	1.00	1.60	1.92	No
Silver	µg/L	Monthly	1.4		N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Zinc	µg/L	Monthly	1,000	130	220.00 ⁴	5.00	55.25	76.59	No
BTEX	µg/L	Monthly	700	>3.0	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
aMDEA	Ug/L	Monthly	No trigger	LOR	0.00	0.00	0.00	0.00	No

Note:

- 1. Results from mandatory sampling are only considered when determining reportable non-conformances under the Licence.
- 2. No samples above LOR in the period.
- 3. Exceedance against EPL217-04
- 4. Exceedance against EPL217-05
- * Yellow shading denotes exceedances of the Licence trigger values.
- * Red text indicates a non-compliance
- *where a value is below LOR the LOR is used to determine the average of the dataset



Table 3-6: Summary of 2025 Sediment Pond 3 water quality monitoring results

Parameter	Units	Monitoring Frequency (EPL217-05)	Licence Trigger Value (217-04) ^[1]	Licence Trigger Value (217-05) ^[1]	2025 Maximum	2025 Minimum	2025 Average	Long-term Average (2015-2025)	2025 Reportable Non-Conformance ^[1]
Field Parameters									
pH	pH units	Monthly	6-8.5		7.56	6.87	7.18	6.92	No
Electrical conductivity	µs/cm	Monthly	No trigger		333.50	60.30	130.23	136.38	N/A
TSS	mg/L	Monthly	≤ 75	75	107.00 ⁴	1.50	23.79	2.50	No
Turbidity	NTU	Monthly	28.0	No trigger	64.50	3.07	31.94	8.40	No
DO	mg/L	Monthly	No trigger		107.10	5.41	31.43	8.31	N/A
Temperature	°C	Monthly	No trigger		31.60	22.30	26.40	29.17	N/A
Environmental Indicators									
Ammonia (NH ₃ -N)	µg/L	Monthly	94	No trigger	34.00	5.00	15.00	24.68	No
Nitrate (NO ₃ -N)	µg/L	Monthly	145	No trigger	300.00	89.00	213.00	56.84	No
Nitrite (NO ₂ -N)	µg/L	Monthly	17	No trigger	7.00	4.00	5.33	3.09	No
DRP (PO ₄ -P)	µg/L	Monthly	5	No trigger	N/A ^[2]	N/A ^[2]	N/A ^[2]	4.16	No
Total Nitrogen	mg/L	Monthly	≤ 40	40	0.64	0.14	0.39	0.30	No
Total Phosphorous	mg/L	Monthly	≤ 10	10	0.06	0.04	0.05	0.02	No
BOD	µg/L	Monthly	≤ 25	No trigger	3.00	1.00	1.60	1.48	No
TRH	µg/L	Monthly	< 6.0	>0.32	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
<i>E. coli</i>	MPN/100 mL	Not required	≤ 305	No trigger	1054.00 ³	1054.00	1054.00	918.62	Yes
<i>Enterococci</i>	MPN/100 mL	Not required	261	No trigger	2098.00 ³	2098.00	2098.00	130.94	No
Metals & BTEX									
Arsenic	µg/L	Monthly	No trigger		1.00	1.00	1.00	0.99	N/A
Cadmium	µg/L	Monthly	5.5		N/A ^[2]	N/A ^[2]	N/A ^[2]	0.11	No
Chromium	µg/L	Monthly	4.4		N/A ^[2]	N/A ^[2]	N/A ^[2]	1.23	No
Copper	µg/L	Monthly	2.0		6.00 ⁴	1.00	1.71	1.38	No
Iron	µg/L	Monthly	No trigger		610.00	95.00	303.75	227.59	N/A
Lead	µg/L	Monthly	4.4		3.00	1.00	1.50	1.03	No
Manganese	µg/L	Monthly	No trigger		150.00	3.00	45.00	44.67	N/A
Mercury	µg/L	Monthly	0.4		N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Nickel	µg/L	Monthly	70.		2.00	1.00	1.25	1.89	No
Silver	µg/L	Monthly	1.4		N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Zinc	µg/L	Monthly	1,000	130	58.00	5.00	19.00	53.43	No
BTEX	µg/L	Monthly	700	>3.0	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No

Note:

- 1. Results from mandatory sampling are only considered when determining reportable non-conformances under the Licence.
- 2. No samples above LOR in the period.
- 3. Exceedance against EPL217-04
- 4. Exceedance against EPL217-05

* Yellow shading denotes exceedances of the Licence trigger values.
* Red text indicates a non-compliance
*where a value is below LOR the LOR is used to determine the average of the dataset

3.1.5. Data Management and Quality Control

As outlined in **Section 3.1.2**, all samples and field measurements are collected by DLNG laboratory staff or environmental consultants, who are trained and experienced with the sampling methodologies used. All samples are collected by DLNG laboratory staff in accordance with the Santos document, *Laboratory Sampling – Monitoring of Wastewater [1U00-200-PRO-0596]*. All samples are analysed by laboratories accredited by the NATA for the analyses performed.

Field parameters (pH, DO, EC, TSS, turbidity and temperature) are recorded in-situ (i.e. directly from the discharge) using calibrated water quality meters, or using DLNG laboratory equipment.

All field measurements and analytical results are reviewed prior to being recorded in a Santos database. Where anomalous results are identified, the results are investigated further and additional sampling undertaken if required.

3.1.6. Discussion and Interpretation of Results

3.1.6.1. Jetty outfall discharge and mixing zone

The monitoring program for the jetty discharge recorded several trigger level exceedances for DRP and metals (chromium, copper, nickel and zinc) during the three 2025 sampling events, however monitoring at the mixing zone demonstrated compliance with the respective trigger values and these results were also consistent with monitoring at the reference site. Subsequently these exceedances were not a non-compliance with EPL217-04. The elevated DRP and zinc were likely associated with the reduced flows and from the jetty outfall. At the time of drafting this AEMR, the elevated metals (e.g. Chromium and Nickel) are thought to be caused from corrosion of internal piping associated with the RO unit and is being investigated.

Dissolved Oxygen in the mixing zone exceeded the trigger level range for all three monitoring events in 2025, however as the reference sites also all exceeded the trigger value range to the same extent as the mixing zone sites, it is considered to be compliant, on the basis that the results are consistent for both the mixing zone and the reference sites. The median dissolved oxygen value is also considered compliant in accordance with the internal assessment criteria for each monitoring event.

In summary, the results of the jetty outfall mixing zone sampling program were compliant with Licence Condition 78 (EPL217-04). In addition, the dilutions generally met the reference site, Licence trigger values and DHWQO trigger values, and therefore the risk of environmental impact from the jetty outfall discharge continues to be low.

3.1.6.2. Sediment Ponds

Overall, in 2025 the sediment pond monitoring results were consistent with data obtained during previous monitoring events in past years, with the exception of some elevated parameters as detailed below.

There were exceedances of licence trigger values for Turbidity and TSS in each of the sediment pond discharges in early 2025 and are believed to be associated with onsite construction activities (Darwin Life Extension and Darwin Pipeline Duplication) during the wet season rains.

During this early 2025 period there was also an exceedance for *E. coli* and *Enterococci* in each of the sediment ponds and is believed to be a result of the turbidity present, along with faecal matter from wildlife (e.g. birds, frogs etc) frequenting these sites. The faecal matter, being a source of nutrients, is believed to be responsible for the Nitrate exceedance in Sediment Pond 2 during this period too.

Copper and Zinc exceedances were also detected in the Sediment Ponds during the first sampling event for the 2025/2026 wet season. As the first discharge event for the wet season commenced the night before scheduled sampling, the samples were collected during a 'first flush' event meaning a temporary spike in some water quality parameters was possible.

As above the exceedances are generally associated with onsite construction activities combined with wet season rains. The discharge water quality from the sediment ponds is of low environmental risk.

3.2. Mangrove Monitoring

There is mangrove habitat surrounding DLNG, which is monitored to determine if there is any environmental impact from the operation of DLNG. Condition 64 of EPL217-04 and subsequently Conditions 6 and 49 of EPL217-05, requires Santos to implement and maintain a mangrove monitoring program. The requirements for this program are outlined in the Darwin LNG – Mangrove Monitoring Program (1U00-650-EMP-0004), and are summarised below:

- Mangrove health monitoring (including groundwater monitoring) – regular ongoing monitoring of indices related to mangrove health, such as:
 - Canopy density.
 - Tree density.
 - Species composition.
 - Defoliation index.
 - Relative ground levels – sediment accumulation or erosion; and
 - Groundwater condition.
- Chemical monitoring – analysis of sediments and biota in mangrove habitats for hydrocarbon and heavy metal contamination, including:
 - Sediment particle size; and
 - Concentrations of metals and hydrocarbons in sediments and biota (mudwhelks).

The mangrove monitoring program is required to be undertaken annually.

CDM Smith, with the support of EcoScience, were commissioned by Santos to collect, review, and interpret mangrove related data in accordance with the mangrove monitoring plan. The results of this analysis were provided in an annual mangrove monitoring report (CDM Smith, 2025e) and are summarised in this section.

3.2.1. Monitoring Objectives

The objective of the mangrove monitoring program is to identify and quantify potential impacts from the operation of DLNG on the environment surrounding the facility. The monitoring program provides information on the health of this ecosystem. The information collected by the mangrove monitoring and chemical surveillance program is considered in conjunction with results from other monitoring programs implemented by Santos.

The mangrove monitoring and chemical surveillance program is also intended to maintain compliance with Condition 64 of EPL217-04 and subsequently Conditions 6 and 49 and of EPL217-05.

3.2.2. Monitoring Methods

The annual mangrove monitoring was undertaken at DLNG during August 2025. The methods used to undertake the monitoring are summarised in **Table 3-7** and are in accordance with the Darwin LNG – Mangrove Monitoring Program (1U00-650-EMP-0004). The sampling locations are shown in **Figure 3-7** and **Figure 3-8**.

Table 3-7: Summary of 2025 mangrove monitoring and chemical surveillance methods

Element	Indicator	Method	Information Provided
Mangrove Monitoring			
Mangrove Health	Canopy cover	Densiometer readings of foliage or canopy cover	Quantitative estimates of mangrove canopy density used to determine changes in canopy cover over time
	Photo-monitoring	Comparison of photo-monitoring from current year with baseline imagery and previous years	Standardised set of photos used for comparison of forest health over time
	Tree condition	Defoliation index (score of health on scale of 0-5)	Visual assessment using standardised method of tree health used for comparison of forest health over time

Element	Indicator	Method	Information Provided
	Tree density and species composition	Percentage species composition Tree density per hectare	Mangrove species richness, diversity and density measures used for comparison over time
	Resilience	Abundance of seedlings (<1 m) and saplings (<2 m) is ranked from 0 to 5	Assessment of the presence and abundance of mangrove seedlings and saplings as an indicator of forest health and potential for rapid regeneration
Groundwater monitoring	Water table depth Total dissolved solids (TDS) pH	Water quality monitoring probes in monitoring bores	Data on groundwater quality (water table depth, TDS and pH) for comparison of water quality to previous monitoring data and water quality standards
Sediment / erosion monitoring	Sediment levels	Measurements of sediment height taken from fixed reference post	Sediment height in relation to reference post for comparison over time
Chemical Monitoring			
Sediment characterisation	Particle size distribution (PDS)	Wet sieving Laser diffraction	Sediment particle size distribution for comparison over time
	Metal and hydrocarbon concentrations in sediments	Sediment samples for laboratory analysis	Concentrations of metals and hydrocarbons in sediments for comparison to previous monitoring data and sediment quality standards
Bioaccumulation	Metal and hydrocarbon concentrations in mudwhelks	Tissue samples for laboratory analysis	Concentrations of metals and hydrocarbons in mudwhelk tissue for comparison to previous monitoring data

The following changes have been made to the monitoring methods:

- During the August 2015 survey, two new sites (SS15A and SS16A) were established as replacement sites for SS15 and SS16 whose value had become limited due to location of plots within the flare dyke footprint during the construction phase. The new sites were selected to provide monitoring coverage in this area and were also located adjacent the outlet of discharge from Sedimentation Pond 1 (**Figure 3-7**).
- During monitoring surveys conducted between 2003 to 2017 canopy cover was measured using a standard densiometer. In 2017 and 2018 the Stickler's modified 17-point densiometer was trialled alongside the standard densiometer method. The 17-point densiometer has been widely adopted as the standard instrument in mangrove monitoring in Darwin Harbour since 2011. After reviewing the trial data and other benefits, this was adopted as the sole method for measuring canopy at DLNG since the 2019 mangrove surveillance monitoring campaign.
- Historically all photo monitoring has been undertaken using the corner post to centre method. Since the 2018 survey a second set of photographs has been taken using the centre to corner post method. This additional set of high-quality images improves the ability to detect short-term and localised changes in mangroves, eliminating the redundancy of older, occasionally mis-matched photos and allows detailed visual monitoring of post-cyclone recovery and future changes in mangrove forest health.
- Three new chemical monitoring sites were installed during in 2020 and have been retained in the 2025 program to help assess potential contamination downstream of Sediment Ponds 2 and 3 (SP2A – sediment only, SP3 – sediment only and SP3-A – sediment and biota). Biota is not typically present at SP2A and SP3.
- In 2021 two new photo monitoring sites were installed downstream from the sediment ponds (SP1-C and SP3-B).
- A remote sensing trial (using drone or UAV technology) was conducted during the 2023 field survey and repeated in the 2025 survey. The Remotely Piloted Aircraft System (RPAS) trial was designed to obtain data on mangrove health and cover as well as the current distribution and extent, for comparison with ground-based measurements. The 2023, 2024 and 2025 trials have demonstrated that RPAS data is analogous with ground-based estimates and measurements of key indices of mangrove health and could therefore replace these during future surveys.

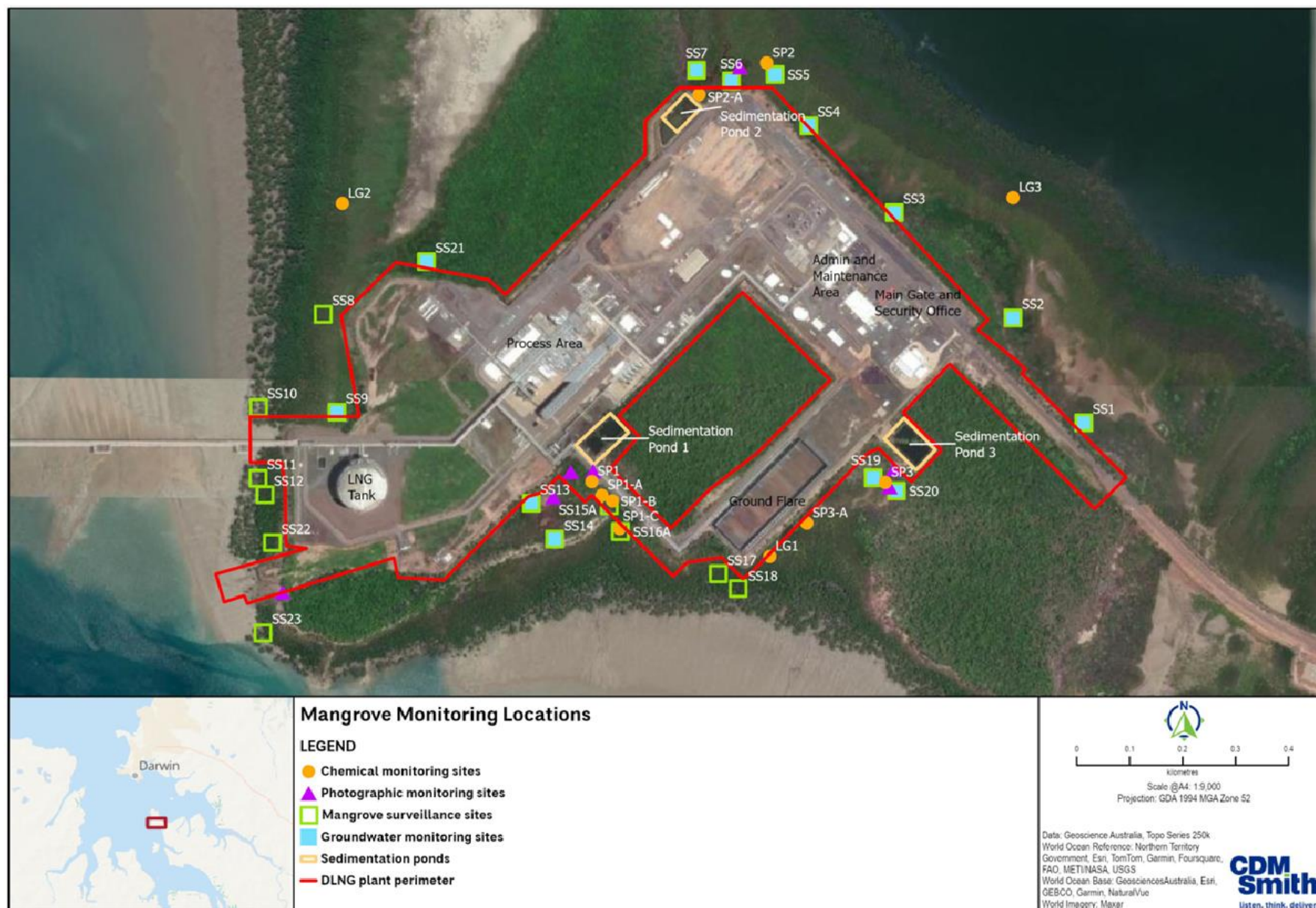


Figure 3-7: Location of sampling sites for the mangrove monitoring program

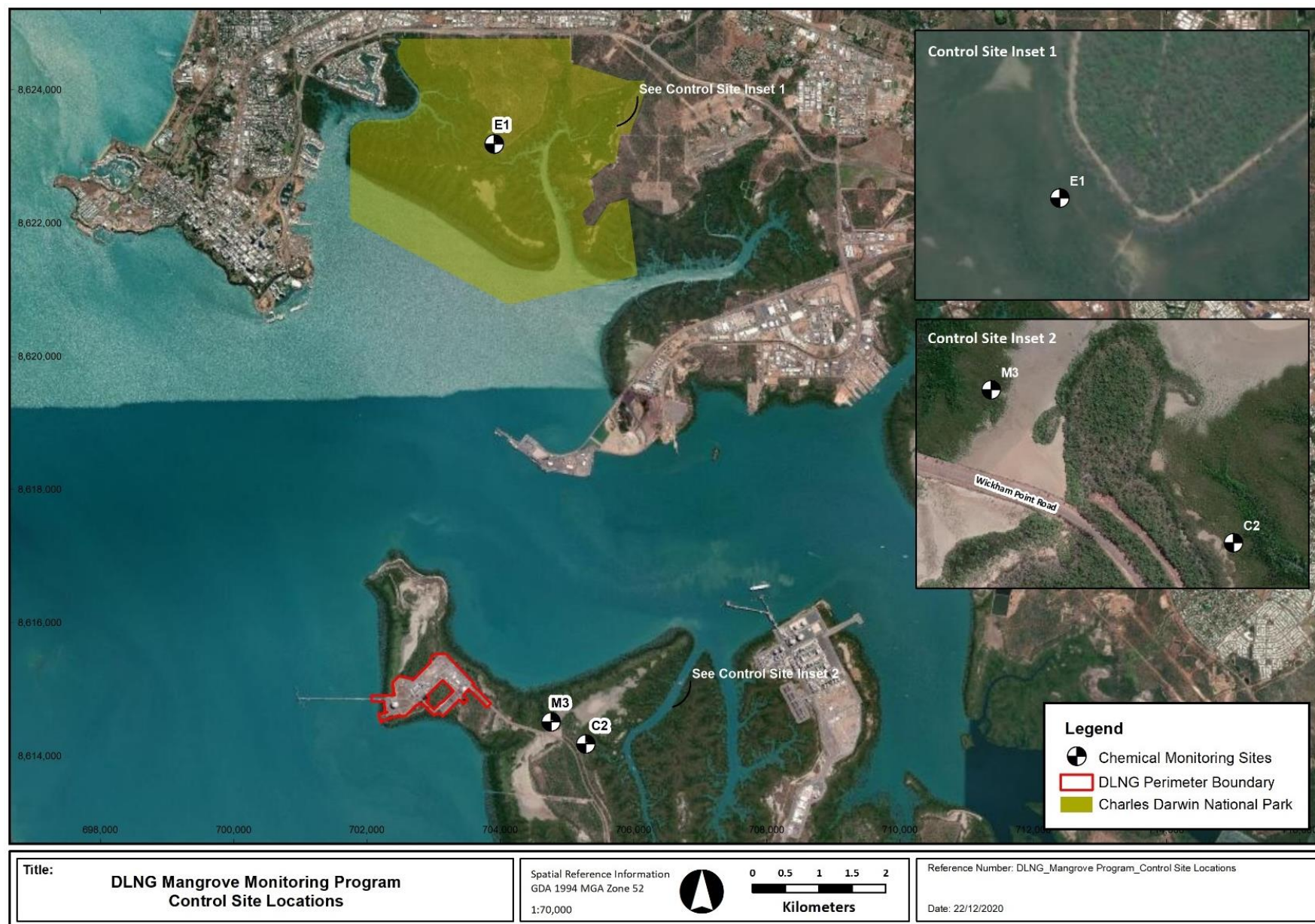


Figure 3-8: Location of control sites for the mangrove monitoring program

Mangrove monitoring sites around DLNG represent several mangrove assemblages, which are distinguished by the degree of tidal inundation experienced as illustrated in the conceptual model (Metcalf, 2007) (**Figure 3-9**). DLNG monitoring sites are in the hinterland margin, tidal flat and tidal creek assemblages. Most sampling locations (11 of 23) are located in the most landward assemblage (hinterland margin), which typically abuts DLNG boundary. The hinterland margin assemblage is dominated by mid-high *Ceriops australis* and *Lumnitzera racemosa* and in some areas this assemblage may be only 10 m in width. Three of the 23 surveillance sites occur within *Ceriops* forests of the tidal flat assemblage, which occurs slightly lower in the intertidal zone and are dominated by low *Ceriops australis*. Nine sites occur within forests dominated by *Rhizophora stylosa* (the tidal creek or *Rhizophora* zone) which typically occur further to seaward but are also associated with minor tidal channels draining the tidal flat.

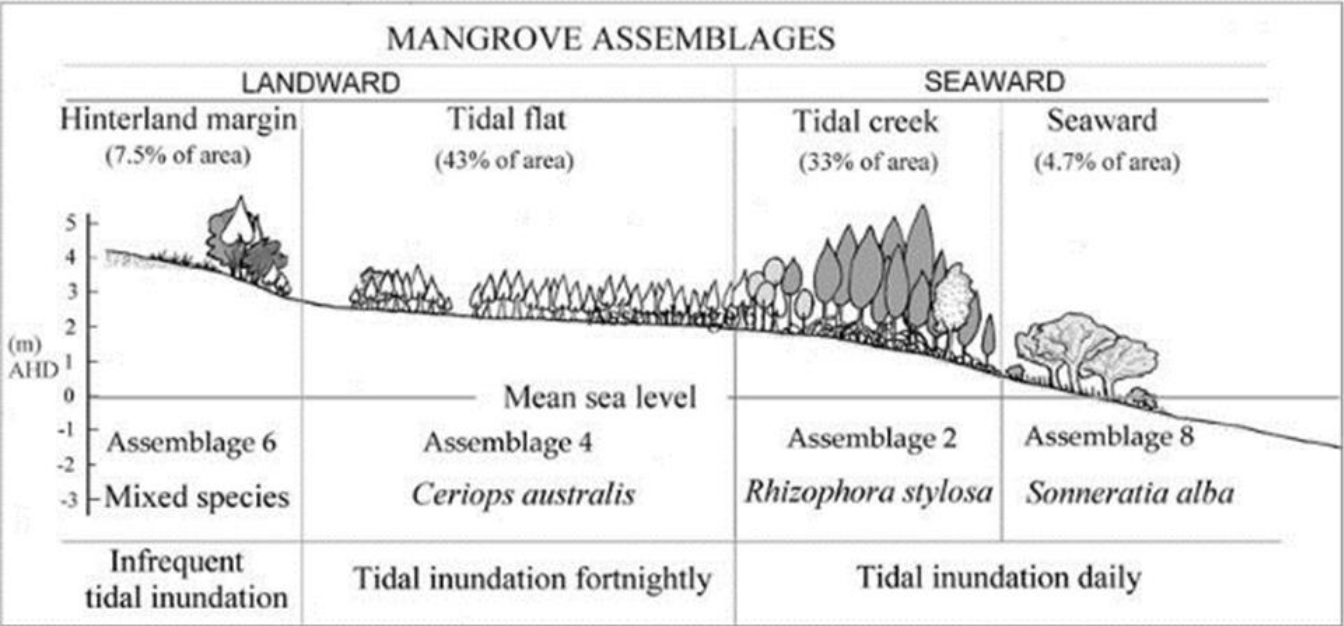


Figure 3-9: Conceptual model of the four main mangrove assemblages found within Darwin Harbour

3.2.3. Monitoring Results – Mangrove Surveillance

A summary of the mangrove monitoring results is provided in the following sections with a dataset (2003-2025) provided in **Attachment B – Mangrove Data**.

3.2.3.1. Canopy Density

Canopy cover, which is determined by leaf growth and senescence, is sensitive to a wide range of environmental factors. Hence the density of the tree canopy is a useful gauge of forest condition and is typically a key indicator of mangrove health. During monitoring surveys conducted between 2003 and 2017 the canopy cover was measured using a standard densiometer. In 2017 and 2018, the Stickler’s modified 17-point densiometer was trialled and is now the preferred and sole method since 2019.

From the 2021 monitoring event onwards, long-term changes in canopy cover (%) now incorporate the initial 2003-2004 baseline survey as well as the subsequent 2015 and 2017 baseline surveys. In contrast, all previous reports only examined long-term change between the initial 2003-2004 baseline survey and the most recent monitoring programme, omitting the additional sites SS15A & SS16A established in 2015, and site SS06 which has only recently been included in canopy cover monitoring in 2017.

Results revealed that amongst the 23 surveillance sites monitored, 18 sites varied within $\pm 10\%$ of baseline data (**Table 3-8** and **Figure 3-9**). These results were consistent with the 2024 survey findings. No decreases in canopy cover greater than the -20% exceedance level were recorded in the current 2025 survey (**Table 3-8** and **Figure 3-9**). At two monitoring sites SS03 and SS23, historic declines in canopy cover have been recorded, but these remain less than 20% below baseline canopy cover (i.e., the trigger level). Similarly, no exceedances of the trigger level have been recorded in the previous ten years of monitoring (see **Table 3-8**).

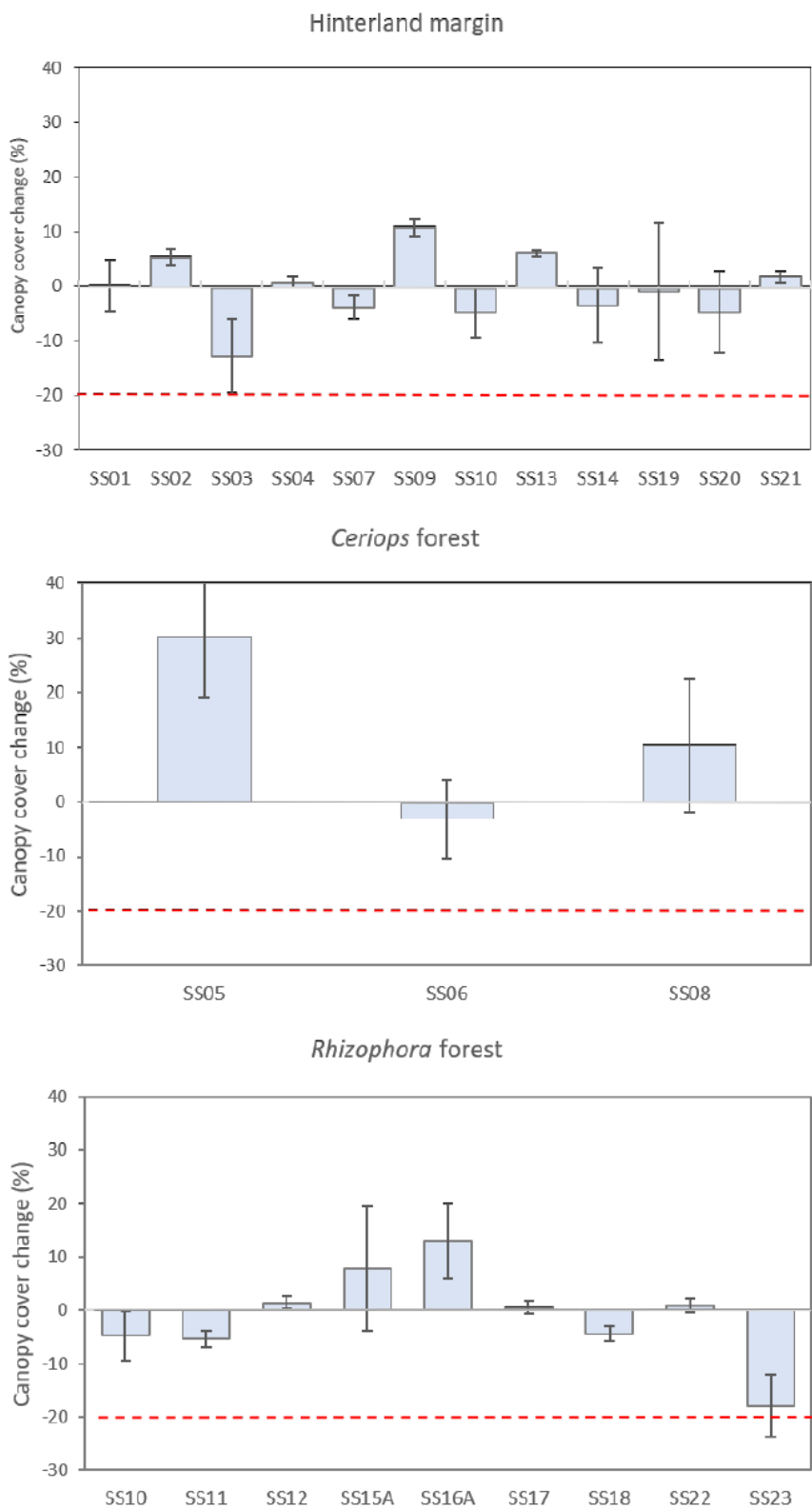
Table 3-8: Differences in mean canopy cover (%) from baseline (2003)

Change from Baseline (%)												
Assemblage	Site	Standard Densiometer			17-point Densiometer							
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Hinterland Margin	SS01	-1	1	1	6.3	6.5	4	6	2	0	-5	0
	SS02	-2	4	3	9.1	8.2	7.9	7	7	7	5	5
	SS03	-18	-18	-16	-14.0	-16.2	-12.5	-11	-11	-17	-15	-13
	SS04	-2	-1	-1	2.1	2.5	2.9	3	2	1	0	1
	SS07	-2	-5	-7	5.9	-1.6	5	2	1	-3	-6	-4
	SS09	-1	2	5	11.7	11.1	12.1	13	14	11	11	11
	SS13	1	2	3	7.2	6.3	8.2	9	7	6	7	6
	SS14	-4	-1	0	10.4	-0.1	0.5	2	-1	-2	-7	-3
	SS19	0	0	-1	28.3	18.5	17.8	11	4	2	0	-1
	SS20	2	-7	-16	15.4	3.3	5.9	2	-3	-5	-7	-5
	SS21	1	0	0	1.2	3.1	2.3	4	-2	0	1	2
Rhizophora forest	SS10	-3	-5	-5	-8.4	-6.8	-4.2	-2	-1	-4	-3	-5
	SS11	-6	-5	-8	-6.3	-6.5	-4.1	-3	-7	-9	-6	-5
	SS12	-2	-6	-3	1.0	2.1	2.9	4	2	0	2	1
	SS15A ^[2]	N/A	2	-3	13	9	9	7	5	7	2	8
	SS16A ^[2]	N/A	4	10	13	10	16	15	15	15	15	13
	SS17	-3	-2	-4	2.2	0.6	1.1	2	1	1	1	1
	SS18	-6	-4	-10	2.2	-3.6	-1.1	0	-3	-4	-4	-4
	SS22	-3	-3	-6	1.1	0.0	1.8	6	1	2	3	1
	SS23	-1	-5	-5	-9.7	-14.2	-13.8	-14	-14	-19	-20	-18
Ceriops forest / tidal flat	SS05	8	8	14	40.6	35.7	37.2	33	33	28	25	30
	SS06 ^[2,3]	N/A	N/A	N/A	2	-8	4	1	-1	-2	-4	-3
	SS08	12	11	5	32.8	28.2	22.1	19	19	14	10	10

[1] N/A indicates data unavailable for previous years

[2] Surveillance sites SS15A & SS16A and SS06 which were established in 2015 and 2017 respectively: Mean change (%) calculated from the four subplots at each site.

[3] Change from Baseline data for SS06 is now derived from the 2017 Baseline survey 17-point densiometer data. NB: all previous reports displaying change were derived from the Standard densiometer method.



*Red dashed line represents the -20% trigger value. NB: change from Baseline includes sites SS06 and SS15A & SS16A.

Figure 3-10: Mean change in canopy cover (+ SE) since baseline

Although no trigger level exceedances (> 20% decline in canopy cover) were documented in 2025, notable changes (both increases and decreases) in canopy cover since baseline have been observed at a number of sites. These changes include patterns of decline and significant increases in canopy cover, both of which are discussed in the sections below and presented in **Table 3-8** and **Figure 3-9**.

Decreases in Canopy Cover

- Canopy cover data recorded during the 2025 season was similar to previous monitoring surveys, revealing no trigger exceedances (> 20% decline in canopy cover) were recorded when analysing annual (2024-2025) change.
- During the 2025 survey, ten sites displayed declines in canopy cover since baseline. Notable declines in canopy cover (> -13% but less than -20% exceedance level) have been recorded at two monitoring sites SS03 and SS23.
- Canopy losses recorded within the remaining sites were negligible (< -5%) and likely associated with seasonal fluctuations, natural canopy thinning due to forest maturation and error associated with the densiometer method. Long-term patterns in canopy measurements show declines at most sites are small, non-significant and stable.
- Although no trigger level exceedances were documented in 2025, notable changes (both increases and decreases) in canopy cover since baseline have been observed at several sites.
- Declines in canopy cover at SS03 are believed to be in response to storm damage or a lightning strike between 2011 and 2012 and is unrelated to impacts from DLNG operations. Although current photo monitoring suggests that forest recovery is occurring at SS03 (+2% compared to 2024), regenerating mangrove vegetation is likely to have little to no effect on canopy cover readings for many years.
- Declines in canopy cover at SS23 have been evident since 2018. This was because of strong damaging winds from cyclone Marcus in March 2018. The localised decline in canopy cover at SS23 is therefore not associated with anthropogenic impacts from DLNG.

Increases in Canopy Cover

- Increases in canopy cover since baseline were recorded during the 2025 survey at 12 sites. In many instances, significant increases in canopy cover are likely attributable to use of the 17-point densiometer that can detect more canopy cover (due to the method) as well as the result of forest growth.
- Notable increases in canopy cover occurred at site SS05 (30% change since baseline) which may have been encouraged by increased freshwater inflows associated with the DLNG footprint and indirect runoff from Sedimentation Pond 2. These results may also be slightly exaggerated by apparent increases in low forests (2–4 m in height) by use of the tripod-mounted 17-point densiometer which captures a greater portion of low-growing tree canopies. Increases in percentage change in canopy cover since baseline are regarded as positive changes and not of concern in terms of anthropogenic impacts to mangroves.
- The Ceriops forest site SS08 has also displayed a notable increase in canopy cover since the 2018 baseline, with a 10% gain recorded in 2025. This marked increase is likely attributable to use of the 17-point densiometer. Site SS08 is a low-open forest with a healthy understorey of *Aegialitis annulata* which is a low woody shrub that typically grows to <1.0 m in height, and hence their canopies are now detected by the 17-point densiometer, contributing to the apparent large increase in canopy cover. Photo-monitoring images have shown substantial increases in forest height at SS08, indicating that gains in canopy cover are also partly the result of forest growth.
- At site SS09, an 11% increase in canopy cover since baseline was recorded. This gain in forest cover was comparable to all post-2018 survey data for this site, but slightly greater than earlier monitoring surveys. Site SS09 has a prominent understorey of *C. australis* saplings and *Aegialitis annulata* shrubs, and growth in this low vegetation may have partly contributed to gains in canopy cover. Site SS09 is located at the base of an embankment which runs parallel with the LNG jetty. Beneficial changes to tidal hydrodynamics and increased freshwater inflows associated with the DLNG plant footprint may also have contributed to forest growth in this area. Results from current and previous photo-monitoring have shown positive changes in forest development at SS09, with increased forest growth clearly evident from comparison with historical imagery. Results from the current survey revealed that tall seedlings have matured at the site and are not detected in canopy cover readings.
- In the Rhizophora forest site SS16A, a 13% increase in canopy cover since baseline was recorded during the 2025 survey. This increase in forest cover since baseline was similar to that noted in previous surveys and has persisted since 2016. Although this sustained increase in cover is probably due to introduction of the tripod-mounted densiometer method (and possibly other environmental factors), examination of historic data suggests initial baseline canopy readings may have been underestimated. Indeed, since the 2015 establishment of site SS16A, canopy readings have been consistently higher than the initial baseline data.

3.2.3.2. Photographic Monitoring

Photo-monitoring images obtained during the mangrove monitoring program are used as a valuable reference and to monitor mangrove health by detection of any changes in forest structure, regeneration, species composition and physiognomy over time.

Photo-monitoring prior to 2018 compared recorded images with a 2003-2004 baseline and used a different field technique (the corner to centre method). In 2018 a new baseline was established to document post-cyclone recovery after Cyclone Marcus passed through Darwin in March 2018. Establishment of the new 2018 baseline also allowed introduction of the new, more efficient technique (the centre to corner method) and has produced better quality imagery for comparative purposes.

In 2025, photo-monitoring was undertaken from the central PVC marker post of each 10 × 10 m surveillance plot. Four landscape format images were taken from the centre toward each corner post (92 images across 23 plots) with the camera held level at chest height to capture both ground conditions and part of the forest canopy. A temporary post with a labelled marker board identified plot, sub-plot, and date. All images were collected by Larrakia Rangers during the annual DLNG monitoring survey.

Photo-monitoring supplemented results for defoliation index and percentage canopy change. Key findings from the photographic monitoring results include:

- Comparison of images from August 2018 (post cyclone Marcus) with images obtained in August 2025 demonstrated no decline in mangrove health at the 23 DLNG surveillance monitoring sites. Although simple, this on-ground technique is effective in providing visual proof of mangrove health and vitality and for tracking more gradual environmental changes.
- The 2025 images underscore that mangrove forest structure, species composition and physiognomy has remained remarkably stable at most surveillance sites for the past seven years.
- Minor structural changes (e.g. canopy thinning, disintegration of logs and attrition of dead cyclone-damaged trees) were evident in shoreline *Rhizophora* forests impacted by Cyclone Marcus (e.g., SS23, SS10,) but overall, lower intertidal sites appeared stable and in healthy condition.
- Little or no short-term change was observed in images from hinterland margin sites with the exception of some active regrowth of seedlings within canopy gaps at SS03 and at SS07, and similar to previous years, increased sapling and tree density were evident at SS09.
- In accordance with canopy cover results, the most change evident from photo-monitoring was in mid-tidal habitats dominated by *Ceriops australis* and *Avicennia marina* (e.g. SS05, SS06, SS07 and SS09). An increase in height and forest density was apparent at SS05 and SS06 which appears to reflect long-term environmental change, potentially associated with sea level rise and/or increased freshwater inflow.
- Photo-monitoring and canopy cover results were corroborated by remotely sensed data, which recorded increases in FVC between 2024 and 2025 of 7.9% at SS03, 8.3% at SS06, and 11.3% at SS07.
- Photo-monitoring in 2025 proved to be an effective rapid surveillance technique, confirming that the healthy condition of mangroves at the 23 monitoring sites surrounding the DLNG has been maintained. The monitoring also indicated that active recovery from the 2018 cyclone damage is underway, evidenced by seedling recruitment in canopy gaps.

3.2.3.3. Defoliation Index

To supplement canopy cover data and to provide a rapid assessment of forest health within each surveillance site, the health of the canopy, as indicated by the degree and extent of leaf loss (or defoliation) is estimated. To estimate defoliation index, the observer stands within the centre of each of the four 5 m x 5 m quadrants of the monitoring plot to assess tree health within the subplot. A ranked estimate of the cover of foliage (i.e., above and surrounding that central point), is derived from the mean of four visual assessments per plot.

Mean defoliation index data, averaged from four ranked estimates obtained from each site for the period 2016 and 2025 is presented in **Table 3-9**. Key findings include:

- Overall, defoliation index recorded at each surveillance site during the 2025 survey showed no change from the previous survey. Consistently stable index values indicate that the mangrove forests surrounding the DLNG plant continue to remain healthy and in good condition.

Table 3-9: Annual mean defoliation index

Assemblage	Site	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Difference between 2024-2025
Hinterland margin	SS01	4.0	4.0	4.25	4.25	4.3	4.0	4.0	4.0	4.0	4	0.0
	SS02	4.0	4.0	4.75	4.25	4.3	4.3	4.3	4.3	4.3	4.3	0.0
	SS03	3.5	3.5	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0.0
	SS04	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5	0.0
	SS07	4.0	4.0	3.5	4.0	3.5	3.5	3.5	3.5	3.5	3.5	0.0
	SS09	4.0	4.0	4.25	4.25	4.3	4.0	4.0	4.0	4.0	4	0.0
	SS13	4.0	4.0	4.75	5.0	4.8	5.0	5.0	5.0	5.0	5	0.0
	SS14	4.0	4.0	4.25	4.0	4.0	3.8	3.8	3.8	3.8	3.8	0.0
	SS19	4.0	4.0	2.75	3.0	3.0	2.8	2.8	2.8	2.8	2.8	0.0
	SS20	4.0	4.0	3.0	3.0	3.0	2.8	2.8	2.8	2.8	2.8	0.0
	SS21	4.0	4.0	3.25	4.0	4.0	4.8	4.8	4.5	4.5	4.5	0.3
Rhizopora forest	SS10	4.0	4.0	4.25	4.5	4.3	4.3	4.3	4.3	4.3	4.3	0.0
	SS11	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4	0.0
	SS12	4.0	4.0	4.75	4.75	4.8	4.8	4.8	4.8	4.8	4.8	0.0
	SS15A	4.0	4.0	3.75	4.0	4.0	3.8	3.8	3.8	3.8	3.8	0.0
	SS16A	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4	0.0
	SS17	4.0	4.0	4.25	4.25	4.3	4.3	4.3	4.3	4.3	4.3	0.0
	SS18	4.0	4.0	4.0	4.0	4.3	4.3	4.3	4.3	4.3	4.3	0.0
	SS22	4.0	4.0	4.5	4.25	4.0	4.0	4.0	4.0	4.0	4	0.0
	SS23	4.0	4.0	3.25	3.5	3.3	3.3	3.3	3.3	3.3	3.3	0.0
Ceriops forest / tidal flat	SS05	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4	0.0
	SS06	N/A	N/A	4.0	4.0	4.3	4.3	4.3	4.3	4.3	4.3	0.0
	SS08	4.0	4.0	4.25	4.0	4.0	4.0	4.0	4.0	4.0	4	0.0

Defoliation Index: 0 = Nil canopy; complete defoliation, 1 = <25% canopy, 2 = 25-50% canopy, 3 = 50-75% canopy, 4 = >75% canopy, 5 = complete full canopy.

3.2.3.4. Species Composition and Tree Density

The species composition and density of mangrove forests within each of the 23 surveillance monitoring sites was documented during program establishment in 2003 (URS, 2004). This data was recorded to provide a baseline for comparison of future change in mangrove health, forest structure and composition. Mangrove trees were defined in accordance with Brocklehurst and Edmeades (1996) as plants exceeding a height of 2 m and a diameter of 2 cm or more. Monitoring of tree density and species composition was conducted on a once-only data collection basis which may be repeated should any major change in forest health be detected, or at conclusion of the monitoring program.

3.2.3.5. Relative Ground Levels

Relative ground levels were recorded at each surveillance site to investigate any potential sediment deposition or erosion in mangroves. Increased sedimentation rates have the potential to stress mangrove trees by burying or uncovering root systems.

For each site, sediment heights were taken with a tape measure at each corner post (1, 2, 3 and 4) from the top of the PVC post to the most representative ground surface. Bioturbation such as crab burrows was avoided where possible. The mean of the four posts was calculated to obtain the overall ground level of the site. Net difference was calculated by subtracting the baseline (2003) mean height with the subsequent surveys:

Net Difference = First year of data - monitoring year data

The net difference since baseline for the last ten years (2016 to 2025) results are presented in **Table 3-11** together with the change recorded between 2024 and 2025. For sites SS04, SS07, SS22 and SS23, where new posts were installed in 2018 post cyclone Marcus, a new baseline was set by establishing the difference between the 2017 height data and the newly established height in 2018 and subtracting this from the height data measured in 2025.

A positive result, indicating a higher ground level, suggests a potential sediment deposition whilst a negative net difference indicates lower ground level and potentially sediment erosion. **Figure 3-11** represents graphically the net difference since baseline to 2025 at all sites.

There was no evidence that substantial sedimentation or erosion has occurred surrounding the DLNG plant. Key findings include:

- Changes in sediment heights were consistent with previous years data and all changes were below the trigger value for accretion of 5-10 cm sediment deposition over a 6 to 12-month period. No sites recorded a net difference greater than ± 1.3 cm over the 2024 to 2025 monitoring period (**Table 3-10**).
- Since baseline monitoring in 2003, there has been a small increase in sediment height (0.4 cm – 44.8 cm) at a majority of the sites, indicating small sediment accretion rates over the monitoring period. Greater increases in sediment height (16.7 cm – 39.1 cm) since baseline have been recorded at sites SS8 to SS12 (located in the southwest section of Wickham Point, near the LNG jetty).
- The data recorded in 2025 remains consistent with previous monitoring events, and no indication of mangrove health deterioration can be noted.

Table 3-10: Net difference in mean relative sediment height (cm) from baseline (2003)

Assemblages	Site	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Difference between 2024-2025
Hinterland margin	SS01	1.8	2.3	2.9	2.4	2.5	2.2	2.9	3.2	2.9	2.7	0.1
	SS02	1.2	2.0	2.3	1.5	1.5	4.3	2.9	3.0	2.5	3.8	-1.3
	SS03	1.7	1.9	1.1	2.1	2.2	1.4	1.7	1.7	2.1	3.2	-1.1
	SS04 ^[1]	0.3	0.3	0.1	1.4	1.6	1.1	-10.4	-9.4	-9.7	-9.0	-0.7
	SS07 ^[1]	-2.5	-3.0	-2.8	-2.8	-2.8	0.0	1.0	-7.5	-7.5	-8.1	0.6
	SS09	12.7	12.9	16.8	15.8	15.9	16.0	17.8	19.0	19.4	20.5	-1.2
	SS13	3.8	4.8	5.3	5.5	5.6	5.8	5.3	5.3	5.4	9.3	-4.0
	SS14	2.7	2.7	2.5	1.8	2.2	3.4	4.7	4.7	4.3	25.3	-20.9
	SS19	-0.2	0.6	0.2	0.1	0.1	0.5	0.5	0.6	0.3	0.7	-0.4
	SS20	1.8	2.3	1.8	2.5	2.6	2.4	2.1	2.6	1.3	7.8	-6.4
	SS21	8.4	7.9	6.2	6.5	6.9	7.1	7.9	7.2	6.2	5.6	0.6
Rhizopora forest	SS10	11.5	13.6	21.0	24.9	27.5	27.8	41.4	29.3	29.5	31.7	-2.3
	SS11	10.8	11	8.3	10.5	11.3	16.4	17.0	18.4	18.3	17.5	0.8
	SS12	10.6	12.6	13.8	13.9	14.6	15.4	15.8	16.5	17.0	39.1	-22.1
	SS15A ^[2]	N/A	1.3	2.3	-4.1	-4.3	5.6	4.7	4.3	4.3	6.5	-2.2
	SS16A ^[2]	N/A	0	1.0	0.4	0.3	3.2	2.5	2.3	2.8	2.6	0.2
	SS17	3.2	3.2	4.2	4.2	4.4	5.0	4.7	4.8	5.7	32.1	-26.4
	SS18	7.1	7.1	9.5	9.1	8.9	9.9	20.3	11.3	12.1	38.2	-26.1
	SS22 ^[1]	0.3	-0.3	0.5	0.5	0.5	1.6	0.8	1.0	0.9	3.7	-2.8
	SS23 ^[1]	1.0	-0.5	1.3	-2.1	-1.0	-0.1	-0.3	-0.7	-1.7	0.4	-2.2
Ceriops forest / tidal flat	SS05	2.8	2.6	2.1	3.1	4.1	3.6	3.7	7.5	6.4	44.8	-38.5
	SS06	1.4	1.2	0.8	1.3	0.9	1.7	2.1	2.3	2.3	3.6	-1.3
	SS08	8.9	10.1	11.1	11.4	11.6	13.3	13.9	15.2	15.5	16.7	-1.2

Notes:

1 New corner posts were installed in 2018 after damages from cyclone Marcus. A new baseline was establish resulting in significant different data from the previous years.

2 Sites 15A and 16A were established in 2015

3 N/A indicates data unavailable

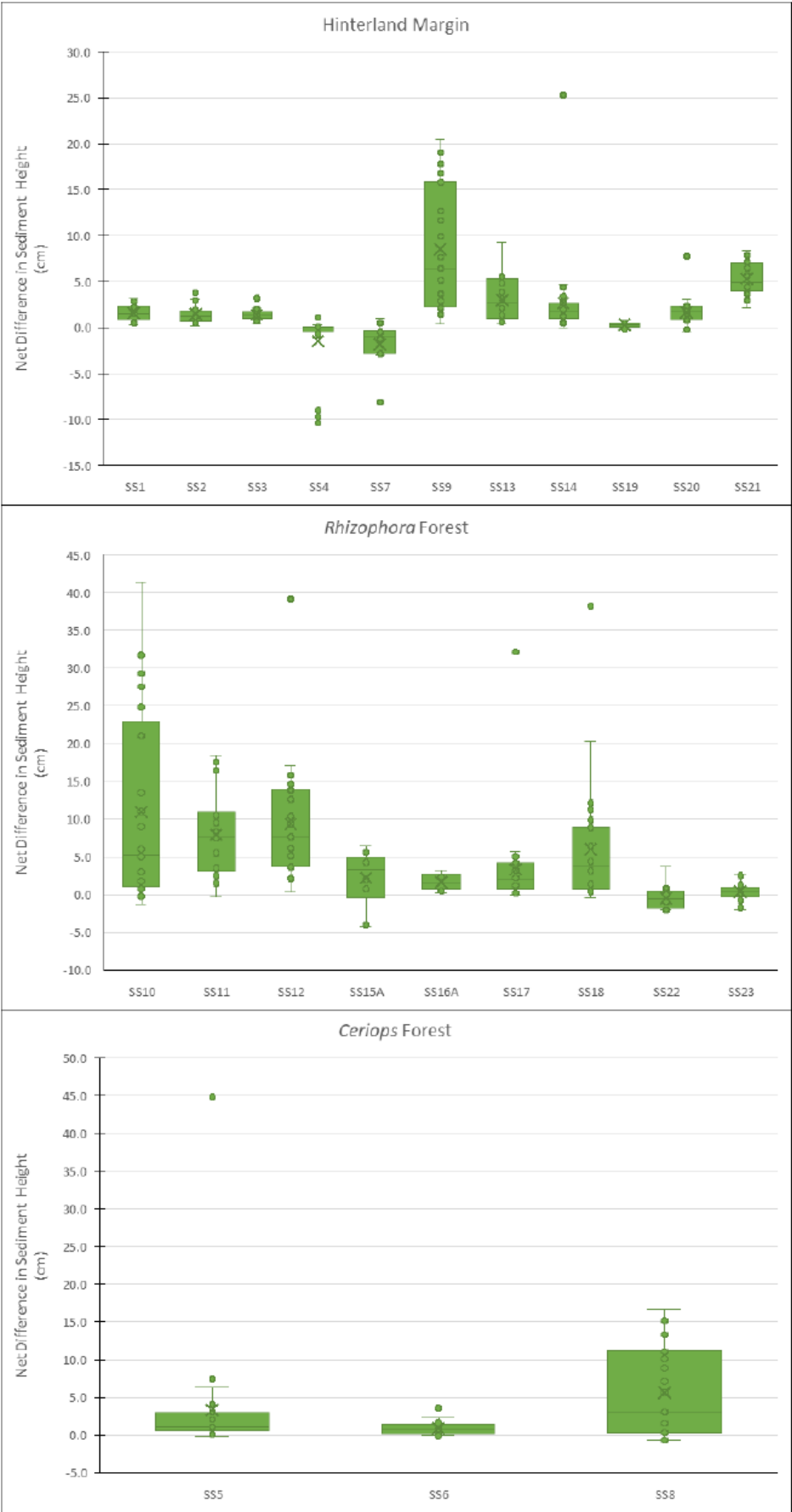


Figure 3-11: Change in sediment height distribution since baseline (2003 to 2025)

3.2.3.6. Groundwater Conditions

Groundwater monitoring was undertaken at sites potentially exposed to modification by freshwater input from the DLNG site, thus representing a potential impact to the mangrove health. A total of 15 shallow (<2 m) groundwater monitoring bores were installed in the “hinterland fringe” mangrove zone and are monitored for depth (below ground level) to the water table, salinity (TDS) and pH. Groundwater monitoring results from hinterland monitoring sites from 2016 to 2025 are presented in **Table 3-11**. Key findings include:

- Between 2003 and 2006, groundwater monitoring conditions were analysed quarterly. During the wet seasons, salinity concentrations were lower, and water levels were elevated closer to the ground surface by comparison with the dry season when salinity levels increase, and water was lower in the bores. These data demonstrate the seasonal variability of rainfall patterns between annual wet and dry seasons (**Table 3-11**).
- Since the end of the construction phase in 2006, mangrove monitoring events have been undertaken only during the dry season and mostly coincided with neap tides. The 2025 monitoring survey was undertaken during spring tides and likely inundated the entire mangrove zone, including the hinterland fringe sites and groundwater sampling sites. All groundwater sites were sampled, excluding SS1, SS5, SS19 and SS20 due to being dry.
- SS7 recorded a higher level of salinity compared to previous years (**Table 3-11**). SS21 recorded a lower level of salinity than in 2024, but levels remained higher than in earlier years. This is likely due to the surveys being conducted during spring tides, causing seawater to inundate the groundwater bores prior to sampling. **Table 3-11** provides the mean and range of salinity data recorded since baseline.

Table 3-11: Groundwater salinity (TDS ‰) at hinterland mangrove monitoring sites

Site No.	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Salinity Range and Mean (PSU) ^[2]
SS1	N/A	NW	NW	NW	NW	NW	NW	NW	NW	NW	49 (6 – 78)
SS2	NC	70	73	NW	65	NW	NW	51	NW	NC*	59 (22 – 73)
SS3	NC	69	67	68	66	64	51	50	47	NC*	58 (22 – 72)
SS4	NC	66	NW	NW	63	62	NW	NW	NC*	NC*	59 (22 – 73)
SS5	60	59	58	55	60	52	58	59	NW	NW	58 (40 – 66)
SS6	70	61	NW	NW	62	56	52	NW	NC*	NC*	62 (45 – 76)
SS7	NC	48	NW	NW	45	42	39	32	53	59.5	43 (2 – 70)
SS9	67	70	72	70	60	68	33	49	NC*	NC*	64 (33 – 73)
SS13	NC	NW	24	NW	52	50	NW	NC	66	NC*	46 (12 – 66)
SS14	68	67	69	66	37	58	NW	50	70	NC*	57 (12 – 71)
SS19	65	22	NW	NW	54	50	63	NC*	63	NW	49 (2 – 68)
SS20	NC	NW	NW	NW	26	NW	65	NW	NC*	NW	37 (5– 70)
SS21	NC	40	41	NW	41	22	NW	35	60	56.12	36 (5 – 67)

Note: 1. "NC" indicates that sample/data was not collected due to lack of water in the bore

2. Salinity range and mean data 2004 to 2025.

3. salinity data was not collected due to technical issues with the water quality meter.

3.2.4. Monitoring Results – Mangrove Sediments

Mangrove ecosystems are known to act as physical and biogeochemical barriers to pollutant transport. Sediments in mangrove ecosystems are also reservoirs of heavy metals and hydrocarbons due to their physical and chemical properties. Mangrove sediments are anaerobic and reduced, as well as rich in sulphide and organic matter, properties which have strong influences on metal mobilisation and bioavailability (Silva et al. 1990; Clark et al. 1998).

Sediment sampling was undertaken at 14 sites (refer to **Figure 3-8** and **Figure 3-9**). Sediment samples were analysed for particle size, acid soluble metals (cadmium, chromium, copper, iron, manganese, nickel, lead and zinc) and hydrocarbon concentration.

Metal concentrations in sediment samples were compared against the Australian and New Zealand Guidelines (ANZG) sediment guideline values (ANZG, 2018). ANZG (2018) provide two sediment quality guideline values, the 'DGV' (Default Guideline Value) and 'GV-high' values. The DGVs indicate the concentrations below which there is a low risk of unacceptable effects occurring, and should be used, with other lines of evidence, to protect aquatic ecosystems. In contrast, the 'upper' guideline values (GV-high) provide an indication of concentrations at which you might expect to observe toxicity-related adverse effects. As such, the GV-high value should only be used as an indicator of potential high-level toxicity problems, not as a guideline value to ensure protection of ecosystems. The ANZG (2018) guidelines therefore provide values which can be used to assess whether contaminant concentrations at the sites are likely to have adverse impacts on the biotic communities at those sites.

The 2025 results were compared with historical data and relevant criteria. Key findings are summarised in **Sections 3.2.4.1, 3.2.4.2 and 3.2.4.3** below.

3.2.4.1. Sediment Particle Size

During the 2025 monitoring event, roughly half the monitoring sites recorded a majority of fine material (silt and clay) whilst the other half recorded more coarse material (gravel and sand). There was no clear distinction in sediment grain size between the impact and reference monitoring sites.

3.2.4.2. Metals in Sediments

In 2025, concentrations for all metals were below the respective DGV's or GV-high trigger values, except for zinc at Sedimentation Pond 1. This is consistent with historical results where zinc has exceeded the guidelines at some of the sites downstream of Sedimentation Pond 1. An association with zinc, manganese and iron in sediments is still evident with the outfall from three sedimentation ponds, however the results show a decreasing trend in concentration as distance from the pond outfalls increases.

Concentrations of zinc derived from the acid soluble metals analysis exceeded the ANZG (2018) default guideline value (200 mg/kg) at site SP1 (300 mg/kg) (**Table 3-12**). Between 2006 and 2025, exceedances of total zinc concentrations were recorded at sites downstream of SP1 (SP1, SP1-A, SP1-B), with most years showing elevated levels except for 2013–2015, 2017, and 2022.

Sediment analysis has moved from total metal analysis to acid soluble metals analysis only in 2020 as this represents the biologically available fraction (zinc still exceeded guideline values in 2020, 2021 and 2023 to 2025) (**Table 3-12**).

Figure 3-12 shows the zinc concentrations at sites located downstream to Sediment Pond 1. These sites include SP1 (23 m), SP1-A (60 m), SP1-B (80 m) and SP1-C (120 m) and the results typically show the decreasing trend in concentration as distance from the pond outfall increases indicating that some form of anthropogenic influence in the area immediately downstream of Sediment Pond 1. The scale of this influence appears to have been localised and confined to areas within the DLNG Approved Disturbance Boundary.

This influence appears to be variable with historical data showing higher zinc concentration at SP1 or SP1-A. However, historical zinc concentration data for Sediment Pond 1 water includes the dissolved fraction only and is insufficient to assess discharge loads from this point source.

Similar patterns were observed downstream of SP2 and SP3, with elevated zinc concentrations at SP2-A (18 mg/kg) and SP3 (46 mg/kg), and lower levels at SP2 (14 mg/kg) and SP3-A (16 mg/kg). Discharge from SP1 is continuous due to greensands filter backwash (under EPL 217-05), while SP2 and SP3 discharge passively during wet season rainfall events. Elevated sediment zinc concentrations downstream of SP1 and SP2 remain confined within the DLNG Approved Disturbance Boundary.

Dissolved zinc discharge concentrations between 2020 and 2025 range from <2.6 µg/L to 520 µg/L. The ANZG state that the GV-high value should only be used as an indicator of potential high-level toxicity problems, not as a guideline value to ensure protection of ecosystems. They recommend using multiple lines of evidence as part of the weight-of-evidence process to better assess the risk to a sediment ecosystem if a DGV is exceeded or even where toxicant concentrations in the sediment are trending towards the DGV. Assessments of toxicity may also be refined by assessing the organic carbon content. Using this assessment process, the occurrence of the zinc concentration exceedances is considered low risk based on the following conclusions:

- No consistent increasing trends.
- The extent of elevated concentrations appears small and localised (within the DLNG disturbance boundary).
- The environmental exposure is limited; and

- The broader mangrove metrics demonstrate system health.

It should be noted that monitoring is ongoing, and that further assessment may be warranted in the future.

Table 3-12: Zinc concentrations in mangrove sediments (mg/kg dry weight)

Location	Site	2018	2019	2020	2021	2022	2023	2024	2025
ANZG (2018) DGV (Default Guideline Value)		200							
ANZG (2018) GV-high		410							
Wickham Pt	LG1	2	27	27	12	9.7	6.2	20	11
	LG2	3	18	30	17	11	5.0	22	11
	LG3	1	13	11	11	8.1	3.5	10	10
	SP1	170	33	520	210	150	710	530	300
	SP1-A	170	48	340	98	57	24	92	200
	SP1-B	73	64	13	51	18	34	65	6.2
	SP1-C	3	27	9	16	14	11	22	25
	SP2	9	30	64	37	17	42	24	14
	SP2-A	ND	ND	100	140	79	7.1	78	18
	SP3	ND	ND	46	70	44	34	82	46
	SP3-A	ND	ND	13	9	6.2	2.6	27	16
Control Site	M3	11	24	35	18	11	6.9	29	14
	E1	15	15	4	6	10	3.5	24	16
	C2	4.6	6	6	5	3.6	<1	3.7	<1

Note: ND means no data collected.

Bold data means it has met or exceeded the DGV

Bold and **red** data means it has met or exceeded the GV-high

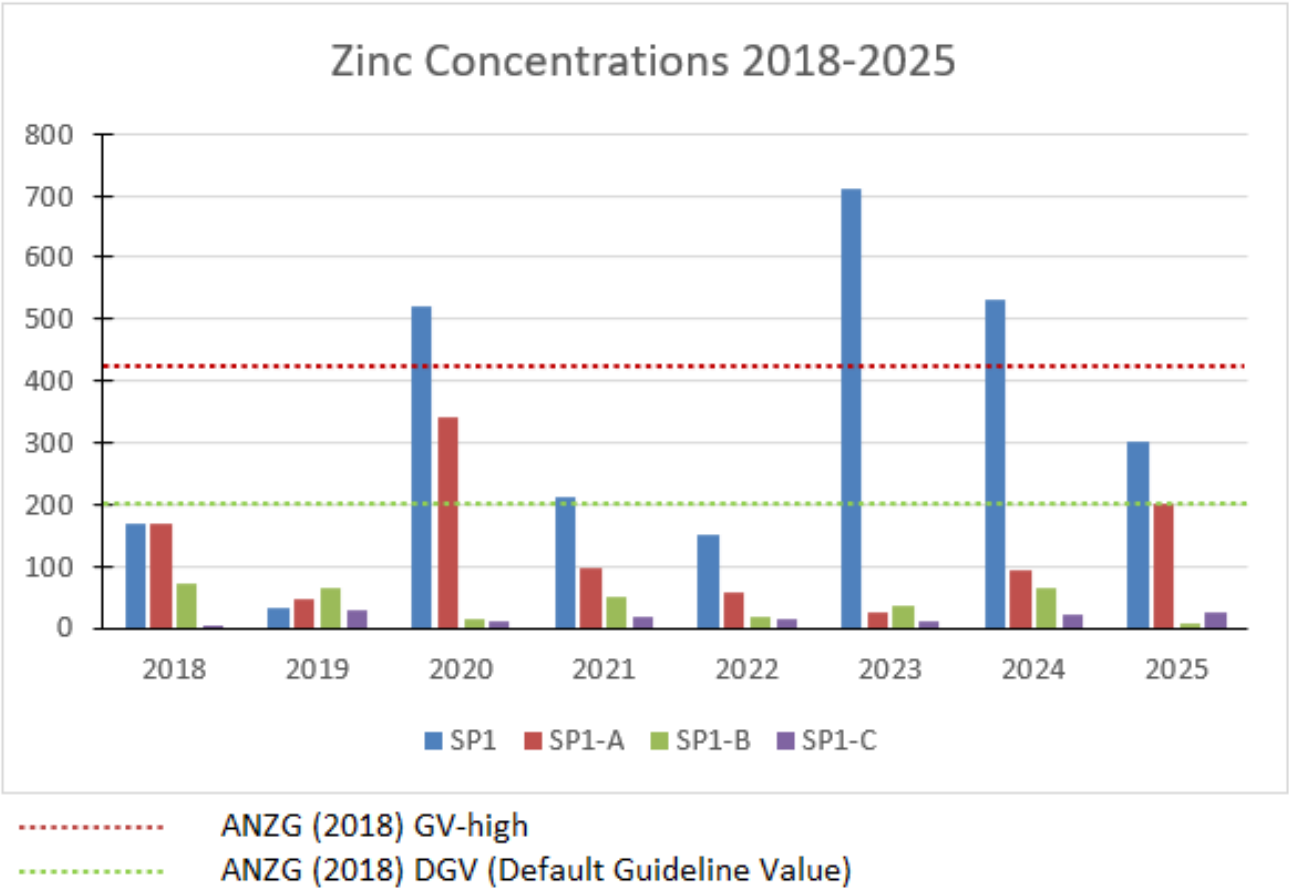


Figure 3-12: Zinc concentrations at sites located downstream to Sediment Pond 1

3.2.4.3. Hydrocarbons in Sediments

Between 2012-2020 levels were below laboratory LOR. In 2021 and 2023, hydrocarbons were detected across all sites, and in four sites in 2022, however these were not associated with site activities and are likely reflective of regional conditions. Analysis of hydrocarbons in pond water was discontinued in 2018 (Appendix B) and association of hydrocarbons in sediment with presence in pond water is not possible, however no hydrocarbon spills from site have been reported. During the 2025 mangrove monitoring program, all sediment samples reported hydrocarbons below the laboratory LOR (**Table 3-13**).

Table 3-13: Hydrocarbons concentrations in sediments at all sites

TPH in sediments (mg/kg)																					
LOR		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
DGV		N/G																			
GV-High		N/G																			
Location	Site	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Wickham Pt	LG1	<0.1	65	82	28	5.5	28	<0.1	<2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	150	<0.2	49	<0.2	<0.2
Wickham Pt	LG2	<0.1	25	52	22	<0.1	7.7	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	42	<0.2	59	<0.2	<0.2
Wickham Pt	LG3	<0.1	41	73	7.4	26	28	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	170	<0.2	62	<0.2	<0.2
Wickham Pt	SP1	ND	ND	53	1.2	<0.1	26	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	120	830	140	<0.2	<0.2
Wickham Pt	SP1-A	ND	85	54	1.9	66	4.6	<0.1	<2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	160	<0.2	43	<0.2	<0.2
Wickham Pt	SP1-B	<0.1	31	45	23	4.6	72	<0.1	<2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	160	<0.2	51	<0.2	<0.2
Wickham Pt	SP1-C	ND	88	46	21	8.8	27	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	150	<0.2	46	<0.2	<0.2
Wickham Pt	SP2	<0.1	63	48	8.1	<0.1	12	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	96	<0.2	45	<0.2	<0.2
Wickham Pt	SP2-A	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.2	58	2,000	40	<0.2	<0.2
Wickham Pt	SP3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.2	110	250	36	<0.2	<0.2
Wickham Pt	SP3-A	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.2	100	<0.2	41	<0.2	<0.2
Control Site	M3	<0.1	94	100	10	20	21	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	220	<0.2	67	<0.2	<0.2
Control Site	E1	<0.1	54	43	<0.1	22	20	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	120	410	41	<0.2	<0.2
Control Site	C2	ND	ND	ND	ND	ND	ND	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	150	<0.2	37	<0.2	<0.2

N/G" indicates no guidelines; "ND" indicates no data

3.2.4.4. Bioaccumulation

Biota analysis allows an assessment of bioavailability of specific elements in sediments and water which may be influenced by site activities. Telescopium or mudwhelks are an appropriate organism to assess bioavailability of sediments and pore waters. This is because they are benthic feeders and have limited mobility between areas and hence are likely to ingest surface contaminants representative of an area.

Mudwhelks were collected from a total of twelve sites (refer to **Figure 3-8** and **Figure 3-9**) and tested for moisture, metals and hydrocarbons and compared against the Food Standards Australia New Zealand (FSANZ 2005) guidelines. The FSANZ (2005) criteria for molluscs provides maximum levels (**MLs**) for contaminants to not be exceeded in the specified food items. Generally Expected Levels (**GELs**) have been introduced to maintain the lowest achievable levels of contaminants in food. GELs were derived from analysis of uncontaminated samples of various foods, with the 90th percentile representing the value below which 90% of the values fell. It should be emphasised that the criteria levels relate to potential human health risk and do not imply that the health of the molluscs would be adversely affected at metal concentrations exceeding these levels.

Key findings include:

- Metal concentrations observed in the 2025 mudwhelk samples were below the recommended FSANZ ML and GEL for all metals except copper.
- Copper concentrations of 35 mg/kg at SP1-A and 36.4 mg/kg at SP1-B were recorded which exceeded the GEL of 30mg/kg. However, three control sites also exceeded the GEL 90th Percentile. These concentrations are consistent with historical data and within the range of previous studies undertaken in Darwin Harbour (Peerzad et al., 1990). Concentrations of copper in the mudwhelk colonies occurring in mangroves adjacent to the Darwin LNG do not suggest exposure to copper contamination.
- Exceedances of the zinc DGV have only been recorded four times since 2006, twice at site SP1 in 2012 (318 mg/kg) and 2023 (252 mg/kg), once at site SP1-B in 2018 (414 mg/kg) and again in 2025 at site SP1-C (400 mg/kg).
- Darwin Harbour wide sampling for 16 locations in previous studies have recorded elevated sediment zinc concentration. This suggests that the elevated concentrations of zinc is not conclusive of any influence from site and no increasing trend over time has been observed.
- Previous years have recorded elevated zinc concentrations in mudwhelks and seen some relationship between levels in sediments and mudwhelks. In 2025, elevated zinc levels within mudwhelks were recorded at SP1-C (Figure 3-13). There is no relationship between the elevated zinc concentrations in mudwhelks and sediment at SP1-C.
- There was no evidence of any hydrocarbon contamination within the mudwhelks sampled. All mudwhelk samples reported TPH below the laboratory limit of reporting in 2025.

Table 3-14: Metal concentrations in biota (mg/kg wet weight) (2025)

Location	Site	Metal Concentrations (mg/kg wet weight)							
		Cd	Cr	Cu	Fe	Mn	Pb	Ni	Zn
FSANZ Maximum		2	N/G	N/G	N/G	N/G	2	N/G	N/G
GEL 90th Percentile		N/G	N/G	30	N/G	N/G	N/G	N/G	290*
Wickham Pt	LG1	0.81	0.87	28.5	720	450	0.33	3.00	81
	LG2	0.70	0.26	24.7	260	312	1.508	2.86	96.2
	LG3	0.13	1.49	24.09	990	36.3	1.32	0.83	19.47
	SP1-A	0.10	0.28	35	107.5	92.5	0.25	0.25	35
	SP1-B	0.08	0.25	36.4	196	75.6	0.28	0.28	16.8
	SP1-C	0.20	0.28	23.75	800	525	0.525	1.43	400
	SP2	0.03	0.32	25.48	28	33.6	0.28	0.28	18.2
	SP3-A	0.06	0.25	25.6	169.6	35.2	0.32	0.32	19.2
Control Site	M3	0.43	0.25	37.5	275	235	0.25	2.08	92.5
	E1	0.80	0.28	42.5	400	875	0.275	5.50	127.5

Location	Site	Metal Concentrations (mg/kg wet weight)							
		Cd	Cr	Cu	Fe	Mn	Pb	Ni	Zn
	C2	0.13	0.45	37.5	650	37.5	0.25	0.70	12.25

Note: Exceedances are highlighted in bold.
N/G indicated no guideline
* The DGV for Zinc relates to the consumption specifically of Oysters and not Mudwhelks and therefore should be interpreted with this in mind.

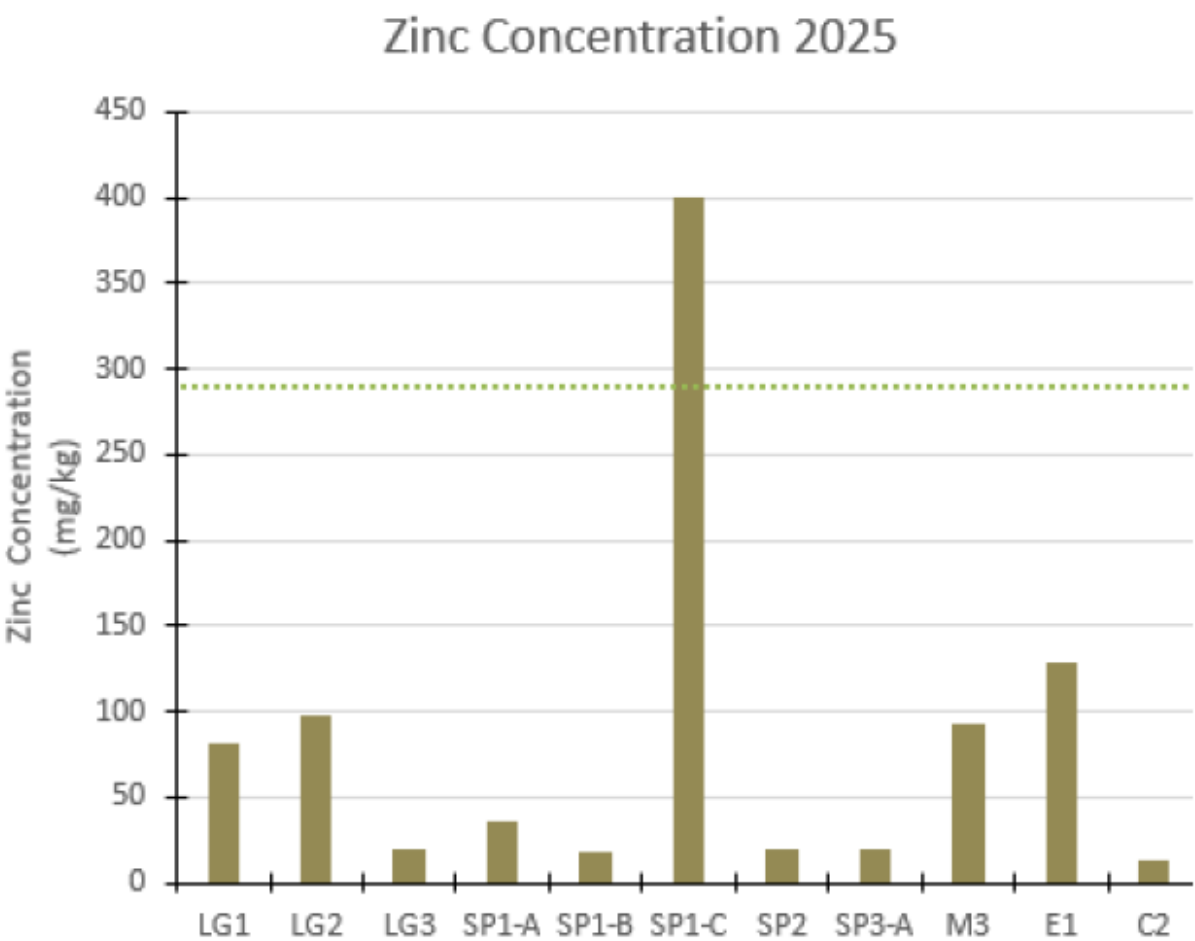


Figure 3-13: Zinc concentrations for biota at all sites

3.2.5. Data Management and Quality Control

The Quality Assurance and Quality Control results detailed in Darwin LNG Mangrove Monitoring 2025 Annual Report (CDM Smith, 2025e) indicate the results are acceptable for the purposes of the mangrove assessment.

A QA/QC program was implemented during the mangrove monitoring event, which included:

- Use of qualified staff for all sampling activities.
- Use of standardised sampling procedures including prescribed sample storage/transport and equipment decontamination.
- Use of NATA accredited laboratories to undertake the required analysis of samples.
- The collection and analysis of blind field duplicate samples.

Consultant CDM Smith assessed the data against the Data Quality Indicators and data acceptance criteria in order to assess whether the Data Quality Objectives were satisfied. A summary of the QA/QC results is as follows.

- Analyses of the duplicate sediment sample returned RPDs of less than 50% for all analytes except for Lead (58.33%). Sediments are known to be highly heterogenous and in consideration of the laboratory QA/QC report and weight of compliant results, these data are considered suitably reliable.
- Field duplicate samples of mudwhelk tissue were homogenised and separated into duplicates by the laboratory before analysis. Biota samples returned RPDs of less than 50% for all analytes except for Cadmium (93.33%). The high RPD was confirmed with the lab, however, due to nature of biota, results can vary a reasonable amount based on which parts of the animal are in the subsample that is taken.
- Laboratory QA/QC indicated no outliers occurred with the standard quality control processes including matrix spikes, duplicates or analysis of blanks. The useability of the dataset and laboratory's method precision and accuracy is considered unlikely to materially affect the outcomes of the assessment.

3.2.6. Remotely Piloted Aircraft Systems (RPAS) Trial

3.2.6.1. Remote Sensing (RPAS) Trial

A remote sensing trial was conducted in 2023, 2024 and replicated in 2025, providing detailed data on mangrove health and canopy cover. Analysis of the detailed imagery captured by Remotely Piloted Aircraft Systems (RPAS) has provided data that is analogous with that collected during ground-based surveys. The remote sensing trials conducted during 2023, 2024 and again in 2025 indicate that future monitoring of forest health at DLNG can be streamlined by using RPAS, while significantly enhancing the detection of fine-scale changes in mangrove distribution and status. RPAS data and imagery collected in 2024 was used as the baseline for the 2025 report and now underpins calculations of change over time.

3.2.6.2. Remote Sensing (RPAS) Methodology

To adequately accommodate the trial of RPAS-based remote sensing into the existing DLNG Mangrove Monitoring Program (MMP), an aerial mapping survey of approximately 34 ha was developed for the 2025 survey. Aerial mapping of the DLNG plant was separated into 12 survey areas (i.e., DLNG-1 to 11 and the Pipeline Shore Crossing), with 2-3 missions flown each day. This remote sensing program allowed for the aerial mapping of all 23 mangrove surveillance sites to be conducted within the 5 days allocated for the MMP field survey.

Aerial surveys conducted at DLNG during the August 2025 survey were performed using a DJI Phantom 4 Multispectral (P4-M) drone. The P4-M is a precision, multispectral imaging system commonly used in land cover classification and vegetation mapping. RPAS missions were developed in QGIS 3.32.3, with shapefiles exported into the flight planning software DJI Ground Station Pro. True-colour and multispectral imagery was produced during each flight, with 5 bands collected: RGB visible-light and Blue (B), Red (R), Green (G) and Near infrared (NIR) bands.

RPAS missions were flown at a height of 50 m Above Ground Level (AGL), with front and side overlap of 80% and 75%, producing imagery with a spatial resolution of 2.6 cm per pixel. Flights were performed between 0830-1200 noon each day to standardize light intensity and spectral conditions between surveys, and to reduce impacts from strong winds and high temperatures.

Before each flight, IMU (Inertial Measurement Unit), compass, gimbal and vision sensors of the P4-M were calibrated and the photos of the MAPIR reflectance MAPIR Diffuse Reflectance Standard Calibration Target Package (V2) panel were taken. Radiometric calibration of multispectral imagery was done using the sun sensor option in Agisoft Metashape: calibration using the MAPIR reflectance panel can be done in future surveys, with orthomosaic photomaps redrawn as required.

Image processing was conducted in Agisoft Metashape Professional (64 bit) with sparse and dense point clouds, a 3D model, DEM (Digital Elevation Model) and orthomosaic photomaps produced from each survey area. True-colour and multispectral orthomosaics were subsequently imported into QGIS 3.32.3 and False-colour (NIR-R-G) imagery was generated for each survey area. Composite False-colour and RGB visible-light images were then produced for each of the 23 surveillance sites, with each plot visually inspected for forest cover and vegetation health.

To produce key on-ground mangrove health indicators similar to Canopy cover and Defoliation Index from aerial imagery, Fractional Vegetation Cover (FVC) and the Normalization Difference Vegetation Index (NDVI) were chosen to provide substitutive measurements of forest cover and quantitative data on vegetation health.

Fractional Vegetation Cover

Fractional Vegetation Cover describes the proportion of the horizontal ground surface covered by live, photosynthetic vegetation as seen from the overhead perspective. FVC is an excellent substitute for on-ground canopy cover measurements as this index quantifies the spatial extent of live vegetation.

To calculate FVC of mangrove forests the Excess Green vegetation index was used, as it is effective at distinguishing forest canopy from soil and non-photosynthetic material and allows for threshold-based image classification in QGIS.

Normalised Difference Vegetation Index (NDVI)

The Normalised Difference Vegetation Index (NDVI) is a measure of the greenness and amount and vigour of vegetation.

The NDVI index detects and quantifies the presence of living green vegetation using this reflected light in the visible and near-infrared bands to quantify the health and density of vegetation. NDVI is considered as an excellent substitute for on-ground defoliation index measurements as it quantifies the health of vegetation.

3.2.6.3. Remote Sensing (RPAS) Results

RPAS-based monitoring was first trialled in 2023 and repeated in 2024 and 2025. Previous RPAS trials at DLNG have shown that the remotely-sensed vegetation indices FVC and NDVI were comparable to traditional on-ground methods and that the two indices employed are powerful tools for monitoring mangrove forest cover and plant health. As observed in 2024, FVC and NDVI closely corresponded with canopy cover and defoliation Index, yielding results comparable to on-ground assessments. The 2024 aerial imagery will therefore serve as the baseline for future monitoring.

To efficiently map all 23 surveillance sites and other areas of interest at DLNG, twelve aerial survey areas [(i.e., DLNG-1 to 11 and Pipeline Shore Crossing (PLSC))] were used to capture imagery of the mangroves surrounding the plant (**Figure 3-15**).

Figure 3-15 presents true-colour (RGB) images of the 23 mangrove surveillance sites recorded during the 2025 survey. These high-resolution images illustrate variation in canopy cover, forest structure, and species composition across the monitored plots. The figure also demonstrates the utility of multispectral imagery, particularly through the application of FVC and NDVI metrics, which enable detection of subtle differences in forest condition that are not readily discernible through visual assessment alone.

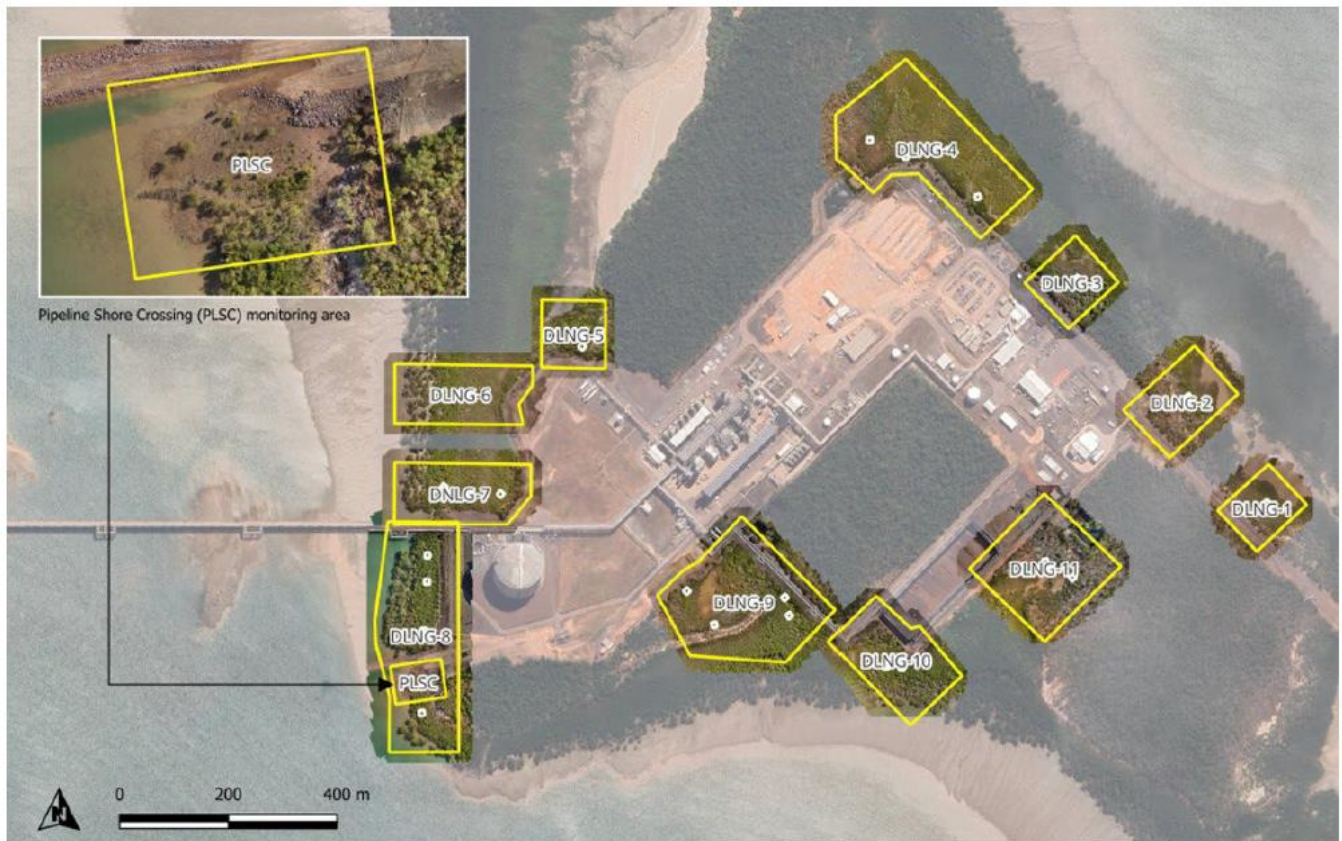


Figure 3-14: Location and extent of the RPAS-based monitoring undertaken at the DLNG plant during the August 2025 survey. Aerial surveys included all 23 surveillance sites (SS01-SS23), the Pipeline Shore Crossing (PLSC) and sedimentation ponds SP1, SP2 and SP3.



Figure 3-15: True-colour imagery (RGB) of the 23 DLNG surveillance site recorded during the August 2025 survey. Note the differences in forest structure, canopy cover and species composition within each plot.

3.2.6.4. Fractional Vegetation Cover (FVC) and Normalised Difference Vegetation Index (NDVI)

Table 3-15 presents FVC (%) recorded at each of the 23 surveillance sites during the current survey and short-term (annual) changes between the previous 2024 survey.

Overall differences in FVC between 2024 and 2025 were minor (-2.1 to +11.3), with most sites showing small increases in live green cover (**Table 3-15**). All increases in FVC greater than 5% were recorded in the landward (Hinterland margin) and mid-shore (Ceriops) mangrove forests. The notable increase in FVC (+11.3%) measured at SS07 is possibly explained by new plant growth documented in the lower canopy of Ceriops trees at this site during centre to corner photo monitoring.

NDVI (canopy fullness and health) measurements recorded during the 2025 survey were very similar to the previous year, with no change or small increases documented (**Table 3-16**). As with the former vegetation index, all increases in NDVI were recorded in the two landward assemblages - the Hinterland margin and Ceriops forests (**Table 3-15**).

Table 3-15: Mean Fractional Vegetation Cover

Assemblages	Site	Fractional Vegetation Cover ¹ (%) Change 2024		Difference between 2024-2025
		2024	2025	
Hinterland margin	SS01	79.6	85.3	5.6
	SS02	89.0	96.4	7.4
	SS03	62.8	70.7	7.9
	SS04 ^[1]	96.05	96.8	0.3
	SS07 ^[1]	53.2	64.4	11.3
	SS09	93.6	95.9	2.2
	SS13	95.5	95.2	-0.2
	SS14	66.1	73.9	7.7
	SS19	56.4	57.4	1.0
	SS20	54.1	63.9	9.8
	SS21	95.6	94.3	-1.3
Rhizophora forest	SS10	90.6	91.7	1.1
	SS11	84.1	83.9	-0.2
	SS12	90.9	93.0	2.1
	SS15A ^[2]	76.2	74.1	-2.1
	SS16A ^[2]	85.9	89.9	4.1
	SS17	94.3	95.6	1.3
	SS18	93.6	94.4	0.8
	SS22 ^[1]	93.2	93.7	0.5
	SS23 ^[1]	75.2	73.3	-1.9
Ceriops forest / tidal flat	SS05	85.7	83.9	-1.8
	SS06	73.9	82.2	8.3
	SS08	73.0	79.9	6.9

¹FVC is now presented as percentage (%) to better display changes over time.

Table 3-16: Normalised Difference Vegetation Index

Assemblages	Site	NDVI (0 -+1)		Difference between 2024-2025
		2024	2025	
Hinterland margin	SS01	0.61	0.66	0
	SS02	0.69	0.76	0.1
	SS03	0.74	0.79	0.1
	SS04 ^[1]	0.73	0.72	0
	SS07 ^[1]	0.50	0.53	0
	SS09	0.70	0.77	0.1
	SS13	0.79	0.79	0
	SS14	0.59	0.61	0
	SS19	0.58	0.66	0.1
	SS20	0.55	0.68	0.1
	SS21	0.85	0.89	0
Rhizophora forest	SS10	0.79	0.79	0
	SS11	0.80	0.81	0
	SS12	0.82	0.82	0
	SS15A ^[2]	0.70	0.70	0
	SS16A ^[2]	0.75	0.76	0
	SS17	0.78	0.81	0
	SS18	0.80	0.82	0
	SS22 ^[1]	0.79	0.81	0
	SS23 ^[1]	0.71	0.69	0
Ceriops forest / tidal flat	SS05	0.63	0.65	0
	SS06	0.58	0.63	0
	SS08	0.58	0.65	0.1

3.2.6.5. Monitoring the PLSC Using RPAS-based Remote Sensing

RPAS-based remote sensing showed that completion of intertidal earthworks associated with the DPD Project had notable impacts on the PLSC monitoring area. Aerial surveying in 2025 revealed that mangrove regrowth had been cleared across an area covering almost half of the PLSC (**Figure 3-16**), in accordance with DPD Project environmental approvals.

Measurements of FVC recorded during 2025 showed that approximately 430 m² of live green vegetation now covers the PLSC, equating to about 14% coverage of the total monitoring area (**Figure 3-17**). Based on FVC measurements of live vegetation recorded prior to earthworks in 2023, approximately 95-100 m² of regrowth mangroves have been cleared within the PLSC monitoring area by August 2025 (**Figure 3-16**). Aerial imagery showed this clearing included numerous large *Sonneratia* trees and smaller sparse understory vegetation, i.e., shrubs, small trees and saplings and seedlings (See **Figure 3-17**).

Based on the area cleared during intertidal earthworks, roughly 19% of the naturally reforested mangroves (i.e., trees, saplings, shrubs and seedlings) were removed from the PLSC monitoring area. NDVI analysis showed that intertidal earthworks had no observable impacts on the remaining mangroves at the PLSC, with all vegetation still being in a healthy condition (**Figure 3-17**). Large trees and the dense thicket of mangroves (mostly *Rhizophora stylosa*) that has formed in the central up-shore section of the monitoring area all still displayed relatively luxuriant foliage (**Figure 3-17**).

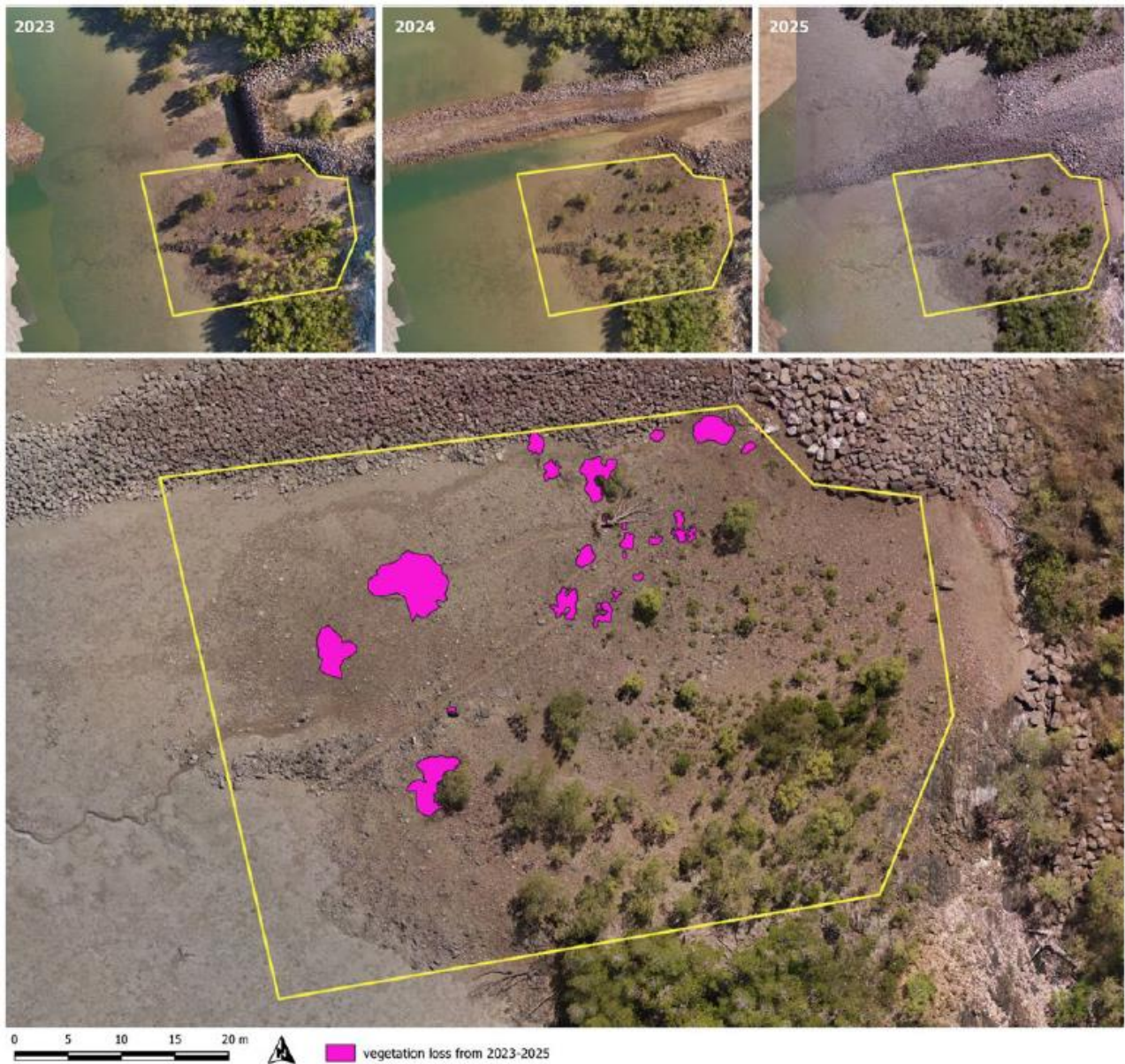


Figure 3-16: Changes at the PLSC from 2023 to 2025 associated with the DPD Project (top row). Extent of mangrove clearing after intertidal earthworks is shown in pink (bottom)

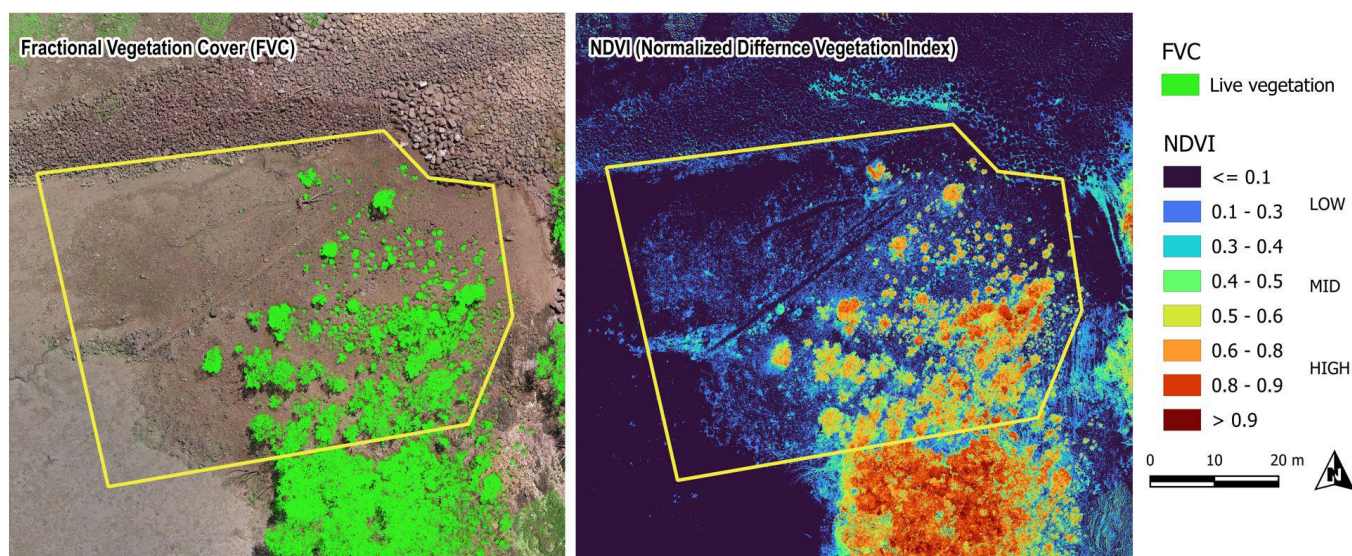


Figure 3-17: FVC and NDVI maps of the PLSC produced from orthomosaic imagery collected during the August 2025 survey

3.2.6.6. Limitations of RPAS Monitoring Techniques

Overall comparisons between remotely sensed data and traditional on-ground methods shows that FVC measurements are a good analogue for Canopy cover and Defoliation Index. However, as outlined above, RPAS-based and on-ground methods are not directly comparable as different amounts of forest cover are measured. Differences between FVC and Canopy cover readings are expected, as the birds-eye-view measurements of the former are likely to capture forest canopy features not observable with the densiometer method. This limits the direct comparisons between methods.

However, it does not diminish the value of aerial surveys in monitoring mangrove forest health.

The NDVI quantifies the density and health of vegetation by calculating the visible and near-infrared light reflected by vegetation. As such, direct comparisons between NDVI and Canopy cover and the Defoliation Index are not appropriate.

NDVI is also prone to over-saturation, whereby in areas of dense vegetation of high biomass NDVI measurements become insensitive to increases in vegetation. As discussed in the previous report, high NDVI measurements often mask adjacent forest canopy gaps, with over-saturation washing out notable holes in the forest canopy.

Overall, despite these limitations, it is evident from RPAS trials conducted during 2023, 2024 and 2025 that both FVC and NDVI represent valuable vegetation indices that can be acquired rapidly and efficiently for monitoring mangrove forest health at the DLNG plant (**Table 3-16**).

3.2.7. Discussion and Interpretation of Results

Mangroves remain in good condition, with canopy cover characteristic of healthy mangrove assemblages. Examination of long-term trends in canopy data demonstrate that mangrove health has remained stable or has slightly improved during the 23 years since program commencement. Notable historic declines in canopy cover since baseline (i.e., between -13% to -18%) were recorded at only two sites but diminished cover at these sites was associated with localized natural forest senescence potentially associated with a lightning strike (SS03) and cyclone damage in 2018 (SS23). Both declines in canopy cover are unrelated to impacts from the DLNG plant.

Notable increases in canopy cover since baseline are attributable to a range of factors including use of the tripod-mounted densiometer (i.e survey methodology), natural forest growth, sea level rise and beneficial changes in freshwater drainage associated with the DLNG footprint.

The 2025 canopy cover results indicate that there has been no significant decline in mangrove forest health surrounding the DLNG plant. Furthermore, no adverse changes were detected that could be attributed to the construction or ongoing operation of the facility.

Combined with canopy cover, defoliation index data indicates that mangrove forests surrounding the DLNG plant remain in a healthy condition. Long-term patterns in defoliation index data indicate that mangrove canopy

health/fullness has increased slightly at 26% of sites and declined slightly at 30% of the 23 monitoring sites, and no change at the remaining sites.

Photo monitoring in 2025 showed that the mangrove forest structure, species composition and physiognomy has remained remarkably stable at most surveillance sites for the past seven years. The photo monitoring proved to be an effective rapid surveillance technique, confirming that the healthy condition of mangroves at the 23 monitoring sites surrounding DLNG has been maintained. The monitoring also indicated that active recovery from the 2018 cyclone damage is underway, evidenced by seedling recruitment in canopy gaps.

Changes in sediment heights were consistent with previous years monitoring at most sites and there was no evidence of substantial erosion or sedimentation that has the potential to affect mangrove health. Metal results in sediments indicate concentrations of zinc only exceeded the ANZG at site SP1. This is consistent with previous monitoring results. Detections of TPH were lower than the LOR in all sediment samples.

There was two exceedances in copper concentrations in mudwhelks at Wickham Point (SP1-A and SP1-B) in 2025, however there were also exceedances at three control sites. These concentrations are consistent with historical monitoring events and there was no evidence of any hydrocarbon contamination within mudwhelks sampled.

Increased efficiency of executing the mangrove monitoring program could be achieved by reducing the scope of ground-based monitoring and increased reliance in RPAS. The 2023, 2024 and 2025 trials have demonstrated that RPAS data is analogous with ground-based estimates and measurements of key indices of mangrove health and could therefore replace these during future surveys. Analyses of drone-based aerial data were shown to be consistent with ground-based measurements of key mangrove health indices, demonstrating that RPAS surveys could effectively replace conventional ground-based methods in future monitoring programs.

Overall, the results of mangrove monitoring indicate surface water discharged from DLNG has not had a significant impact on mangrove sediment and biota surrounding the facility since post-commissioning monitoring began in 2006. The discharge water quality from the sediment ponds is of low environmental risk.

4. Monitoring Discharges to Air

Conditions 45 to 53 (EPL217-04) and subsequently Conditions 37 to 39 (EPL217-05) of the Licence permits Santos to discharge emissions to air from the following sources:

- Stack emissions from the power generation turbines, compressor turbines, acid gas incinerator/thermal oxidiser and process boiler (**Section 4.1**); and
- Hydrocarbon flaring and venting (**Section 4.3**).

Refer to **Figure 4-1**, which presents the locations within DLNG of point source emissions to air.

In addition, Condition 54 (EPL217-04) and Condition 45 (EPL217-05) relates to ambient air quality and Conditions 67 to 69 (EPL217-04) and Conditions 56 to 58 (EPL217-05) of the Licence outline requirements to monitor air discharges.

The following sections are also included in relation to monitoring discharges to air:

- Ambient air quality monitoring program (**Section 4.4**).
- Fugitive emissions management (**Section 4.5**).

The objectives, methods, analysis, and discussion of results for each of these monitoring programs are provided in the sections below.

Following the cessation of production from the Bayu-Undan field in November 2023, DLNG was in a shutdown phase with no Liquefied Natural Gas (LNG) production during most of 2025. DLNG restarted in October 2025 however due to commissioning and issues with offshore commissioning (Barossa) no stack emissions testing was undertaken in 2025 and therefore will not be reported on in this AEMR. However continuous emissions monitoring of the hot vent was undertaken.

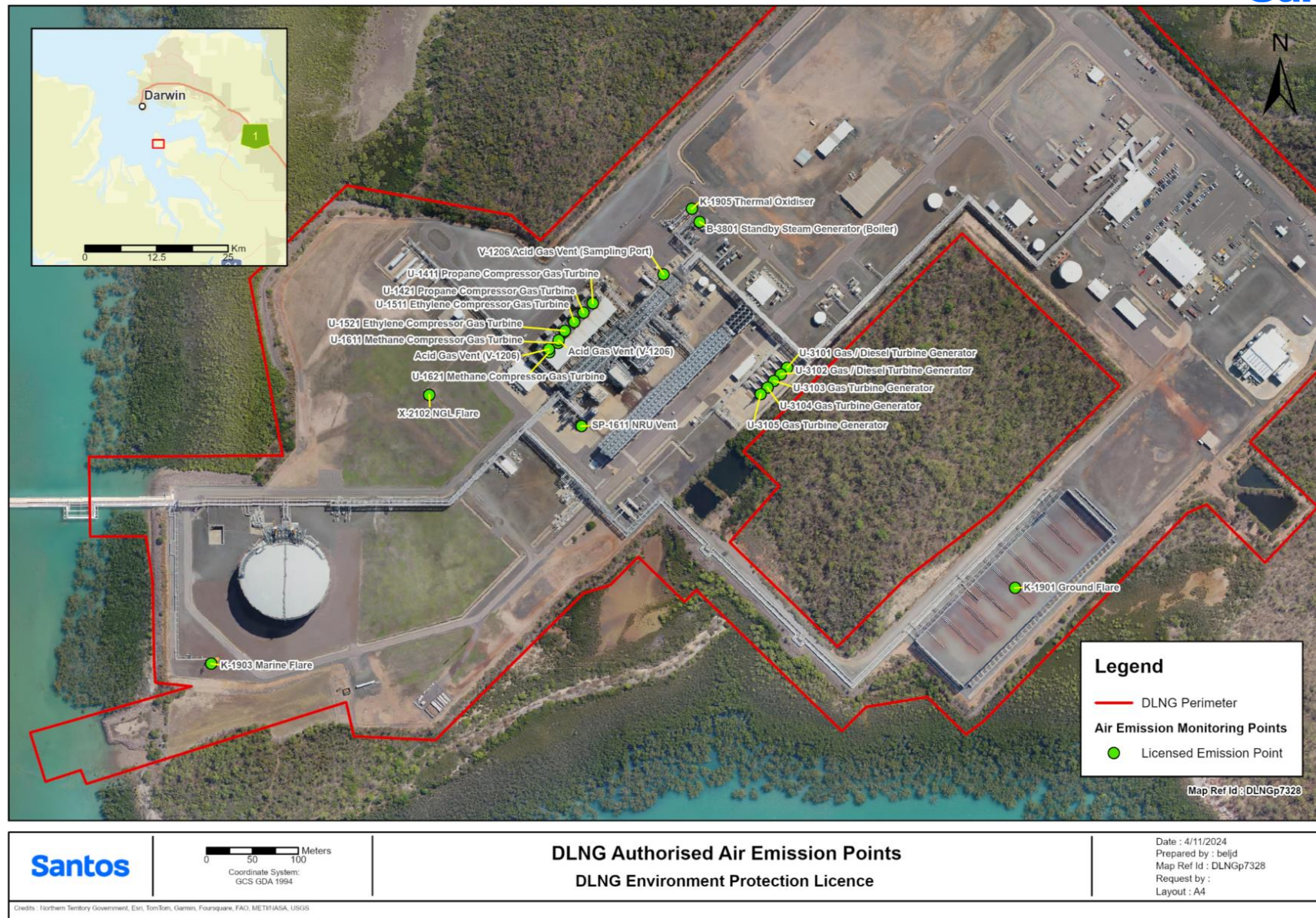


Figure 4-1: Map of emissions to air locations permitted by the Licence

4.1. Total Emissions to Air

Santos NA is required to provide the total emissions to air in tonnes per year, with respect to the parameters listed in Appendix B (Condition 61.7 of the Licence). The total emissions to air in tonnes per year, with respect to the parameters listed in Column 3 of Table 3 (Appendix B) from the sources detailed in Column 2 of Table 3 (Appendix B) are provided under the column titled “EPL217-05 Stationary Emissions (kg/yr)” in **Table 41** below.

Also provided in **Table 4-1** is the estimated total stationary emissions to air, with respect to the parameters listed in Appendix B, as reported via the Commonwealth National Pollutant Inventory (**NPI**). The differences in the benzene quantities reported in **Table 4-1** below are due to the NPI Emissions also accounting for emissions from flaring, stationary diesel combustion and from fugitive sources.

As DLNG re-started in October 2025 and underwent commissioning and experienced production interruptions as a result of commissioning upsets offshore (Barossa), no stack emissions testing was undertaken in 2025 and therefore stationary emission estimates for many pollutants have not been presented in **Table 4-1**.

Table 4-1: Estimated total emissions to air for the reporting period

Pollutant	NPI Emissions Onshore (kg/yr)	EPL217-05 Stationary Emissions (kg/yr)
Sulfur dioxide (SO ₂)	1,249.63	No data
NOx as nitrogen dioxide (NO ₂)	194,496.57	No data
Carbon monoxide (CO)	61,949.97	No data
Hydrogen Sulfide (H ₂ S)	98.29 ^{1,2}	98.29 ²
Benzene (H ₆ C ₆)	954.78 ³	837.51 ³

¹ not reported as NPI reporting threshold not exceeded

² derived from continuous monitoring data

³ derived from continuous monitoring data (hot venting) and NPI emission estimation (gas turbines, 4.29 kg)

4.2. Stack Emissions Monitoring Program

Most of the emissions from DLNG are from point sources, such as exhaust stacks. These stacks are a source of atmospheric pollutants, which are regulated under the Licence. The Licence specifies the locations of stack emissions that are permitted, the concentrations of pollutants that are allowed, the mass emission rates for pollutants and the frequency at which these must be monitored.

4.2.1. Monitoring Objectives

The objective of the stack emission monitoring program is to quantify the mass emission rates and concentrations of potential atmospheric pollutants at the point of emission. These results are considered in conjunction with other atmospheric monitoring programs, such as the ambient air quality monitoring program (**Section 4.4**). The monitoring program is also intended to ensure compliance with Conditions 56 to 58 of the Licence (EPL217-05).

4.2.2. Monitoring Methods

The Licence requires stack sampling to be completed in accordance with NSW EPA document *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*. Santos has developed a stack emissions monitoring program, which is implemented by a specialist contractor in accordance with the approved methods stipulated by the Licence.

The required locations, parameters and frequency of monitoring is outlined in Appendix B Table 3 of the Licence. The locations are shown in **Figure 4-1**.

4.2.3. Monitoring Results

No stack emission monitoring results are available for the 2025 monitoring period. However, historic monitoring results for stack emission have been provided in **Attachment C**.

4.3. Hydrocarbon Flaring and Venting

Hydrocarbon flaring and venting is an unavoidable activity and is required to operate the DNLG facility in a safe manner. Santos seeks to reduce the volume of hydrocarbons flared where practicable and implements flare targets for DLNG. Methane is a much more potent Greenhouse Gas than Carbon Dioxide (CO₂) although methane has a shorter average residence time in the atmosphere. Hence, flaring of hydrocarbons to convert methane to CO₂ is the preferred disposal method.

As part of a historical planned shutdown the acid gas cold vent pipework was removed and replaced with the hot vent pipework, which results in the acid gas stream being comingled with the compressor exhaust emissions to increase plume buoyance and mixing. Small quantities of acid gas are hot vented on occasions when the AGI/Thermal Oxidiser is unavailable (e.g., AGI or plant trip).

4.3.1. Monitoring Objectives

The objective of the flaring and venting monitoring program is to understand the amounts of emissions associated with these activities. This information is used to quantify the atmospheric emissions and inform reporting to the NT EPA. The information is analysed in conjunction with other monitoring programs, such as the ambient air monitoring program.

The monitoring is also intended to ensure compliance with Conditions 41, 42, and 43 of the Licence, which regulate the disposal of acid gas and mandate that hot venting must not exceed a total of 36 days per year.

4.3.2. Monitoring Methods

Measurements of volumes of gas sent to the flares and acid gas vent are calculated based on metering of gas flows within DLNG.

4.3.3. Monitoring Results

4.3.3.1. Flaring

During the reporting period, the total flaring volume was 1,957 kNm³ (**Figure 4-2**). The flaring volume was lower than the previous years due to DLNG being in shutdown for most of 2025.

The majority of the flaring in 2025 was associated with the re-start of DLNG which commenced in October 2025. There was no flaring in the months before this due to the plant being offline.

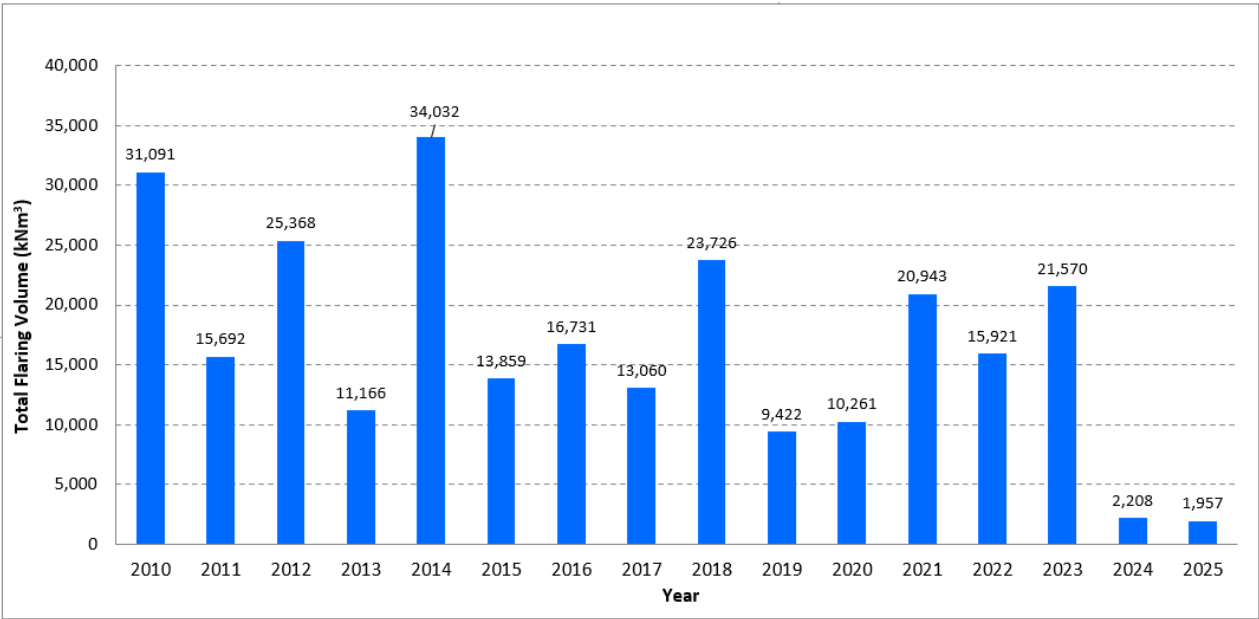


Figure 4-2: Annual flaring volumes

4.3.3.2. Nitrogen Rejection Vent

The Nitrogen Rejection Unit (NRU) is no longer required to operate with Barossa feed gas; therefore, the NRU will not be reported on in this or future AEMR's.

4.3.3.3. Acid Gas Vent

In accordance with Conditions 41 and 42 of the Licence, which permit the disposal of acid gas via hot venting during periods of maintenance and repair, or as otherwise authorised by the NT EPA, hot venting occurred at DLNG on four separate occasions in late 2025 whilst the plant was in start-up phase and commissioning of the thermal oxidiser commenced (requiring acid gas to be diverted to the hot vent). As detailed in **Table 4-2**, these events lasted a total of 13 days, remaining within the 36-day annual limit specified in Condition 43. These events are summarised in **Table 4-2** below.

Table 4-2: Hot venting periods and estimated emissions (January 2025 to December 2025)

Start Date/time	End Date/Time	Duration (Days)	Volume discharged (kNm ³)	H ₂ S mg/Nm ³	H ₂ S (g/s)	Benzene mg/Nm ³	Benzene g/s	H ₂ S (kg)	Benzene (kg)
4/11/2025 12:00:00	05/11/25 02:00:00	0.583	148.43	81.71 ¹	0.24	0 ²	0 ²	12.56	124.76 ³
5/11/2025 04:00:00	5/11/2025 05:00:00	0.042	0.55	119.61	0.02	0 ²	0 ²	0.02	0.46 ³
5/11/2025 06:00:00	5/11/2025 17:00:00	0.458	11.16	92.84	0.03	0 ²	0 ²	0.91	9.38 ³
1/12/2025 14:00:00	13/12/2025 12:00:00	11.875	821.17	102.84	0.08	938.4 ²	1.03 ²	84.79	702.90 ³
TOTAL								98.29	837.51

¹ average

² Benzene analyser came online on 9/12/2025

³ emissions estimated for this period

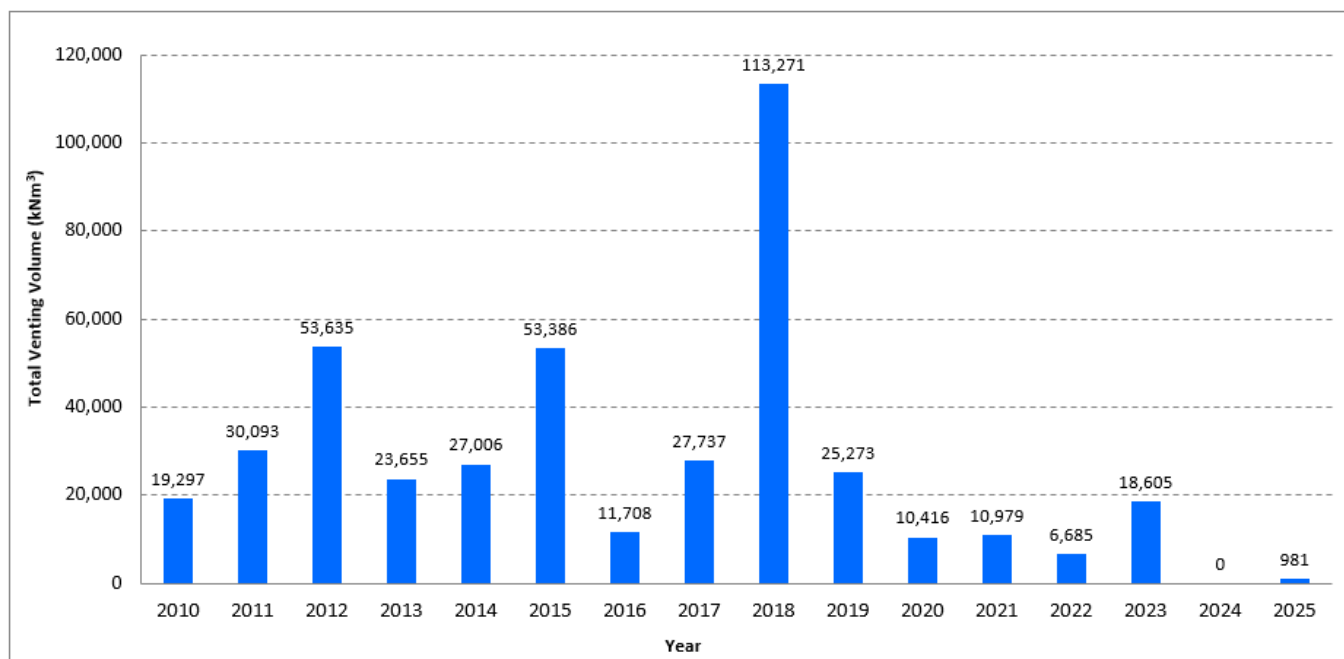


Figure 4-3: DLNG annual acid gas venting volumes

4.3.4. Data Management and Quality Control

Hydrocarbon flaring and venting volumes were calculated using Santos' plant operating process data system. This system is routinely monitored as part of the operation of DLNG and is considered reliable.

4.3.5. Discussion and Interpretation of Results

Given 'shutdown' operations were in effect for most of 2025, emissions to air from DLNG were significantly lower than typical years of operation and therefore negligible impact on air quality would be expected (refer to **Section 4.4**). These results, combined with the ambient air analysis in **Section 4.4.10**, satisfy the requirements of Condition 61.8 to analyse environmental impacts and demonstrate that these authorised activities were fully consistent with maintaining the ambient air quality standards of the Darwin region.

4.4. Ambient Air Monitoring

As outlined in the summary of the 2025 stack emissions monitoring program results (**Section 4.1**), DLNG has air emissions points permitted by the Licence. While the stack emissions monitoring program provides information on the amounts of atmospheric releases from these authorised discharge points, it does not provide information on their potential impacts in the airshed around DLNG.

The NT EPA have established an Air Quality Network in the Darwin airshed, which via their website, provides real-time and historical air pollutant concentrations as well as meteorological data (refer to **Section 4.4.2**).

Katestone Environmental Australia Pty Ltd was commissioned by Santos to collate, review, and interpret the ambient air monitoring data from NT EPA managed stations and subsequently summarised in this section of the AEMR.

4.4.1. Monitoring Objective

The ambient air quality monitoring program aims to obtain robust data that accurately monitors the Darwin City and DLNG air sheds to determine the impact, if any, from DLNG air emissions. During annual period of typical operations, the data from the ambient air monitoring program is considered in conjunction with the stack emissions monitoring program and the operational activities at DLNG.

4.4.2. NT EPA Network

As stated in **Section 4.4**, NT EPA maintain their own network of three stations at Stokes Hill near Darwin city, Winnellie along the Stuart Highway, and Palmerston. These monitoring sites are shown in **Figure 4-4** and their location and classification are detailed in **Table 4-3**.

All three sites currently monitor particulate matter (PM₁₀ and PM_{2.5}), carbon monoxide (CO), oxides of nitrogen (NO_x, NO and NO₂), sulphur dioxide (SO₂), ozone (O₃) and meteorological parameters (wind speed and direction). This dataset is available on the public NT Air Quality Network website and is included within the ambient air quality discussion.

In general, the primary air pollutant in Darwin and Palmerston is particulate matter in smoke from distant and local vegetation burning during the dry season. Other air pollutants CO, NO₂ and SO₂ all occur at very low levels compared to large cities in other parts of Australia, while O₃ occurs at moderate levels, typically due to natural processes.

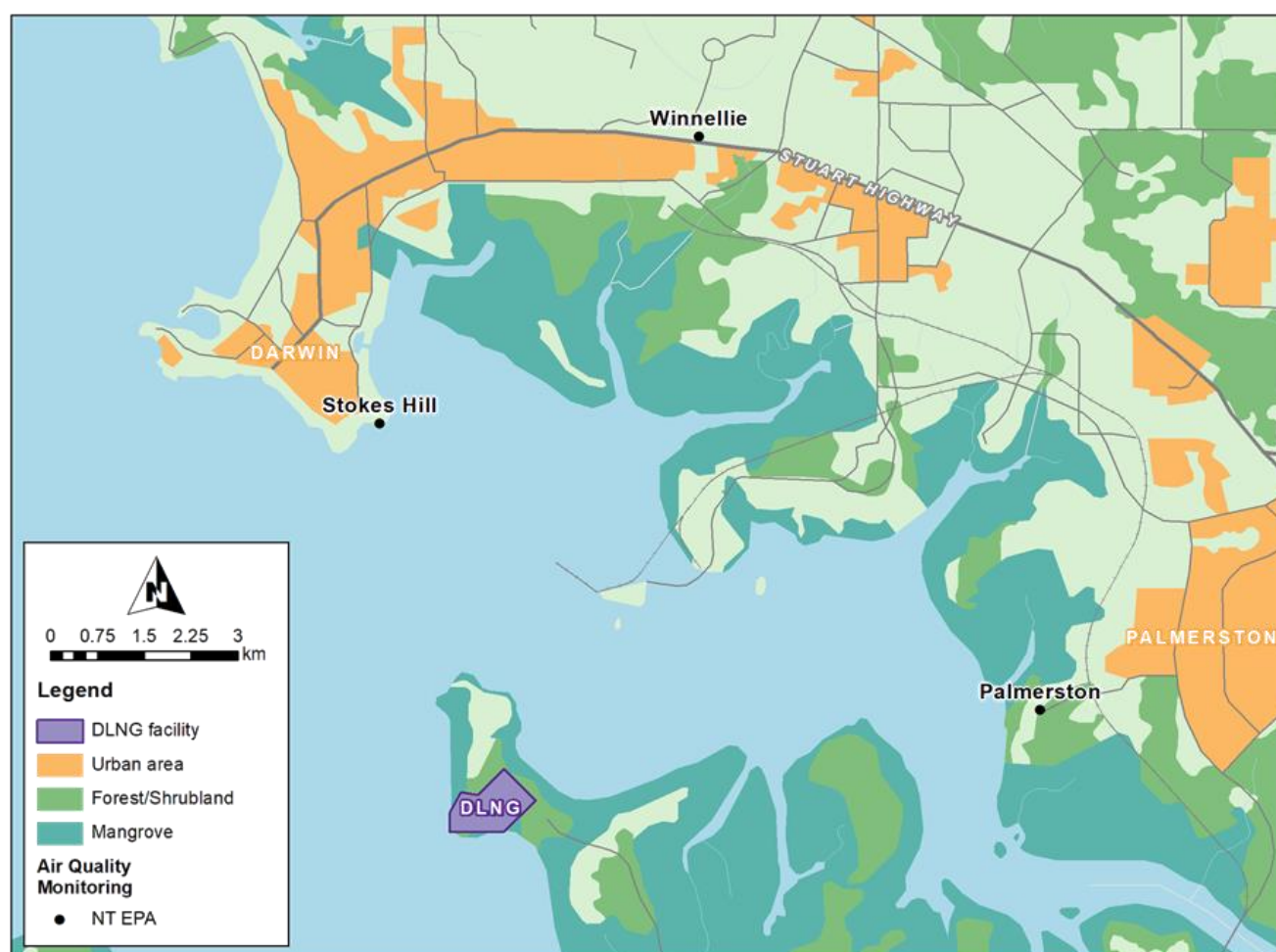


Figure 4-4: Ambient air quality monitoring station locations

Table 4-3: NT EPA ambient air monitoring network

Site description		Palmerston	Stokes Hill	Winnellie
Geographical coordinates	Latitude	130.9483	130.8478	130.8933
	Longitude	-12.5078	-12.4600	-12.4240
Classification		Residential	Industrial	Generally Representative Upper Bound
Meteorology				
Wind speed		✓	✓	✓
Wind direction		✓	✓	✓
Pollutants				
NO, NO ₂ , NO _x		✓	✓	✓
SO ₂		✓	✓	✓
O ₃		✓	✓	✓
CO		✓	✓	✓
PM ₁₀ , PM _{2.5}		✓	✓	✓

4.4.3. Data Capture

Data from the NT EPA ambient air quality monitoring network were downloaded via the public NT Air Quality Network website (Envitech, 2026) by Katestone as hourly averages for all air pollutants and meteorological parameters. This data is automatically collected and may not have undergone preliminary quality checks or data ratification. The lack of data ratification is obvious in the concentration data for some pollutants, and it is not possible for Katestone to carry out this data ratification as it requires specific calibration data that is not published. Hence, while Katestone has sought to remove anomalous values from the dataset, the underlying data quality remains very poor in some cases, in particular:

- Significant drift and step changes in CO and SO₂ concentrations that should be accounted for through data ratification, as well as extended periods of negative concentrations at Palmerston and Stokes Hill that would likely be positive if the data were properly ratified.
- Moderate negative spike in SO₂ at Winnellie from 25 June to 26 June.
- Large positive spike in NO₂ at Winnellie from 24 June to 26 June.
- Large positive spike in all pollutants at Palmerston on 2 September.
- Small negative spike in PM₁₀ and PM_{2.5} data at Palmerston on 15 September.
- Large negative spike in CO and SO₂ data at Winnellie from 26 November until 28 November.
- Wind speeds at Winnellie which are impossibly large at times and routinely appear unrealistically high.

Katestone sought to remove values which could reasonably be considered anomalous, including:

- Moderate negative spike in SO₂ at Winnellie from 25 June to 26 June.
- Large positive spike in NO₂ at Winnellie from 24 June to 26 June.
- Large negative spikes in CO and SO₂ data at Winnellie from 26 November until 28 November.
- Wind speeds at Winnellie greater than 15 m/s.

No other positive spikes in concentrations were removed, since there was no evidence that these measurements were necessarily invalid.

0.1% of all data was invalidated due to this process. Analysis was conducted on the remaining data in accordance with the following guidance:

- National Environment Protection (Ambient Air Quality) Measure Technical Paper No.5. Data Collection and Handling, Peer Review Committee (PRC, 2001).
- National Environment Protection (Ambient Air Quality) Measure. Technical Paper No.8. Annual Reports, PRC 2002 Peer Review Committee (PRC, 2002).

Air pollutant concentration percentiles were calculated using linear interpolation of the modes for the order statistics for the uniform distribution on [0,1], commonly known as the R-7 scheme. This is the default method in the R programming language and equivalent to Microsoft Excel's PERCENTILE and PERCENTILE.INC functions.

4.4.4. Meteorological Conditions

Wind speed and wind direction are important factors in the dispersion of air pollutants from the point of emission. The NT EPA conducts meteorological monitoring at all three ambient air quality monitoring stations to aid interpretation of the air quality data. Several wind speed data records were removed at Winnellie where unrealistically high wind speeds were measured (see **Section 4.4.3**).

Figure 4-5 presents the subsequent distributions of wind speed and direction during the full calendar year 2025 as wind roses. **Figure 4-6** presents separate wind roses for the periods when DLNG was offline and when it was operational. The wind roses show that:

- At Palmerston, the winds during the offline period came predominantly from the east-southeast. During the operational period, most winds came from the west-northwest and the west, with some occasional winds from the northeast and east-southeast. Average wind speeds during the operational and offline periods were 2.18 m/s and 2.46 m/s respectively.

- At Stokes Hill, the wind while the DLNG facility was offline came predominantly from the north-northwest, with occasional winds from the east-southeast. While it was operational, winds largely remained north-northwesterly, with regular winds also from the north. Winds from the south, east and direct west were uncommon. Average wind speeds during the operational and offline periods were 1.93 m/s and 1.67 m/s respectively.
- At Winnellie, winds during the offline period were predominantly from the northwest and southeast quadrants. During the operational period, winds were predominantly from the northwest quadrant. Average wind speeds during the operational and offline periods were 1.72 m/s and 2.0 m/s respectively.

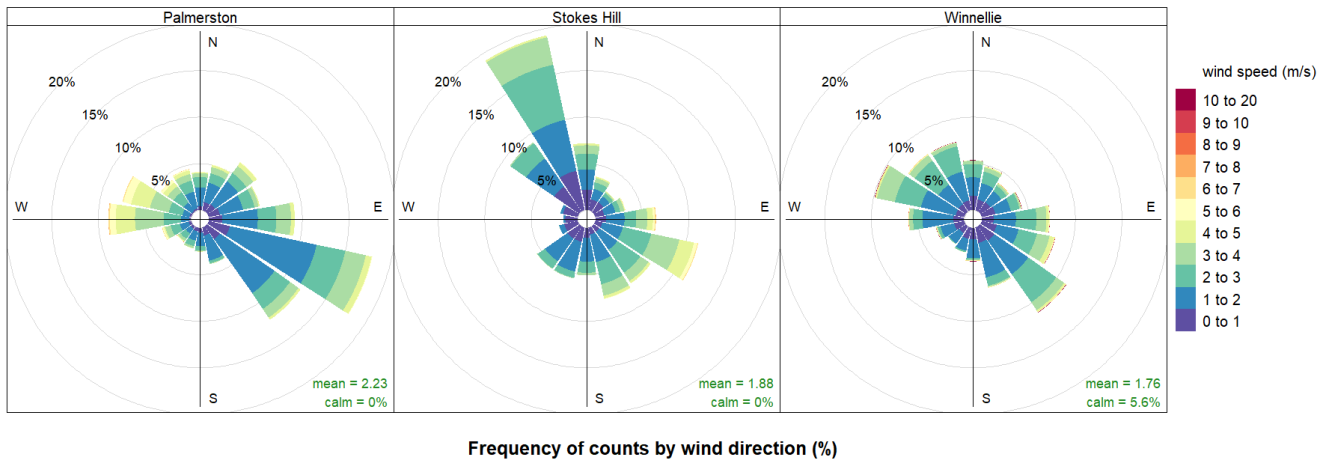


Figure 4-5: Distribution of 1-hour average wind speed and direction measurements at NT EPA monitoring sites in 2025

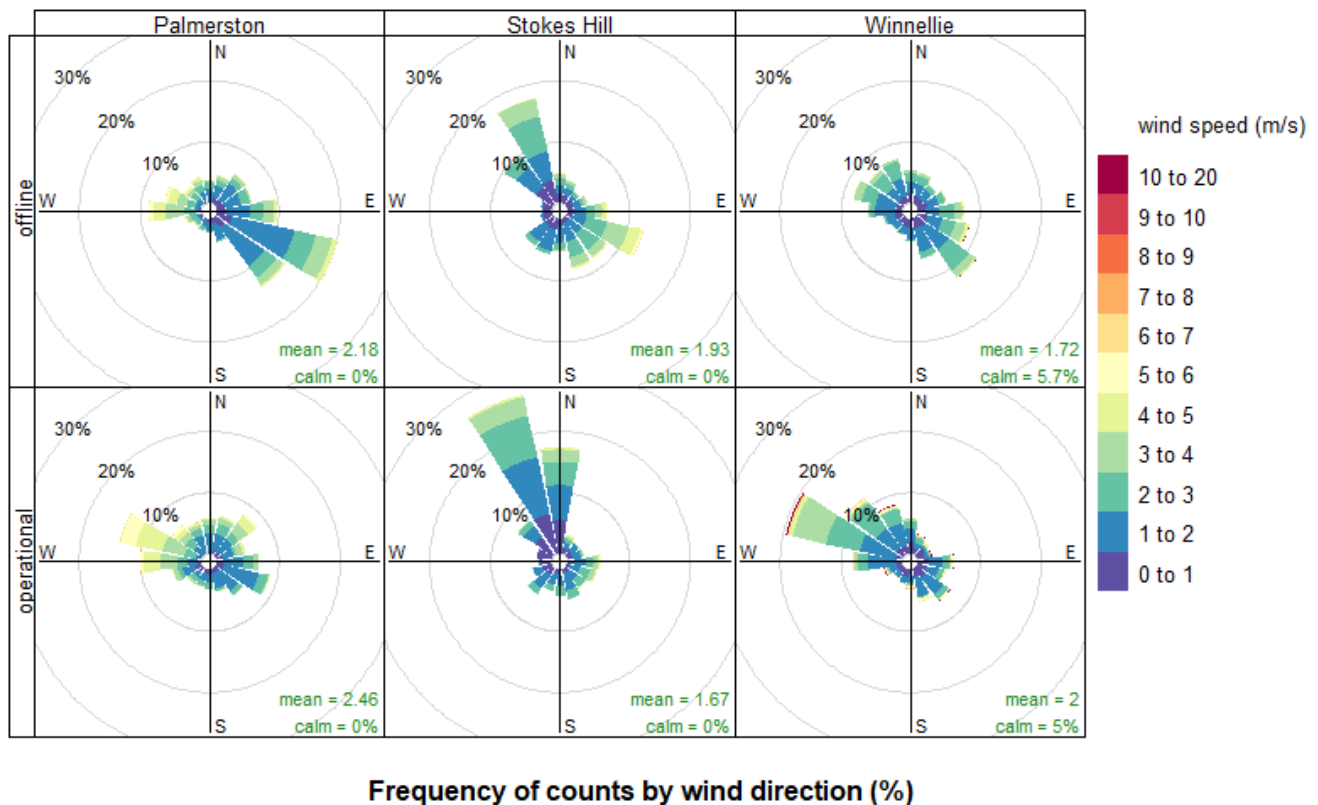


Figure 4-6: Distribution of 1-hour average wind speed and direction measurements at NT EPA monitoring sites during DLNG offline and operational periods in 2025

4.4.5. Nitrogen Dioxide (NO₂)

A summary of NO₂ concentrations measured by the NT EPA monitoring network is presented in **Table 4-4**; the corresponding timeseries are shown in **Figure 4-7**. The results show that:

- 1-hour average concentrations of NO₂ were below the Air NEPM standard of 0.08 ppm at Winnellie, Palmerston and Stokes Hill.
- Annual average concentrations of NO₂ were below the Air NEPM standard of 0.015 ppm at Winnellie, Palmerston and Stokes Hill.

Table 4-4: Summary of 1-hour and annual average NO₂ concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Site	1-hour average (ppm)					Annual average
	Max	99 th %ile	95 th %ile	90 th %ile	50 th %ile	
Palmerston	0.069	0.009	0.006	0.004	0.001	0.002
Stokes Hill	0.031	0.015	0.010	0.008	0.003	0.004
Winnellie	0.023	0.011	0.008	0.006	0.002	0.003
Air NEPM standard	0.08					0.015

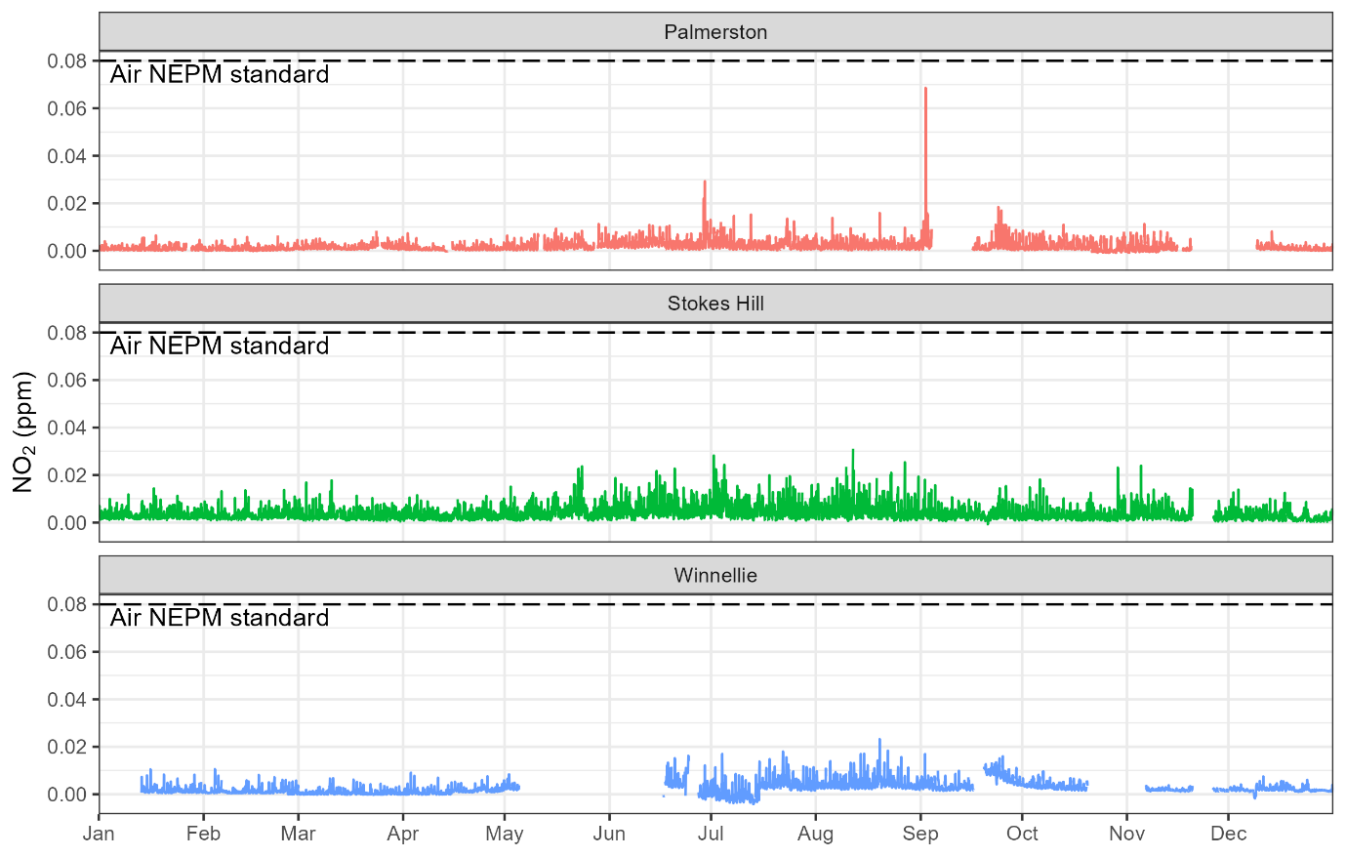


Figure 4-7: Timeseries of 1-hour average NO₂ concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Figure 4-8 presents polar plots for each monitoring site using 1-hour average NO₂ data. Making reference to the monitoring locations as shown in **Figure 4-4**, these can be interpreted as follows:

- The Palmerston monitor is to the east of DLNG. The operational polar plot for Palmerston shows low average concentrations under winds from the west, suggesting that DLNG did not contribute significantly to measured concentrations of NO₂ at this monitor.
- The Stokes Hill monitor is to the north-northwest of DLNG. Concentrations at this monitor were elevated under winds from the south-southeast both when DLNG was operational and when it was not. Average concentrations were higher when it was not operational. This suggests that it is primarily other sources are contributing to measured NO₂ concentrations, although some contribution from DLNG cannot be discounted. Nevertheless, concentrations did not get close to exceeding the Standards, thus any contribution is likely negligible.
- The Winnellie monitor is to the north-northeast of DLNG. The operational polar plot for Winnellie does not indicate elevated average concentrations under winds from the south-southwest, suggesting that DLNG did not contribute significantly to measured concentrations of NO₂ at this monitor.

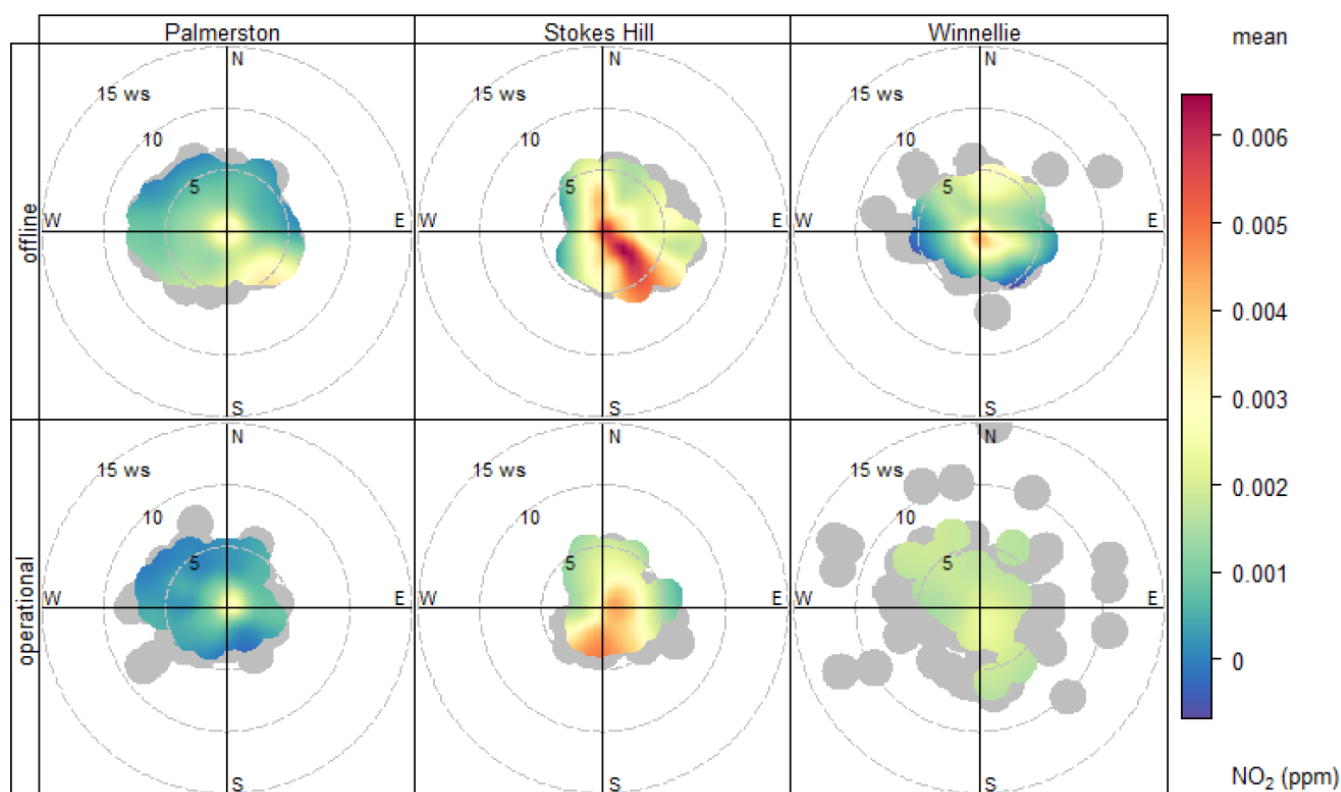


Figure 4-8: Polar plots by monitoring site for 1-hour average winds and NO₂ concentrations measured while DLNG was operational and offline

4.4.6. Sulfur Dioxide (SO₂)

Summaries of SO₂ concentrations measured by the NT EPA monitoring network are presented in **Table 4-5** and **Table 4-6**; the corresponding timeseries are shown in **Figure 4-9** and **Figure 4-10**. The results show that:

- 1-hour average concentrations of SO₂ exceeded the Air NEPM standard of 0.08 ppm on one occasion at Palmerston
- 1-hour average concentrations of SO₂ were below the Air NEPM standard at Stokes Hill and Winnellie
- 24-hour average concentrations of SO₂ were below the Air NEPM standard of 0.02 ppm at all three sites.

Table 4-5: Summary of 1-hour average SO₂ concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Site	1-hour average (ppm)				
	Max	99 th %ile	95 th %ile	90 th %ile	50 th %ile
Palmerston	0.0915	0.0017	0.0012	0.0010	0.0004
Stokes Hill	0.0049	0.0014	0.0013	0.0012	0.0003
Winnellie	0.0052	0.0048	0.0040	0.0029	0.0012
Air NEPM standard	0.075				

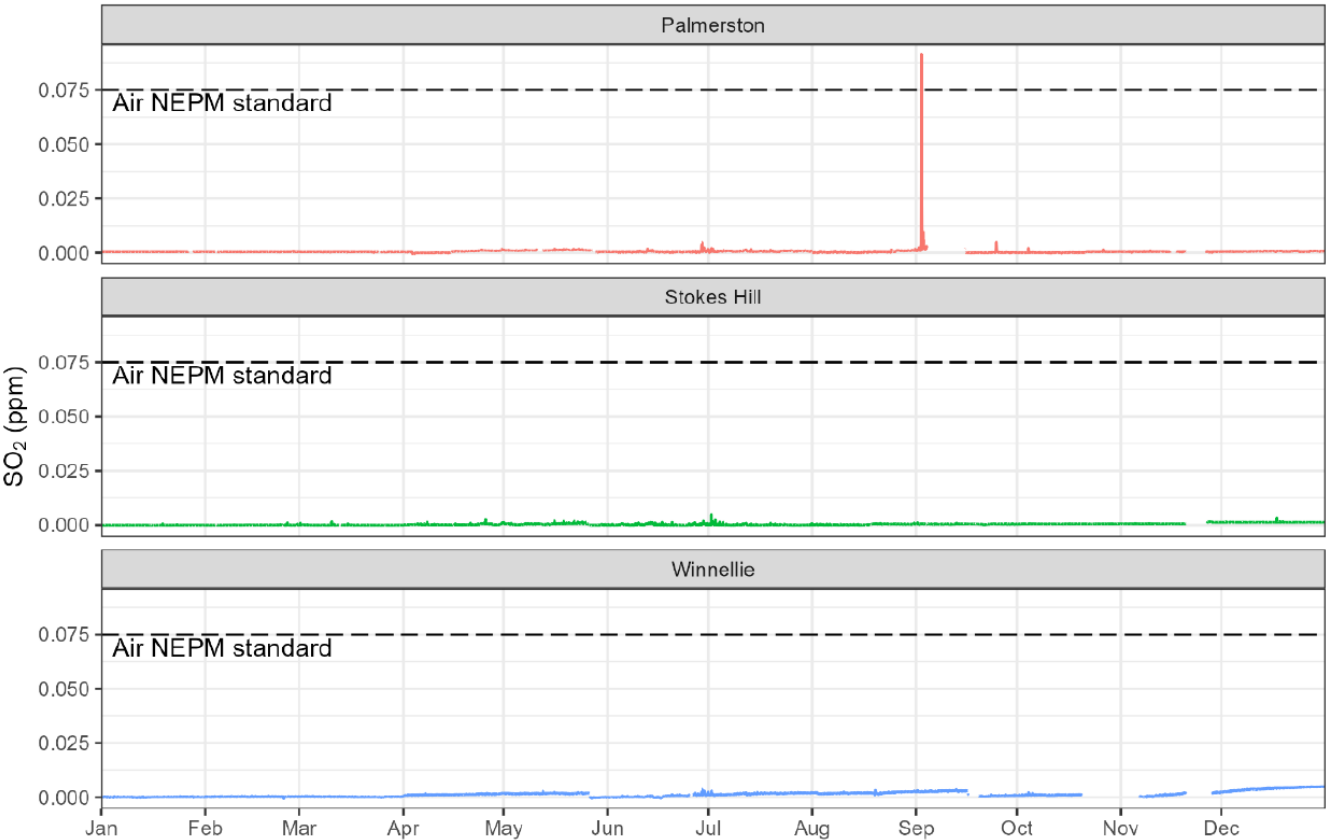


Figure 4-9: Timeseries of 1-hour average SO₂ concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Table 4-6: Summary of 24-hour average SO₂ concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Site	24-hour average (ppm)				
	Max	99 th %ile	95 th %ile	90 th %ile	50 th %ile
Palmerston	0.0103	0.0015	0.0012	0.0010	0.0004
Stokes Hill	0.0015	0.0013	0.0013	0.0009	0.0003
Winnellie	0.0050	0.0048	0.0040	0.0029	0.0012
Air NEPM standard	0.02				

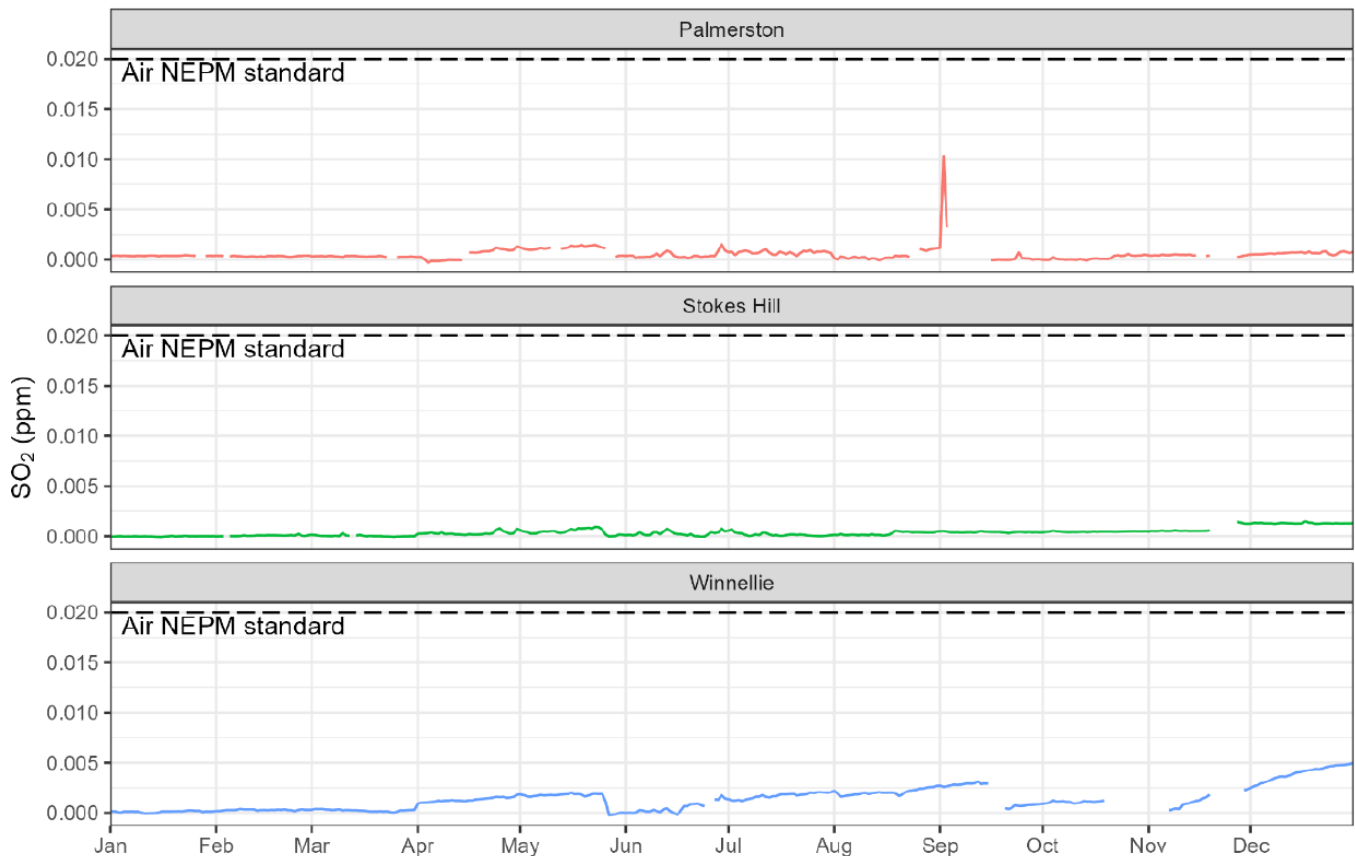


Figure 4-10: Timeseries of 24-hour average SO₂ concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Figure 4-11 presents polar plots for each monitoring site using 1-hour average SO₂ data. Making reference to the monitoring locations as shown in **Figure 4-4**, these can be interpreted as follows:

- The operational polar plot for Palmerston shows low average concentrations under winds from the west, suggesting that DLNG did not contribute significantly to measured concentrations of SO₂ at this monitor
- The operational polar plot for Stokes Hill shows low average concentrations under winds from the south-southeast, suggesting that DLNG did not contribute significantly to measured concentrations of SO₂ at this monitor
- The operational polar plot for Winnellie suggests elevated average concentrations under winds from the northwest and west. Winds from the south-southwest were uncommon and not associated with especially high concentrations, suggesting that DLNG did not contribute significantly to measured concentrations of SO₂ at this monitor.

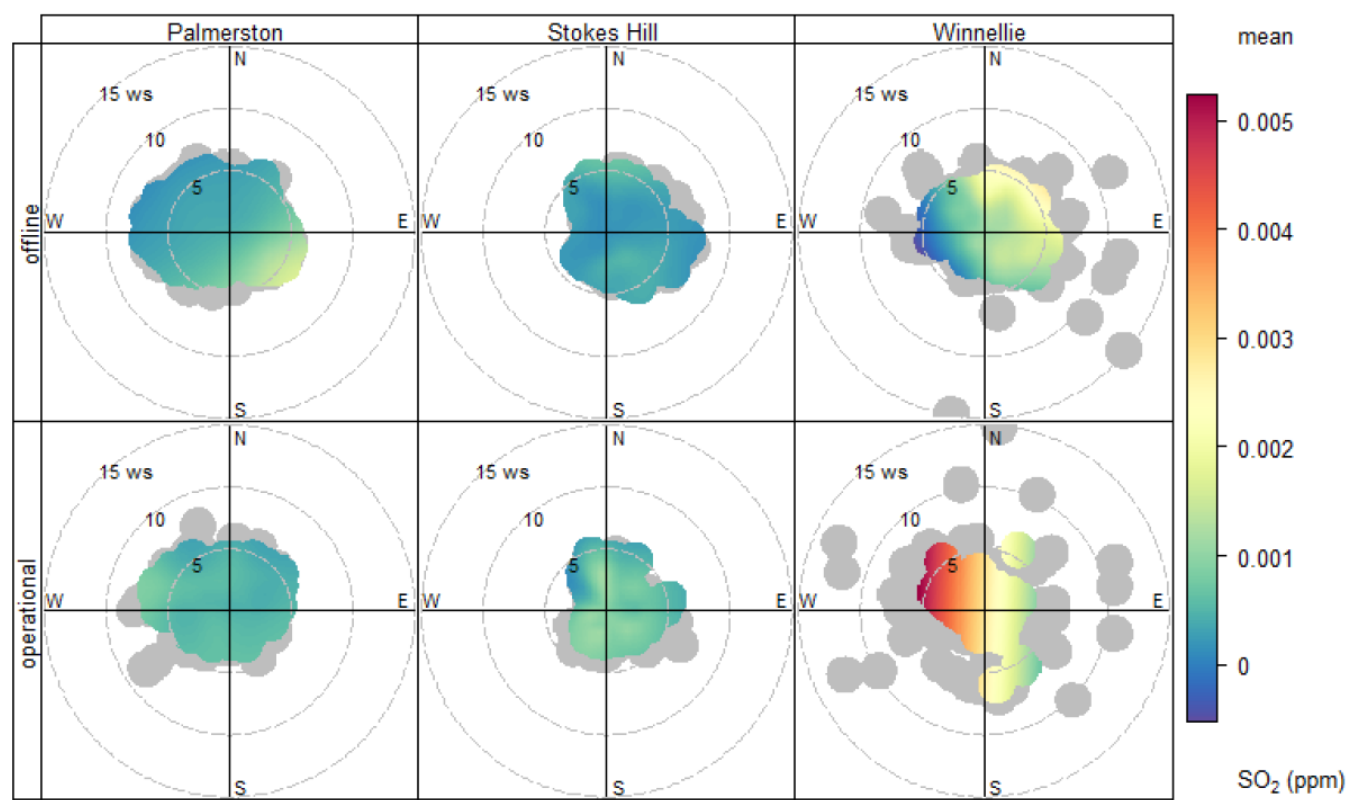


Figure 4-11: Polar plots by monitoring site for 24-hour average winds and SO₂ concentrations measured while DLNG was operational and offline

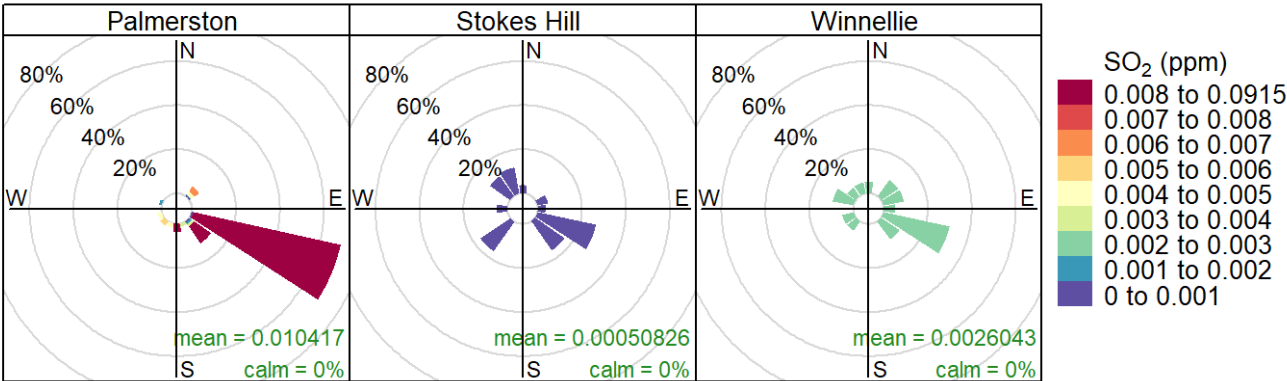
Table 4-7 presents 1-hour average SO₂ concentrations at all three monitors for the one hour of exceedance of the Air NEPM criterion of 0.075 ppm at Palmerston on 2 September 2025. Concentrations were low in this hour at Stokes Hill and Winnellie, suggesting a source local to, or upwind of, the Palmerston monitor only. DLNG was not operational on this day.

Table 4-7: 1-hour average SO₂ concentrations (ppm) measured by the NT EPA monitoring network during exceedances (January 2025 to December 2025)

Date	1-hour average SO ₂ concentration (ppm)		
	Palmerston	Stokes Hill	Winnellie
02/09/2025 12:00	0.092	0.0007	0.003

Figure 4-12 presents a proportion contribution rose for all monitoring stations for this day. Proportion contribution roses present the proportion contribution to the period mean concentration (in this case the 24-hour mean on this specific day) by wind direction. The radial extent of each rose arm reflects the percentage of the period mean concentration that winds from that 30° sector have contributed, while the colouring of the arm reflects the magnitude of the concentrations measured under those wind conditions. These are very useful in highlighting which wind directions carry the most pollution to a monitor over a given period, as well as whether especially high concentrations from a specific wind direction contributed a significant portion of the mean, as might be expected for wind directions that place a monitor downwind of a nearby pollution source.

The proportion contribution rose for Palmerston suggests the cause of the exceedance to be emission from a source to the east-southeast of the monitor. The spike in SO₂ concentrations was accompanied by a concurrent spike in concentrations of NO₂, CO, PM₁₀ and PM_{2.5}, suggesting the source to be something that generates emissions of all of these pollutants. According to the Northern Australian Fire Information database, small bushfires occurred in the area immediately to the east of the Palmerston monitor in August, with larger fires in September. It is considered most likely that the exceedance at Palmerston was due to local bushfires.



Proportion contribution to the mean (%)

Figure 4-12: Proportion contribution to the mean SO₂ concentrations measured on 2 September 2025, when Palmerston recorded one hour in exceedance of the Air NEPM standard

4.4.7. Carbon Monoxide (CO)

A summary of CO concentrations measured by the NT EPA monitoring network is presented in **Table 4-8** and the corresponding timeseries are shown in **Figure 4-12**. The results show that 8-hour rolling average concentrations of CO complied with the Air NEPM standard of 9.0 ppm at all monitoring sites, reaching at most 72.2% of the standard at Palmerston and at most 12% of the standard at Stokes Hill and Winnellie.

Table 4-8: Summary of 8-hour rolling average CO concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Site	24-hour average (ppm)				
	Max	99 th %ile	95 th %ile	90 th %ile	50 th %ile
Palmerston	6.498	0.559	0.292	0.262	0.179
Stokes Hill	1.024	0.762	0.641	0.591	0.315
Winnellie	1.077	0.711	0.569	0.509	0.300
Air NEPM standard	9.0				



Figure 4-13: Timeseries of 8-hour rolling average CO concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Figure 4-14 presents polar plots for each monitoring site using 1-hour average CO data. Making reference to the monitoring locations as shown in **Figure 4-4**, these can be interpreted as follows:

- The operational polar plot for Palmerston shows low average concentrations under winds from the west, suggesting that DLNG did not contribute significantly to measured concentrations of CO at this monitor.
- The operational polar plot for Stokes Hill shows comparable average concentrations under winds from the south-southeast to those when DLNG was offline, suggesting that DLNG is unlikely to have contributed significantly to measured concentrations of CO at this monitor.
- The operational polar plot for Winnellie shows low average concentrations under winds from the south-southwest, suggesting that DLNG did not contribute significantly to measured concentrations of CO at this monitor.

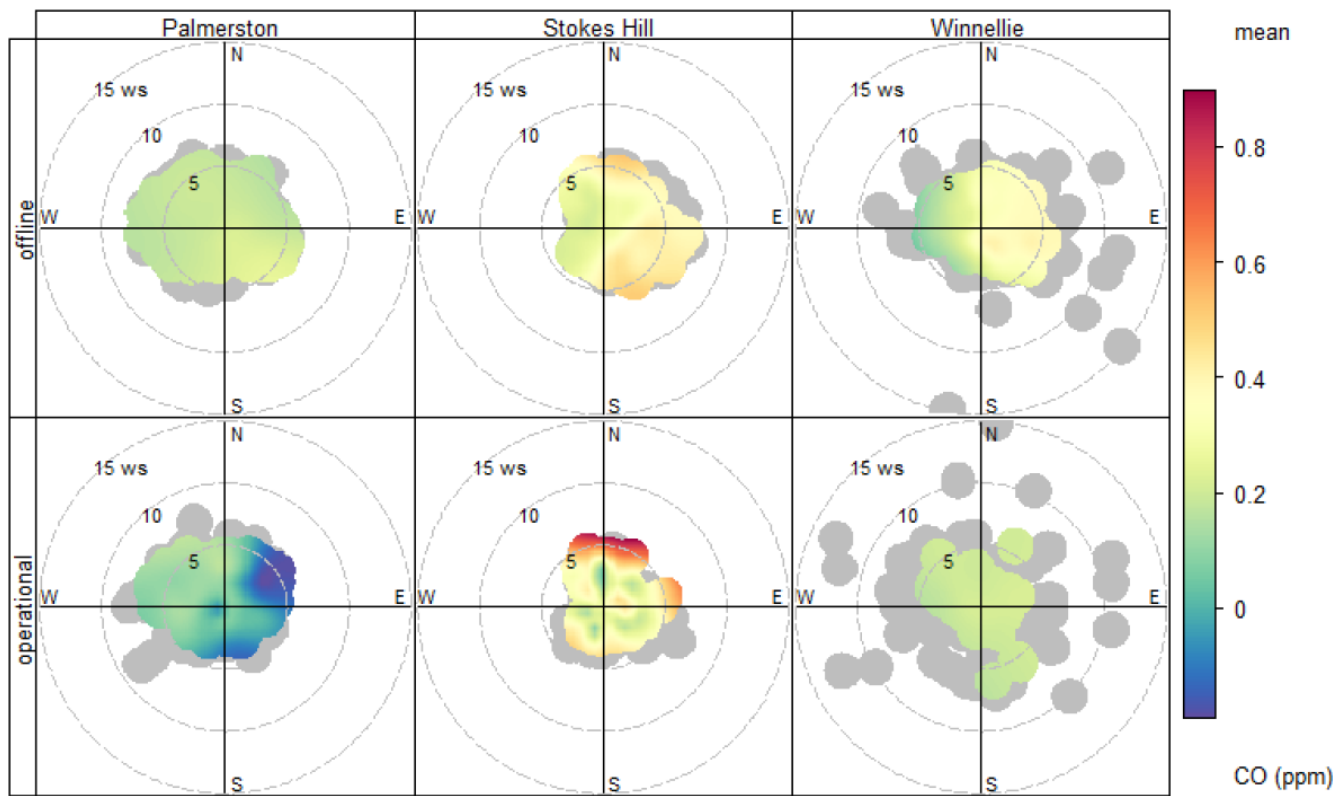


Figure 4-14: Timeseries of 8-hour rolling average CO concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

4.4.8. Particulate Matter (PM₁₀)

A summary of PM₁₀ concentrations measured by the NT EPA monitoring network is presented in **Table 4-9**. The corresponding timeseries are shown in **Figure 4-15**. The results show that:

- Annual average concentrations of PM₁₀ complied with the Air NEPM standard of 25 µg/m³ at all three sites
- 24-hour average concentrations of PM₁₀ exceeded the Air NEPM standard of 50 µg/m³ on four days at Palmerston, on eight days at Stokes Hill, and on one day at Winnellie, for a total of 10 calendar days with an exceedance.

Table 4-9: Summary of 24-hour and annual average PM10 concentrations (µg/m3) measured by the NT EPA monitoring network (January 2025 to December 2025)

Site	24-hour average (µg/m ³)					Annual average
	Max	Max	99 th %ile	95 th %ile	90 th %ile	
Palmerston	242.3	52.3	35.4	27.9	8.8	13.9
Stokes Hill	77.3	56.7	40.0	28.5	11.5	15.2
Winnellie	55.7	40.8	30.3	25.3	9.2	12.8
Air NEPM standard	50					25

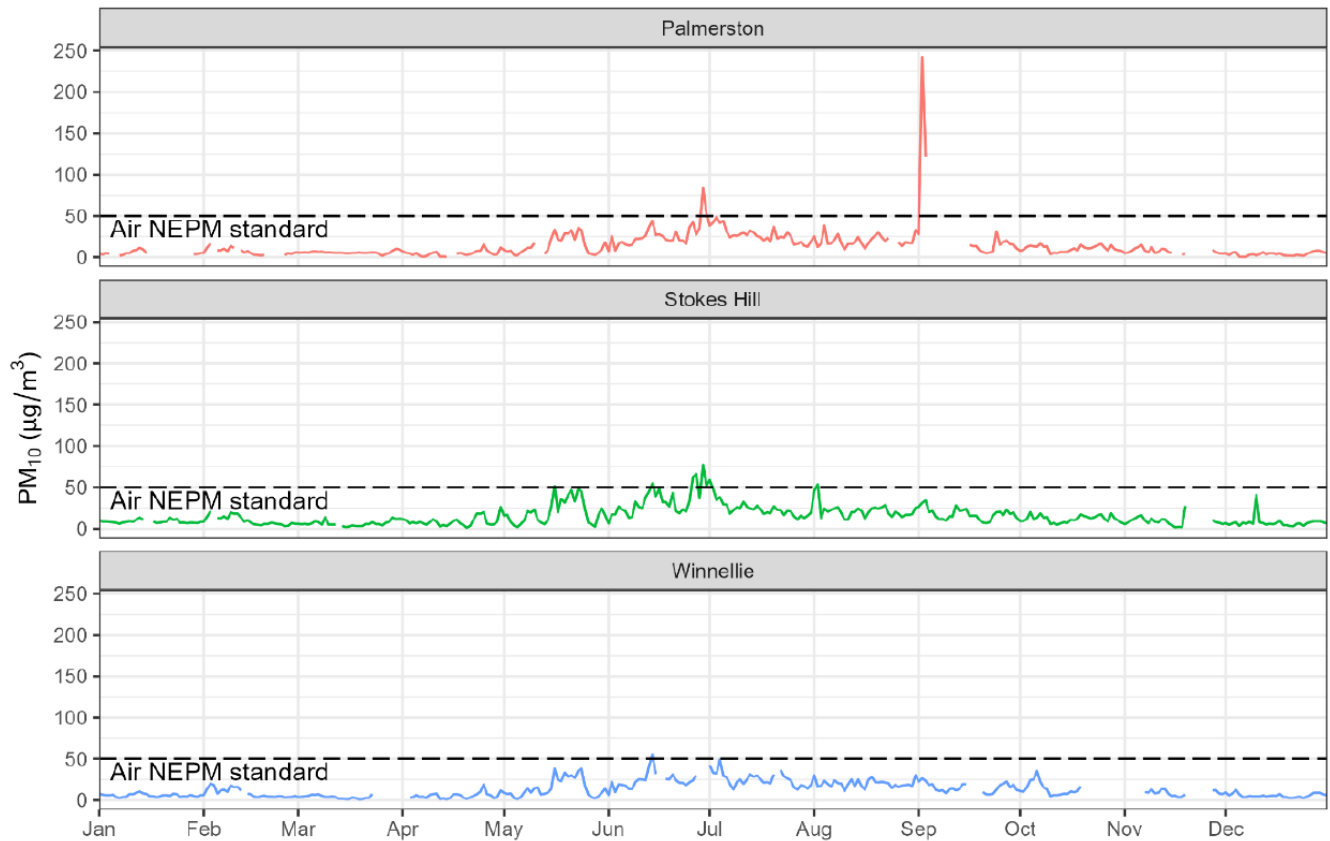


Figure 4-15: Timeseries of 24-hour average PM₁₀ concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Figure 4-16 presents polar plots for each monitoring site using 1-hour average PM₁₀ data. Concentrations were low at all sites while DLNG was operational, suggesting that DLNG did not contribute significantly to measured concentrations of PM₁₀ at any monitor. Average concentrations were high at Palmerston and Stokes Hill under strong southeasterly winds during the period when DLNG was offline, likely reflecting the transport of dust from inland during dry season regional dust events, although it is surprising that the Winnellie monitor did not also identify such events. This potentially suggests an issue with either the Winnellie PM₁₀ monitor or the Winnellie wind data, with the latter seeming the most likely giving the identified issues with the Winnellie wind data (see **Section 4.4.4**).

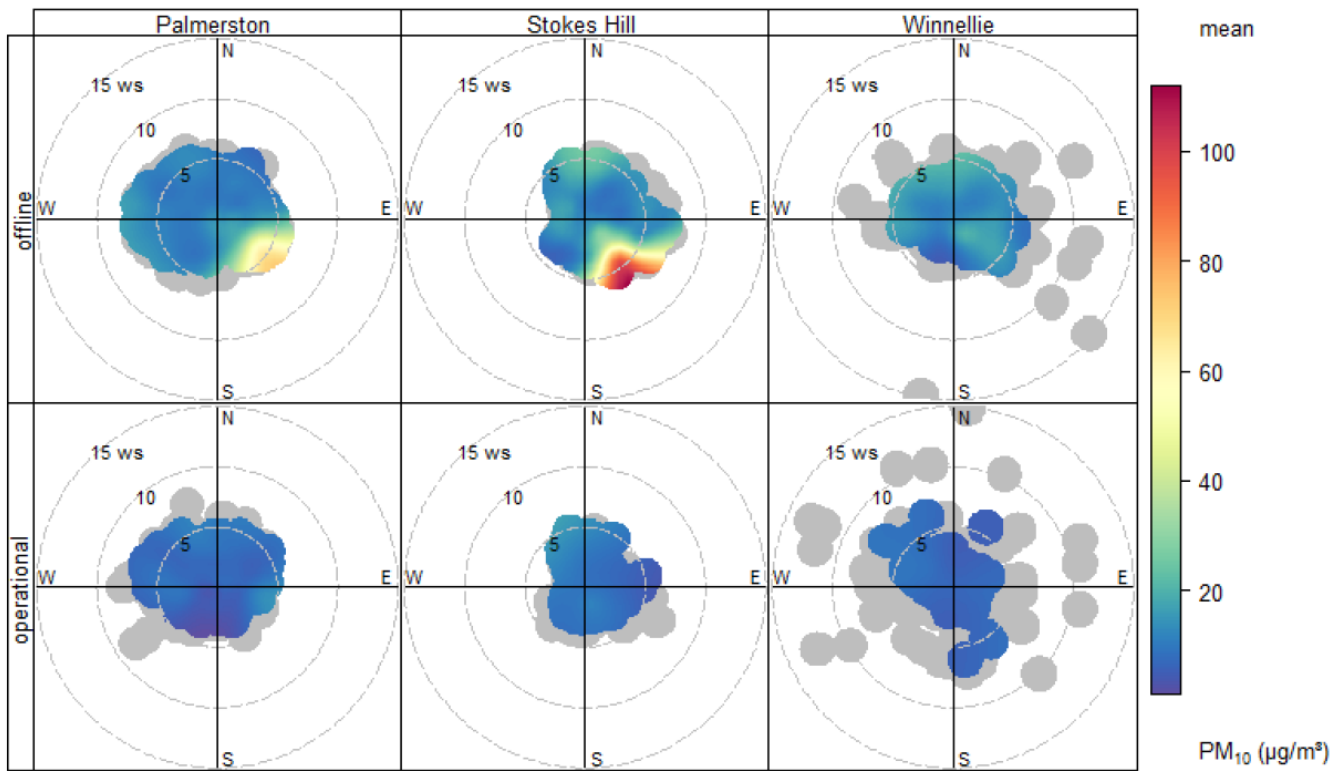


Figure 4-16: Polar plots by monitoring site for 1-hour average winds and PM₁₀ concentrations measured while DLNG was operational and offline

Table 4-10 details the 24-hour average concentrations measured at all three monitors on the days when any of the three monitors recorded an exceedance of the Air NEPM Standard of 50 µg/m³. All exceedance events occurred while DLNG was not operational, thus it must be concluded that DLNG did not contribute to any exceedances.

Table 4-10: 24-hour average PM₁₀ concentrations (µg/m³) measured by the NT EPA monitoring network on exceedance days (January 2025 to December 2025)

Date	24-hour average PM10 concentration (µg/m3)		
	Palmerston	Stokes Hill	Winnellie
16 May 2025	33.3	51.4	38.0
14 June 2025	44.3	54.7	55.7
26 June 2025	42.4	62.5	24.0
27 June 2025	27.3	66.5	30.2
29 June 2025	84.3	77.3	-
30 June 2025	52.9	51.9	-
1 July 2025	38.2	58.9	42.3
2 August 2025	12.5	53.5	16.6
2 September 2025	242.3	31.3	26.4
3 September 2025	121.1	34.1	23.3

4.4.9. Particulate Matter (PM_{2.5})

A summary of PM_{2.5} concentrations measured by the NT EPA monitoring network is presented in **Table 4-11**; the corresponding timeseries are shown in **Figure 4-17**. The results show that:

- Annual average concentrations of PM_{2.5} exceeded the Air NEPM standard of 8 µg/m³ at all three monitors, and
- 24-hour average concentrations of PM_{2.5} exceeded the Air NEPM standard of 25 µg/m³ on 21 days at Palmerston, on 14 days at Stokes Hill, and on 13 days at Winnellie, for a total of 26 calendar days with an exceedance.

Table 4-11: Summary of 24-hour and annual average PM_{2.5} concentrations (µg/m³) measured by the NT EPA monitoring network (January 2025 to December 2025)

Site	24-hour average (µg/m ³)					Annual average
	Max	99 th %ile	95 th %ile	90 th %ile	50 th %ile	
Palmerston	218.8	44.9	28.6	20.4	4.8	9.3
Stokes Hill	44.0	35.2	21.0	16.1	5.9	8.2
Winnellie	49.0	34.9	24.1	18.3	5.4	8.5
Air NEPM standard	25					8

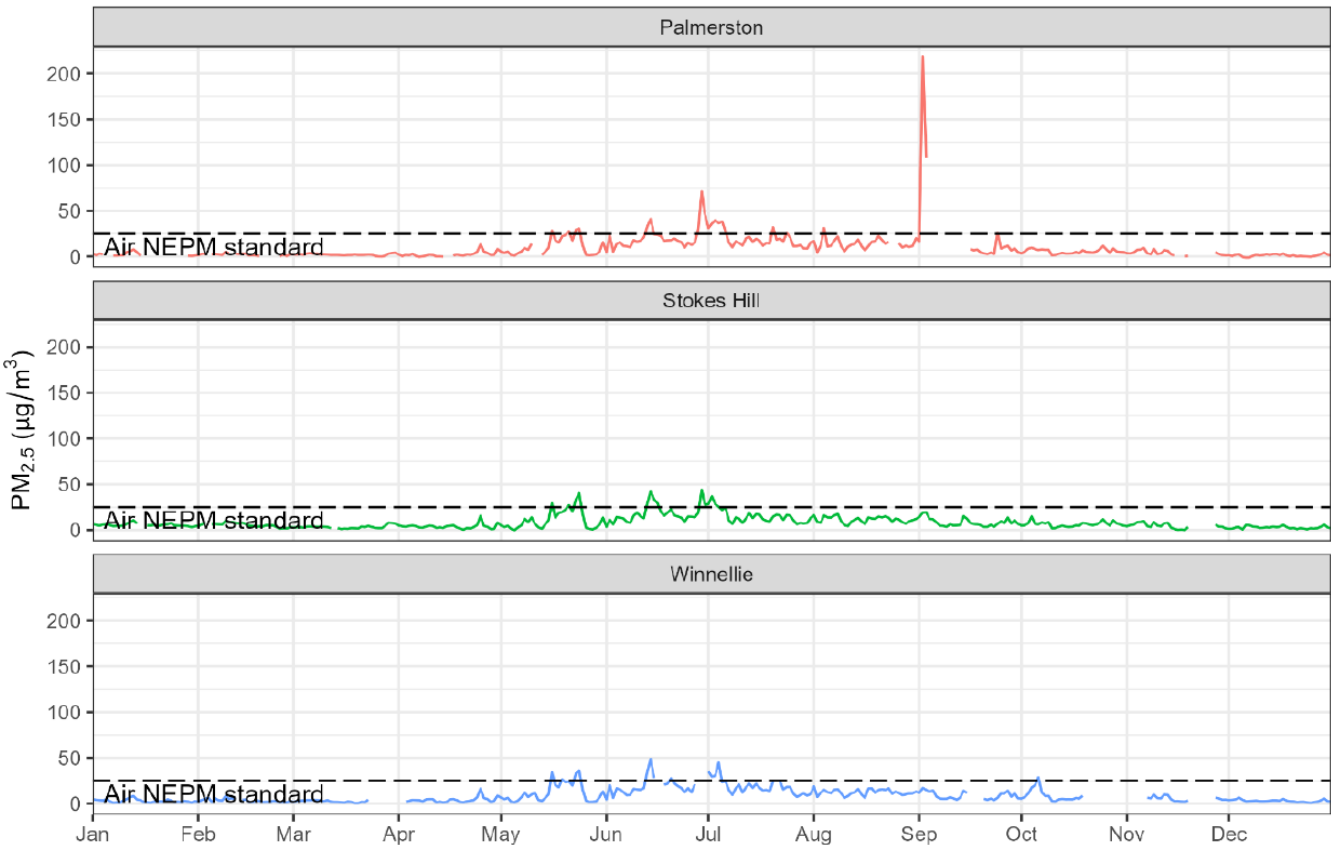


Figure 4-17: Timeseries of 24-hour average PM_{2.5} concentrations (ppm) measured by the NT EPA monitoring network (January 2025 to December 2025)

Figure 4-18 presents polar plots for each monitoring site using 1-hour $PM_{2.5}$ data. Concentrations were low at all sites while DLNG was operational, suggesting that DLNG did not contribute significantly to measured concentrations of $PM_{2.5}$ at any monitor.

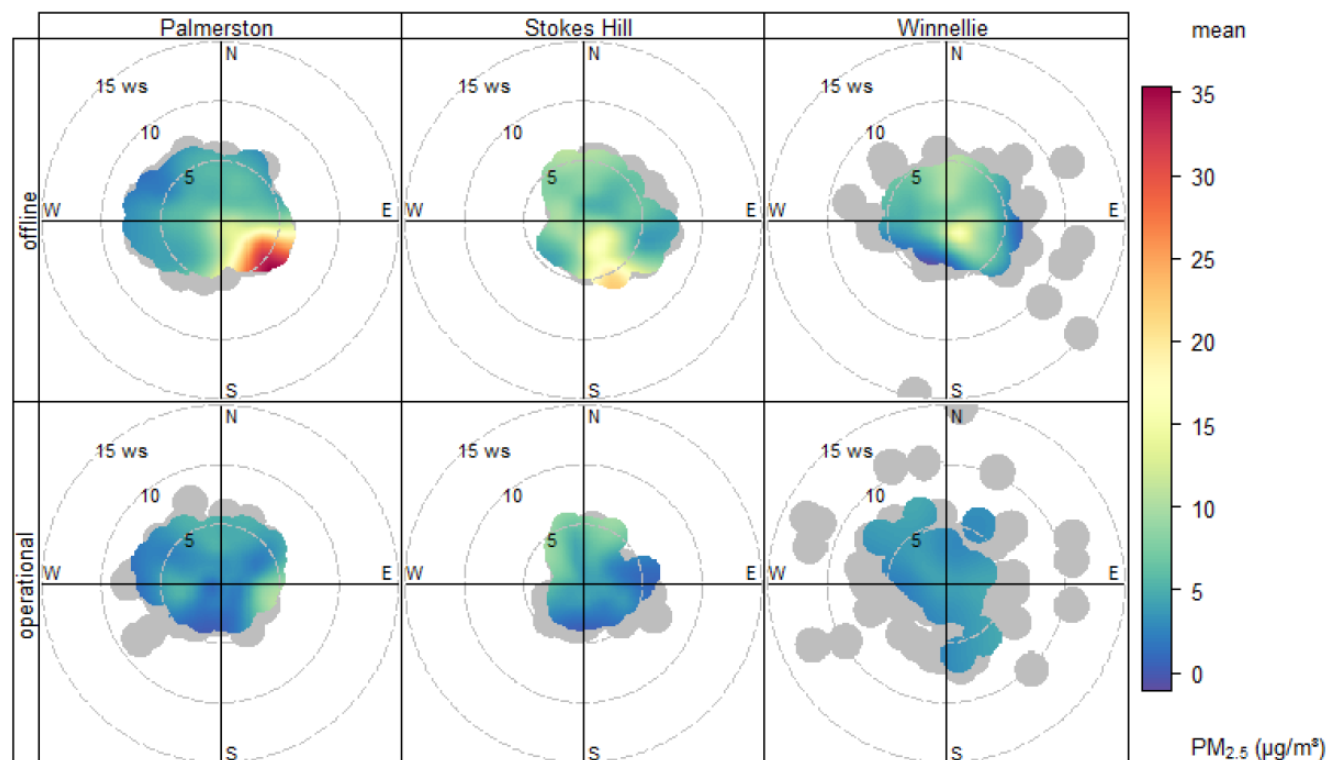


Figure 4-18: Polar plots by monitoring site for 1-hour average winds and $PM_{2.5}$ concentrations measured while DLNG was operational and offline

Table 4-12 details the 24-hour average concentrations measured at all three monitors on the days when any of the three monitors recorded an exceedance of the Air NEPM Standard of $25 \mu g/m^3$. All exceedance events occurred while DLNG was not operational, thus it must be concluded that DLNG did not contribute to any exceedances.

Table 4-12: 24-hour average $PM_{2.5}$ concentrations ($\mu g/m^3$) measured by the NT EPA monitoring network on exceedance days (January 2025 to December 2025)

Date	24-hour average $PM_{2.5}$ concentration ($\mu g/m^3$)		
	Palmerston	Stokes Hill	Winnellie
16 May 2025	28.4	29.1	33.8
19 May 2025	22.2	19.8	26.4
21 May 2025	27.7	27.3	24.4
23 May 2025	29.2	33.3	32.7
24 May 2025	30.5	40.4	36.4
13 June 2025	32.8	29.2	34.8
14 June 2025	41.1	42.5	49.0
15 June 2025	24.3	33.7	27.9
16 June 2025	24.0	29.4	NA

Date	24-hour average PM _{2.5} concentration (µg/m ³)		
	Palmerston	Stokes Hill	Winnellie
20 June 2025	18.0	22.7	27.7
28 June 2025	30.0	18.8	NA
29 June 2025	71.0	44.0	NA
30 June 2025	45.5	27.5	NA
1 July 2025	31.2	28.5	35.0
2 July 2025	35.9	36.8	29.5
3 July 2025	39.8	28.3	30.5
4 July 2025	36.5	25.5	44.9
5 July 2025	38.2	22.1	23.3
6 July 2025	27.5	24.8	24.4
20 July 2025	31.9	14.7	24.1
24 July 2025	26.0	16.5	18.2
4 August 2025	31.2	16.0	15.1
2 September 2025	218.8	19.0	17.1
3 September 2025	107.6	19.4	15.0
24 September 2025	25.9	6.8	6.4
6 October 2025	7.1	6.3	28.6

4.4.10. Hot Venting Analysis

Hot venting occurred at DLNG on four occasions in 2025. These events are summarised in **Section 4.3.3.3** and **Table 4-2**. There were no exceedances of any ambient air quality standards at any monitoring sites while hot venting occurred.

Figure 4-19, Figure 4-20, Figure 4-21 illustrate the 1-hour average pollutant concentrations measured at the Palmerston, Stokes Hill and Winnellie monitoring sites during the period when DLNG was operational, with periods when hot venting occurred at DLNG is shaded in grey.

Several data quality issues can be observed in these plots:

- All monitors had extended periods of missing data
- At Palmerston and Stokes Hill, there were step changes in CO concentrations that resulted in extended periods of negative concentrations, and which would likely be corrected through data ratification
- There is a step change in SO₂ concentrations at Stokes Hill, separated by a period of missing data
- The Stokes Hill monitor recorded a large positive spike in PM₁₀ that appears unrealistic
- At Winnellie, significant drift in SO₂ concentrations can be observed.

Despite these data quality issues, it is obvious from the plots that the periods of hot venting were not associated with distinctly different pollutant concentrations at any monitor when compared to the operational periods when hot venting was not occurring. Thus, the conclusion drawn in previous annual reports, that hot venting does not contribute significantly to measured concentrations of any pollutant measured as part of the NT EPA monitoring network, remains true.



Figure 4-19: Timeseries of 1-hour average pollutant concentrations at Palmerston monitoring station while DLNG was operating (19 October to 31 December), with hot venting periods highlighted in grey

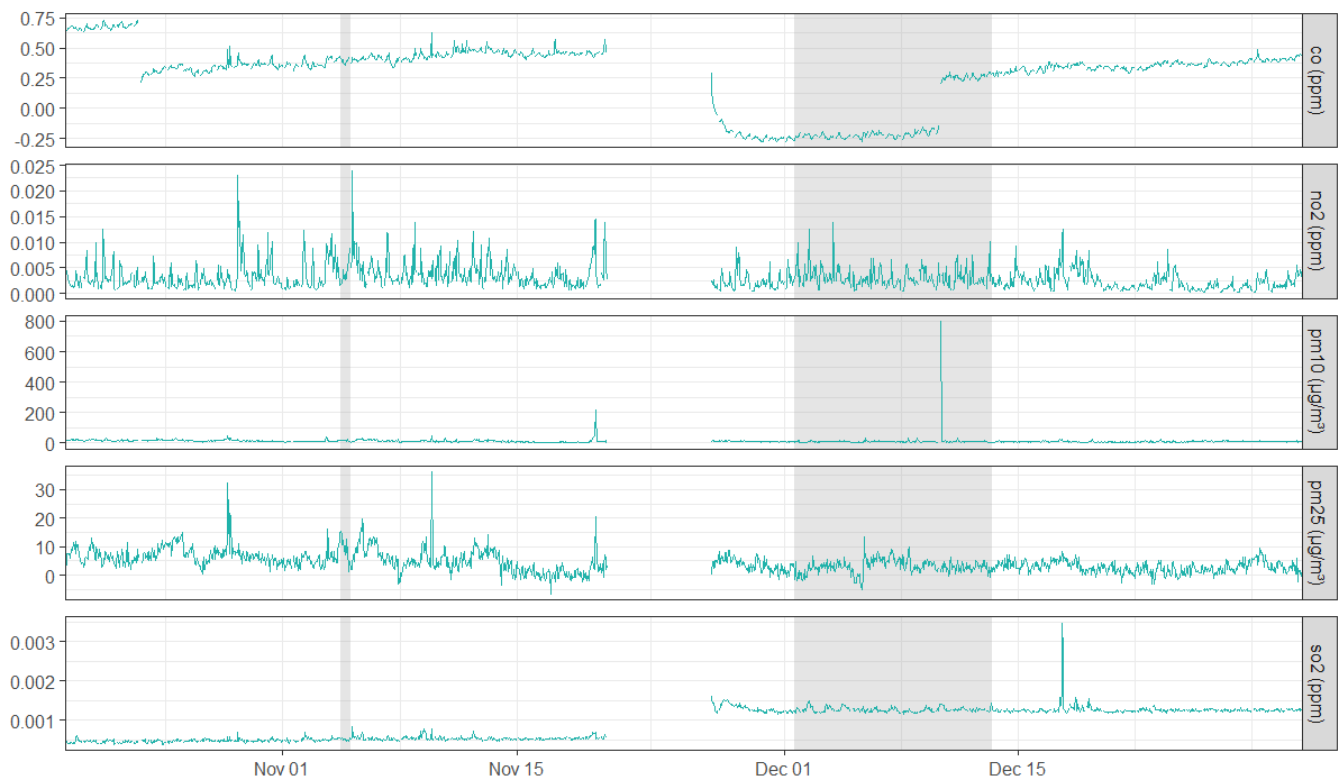


Figure 4-20: Timeseries of 1-hour average pollutant concentrations at Stokes Hill monitoring station while DLNG was operating (19 October to 31 December), with hot venting periods highlighted in grey

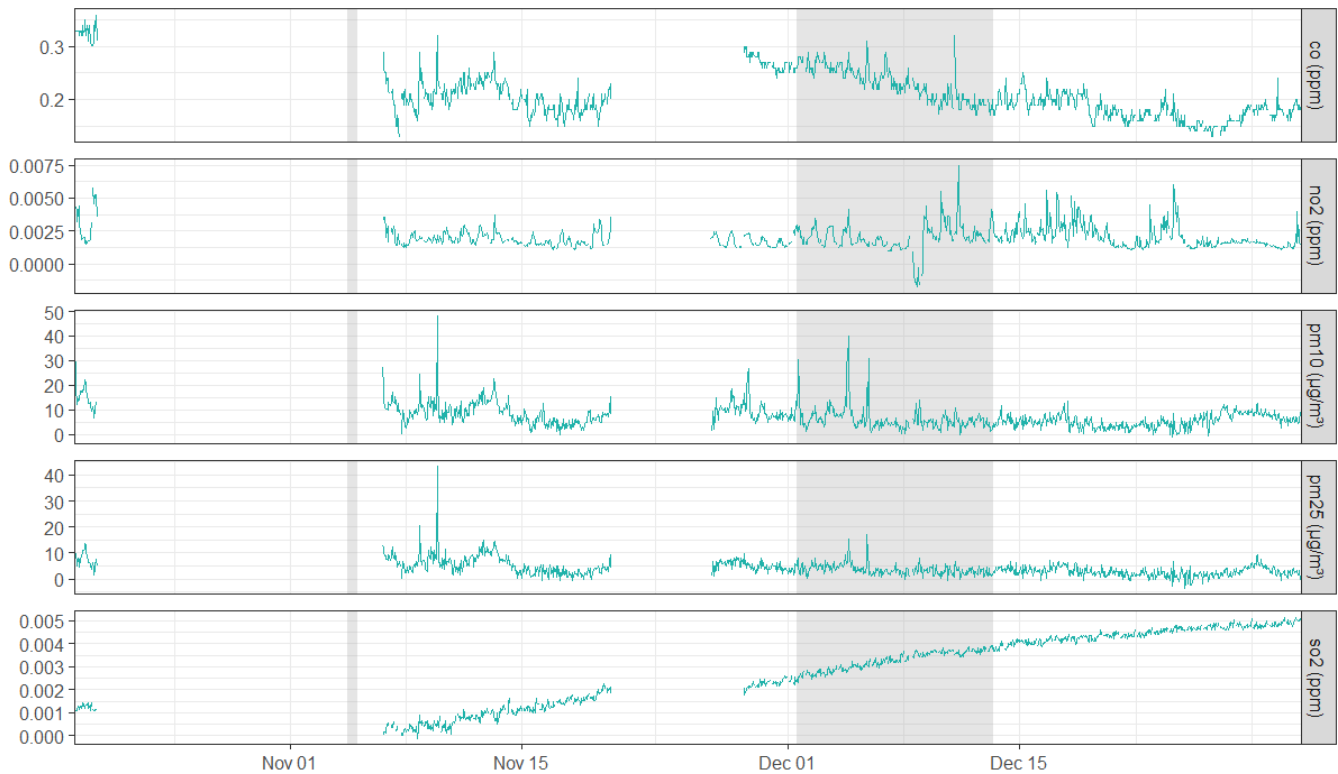


Figure 4-21: Timeseries of 1-hour average pollutant concentrations at Winnellie monitoring station while DLNG was operating (19 October to 31 December), with hot venting periods highlighted in grey

4.4.11. Discussion and interpretation of results

DLNG was offline for much of 2025, with operations only commencing on 19 October 2025. This report incorporates a comparison of measured pollutant concentrations before and after this date, as a means of identifying whether there was an obvious contribution to measured concentrations from the Facility.

Analysis of the NT EPA ambient air quality monitoring data from Palmerston, Stokes Hill and Winnellie shows:

- The NT EPA monitoring network achieved a minimum of 73% valid data capture annually for all pollutants.
- Annual average and 1-hour average concentrations of NO₂ were below the respective Air NEPM standards of 0.015 ppm and 0.08 ppm at all three sites.
- 1-hour average concentrations of SO₂ complied with the Air NEPM standard of 0.075 ppm at Stokes Hill and Winnellie.
- 1-hour average concentrations of SO₂ at Palmerston exceeded the standard in one hour, on a day in September 2025 when DLNG was not operational. The spike in SO₂ concentrations was accompanied by a concurrent spike in concentrations of NO₂, CO, PM₁₀ and PM_{2.5}, suggesting the source to be something that generates all of these pollutants. The exceedance at Palmerston is most likely due to one of several fires that occurred in the Palmerston region during September 2025, as identified in the Northern Australian Fire Information (NAFI) database.
- Concentrations of CO complied with the relevant Air NEPM standards at all monitoring sites, reaching at most 72% of the standard at Palmerston and 12% of the standard at Stokes Hill and Winnellie.
- Annual average concentrations of PM₁₀ complied with the Air NEPM standard of 25 µg/m³ at all three sites. 24-hour average concentrations of PM₁₀ exceeded the Air NEPM standard of 50 µg/m³ on four days at Palmerston, on eight days at Stokes Hill, and on one day at Winnellie, for a total of 10 exceedance days.
- Annual average concentrations of PM_{2.5} exceeded the Air NEPM standard of 8 µg/m³ at all three monitors. 24-hour average concentrations of PM_{2.5} exceeded the Air NEPM standard of 25 µg/m³ on 21 days at Palmerston, on 14 days at Stokes Hill, and on 13 days at Winnellie, for a total of 26 exceedance days.

- All particulate matter exceedances occurred during the Dry season (May to October), when DLNG was not operational, therefore DLNG did not contribute to any exceedances.
- Hot venting at DLNG did not contribute significantly to measured concentrations of any pollutant and there were no exceedances for any pollutant during periods of hot venting at DLNG.

Overall, it is concluded that DLNG did not contribute significantly to measured concentrations of any pollutant in 2025, and did not contribute to any exceedances, all of which occurred while the plant was offline. Given this conclusion and the representativeness of the monitoring network in terms of nearby populated areas, it would seem unlikely that emissions from DLNG would have had a significant impact on air quality at any sensitive receptor.

4.5. Fugitive Emissions

In accordance with Condition 6 and Table 1 of the Licence, Santos NA must implement and maintain a Fugitive Emissions Management Plan (**FEMP**). According to Condition 44 the FEMP must include a leak detection and repair (LDAR) program and include annual monitoring of fugitive methane emissions from the DLNG storage tank using best practice methods.

The FEMP had not been submitted to the NT EPA for approval during the 2025 reporting period and due to DLNG re-starting in October 2025 the DLNG storage tank had not been re-assessed for fugitive methane emissions.

Reporting on fugitive methane emissions as required by Condition 61.10 below will be completed in the 2026 DLNG AEMR.

Condition 61.10 includes the outcomes of the LDAR program (undertaken in accordance with condition 44) including:

- a) the extent of compliance with the LDAR program;
- b) a summary of monitoring undertaken during the reporting period;
- c) a summary of minor and significant leaks identified during the reporting period;
- d) an explanation of any component which could not be repaired;
- e) an estimation of the Volatile Organic Compound (**VOC**) and methane losses from leaking;
- f) the percentage reduction or increase in VOC and methane losses from leaking items achieved since the last year of testing;
- g) the methods used in calculating emissions; and
- h) continual improvement measures for reducing fugitive emissions.

5. Monitoring Discharges to Land and Surrounding Environment

5.1. Irrigation Discharge and Groundwater Monitoring Program

As part of DLNG operations, several water and wastewater streams are authorised to be discharged from DLNG under the Licence. Authorised discharge occurs via the irrigation areas (located onsite within the DLNG boundary). A schematic of processes associated with irrigation discharge streams is shown in **Figure 3-1**.

The irrigation discharge comprises several streams arising from the operation of DLNG:

- Treated wastewater from the Sanitary Treatment Plant (STP). The STP receives wastewater from bathroom and kitchen facilities. The STP utilises biological (e.g. activated sludge) and physical (e.g. filters, settlement) treatment to reduce the nutrient levels, biological oxygen demand and suspended solid levels in the treated wastewater.
- Wastewater from the process area sumps, which is treated by an oily water separator - comprising a Corrugated Plate Interceptor/Dissolved Air Filtration Flotation (CPI/DAFF) system - to remove hydrocarbons. The separated hydrocarbons are stored and disposed of offsite by licenced waste transport and disposal contractors.
- Water from boiler blowdown and the turbine air humidifier system.

Each of these discharge streams are sent to the irrigation water holding tank (T-2903). The combined stream is periodically discharged to the irrigation areas located within the DLNG boundary (shown in **Figure 5-1**).

Contaminants in groundwater have the potential to be transported offsite from DLNG via groundwater flow. Where groundwater flow discharges to offsite area surrounding the site, this has the potential to impact the environment.

Santos has developed and implements a groundwater monitoring plan for DLNG. This program monitors groundwater conditions at DLNG. The groundwater monitoring plan is a requirement of the Licence (Conditions 6 and 49) and was previously submitted to, and approved by, the NT EPA.

The environmental consultant CDM Smith Australia Pty Ltd (CDM Smith) was commissioned by Santos to collect and assess groundwater monitoring data in accordance with the groundwater monitoring plan. The groundwater monitoring results are provided in an annual groundwater monitoring report (CDM Smith, 2026g), the results of which are summarised herein.

5.1.1. Monitoring Objectives

The objective of groundwater monitoring at DLNG is to investigate the presence and concentration of potential contaminants that may be present in the groundwater as a result of:

- Irrigation discharge within the DLNG boundary (known as the 'irrigation areas' as shown in **Figure 5-1**).
- The discharge of materials or substances to groundwater from other operations at DLNG.

The objectives of the irrigation discharge monitoring program are to:

- Characterise the quality and quantify the flow of the discharge water; and
- Assess compliance with the trigger values in the Licence (refer to Appendix B Table 2 within the Licence).

Characterising the quality of discharge water allows Santos to assess potential for discharged water to impact the environment. As outlined in the conceptual model (**Figure 2-2**), discharged water may interact with groundwater and Darwin Harbour. The results of the irrigation discharge monitoring program are also used to interpret results from other monitoring programs, such as the mangrove monitoring program (**Section 3.2**).

5.1.2. Monitoring Methods

The location of irrigation discharge is shown in **Figure 5-1**. Monitoring occurs throughout the year, the coordinates, sampling frequencies and the discharge sources are provided within the Licence (Appendix B Table 1 and Table 2).

Field measurements and samples are collected by DLNG laboratory staff or environmental consultants suitably trained and experienced with the methodologies used.

The irrigation discharge samples are collected via a flow meter sample valve positioned along the discharge pipe within the plant. Samples are sent to analytical laboratories for analysis. All laboratories used maintain National Association of Testing Authorities (NATA) accreditation for the analyses being carried out.

Groundwater samples were obtained by qualified personnel from a network of seven monitoring wells. The location coordinates and sampling frequencies of the monitoring wells are provided in **Table 5-1**, with the location of the wells shown in **Figure 5-1**.

Each monitoring well has characteristics that have the potential to influence the groundwater conditions observed, including proximity to coastal/tidal influences, water retention/flow capacity and strata chemistry. Key characteristics of the monitoring well network include:

- BH6 is installed in significantly different strata from other monitoring wells. A review of historical maps pre-dating the construction of DLNG, suggest that BH6 was the only monitoring well not located on the phyllite headland, which is the dominant geological feature underling most of the facility's infrastructure. BH6 is instead positioned in an area of the facility where natural clay and laterite has been deposited where a small inlet formerly existed.
- BH5 has significant difference in groundwater elevation due to hydraulic mounding. The mounding is inferred to be related to irrigation activities and low permeability water bearing strata that this well is installed within.
- BH2 is located closer to the coast and mangrove area, where groundwater conditions are more saline than other areas of DLNG. This is reflective of the proximity of this well to the marine environment within the phyllite strata that this well is installed within.
- Findings presented in past groundwater monitoring reports (CDM Smith, 2022), indicate that the integrity of monitoring well BH3 has likely been compromised, and monitoring results for this well may not reflect the actual groundwater conditions at DLNG. The potential exists for irrigation discharge to seep into groundwater preferentially via this well, and for this reason, monitoring results from well BH3 have not been used for trend analysis purposes since October 2022. Notwithstanding this, Santos has continued to monitor well BH3 in accordance with the Licence requirements.

During 2025, two groundwater monitoring events were undertaken during the reporting period to capture wet and dry seasonality (April 2025 and August 2025). Groundwater analysis was completed for physical parameters, major ions, TPH and dissolved metals listed for analysis in the DLNG Groundwater Monitoring Plan. Groundwater standing water levels were also measured in each well prior to sampling.

Samples were collected following stabilisation of the field parameters (water level, temperature, pH, conductivity and ORP) and stored in bottles and vials supplied by the laboratory.

Table 5-1: Groundwater monitoring bore locations

Bore	Location (Decimal Degrees)	Monitoring Frequency ^[1]
BH1	12.52388°S 130.8753° E	Monthly ^[2]
BH2	12.52099°S 130.8635°E	Biannually
BH3	12.52204°S 130.8637°E	Biannually
BH4	12.52316°S 130.8628°E	Biannually
BH5	12.52424°S 130.8638°E	Biannually

Bore	Location (Decimal Degrees)	Monitoring Frequency ^[1]
BH6	12.52455°S 130.8651°E	Biannually
BH7	12.52558°S 130.8641°E	Biannually

¹ Biannual groundwater monitoring to be undertaken once in the wet season and once in the dry season for the analytes specified in Table 2 with the exception of chlorophyll-a, which does not need to be monitored in groundwater.

² Monthly monitoring to establish a baseline data set over a 24-month period, then reverting to Biannually thereafter.

5.1.3. Assessment Framework

Under the DLNG Groundwater Monitoring Plan, no groundwater specific water quality objectives are nominated or are specified in the Licence. Therefore, to assess environmental risk a tiered assessment framework has been developed and includes the following three steps:

- Step 1 – Irrigation discharge quality assessment: comparison of the irrigation discharge against Licence requirements (listed in Table 2 of Appendix B of the Licence), the modelled ammonia trigger value, and the irrigation discharge historical 80th percentile values (based on data obtained between 2009 and 2025).
- Step 2 – Groundwater quality trend assessment: evaluation of changes in groundwater conditions compared to conditions reported previously via trends analysis. This level of assessment includes a comparison of the wet season groundwater quality against the DHWQO Marine and Estuarine Systems for Mid Estuary, the modelled ammonia trigger value and the groundwater historical 80th percentile values (based on data obtained between 2015 and 2025).
- Step 3 – Environmental risk assessment: analyse trends and correlations between groundwater conditions reported for each well and the irrigation discharge. This level of assessment includes statistics and further assessment to confirm potential environmental risk from the irrigation discharge.

A conservative trigger value of 9.0 mg/L for ammonium nitrogen in groundwater applied at the groundwater network boundary was developed using a fate and transport model (CDM Smith, 2019).

The model uses the Ogata Banks calculation to evaluate the maximum concentration of ammonium nitrogen in groundwater at DLNG, to meet the DHWQO for ammonium nitrogen in groundwater that may be discharged to the harbour from the facility. The calculation is based on the distance and time for groundwater to travel in groundwater, and the subsequent dispersion and degradation of ammonium nitrogen.

The assessment framework is illustrated in **Figure 5-2**.

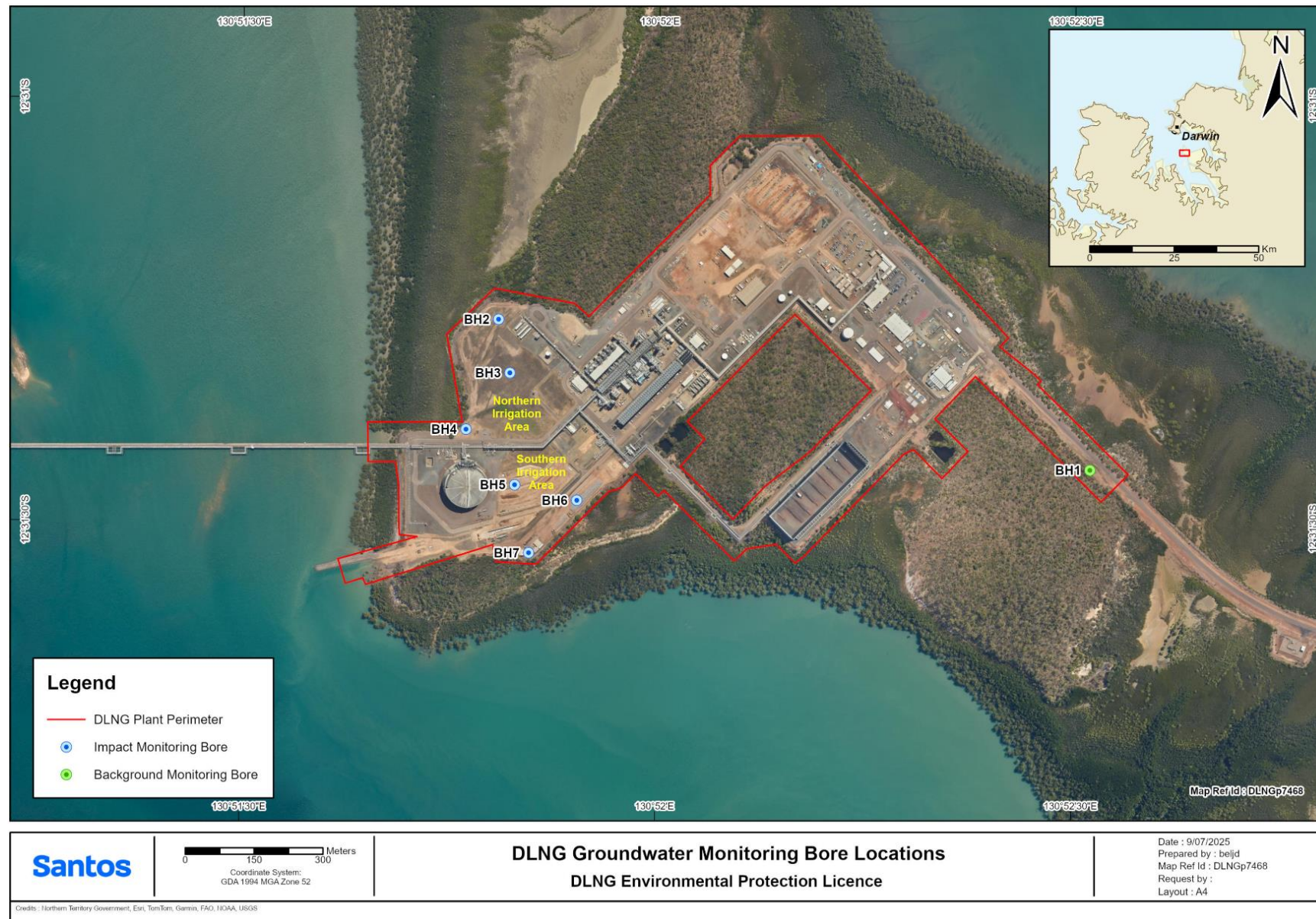


Figure 5-1: Groundwater monitoring program bore locations

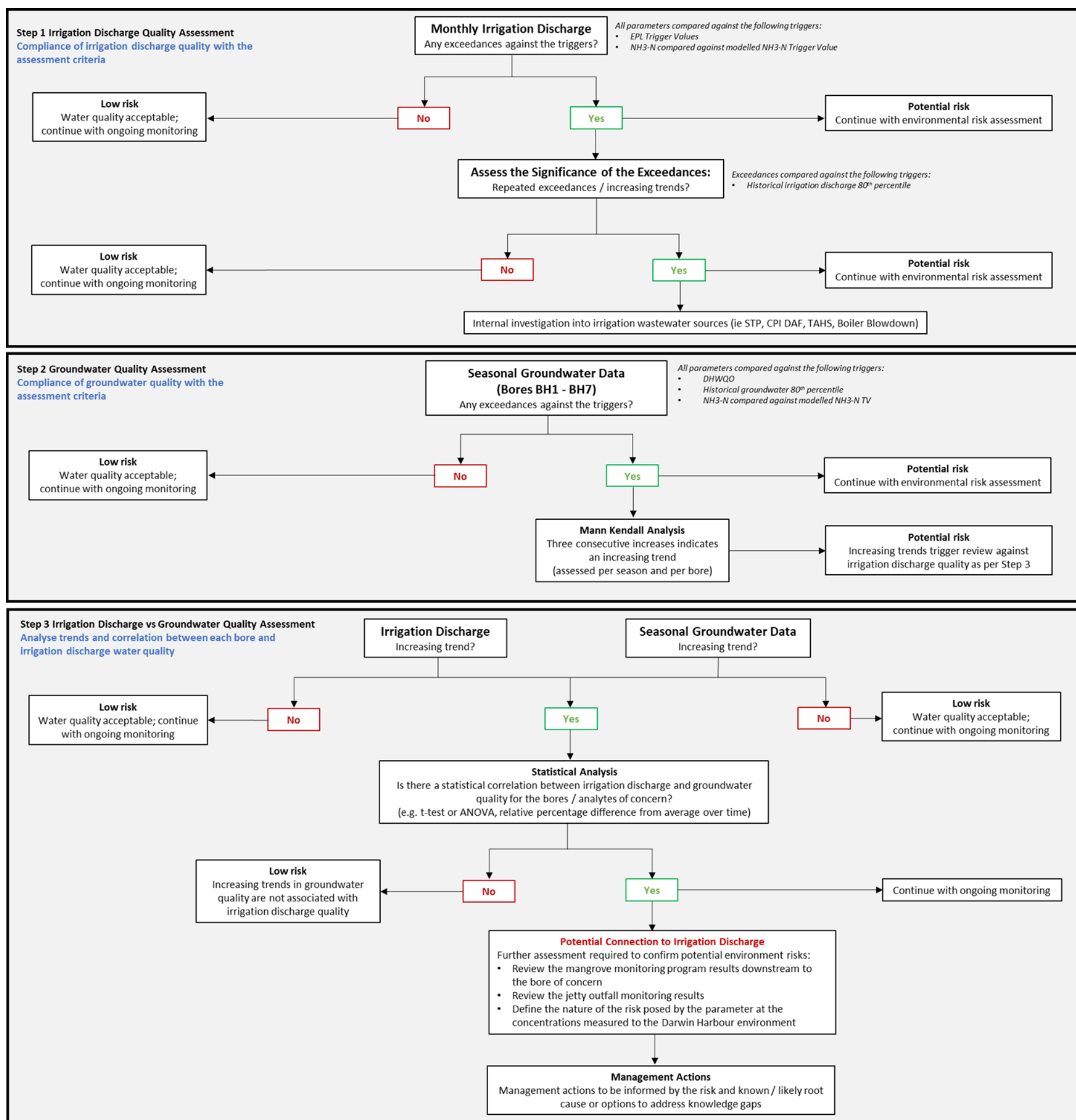


Figure 5-2: Assessment framework of impact to groundwater from irrigation discharge

5.1.4. Monitoring Results – Irrigation Discharge

5.1.4.1. Volume Discharged

A total of 9,145 m³ was discharged to the irrigation area during the reporting period (**Figure 5-3**). This is approximately 35.2% of the 26 ML limit allowed for in the Licence. This volume is significantly lower than historical annual volumes of discharge, with the exception of 2024.

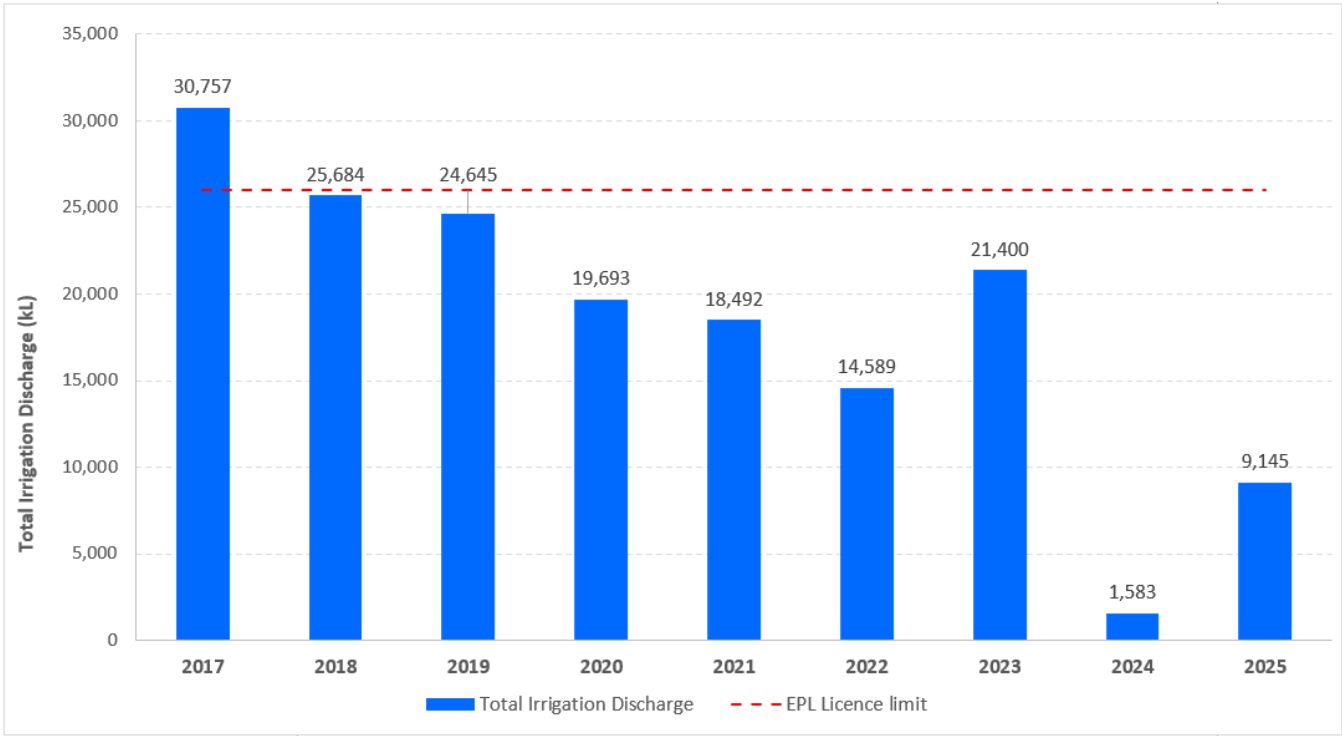


Figure 5-3: Water volumes discharged to the irrigation area

5.1.4.2. Irrigation discharge water quality monitoring results

A summary of the irrigation water quality monitoring results for 2025, including long term trends from 2015 to 2025 and Licence trigger value exceedances, are presented in **Table 5-2**. Monitoring of discharge water environmental indicators is undertaken as per the frequency outlined in **Table 5-2**. The environmental indicators (**Table 5-2**) form part of the water quality parameters measured to assess irrigation discharge water quality.

The 2015 to 2025 dataset for irrigation discharge water quality monitoring results is provided in **Attachment A – Irrigation, Jetty Outfall and Sediment Pond data**; values exceeding current Licence trigger values are bolded. A summary of the water quality results for the irrigation discharge is provided below:

- Copper was reported at a concentration above the Licence trigger value on a single event during 2025 (reported at 100 µg/L compared to a trigger value of 69 µg/L). This exceedance did not constitute a reportable non-compliance as it was less than three times the trigger value. Copper was not reported above the trigger value during other monitoring events. Copper has in the past been reported at concentrations above the Licence trigger value, before returning to concentrations below the Licence trigger value.

Table 5-2: Summary of 2025 irrigation water quality monitoring results

Parameter	Units	EPL217-04 Monitoring Frequency	EPL217-04 Licence Trigger Value	2025 Maximum	2025 Minimum	2025 Average	Long-term Average (2015-2025)	2025 Reportable Non-Conformance ⁽¹⁾
Field Parameters								
pH	pH Units	Monthly	7 – 8.5	8.38	7.37	7.82	7.33	No
Electrical conductivity	µs/cm	Monthly	No trigger	1,342	399.1	982.1	307.3	N/A
TSS	mg/L	Monthly	≤ 30	10.00	1.00	4.41	20.67	No
Turbidity	NTU	Monthly	No trigger	8.59	1.01	3.40	15.75	N/A
DO	mg/L	Monthly	No trigger	51.9	0.45	6.89	1.15	N/A
Temperature	°C	Monthly	No trigger	35.40	25.70	30.48	34.44	N/A
Environmental Indicators								
Ammonia (NH ₃ -N)	µg/L	Annual	No trigger	3,860	31.00	1,915	3,226	N/A
Nitrate (NO ₃ -N)	µg/L	Annual	No trigger	6,800	3,580	4,955	1,100	N/A
Nitrite (NO ₂ -N)	µg/L	Annual	No trigger	570	3.00	236	71.76	N/A
DRP (PO ₄ -P)	µg/L	Annual	No trigger	3,800	2,130	2,840	796	N/A
Total Nitrogen	mg/L	Annual	≤ 40.	11.00	5.30	8.86	8.26	No
Total Phosphorous	mg/L	Annual	≤ 10	4.00	2.40	3.02	1.39	No
Chlorophyll-a	µg/L	Biannual	2	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
BOD	mg/L	Monthly	≤ 25	12.00	1.00	2.89	44.02	No
TRH	mg/L	Annual	< 6	N/A ^[2]	N/A ^[2]	N/A ^[2]	0.66	No
<i>E. coli</i>	MPN/100 mL	Biannual	≤ 75.0	N/A ^[2]	N/A ^[2]	N/A ^[2]	140.61	No
<i>Enterococci</i>	MPN/100 mL	Biannual	50	N/A ^[2]	N/A ^[2]	N/A ^[2]	113.97	No
Metals & BTEX								
Arsenic	µg/L	Annual	10	N/A ^[2]	N/A ^[2]	N/A ^[2]	1.01	No
Cadmium	µg/L	Monthly	3.2	N/A ^[2]	N/A ^[2]	N/A ^[2]	0.1	No
Chromium	µg/L	Annual	10	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Copper	µg/L	Monthly	69	100	7.00	45.00	35.03	No
Iron	µg/L	Annual	1,300	22.00	5.00	11.40	202.47	No

Parameter	Units	EPL217-04 Monitoring Frequency	EPL217-04 Licence Trigger Value	2025 Maximum	2025 Minimum	2025 Average	Long-term Average (2015-2025)	2025 Reportable Non- Conformance ^[1]
Lead	µg/L	Annual	10	N/A ^[2]	N/A ^[2]	N/A ^[2]	1.50	No
Manganese	µg/L	Annual	15,500	16.00	1.00	5.00	31.25	No
Mercury	µg/L	Monthly	0.1	N/A ^[2]	N/A ^[2]	N/A ^[2]	N/A ^[2]	No
Nickel	µg/L	Annual	290	2.00	1.00	1.50	1.31	No
Silver	µg/L	Annual	1.4	N/A ^[2]	N/A ^[2]	N/A ^[2,3]	N/A ^[1]	No
Zinc	µg/L	Monthly	1,780	22.00	5.00	9.64	19.38	No
BTEX	µg/L	Monthly	700	N/A ^[2]	N/A ^[2]	N/A ^[2]	3.14	No

Notes:

1. Results from mandatory sampling are only considered when determining reportable non-conformances under the Licence
2. All results less than LOR
3. Only one sample taken (annual requirement)
4. Exceedance not considered a reportable non-conformance as the effluent was taken offsite (not irrigated / discharged to land at DLNG).

*Yellow shading denotes exceedances of the Licence trigger values.

5.1.5. Monitoring Results and Discussion – Groundwater

The results of the 2025 groundwater monitoring program are discussed herein. The 2015 to 2025 groundwater quality dataset provided in **Attachment D – Groundwater Data**.

5.1.5.1. Groundwater Level and Flow Direction

Seven groundwater monitoring bores are installed at the DLNG facility (**Figure 5-1**):

- Six wells (BH2 to BH7) are located within the irrigation area:
 - BH2, BH4, BH6 and BH7 are located on the periphery of the irrigation area to monitor potential migration of groundwater contaminants from the irrigation area towards Darwin Harbour.
 - BH3 and BH5 are located at the centre of the irrigation area to monitor groundwater mounding.
- BH1 is located to the east of the DLNG facility outside of the operations footprint for reference purposes.

The standing water level (SWL) was measured in the field for each bore by recording the depth to groundwater from the top of the bore casing. Groundwater elevation was then corrected to metres above the Australian Height Datum (mAHD) using survey data.

Plots illustrating the historical groundwater monitoring data are provided in **Figure 5-5**. Groundwater elevation contours for the 2025 wet and dry season are presented in **Figure 5-4**.

According to BOM rainfall data for Darwin Airport station 14015 (BOM, 2025), the total rainfall for the 2024/2025 wet season (October-April) measured around 1,981 mm, which is comparative to the 2023/2024 wet season (approximately 1,765 mm). Groundwater elevations measured in the 2024/2025 wet season were marginally higher when compared with measurements taken in the 2023/2024 wet season. This is likely attributable to the significantly higher rainfall observed in April 2025 (268 mm), compared to April 2024 (18.4 mm).

The contours indicate that groundwater flow reflects topography, flowing in a radial pattern from the irrigation area towards the coast. During the 2025 dry season, overall groundwater elevations are lowered, and the hydraulic gradient reduced as well. The lower groundwater elevation matches the historic seasonal variation (**Figure 5-5**). Historically, groundwater flow during the dry season has been directed away from the irrigation area towards the coast. The highest groundwater levels are seen at BH5. This is consistent with previous observations at the DLNG facility.

As with previous years there is a distinct seasonal trend in response to the wet and dry seasons, with significantly higher groundwater levels during the wet season (**Figure 5-5**). During the wet season, a groundwater mound forms under the irrigation areas and is inferred to flow radially away from these areas towards Darwin Harbour. The mound then dissipates as groundwater elevations become flatter during the dry season. The rise and fall of groundwater levels appears to be predominantly influenced by rainfall driven recharge and not irrigation discharge which occurs all year round.

Hydrograph records for well BH3 indicate that the groundwater level may be responding to surface water ingress directly into the well, particularly during the wet season, and as such may not be representative of groundwater conditions at DLNG.

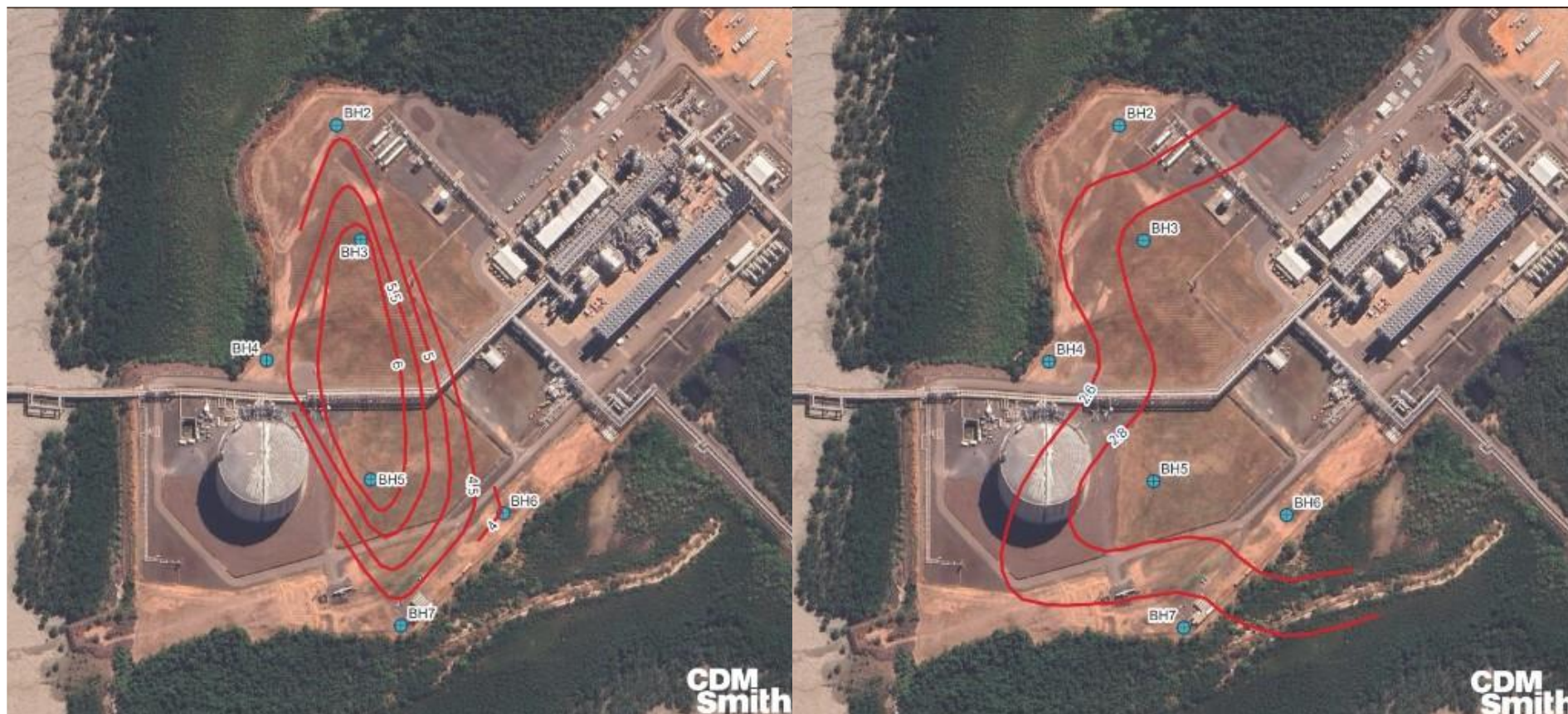


Figure 5-4: Groundwater elevations contours 2025

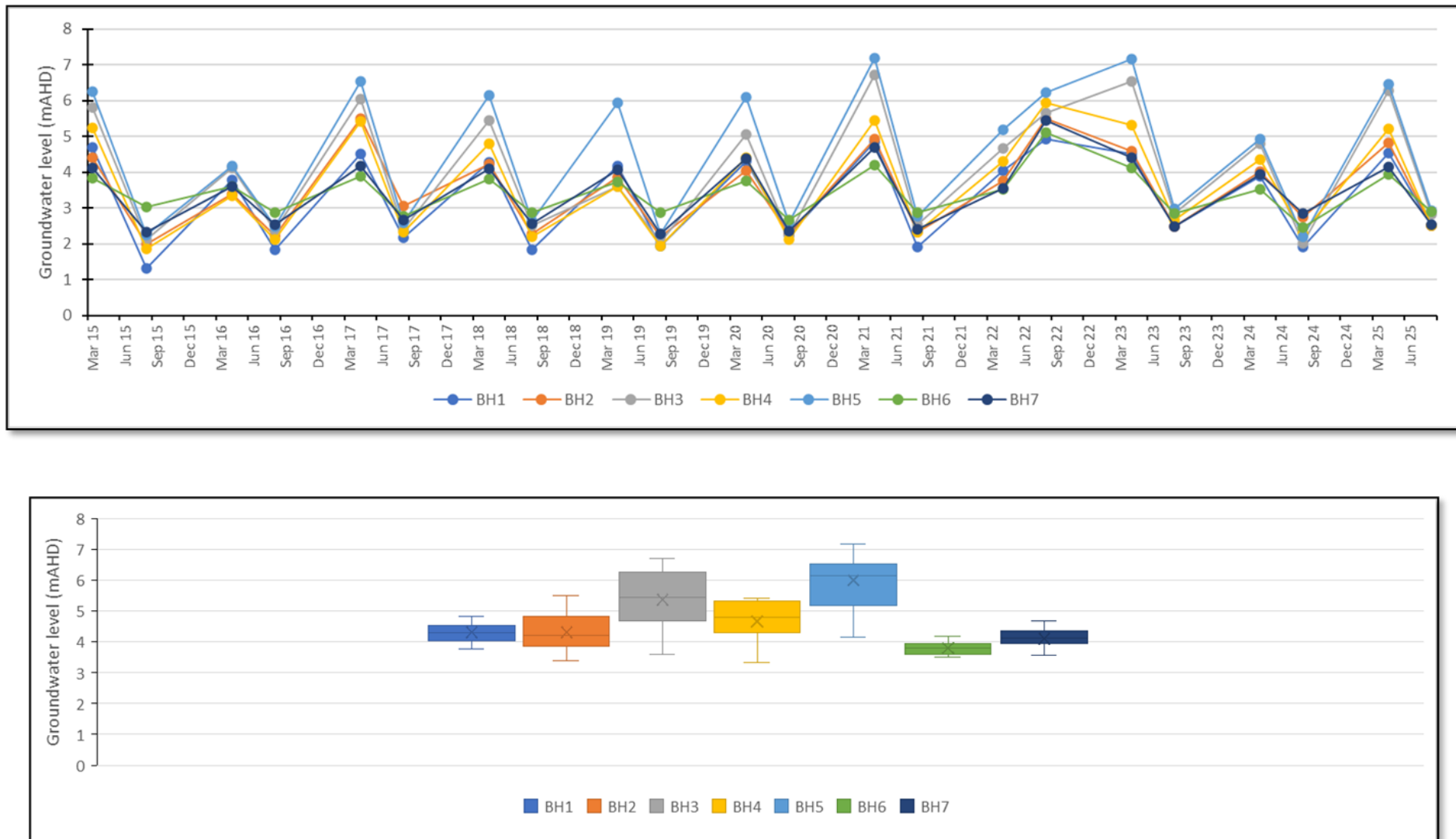


Figure 5-5: Groundwater elevations from 2015 to 2025

5.1.5.2. Groundwater Quality Laboratory Results

The laboratory analytical results for the 2025 biannual groundwater monitoring are presented herein in accordance with the assessment framework outlined in **Section 5.1.3**.

5.1.6. Results: Step 1 – Irrigation Discharge Quality Assessment

Irrigation discharge has the potential to seep into the ground and groundwater. Key findings from a review of the irrigation discharge water quality against the assessment framework include:

- Irrigation discharge exceeded the assessment criteria for September 2024 to August 2025 (Licence trigger value for irrigation discharge, modelled trigger value and irrigation discharge historical 80th percentiles for the following analytes and the results are summarised in **Table 5-3**.
 - EC exceeded the 80th percentile value on all sampling occasions between September 2024 and August 2025.
 - pH exceeded the Licence trigger values on one occasion (Dec 2024), and the historical 80th percentile values on six occasions during between September 2024 and August 2025
 - Nitrate (no trigger value under EPL217-04 & EPL217-05) exceeded the historical 80th percentile value on all samples between September 2024 and August 2025.
 - Nitrite (no trigger value under EPL217-04 & EPL217-05) exceeded the historical 80th percentile value on all two sampling occasions between September 2024 and August 2025.
 - Dissolved Reactive Phosphorus (no trigger value under EPL217-04 & EPL217-05) exceeded the historical 80th percentile value on all samples between September 2024 and August 2025.
 - Dissolved copper for one sampling event exceeded both the EPL217-04 TVs and the historical 80th percentile assessment criterium in the wet season (Dec 2024). Dissolved copper for one sampling event exceeded both the EPL217-04 TVs and the historical 80th percentile assessment criterium in the dry season (Jul 2025).
 - Total suspended solids (TSS) exceeded the Licence trigger value and the historical 80th percentile in December 2024.
 - Irrigation discharge water quality is discussed in further detail in **Section 5.1.4**.
- Based on the criteria for non-compliance under the Licence, TSS (as three or more times the TV on one occasion) registered as non-compliant for the December 2024 sample. However, the irrigation was not used from September 2024 to December 2024 and all waste was removed by vac truck and disposed offsite during this period. Therefore, this is not a non-compliance.

Non-compliances are summarised and presented in **Table 4-3**.

Table 5-3: Step 1: Summary of irrigation discharge exceedances against the assessment criteria from September 2024 to August 2025

Date Sampled / Analyte	Electrical Conductivity (Lab)	Total Suspended Solids (TSS)	Total Nitrogen	Nitrate (as N)	Nitrite (as N)	Dissolved Reactive Phosphorus (PO ₄ -P)	Copper	pH (Field)
Units	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH Unit
EPL 217-04	0.02	30	40	N/A	N/A	N/A	0.069	7.0 – 8.5
Modelled TV	9	-	-	-	-	-	-	-
80 th percentile	283.2	19	10.5	2.602	0.1458	1.168	0.05	7.924
Wet Season								
2/10/2024	704.4	0	7.31	6.88	0.012	3.16	0.041	8.0
11/11/2024	708.2	0	6	6.01	0.009	2.99	0.034	8.23

Date Sampled / Analyte	Electrical Conductivity (Lab)	Total Suspended Solids (TSS)	Total Nitrogen	Nitrate (as N)	Nitrite (as N)	Dissolved Reactive Phosphorus (PO ₄ -P)	Copper	pH (Field)
4/12/2024	667	1,130 ¹	6.75	3.32	0.054	3.28	0.13	8.81
08/01/2025	685	8	5.3	5.02	0.003	2.59	0.033	8.35
15/01/2025	690	1	-	-	-	-	-	8.29
17/02/2025	791.8	1	10.7	4.42	0.57	2.84	0.048	7.37
03/03/2025	1,040	3	8.42	3.58	0.327	3.80	0.042	7.64
02/04/2025	1,275	3	-	-	-	-	0.054	7.56
Dry Season								
4/09/2024	724.9	0	9.63	8.56	0.013	3.87	0.043	8.16
07/05/2025	1,053	7	-	-	-	-	0.055	7.49
04/06/2025	1,069	10	-	-	-	-	0.055	7.655
02/07/2025	1,342	7	-	-	-	-	0.1	7.65
06/08/2025	1,201	2	-	-	-	-	0.05	7.76

Notes

Grey text denotes value less than LOR

Blue cells denote concentrations exceeds the EPL 217-04 TV

Red text denotes values exceeds the historical 80th percentile of groundwater based on data since 2009 to 2025.

[1]. denotes values which register as non-compliant against conditions 77.2 of EPL217-03 – on a single sampling occasion of three times or more the trigger value.



Figure 5-6: Step 1 Results (Licence trigger values, modelled NH₃-N and 80th percentiles values)

5.1.7. Results: Step 2 – Compliance of Groundwater with Assessment Criteria

5.1.7.1. Comparison against the assessment criteria

The groundwater parameters for samples taken during the 2025 GMEs have been compared against the groundwater assessment criteria (i.e., the DHWQO, modelled ammonia TV and the seasonal historical 80th percentile for each groundwater monitoring bore). A total of nine parameters exceeded the DHWQOs, one groundwater monitoring bore (BH2) exceeded the modelled ammonia TV and 17 parameters exceeded the historical 80th percentile (2015 – 2025) during the 2025 GMEs.

Table 5-4 and **Table 5-5** summarise where exceedances have been recorded against the DHWQO, modelled ammonia TV or the historical 80th percentiles for the April and August GMEs. Note, parameters which do not exceed a TV or 80th percentile have been excluded (refer to **Attachment D** – Groundwater Data for the full dataset). An illustration of the Step 2 risk assessment process is provided in **Figure 5-7**. For ease of interpretation, only those parameters which exceed both the DHWQO, and modelled TV/80th percentile have been included in this figure.

Field parameters

Upon sampling each groundwater monitoring bore at the DLNG site, field parameters including electrical conductivity (EC), pH, temperature, dissolved oxygen (DO) % saturation, total dissolved solids (TDS) and oxidation reduction potential (ORP) were measured prior to laboratory analysis.

Microbiology

No exceedance of the DHWQO Interim Recreation Guidelines and Objectives for Primary Contact (≤ 200 E. coli/100mL and ≤ 50 Enterococci/100 mL) were recorded during 2025. The following microbiological parameters exceeded the assessment criteria for the 2025 GME:

- The historical 80th percentile was exceeded for:
 - Enterococci for BH3, BH5 (wet season only)
 - E. coli. for BH1, BH3 (wet season only).

Nutrients

The following nutrients exceeded the assessment criteria for the 2025 GME:

The DHWQO was exceeded for April Wet Season:

- BH1, BH2, BH3, BH5, BH6, BH7: Concentrations of total nitrogen at these boreholes exceeded guideline limits, indicating potential nutrient enrichment that could impact aquatic ecosystems.
- BH1, BH2, BH3, BH5, BH6, BH7: Elevated ammonia levels were recorded at these sites, which may signal organic matter breakdown or contamination sources.
- BH1, BH3, BH5, BH6, BH7: Combined nitrite and nitrate concentrations surpassed acceptable thresholds, pointing to possible leaching from soils or anthropogenic inputs such as fertilizers.
- BH1, BH3, BH5, BH6, BH7: High nitrate levels alone were observed at these boreholes, which can contribute to the degrading of water quality if persistent.

The DHWQO was exceeded for August Dry Season:

- BH1, BH2, BH3, BH5, BH6, BH7: Elevated total nitrogen concentrations were detected across these boreholes during the dry season, indicating persistent nutrient loading that could contribute to long-term water quality degradation.
- BH1, BH2, BH3, BH6, BH7: Ammonia levels exceeded guideline values at these sites, which may suggest organic matter decomposition or localized contamination sources. High ammonia can be toxic to aquatic organisms, especially under low-flow dry season conditions.
- BH1, BH2, BH3, BH5, BH7: Combined nitrite and nitrate concentrations were above acceptable thresholds, pointing to possible leaching from soils or anthropogenic inputs such as wastewater discharge.

- BH1, BH2, BH3, BH5, BH7: Nitrate exceedances alone were observed at these boreholes, which can accelerate algal growth and negatively impact aquatic ecosystems if sustained.
- BH2, ammonia concentrations surpassed the modelled trigger value for both wet and dry seasons.

Historical 80th Percentile Exceedances April Wet Season:

- Concentrations at BH5 exceeded the historical 80th percentile, indicating nutrient enrichment beyond typical seasonal variability. This may reflect increased runoff or localized nutrient sources during wet conditions.
- BH3, BH5: Elevated ammonia levels at these boreholes surpassed historical norms, suggesting organic matter breakdown or contamination. Ammonia exceedances can pose toxicity risks to aquatic life.
- BH2, BH5: Higher-than-expected reactive phosphorus levels were recorded, which can accelerate algal growth and degrade water quality. These exceedances may point to fertilizer inputs or soil leaching.
- BH5, BH6, BH7: Combined nitrite and nitrate concentrations exceeded historical benchmarks, indicating persistent nutrient loading likely from anthropogenic sources.
- BH5, BH6, BH7: Nitrate alone was elevated at these sites, reinforcing concerns about nutrient-driven eutrophication and groundwater contamination.

Historical 80th Percentile Exceedances August Dry Season:

- BH3, BH5: Exceedances during the dry season suggest ongoing nutrient inputs even under low-flow conditions, which can have cumulative ecological impacts.
- BH3: Ammonia levels at BH3 were above historical norms, potentially linked to organic matter decomposition or localized contamination.
- BH2: Elevated phosphorus at BH2 during dry conditions may indicate point-source inputs or sediment interactions.
- BH1, BH2, BH3, BH5, BH7: Widespread exceedances across multiple boreholes highlight systemic nutrient issues that persist beyond seasonal changes.

Petroleum hydrocarbons

Total Petroleum Hydrocarbons (TPH), Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylene, Xylene and Naphthalene (BTEXN) registered below the LOR during the 2025 GMEs, which is consistent with historical data (see **Attachment D** – Groundwater Data for the full groundwater dataset).

Metals

The following metals exceeded the assessment criteria for the 2025 GMEs:

The DHWQO April Wet Season was exceeded for:

- BH4, BH5: Copper concentrations exceeded the DHWQO at these boreholes, indicating potential contamination from industrial sources, corrosion of infrastructure, or natural mineral leaching. Elevated copper can be toxic to aquatic organisms, particularly under low hardness conditions.
- BH5: Nickel levels at BH5 were above guideline limits, which may suggest inputs from industrial activities, groundwater interaction with mineralized zones, or anthropogenic sources such as wastewater discharge.
- BH1, BH2, BH4, BH5, BH7: Widespread zinc exceedances across multiple boreholes point to systemic contamination, possibly from galvanized materials, stormwater runoff, or mining-related activities. High zinc concentrations can impair aquatic life and bioaccumulate in sediments.

The DHWQO August Dry Season was exceeded for:

- BH1, BH4, BH5, BH6: Copper exceedances persisted into the dry season, suggesting ongoing contamination rather than seasonal variability. This may indicate continuous leaching from infrastructure or localized sources.
- BH1, BH5: Elevated nickel during dry conditions reinforces concerns about groundwater quality and potential industrial or geogenic contributions.

- BH1, BH2, BH4, BH5, BH6: Zinc remained above acceptable levels at several boreholes, highlighting the need for targeted management strategies to address persistent metal contamination.

Historical 80th Percentile Exceedances April Wet Season:

- BH3: Arsenic exceedance suggests potential geochemical mobilization during wet conditions, requiring close monitoring to prevent long-term ecological risks.
- BH5: Cadmium is highly toxic even at low concentrations; its exceedance at BH5 may indicate contamination pathways linked to anthropogenic sources or leaching from sediments.
- BH3, BH7: Elevated iron levels could point to natural mineral dissolution or industrial influence.
- BH5: Nickel exceedance highlights possible industrial discharge or groundwater interaction with ultramafic rocks, necessitating source identification.
- BH2, BH5: High manganese may reflect reductive dissolution under saturated conditions, posing risks for water quality compliance.
- BH7: Zinc levels above thresholds indicate persistent contamination, potentially from corrosion products or historical land use.

Historical 80th Percentile Exceedances August Dry Season:

- BH5: Copper exceedance suggests localized contamination, possibly linked to infrastructure corrosion or historical waste disposal.
- BH5: Continued cadmium presence during dry season reinforces concerns about stable contamination sources requiring remediation.
- BH2, BH5: Nickel exceedances during dry conditions may indicate ongoing leaching from soils or industrial residues.
- BH5, BH6: Elevated manganese could be associated with groundwater stagnation or geochemical changes during low recharge periods.
- BH5: Persistent zinc exceedance across seasons signals chronic contamination, emphasizing the need for targeted management strategies.

General water parameters

The following major ions exceeded the assessment criteria for the 2025 GME:

The DHWQO April Wet Season was exceeded for:

- BH1, BH2, BH3, BH4, BH5, BH6, BH7: Total Suspended Solids (TSS) exceeded acceptable limits across all boreholes, indicating widespread sediment mobilization during high rainfall events. This may reduce water clarity and impact aquatic ecosystems, requiring erosion control and sediment management strategies.
- BH1, BH2, BH3, BH4, BH5, BH6, BH7: Field pH readings fell outside the guideline range at all boreholes, suggesting significant fluctuations in acidity/alkalinity during wet conditions. Such deviations can influence metal solubility and aquatic life, highlighting the need for buffering measures or source investigations.

The DHWQO August Dry Season was exceeded for:

- BH1, BH2, BH3, BH4, BH5, BH6, BH7: Elevated TSS persisted during the dry season, pointing to ongoing particulate matter issues possibly linked to wind erosion or residual sediment loads. This trend indicates that sediment control measures should be maintained year-round.
- pH (field) for BH1, BH2, BH3, BH4, BH5, BH6, BH7: Continued pH exceedances during dry conditions suggest systemic geochemical imbalances rather than seasonal anomalies. This warrants further assessment of groundwater buffering capacity and potential anthropogenic influences.

Historical 80th Percentile Exceedances April Wet Season:

- BH1: Elevated Total Suspended Solids indicates increased particulate matter during wet season flows, likely driven by surface runoff and erosion. This can reduce water clarity and impact aquatic habitats, requiring sediment control measures.

- BH3, BH6: High BOD suggests elevated organic matter, which can deplete dissolved oxygen and stress aquatic organisms. This may point to organic contamination sources such as vegetation decay.
- BH2, BH3, BH6, BH7: pH exceedances across multiple boreholes indicate significant shifts in acidity or alkalinity during wet conditions. Such changes can influence metal solubility and biological processes.

Historical 80th Percentile Exceedances August Dry Season:

- BH2: Persistent TSS exceedance at BH2 during dry season suggests localized sediment disturbance or wind-driven erosion.
- BH3, BH7: Elevated BOD at BH3 and BH7 during dry conditions indicates ongoing organic loading, possibly from groundwater-sourced organic matter or residual contamination. This trend underscores the importance of monitoring oxygen dynamics and identifying contributing sources.

Table 5-4: Step 2 – Summary of groundwater exceedances from the wet season (April) 2025 GME

Sample ID	Sample date	Alkalinity (total) as CaCO3	Ammonia as N	Anions Total	Arsenic (filtered)	Biochemical Oxygen Demand	Cadmium (filtered)	Calcium (filtered)	Cations Total	Copper (filtered)	DO % Saturation (Field)	E. Coll	Electrical Conductivity (field)	Enterococci	Fluoride	Ionic Balance	Iron (filtered)	Manganese (filtered)	Nickel (filtered)	Nitrate (as N)	Nitrite + Nitrate as N	Nitrogen (Total)	pH (Field)	Potassium (filtered)	Reactive Phosphorus as P (Orthophosphate as P) (filtered)	Redox Potential (Field)	Sodium (filtered)	Sulfate as SO4 - Turbidimetric (filtered)	Temp (Field)	Total Dissolved Solids (Field)	Total Suspended Solids (Lab)	Zinc (filtered)
		mg/L	mg/L	meq/L	mg/L	mg/L	mg/L	mg/L	meq/L	mg/L	%Sat	CFU/100mL		CFU/100mL	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH	mg/L	mg/L	mV	mg/L	mg/L	°C	mg/L	mg/L	mg/L
DHWQO			0.02				0.0055			0.0013		200		50					0.07	0.02	0.02	0.27	7-8.5								10	0.015
DLNG Modelled Trigger Values			9																													
BH1	22 Apr 2025	7	0.024	13.6	<0.0002	<2	0.00008	21	12.6	0.0007	45.2	100	1970	<1	<0.1	4.02	0.039	1.11	0.0089	0.033	0.033	0.49	5.08	4	0.005	78.9	206	79	30.4	1285	830	0.041
80th Percentile		8.4	0.18	180	0.0016	2	0.00066	178.2	183.8	0.01436	74.74	2	32017	2	0.18	7.9	1.036	4.882	0.06632	0.478	0.45	1.02	5.11	57.6	0.01	264.7	2912	760	32	21972.6	743.2	0.3636
BH2	22 Apr 2025	218	15.4	309	0.0159	<2	<0.0002	331	310	<0.001	80.1	<1	37890	<1	0.3	0.10	2.69	99.2	0.0091	0.018	0.018	15.8	6.5	178	0.018	4.6	5,550	561	35.4	25	607	0.016
80th Percentile		580	19.8	765	0.12	6.2	0.001	780	760	0.025	46.2	2	70747	2	0.6	7.136	63	95	0.025	0.03	0.05	21.3	6.41	441	0.0132	-28.2	15000	2320	32.5	43602	2670	0.05
BH3	22 Apr 2025	60	0.814	1.83	0.0303	4	<0.00005	9	1.68	0.0013	69.1	48	283	20	<0.1	-	4.59	0.183	0.0007	0.034	0.039	2.02	6.47	6	0.006	-50.5	19	6	30.9	183.	1,200	0.007
80th Percentile		34	0.6	1.39	0.0218	2	0.0001	11	1.5	0.006	63.72	17.8	245.5	18	0.2	54.436	4.14	0.253	0.004	0.36	0.05	4	6.27	6	0.018	87.1	16	10	30.8	126.28	6200	0.007
BH4	23 Apr 2025	<1	0.006	2.44	0.0011	<2	<0.00005	4	2.50	0.0026	74.1	<1	464	<1	0.2	-	0.28	0.172	0.0023	0.020	0.020	0.04	3.9	3	0.007	154	38	28	30.4	300	127	0.019
80th Percentile		18	0.02	3.19	0.008	2	0.0001	8.1	3.08	0.0083	63.46	2	445	2	0.2	6.09	1.14	0.223	0.0039	0.05	0.05	0.6	4.32	4	0.01	296.1	56	38	33.1	282.88	1330	0.029
BH5	22 Apr 2025	9	0.198	17.4	0.0010	<2	0.00044	55	16.0	0.0033	60.7	2	2325	8	0.2	4.10	0.003	14.7	0.0930	10.6	10.6	7.38	5.53	2	0.021	84.7	251	168	29.7	1519	414	0.124
80th Percentile		52.6	0.0826	16.48	0.0012	2	0.00032	50	14.16	0.00588	70.8	10.8	1997	2	0.4	8.136	0.272	10.852	0.073	2.47	2.628	3.182	6.38	5.2	0.0164	166	291.2	85	30.6	1228.2	4528	0.1606
BH6	23 Apr 2025	11	0.271	7.76	0.0010	2	0.00010	9	7.03	<0.0005	71.4	<1	1019	<1	<0.1	4.94	4.34	7.96	0.0025	0.022	0.022	0.34	5.96	4	0.003	33.9	108	125	29.5	672	165	0.012
80th Percentile		26	0.58	13.4	0.002	2	0.00036	49	11.2	0.002	45.9	2	2220	2	0.1	8.942	10.6	8.32	0.006	0.02	0.02	0.93	5.67	21	0.01	96.8	890	146	34.2	3462.6	1960	0.019
BH7	22 Apr 2025	57	2.76	13.9	0.0017	3	<0.00005	13	11.8	<0.0005	70.8	<1	1803	<1	0.3	8.39	23.9	31	0.0024	0.057	0.057	2.48	6.45	12	0.002	-65.0	174	161	32.2	1171	102	0.03
80th Percentile		74	2.9	14.2	0.0023	5	0.0001	16	11.8	0.001	53.12	2	3213	2	0.3	6.484	22.9	39.2	0.004	0.031	0.0306	3.4	6.35	14	0.01	-26.5	250	176	33.5	1296.1	856	0.005

Notes:

Grey text denotes value less than Limit of Reporting (LOR)

Orange cells denotes concentrations exceeds the DHWQO

Blue cells denote concentrations exceeds the modelled ammonia TV

Black bold text denote concentrations exceeds the modelled ammonia TV

Red text denotes values exceeds the historical 80th percentile of groundwater based on data since 2015 to 2024

Table 5-5: Step 2 – Summary of groundwater exceedances from the dry season (August) 2025 GME

Sample ID	Sample date	Alkalinity (total) as CaCO3	Ammonia as N	Anions Total	Biochemical Oxygen	Cadmium (filtered)	Cations Total	Chloride	Copper (filtered)	DO % Saturation (Field)	E. Coli	Electrical Conductivity (field)	Fluoride	Kjeldahl Nitrogen Total	Magnesium (filtered)	Manganese (filtered)	Nickel (filtered)	Nitrate (as N)	Nitrite + Nitrate as N	Nitrogen (Total)	Reactive Phosphorus as P (Orthophosphate as P)	Redox Potential (Field)	Sulfate as SO4 - Turbidimetric (filtered)	Total Dissolved Solids (Field)	Total Dissolved Solids (Lab)	Total Suspended Solids (Lab)	Zinc (filtered)
		mg/L	mg/L	meq/L	mg/L	mg/L	meq/L	mg/L	mg/L	%	CFU/100mL	us/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mV	mg/L	mg/L	mg/L	mg/L	mg/L
DHWQO			0.02			0.0055			0.0013		200						0.07	0.02	0.02	0.27						10	0.015
DLNG Modelled Trigger Values			9																								
BH1	06 Aug 2025	<1	0.300	614	<2	0.0018	614	19,900	0.037	89.5	<1	102.6	0.2	0.44	1,480	10.1	0.164	0.577	0.577	1.02	0.045	272.3	2,510	66740	38,500	466	0.885
80th Percentile		9	0.51	676	2.2	0.0031	698	28000	0.075	66.35	NA	75492.4	0.4	1.16	2300	15.24	0.2864	0.381	0.3684	2	0.05	310.92	3050	45864	45100	3520	1.586
BH2	06 Aug 2025	441	18.0	480	<2	<0.0002	582	15,800	<0.001	54.6	<1	9038	0.6	25.4	1,200	28.1	0.0399	0.067	0.069	25.5	0.070	58.1	1,250	58780	30,100	11,800	0.016
80th Percentile		629	27.3	552	3.2	0.001	690	23800	0.01	54.61	2	74419.2	0.8	27	1700	41.06	0.0168	0.02	0.0516	27.9	0.042	4.2	1560	42523	45200	7100	0.05
BH3	05 Aug 2025	59	1.85	1.89	4	<0.0002	1.49	23	<0.001	42.4	10 ^{*1}	524	<0.1	3.01	3	0.18	<0.0005	0.072	0.076	3.09	0.003	44.5	3	342	130	2,150	<0.005
80th Percentile		46	1.28	1.77	3.4	0.0001	1.88	47	0.0028	59.63	2	265.24	0.2	1.66	5	0.2624	0.004	0.03	0.0364	1.3	0.042	136.42	7	137.02	260	15600	0.0162
BH4	05 Aug 2025	<1	0.006	2.65	<2	<0.0002	2.22	74	0.004	81.8	<1	662	0.2	0.20	7	0.174	0.0040	0.015	0.015	0.21	<0.001	346.2	27	451	199	556	0.018
80th Percentile		8.8	0.0276	3.086	2	0.0001	2.98	106	0.008	72.70	2	867.6	0.2	0.62	10.2	0.26	0.0077	0.032	0.0448	1.08	0.05	318.2	34.8	299.4	236.2	7416	0.032
BH5	06 Aug 2025	4	0.014	16.5	<2	0.00036	15.6	499	0.0078	95.2	<1	2565	0.2	1.87	28	12.9	0.103	2.40	2.40	4.27	0.010	7	114	1667	958	610	0.168
80th Percentile		59	0.09	13	2	0.0003	11.8	494	0.0075	82.68	1	2267.4	0.1	1.18	26	9.902	0.10172	1.47	1.404	2.8	0.05	174.88	74	1162.2	902	5860	0.1444
BH6	06 Aug 2025	8	0.297	26.4	<2	0.00013	22.5	780	0.0022	37.3	<1	5296	<0.1	0.30	51	6.41	0.0073	0.005	0.005	0.31	0.005	103.6	206	3456	1,520	100	0.016
80th Percentile		17.6	0.38	48.44	2	0.00076	58.04	3590	0.0049	49.16	-	10917.4	0.26	0.5	382.2	5.79	0.012	0.034	0.042	0.7	0.05	171.44	289.6	4774.9	2980	783.2	0.032
BH7	06 Aug 2025	92	2.13	60.8	3	<0.00005	58.2	1,810	<0.0005	61.5	<1	10.5	0.4	2.27	122	32	0.0041	0.150	0.150	2.42	0.022	21	379	6845	3,710	1,800	0.004
80th Percentile		69	2.95	53.4	2.4	0.0002	46.3	2930	0.001	47.53	2	7364	0.4	3.49	193	61.18	0.0094	0.04	0.028	4.7	0.042	19.14	342	4228.9	3410	4400	0.0124

Notes:

Grey text denotes value less than Limit of Reporting (LOR)

Orange cells denotes concentrations exceeds the DHWQO

Blue cells denote concentrations exceeds the modelled ammonia TV

Black bold text denote concentrations exceeds the modelled ammonia TV

Red text denotes values exceeds the historical 80th percentile of groundwater based on data since 2015 to 2025

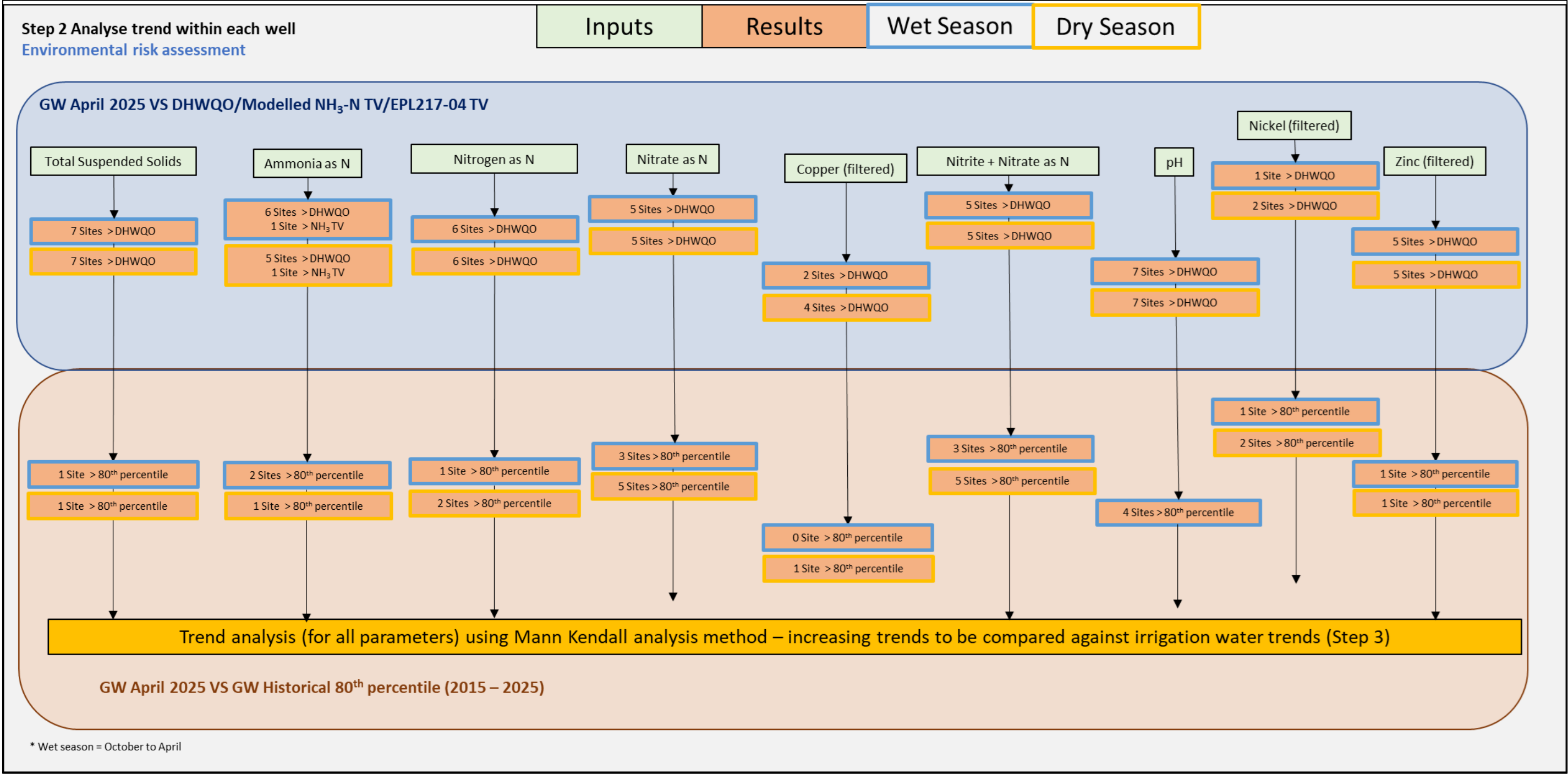


Figure 5-7: Summary of Step 2 Results – 2025 groundwater compared against the DHWQO, modelled NH₃-N and 80th percentiles (2015 – 2025)

5.1.7.2. Trend and Significance of Results

As per the risk assessment framework outlined in **Section 5.1.3**, a Mann–Kendall (MK) analysis was completed for the groundwater and irrigation water dataset to date. MK analysis is used to analyse temporal data to determine statistically significant trends (increasing or decreasing). The MK analysis has been incorporated into a broader tier assessment, combining the MK results for individual parameters with their exceedances against respective TVs and 80th percentiles.

A limitation of the MK trend approach is that a trend will be reported irrespective of the most recent laboratory results as the technique relies on the historical data record. For example, a parameter may report below LOR, but MK will still define a trend based on the historical dataset. Therefore, these results should be interpreted in light of this limitation.

The MK results for the groundwater parameters showing an increasing trend⁴ are presented in **Table 5-6**. In total, nine instances show an increasing trend across eight groundwater parameters from the wet season results compared to eight instances across seven parameters from the dry season results. To assist with the interim assessment of potential trends in wells with limited seasonal data, the consecutive increasing parameters as well as those identified by the MK analysis as having an increasing trend, have been considered for further analysis (under Step 3 of the risk assessment framework) and compared against the same irrigation water parameters to identify a potential correlation. The results of this analysis are provided in the following subsection.

⁴ The use of parameters which have increased/decreased consecutively over four GMEs has been made to identify, where the MK analysis cannot (due to limited data), parameters which may (with less certainty) contain a statistical trend and therefore require consideration under the environmental risk assessment framework for further comparison against respective irrigation water parameters. The identification of such parameters, however, is not considered significant to trigger further statistical assessment or assessment of environmental risks and is used as a preliminary flag only to identify results which may eventually become statistically significant to be considered a trend by the MK analysis.

Table 5-6: Tiered environmental risk assessment framework – Step 2 results

Season	Parameter	Location	Min Concentration	Max. Concentration	Maan-Kendall Trend	General Trend ^[1] ^[2]	DHWQO
Wet Season	Ammonia as N (mg/L)	BH7	1.12	3.7	No Trend	4 Increasing	TRUE
	Ammonia as N (mg/L)	BH3	0.016	1.23	Increasing Trend	Variable	TRUE
	Arsenic (mg/L)	BH3	0.001	0.037	Increasing Trend	Variable	No Criteria
	pH (field)	BH4	3.69	5.69	No Trend	4 Increasing	No Criteria
	pH (field)	BH3	4	6.5	Increasing Trend	Variable	No Criteria
	Aluminium (mg/L)	BH4	0.01	1.57	Increasing Trend	Variable	No Criteria
	Nickel (ug/L)	BH4	0.001	0.019	Increasing Trend	4 Decreasing	TRUE
	Nickel (ug/L)	BH5	0.001	0.254	Increasing Trend	Variable	TRUE
	Copper (mg/L)	BH5	0.001	0.0148	Increasing Trend	Variable	TRUE
	Cadmium (mg/L)	BH5	0.0001	0.00044	Increasing Trend	Variable	TRUE
	Manganese (mg/L)	BH5	0.225	14.7	Increasing Trend	Variable	No Criteria
Dry Season	Ammonia as N (mg/L)	BH3	0.108	1.85	Increasing Trend	Variable	TRUE
	Arsenic (mg/L)	BH3	0.002	0.0517	Increasing Trend	4 Decreasing	No Criteria
	Manganese (mg/L)	BH3	0.05	0.385	Increasing Trend	4 Decreasing	No Criteria
	Aluminium (mg/L)	BH4	0.06	1.6	Increasing Trend	Variable	No Criteria
	Nickel (ug/L)	BH4	0.002	0.015	Increasing Trend	4 Decreasing	TRUE
	Nickel (ug/L)	BH5	0.001	0.169	Increasing Trend	Variable	TRUE
	Copper (mg/L)	BH5	0.001	0.034	Increasing Trend	Variable	TRUE
	>C10-C16 Fraction (F2 Minus Naphthalene) (ug/L)	BH7	0.1	100	Increasing Trend ^[3]	Variable	No Criteria
	Kjeldahl Nitrogen Total (mg/L)	BH1	0.12	2	No Trend	4 Increasing	No Criteria
	Nitrogen (Total) (mg/L)	BH1	0.39	2.2	No Trend	4 Increasing	TRUE
	Total Suspended Solids (Lab) (mg/L)	BH2	460	11800	No Trend	4 Increasing	TRUE
	Total Suspended Solids (Lab) (mg/L)	BH3	123	20300	No Trend	4 Increasing	TRUE

¹ Variable trend denotes trends have not increased or decreased over four consecutive GMEs.

² Increasing/decreasing refers to results for a parameter that has increased or decreased consecutively over four GME's.

³ All TRH C10–C16 results at BH7 are non-detects. Apparent trends are an artefact of the Mann–Kendall analysis, which substitutes numerical values for non-detects. Historical changes in laboratory LORs have caused the substituted values to vary over time, creating a false trend signal.

5.1.8. Results: Step 3 – Environmental Risk Assessment

The consecutive increasing parameters, as well as those identified by the MK analysis as having an increasing trend, have been considered for further analysis under Step 3 of the risk assessment framework and compared against the same irrigation water parameters to identify a potential correlation.

5.1.8.1. Correlation between irrigation water and groundwater

MK results for groundwater and irrigation water have been analysed to determine if a correlation between the irrigation water and groundwater exists. A summary of the tier assessment is provided in **Table 5-7**.

A total of 22 instances across 12 parameters from the irrigation water and groundwater show an increasing trend identified by either an increasing MK trend or as four consecutive GME increases (**Table 5-7**).

The lack of correlation between the trends in irrigation water and groundwater quality suggests that the current irrigation practices present a low environmental risk to the groundwater system in the Wickham Point area.



Table 5-7: Tier assessment summary (2025) for irrigation and groundwater parameters with an increasing trend

Parameter	Units	Location	Season	Min Concentration	Max. Concentration	Maan-Kendall Trend	General Trend ^[1] ^[2]	DHWQO	EPL 217-03	80 th Percentile
Aluminium	mg/L	BH4	Wet Season	0.01	1.57	Increasing Trend	Variable	TRUE	No Criteria	-
			Dry Season	0.06	1.6	Increasing Trend	Variable	-	No Criteria	-
Ammonia as N	mg/L	BH3	Wet Season	0.016	1.23	Increasing Trend	Variable	TRUE	TRUE	-
			Dry Season	0.108	1.85	Increasing Trend	Variable	-	TRUE	-
		BH7	Wet Season	1.12	3.7	No Trend	4 Increasing	TRUE	TRUE	-
Arsenic	mg/L	BH3	Wet Season	0.001	0.037	Increasing Trend	Variable	TRUE	No Criteria	-
			Dry Season	0.002	0.0517	Increasing Trend	4 Decreasing	-	No Criteria	-
Cadmium	mg/L	BH5	Wet Season	0.0001	0.00044	Increasing Trend	Variable	TRUE	TRUE	-
Copper	mg/L	BH5	Wet Season	0.001	0.0148	Increasing Trend	Variable	TRUE	TRUE	-
			Dry Season	0.001	0.034	Increasing Trend	Variable	-	TRUE	-
>C10-C16 Fraction (F2 minus Naphthalene) (mg/L)	pH units	BH7	Dry Season	0.1	100	Increasing Trend	Variable	-	No Criteria	-
E. Coli	CFU/100mL	Irrigation	Wet Season	0	24196	Increasing Trend	Variable	Above Criteria (10)	-	Above Criteria (75)
Enterococci	CFU/100mL	Irrigation	Wet Season	1	2420	Increasing Trend	Variable	Above Criteria (37.8)	-	Above Criteria (50)
Kjeldahl Nitrogen Total	mg/L	BH1	Dry Season	0.12	2	No Trend	4 Increasing	-	No Criteria	-
		Irrigation	Wet Season	0.67	79.3	Increasing Trend	Variable	Above Criteria (10.066)	-	No Criteria
Manganese	mg/L	BH5	Wet Season	0.225	14.7	Increasing Trend	Variable	TRUE	No Criteria	-
		BH3	Dry Season	0.05	0.385	Increasing Trend	4 Decreasing	-	No Criteria	-
Nickel	mg/L	BH4	Wet Season	0.001	0.019	Increasing Trend	4 Decreasing	TRUE	TRUE	-
			Dry Season	0.002	0.015	Increasing Trend	4 Decreasing	-	TRUE	-
		BH5	Wet Season	0.001	0.254	Increasing Trend	Variable	TRUE	TRUE	-
			Dry Season	0.001	0.169	Increasing Trend	Variable	-	TRUE	-
Nitrogen (Total)	mg/L	BH1	Dry Season	0.39	2.2	No Trend	4 Increasing	-	TRUE	-
pH (Field)		BH3	Wet Season	4	6.5	Increasing Trend	Variable	TRUE	No Criteria	-
		BH4	Wet Season	3.69	5.69	No Trend	4 Increasing	TRUE	No Criteria	-
		Irrigation	Wet Season	6.84	8.81	Increasing Trend	Variable	Above Criteria (8.04)	-	Below Range (7-8.5) & Above Range (7-8.5)
Total Suspended Solids	mg/L	BH2	Dry Season	460	11800	No Trend	4 Increasing	-	TRUE	-
		BH3	Dry Season	123	20300	No Trend	4 Increasing	-	TRUE	-
		Irrigation	Wet Season	3.31	878	Increasing Trend	Variable	-	-	-
Reactive Phosphorus as P (mg/L)	mg/L	Irrigation	Wet Season	0.0011	28.5	No Trend	4 Increasing	Above Criteria (1.168)	-	-
		Irrigation	Dry Season	0.0011	28.5	No Trend	4 Increasing	Above Criteria (1.168)	-	-

¹ Variable trend denotes trends have not increased or decreased over four consecutive GMEs.
² Increasing/decreasing refers to results for a parameter that has increased or decreased consecutively over four GME's.

General trends are shown to identify, where the MK analysis cannot (due to limited data), parameters which may (with less certainty) contain a statistical trend and therefore require consideration under the environmental risk assessment framework for further comparison against respective irrigation water parameters. The identification of such parameters, however, is not considered significant to trigger further statistical assessment or assessment of environmental risks and is used as a preliminary flag only to identify results which may eventually become statistically significant to be considered a trend by the MK analysis.

5.1.9. Data Management and Quality Control

5.1.9.1. Irrigation water monitoring

As outlined in **Section 3.1.2**, all samples and field measurements are collected by DLNG laboratory staff or environmental consultants, who are trained and experienced with the methodologies used.

With respect to the sampling of irrigation water, all samples are collected by DLNG laboratory staff in accordance with Santos document, *Laboratory Sampling – Monitoring of Wastewater [1U00-200-PRO-0596]*. All samples are analysed by laboratories accredited by the NATA for the analyses performed.

Field parameters (pH, DO, EC, TSS, turbidity and temperature) are recorded in-situ (i.e. directly from the discharge) using calibrated water quality meters, or using DLNG laboratory equipment.

All field measurements and analytical results are reviewed prior to being recorded in a Santos database. Where anomalous results are identified, the results are investigated further and additional sampling undertaken if required.

5.1.9.2. Groundwater monitoring

The QA and QC results detailed in Darwin LNG Groundwater Interim Report 2025 (CDM Smith, 2025f) and Darwin LNG Groundwater Interpretive Report 2025 (CDM Smith, 2026g) indicate the results are acceptable for the purposes of the groundwater assessment.

A QA/QC program was implemented during the GMEs (April and August 2025) in accordance with the NEPM (2013) and Standard Operating Procedure Groundwater Sampling (CDM Smith, 2018). Key elements of the program included:

- Use of qualified staff for all sampling activities.
- Use of standardised sampling procedures including prescribed sample storage/transport and equipment decontamination.
- Use of NATA accredited laboratories to undertake the required analysis of samples.
- The collection and analysis of blind field duplicate and triplicate samples, trip blanks, field blanks and rinsate samples.

Consultant CDM Smith assessed the data against the Data Quality Indicators and data acceptance criteria in order to assess whether the Data Quality Objectives were satisfied. The assessment of QA/QC results across April and August 2025 GMEs found that overall, the majority of the laboratory QA/QC results achieved the data quality objectives for the GME.

Field duplicates were analysed for the same analytical suite as the primary samples. The acceptable relative percentage difference (RPD) thresholds were set to 50% for organic compounds and 30% for inorganic compounds. QA1 RPD and QA2 RPD exceedances for zinc were above the acceptance criteria which is attributed to the high variability for zinc historically recorded at BH7. Absence of sample contamination was also observed from the laboratory and method blanks which returned values below the LOR, suggesting all field equipment was properly cleaned.

The field, laboratory and analytical QA/QC water results were within the specified requirements. Therefore, the data was considered to be valid and of sufficient quality to meet the data quality objectives for the assessment.

6. Waste Reduction Measures

Waste is managed onsite as per the Darwin LNG – Waste Management Plan (1U00-650-EMP-0005) and several measures are in place to reduce the amount of waste generated by the facility.

Sewage is managed onsite via a newly commissioned sewage treatment plant that was installed and commissioned in 2024, with treated effluent irrigated to onsite discharge fields negating the need for offsite disposal.

Wastewater from the onsite process sumps are treated by an oily water separator [Corrugated Plate Interceptor/Dissolved Air Filtration Floatation (CIP/DAFF) system] to remove any hydrocarbons. The CPI/DAFF allows onsite separation of hydrocarbons for collection and offsite disposal, and the remaining wastewater stream can be irrigated onsite, reducing the amount of waste requiring offsite disposal.

RO reject water is discharged via the Jetty Outfall, and this waste is reduced by undertaking two separate passes through the RO membranes before the remaining waste product is transferred to the reject tank. This method reduces the amount of waste produced by recycling the second pass concentrate stream back through the first pass RO membranes, increasing the overall water recovery and demineralised water production, and subsequently reducing the volume of RO reject water discharged via the jetty outfall.

Jetty outfall and irrigation discharges are metered and monitored to ensure discharges do not exceed licence limits.

DLNG wastes are recycled where possible, and bins for a variety of recyclables are provided around the site to encourage this practice. Bins are available for paper and cardboard, comingled recyclables, metal, wood, printer cartridges and e-waste.

Other adhoc items are also assessed on a case by case basis to determine if recycling is an option. As an example, upon completion of the Darwin Life Extension project a number of large bunded pallets were no longer required onsite as they exceeded DLNG requirements. An enquiry to DLNG's waste contractor was made and resulted in the bunded pallets being gifted for their own purposes.

7. Conclusions

This AEMR has been prepared for the period of 1 January to 31 December 2025, in accordance with Condition 60 of the Licence. This report:

- Has been prepared in accordance with the requirements of the NT EPA 'Guideline for Reporting on Environmental Monitoring'(or any other guideline as adopted by the NT EPA from time to time);
- includes a tabulation, in Microsoft® Excel® format, of all monitoring data required as a condition of this licence;
- includes long term trend analysis, including statistical analysis, of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of 5 years;
- summarises performance of the authorised discharges to water and air emissions compared to the limits and values specified in Appendix B;
- highlights all instances of exceedances of trigger values and limits specified in Appendix B;
- reports the frequency and volume of wastewater discharges via the Irrigation Water and Jetty Outfall authorised discharge point points for the reporting period;
- provides the total emissions to air in tonnes per year, with respect to the parameters listed in Appendix B;
- includes analysis of environmental impacts and measures taken to reduce environmental impacts arising from Scheduled Activity, including wastewater and ambient air quality improvements; and
- summarises measures taken to reduce waste.

As the Fugitive Emissions Management Plan and leak detection and repair program had not been submitted and approved for use by the NT EPA during the reporting year, this AEMR has not included the outcomes of the leak detection and repair program as required by condition 44 and 61.10 of EPL217-05.

Condition 61.11 of the Licence requires this AEMR to be prepared by a Qualified Professional⁵. The AEMR reports on the DLNG environmental monitoring programs that have been developed, executed and reported on by Qualified Professionals. This AEMR was subsequently prepared by Qualified Professionals employed by Santos who hold a minimum Bachelor Degree in Science (or related fields) with over 20 years' experience in environmental management.

The monitoring results obtained in 2025 and the analysis undertaken indicate that the risk to the environment is low from the activities undertaken at DLNG in 2025.

⁵ As defined by EPL217-05: a person who has professional qualifications, training, skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis about performance relevant to the subject matters using relevant protocols, standards, methods or literature.

8. 2024 Annual Report Errata

The 2024 Darwin LNG Annual Environmental Monitoring Report presented data that were subsequently reviewed and corrected. **Table 8-1** demonstrates the necessary corrections (no corrections at the time of reporting).

Table 8-1: 2024 Annual report corrections

2024 Darwin LNG Annual Environmental Monitoring Report information		Errata
N/A		

9. Certification

Santos	I, Daniel Hayward – Production Manager DLNG have reviewed this report, and I confirm that to the best of my knowledge and ability all the information provided in the report is true and accurate.
Name	Daniel Hayward
Position	Production Manager, Darwin
Signature	Signed by:  5B25EEF2EF77413...
Date	9 September 2026

10. References

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Attachment A – Irrigation, Jetty Outfall and Sediment Pond data

IRRIGATION WATER (1SC-2919)

Date Sampled / Analyte	Sampling Reason (Compliance / Retest / Voluntary)	DO	Temp	Turbidity	pH	EC	TSS	TRH	E Coli	Enterococci	BOD	Chlorophyll a	TN	TP	NH3-N	NO3-N	NO2-N	PO4-P	As	Cd	Cr Total	Cu	Pb	Fe	Mn	Hg	Ni	Zn	Ag	BTEX	
		mg/L	°C	NTU	pH units	µS/cm	mg/L	mg/L	MPN/100m	MPN/100mL	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EPL217-04 Trigger Value		N/A	N/A	N/A	7-8.5	N/A	30	6	75	50	25	2	40	10	20	17	17	5	10	3.2	10	69	10	1,300	15,500	0.1	290	1780	1.4	700	
EPL217-05 Trigger Value		N/A	N/A	N/A	7-8.5	N/A	30	1.2	1000	N/A	N/A	N/A	40	10	N/A	N/A	N/A	N/A	5	10	3.2	10	69	10	1,300	15,500	0.1	290	1780	1.4	3
LOR			N/A		N/A			0.65	10	10	<1	1	0.01	0.005	1	1	1	1	1	0.1	1	1	1	5	1	0.0001	1	5	1	3	
Testing Frequency (EPL217-05)		Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	N/A	N/A	N/A	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	
2015																															
7/01/2015	C	0.07	34.8	13.80	8.41	399	7	<0.65	<1	1	250.0	<1	79.40	3	6,120	4,200	473	2,630	2	<0.1	<1	150	<1	200	14	<0.1	5	40	<1	<3	
4/02/2015	C	0.28	32.1	23.80	7.47	190	5	0.74	1	50	13.0	<1	10.80	1	3,360	11	4	898	<1	<0.1	<1	61	<1	220	48	<0.1	2	15	<1	<3	
4/03/2015	C	0.10	35.9	8.96	7.36	195	8	<0.65	7	35	11.0	<1	8.59	1	5,050	732	31	616	<1	<0.1	<1	23	32	150	32	<0.1	<1	15	<1	<3	
4/03/2015	R																					25									
23/03/2015	R																					18									
1/04/2015	C	0.12	34.7	9.16	7.87	184	5	<0.65	67	48	6.7	<1	7.07	1	3,820	942	75	900	<1	<0.1	<2	22	<1	64	27	<0.1	<1	16	<1	<3	
6/05/2015	C	0.65	34.8	9.10	6.49	196	6	1.00	5	50	9.4	<1	7.56	1	4,560	2	7	539	<1	<0.1	<1	15	<1	110	13	<0.1	<1	8	<1	<3	
3/06/2015	C	0.25	36.8	12.70	7.27	288	8	<0.65	24	44	13.0	<1	7.43	1	45,670	89	26	600	<1	<0.1	<1	15	<1	96	34	<0.1	<1	8	<1	<3	
1/07/2015	C	0.28	36.4	16.20	7.01	198	24	<0.65	11	99	22.0	<1	7.72	1	3,340	<1	2	12	<1	<0.1	<1	13	<1	170	34	<0.1	<1	26	<1	<3	
1/07/2015	R																														
5/08/2015	C	0.16	31.6	18.00	7.05	186	39	<0.65	206	1,203	24.0	<1	9.24	1	4,560	2	6	9	<1	<0.1	<1	7	<1	300	43	<0.1	<1	13	<1	<3	
10/08/2015	R								<1	84																					
2/09/2015	C	0.08	32.8	21.50	7.66	176	32	<0.65	3	26	35.0	<1	9.78	1	4,830	6	21	12	<1	<0.1	<1	11	<1	420	32	<0.1	1	13	<1	<3	
7/10/2015	C	0.07	37.1	21.00	7.41	167	27	1.80	6	687	34.0	3	9.54	0.575	3,600	<1	<1	5	<1	<0.1	<1	4	<1	160	32	<0.1	<1	10	<1	<3	
21/10/2015	R																					17									
28/10/2015	R																														
4/11/2015	C	0.08	41.0	14.20	7.37	197	12	0.68	1	37	66.0	<1	7.48	0.61	1.92	4	<1	118	<1	<0.1	<1	21	<1	310	31	<0.1	<1	17	<1	<3	
9/12/2015	C	0.05	33.7	3.35	7.96	762	<1	<0.65	<1	4	22.0	<1	8.84	0.78	3,170	166	98	293	<1	<0.1	<1	13	<1	110	37	<0.1	1	28	<1	<3	
15/12/2015	V																					6	<1	120	40	<0.1	<1	8	<1		
2016																															
6/01/2016	C	0.17	37.4	11.80	7.24	187	17	<0.65	2	41	26	<1	4.19	0.25	2,370	<1	54	213	<1	<0.1	<1	22	<1	62	38	<0.1	2	33	<1	5.00	
14/01/2016	R																														
3/02/2016	C	0.17	36.4	2.82	7.70	212	0	<0.65	1	5	4.9	<0.2	6.37	0.75	3,530	741	207	548	<1	<0.1	<1	21	<1	44	22	<0.1	2	19	<1	<3	
18/02/2016	C																														
2/03/2016	C	0.12	39.8	9.40	7.34	196	8	<0.65	<1	27	120	1	5.62	0.78	1,140	2	3	7	<1	<0.1	<1	19	<1	25	39	<0.1	<1	22	<1	<3	
2/03/2016	R																														
9/03/2016	V																														
4/04/2016	C	0.12	41.0	16.70	6.73	199	17	<0.65	1	5	68	<1	6.45	1.27	167	3	2	81	<1	<0.1	<1	6	<1	56	41	<0.1	<1	17	<1	<3	
4/05/2016	C	0.16	33.9	37.30	7.20	237	7	1.20	<1	38	140	2	5.60	0.97	798	<1	3	61	<1	<0.1	<1	18	<1	130	50	<0.1	2	24	<1	<3	
1/06/2016	C	0.12	33.0	16.30	7.24	272	22	<0.65	<10	31	100	<1	9.68	1.92	1,510	4	<1	580	<1	<0.1	<1	11	<1	180	54	<0.1	2	22	<1	<3	
5/07/2016	C	0.08	38.1	14.40	6.79	224	21	<0.65	<1	78	170	<1	7.09	0.95	133	3	2	8	<1	<0.1	<1	9	<1	230	42	<0.1	<1	12	<1	<3	
3/08/2016	C	0.14	38.3	12.70	6.93	214	21	<0.65	<10	<10	190	1	7.75	1.22	184	5	<1	12	<1	<0.1	<1	9	<1	190	43	<0.1	<1	15	<1	<3	
7/09/2016	C	0.09	39.9	13.20	7.59	239	14	<0.65	3	>2420	110	<1	7.28	1.25	101	8	3	19	<1	<											

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Date Sampled / Analyte	Sampling Reason (Compliance / Retest / Voluntary)	DO	Temp	Turbidity	pH	EC	TSS	TRH	E Coli	Enterococci	BOD	Chlorophyll a	TN	TP	NH3-N	NO3-N	NO2-N	PO4-P	As	Cd	Cr Total	Cu	Pb	Fe	Mn	Hg	Ni	Zn	Ag	BTEX
		mg/L	°C	NTU	pH units	µS/cm	mg/L	mg/L	MPN/100m	MPN/100mL	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EPL217-04 Trigger Value		N/A	N/A	N/A	7-8.5	N/A	30	6	75	50	25	2	40	10	20	17	17	5	10	3.2	10	69	10	1,300	15,500	0.1	290	1780	1.4	700
EPL217-05 Trigger Value		N/A	N/A	N/A	7-8.5	N/A	30	1.2	1000	N/A	N/A	N/A	40	10	N/A	N/A	N/A	N/A	10	3.2	10	69	10	1,300	15,500	0.1	290	1780	1.4	300
LOR			N/A		N/A			0.65	10	10	<1	1	0.01	0.005	1	1	1	1	1	0.1	1	1	1	5	1	0.0001	1	5	1	3
Testing Frequency (EPL217-05)		Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	N/A	N/A	N/A	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
2024																														
10/01/2024	C	0.22	26.3	14.10	6.84	146	2				7.6									<0.1		5			<0.1		6		<3	
7/02/2024	C	5.90	32.0	9.69	7.44	105	4	<0.32	<10	<10	<1	4	1.26	0.1	3	480	<1	0.051	<1	<0.1	<1	22	<1	15	<1	<0.1	<1	21	<1	<3
5/03/2024	C	2.38	31.5	1.70	7.22	109	0				<1									<0.1		19			<0.1		54		<3	
3/04/2024	C	6.47	31.0	1.04	7.53	91	0				1.1									<0.1		21			<0.1		28		<3	
1/05/2024	C	5.71	31.2	1.03	7.29	112	0													<0.1		14			<0.1		24		<3	
5/06/2024	C	5.99	28.6	0.78	7.71	607	0				<1									<0.1		18			<0.1		16		<3	
3/07/2024	C	6.56	29.0	1.73	7.77	197	8.30	<0.32	<10	<10	<1	1	0.37	0.05	6	186	1	50	<1	<0.1	<1	15	<1	24	5	<0.1	<1	14	<1	<3
7/08/2024	C	5.58	28.9	2.34	7.74	576	1				2.0		7.97	2.2	27	6900	47	2200		<0.1		44			<0.1		8		<3	
4/09/2024	C	-	24.5	2.41	8.16	725	0				<1		9.63	3.89	13	8560	13	3870		<0.1		43			<0.1		<5		<3	
2/10/2024	C	4.05	32.7	6.1	8	704	0				<1		7.31	3.2	10	6880	12	3160		<0.1		41			<0.1		6		<3	
11/11/2024	C	-	24.8	1.13	8.23	708	0		<10	<10	1.0		6	3.1	9	6010	9	2990	<1	<0.1	<1	34	<1	<5	1	<0.1	1	<5	<1	<3
4/12/2024	C	1.17	44.8	>800.00	8.81	667	1130				<1		6.75	3.58	819	3320	54	3280		<0.1		130			<0.1		<5		<3	
2025																														
8/01/2025	C		25.7	8.59	8.35	685	8				<1		5.30	2.71	31	5020	3	2590		<0.1		33			<0.1		<5		<3	
15/01/2025	C	5.12	31.0	1.01	8.29	690	1	<0.5	<10	<10		<1							<1		<1		<1	16	3		2		<1	
17/02/2025	C	0.45	31.3	2.11	7.37	792	1	<0.5	<10	<10	12.0	<1	10.70	2.96	3860	4420	570	2840	<1	<0.1	<1	48	<1	7	3	<0.1	2	11	<1	<3
3/03/2025	C	1.27	32.9	3.02	7.64	1,040	3				<1		8.42	4	2950	3580	327	3800	<1	<0.1	<1	42	<1	7	<1	<0.1	1	7		<3
2/04/2025	C	0.60	30.1	3.92	7.56	1,275	3				<1									<0.1		54			<0.1		5		<3	
7/05/2025	C	2.03	32.6	3.69	7.49	1,053	7				<1									<0.1		55			<0.1		6		<3	
4/06/2025	C	2.97	30.4	2.83	7.66	1,069	10				4.0									<0.1		55			<0.1		22		<3	
2/07/2025	C	1.23	28.1	3.83	7.65	1,342	7				4.0									<0.1		100			<0.1		16		<3	
6/08/2025	C	2.54	29.4	1.03	7.76	1,201	2		<10	<10	<1	1								<0.1		50			<0.1		12		<3	
8/09/2025	C	0.82	28.4	3.54	8.38	1,257	3				<1									<0.1		22			<0.1		12		<3	
10/11/2025	C	51.90	35.4	3.87	7.84	399	4.0	<0.5	<10				11.00	2.4	820	6800	43	2130	<1	<0.1	<1	29	<1	22	16	<0.1	<1	<5	<1	<3



JETTY OUTFALL (1SC-2920)

Date Sampled / Analyte	Sampling Reason (Compliance / Retest / Voluntary)	DO	Temp	Turbidity	pH	EC	TDS	TSS	TRH	E Coli	Enterococci	BOD	Chlorophyll a	TN	TP	NH3-N	NO3-N	NO2-N	PO4-P	TKN	Al	As	Cd	Cr Total	Cr VI	Cu	Pb	Fe	Mn	Hg	Ni	Zn	Ag	Benzene	Toluene	Ethyl Benzene	Xylene	BTEX	
		mg/L	°C	NTU		µS/cm	mg/L	mg/L	mg/L	MPN/100mL	MPN/100mL	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EPL217-04 Trigger Value		N/A	N/A	20	7-8.5	N/A	N/A	30	6	75	50	25	N/A	40	10	337	764	27	51	N/A	N/A	N/A	5.5	4.4	N/A	1.3	4.4	N/A	N/A	0.4	70	15	1.4	N/A	N/A	N/A	N/A	700	
EPL217-05 Trigger Value		N/A	N/A	20.00	7-8.5	N/A	N/A	30	0.32	N/A	N/A	N/A	N/A	13.50	1.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.50	4.40	N/A	13.00	4.40	N/A	N/A	0.40	70.00	80	1.40	N/A	N/A	N/A	N/A	3.0	
LOR		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.65	10	10	<1	1	0.01	0.005	1	1	1	1	10	5	1	0.1	1	0.004	1	1	5	1	0.0001	1	5	1	0.5	0.5	0.5	1.5	3	
Testing Frequency		Monthly	Monthly	Monthly	Monthly	Monthly	N/A	Monthly	Monthly	N/A	N/A	N/A	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	Monthly	Monthly	Monthly	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	N/A	N/A	Monthly	
2016																																							
4/01/2016	C	0.03	31.0	2.23	7.68				<0.65	<10	<10	1.1	6	1.28	0.11	51	524	6	35			<5	<1	<0.1	<1	<0.004	<1	<1	140	2	<0.0001	1	<5	<1	<0.5	<0.5	<0.5	<1.5	
6/01/2016	C	0.05	33.5	3.08	8.06	824	574	0	<0.65	<1	<1	6.3	<1	1.34	0.14	118	315	32	64	1.03		<5	<1	<0.1	<1	<0.005	2	<1	240	8	<0.0001	2	<5	<1	<0.5	<0.5	0.6	3.8	5
14/01/2016	R																																						
3/02/2016	C	0.29	33.4	2.08	7.99	900	600	0	<0.65	<1	<1	2.9	<0.2	1.48	0.12	184	60	36	42	1.49	<5	<1	<0.1	<1	<0.005	<1	<1	170	21	<0.0001	2	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
2/03/2016	C	3.21	35.0	0.77	8.15	857	576	0	<0.65	<1	629	<5	<0.2	1.37	0.10	162	366	14	38	1.12	<5	<1	<0.1	<1	<0.005	<1	<1	230	12	<0.0001	2	6	<1	<0.5	<0.5	<0.5	2.2	<3	
4/04/2016	C	0.08	35.6	2.38	8.05	907	611	0	<0.65	<1	<1	3.3	<1	1.79	0.18	73	383	8	22	1.49	<5	<1	<0.1	<1	<0.005	<1	<1	260	3	<0.0001	1	<5	<1	<0.5	<0.5	<0.5	2.1	<3	
4/05/2016	C	3.93	33.8	0.58	8.05	729	497	0	<0.65	<1	<1	2.3	<1	1.76	0.14	165	343	3	20	1.49	<5	<1	<0.1	<1	<0.005	10	<1	270	6	<0.0001	1	9	<1	<0.5	<0.5	<0.5	<1.5	<3	
1/06/2016	C	0.16	23.0	1.12	8.09	760	524	0	<0.65	<1		2.4	<1	1.68	0.11	254	320	3	26	1.38	<5	<1	<0.1	<1	<0.005	<1	<1	220	2	<0.0001	1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
5/07/2016	C	0.17	30.6	1.76	8.02	775	550	0	<0.65	<1	<1	4.1	<1	1.90	0.12	369	295	5	42	1.50	<5	<1	<0.1	<1	<0.005	<1	<1	180	20	<0.0001	2	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
3/08/2016	C	2.83	30.5	0.66	8.00	689	502	0	<0.65	<1	<1	3.2	<1	1.70	0.10	260	435	13	71	1.33	<5	<1	<0.1	<1	<0.005	<1	<1	180	29	<0.0001	1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
7/09/2016	C	0.03	32.9	2.50	7.76	703	494	0	<0.65	<1	<1	2.0	<1	1.22	0.08	113	484	10	31	1.07	<5	<1	<0.1	<1	<0.005	<1	<1	390	8	<0.0001	2	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
5/10/2016	C	6.45	33.8	0.32	8.00	702	491	0	<0.65	<1	<1	2.4	<1	1.86	0.11	348	453	5	69	1.43	<5	<1	<0.1	<1	<0.004	<1	<1	400	12	<0.0001	2	5	<1	<0.5	<0.5	<0.5	<1.5	<3	
2/11/2016	C	6.52	33.2	0.26	7.50	795	457	0	<0.65	<10	<10	3.7	<1	1.36	0.09	61	326	27	45	0.97	<5	<1	<0.1	<1	<0.004	<1	<1	350	8	<0.0001	2	<5	<1	<0.5	<0.5	<0.5	2	2	
7/12/2016	C	1.01	34.8	2.12	7.89	815	550	0	<0.65	<1	40	2.5	<1	1.30	0.07	40	474	8	25	0.09	<5	<1	<0.1	<1	<0.004	<1	<1	190	2	<0.0001	1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
2017																																							
4/01/2017	C	0.03	31.0	2.23	7.88	826	561	1	<0.65	<10	<10	1.1	6	1.28	0.11	51	524	6	35	1.20	<5	<1	<0.1	<1	<0.004	<1	<1	140	2	<0.00005	1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
1/02/2017	C	6.34	33.5	0.26	7.32	99	68	1	<0.65	<10	<10	1.4	<1	1.40	0.11	101	667	10	46	0.77	<5	<1	<0.1	<1	<0.004	1	<1	300	3	<0.0001	1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
1/03/2017	C	3.34	33.2	0.63	8.10	780	538	1	<0.65	<10	<10	<1	<1	0.81	0.07	113	156	10	52	0.61	<5	<1	<0.1	<1	<0.004	<1	<1	270	7	<0.0001	<1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
5/04/2017	C	6.77	33.6	0.49	8.00	730	496	0	<0.65	<10	<10	6.5	<1	1.79	0.05	335	442	10	23	1.15	<5	<1	<0.1	<1	<0.004	<1	<1	230	8	<0.0001	1	<5	<1	<0.5	<0.5	<0.5	8.80	<10.3	
3/05/2017	C	0.15	32.7	2.74	8.20	702	477	1	<0.65	<10	<10	<1	<1	2.44	0.09	148	437	14	21	2.27	<5	<1	<0.1	1	<0.004	2	<1	490	4	<0.0001	2	7	<1	<0.5	<0.5	<0.5	<1.5	<3	
7/06/2017	C	6.98	30.2	0.23	8.04	590	401	0	<0.65	<10	<10	4.6	<1	1.56	0.08	250	482	6	52	1.29	<5	<1	<0.1	<1	<0.004	1	<1	420	4	<0.0001	<1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
5/07/2017	C	0.25	31.9	1.88	7.82	685	486	0	<0.65	<10	<10	3.5	<1	1.34	0.06	156	327	4	17	1.12	<5	<1	<0.1	<1	<0.004	2	<1	880	8	<0.0001	<1	7	<1	<0.5	<0.5	<0.5	<1.5	<3	
2/08/2017	C	0.16	30.8	3.76	8.04	704	478	0	<0.65	<1	<1	3.9	<1	1.73	0.07	316	312	7	11	1.74	<5	<1	<0.1	<1	<0.004	1	<1	470	6	<0.0001	<1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
6/09/2017	C	1.52	32.20	5.43	7.71	715	486	0		<1	<10	10.0	<1	1.74	0.08	500	440	10	20	1.48	<5	<1	<0.1	<1	<0.004	7	<1	150	21	<0.0001	3	10	<1		<0.5	<0.5	<0.5	<1.5	<3
12/09/2017	R								<0.65																														
4/10/2017	C	0.16	33.7	2.98	7.90	697	481	0	<0.65	<10	<10	26.0	1	2.10	0.14	562	494	12	47	1.72	<5	<1	<0.1	<1	<0.004	<1	<1	110	10	<0.0001	<1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
1/11/2017	C	0.13	33.8	3.09	7.99	728	502	0		<1	<1	9.9																											
6/12/2017	C	0.19	33.5	2.31	7.83	708	489	0		<1		17.0																											
2018																																							
3/01/2018	C	1.63	33.7	1.29	8.10	673		0			20			2.14	0.045	370	325	43	8	1.84			<0.1			<1					<0.0001		7		<0.5	<0.5	<0.5	2.10	<3
7/02/2018	C	1.24	32.1	2.42	6.83	627		0			5.1			2.63	0.080	648	150	56	7	2.30			<0.1			<1					<0.0001		13		<0.5	<0.5	<0.5	1.80	<3
7/03/2018	C	1.94	32.6	1.42	7.33	717		0		<10	<10	6.1		3.07	0.060	839	189	75	27	2.22		<1	<0.1	<1	<0.004	<1	<1	300	16	<0.0001	1	<5	<1	<0.5	<0.5	<0.5	<1.5	<3	
4/04/2018	C	3.29	33.1	1.69	7.58	421		0			<1			2.62	0.120	497	19	4	17	2.19			<0.1			<1					<0.0001		<5		<0.5	<0.5	<0.5	2.10	<3
2/05/2018	C	0.15	32.2	2.07	7.80	306		0			9.9			2.36	0.100	279	12	177	14	2.76			<0.1			<1					<0.0001		5		<0.5	<0.5	<0.5	<1.5	<3
6/06/2018	C																																						

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Date Sampled / Analyte	Sampling Reason (Compliance / Retest / Voluntary)	DO	Temp	Turbidity	pH	EC	TSS	TRH	E Coli	Enterococci	BOD	Chlorophyll a	TN	TP	NH3-N	NO3-N	NO2-N	PO4-P	TKN	Al	As	Cd	Cr Total	Cu	Pb	Fe	Mn	Hg	Ni	Zn	Ag	BTEX	
		mg/L	°C	NTU		µS/cm	mg/L	mg/L	MPN/100	MPN/100mL	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EPL217-04 Trigger Value		N/A	N/A	28	6-8.5	N/A	75	6	305	261	25	N/A	40	10	94	145	17	5	N/A	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	1000	1.4	700	
EPL217-05 Trigger Value		N/A	N/A	N/A	6-8.5	N/A	75	0.32	N/A	N/A	N/A	N/A	40	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	130	1.4	3.0	
LOR			N/A	N/A	N/A			0.32	10	10	<1	1	0.01	0.005	1	1	1	1	10	5	1	0.1	1	1	1	5	1	0.0001	1	5	1	3	
Testing Frequency			Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	
2015																																	
	7/01/2015	C	5.57	30.2	2.59	6.52	80	0	<0.65	53	21	2.4	7	0.4	0.02	58	117	4	<1	0.29	11	<1	0.2	<1	<1	<1	180	400	<0.0001	<1	160	<1	<3
	13/01/2015	V				6.63		0																									
	20/01/2015	V				6.75		0																									
	27/01/2015	V				6.38		0																									
	4/02/2015	C	4.69	31.7	1.48	6.49	84	0	<0.65	13	91	1.0	2	0.3	0.01	27	14	3	4	0.29	11	<1	0.1	<1	4	<1	240	350	<0.0001	2	54	<1	<3
	9/02/2015	V				6.36		0																									
	10/02/2015	C	5.28	30.8	1.86	6.75	72	47	<0.65	13	2	1.0	5	0.01	0.005	24	46	1	1		11	<1	<0.1	<1	1	<1	200	250	<0.0001	<1	78	<1	<3
	18/02/2015	V				6.07		1																									
	26/02/2015	V				6.38		0																									
	4/03/2015	C	5.28	30.8	1.86	6.75	72	0	<0.65	13	2	1.0	5	0.3	0.02	24	46	1	1	0.14	11	<1	<0.1	<1	<1	<1	200	250	<0.0001	<1	78	<1	<3
	4/03/2015	R																															
	9/03/2015	V				6.66		0																									
	16/03/2015	V				6.04		0																									
	23/03/2015	C	7.39	32.3	1.65	6.60	100	0	<0.65																								

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Date Sampled / Analyte	Sampling Reason (Compliance / Retest / Voluntary)	DO	Temp	Turbidity	pH	EC	TSS	TRH	E Coli	Enterococci	BOD	Chlorophyll a	TN	TP	NH3-N	NO3-N	NO2-N	PO4-P	TKN	Al	As	Cd	Cr Total	Cu	Pb	Fe	Mn	Hg	Ni	Zn	Ag	BTEX		
		mg/L	°C	NTU		µS/cm	mg/L	mg/L	MPN/100	MPN/100mL	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
EPL217-04 Trigger Value		N/A	N/A	28	6-8.5	N/A	75	6	305	261	25	N/A	40	10	94	145	17	5	N/A	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	1000	1.4	700		
EPL217-05 Trigger Value		N/A	N/A	N/A	6-8.5	N/A	75	0.32	N/A	N/A	N/A	N/A	40	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	130	1.4	3.0		
LOR			N/A		N/A			0.32		10		1	0.01	0.005	1	1	1	1	10	5	1	0.1	1	1	1	1	5	1	0.0001	1	5	1	3	
Testing Frequency		Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly		
2019																																		
2/01/2019	C	5.07	30.1	0.96	6.51	121	0				2.8		0.32	0.01	8	42	<1	<1	0.28			0.1		<1			<0.0001		130		<3			
6/02/2019	C	4.71	28.1	1.30	6.51	72	0				1.2		0.20	0.01	11	30	3	4	0.17			0.1		<1			<0.0001		100		<3			
6/03/2019	C	4.81	31.9	1.03	6.42	74	0	<0.65	20	<10	1.9		0.18	0.02	10	<1	<1	16	0.02	<5	<1	<0.1	<1	<1	<1	87	260	<0.0001	<1	72	<1	<3		
18/03/2019	R																				<1	<0.1	<1	<1	<1	140	240		<1		<1	<3		
25/03/2019	R												0.24	0.010	125	95	3	1	0.13								<0.0001		28		<3			
3/04/2019	C	5.49	31.0	0.81	6.48	97	0				1.1		0.20	0.005	112	21	1	6	0.18			<0.1		<1			<0.0001		14		<3			
1/05/2019	C	5.2	29.6	0.93	6.66	108	0				1.1		0.14	0.010	25	<1	2	<1	0.13			<0.1		<1			<0.0001		7		<3			
5/06/2019	C	6.02	22.7	0.80	7.69	118	0				1.5		0.23	0.015	15	3	<1	<1	0.23			<0.1		<1			<0.0001		12		<3			
3/07/2019	C	6.26	24.8	2.12	7.29	114	0				<1		0.21	0.010	13	<1	2	2	0.19			<0.1		<1			<0.0001		16		<3			
7/08/2019	C	6.74	22.4	0.78	7.23	111	0				1.3		0.20	0.005	17	<1	5	<1	0.20			<0.1		<1			<0.0001		7		<3			
4/09/2019	C	6.97	26.6	0.69	7.41	116	1				<1		0.18	0.005	4	3	2	2	0.10			<0.1		<1			<0.0001		<5		<3			
2/10/2019	C	6.37	30.1	0.72	7.43	120	2				2.3		0.29	0.005	35	<1	<1	3	0.28			<0.1		<1			<0.0001		<5		<3			
15/10/2019	R							<0.65																								<3		
6/11/2019	C	3.77	28.7	4.97	6.77	279	3	<0.65	272	235	<1		0.70	0.020	29	380	9	<1	0.45		<1	0.4	<1	<1	<1	150	790	<0.0001	2	520	<1	<3		
11/11/2019	R							<10	<10	<10	<1																							
4/12/2019	C	4.46	30.9	0.73	6.89	211	0		10	<10	<1		0.28	0.015	35	3	2	15	0.28		<1	<0.1	<1	<1	<1	99	150	<0.0001	<1	24	<1	<3		
11/12/2019	V	4.89	31.7	0.73	7.16	182	5		30	<10			0.38	<0.020	10	<5	<5	6	0.38		<1	<0.1	<1	<1	<1	120	190	<0.0001	<1	11	<1			
11/12/2019	V												0.28	0.015	27	<1	1	<1	0.06															
17/12/2019	V	4.71	31.7	0.56	6.86	183	0		<10	<10			0.32	<0.02	29	97	6	5	0.22		<1	<0.1	<1	<1	<1	39	220	<0.0001	<1	99	<1			
17/12/2019	V												0.71	0.010	18	92	5	2	0.67															
2020																																		
8/01/2020	C	3.45	29.5	1.93	6.48	127	3				1.3		0.31	0.030	62	13	3	<1	0.29		<1	<0.1	<1	<1	<1	6	3	<0.00005	<1	40	<1	<4		
15/01/2020	V												0.32	0.020	20	63	4	<1	0.23			0.1		<1			<0.0001		130					
22/01/2020	V												0.24	0.020	17	83	3	7																
5/02/2020	C	4.67	28.7	1.77	6.71	132	1				<1											0.1		<1			<0.0001		130		<3			
4/03/2020	C	5.88	29.6	1.36	7.07	139	2	<0.65	<10	10	<1		0.18	0.010	26	3	<1	<1			<1	<0.1	<1	<1	<1	77	140	<0.0001	<1	80	<1	<3		
1/04/2020	C	4.63	30.7	2.28	6.51	107	2				1.0											<0.1		<1			<0.0001		14		<3			
6/05/2020	C	3.25	26.1	5.49	6.80	87	4	<0.65			3.2											<0.1		<1			<0.0001		<5		<3			
10/06/2020	C	5.36	24.9	3.85	6.98	97	1				1.4											<0.1		<1			<0.0001		7		<3			
8/07/2020	C	5.41	23.9	3.41	6.96	98	4				1.6											<0.1		<1			<0.0001		24		<3			
5/08/2020	C	5.81	24.5	1.33	7.05	113	1				1.5											<0.1		<1			<0.0001		12		<3			
9/09/2020	C	5.51	28.5	1.36	7.30	122	0				3.2											<0.1		<1			<0.0001		6		<3			
7/10/2020	C	4.57	28.4	6.67	6.76	198	0		933	512	<1		0.63	0.015	41	313	3	8				0.6		<1			<0.0001		360		<3			
19/10/2020	V	5.19	29.5	1.21	6.83	196	0		10	<10																								
28/10/2020	V	6.22	29.7	2.19	7.23	170	0		31	20																								
4/11/2020	V	6.33	30.6	7.28	6.64	177	0		31	10	<1											<0.1		<1			<0.0001		25		<3			
11/11/2020	V	5.20	30.5	1.61	7.15	195	0		74	10																								
18/11/2020	V	5.34	30.8	0.81	7.11	167	0		52	<10																								
25/11/2020	V	5.20	28.4	2.19	6.70	143	0		10	146																								
2/12/2020	C	4.94	29.9	1.04	6.54	132	0				1.1											0.1		<1			<0.0001		180		<3			
2021																																		
6/01/2021	C	6.25	31.0	2.06	7.18	88	0		10	31	<1		0.37	0.015	8	2	1	<1			<0.5	0.1	<0.5	<1	<0.2	120	80	<0.0001		61	<1	<2		
3/02/2021	C	5.98	23.7	2.84	6.55	81	0				1.0											0.2		<1			<0.0001		130		<3			
3/03/2021	C	5.28	29.2	1.58	6.81	91	0	<0.65	20	20	<1		0.06	0.005	11	3	1	<1			<1	<0.1	<1	<1	<1	110	300	<0.0001	6	52	<1	<3		
7/04/2021	C	5.47	28.0	1.74	6.53	72	0				<1											<0.1		<1			<0.0001		64		<3			
5/05/2021	C	5.40	27.0	1.54	6.87	86	0				1.9											<0.1		<1			<0.0001		7		<3			
3/06/2021	C	5.46	26.1	1.50	6.95	100	0				1.9											<0.1		<1			<0.0001		5		<3			
7/07/2021	C	6.67	23.2	1.28	6.79	101	0				2.7											<0.1		<1			<0.0001		9		<3			
4/08/2021	C	4.71	27.2	2.21	6.88	108	4				<1											<0.1		<1			<0.0001		<5		<3			
1/09/2021	C	5.19	27.9	1.35	7.16	113	0				<1											<0.1		<1			<0.0001		<5		<3			
6/10/2021	C	5.89	25.8	6.92	7.46	197	0															<0.1		<1			<0.0001							



Date Sampled / Analyte	Sampling Reason (Compliance / Retest / Voluntary)	DO	Temp	Turbidity	pH	EC	TSS	TRH	E Coli	Enterococci	BOD	Chlorophyll a	TN	TP	NH3-N	NO3-N	NO2-N	PO4-P	TKN	Al	As	Cd	Cr Total	Cu	Pb	Fe	Mn	Hg	Ni	Zn	Ag	BTEX	
		mg/L	°C	NTU		µS/cm	mg/L	mg/L	MPN/100m	MPN/100mL	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EPL217-04 Trigger Value		N/A	N/A	28	6-8.5	N/A	75	6	305	261	25	N/A	40	10	94	145	17	5	N/A	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	1000	1.4	700	
EPL217-05 Trigger Value		N/A	N/A	N/A	6-8.5	N/A	75	0.32	N/A	N/A	N/A	N/A	40	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	130	1.4	3.0	
LOR			N/A	N/A	N/A			0.32	10	10	<1	1	0.01	0.005	1	1	1	1	10	5	1	0.1	1	1	1	1	5	1	0.0001	1	5	1	3
Testing Frequency		Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	1	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	
2023																																	
4/01/2023	C	5.15	27.9	1.76	6.59	116.2	0				<1										0.2			<1				<0.0001		220		<3	
1/02/2023	C	4.05	30.9	1.46	6.5	160.5	1	<0.05	85	10	3		0.11	0.015	4	46	<1	<1		<1	<0.1	<1		<1	<1	100	230	<0.0001	<1	79		<3	
1/03/2023	C	5.26	28.3	2.57	6.8	79.62	0				<1										0.2			<1				<0.0001		150		<3	
5/04/2023	C	7.12	30.8	4.76	7.24	74.52	4				3										0.1			<1				<0.0001		75		<3	
3/05/2023	C	4.79	28.3	2.23	6.93	96.7	1				1										<0.1			<1				<0.0001		5		<3	
7/06/2023	C	6.88	30.2	2.31	7.38	90.6	0				<1										<0.1			<1				<0.0001		86		<3	
Jul-24	no flow																																
Aug-24	no flow																																
Sep-24	no flow																																
Oct-24	no flow																																
Nov-24	no flow																																
Dec-24	no flow																																
2024																																	
10/01/2024	C	4.7	30.1	7.43	7.43	234.3	0				<1		56	10	5	64	<1	<1				0.1		<1				<0.0001		54		<1	
7/02/2024	C	4.88	31.6	1.25	6.66	100.4	0	<0.05	10	169	<1		0.23	10	12	2	<1	4			<1	<0.1	<1	<1	<1	220	210	<0.0001	1	92	<1	<3	
5/03/2024	C	3.05	30.9	2.9	6.67	82.1	0				<1											<0.1		<1				<0.0001		50		<3	
3/04/2024	C	2.32	30.1	2.21	6.74	96	0				1.8											<0.1		<1				<0.0001		49		<3	
1/05/2024	C	5.26	30.4	7.64	6.99	106.7	0				<1											<0.1		<1				<0.0001		15		<3	
5/06/2024	no flow (sample taken)	ND	23.4	1.22	7.08	110.3	0	<0.05			1.1											<0.1		<1				<0.0001		33		<3	
Jul-24	no flow																																
Aug-24	no flow																																
Sep-24	no flow																																
Oct-24	no flow																																
11/11/2024	no flow (sample taken)	2.67	24.5	6.84	6.95	244.7	0	<0.05	63	148	7		0.99	0.05	9	<1	8	6			<1	<0.1	<1	<1	<1	640	570		1	31	<1	<3	
4/12/2024	no flow (sample taken)	6.76	27.6	12.4	7.07	109.5	6	<0.05			<1										<1	<0.1								37		<3	
2025																																	
8/01/2025	C	6.25	25.40	61.20	6.73	70.19	19.00	<0.05			<1											0.20		<1				<0.0001		110.00		<3	
5/02/2025	C	6.86	24.10	294.00	6.88	57.00	92.00	<0.04	833.00	4611.00	3.00		0.39	0.04	6.00	142.00	5.00	<1			<1	0.20	<1	<1	<1	270.00	59.00	<0.0001	<1	100.00	<1	<3	
7/02/2025	V - Spot check sample			194.00			64.00																										
3/03/2025	C	5.87	24.70	26.30	7.10	97.30	7.00				<1										<1	<0.1	<1	<1	<1	110.00	6.00		<1	17.00		<3	
2/04/2025	C	7.42	22.80	380.00	6.95	70.60	132.00				<1	-										0.10		<1		-	-	<0.0001		70.00		<3	
22/04/2025	V - Spot check sample			13.00																													
7/05/2025	C	6.03	25.20	6.03	6.80	172.70	7.00				<1											<0.1		<1				<0.0001		6.00		<3	
4/06/2025	V - Spot check sample - no flow		22.00	58.30	7.16	213.50		<0.05	30.00	40.00	3.00	9.00									<1	<0.1	<1	<1	<1	280.00	3.00	<0.0001	<1	<5	<1	<3	
4/06/2025	V - Total Analysis - no flow																				2.00	<0.1	<1	<1	<1	1200.00	5200.00	<0.0001	4.00	67.00	<1		
Jul-24	no flow																																
Aug-24	no flow																																
Sep-24	no flow																																
Oct-24	no flow																																
5/11/2025	C	64.90	29.30	65.80	6.62	166.00	107.00	<0.05					1.70	0.06	110.00	820.00	11.00	<5			1.00	1.10	<1	2.00	2.00	760.00	750.00	<0.0001	3.00	400.00	<1	<3	
13/11/2025	V- resample for non-compliance																				1.00	<0.1	<1	3.00	1.00	170.00	500.00	<0.0001	1.00	56.00	<1	<3	
3/12/2025	C	65.50	30.80	4.54	6.63	95.25	6.40	<0.05					0.19	<0.05	<5	<5	<5	<5			<1	<0.1	<1	<1	<1	460.00	530	<0.0001	<1	72.00	<2	<3	

Date Sampled / Analyte	Sampling Reason (Compliance / Retest / Voluntary)	DO	Temp	Turbidity	pH	EC	TSS	TRH	E Coli	Enterococci	BOD	Chlorophyll a	TN	TP	NH3-N	NO3-N	NO2-N	PO4-P	Al	As	Cd	Cr Total	Cu	Pb	Fe	Mn	Hg	Ni	Zn	Ag	BTEX	aMDEA
		mg/L	°C	NTU		µS/cm	mg/L	mg/L	MPN/100m	MPN/100mL	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EPL217-04 Trigger Value		N/A	N/A	28	6-8.5	N/A	75	6	305	261	25	N/A	40	10	94	145	17	5	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	1000	1.4	700	LOR
EPL217-05 Trigger Value		N/A	N/A	N/A	6-8.5	N/A	75	0.32	N/A	N/A	N/A	N/A	40	10	N/A	N/A	N/A	N/A	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	130	1.4	3.0	LOR
LOR			N/A		N/A			0.65	10	10	<1	1	0.01	0.005	1	1	1	1	5	1	0.1	1	1	1	5	1	0.0001	1	5	1	3	TBA
Testing Frequency		Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
2016																																
21/01/2016	V				5.89		10																									
3/02/2016	C	3.15	30.4	7.86	7.80	101	0	<0.65	11	34	37.0	3	7.3	0.03	308	89	9	<1	19	<1	<0.1	<1	5	<1	29	17	<0.0001	<1	15	<1	<3	
25/02/2016	V				6.39		0																									
10/03/2016	V				6.10		1																									
16/03/2016	V				6.55		0																									
22/03/2016	V				6.02		3																									
21/09/2016	V				6.10		4																									
23/11/2016	V				7.42		0																									
30/11/2016	V				6.27		0																									
14/12/2016	V				6.82		1																									
21/12/2016	V				6.32		13																									
28/12/2016	V				6.55		8																									
2017																																
4/01/2017	C	6.43	27.8	20.70	6.37	56	2	<0.65	85	216	<1	2	0.2	0.03	4	68	1	2	10	<1	<0.1	<1	1	<1	19	64	<0.00005	<1	40	<1	<3	
9/01/2017	R								<10	41																						
25/01/2017	V																															



Date Sampled / Analyte	Sampling Reason (Compliance / Retest / Voluntary)	DO	Temp	Turbidity	pH	EC	TSS	TRH	E Coli	Enterococci	BOD	Chlorophyll a	TN	TP	NH3-N	NO3-N	NO2-N	PO4-P	Al	As	Cd	Cr Total	Cu	Pb	Fe	Mn	Hg	Ni	Zn	Ag	BTEX	αMDEA
		mg/L	°C	NTU		µS/cm	mg/L	mg/L	MPN/100m	MPN/100mL	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EPL217-04 Trigger Value		N/A	N/A	28	6-8.5	N/A	75	6	305	261	25	N/A	40	10	94	145	17	5	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	1000	1.4	700	LOR
EPL217-05 Trigger Value		N/A	N/A	N/A	6-8.5	N/A	75	0.32	N/A	N/A	N/A	N/A	40	10	N/A	N/A	N/A	N/A	N/A	N/A	5.5	4.4	2.0	4.4	N/A	N/A	0.4	70	130	1.4	3.0	LOR
LOR			N/A	N/A	N/A			0.65	10	10	<1	1	0.01	0.005	1	1	1	1	5	1	0.1	1	1	1	5	1	0.0001	1	5	1	3	TBA
Testing Frequency		Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
2023																																
4/01/2023	C	5.62	28.0	18.40	6.55	104	6														<0.1		2				<0.0001		76		<3	
1/02/2023	C	4.98	30.4	7.91	6.61	114	3				1.5		0.03	0.010	8	23	3	<1		1.00	<0.1	<1	1	<1	93	280	<0.0002	1	36	<1	<3	
1/03/2023	C	5.46	27.9	34.80	7.08	72	10				<1										<0.1		1			<0.0003		48		<3		
5/04/2023	C	5.35	30.2	4.45	6.83	99	4														<0.1		<1			<0.0004		23		<3		
May-23	no flow																															
Jun-23	no flow																															
Jul-23	no flow																															
Aug-23	no flow																															
Sep-23	no flow																															
Oct-23	no flow																															
Nov-23	no flow																															
Dec-23	no flow																															
2024																																
1/01/2024	no flow																															
14/02/2024	C	6.49	26.0	38.10	6.94	41	10	<0.05	144	408	1.0		0.13	0.025	<1	67	3	<1		<1	<0.1	<1	<1	<1	32	63	<0.0001	<1	52	<1	<3	
Mar-24	no flow																															
Apr-24	no flow																															
May-24	no flow																															
Jun-24	no flow																															
Jul-24	no flow																															
Aug-24	no flow																															
Sep-24	no flow																															
Oct-24	no flow																															
11/11/2024	no flow (sample taken)	5.00	25.5	3.93	7.21	651	0	<0.05	63	3448	1.0		0.3	0.025	3	1	6	2		1	<0.1	<1	<1	<1	76	230	<0.0001	<1	<5	<1	<3	
4/12/2024	no flow (sample taken)	6.63	26.3	5.95	7.50	267	5				<1										<0.1		1			<0.0001		<5		<3		
2025																																
8/01/2025	C	7.01	25.5	97.7	7.80	170.4	38				<1										<0.1		1			<0.0001		11		<3		
5/02/2025	C	7.3	23.9	150	8.42	120.2	53	<0.04	373	880	3		0.42	0.035	10	179	5	<1		<1	<0.1	<1	1	<1	120	69	<0.0001	<1	7	<1	<3	
7/02/2025	Spot check sample			66			19																									
3/03/2025	C	6.41	24.2	17.7	7.64	176.2	5				<1										<0.1	<1	<1	<1	55	80	<0.0001	<1	<5		<3	
2/04/2025	C	7.51	23.4	180	7.80	80.8	64				<1	-									<0.1		<1		-	-	<0.0001		6		<3	
22/04/2025	V - Spot check sample			13.5																												
7/05/2025	C	6.74	24.8	8.38	7.18	230.9	10				1.0										<0.1		<1			<0.0001		<5		<3		
Jun-25	no flow																															
Jul-25	no flow																															
Aug-25	no flow																															
Sep-25	no flow																															
Oct-25	no flow																															
5/11/2025	C	69.3	28.3	126	7.295	524.9	216	<0.05					1.50	0.06	24.00	790.00	16.00	10.00		2	0.4	<1	8.00	4.00	200.00	1200.00	<0.0001	4.00	130.00	<1	<3	0.00
13/11/2025	V-resample for non-compliance																			<1	0.5	<1	1.00	<1	340.00	270.00	<0.0001	<1	220.00	<1		
3/12/2025	no flow																															
9/12/2025	C	78.20	29.4	50.0	7.323	19.6	92.0	<0.05					0.43	0.02	<5	290.00	5.00	<5		<1	<0.1	<1	3.00	1.00	170.00	450.00	<0.0001	1.00	58.00	<1	<3	0.00



Date Sampled / Analyte	Sampling Reason (Compliance / Retest / Voluntary)	DO	Temp	Turbidity	pH	EC	TSS	TRH	E Coli	Enterococci	BOD	Chlorophyll a	TN	TP	NH3-N	NO3-N	NO2-N	PO4-P	Al	As	Cd	Cr Total	Cr VI	Cu	Pb	Fe	Mn	Hg	Ni	Zn	Ag	BTEX
		mg/L	°C	NTU		µS/cm	mg/L	mg/L	MPN/100m	MPN/100mL	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EPL217-04 Trigger Value		N/A	N/A	28	6-8.5	N/A	75	6	305	261	25	N/A	40	10	94	145	17	5	N/A	N/A	5.5	4.4	N/A	2	4.4	N/A	N/A	0.4	70	1000	1.4	700
EPL217-05 Trigger Value		N/A	N/A	N/A	6-8.5	N/A	75	0.32	N/A	N/A	N/A	N/A	40	10	N/A	N/A	N/A	N/A	N/A	N/A	5.5	4.4	N/A	2.0	4.4	N/A	N/A	0.4	70	130	1.4	3.0
LOR				N/A	N/A			0.65	10	10	<1	1	0.01	0.005	1	1	1	1	5	1	0.1	1	0.004	1	1	5	1	0.0001	1	5	1	3
Testing Frequency		Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	N/A	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
2020																																
8/01/2020	C	5.33	30.4	1.91	6.65	138	2				1.2		0.29	0.015	33	12	2	<1		<1	<0.1	<1	<0.001	<1	<1	170	15	<0.00005	<1	11	<1	<4
15/01/2020	V												0.18	0.015	36	37	2	<1														
5/02/2020	C	5.67	27.2	5.49	6.72	164	5				1.6										<0.1			<1					32		<3	
4/03/2020	C	7.45	30.3	3.18	7.04	118	1	<0.65	75	<10	<1		0.13	0.010	24	<1	<1	<1		<1	<0.1	<1	<0.004	<1	<1	380	2	<0.0001	<1	20	<1	<3
1/04/2020	C	7.55	32.2	1.55	7.14	144	0				1.1										<0.1			<1					16		<3	
7/10/2020	C	3.63	28.2	33.00	6.46	240	31		602	231	<1		0.87	0.025	49	319	3	9			<0.1			1				<0.0001		84		<3
19/10/2020	V	3.63	30.8	4.41	6.72	224	1		132	<10																						
28/10/2020	V	3.63	31.8	4.71	6.67	208	0		74	414																						
4/11/2020	C	3.63	31.7	3.75	6.89	205	0		109	74	<1										<0.1			<1				<0.0001		<5		<3
11/11/2020	V	3.63	30.7	3.02	7.22	220	0		17329	723																						
18/11/2020	V	3.63	31.8	2.66	7.27	197	0		24196	318																						
25/11/2020	V	3.63	29.3	8.22	6.82	136	0		108	63																						
2/12/2020	C	3.63	30.6	2.03	7.64	139	0		313	85	<1										<0.1			<1				<0.0001		11		<3
9/12/2020	V	3.63	29.0	1.98	7.26	141	0		228	<10																						
16/12/2020	V	3.63	28.3	19.90	6.51	69	13		663	776																						
2021																																
8/01/2021	C	7.41	32.3	10.60	7.23	116	0		341	<10	1.0		0.2	0.015	8	1	<1	3			<0.05			<1				<0.0001		14		<2
3/02/2021	C	6.58	28.2	6.24	6.67	95	0		408	41	1.1										<0.1			<1				<0.0001		35		<3
3/03/2021	C	7.37	31.4	2.20	6.91	111	0	<0.65	10	<10	<1		0.1	0.005	9	3	1	<1		<1	<0.1	11		2	<1	520	48	<0.0001	29	22	<1	<3
24/03/2021	V																				<0.05	<0.5		<1	<1	180	1	<0.0001	<0.5	2	<1	
7/04/2021	C	6.68	29.0	1.78	6.68	90	0				<1									<0.5	<0.1	<1		<1	<0.2	180	1	<0.0001	<0.5	8		<3
May-21	no flow																															
Jun-21	no flow																															
Jul-21	no flow																															
Aug-21	no flow																															
Sep-21	no flow																															
Oct-21	no flow																															
10/11/2021	C	6.50	29.8	7.75	6.58	76	2		226	41	<1		0.4	0.02	19	48	3	4			<0.1			2				<0.0001		48		<3
1/12/2021	C	8.95	29.2	2.26	7.28	142	7		52	10	<1										<0.1			<1				<0.0001		11		<3
13/12/2021	R																				<0.1			<1				<0.0001		13		
2022																																
5/01/2022	C	7.79	30.3	3.19	6.92	90	0				<1										<0.1			<1				<0.0001		32		<3
1/02/2022	C	7.28	28.0	3.80	6.68	90.5	1	<0.05	52.00	63.00	<1		0.17	0.02	8.00	39.00	<1	<1		<1	<0.1	<1		<1	<1	180	3	<0.0001	<1	31	<1	<3
8/03/2022	C	5.67	30.9	2.53	6.99	132.2	3				1.8																					
6/04/2022	C	4.13	28.8	14.40	6.37	77	7				2.9										<0.1			<1				<0.0001		41		<3
4/05/2022	C																															
Jun-22	no flow																															
Jul-22	no flow																															
Aug-22	no flow																															
Sep-22	no flow																															
Oct-22	no flow																															
5/10/2022	C	5.6	30.2	14.90	6.49	163.6	7				<1										<0.1			2				<0.0001		140		<3
Nov-22	no flow																															
16/11/2022	C	5.49	30.4	5.46	6.32	172.4	2		158	31	<1																					
21/12/2022	no sample (crocodile sighting)																															
2023																																
4/01/2023	C	7.5	27.9	5.95	6.67	135.1	3														<0.1			<1	<1	210	<1	<0.0001	<1	64		<3
1/02/2023	C	7.47	30.4	2.27	7.11	92	2		107	10	2.4		<0.01	0.01	<1	2	<1	<1		<1	<0.1	<1		<1	<1	210	<1	<0.0001	<1	7	<1	<3
1/03/2023	C	7.38	27.6	5.67	7.32	98.15	0				<1										<0.1			<1	<1	210	<1	<0.0001	<1	34		<3
5/04/2023	C	6.95	31.3	2.81	6.89	106.8	4														<0.1							<0.0001		6		<3
May-23	no flow																															
Jun-23	no flow																															
Jul-23	no flow																															
Aug-23	no flow																															
Sep-23	no flow																															
Oct-23	no flow																															
Nov-23	no flow																															
Dec-23	no flow																															
2024																																
10/01/2024	C	3.61	30.3	10.10	7.02	124	1				<1	</																				

Attachment B – Mangrove Data

Mangroves - Canopy, Sediment Height and Groundwater

Site	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12	SS13	SS14	SS15	SS15A	SS16	SS16A	SS17	SS18	SS19	SS20	SS21	SS22	SS23	Comments
	MEAN CANOPY COVER (%)																									
2003	90	90	90	94	37	*	85	*	79	94	97	92	92	81	88	*	93	*	*	*	52	61	*	*	*	2017 and 2018 use the standard densiometer data (not that recorded using the 17 point densiometer) so the following graphs display data collected using the same method
2004	92	90	91	93	40	*	87	59	74	91	95	93	90	84	84	*	72	*	92	92	63	74	93	92	93	
2005	93	88	85	92	45	*	84	66	80	92	94	94	89	80	86	*	77	*	93	92	67	74	94	91	90	
2006	85	88	86	91	51	*	82	57	71	84	89	86	83	75	82	*	76	*	88	89	65	73	89	85	88	
2007	88	87	84	92	47	*	80	53	77	87	88	86	83	83	86	*	77	*	89	89	61	75	91	84	87	
2008	91	86	93	96	41	*	84	56	75	84	91	91	88	79	85	*	81	*	96	94	54	69	92	87	88	
2009	89	88	85	91	47	*	83	58	81	87	90	89	88	79	90	*	74	*	90	90	72	66	94	89	89	
2010	81	84	83	94	62	*	82	49	74	88	90	88	90	82	84	*	62	*	91	91	63	64	91	89	90	
2011	91	88	86	93	49	*	81	61	78	89	89	89	92	82	90	*	62	*	91	91	52	54	90	86	91	
2012	87	84	71	88	46	*	82	55	79	87	89	85	90	80	87	*	55	*	86	86	53	58	92	88	89	
2013	88	84	75	92	53	*	81	56	76	85	86	90	89	74	87	*	59	*	90	89	55	59	92	83	89	
2014	85	83	74	91	53	*	77	65	81	87	87	89	89	73	93	*	53	*	90	90	51	64	92	88	90	
2015	90	88	74	93	47	*	83	63	78	90	91	92	92	79	*	74	*	64	93	89	52	67	96	89	92	
2016	91	94	74	94	47	*	79	62	82	89	92	87	93	82	*	76	*	69	94	90	52	57	95	88	88	
2017	91	93	76	95	53	22	78	56	85	88	89	91	94	84	*	71	*	74	92	85	51	48	95	85	88	
2018	97	99	78	98	80	66	90	84	91	85	90	95	98	94	*	87	*	77	98	97	80	80	96	93	84	17-point densiometer method (data change from previous report)
2019	97	98	76	98	75	56	83	79	90	87	90	96	97	83	*	83	*	74	97	91	70	68	98	92	79	17-point densiometer method
2020	94	98	79	98	76	68	89	73	91	89	92	97	99	84	*	84	*	80	97	93	69	70	97	94	79	
2021	96	97	81	99	72	65	87	70	93	92	94	98	100	86	*	81	*	79	98	95	63	67	99	98	79	
2022	97	97	81	98	72	63	86	70	93	92	90	96	99	82	*	79	*	79	98	92	56	61	93	93	79	
2023	90	97	75	96	68	62	81	65	90	89	88	94	97	81	*	81	*	79	97	90	54	59	95	94	74	
2024	86	96	77	96	65	60	79	61	90	90	91	95	98	76	*	76	*	79	97	90	51	58	96	95	73	
2025	90	96	79	96	69	61	81	61	90	89	91	95	97	80	*	82	*	77	97	90	51	60	97	93	75	
	MEAN RELATIVE SEDIMENT HEIGHT (cm)																									
2003	76	76	73	77	85	83	76	74	90	94	76	100	85	93	*	E	*	E	119	113	90	114	89	E	E	"R" indicates that the site was filled in by site reclamation works and a replacement site was established in Nov 2003
2004	77	76	73	77	85	83	77	75	88	94	76	97	86	92	*	E	*	E	119	113	90	114	86	108	119	
2005	77	76	73	78	84	83	76	74	88	93	74	98	86	92	*	E	*	E	119	113	90	113	85	110	118	
2006	76	75	72	77	85	83	77	73	86	92	72	95	85	92	*	E	*	E	118	111	90	112	85	109	119	E indicates that the site had not yet been established
2007	76	76	73	77	85	82	77	73	86	91	72	96	85	93	*	E	*	E	118	112	90	112	84	110	119	
2008	76	75	72	77	85	83	77	73	86	92	72	95	85	92	*	E	*	E	118	111	90	112	85	109	119	
2009	76	76	72	77	85	83	77	73	86	92	72	96	85	91	*	E	*	E	118	112	90	113	85	110	120	Sediment height measurements were collected at a quarterly frequency during the construction phase (2003-2006) and the annual values provided above for 2003-2006 are the mean values caluculated from the quarterly data
2010	75	75	72	77	85	83	77	72	85	90	72	94	84	91	*	E	*	E	118	110	90	112	84	110	121	
2011	76	75	72	77	85	83	77	71	84	89	70	94	84	91	*	E	*	E	118	110	90	112	85	110	119	
2012	76	75	72	77	83	83	77	71	82	89	69	92	84	92	*	E	*	E	117	109	89	112	85	110	120	
2013	76	75	72	77	84	82	79	69	82	89	69	92	83	92	*	E	*	E	116	108	89	112	85	108	119	
2014	75	75	72	77	83	81	78	67	80	86	69	91	83	91	*	E	*	E	117	107	90	111	82	108	119	
2015	75	75	72	77	83	81	78	67	78	84	68	91	83	91	*	70	*	67	117	107	90	111	82	107	119	
2016	75	75	72	77	82	81	78	66	77	83	67	91	83	90	*	70	*	66	116	106	90	112	81	108	119	
2017	75	74	72	77	83	82	79	64	77	81	67	89	82	90	*	68	*	66	116	106	90	111	81	108	120	
2018	74	74	73	77	83	82	79	63	73	74	69	87	81	90	*	68	*	66	115	104	90	112	83	107	118	
2019	75	75	72	75	82	81	79	63	74	70	67	87	81	91	*	74	*	66	115	104	90	111	83	110	122	
2020	75	75	72	75	81	82	79	63	74	67	66	87	81	91	*	75	*	67	115	105	90	111	82	107	121	
2021	75	72	72	76	81	81	76	61	74	67	61	86	81	90	*	65	*	64	114	104	90	111	82	106	120	
2022	74	73	72	87	81	81	75	60	72	53	61	85	81	88	*	66	*	64	115	93	90	111	81	107	120	
2023	74	73	72	86	78	80	83	59	71	65	59	85	81	88	*	66	*	64	115	102	90	111	82	107	120	
2024	74	74	72	87	79	80	83	59	71	65	59	84	81	89	*	66	*	64	114	101	90	112	83	107	121	
2025	74	72	70	86	40	79	84	58	69	63	60	62	77	68	*	64	*	64	87	75	89	106	84	104	119	

Site	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12	SS13	SS14	SS15	SS15A	SS16	SS16A	SS17	SS18	SS19	SS20	SS21	SS22	SS23	Comments
	GROUNDWATER SALINITY DATA (‰)																									
2003	NI	70	68	68	NI	76	58	*	70	*	*	*	NI	66	*	*	*	*	*	*	NI	NI	67	*	*	"NC" indicates that sample/data was not collected due to lack of water in the bore "NC*" - salinity data was not collected due to technical issues with the water quality meter."
2004	68	40	30	48	60	65	38	*	68	*	*	*	48	36	*	*	*	*	*	*	48	55	49	*	*	
2004	6	22	26	22	40	48	2	*	38	*	*	*	12	12	*	*	*	*	*	*	4	5	5	*	*	
2004	NC	45	48	43	46	57	30	*	60	*	*	*	44	54	*	*	*	*	*	*	38	26	27	*	*	
2004	NC	56	58	64	58	68	45	*	62	*	*	*	NC	63	*	*	*	*	*	*	65	NC	48	*	*	
2004	78	66	64	70	48	72	61	*	72	*	*	*	62	55	*	*	*	*	*	*	62	12	54	*	*	
2005	42	41	45	42	56	52	30	*	60	*	*	*	30	33	*	*	*	*	*	*	30	11	22	*	*	
2005	70	65	60	NC	62	60	42	*	64	*	*	*	NC	56	*	*	*	*	*	*	NC	NC	25	*	*	
2005	NC	62	72	NC	66	71	54	*	73	*	*	*	NC	71	*	*	*	*	*	*	NC	NC	32	*	*	
2005	60	60	58	63	63	72	52	*	70	*	*	*	50	48	*	*	*	*	*	*	56	10	21	*	*	
2006	21	40	22	32	55	45	5	*	56	*	*	*	23	24	*	*	*	*	*	*	15	9	8	*	*	
2006	NC	65	68	NC	64	60	70	*	65	*	*	*	NC	65	*	*	*	*	*	*	NC	65	22	*	*	
2007	NC	66	68	NC	65	65	52	*	72	*	*	*	NC	68	*	*	*	*	*	*	NC	64	45	*	*	
2008	NC	69	66	72	60	64	53	*	71	*	*	*	NC	64	*	*	*	*	*	*	68	NC	54	*	*	
2009	NC	70	64	73	65	54	48	*	70	*	*	*	60	62	*	*	*	*	*	*	64	NC	43	*	*	
2010	NC	66	66	70	48	58	38	*	71	*	*	*	51	60	*	*	*	*	*	*	62	64	34	*	*	
2011	NC	66	66	62	62	62	32	*	65	*	*	*	NC	59	*	*	*	*	*	*	58	NC	19	*	*	
2012	NC	68	64	68	62	60	44	*	64	*	*	*	NC	62	*	*	*	*	*	*	67	NC	42	*	*	
2013	NC	NC	67	61	62	62	NC	*	67	*	*	*	NC	68	*	*	*	*	*	*	NC	NC	NC	*	*	
2014	NC	62	64	69	60	62	52	*	68	*	*	*	61	66	*	*	*	*	*	*	65	70	19	*	*	
2015	NC	70	66	67	62	68	48	*	68	*	*	*	50	68	*	*	*	*	*	*	64	NC	50	*	*	
2016	NC	NC	NC	NC	60	70	NC	*	67	*	*	*	NC	68	*	*	*	*	*	*	65	NC	NC	*	*	
2017	NC	70	69	66	59	61	48	*	70	*	*	*	NC	67	*	*	*	*	*	*	22	NC	40	*	*	
2018	NC	73	67	NC	58	NC	NC	*	72	*	*	*	24	69	*	*	*	*	*	*	NC	NC	41	*	*	
2019	NC	NC	68	NC	55	NC	NC	*	70	*	*	*	NC	66	*	*	*	*	*	*	NC	NC	NC	*	*	
2020	NC	65	66	63	60	62	45	*	60	*	*	*	52	37	*	*	*	*	*	*	54	26	41	*	*	
2021	NC	NC	64	62	52	56	42	*	68	*	*	*	50	58	*	*	*	*	*	*	50	NC	22	*	*	
2022	NC	NC	51	NC	58	52	39	*	33	*	*	*	NC	NC	*	*	*	*	*	*	63	65	NC	*	*	
2023	NC	51	50	NC	59	NC	32	*	49	*	*	*	NC	50	*	*	*	*	*	*	2	NC	35	*	*	
2024	NC	NC	47	NC*	NC	NC	53	*	NC*	*	*	*	66	70	*	*	*	*	*	*	63	NC*	60	*	*	
2025	NC	NC	NC	NC*	NC	NC	60	*	NC*	*	*	*	NC	NC	*	*	*	*	*	*	NC	NC*	56	*	*	

Site	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12	SS13	SS14	SS15	SS15A	SS16	SS16A	SS17	SS18	SS19	SS20	SS21	SS22	SS23	Comments
	GROUNDWATER DEPTH (cm BGL)																									
2003	NI	80	70	30	NI	15	50	*	5	*	*	*	NI	18	*	*	*	*	*	*	NI	NI	42	*	*	"NC" indicates that sample/data was not collected due to lack of water in the bore
2004	20	5	9	7	10	5	18	*	15	*	*	*	22	7	*	*	*	*	*	*	1	17	19	*	*	
2004	12	0	3	3	5	6	1	*	1	*	*	*	4	9	*	*	*	*	*	*	0	1	1	*	*	
2004	NC	53	48	51	12	29	52	*	10	*	*	*	54	44	*	*	*	*	*	*	59	20	43	*	*	
2004	NC	70	71	52	62	41	80	*	4	*	*	*	NC	40	*	*	*	*	*	*	90	NC	69	*	*	
2004	38	43	47	41	28	45	44	*	42	*	*	*	51	24	*	*	*	*	*	*	56	31	53	*	*	
2005	22	2	5	11	9	6	7	*	23	*	*	*	10	9	*	*	*	*	*	*	6	0	11	*	*	
2005	60	80	90	NC	52	41	95	*	51	*	*	*	NC	60	*	*	*	*	*	*	NC	NC	88	*	*	
2005	NC	80	86	NC	21	44	99	*	40	*	*	*	NC	56	*	*	*	*	*	*	NC	NC	57	*	*	
2005	34	27	35	40	24	22	32	*	25	*	*	*	31	20	*	*	*	*	*	*	25	0	22	*	*	
2006	16	2	0	1	3	0	0	*	2	*	*	*	5	8	*	*	*	*	*	*	1	7	2	*	*	
2006	NC	80	86	NC	37	41	95	*	29	*	*	*	NC	61	*	*	*	*	*	*	NC	55	105	*	*	
2007	NC	79	84	NC	28	37	90	*	29	*	*	*	NC	49	*	*	*	*	*	*	NC	55	86	*	*	
2008	NC	74	55	40	25	29	53	*	38	*	*	*	NC	31	*	*	*	*	*	*	72	NC	60	*	*	
2009	NC	54	50	40	40	40	58	*	56	*	*	*	54	30	*	*	*	*	*	*	60	NC	43	*	*	
2010	NC	39	25	38	0	20	61	*	40	*	*	*	48	34	*	*	*	*	*	*	55	50	40	*	*	
2011	NC	63	65	44	27	44	67	*	64	*	*	*	NC	22	*	*	*	*	*	*	70	NC	51	*	*	
2012	NC	78	72	37	48	40	78	*	9	*	*	*	NC	36	*	*	*	*	*	*	81	NC	64	*	*	
2013	NC	NC	84	6	3	4	NC	*	0	*	*	*	NC	56	*	*	*	*	*	*	NC	NC	NC	*	*	
2014	NC	12	15	9	3	7	35	*	0	*	*	*	40	57	*	*	*	*	*	*	27	27	12	*	*	
2015	NC	62	53	43	15	39	65	*	32	*	*	*	68	55	*	*	*	*	*	*	78	NC	79	*	*	
2016	NC	NC	NC	NC	0	46	NC	*	50	*	*	*	NC	75	*	*	*	*	*	*	65	NC	NC	*	*	
2017	NC	74	55	21	1	0	46	*	8	*	*	*	NC	26	*	*	*	*	*	*	42	NC	46	*	*	
2018	NC	16	70	NC	52	7	2	*	99	*	*	*	11	26	*	*	*	*	*	*	47	1	96	*	*	
2019	NC	NC	18	NC	109	NC	NC	*	88	*	*	*	NC	13	*	*	*	*	*	*	NC	NC	NC	*	*	
2020	NC	75	21	49	90	49	76	*	110	*	*	*	18	59	*	*	*	*	*	*	65	21	80	*	*	
2021	NC	NC	29	63.5	119	42	107.4	*	149	*	*	*	23	85.6	*	*	*	*	*	*	92.5	NC	22	*	*	
2022	NC	NC	10.5	NC	102.5	40	77	*	114	*	*	*	NC	7.5	*	*	*	*	*	*	92	66	NC	*	*	
2023	NC	22	52	NC	81	NC	20	*	54	*	*	*	NC	32	*	*	*	*	*	*	17	NC	65	*	*	
2024	NC	NC	23.5	52.5	9	34.5	34	*	32.5	*	*	*	47.5	51	*	*	*	*	*	*	30.5	50.5	46.5	*	*	
2025	NC	27	47.5	62.4	7	37	57	*	0	*	*	*	63.7	37.1	*	*	*	*	*	*	NC	NC	26.5	*	*	
	GROUNDWATER PH																									
2018	NC	5.94	6.07	NC	6.34	NC	NC	*	6.39	*	*	*	6.14	5.7	*	*	*	*	*	*	NC	NC	5.95	*	*	"NC" indicates that sample/data was not collected due to lack of water in the bore
2019	NC	NC	6.4	NC	6.26	NC	NC	*	6.49	*	*	*	NC	5.71	*	*	*	*	*	*	NC	NC	NC	*	*	
2020	NC	6.01	5.9	6.26	6.46	6.33	5.48	*	6.4	*	*	*	5.4	5.4	*	*	*	*	*	*	5.93	6.53	6.31	*	*	
2021	NC	NC	5.62	6.04	6.54	5.31	2.27	*	6.58	*	*	*	5.86	5.35	*	*	*	*	*	*	4.79	NC	4.64	*	*	
2022	NC	NC	NC	NC	NC	NC	NC	*	NC	*	*	*	NC	NC	*	*	*	*	*	*	NC	NC	NC	*	*	
2023	NC	NC	NC	NC	NC	NC	NC	*	NC	*	*	*	NC	NC	*	*	*	*	*	*	NC	NC	NC	*	*	
2024	NC	NC	6.56	6.59	NC	5.96	6.14	*	6.35	*	*	*	5.34	5.93	*	*	*	*	*	*	6.02	611	5.9	*	*	
2025	NC	7.01	6.58	7.09	NC	6.45	5.84	*	6.86	*	*	*	6.34	6.17	*	*	*	*	*	*	NC	NC	6.35	*	*	

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
SEDIMENTS																	
	CADMIUM IN SEDIMENTS (total mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	1.5																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1 Changed to weak acid extractable metals analysis only in 2020
ANZG (2018) GV-High	10.0																
2006	0.1	0.1	0.1	ND	ND	0.1	ND	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2007	0.1	0.1	0.1	ND	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2008	0.1	0.1	0.1	ND	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2009	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2010	0.3	0.4	0.3	0.5	1.0	0.2	0.1	0.5	ND	ND	ND	0.2	0.4	0.3	ND	ND	
2011	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2012	0.1	0.2	0.1	0.7	0.1	0.1	0.1	0.2	ND	ND	ND	0.1	0.1	0.1	0.2	ND	
2013	0.5	0.9	0.6	1.0	0.5	0.1	0.2	0.4	ND	ND	ND	0.6	0.4	0.7	1.1	ND	
2014	0.6	0.6	0.4	1.1	0.4	0.5	0.4	0.4	ND	ND	ND	0.8	0.8	0.8	0.5	ND	
2015	0.1	0.9	0.7	0.2	0.6	0.4	0.6	0.3	ND	ND	ND	1.3	1.0	1.1	0.8	ND	
2016	0.2	0.2	0.1	0.2	0.5	0.4	0.5	0.3	ND	ND	ND	0.4	0.3	0.3	0.2	ND	
2017	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	0.1	ND	
2018	0.4	0.1	0.3	0.1	0.6	0.4	0.5	0.4	ND	ND	ND	0.5	0.5	ND	0.6	0.9	
2019	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	ND	<0.1	<0.1	
	CADMIUM IN SEDIMENTS (weak acid mg/kg)																Commenced weak acid analysis in 2018
ANZG (2018) DGV (Default Guideline Value)	1.5																
ANZG (2018) GV-High	10.0																
2018	0.1	0.2	0.1	0.1	0.6	0.2	0.1	0.1	ND	ND	ND	0.3	0.3	ND	0.3	0.4	
2019	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	ND	0.1	0.1	
2020	0.1	0.1	0.1	1.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	ND	0.1	0.1	
2021	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	ND	0.1	0.1	
2022	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	ND	0.1	<0.1	
2023	<0.1	<0.1	<0.1	0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	
2024	<0.1	<0.1	<0.1	0.4	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	
2025	<0.1	<0.1	<0.1	0.2	0.3	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	
	CHROMIUM IN SEDIMENTS (total mg/kg)																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1 Changed to weak acid extractable metals analysis only in 2020
ANZG (2018) DGV (Default Guideline Value)	80																
ANZG (2018) GV-High	370																
2006	14.0	25.0	21.0	ND	ND	14.0	ND	12.0	ND	ND	ND	16.0	20.0	20.0	ND	ND	
2007	30.0	29.0	17.0	ND	26.0	6.3	14.0	18.0	ND	ND	ND	21.0	28.0	25.0	ND	ND	
2008	40.0	34.0	24.0	44.0	10.0	6.2	7.6	17.0	ND	ND	ND	24.0	21.0	19.0	ND	ND	
2009	34.0	33.0	8.8	46.0	11.0	9.8	15.0	17.0	ND	ND	ND	17.0	23.0	17.0	ND	ND	
2010	16.0	23.0	9.0	48.0	18.0	5.9	4.9	14.0	ND	ND	ND	12.0	14.0	14.0	ND	ND	
2011	19.0	15.0	10.0	31.0	14.0	3.1	9.0	16.0	ND	ND	ND	16.0	11.0	21.0	ND	ND	
2012	38.0	32.0	27.0	31.0	12.0	4.1	7.3	31.0	ND	ND	ND	8.8	32.0	29.0	1.9	ND	
2013	28.0	47.0	25.0	25.0	14.0	3.0	10.0	17.0	ND	ND	ND	29.0	25.0	34.0	26.0	ND	
2014	32.0	27.0	20.0	16.0	11.0	11.0	18.0	16.0	ND	ND	ND	39.0	25.0	31.0	25.0	ND	
2015	28.0	24.0	20.0	38.0	12.0	5.0	12.0	7.5	ND	ND	ND	19.0	21.0	24.0	23.0	ND	
2016	31.0	34.0	18.0	47.0	14.0	8.3	17.0	12.0	ND	ND	ND	39.0	25.0	25.0	22.0	ND	
2017	28.0	36.0	22.0	16.0	16.0	21.0	36.0	29.0	ND	ND	ND	39.0	21.0	29.0	26.0	ND	
2018	9.0	19.0	3.0	16.0	10.0	4.0	7.0	6.0	ND	ND	ND	31.0	22.0	ND	12.0	13.0	
2019	39.0	36.0	18.0	27.0	17.0	6.0	20.0	15.0	ND	ND	ND	48.0	21.0	ND	22.0	21.0	

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
	CHROMIUM IN SEDIMENTS (weak acid mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	80																Commenced weak acid analysis in 2018
ANZG (2018) GV-High	370																
2018	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	ND	ND	ND	7.1	4.7	ND	7.2	4.9	
2019	12.0	9.0	8.0	5.0	3.0	2.0	5.0	5.0	ND	ND	ND	9.0	4.0	ND	9.0	8.0	
2020	36.0	45.0	8.0	18.0	11.0	2.0	4.0	18.0	27.0	24.0	16.0	54.0	11.0	ND	22.0	24.0	
2021	11.0	12.0	6.0	9.0	8.0	2.0	4.0	4.0	9.0	6.0	6.0	16.0	4.0	ND	7.0	5.0	
2022	2.5	3.6	<1	1.2	<1	<1	<1	1.6	1.6	3.1	1.8	5.0	2.4	ND	<1	2.2	
2023	<1	1.7	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.1	<1	ND	<1	<1	
2024	12.0	21.0	9.2	16.0	14.0	2.8	4.8	8.5	8.7	8.7	11.0	25.0	17.0	ND	7.8	12.0	
2025	11.0	9.6	5.9	9.4	8.8	2.0	6.1	4.4	5.1	6.9	4.8	16.0	12.0	ND	2.0	7.5	
	COPPER IN SEDIMENTS (total mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	65																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1 Changed to weak acid extractable metals analysis only in 2020
ANZG (2018) GV-High	270																
2006	4.5	4.4	5.3	ND	ND	12.0	ND	4.5	ND	ND	ND	2.0	3.4	3.1	ND	ND	
2007	9.5	5.0	3.4	ND	17.0	3.3	4.2	11.0	ND	ND	ND	3.4	3.6	8.7	ND	ND	
2008	6.9	5.0	3.4	8.9	17.0	3.3	4.2	11.0	ND	ND	ND	3.4	3.6	8.7	ND	ND	
2009	7.4	7.2	1.4	11.0	5.4	2.8	3.5	7.0	ND	ND	ND	4.0	3.5	2.9	ND	ND	
2010	4.1	7.7	2.4	8.2	15.0	2.9	2.1	9.7	ND	ND	ND	2.6	3.4	2.8	ND	ND	
2011	6.6	6.6	3.4	4.7	11.0	2.2	4.1	11.0	ND	ND	ND	4.4	3.3	5.7	ND	ND	
2012	7.0	8.5	5.1	4.9	4.1	1.1	1.3	19.0	ND	ND	ND	0.6	5.0	4.6	1.9	ND	
2013	4.1	9.6	3.0	2.9	5.9	1.1	2.0	5.7	ND	ND	ND	7.6	4.6	5.6	1.4	ND	
2014	5.8	7.7	4.0	2.1	3.0	4.9	3.0	4.7	ND	ND	ND	5.9	4.9	5.6	2.4	ND	
2015	6.8	6.5	3.7	5.1	2.9	1.9	3.6	2.9	ND	ND	ND	4.8	3.7	1.9	2.6	ND	
2016	7.1	11.0	3.7	6.5	5.5	2.2	4.4	4.6	ND	ND	ND	8.6	5.2	4.8	2.2	ND	
2017	6.0	8.0	3.0	5.0	4.0	4.0	3.0	10.0	ND	ND	ND	5.0	4.0	6.0	2.0	ND	
2018	2.0	3.0	1.0	2.0	4.0	2.0	1.0	2.0	ND	ND	ND	3.6	4.8	ND	0.5	0.6	
2019	8.0	8.0	4.0	9.0	5.0	1.0	4.0	5.0	ND	ND	ND	6.0	4.0	ND	<1	<1	
	COPPER IN SEDIMENTS (weak acid mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	65																Commenced weak acid analysis in 2018
ANZG (2018) GV-High	270																
2018	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0	ND	ND	ND	3.3	3.5	ND	0.8	0.6	
2019	3.0	2.0	1.0	3.0	2.0	1.0	1.0	3.0	ND	ND	ND	4.0	2.0	ND	1.0	1.0	
2020	2.0	6.0	3.0	43.0	6.0	1.0	1.0	8.0	7.0	6.0	1.0	2.0	1.0	ND	1.0	1.0	
2021	2.0	5.0	1.0	6.0	2.0	1.0	1.0	1.0	9.0	8.0	1.0	3.0	2.0	ND	1.0	1.0	
2022	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	7.3	6.3	1.0	1.1	1.0	ND	1.0	1.0	
2023	1.5	1.6	1.0	4.4	1.0	1.0	1.0	4.2	1.6	3.3	1.1	3.1	1.0	ND	1.0	3.7	
2024	3.8	4.2	2.2	11.0	7.7	1.3	1.8	2.9	21.0	12.0	4.0	6.1	4.7	ND	<1	2.2	
2025	3.0	3.8	1.5	10.0	1.1	1.1	1.0	2.1	2.9	8.1	1.5	4.5	3.9	ND	<1	1.9	

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
	IRON IN SEDIMENTS (total mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	N/G																"N/G" indicates no guidelines; "ND" indicates no data
ANZG (2018) GV-High	N/G																In 2012 Site C2 was established to replace site C1
2006																	Changed to weak acid extractable metals analysis only in 2020
2007																	
2008																	
2009																	
2010																	
2011																	
2012																	
2013																	
2014																	
2015																	
2016	19,000	24,000	11,000	86,000	12,000	6,400	14,000	8,700	ND	ND	ND	26,000	23,000	24,000	26,000	ND	
2017	21,000	26,000	16,000	12,000	15,000	18,000	42,000	25,000	ND	ND	ND	23,000	23,000	27,000	24,000	ND	
2018	6,000	17,000	3,700	16,000	5,600	6,300	7,400	5,200	ND	ND	ND	18,000	16,000	ND	21,000	30,000	
2019	28,000	29,000	14,000	42,000	30,000	7,500	17,000	12,000	ND	ND	ND	44,000	26,000	ND	57,000	56,000	
	IRON IN SEDIMENTS (weak acid mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	N/G																Commenced weak acid analysis in 2018
ANZG (2018) GV-High	N/G																
2018	500	2,000	140	11,000	2,100	200	450	400	ND	ND	ND	8,800	10,000	ND	9,200	14,000	
2019	19,000	11,000	5,700	17,000	19,000	2,600	4,400	10,000	ND	ND	ND	18,000	19,000	ND	21,000	16,000	
2020	18,000	25,000	7,100	32,000	20,000	2,100	1,600	9,800	38,000	28,000	7,400	38,000	14,000	ND	14,000	19,000	
2021	5,800	9,900	3,500	37,000	9,400	1,700	3,500	2,700	24,000	15,000	5,200	19,000	10,000	ND	9,700	4,900	
2022	1,300	3,400	590	24,000	3,200	1,200	490	810	11,000	10,000	1,900	7,900	5,400	ND	350	1,100	
2023	2,700	3,100	2,100	20,000	400	940	400	810	590	1,300	1,200	4,500	910	ND	240	760	
2024	6,600	14,000	5,400	57,000	54,000	3,200	6,200	6,300	56,000	14,000	13,000	21,000	16,000	ND	6,100	5,400	
2025	4,400	6,900	3,300	55,000	5,300	1,500	3,400	3,300	1,900	8,200	4,100	17,000	1,200	ND	2,100	4,800	
	LEAD IN SEDIMENTS (total mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	50																"N/G" indicates no guidelines; "ND" indicates no data
ANZG (2018) GV-High	220																In 2012 Site C2 was established to replace site C1
2006	4.1	6.0	6.2	ND	ND	9.3	ND	5.9	ND	ND	ND	2.9	6.2	6.2	ND	ND	Changed to weak acid extractable metals analysis only in 2020
2007	13.0	9.0	6.6	ND	25.0	3.1	5.7	13.0	ND	ND	ND	5.5	9.8	18.0	ND	ND	
2008	12.0	11.0	8.4	21.0	5.6	3.6	2.5	11.0	ND	ND	ND	8.3	9.8	9.5	ND	ND	
2009	12.0	13.0	2.0	29.0	4.7	3.5	5.0	9.4	ND	ND	ND	4.7	6.0	4.4	ND	ND	
2010	7.0	8.0	3.9	23.0	19.0	3.7	2.3	14.0	ND	ND	ND	5.3	8.1	7.6	ND	ND	
2011	8.2	6.0	4.7	17.0	11.0	2.6	3.5	17.0	ND	ND	ND	7.3	6.3	12.0	ND	ND	
2012	10.0	7.7	7.0	12.0	5.0	1.8	2.6	25.0	ND	ND	ND	1.6	11.0	9.4	2.7	ND	
2013	12.0	18.0	11.0	9.6	8.8	1.7	3.9	10.0	ND	ND	ND	16.0	12.0	16.0	7.2	ND	
2014	15.0	12.0	9.3	9.8	6.4	7.1	8.6	9.1	ND	ND	ND	19.0	13.0	16.0	8.4	ND	
2015	14.1	12.3	4.3	24.8	6.9	4.3	6.6	5.4	ND	ND	ND	12.4	5.8	6.6	6.9	ND	
2016	14.0	16.0	6.9	26.0	8.8	4.3	9.1	8.2	ND	ND	ND	20.0	13.0	13.0	7.7	ND	
2017	10.0	13.0	8.0	8.0	6.0	8.0	8.0	13.0	ND	ND	ND	13.0	10.0	13.0	6.0	ND	
2018	7.0	11.0	4.0	31.0	13.0	7.0	6.0	7.0	ND	ND	ND	12.0	12.0	ND	5.0	7.0	
2019	11.0	9.0	6.0	13.0	10.0	3.0	8.0	12.0	ND	ND	ND	18.0	8.0	ND	6.0	6.0	

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
	LEAD IN SEDIMENTS (weak acid mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	50																Commenced weak acid analysis in 2018
ANZG (2018) GV-High	220																
2018	1.0	4.0	1.0	8.0	6.0	2.0	1.0	3.0	ND	ND	ND	9.0	7.0	ND	3.0	4.0	
2019	11.0	9.0	6.0	7.0	10.0	2.0	5.0	12.0	ND	ND	ND	18.0	8.0	ND	5.0	4.0	
2020	6.0	9.0	6.0	21.0	18.0	2.0	2.0	5.0	22.0	21.0	3.0	13.0	2.0	ND	5.0	5.0	
2021	10.0	15.0	9.0	17.0	13.0	5.0	9.0	8.0	13.0	16.0	6.0	12.0	7.0	ND	11.0	5.0	
2022	3.4	2.6	1.2	6.0	2.0	1.7	1.5	2.2	7.2	7.2	2.1	4.5	1.3	ND	<1	2.6	
2023	4.5	5.0	2.8	7.0	<1	1.4	1.4	6.5	2.1	5.2	1.6	6.7	1.8	ND	<1	5.2	
2024	6.0	8.6	4.4	13.0	16.0	2.2	3.3	5.1	26.0	9.7	12.0	17.0	10.0	ND	1.6	4.4	
2025	5.2	7.7	3.4	14.0	6.2	1.1	3.6	3.6	7.7	5.7	3.3	15.0	9.5	ND	1.3	6.2	
	NICKEL IN SEDIMENTS (total mg/kg)																
ANZECC & ARMCANZ (2000)ISQG-Low (Tri)	21																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1 Changed to weak acid extractable metals analysis only in 2020
ANZECC & ARMCANZ (2000) ISQG-High	52																
2006	6.6	9.7	9.2	ND	ND	15.0	ND	6.1	ND	ND	ND	5.9	8.7	8.8	ND	ND	
2007	10.0	9.5	6.2	ND	18.0	5.5	5.0	9.3	ND	ND	ND	6.0	7.5	8.6	ND	ND	
2008	12.0	11.0	7.3	12.0	8.6	3.6	2.4	6.8	ND	ND	ND	5.6	6.2	6.0	ND	ND	
2009	10.0	9.6	2.6	13.0	3.9	3.2	4.2	5.9	ND	ND	ND	4.7	6.0	4.4	ND	ND	
2010	4.7	6.9	2.2	8.2	9.0	2.0	1.4	5.5	ND	ND	ND	3.0	3.9	4.0	ND	ND	
2011	6.6	4.7	2.8	6.4	8.9	1.7	2.7	5.8	ND	ND	ND	4.6	3.5	6.9	ND	ND	
2012	11.0	8.9	6.7	6.2	2.7	1.3	2.0	10.0	ND	ND	ND	0.9	7.9	7.3	4.1	ND	
2013	6.7	11.0	4.6	3.4	4.1	0.8	2.1	4.1	ND	ND	ND	6.9	5.3	7.4	2.4	ND	
2014	8.7	8.3	4.9	3.5	2.6	3.9	4.4	5.0	ND	ND	ND	11.0	7.1	8.4	3.0	ND	
2015	9.7	8.2	3.6	7.2	2.5	2.5	3.7	2.4	ND	ND	ND	6.0	4.0	2.0	2.8	ND	
2016	8.3	8.6	3.3	8.6	3.9	1.7	4.2	3.4	ND	ND	ND	8.5	5.8	5.2	2.6	ND	
2017	8.0	10.0	6.0	3.0	3.0	5.0	2.0	8.0	ND	ND	ND	8.0	5.0	7.0	3.0	ND	
2018	2.0	6.0	1.0	9.0	3.0	2.0	2.0	2.0	ND	ND	ND	7.3	6.3	ND	4.8	6.6	
2019	7.0	7.0	4.0	3.0	3.0	2.0	4.0	3.0	ND	ND	ND	6.0	2.0	ND	7.0	6.0	
	NICKEL IN SEDIMENTS (weak acid mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	21																Commenced weak acid analysis in 2018
ANZG (2018) GV-High	52																
2018	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	ND	ND	ND	2.5	2.0	ND	2.1	3.4	
2019	4.0	3.0	3.0	2.0	2.0	1.0	2.0	2.0	ND	ND	ND	5.0	2.0	ND	7.0	4.0	
2020	3.0	13.0	2.0	12.0	6.0	1.0	1.0	2.0	15.0	6.0	2.0	14.0	1.0	ND	1.0	1.0	
2021	2.0	5.0	2.0	3.0	3.0	1.0	2.0	2.0	5.0	3.0	1.0	5.0	1.0	ND	2.0	1.0	
2022	<1	1.2	<1	2.9	1.0	<1	<1	<1	1.7	2.0	<1	2.1	1.1	ND	<1	<1	
2023	1.1	1.2	<1	5.6	<1	<1	<1	<1	<1	1.2	<1	1.1	<1	ND	<1	<1	
2024	3.2	6.4	2.4	11.0	3.3	<1	1.5	2.6	9.1	3.8	4.8	7.3	5.9	ND	1.6	2.4	
2025																	

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
	ZINC IN SEDIMENTS (total mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	200																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1 Changed to weak acid extractable metals analysis only in 2020
ANZG (2018) GV-High	410																
2006	20	33	33.0	ND	ND	210	ND	53	ND	ND	ND	11	28	54	ND	ND	
2007	44	24	24.0	ND	450	95	21	67	ND	ND	ND	13	25	37	ND	ND	
2008	29	23	23.0	200	62	32	9.4	56	ND	ND	ND	12	21	18	ND	ND	
2009	30	27	6.2	380	51	38	32	52	ND	ND	ND	18	19	14	ND	ND	
2010	15	20	6.4	140	510	47	12	65	ND	ND	ND	10	18	17	ND	ND	
2011	22	14	8.0	180	350	19	17	49	ND	ND	ND	12	14	29	ND	ND	
2012	31	24	18.0	210	69	19	14	85	ND	ND	ND	4.7	28.0	25	6.7	ND	
2013	16	26	8.9	87	170	21	4.9	50	ND	ND	ND	28	18	28	5.0	ND	
2014	27	23	15.0	84	92	150	26	66	ND	ND	ND	28	25	30	7.8	ND	
2015	33	24	12.0	140	62	48	24	37	ND	ND	ND	28	6	9	11	ND	
2016	29	29	9.4	200	180	16	28	38	ND	ND	ND	31	27	25	10	ND	
2017	24	25	17.0	53	48	42	40	68	ND	ND	ND	21	19	27	7	ND	
2018	8	18	4.0	440	290	110	19	20	ND	ND	ND	22	28	ND	9	12.0	
2019	35	30	15.0	42	210	70	35	32	ND	ND	ND	36	19	ND	13	11.0	
	ZINC IN SEDIMENTS (weak acid mg/kg)																
ANZG (2018) DGV (Default Guideline Value)	200																Commenced weak acid analysis in 2018
ANZG (2018) GV-High	410																
2018	2	3	1	170	170	73	3	9	ND	ND	ND	11	15	ND	4.6	5.5	
2019	27	18	13	33	48	64	27	30	ND	ND	ND	24	15	ND	6	5	
2020	27	30	11	520	340	13	9	64	100	46	13	35	4	ND	6	8	
2021	12	17	11	210	98	51	16	37	140	70	9	18	6	ND	5	2	
2022	10	11	8	150	57	18	14	17	79	44	6.2	11	10	ND	3.6	8	
2023	6	5	4	710	24	34	11	42	7.1	34	2.6	6.9	3.5	ND	<1	53	
2024	20	22	10	530	92	65	22	24	78	82	27	29	24	ND	3.7	10	
2025	4	4.4	2	9.5	4.2	<1	2.8	2.1	1.3	3.9	2.0	5.6	6.1	ND	<1	2.5	
	TPH IN SEDIMENTS (mg/kg wet weight)																
FSANZ maximum level	N/G																
GEL 90th percentile	N/G																
2006	<0.1	<0.1	<0.1	ND	ND	<0.1	ND	<0.1	ND	ND	ND	<0.1	<0.1	ND	ND	ND	
2007	65	25	41	ND	85	31.0	88	63	ND	ND	ND	94	54	ND	ND	ND	
2008	82	82	52	73	53	54	45	46	48	ND	ND	100	43	ND	ND	ND	
2009	28	22	7.4	1.2	1.9	23	21	8	ND	ND	ND	10	<0.1	ND	ND	ND	
2010	5.5	<0.1	26	<0.1	66.0	4.6	8.8	<0.1	ND	ND	ND	20	22	ND	ND	ND	
2011	28	7.7	28	26	4.6	72	27	12	ND	ND	ND	21	20	ND	ND	ND	
2012	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	ND	
2013	<2	<0.2	<0.2	<0.2	<2	<2	<0.2	<0.2	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	ND	
2014	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	ND	
2015	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	ND	
2016	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	ND	
2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	ND	
2018	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND	ND	ND	<0.2	<0.2	<0.2	<0.2	ND	
2019	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND	ND	ND	<0.2	<0.2	ND	<0.2	ND	
2020	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND	
2021	150	42	170	120	160	160	150	96	58	110	100	220	120	ND	150	ND	
2022	<0.2	<0.2	<0.2	830	<0.2	<0.2	<0.2	<0.2	2000	250	<0.2	<0.2	410	ND	<0.2	ND	
2023	49	59	62	140	43	51	46	45	40	36	41	67	41	ND	37	ND	
2024	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND	<0.2	ND	
2025	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND	<0.3	ND	

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
MUDWHELKS																	
	CADMIUM IN MUDWHELKS (mg/kg wet weight)																
FSANZ maximum level	2.00																"N/G" indicates no guidelines; "ND" indicates no data - in 2012 Site C2 was established to replace site C1
GEL 90th percentile	N/G																
2006	0.2	0.14	0.11	ND	ND	0.12	NC	0.2	ND	ND	ND	0.08	0.22	0.2	ND	ND	
2007	0.1	0.1	0.1	ND	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.25	0.1	ND	ND	
2008	0.1	0.1	0.1	ND	0.1	0.2	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2009	0.1	0.1	0.1	ND	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2010	0.1	0.1	0.1	ND	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2011	0.05	0.05	0.05	ND	0.05	0.05	0.05	0.05	ND	ND	ND	0.05	0.05	0.05	ND	ND	
2012	0.10	0.10	0.10	ND	0.20	0.05	0.05	0.10	ND	ND	ND	0.10	0.10	0.10	0.10	ND	
2013	0.10	0.10	0.10	ND	0.10	0.10	0.10	0.10	ND	ND	ND	0.05	0.10	0.10	0.10	ND	
2014	0.42	0.34	0.32	ND	0.17	0.14	0.19	0.08	ND	ND	ND	0.17	0.47	0.48	0.12	ND	
2015	0.20	0.11	0.11	ND	0.01	0.09	0.08	0.13	ND	ND	ND	0.12	0.05	0.05	0.08	ND	
2016	0.03	0.06	0.03	ND	0.03	0.03	0.03	0.03	ND	ND	ND	0.03	0.03	0.03	0.03	ND	
2017	0.03	0.03	0.03	ND	0.03	0.06	0.03	0.03	ND	ND	ND	0.03	0.03	0.03	0.03	ND	
2018	0.07	0.66	0.09	0.06	0.06	0.19	0.13	0.05	ND	ND	ND	0.12	0.11	ND	0.10	0.07	
2019	0.09	0.18	0.20	0.10	0.23	0.24	0.30	0.08	ND	ND	ND	0.31	0.11	ND	0.18	0.10	
2020	0.03	0.03	0.16	0.03	0.11	0.05	0.10	0.05	ND	ND	0.10	0.08	0.10	ND	0.02	<0.1	
2021	0.06	0.10	0.10	0.10	0.08	0.10	0.10	0.10	ND	ND	0.10	0.11	0.10	ND	0.10	0.02	
2022	0.14	0.08	0.33	0.11	0.12	0.02	0.02	0.08	ND	ND	0.62	0.18	0.32	ND	0.22	0.30	
2023	0.10	0.07	0.08	0.15	0.06	0.02	<0.03	0.08	ND	ND	0.29	0.11	0.02	ND	<0.03	0.30	
2024	0.32	0.38	0.18	ND	0.11	0.32	0.11	0.10	ND	ND	0.26	0.60	0.18	ND	0.10	0.13	
2025	0.81	0.70	0.13	ND	0.10	0.08	0.20	0.03	ND	ND	0.06	0.43	0.80	ND	0.13		
	CADMIUM IN MUDWHELKS (mg/kg dry weight)																
2006	0.7	0.5	0.4	ND	ND	0.5	ND	0.8	ND	ND	ND	0.3	0.8	<0.04	ND	ND	
2007	0.1	0.2	<0.1	ND	0.1	<0.2	<0.2	0.2	ND	ND	ND	0.1	0.2	0.4	ND	ND	
2008	0.10	0.1	<0.1	ND	0.1	0.4	0.1	0.1	ND	ND	ND	<0.1	0.1	0.1	ND	ND	
2009	0.1	0.1	0.1	ND	0.1	<0.1	0.1	0.1	ND	ND	ND	0.1	0.1	<0.1	ND	ND	
2010	<0.1	<0.1	0.1	ND	0.1	<0.1	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	<0.1	ND	ND	
2011	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	<0.1	ND	ND	
2012	0.3	0.1	0.1	ND	0.3	<0.1	<0.1	0.1	ND	ND	ND	0.1	0.2	0.2	0.2	ND	
2013	0.2	0.2	0.2	ND	0.2	0.3	0.2	0.2	ND	ND	ND	<0.1	0.2	0.2	0.2	ND	
2014	0.1	0.2	0.1	ND	<0.1	<0.1	0.1	0.1	ND	ND	ND	<0.1	0.1	0.2	<0.1	ND	
2015	0.7	0.4	0.5	ND	<0.1	0.4	0.3	0.5	ND	ND	ND	0.5	0.2	0.2	0.4	ND	
2016	0.1	0.2	0.1	ND	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	0.1	ND	
2017	0.1	0.1	0.1	ND	0.1	0.2	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	0.1	ND	
2018	0.3	2.2	0.4	0.3	0.3	1	0.5	0.2	ND	ND	ND	0.4	0.5	ND	0.4	0.3	
2019	0.3	0.6	0.7	0.4	0.9	0.9	1	0.3	ND	ND	ND	1.3	0.4	ND	0.7	0.4	
2020	0.1	0.1	0.8	0.1	0.5	0.2	<0.1	0.2	ND	ND	0.4	0.3	0.1	ND	0.1	<0.1	
2021	0.3	0.1	0.1	0.1	0.4	0.1	0.1	0.1	ND	ND	0.1	0.6	0.1	ND	0.1	0.1	
2022	0.6	2.4	1.3	0.6	0.5	0.1	0.1	0.3	ND	ND	2.6	0.7	1.6	ND	0.9	0.3	
2023	0.4	0.3	0.3	0.7	0.3	0.1	<0.1	0.3	ND	ND	1.2	0.5	0.1	ND	<0.1	0.3	
2024	1.4	1.6	0.7	ND	0.5	1.8	0.5	0.4	ND	ND	1.2	2.5	0.7	ND	0.4	0.6	
2025	2.7	2.7	0.4	ND	0.4	0.3	0.8	0.1	ND	ND	0.2	1.7	3.2	ND	ND	1.1	

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
	CHROMIUM IN MUDWHELKS (mg/kg wet weight)																
FSANZ maximum level	N/G																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1
GEL 90th percentile	N/G																
2006	0.29	0.25	0.22	ND	ND	0.28	ND	0.23	ND	ND	ND	0.26	0.28	0.24	ND	ND	
2007	0.35	0.31	0.3	ND	0.2	0.2	0.2	0.2	ND	ND	ND	0.11	0.21	0.32	ND	ND	
2008	2.32	1.6	0.21	ND	0.4	0.39	0.6	0.52	ND	ND	ND	1.68	1.19	1.61	ND	ND	
2009	0.20	0.20	0.20	ND	0.20	0.20	0.20	0.20	ND	ND	ND	0.20	0.20	0.20	ND	ND	
2010	0.20	0.20	0.38	ND	0.82	0.22	0.20	0.20	ND	ND	ND	0.20	0.20	0.20	ND	ND	
2011	0.20	0.20	0.20	ND	0.20	0.20	0.20	0.20	ND	ND	ND	0.20	0.20	0.20	ND	ND	
2012	0.20	2.20	0.20	ND	0.50	0.30	0.10	0.20	ND	ND	ND	0.60	1.10	1.10	1.20	ND	
2013	0.90	1.10	0.20	ND	0.30	0.40	1.00	0.40	ND	ND	ND	0.20	0.20	0.30	0.20	ND	
2014	0.42	0.34	0.32	ND	0.17	0.14	0.19	0.08	ND	ND	ND	0.17	0.47	0.48	0.12	ND	
2015	0.46	0.09	0.02	ND	0.14	0.02	0.08	0.03	ND	ND	ND	0.08	0.02	0.02	0.02	ND	
2016	0.11	0.34	0.20	ND	0.11	0.18	0.19	0.28	ND	ND	ND	0.08	0.20	0.15	0.13	ND	
2017	0.19	0.34	0.11	ND	0.09	0.25	0.28	0.31	ND	ND	ND	0.30	0.26	0.64	0.34	ND	
2018	0.04	0.54	0.09	0.34	0.13	0.81	0.11	0.09	ND	ND	ND	2.77	2.28	ND	1.84	1.66	
2019	0.61	<1	<1	<1	<1	<1	<1	<1	ND	ND	ND	<1	<1	ND	<1	1.00	
2020	<1	<1	<1	<1	<1	<1	<1	<1	ND	ND	<1	<1	<1	ND	<1	<1	
2021	0.63	0.49	0.51	0.24	0.41	0.38	0.10	0.44	ND	ND	0.52	0.56	0.39	ND	1.32	0.43	
2022	0.58	0.32	<0.1	<0.1	0.36	<0.1	0.28	0.70	ND	ND	0.4	1.30	1.02	ND	0.30	1.50	
2023	<0.25	<0.25	1.05	<0.25	<0.25	<0.25	0.21	0.38	ND	ND	6	<0.25	<0.25	ND	<0.25	<1	
2024	0.41	0.60	2.13	ND	0.42	0.56	0.42	0.84	ND	ND	0.75	1.34	2.75	ND	0.81	0.77	
2025	0.87	0.26	1.49	ND	ND	0.28	0.25	0.28	ND	ND	0.32	0.25	0.25	ND	0.45		
	CHROMIUM IN MUDWHELKS (mg/kg dry weight)																
2006	1.0	0.9	0.8	ND	ND	1.2	ND	0.9	ND	ND	ND	1.0	1.0	0.9	ND	ND	
2007	1.1	1.2	1.0	ND	0.6	<0.2	<0.2	<0.2	ND	ND	ND	0.4	1.2	1.4	ND	ND	
2008	6.10	4.0	0.5	ND	1.0	1.0	1.5	1.2	ND	ND	ND	4.1	3.3	5.2	ND	ND	
2009	0.2	0.2	<0.2	ND	0.2	0.2	0.3	0.2	ND	ND	ND	0.3	0.3	0.3	ND	ND	
2010	<0.2	0.3	1.5	ND	3.9	0.8	<0.2	<0.2	ND	ND	ND	<0.2	<0.2	0.2	ND	ND	
2011	0.2	<0.2	<0.2	ND	0.4	0.2	0.3	0.2	ND	ND	ND	0.2	0.3	0.4	ND	ND	
2012	0.5	4.7	0.4	ND	1.0	0.6	0.2	0.2	ND	ND	ND	1.3	2.7	2.8	2.9	ND	
2013	2.8	3.7	0.3	ND	1.0	1.4	3.6	1.0	ND	ND	ND	0.4	0.5	0.8	0.4	ND	
2014	1.5	1.3	1.0	ND	0.6	0.5	0.6	0.3	ND	ND	ND	0.6	1.7	1.7	0.5	ND	
2015	1.7	0.4	0.1	ND	0.6	0.1	0.3	0.1	ND	ND	ND	0.3	0.1	0.1	0.1	ND	
2016	0.4	1.2	0.8	ND	0.4	0.7	0.7	1.1	ND	ND	ND	0.3	0.7	0.5	0.4	ND	
2017	0.6	1.1	0.4	ND	0.3	0.8	1.1	0.9	ND	ND	ND	0.9	0.8	2.2	1.2	ND	
2018	0.2	1.8	0.4	1.7	0.6	4.3	0.4	0.4	ND	ND	ND	8.9	10	ND	7.4	7	
2019	2	1	1	1	1	1	1	1	ND	ND	ND	1	1	ND	1	1	
2020	1.00	1.00	1	1	1	1	1	1	ND	ND	1	1	1	ND	1	1	
2021	3.00	2.00	2	1	2	2	<1	2	ND	ND	2	3	2	ND	5	2	
2022	2.50	1.50	1	1	1.5	1.0	1.4	2.80	ND	ND	1.8	5.20	5.10	ND	2	2	
2023	<1	<1	4.2	<1	1	<1	1	1.50	ND	ND	25	<1	<1	ND	<1	<1	
2024	1.80	2.50	8.2	ND	2	3.10	2	3.50	ND	ND	3.4	5.60	11	ND	3.10	3.50	
2025	2.90	4.50	4.5	ND	<1	<1	1	<1	ND	ND	<1	<1	1	ND	1.80	6.80	

Location	Wickham Pt										Control Site						Comments
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	
	COPPER IN MUDWHELKS (mg/kg wet weight)																
FSANZ maximum level	N/G																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1
GEL 90th percentile	30.00																
2006	44.00	34	31	ND	ND	21	ND	35	ND	ND	ND	18	22	21.00	ND	ND	
2007	0.35	29	30	ND	36	22	22	56	ND	ND	ND	16	10	20.00	ND	ND	
2008	27	24	23	ND	14	32	23	38	ND	ND	ND	31	13	5.30	ND	ND	
2009	12	11	8	ND	8	7	10	9	ND	ND	ND	3	4	2.00	ND	ND	
2010	21	13	7	ND	4	15	6	11	ND	ND	ND	5	4	2.00	ND	ND	
2011	10	3	4	ND	10	8	9	8	ND	ND	ND	13	0	1.00	ND	ND	
2012	37	32	24	ND	17	15	24	26	ND	ND	ND	18	6	5.00	20	ND	
2013	39	41	42	ND	40	22	31	26	ND	ND	ND	20	9	5.00	22	ND	
2014	30.0	34	31	ND	18	33	24	33	ND	ND	ND	31	7	6.00	27	ND	
2015	30.0	48	17	ND	12	18	21	30	ND	ND	ND	14	5	3.00	24	ND	
2016	5.00	9	5	ND	5	4	6	9	ND	ND	ND	5	3	4.00	10	ND	
2017	28.0	26	15	ND	16	14	13	15	ND	ND	ND	16	8	6.00	16	ND	
2018	45.0	30	27	15.52	45	18	17	51.00	ND	ND	ND	34	19	ND	32.40	30.80	
2019	42.98	29	37.05	44.64	20.57	24.75	26.66	33.84	ND	ND	ND	20.33	29.7	ND	33.80	38.08	
2020	53.39	43.84	32	23.95	17.17	18.74	40.68	35.23	ND	ND	42.67	32.76	26.89	ND	40.63	45.57	
2021	38.0	39.5	13.3	26.8	17.1	26.9	20	14.1	ND	ND	11.1	18.60	25.1	ND	29.04	25.92	
2022	6.9	16.59	7.5	5.75	11.28	2.72	5.2	8.91	ND	ND	28.8	7.5	4	ND	14.88	8.19	
2023	32.5	14.95	11.5	21	15.75	7.22	9.03	30	ND	ND	45.6	12.6	14.4	ND	22	52.20	
2024	18.4	23.76	28.6	ND	14.28	19.80	15.12	19.44	ND	ND	33.0	22.08	23.75	ND	20.54	22	
2025	28.5	24.70	24.1	ND	35.00	36.40	23.75	25.48	ND	ND	25.6	37.50	42.50	ND	37.50		
	COPPER IN MUDWHELKS (mg/kg dry weight)																
2006	150	120	110	ND	ND	93	ND	140	ND	ND	ND	68	80	83	ND	ND	
2007	110	110	100	ND	130	83	81	180	ND	ND	ND	60	46	88	ND	ND	
2008	71	60	55	ND	35	82	58	88	ND	ND	ND	76	36	17	ND	ND	
2009	30	31	20	ND	23	19	27	25	ND	ND	ND	11	14	8.5	ND	ND	
2010	65	53	29	ND	19	79	24	37	ND	ND	ND	19	14	7.0	ND	ND	
2011	39	12	11	ND	42	23	37	30	ND	ND	ND	55	<0.5	5.0	ND	ND	
2012	79	70	66	ND	34	28	64	61	ND	ND	ND	39	15	13	50	ND	
2013	120	140	130	ND	130	73	110	68	ND	ND	ND	59	30	16	73	ND	
2014	110	130	98	ND	64	120	76	130	ND	ND	ND	110	10	21	110	ND	
2015	110	190	78	ND	52	92	83	120	ND	ND	ND	64	20	12	110	ND	
2016	16	31	18	ND	19	16	23	37	ND	ND	ND	20	10	14	30	ND	
2017	89	86	55	ND	53	45	52	44	ND	ND	ND	50	26	20	55	ND	
2018	200	100	120	78	210	96	63	220	ND	ND	ND	110	85	ND	130	130	
2019	140	100	130	180	81	91	88	120	ND	ND	ND	84	110	ND	130	160	
2020	190	160	160	77	81	71	120	130	ND	ND	170	130	95	ND	170	210	
2021	180	160	52	110	84	140	95	64	ND	ND	43	100	130	ND	110	120	
2022	30	79	30	32	47	16	26	33	ND	ND	120	30	20	ND	62	39	
2023	130	65	46	100	75	38	43	120	ND	ND	190	60	60	ND	88	180	
2024	80	99	110	ND	68	110	72	81	ND	ND	150	92	95	ND	79	100	
2025	95	99	73	ND	140	130	95	91	ND	ND	80	150	170	ND	150	100	
	IRON IN MUDWHELKS (mg/kg wet weight)																
FSANZ maximum level	N/G																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1
GEL 90th percentile	N/G																
2018	9	298	29	438	34	105	43	21	ND	ND	ND	1462	1322	ND	797	806	
2019	276	70	143	769	244	381	164	34	ND	ND	ND	189	254	ND	190	81	
2020	53	44	62	81	53	61	31	95	ND	ND	105	103	85	ND	67	30	
2021	55	62	51	51	75	35	27	26	ND	ND	26	63	52	ND	77	45	
2022	345	174	138	49	360	58	60	378	ND	ND	182	700	106	ND	175	149	
2023	40	154	1000	179	25	38	21	700	ND	ND	218	141	16	ND	33	957	
2024	202	223	1378	ND	109	1044	109	118	ND	ND	216	696	2150	ND	364	264	
2025	720	260	990	ND	108	196	800	28	ND	ND	169.6	275	400	ND	650		

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
	IRON IN MUDWHELKS (mg/kg dry weight)																
2018	40	1000	130	2200	160	560	160	90	ND	ND	ND	4700	5800	ND	3200	3400	
2019	900	240	500	3100	960	1400	540	120	ND	ND	ND	780	940	ND	730	340	
2020	190	160	310	260	250	230	90	350	ND	ND	420	410	300	ND	280	140	
2021	260	250	200	210	370	180	130	120	ND	ND	100	340	270	ND	290	210	
2022	1500	830	550	270	1500	340	300	1400	ND	ND	760	2800	5300	ND	730	710	
2023	160	670	4000	850	120	200	98	2800	ND	ND	910	670	65	ND	130	3300	
2024	880	930	5300	ND	520	5800	520	490	ND	ND	980	2900	8600	ND	1400	1200	
2025	2400	1000	3000	ND	430	700	3200	100	ND	ND	530	1100	1600	ND	2600	4800	
	MANGANESE IN MUDWHELKS (mg/kg wet weight)																
FSANZ maximum level	N/G																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1
GEL 90th percentile	N/G																
2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2019	37	44	131	129	762	299	152	82	ND	ND	ND	237	119	ND	65	14	
2020	65	12	46	44	254	45	7	54	ND	ND	25	141	18	ND	38	22	
2021	36	3	8	10	14	25	6	10	ND	ND	12	10	3	ND	9	5	
2022	101	149	163	38	226	7	28	49	ND	ND	384	25	72	ND	84	40	
2023	6	11	9	357	67	29	5	120	ND	ND	456	14	4	ND	3	133	
2024	483	360	65	ND	103	1422	50	72	ND	ND	68	240	70	ND	36	21	
2025	450	312	36		93	76	525	34	ND	ND	35	235	875	ND	38		
	MANGANESE IN MUDWHELKS (mg/kg dry weight)																
2018	75	1800	39	2400	250	7600	79	460	ND	ND	ND	88	210	ND	190	72	
2019	120	150	460	520	3000	1100	500	290	ND	ND	ND	980	440	ND	250	58	
2020	230	45	230	140	1200	170	22	200	ND	ND	100	560	63	ND	160	100	
2021	170	14	33	42	70	130	27	46	ND	ND	48	54	15	ND	33	25	
2022	440	710	650	210	940	39	140	180	ND	ND	1600	100	360	ND	350	190	
2023	23	48	36	1700	320	150	26	480	ND	ND	1900	65	16	ND	11	460	
2024	2100	1500	250	ND	490	7900	240	300	ND	ND	310	1000	280	ND	140	94	
2025	1500	1200	110	ND	430	270	2100	120	ND	ND	110	940	3500	ND	150	4800	
	NICKEL IN MUDWHELKS (mg/kg wet weight)																
FSANZ maximum level	N/G																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1
GEL 90th percentile	N/G																
2006	1.39	0.84	0.98	ND	NC	0.85	NC	1.18	ND	ND	ND	0.55	1.51	1.05	ND	ND	
2007	0.22	0.23	0.1	ND	0.25	0.16	0.11	0.22	ND	ND	ND	0.11	0.11	0.25	ND	ND	
2008	1.22	0.8	0.1	ND	0.1	0.2	0.8	0.22	ND	ND	ND	0.49	0.5	0.71	ND	ND	
2009	0.1	0.1	0.1	ND	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2010	0.1	0.2	0.1	ND	0.1	0.1	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2011	0.80	0.05	0.05	ND	0.10	0.20	0.05	0.10	ND	ND	ND	0.05	0.05	0.10	ND	ND	
2012	0.50	1.20	0.05	ND	0.80	0.40	0.10	0.30	ND	ND	ND	0.30	1.10	1.00	0.80	ND	
2013	0.30	0.40	0.10	ND	0.20	0.20	0.30	0.40	ND	ND	ND	0.10	0.30	0.30	0.30	ND	
2014	0.17	0.19	0.16	ND	0.06	0.08	0.19	0.10	ND	ND	ND	0.11	0.19	0.23	0.07	ND	
2015	0.35	0.48	0.20	ND	0.09	0.39	0.12	0.43	ND	ND	ND	0.24	0.54	0.26	0.08	ND	
2016	0.09	0.31	0.13	ND	0.20	0.13	0.08	0.15	ND	ND	ND	0.11	0.11	0.21	0.13	ND	
2017	0.06	0.12	0.06	ND	0.15	0.09	0.08	0.21	ND	ND	ND	0.13	0.10	0.17	0.09	ND	
2018	0.20	3.58	0.16	0.62	0.15	0.81	0.24	0.49	ND	ND	ND	0.90	1.05	ND	0.77	0.48	
2019	0.61	0.58	1.14	0.50	0.76	1.09	0.91	0.56	ND	ND	ND	1.69	0.81	ND	0.78	0.48	
2020	<1	<1	0.40	<1	0.42	<1	<1	0.27	ND	ND	0.50	0.25	<1	ND	<1	<1	
2021	1.27	0.49	0.51	0.24	0.61	0.38	0.84	0.44	ND	ND	0.78	0.37	0.77	ND	0.26	0.86	
2022	0.76	2.10	1.58	0.25	0.62	0.65	0.36	0.95	ND	ND	2.30	0.88	1.58	ND	1.32	2.90	
2023	0.25	0.25	0.48	0.90	0.42	<0.25	0.36	1.55	ND	ND	4.80	0.92	<0.25	ND	0.70	3.20	
2024	1.82	3.84	1.56	ND	0.44	3.06	0.53	0.70	ND	ND	0.92	2.30	1.90	ND	1.01	0.68	
2025	3.00	2.86	0.83		0.25	0.28	1.43	0.28	ND	ND	0.32	2.08	5.50	ND	0.70		

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
	NICKEL IN MUDWHELKS (mg/kg dry weight)																
2006	4.8	3.0	3.5	ND	ND	3.7		4.7	ND	ND	ND	2.1	5.4	4.2	ND	ND	
2007	0.7	0.9	<0.1	ND	0.9	0.6	0.4	0.7	ND	ND	ND	0.4	1.0	1.1	ND	ND	
2008	3.2	2.0	0.2	ND	<0.1	0.5	2.0	0.5	ND	ND	ND	1.2	1.4	2.3	ND	ND	
2009	<0.1	0.1	<0.1	ND	0.2	<0.1	<0.1	<0.1	ND	ND	ND	0.3	<0.1	<0.1	ND	ND	
2010	<0.1	0.5	0.2	ND	0.4	0.5	<0.1	<0.1	ND	ND	ND	<0.1	0.2	0.2	ND	ND	
2011	2.9	<0.1	<0.1	ND	0.1	0.6	<0.1	0.1	ND	ND	ND	<0.1	<0.1	0.5	ND	ND	
2012	1.1	2.6	<0.1	ND	1.7	0.8	0.3	0.8	ND	ND	ND	0.7	2.6	2.5	2.0	ND	
2013	0.9	1.3	0.3	ND	0.8	0.8	1.2	1.0	ND	ND	ND	0.2	1.0	0.9	0.9	ND	
2014	0.6	0.7	0.5	ND	0.2	0.3	0.6	0.4	ND	ND	ND	0.4	0.7	0.8	0.6	ND	
2015	1.3	1.9	0.9	ND	0.4	2	0.5	1.7	ND	ND	ND	1.1	2.3	1.1	0.4	ND	
2016	0.3	1.1	0.5	ND	0.7	0.5	0.3	0.6	ND	ND	ND	0.4	0.4	0.7	0.4	ND	
2017	0.2	0.4	0.2	ND	0.5	0.3	0.3	0.6	ND	ND	ND	0.4	0.3	0.6	0.3	ND	
2018	0.9	12	0.7	3.1	0.7	4.3	0.9	2.1	ND	ND	ND	2.9	4.6	ND	3.1	2	
2019	2.0	2.0	4.0	2.0	3.0	4.0	3.0	2.0	ND	ND	ND	7.0	3.0	ND	3.0	2.0	
2020	1	1	2	1	2	1	1	2	ND	ND	2	1	1	ND	1	1	
2021	6	2	2	1	3	2	4	2	ND	ND	3	2	4	ND	1	4	
2022	3.3	10	6.3	1.4	2.6	3.8	1.8	3.5	ND	ND	9.6	3.5	7.9	ND	5.5	2.9	
2023	1	1.1	1.9	4.3	2	<1	1.7	6.2	ND	ND	20	4.4	<1	ND	2.8	3.2	
2024	7.9	16	6	ND	2.1	17	2.5	2.9	ND	ND	4.2	9.6	7.6	ND	3.9	3.1	
2025	10	11	2.5	ND	<1	1	5.7	<1	ND	ND	1	8.3	22	ND	2.8	4	
	LEAD IN MUDWHELKS (mg/kg wet weight)																
FSANZ maximum level	2.00																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1
GEL 90th percentile	N/G																
2006	0.15	0.28	0.25	ND	ND	0.25	ND	0.25	ND	ND	ND	0.21	0.22	0.25	ND	ND	
2007	0.1	0.1	0.48	ND	0.39	0.16	0.14	0.28	ND	ND	ND	0.1	0.1	0.14	ND	ND	
2008	0.3	0.52	0.21	ND	0.2	0.2	0.2	0.1	ND	ND	ND	0.29	0.4	0.4	ND	ND	
2009	0.3	0.3	0.2	ND	0.2	0.2	0.3	0.2	ND	ND	ND	0.2	0.2	0.1	ND	ND	
2010	0.1	0.2	0.1	ND	0.1	1.6	0.1	0.1	ND	ND	ND	0.1	0.1	0.1	ND	ND	
2011	0.05	0.05	0.05	ND	0.30	0.10	0.05	0.05	ND	ND	ND	0.05	0.05	0.05	ND	ND	
2012	0.40	0.40	0.10	ND	0.20	0.10	0.10	0.10	ND	ND	ND	0.10	0.30	0.40	0.80	ND	
2013	0.50	0.60	0.20	ND	0.30	0.30	0.50	0.50	ND	ND	ND	0.10	0.10	0.30	0.20	ND	
2014	0.19	0.16	0.13	ND	0.14	0.08	0.10	0.05	ND	ND	ND	0.08	0.41	0.37	0.05	ND	
2015	0.12	0.03	0.02	ND	0.05	0.04	0.04	0.04	ND	ND	ND	0.05	0.05	0.03	0.01	ND	
2016	0.06	0.06	0.13	ND	0.03	0.13	0.08	0.15	ND	ND	ND	0.08	0.09	0.06	0.03	ND	
2017	0.10	0.15	0.06	ND	0.06	0.09	0.13	0.14	ND	ND	ND	0.10	0.13	0.32	0.11	ND	
2018	0.07	0.33	0.07	0.60	0.78	0.13	0.08	0.30	ND	ND	ND	1.03	0.91	ND	0.72	0.55	
2019	0.31	<1	<1	<1	0.51	<1	<1	<1	ND	ND	ND	0.726	<1	ND	<1	1	
2020	<1	<1	<1	<1	<1	<1	<1	<1	ND	ND	<1	<1	<1	ND	<1	<1	
2021	0.63	0.49	0.10	0.49	0.61	0.38	0.42	0.10	ND	ND	0.10	0.74	0.39	ND	0.79	0.86	
2022	0.94	0.84	0.75	0.49	1.25	0.73	0.84	2.38	ND	ND	0.36	0.98	0.42	ND	<1	<1	
2023	<0.25	0.53	0.50	<0.25	<0.25	<0.25	<0.25	0.30	ND	ND	<0.25	<0.25	<0.25	ND	<0.25	<1	
2024	0.23	0.24	0.70	ND	0.21	0.18	0.21	0.24	ND	ND	0.22	0.432	1.08	ND	0.26	0.22	
2025	0.33	1.51	1.32		0.25	0.28	0.53	0.28	ND	ND	0.32	0.25	0.28	ND	0.25		

Location	Wickham Pt											Control Site						
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments	
	LEAD IN MUDWHELKS (mg/kg dry weight)																	
2006	0.5	1.0	0.9	ND	ND	1.1	ND	1.0	ND	ND	ND	0.8	0.8	1.0	ND	ND		
2007	<0.1	<0.1	1.6	ND	1.4	0.6	0.5	0.9	ND	ND	ND	<0.1	0.4	0.6	ND	ND		
2008	0.8	1.3	0.5	ND	0.5	0.5	0.5	0.2	ND	ND	ND	0.7	1.1	1.3	ND	ND		
2009	0.8	0.8	0.5	ND	0.5	0.5	0.7	0.6	ND	ND	ND	0.7	0.5	0.5	ND	ND		
2010	0.1	0.6	0.2	ND	0.3	6	<0.1	0.1	ND	ND	ND	<0.1	<0.1	<0.1	ND	ND		
2011	0.1	<0.1	<0.1	ND	1.1	0.2	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	1.9	ND	ND		
2012	0.8	0.8	0.1	ND	0.4	0.2	0.3	0.1	ND	ND	ND	0.3	0.8	1.1	0.8	ND		
2013	1.4	1.9	0.6	ND	0.9	1.1	1.9	1.3	ND	ND	ND	0.4	0.5	1.0	0.5	ND		
2014	0.7	0.6	0.4	ND	0.5	0.3	0.3	0.2	ND	ND	ND	0.3	1.5	1.3	0.2	ND		
2015	0.5	0.1	0.1	ND	0.2	0.2	0.1	0.1	ND	ND	ND	0.2	0.2	0.2	0.1	ND		
2016	0.2	0.2	0.5	ND	0.1	0.5	0.3	0.6	ND	ND	ND	0.3	0.3	0.2	0.1	ND		
2017	0.3	0.5	0.2	ND	0.2	0.3	0.5	0.4	ND	ND	ND	0.3	0.4	1.1	0.4	ND		
2018	0.3	1.1	0.3	3	3.7	0.7	0.3	1.3	ND	ND	ND	3.3	4	ND	2.9	2.3		
2019	1	1	1	1	2	1	1	1	ND	ND	ND	3	1	ND	1.0	1.0		
2020	1	1	1	1	1	1	1	1	1	1	1	1	1	ND	1	1		
2021	3	2	<1	2	3	2	2	<1	ND	ND	<1	4	2	ND	3	4		
2022	4.1	3	3	2.7	5.2	4.3	4.2	8.8	ND	ND	1.5	3.9	2.1	ND	1.7	2		
2023	<1	2.3	2	<1	<1	<1	<1	1.2	ND	ND	<1	<1	<1	ND	<1	<1		
2024	<1	<1	2.7	ND	<1	<1	<1	<1	ND	ND	<1	1.8	4.3	ND	<1	<1		
2025	1.1	5.8	4	ND	<2	<1	2.1	<1	ND	ND	<1	<1	1.1	ND	1	4		
	ZINC IN MUDWHELKS (mg/kg wet weight)																	
FSANZ maximum level	N/G																"N/G" indicates no guidelines; "ND" indicates no data In 2012 Site C2 was established to replace site C1	
GEL 90th percentile	290																	
2006	73	190	90	ND	ND	76	ND	153	ND	ND	ND	47	106	75	ND	ND		
2007	12	12	15	ND	15	10	14	19	ND	ND	ND	10	8	10	ND	ND		
2008	14	8	6	ND	7	13	48	15	ND	ND	ND	11	9	8	ND	ND		
2009	7	5	5	ND	5	5	7	7	ND	ND	ND	17	4	3	ND	ND		
2010	8	6	4	ND	4	10	3	5	ND	ND	ND	3	3	2	ND	ND		
2011	4	0.7	1	ND	3.1	2	3	4	ND	ND	ND	2	4	3	ND	ND		
2012	31	15	11	ND	318	109	12	19	ND	ND	ND	9	11	16	12	ND		
2013	13	13	13	ND	70	19	39	60	ND	ND	ND	12	17	33	21	ND		
2014	11.9	11.9	8.2	ND	13.7	14.1	12.8	11.7	ND	ND	ND	10.9	12.1	9.1	10.6	ND		
2015	18.4	20.3	12.5	ND	77.9	72.5	15.3	32.5	ND	ND	ND	13.8	16.9	23.2	11.8	ND		
2016	4.0	8.2	4.5	ND	44.8	5.0	5.5	8.8	ND	ND	ND	3.5	5.7	5.2	4.8	ND		
2017	6.0	9.5	6.4	ND	15.1	8.3	7.9	20.9	ND	ND	ND	8.2	4.9	5.5	6.0	ND		
2018	16	143	22	149	34	414	19	81	ND	ND	ND	12	21	ND	25	9		
2019	20	21	68	57	229	98	242	65	ND	ND	ND	119	149	ND	26	16		
2020	48	18	24	37	165	42	17	35	ND	ND	23	71	28	ND	22	24		
2021	25	17	13	17	25	16	12	14	ND	ND	11	13	15	ND	11	13		
2022	25	20	40	9	84	6	7	27	ND	ND	161	22	22	ND	38	72		
2023	12	12	7	252	25	13	12	28	ND	ND	106	14	5	ND	9	150		
2024	127	55	22	ND	40	270	29	36	ND	ND	37	74	19	ND	15	13		
2025	81	96	19		35	17	400	18	ND	ND	19	93	128	ND	12			

Location	Wickham Pt											Control Site					
Site	LG1	LG2	LG3	SP1	SP1-A	SP1-B	SP1-C	SP2	SP2-A	SP3	SP3-A	M3	E1	E2	C2	QA1	Comments
	ZINC IN MUDWHELKS (mg/kg dry weight)																
2006	250	680	320	ND	ND	330	ND	610	ND	ND	ND	180	380	300	ND	ND	
2007	38	47	51	ND	54	36	52	60	ND	ND	ND	39	39	45	ND	ND	
2008	37	20	14	ND	18	33	120	35	ND	ND	ND	27	24	26	ND	ND	
2009	16	14	12	ND	14	14	18	20	ND	ND	ND	60	13	13	ND	ND	
2010	25	19	15	ND	20	38	13	16	ND	ND	ND	11	9.7	8.4	ND	ND	
2011	14	2.6	3.7	ND	13	5	12	17	ND	ND	ND	10	12	13	ND	ND	
2012	65	33	30	ND	650	210	32	45	ND	ND	ND	20	27	41	31	ND	
2013	40	46	40	ND	260	63	140	160	ND	ND	ND	34	59	100	68	ND	
2014	43	45	26	ND	48	51	40	46	ND	ND	ND	39	44	32	44	ND	
2015	68	80	57	ND	340	370	61	130	ND	ND	ND	62	72	100	54	ND	
2016	14	29	18	ND	160	19	20	35	ND	ND	ND	13	20	17	15	ND	
2017	19	31	23	ND	50	27	31	61	ND	ND	ND	25	15	19	21	ND	
2018	72	480	100	750	160	2,200	69	350	ND	ND	ND	37	90	ND	100	36	
2019	65	71	240	230	900	360	800	230	ND	ND	ND	490	550	ND	100	67	
2020	170	64	120	120	780	160	49	130	ND	ND	92	280	100	ND	93	110	
2021	120	68	50	68	120	84	57	63	ND	ND	42	69	79	ND	40	58	
2022	110	96	160	48	350	36	36	100	ND	ND	670	89	110	ND	160	72	
2023	47	54	26	1200	120	70	59	110	ND	ND	440	65	21	ND	35	45	
2024	550	230	83	ND	190	1500	140	150	ND	ND	170	310	76	ND	59	61	
2025	270	370	59	ND	140	60	1600	65	ND	ND	60	370	510	ND	49	55	
	TPH IN MUDWHELKS (mg/kg wet weight)																
FSANZ maximum level	N/G																
GEL 90th percentile	N/G																
2006	<0.04	<0.04	<0.04	ND	ND	<0.04	ND	<0.04	ND	ND	ND	<0.04	2.1	ND	ND	ND	
2007	<0.04	1.1	1.9	ND	<0.04	1.2	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	ND	ND	
2008	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	ND	ND	
2009	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	ND	ND	
2010	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	ND	ND	
2011	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	ND	ND	
2012	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	<0.04	ND	
2013	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	<0.04	ND	
2014	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	<0.04	ND	
2015	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	<0.04	ND	
2016	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	<0.04	ND	
2017	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	<0.04	ND	
2018	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	<0.04	ND	
2019	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	ND	<0.04	<0.04	ND	<0.04	ND	
2020	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	<0.04	<0.04	<0.04	ND	<0.04	ND	
2021	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	<0.04	<0.04	<0.04	ND	<0.04	ND	
2022	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	<0.04	<0.04	<0.04	ND	<0.04	ND	
2023	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	<0.04	<0.04	<0.04	ND	<0.04	ND	
2024	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	<0.04	<0.04	<0.04	ND	<0.04	ND	
2025	<0.04	<0.04	<0.04	ND	<0.04	<0.04	<0.04	<0.04	ND	ND	<0.04	<0.04	<0.04	ND	<0.04	<0.04	

Attachment C – Stack Emission Data

*Note: No data available for 2024 and 2025

Compressor Turbines

NOX g/s		Unit						EPL217
Year	Month	U1411	U1421	U1511	U1521	U1611	U1621	Max Emission Rate (g/s)
2016	2	6.5	5.5	5.2	7.2	5.4	5.6	25
	4	7	6.1	5.8	7.4	6.7	5.6	25
	9	5.9	5.2	4.6	7.2	6.7	5.8	25
	11	6	6.3	4.7	5.7	5.6	4.8	25
2017	3	6.6	6	6.6	6	6.7	6.2	25
	5	9.1	9.6	9	9	7.9	7.5	25
	8	6.7	6.9	6.6	6.3	7.6	7.1	25
	10	6.1	6.1	5.8	5.5	6.9	6.5	25
2018	4	5.1	5.7	8	6.6	6.4	6.7	25
	10	7.3	7.2	7	7.3	5.6	5.8	25
	3	5.8	5.9	7	7	4.6	5.4	25
2019	11	10	8.4	6.7	7.5	7.1	7.5	25
	8	12	10	10	11	8.2	10	25
2020	11	9.2	9.6	10	9.9	11	8.2	25
	6	11	11	9.8	9.3	12	11	25
	12	9.5	8.9	9.3	8	6.8	7.4	25
2022	4	8.6		7.3		8.5		25
	6		11		6.9		8.7	25
	10	8.5		6.9		7.4		25
2023	4		9.6		7.2		8.8	25

CO g/s		Unit						EPL217
Year	Month	U1411	U1421	U1511	U1521	U1611	U1621	Max Emission Rate (g/s)
2016	2	0.7	0.95	0.69	0.55	1.5	0.92	5
	4	0.59	1.5	0.7	1.5	1.8	0.99	5
	9	0.71	1.1	0.96	1.2	1.3	1.4	5
	11	0.67	1.2	0.99	0.65	1.1	0.54	5
2017	3	0.7	0.71	0.43	0.66	0.85	0.38	5
	5	1.7	1.6	1.2	1.6	2.4	0.96	5
	8	0.89	0.8	0.52	0.68	1.1	0.64	5
	10	0.96	1.1	0.5	0.74	0.59	0.61	5
2018	4	0.59	0.83	0.62	0.74	0.72	0.51	5
	10	0.44	0.7	0.58	0.58	0.9	0.87	5
	3	0.52	0.68	0.67	0.66	0.98	0.78	5
2019	11	0.61	0.67	0.8	0.42	0.32	0.6	5
	8	0.68	0.71	1.1	0.39	0.47	0.28	5
	11	0.62	0.48	0.45	0.42	0.56	0.42	5
2021	6	0.52	0.58	0.49	0.5	0.48	0.59	5
	12	0.57	0.4	0.5	0.43	0.42	0.44	5
2022	4	0.57		0.45		0.3		5
	6		0.48		0.52		0.74	5
	10	0.47		0.41		0.22		5
2023	4		0.38		0.59		0.59	5

SO2 g/s		Unit						EPL217
Year	Month	U1411	U1421	U1511	U1521	U1611	U1621	Max Emission Rate (g/s)
2016	2	0.18	0.18	0.17	0.18	0.19	0.18	4.7
	4	0.19	0.19	0.18	0.18	0.19	0.19	4.7
	9	0.17	0.18	0.17	0.17	0.19	0.19	4.7
	11	0.17	0.18	0.17	0.16	0.17	0.17	4.7
2017	3	0.17	0.19	0.17	0.19	0.17	0.18	4.7
	5	0.50	0.50	0.50	0.50	0.40	0.40	4.7
	8	0.40	0.40	0.48	0.54	0.36	0.37	4.7
	10	0.40	0.30	0.40	0.30	0.40	0.30	4.7
2018	4	0.30	0.40	0.40	0.30	0.30	0.30	4.7
	10	0.40	0.40	0.30	0.30	0.30	0.30	4.7
	3	0.30	0.30	0.30	0.30	0.30	0.30	4.7
2019	11	0.40	0.30	0.30	0.30	0.30	0.30	4.7
	8	2.20	0.90	2.50	2.10	2.10	2.20	4.7
2020	11	0.85	0.30	2.00	0.40	0.40	1.10	4.7
	6	0.30	0.30	0.44	0.49	0.40	0.59	4.7
	12	0.30	0.40	0.30	0.30	0.30	0.39	4.7
2022	4	0.89		0.86		0.2		4.7
	6		0.3		0.2		0.2	4.7
	10	0.3		0.3		0.3		4.7
2023	4		0.3		0.3		0.3	4.7

NOX mg/Nm³		Unit						EPL217
Year	Month	U1411	U1421	U1511	U1521	U1611	U1621	Concentration Limit (mg/Nm3)
2016	2	91	75	75	105	73	79	212
	4	95	83	84	108	88	77	212
	9	82	73	66	106	88	78	212
	11	83	88	72	91	77	66	212
2017	3	92	84	105	98	103	96	212
	5	99	98	103	104	92	89	212
	8	92	92	101	98	99	93	212
	10	86	86	96	93	96	90	212
2018	4	72	78	113	95	102	102	212
	10	100	100	108	110	80	82	212
	3	81	91	100	101	71	80	212
2019	11	147	120	108	123	115	123	212
	8	172	144	150	162	148	174	212
2020	11	138	144	152	149	161	118	212
	6	170	170	140	130	160	150	212
	12	150	130	150	130	120	140	212
2022	4	140		130		130		212
	6		160		120		140	212
	10	140		120		130		212
2023	4		160		130		150	212

CO mg/Nm³		Unit						EPL217
Year	Month	U1411	U1421	U1511	U1521	U1611	U1621	Concentration Limit (mg/Nm3)
2016	2	9.7	13	10	8.1	20	13	70
	4	8	20	10	21	24	14	70
	9	10	15	14	17	17	19	70
	11	9	17	15	10	15	7	70
2017	3	10	10	7	11	13	6	70
	5	19	17	14	19	28	11	70
	8	12	11	8	11	15	8.3	70
	10	14	16	8.2	13	8.2	8.5	70
2018	4	8.2	11	8.7	11	11	7.8	70
	10	6	9.6	8.8	8.8	13	12	70
	3	7.3	10	9.6	9.6	15	12	70
2019	11	8.9	9.6	13	6.8	5.2	9.9	70
	8	9.9	11	16	5.7	8.5	4.8	70
	11	9.3	7.2	6.6	6.3	7.9	6.1	70
2021	6	7.7	8.7	6.9	7.1	6.4	7.7	70
	12	8.8	5	7.8	7.3	7.3	8.3	70
2022	4	9.1		7.9		5		70
	6		7		9.1		12	70
	10	7.7		7.2		3.9		70
2023	4		6.2		11		9.8	70

SO2 mg/Nm³		Unit						EPL217
Year	Month	U1411	U1421	U1511	U1521	U1611	U1621	Concentration Limit (mg/Nm3)
2016	2	2.6	2.5	2.5	2.7	2.5	2.6	65
	4	2.6	2.5	2.6	2.6	2.4	2.6	65
	9	2.4	2.5	2.4	2.4	2.5	2.5	65
	11	2.3	2.5	2.6	2.6	2.4	2.4	65
2017	3	2.4	2.6	2.6	3.2	2.6	2.9	65
	6	5	5	5	5	5	5	65
	9	5	5	7.4	8.5	4.8	4.8	65
	10	5	5	6	6	5	5	65
2018	4	4	5	5	5	5	5	65
	10	5	5	5	5	5	5	65
	3	5	5	5	5	5	5	65
2019	11	5	5	5	5	5	5	65
	8	33	14	37	30	37	38	65
2020	11	13	5	30	5	5	16	65
	6	5	5	6.1	7	5	5	65
	12	5	5	5	5	6	7.2	65
2022	4	14		7.9		4		65
	6		4		5		4	65
	10	5		6		6		65
2023	4		5		5		5	65

Power Generation Turbines

NOX g/s		Unit					EPL217
Year	Month	U3101	U3102	U3103	U3104	U3105	Max Emission Rate (g/s)
2016	2	0.24	0.2		0.17	0.23	1
	4	0.36	0.3	0.14	0.044		1
	8	0.27	0.18	0.12	0.19		1
	11	0.25	0.23	0.17	0.13	0.26	1
2017	3	0.2	0.32	0.08	0.14	0.22	1
	6	0.34	0.37	0.15	0.19	0.37	1
	8	0.28	0.38	0.096	0.16	0.34	1
	10	0.25	0.3	0.076	0.12	0.23	1
2018	4	0.17	0.17	0.036	0.074	0.15	1
	10	0.37	0.31	0.12	0.15	0.26	1
2019	3	0.28	0.41	0.091	0.014	0.043	1
	11	0.3	0.3	0.11	0.041	0.12	1
2020	8	0.34	0.11	0.08	0.15	0.09	1
	11	0.24	0.24	0.079	0.17	0.27	1
2021	6	0.22	0.34	0.03	0.16	0.20	1
	12	0.16	0.17	0.05	0.16	0.29	1
2022	4	0.22	0.16	0.03		0.16	1
	10	0.19	0.13			0.12	1
2023	4		0.24	0.04		0.11	1

CO g/s		Unit					EPL217
Year	Month	U3101	U3102	U3103	U3104	U3105	Max Emission Rate (g/s)
2016	2	0.012	0.048		0.012	0.047	0.4
	4	0.014	0.042	0.01	0.014		0.4
	8	0.012	0.053	0.012	0.04		0.4
	11	0.013	0.013	0.013	0.013	0.013	0.4
2017	3	0.012	0.013	0.012	0.012	0.015	0.4
	6	0.032	0.022	0.016	0.01	0.015	0.4
	8	0.012	0.015	0.013	0.012	0.012	0.4
	10	0.012	0.013	0.014	0.01	0.012	0.4
2018	4	0.012	0.011	0.015	0.011	0.024	0.4
	10	0.012	0.013	0.01	0.011	0.01	0.4
2019	3	0.011	0.013	0.013	0.012	0.012	0.4
	11	0.012	0.013	0.013	0.013	0.026	0.4
2020	8	0.012	0.014	0.012	0.013	0.01	0.4
	11	0.011	0.013	0.013	0.01	0.01	0.4
2021	6	0.011	0.012	0.01	0.01	0.012	0.4
	12	0.07	0.06	0.07	0.07	0.07	0.4
2022	4	0.07	0.06	0.06		0.07	0.4
	10	0.01	0.01			0.01	0.4
2023	4		0.01	0.01		0.01	0.4

SO2 g/s		Unit					EPL217
Year	Month	U3101	U3102	U3103	U3104	U3105	Max Emission Rate (g/s)
2016	2	0.028	0.027		0.029	0.027	0.2
	4	0.031	0.03	0.023	0.032		0.2
	8	0.029	0.029	0.029	0.03		0.2
	11	0.03	0.029	0.03	0.031	0.029	0.2
2017	3	0.027	0.03	0.027	0.028	0.027	0.2
	6	0.06	0.06	0.06	0.06	0.07	0.2
	8	0.06	0.06	0.06	0.06	0.06	0.2
	10	0.06	0.06	0.06	0.05	0.06	0.2
2018	4	0.06	0.05	0.07	0.05	0.06	0.2
	10	0.06	0.06	0.06	0.05	0.06	0.2
2019	3	0.05	0.05	0.06	0.05	0.06	0.2
	11	0.06	0.06	0.06	0.06	0.06	0.2
2020	8	0.06	0.06	0.06	0.06	0.06	0.2
	11	0.05	0.06	0.06	0.06	0.06	0.2
2021	6	0.05	0.06	0.06	0.05	0.06	0.2
	12	0.06	0.06	0.07	0.06	0.07	0.2
2022	4	0.07	0.06	0.05		0.06	0.2
	10	0.05				0.05	0.2
2023	4		0.05	0.06		0.05	0.2

NOX mg/Nm³		Unit					EPL217
Year	Month	U3101	U3102	U3103	U3104	U3105	Concentration Limit (mg/Nm3)
2016	2	29	24		20	27	70
	4	37	32	15	5		70
	8	30	19	13	20	21	70
	11	26	24	17	13	27	70
2017	3	22	34	9	15	24	70
	6	35	37	14	19	33	70
	9	31	40	10	19	36	70
	10	28	32	8.2	15	25	70
2018	4	19	18	3.9	9.1	16	70
	10	41	32	13	18	28	70
2019	3	33	46	9.6	1.6	4.6	70
	11	32	32	11	4.4	13	70
2020	8	37	12	8	16	9.6	70
	11	27	25	8.3	18	29	70
2021	6	25	36	3	20	22	70
	12	16	18	5	16	27	70
2022	4	21	14	3		14	70
	10	22	14			13	70
2023	4		27.00	5.00		13.00	70

CO mg/Nm³		Unit					EPL217
Year	Month	U3101	U3102	U3103	U3104	U3105	Concentration Limit (mg/Nm3)
2016	2	1.5	5.7		1.5	5.6	32
	4	1.4	4.4	1	1.5		32
	8	1.3	5.7	1.3	4.3	7.4	32
	11	1.3	1.3	1.4	1.4	1.3	32
2017	3	1.2	1.4	1.2	1.3	1.7	32
	6	3.3	2.2	1.6	1	1.4	32
	8	1.4	1.6	1.4	1.4	1.3	32
	10	1.3	1.4	1.5	1	1.3	32
2018	4	1.3	1.2	1.6	1.4	2.6	32
	10	1.3	1.3	1	1.4	1	32
2019	3	1.3	1.5	1.3	1.4	1.3	32
	11	1.3	1.4	1.4	1.4	2.7	32
2020	8	1.3	1.5	1.3	1.4	1	32
	11	1.2	1.4	1.4	1	1	32
2021	6	1.3	1.3	1	1	1.3	32
	12	6	6	7	7	7	32
2022	4	7	5	6		6	32
	10	1	1			1	32
2023	4		1.00	1.00		1.00	32.0

SO2 mg/Nm³		Unit					EPL217
Year	Month	U3101	U3102	U3103	U3104	U3105	Concentration Limit (mg/Nm3)
2016	2	3.4	3.2		3.4	3.2	23
	4	3.2	3.1	2.4	3.4		23
	8	3.1	3.2	3.1	3.2	3.2	23
	11	3.1	3.1	3.2	3.2	3.1	23
2017	3	2.9	3.2	2.9	3	2.9	23
	6	6	6	6	6	6	23
	8	7	7	7	7	7	23
	10	6	6	7	6	6	23
2018	4	6	5	7	6	6	23
	10	6	6	6	6	6	23
2019	3	6	6	6	6	6	23
	11	6	6	6	6	6	23
2020	8	6	6	6	6	6	23
	11	6	6	6	7	6	23
2021	6	6	6	6	6	6	23
	12	6	6	6	6	6	23
2022	4	6	5	5		5	23
	10	6	6			6	23
2023	4		6	6		6	23.0

Acid Gas Incinerator

NOX g/s		EPL217	
Year	Month	K-1904	Max Emission Rate (g/s)
2016	2	0.67	1.5
	4	1	1.5
	9	0.88	1.5
	11	1.2	1.5
2017	3	0.94855525	1.5
	6	0.7	1.5
	8	0.8	1.5
	11	0.77	1.5
2018	2	0.75	1.5
	4	0.66	1.5
	12	0.42	1.5
2019	1	0.65	1.5
	4	0.37	1.5
	8	0.47	1.5
	11	0.21	1.5
2020	2	0.36	1.5
	8	0.51	1.5
	11	0.32	1.5
2021	3	0.21	1.5
	6	0.37	1.5
	9	0.43	1.5
	12	0.19	1.5
2022	2	0.27	1.5
	4	0.47	1.5
	8	0.31	1.5
	10	0.27	1.5
2023	2	0.3	1.5
	4	0.29	1.5

SO2 g/s		EPL217	
Year	Month	K-1904	Max Emission Rate (g/s)
2016	2	1.6	4.6
	4	2.5	4.6
	9	2.7	4.6
	11	3.5	4.6
2017	3	2.9	4.6
	6	2	4.6
	8	2.4	4.6
	11	2.5	4.6
2018	2	1.9	4.6
	4	2.1	4.6
	12	2.2	4.6
2019	1	2.2	4.6
	4	1.4	4.6
	8	1.6	4.6
	11	1.8	4.6
2020	2	2.1	4.6
	8	2.4	4.6
	11	1.4	4.6
2021	3	1.8	4.6
	6	1.4	4.6
	9	2.2	4.6
	12	3.4	4.6
2022	2	1.8	4.6
	4	0.88	4.6
	8	0.62	4.6
	10	0.68	4.6
2023	2	0.37	4.6
	4	0.42	4.6

NOX mg/Nm³		Unit	EPL217
Year	Month	K-1904	Concentration Limit (mg/Nm³)
2016	2	30	64
	4	44	64
	9	34	64
	11	38	64
2017	3	30	64
	6	34	64
	8	40	64
	11	38	64
2018	2	37	64
	4	31	64
	12	22	64
2019	1	32	64
	4	30	64
	8	23	64
	11	13	64
2020	2	20	64
	8	26	64
	11	19	64
2021	3	12.0	64
	6	18.0	64
	9	22.0	64
	12	11.0	64
2022	2	16	64
	4	71	64
	8	59	64
	10	46	64
2023	2	71.0	64
	4	70.0	64

SO2 mg/Nm³		Unit	EPL217
Year	Month	K-1904	Concentration Limit (mg/Nm³)
2016	2	74	194
	4	112	194
	9	103	194
	11	106	194
2017	3	90	194
	6	98	194
	9	122	194
	11	126	194
2018	2	92	194
	4	95	194
	12	117	194
2019	1	112	194
	4	110	194
	8	76	194
	11	109	194
2020	2	119	194
	8	121	194
	11	81	194
2021	3	97	194
	6	22	194
	9	120	194
	12	190	194
2022	2	110	194
	4	130	194
	8	120	194
	10	120	194
2023	2	89	194
	4	100	194

CO g/s		Unit	EPL217
Year	Month	K-1904	Max Emission Rate (g/s)
2016	2	1.7	3
	4	0.65	3
	9	1.8	3
	11	0.99	3
2017	3	2.8	3
	6	1.3	3
	9	0.74	3
	11	0.69	3
2018	2	1.2	3
	4	1	3
	12	0.67	3
2019	1	1	3
	4	0.23	3
	8	2.7	3
	11	1.2	3
2020	2	0.68	3
	8	0.72	3
	11	0.53	3
2021	3	0.61	3
	6	0.44	3
	9	0.64	3
	12	0.46	3
2022	2	0.57	3
	4	0.1	3
	8	0.058	3
	10	0.043	3
2023	2	0.065	3
	4	0.044	3

H2S g/s		EPL217		EPL217	
Year	Month	K1904	H2S Concentration Limit (mg/Nm³)	K1904	Maximum mass emission rate H2S (g/s)
2017	11	0.8	5	0.02	0.1
2018	2	0.8	5	0.02	0.1
	4	0.8	5	0.02	0.1
	12	0.6	5	0.01	0.1
2019	1	0.6	5	0.01	0.1
	4	0.6	5	0.008	0.1
	8	0.4	5	0.009	0.1
	11	0.4	5	0.007	0.1
2020	2	0.4	5	0.007	0.1
	8	0.4	5	0.008	0.1
	11	0.7	5	0.012	0.1
2021	3	0.4	5	0.008	0.1
	6	0.3	5	0.006	0.1
	9	0.4	5	0.008	0.1
	12	0.4	5	0.008	0.1
2022	2	0.2	5	0.004	0.1
	4	0.5	5	0.004	0.1
	8	0.4	5	0.002	0.1
	10	0.9	5	0.005	0.1
2023	2	0.5	5	0.002	0.1
	4	0.5	5	0.002	0.1

CO mg/Nm³		Unit	EPL217
Year	Month	K-1904	Concentration Limit (mg/Nm³)
2016	2	79	339
	4	29	339
	9	69	339
	11	31	339
2017	3	87	339
	6	61	339
	9	37	339
	11	34	339
2018	2	59	339
	4	46	339
	12	36	339
2019	1	52	339
	4	18	339
	8	130	339
	11	71	339
2020	2	38	339
	8	37	339
	11	32	339
2021	3	33	339
	6	22	339
	9	33	339
	12	26	339
2022	2	35	339
	4	15	339
	8	11	339
	10	7	339
2023	2	16	339
	4	11	339

Boiler

NOx g/s			EPL217
Year	Month	B-3801	Max Emission Rate (g/s)
2016	2	0.26	0.70
	4	0.21	0.70
	9	0.20	0.70
	11	0.14	0.70
2017	3	0.22	0.70
	6	0.45	0.70
	8	0.49	0.70
	10	0.25	0.70
2018	4	0.18	0.70
	11	0.20	0.70
2019	3	0.16	0.70
	11	0.15	0.70
	11	0.17	0.70
2020	8	0.19	0.70
	11	0.17	0.70
2021	6	0.20	0.70
	12	0.24	0.70
2022	4	0.27	0.7

NOx mg/Nm ³			EPL217
Year	Month	B-3801	Concentration Limit (mg/Nm3)
2016	2	124.0	190
	4	114.0	190
	9	114.0	190
	11	111.0	190
2017	3	105.0	190
	6	139.0	190
	9	139.0	190
	10	100.0	190
2018	4	101.0	190
	11	103.0	190
2019	3	103.00	190
	11	134.00	190
	11	121.00	190
2020	8	128.00	190
	11	110.00	190
2021	6	150.00	190
	12	120.00	190
2022	4	130	190

CO g/s			EPL217
Year	Month	B-3801	Max Emission Rate (g/s)
2016	2	0.003	0.2
	4	0.01	0.2
	9	0.06	0.2
	11	0.002	0.2
2017	3	0.004	0.2
	6	0.006	0.2
	9	0.006	0.2
	10	0.005	0.2
2018	4	0.004	0.2
	11	0.037	0.2
2019	3	0.021	0.2
	11	0.120	0.2
	11	0.0042	0.2
2020	8	0.0030	0.2
	11	0.0030	0.2
2021	6	0.0046	0.2
	12	0.0200	0.2
2022	4	0.02	0.2

CO mg/Nm ³			EPL217
Year	Month	B-3801	Concentration Limit (mg/Nm3)
2016	2	1.4	42
	4	3.2	42
	9	36	42
	11	1.9	42
2017	3	1.9	42
	6	2	42
	9	2	42
	10	2	42
2018	4	2	42
	11	19	42
2019	3	13	42
	11	107	42
	11	3	42
2020	8	2	42
	11	2	42
2021	6	3.5	42
	12	9	42
2022	4	8	42

SO2 g/s			EPL217
Year	Month	B-3801	Max Emission Rate (g/s)
2016	2	0.007	0.25
	4	0.006	0.25
	9	0.007	0.25
	11	0.005	0.25
2017	3	0.009	0.25
	6	0.030	0.25
	9	0.020	0.25
	10	0.020	0.25
2018	4	0.020	0.25
	11	0.020	0.25
2019	3	0.020	0.25
	11	0.010	0.25
	11	0.010	0.25
2020	8	0.010	0.25
	11	0.010	0.25
2021	6	0.010	0.25
	12	0.020	0.25
2022	4	0.02	0.25

SO2 mg/Nm ³			EPL217
Year	Month	B-3801	Concentration Limit (mg/Nm3)
2016	2	3.20	65
	4	3.10	65
	9	4.20	65
	11	4.30	65
2017	3	4.30	65
	6	9.00	65
	9	6.00	65
	10	9.00	65
2018	4	9.00	65
	11	10.00	65
2019	3	10.00	65
	11	10.00	65
	11	9.00	65
2020	8	9.00	65
	11	9.00	65
2021	6	9.00	65
	12	9.00	65
2022	4	8	65

Solvent Regenerator Reflux Drum (Acid Gas Removal Vent)

H2S					
Year	Month	V1206	H2S Concentration Limit (mg/Nm3)	V1206	Maximum mass emission rate H2S (g/s)
2017	10	86.00	136	0.82	1.5
2018	2	44.00	136	0.54	1.5
	4	31.00	136	0.36	1.5
	7	95.00	136	1.10	1.5
	10	142.00	136	1.40	1.5
2019	1	67.00	136	0.66	1.5
	4	60.00	136	0.54	1.5
	8	68.00	136	0.70	1.5
	11	107	136	1.0	1.5
2020	2	82.00	136	0.78	1.5
	8	44.00	136	0.38	1.5
	11	51.00	136	0.53	1.5
2021	3	88.00	136	0.76	1.5
	6	5.00	136	0.06	1.5
	9	85.00	136	0.87	1.5
	12	5.00	136	0.02	1.5
2022	1	6	136	0.04	1.5
	2	6	136	0.04	1.5
	4	4	136	0.01	1.5
	8	49	136	0.16	1.5
	10	23	136	0.07	1.5
2023	2	4	136	0.006	1.5
	4	3	136	0.006	1.5

Benzene					
Year	Month	V1206	Benzene Concentration Limit (mg/Nm3)	V1206	Maximum mass emission rate Benzene (g/s)
2017	10	6.20	16	0.059	0.18
2018	2	5.60	16	0.068	0.18
	4	2.70	16	0.031	0.18
	7	1.20	16	0.014	0.18
	10	6.10	16	0.061	0.18
2019	1	9.70	16	0.096	0.18
	4	34.00	16	0.30	0.18
	8	8.80	16	0.09	0.18
	11	16.00	16	0.15	0.18
2020	2	14.00	16	0.13	0.18
	8	13.00	16	0.11	0.18
	11	5.80	16	0.06	0.18
2021	3	13.00	16	0.11	0.18
	6	7.30	16	0.08	0.18
	9	9.30	16	0.10	0.18
	12	24.00	16	0.10	0.18
2022	1	24	16	0.18	0.18
	2	24	16	0.18	0.18
	4	42	16	0.13	0.18
	8	24	16	0.08	0.18
	10	44	16	0.13	0.18
2023	2	150.00	16	0.27	0.18
	4	130	16	0.23	0.18

Attachment D – Groundwater Data

GROUNDWATER

		PHYSICAL PROPERTIES							NUTRIENTS							
Sample	Date Sampled	pH	Electrical Conductivity (EC)	Dissolved Oxygen	Dissolved Oxygen (Field %)	Total Dissolved Solids (grav)	Total Suspended Solids	Biological Oxygen Demand	Total Nitrogen	Ammonia as N	Nitrite + Nitrate as N	Nitrate as N	Nitrite as N	Kjeldahl Nitrogen Total	Dissolved Reactive Phosphorus as P	Total Phosphorus
Biannual Testing Frequency		pH Units	µS/cm	mg/L	% Sat	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR		0.1	1	0.1		1	1	2	0.1	0.01	0.01	0.01	0.01	0.1	0.01	0.01
BH1																
BH1	16/03/2015	5.78	2,110	8.6		1,070	531		0.6	0.04		0.18	<0.01		<0.01	0.18
BH1	25/08/2015	5.39	91,100	7.0		50,400	9,480		2	0.37		0.35	<0.01		<0.1	3.14
BH1	27/04/2016	5.4	14,000	9.3		9,300	430		1	0.01		0.44	0.006			0.02
BH1	10/08/2016	4.9	69,000			50,000	7,600		2.2	0.51		0.83	<0.005			0.13
BH1	27/04/2017	5.53	5,030	8.7		2,720	439		1	0.13		0.18	<0.01	0.8	<0.01	0.78
BH1	22/08/2017	5.14	91,800	7.1		78,700	2,240		<2	0.6	0.19	<0.01	0.19	<2.0	0.02	0.9
BH1	11/04/2018	5.7	4,400	9.1		3,300	280		0.4	0.03	0.14	0.14	<0.02	0.3	<0.05	0.14
BH1	9/08/2018	4.2	76,000	7.6		8	56,000		<0.5	0.70	0.26	0.59	0.59	<0.02	<0.2	0.12
BH1	2/04/2019	5.2	9,850	7.7		5,550	735		1.1	0.38	0.63	0.63	<0.01	0.5	<0.01	0.08
BH1	14/08/2019	5.0	72,800	7.7		57,600	3,520		<2	0.80	0.36	0.36	<0.01	<2	0.01	0.84
BH1	8/04/2020	4.7	17,400	6.7		9,950	3,430		0.8	0.1	0.15	0.15	<0.01	0.6	<0.01	0.41
BH1	5/08/2020	5.3	48,700	8.5		43,400	1,030		0.7	0.1	0.34	0.34	<0.002	0.4	0.026	0.06
BH1	7/04/2021	5.9	2,160	4.7		1,250	776		0.3	0.38	0.032	0.03	<0.002	0.25	0.0004	0.21
BH1	10/08/2021	4.2	64,100	10.6		45,100	183		0.5	0.0	0.36	0.35	<0.002	0.2	<0.01	0.12
BH1	4/27/2022	5.2	20,100			12,500	131		<0.5	0.07	0.03	0.03	<0.01	<0.5		<0.5
BH1	8/09/2022	4.2	35,700	63.9		24,300	38		0.8	0.2	0.19	0.19	<0.01	0.6		0.08
BH1	4/12/2023	4.97	47,180	108.5		6,460	43		0.22	0.035	0.046	0.046	<0.002	0.17	<0.001	<0.005
BH1	8/02/2024	4.39	14,396	51.8		29,400	60		0.39	0.062	0.27	0.27	<0.002	0.12	<0.001	<0.005
BH1	30/04/2024	4.69	20,230	13100	79.9	6,050	151	3	0.44	0.037	0.183	0.183	<0.002	0.26	0.016	0.082
BH1	13/08/2024	4.35	61,000		77.7	48,900	294	<2	0.78	0.306	0.381	0.381	<0.002	0.40	0.046	0.122
BH1	22/04/2025	5.08	1,970		45.2	767	830	<2	0.49	0.024	0.033	0.033	<0.002	0.46	0.005	0.175
BH1	6/08/2025		103		66.35	38,500	466	<2	1.02	0.300	0.577	0.577	<0.002	0.44	0.045	0.068
BH2																
BH2	18/03/2015	7.08	82,800	6.4		63,000	2,500		2.3	2.02		0.02	<0.01		<0.01	1.1
BH2	26/08/2015	7.4	74,700	7.1		48,200	2,890		28.4	27.3		0.04	<0.01		<0.1	0.77
BH2	27/04/2016	6.2	55,000			38,000	1,200		66	39		1.61	<0.05			<0.01
BH2	10/08/2016	6.7	75,000			54,000	7,100		26	15		<0.01	<0.05			0.12
BH2	26/04/2017	7.19	58,900	6.5		52,200	21,500		21	15.6		<0.002	<0.01	21.3	<0.01	2.37
BH2	22/08/2017	7.48	66,500	6.2		55,600	7,920		13,100	11.9	<0.01	<0.01	<0.01	13.1	<0.01	1.73
BH2	11/04/2018	7.7	66,000	8.9		44,000	720		9.6	11	<0.05	<0.02	<0.02	9.6	<0.05	1.5
BH2	8/08/2018	7.7	62,000	9.0		9	48,000		<0.5	16.00	14	<0.05	<0.02	<0.02	16	
BH2	2/04/2019	7.1	65,800	4.6		50,600	2,390		21.3	19.80	0.03	0.03	<0.01	21.3	<0.01	0.26
BH2	13/08/2019	7.0	54,100	7.5		42,700	460		26.4	27.30	<0.01	<0.01	<0.01	26.4	<0.01	0.19
BH2	7/04/2020	7.0	70,000	4.6		52,200	3,760		19.8	13.5	0.05	0.05	<0.01	19.8	<0.01	0.14
BH2	6/08/2020	7.2	50,500	8.6		45,200	892		27.9	23.8	<0.002	<0.002	<0.002	27.9	0.003	<0.005
BH2	7/04/2021	7.3	35,600	6.6		24,100	758		15.4	13.80	0.017	0.02	<0.002	15.40	0.014	0.20
BH2	11/08/2021	7.0	63,300	6.5		46,700	9,040		14.6	13.4	<0.002	<0.002	<0.002	15.5	<0.01	0.46
BH2	4/26/2022	5.7	58,600			43,100	370		12.8	11.4		<0.01	<0.01	12.8		0.12
BH2	8/09/2022	6.1	42,100	76.4		27,700	684		35.8	30.9	<0.01	<0.01	<0.01	35.8		<0.05
BH2	4/12/2023	5.97	19,867	34.4		14,300	512		9.29	14.3	<0.01	<0.01	0.006	9.29	0.033	0.259
BH2	8/01/2024	6.3	39,510	87.8		24,000	1,270		10.6	34.8	<0.01	<0.01	<0.002	10.6	0.009	1.29
BH2	23/04/2024	6.29	45,440		70.2	29,700	2,670	5	17.6	19	<0.020	<0.020	<0.020	17.6	0.082	0.839
BH2	13/08/2024	6.22	45,730		57	36,300	3980	<2	22.6	18	0.054	0.054	<0.002	22.5	0.007	0.154
BH2	22/04/2025	6.5	32,017		80.1	18,100	607	<2	15.8	15.4	0.018	0.018	<0.002	15.8	0.018	1.29
BH2	6/08/2025		9,038		54.6	30,100	11,800	<2	25.5	18	0.069	0.067	0.002	25.4	0.07	1.08

Sample	Date Sampled	PHYSICAL PROPERTIES							NUTRIENTS							
		pH	Electrical Conductivity (EC)	Dissolved Oxygen	Dissolved Oxygen (Field %)	Total Dissolved Solids (grav)	Total Suspended Solids	Biological Oxygen Demand	Total Nitrogen	Ammonia as N	Nitrite + Nitrate as N	Nitrate as N	Nitrite as N	Kjeldahl Nitrogen Total	Dissolved Reactive Phosphorus as P	Total Phosphorus
Biannual Testing Frequency		pH Units	µS/cm	mg/L	% Sat	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR		0.1	1	0.1		1	1	2	0.1	0.01	0.01	0.01	0.01	0.1	0.01	0.01
BH3																
BH3	18/03/2015	5.54	376	5.7		184	8,950		4	0.04		3.15	0.02		<0.01	1.46
BH3	25/08/2015	4.23	574	5.8		560	13,200		<1	0.14		0.04	<0.01		<0.1	4.66
BH3	27/04/2016	4.7	230			200	2,800		1.4	0.016		0.38	<0.005			0.21
BH3	10/08/2016	5.5	340			200	3,900		1.1	0.12		0.012	<0.005			0.16
BH3	26/04/2017	6.42	98	7.0		214	6,940		6	0.25		0.04	<0.01	5.6	<0.01	4.94
BH3	22/08/2017	6.04	472	7.5		97	15,600		800	0.33	0.04	<0.01	0.04	0.8	<0.01	1.55
BH3	11/04/2018	6.4	120	7.9		76	6,200		0.65	0.38	0.05	0.05	< 0.02	0.6	< 0.05	0.32
BH3	8/08/2018	6.1	130	8.9		140	3,600		0.9	0.63	<0.05	<0.02	< 0.02	0.9	< 0.05	0.13
BH3	2/04/2019	6.1	115	5.6		177	2,800		2.4	0.39	0.05	0.05	<0.01	2.4	<0.01	1.76
BH3	13/08/2019	6.6	261	5.8		508	20,300		1.3	0.38	<0.01	<0.01	<0.01	1.3	<0.01	3.97
BH3	7/04/2020	6.0	174	5.9		136	4,630		1.9	0.1	0.36	0.36	<0.01	1.5	0.02	1.11
BH3	6/08/2020	6.1	199	7.8		260	4,590		0.8	0.1	0.01	0.01	0.003	0.8	<0.001	0.02
BH3	7/04/2021	6.3	121	4.0		323	4,790		2.0	0.24	<0.01	0.03	<0.01	1.97	0.003	0.76
BH3	10/08/2021	6.2	147	8.4		228	1,830		5.0	1.6	0.02	0.02	<0.002	5.7	<0.01	0.99
BH3	4/26/2022	5.7	137			287	746		2.3	0.6		0.01	<0.01	2.3		0.54
BH3	8/09/2022	6.3	159	53		2	96		0.1	1.3	<0.01	0.03	3.9	<0.0001		<50
BH3	4/12/2023	6.27	133.8	97.1		87.1	142		1.08	0.853	0.017	0.015	0.002	1.06	0.031	0.236
BH3	8/01/2023	6.39	195	63.2		150	172		1	1.68	<0.002	<0.002	<0.002	1	0.006	0.144
BH3*	8/01/2023						152		3		0.015	0.011	0.004	3	0.016	0.191
BH3*	8/01/2023						120		0.98		<0.002	<0.002	<0.002	0.98	0.007	0.124
BH3*	23/04/2024	6.5	287		65.8	69	3150	2	4.05	1.23	<0.002	<0.002	<0.002	4.05	0.006	0.878
BH3*	13/08/2024	6.27	189		67.3	94	265	<2	1.06	0.952	0.034	0.028	0.006	1.03	<0.001	0.093
BH3*	22/04/2025	6.47	283		69.1	127	1,200	4	2.02	0.814	0.039	0.034	0.005	1.98	0.006	0.553
BH3*	5/08/2025		524		42.4	130	2,150	4	3.09	1.85	0.076	0.072	0.004	3.01	0.003	0.302
BH4																
BH4	18/03/2015	6.05	634	6.9		308	7,840		0.7	0.02		0.03	<0.01		<0.01	0.84
BH4	25/08/2015	6.21	903	3.7		1,930	48,000		2.9	0.09		0.03	<0.01		<0.1	3.55
BH4	27/04/2016	5.7	480			290	330		0.2	0.021		<0.005	<0.005			0.03
BH4	10/08/2016	5.2	500			320	6,900		0.4	0.02		0.006	<0.005			0.11
BH4	26/04/2017	4.37	448	7.6		314	1,330		0.4	0.11		0.02	<0.01	0.4	<0.01	0.25
BH4	21/08/2017	4.48	149	6.4		319	9,480		1,800	0.02	0.02	<0.01	0.02	1.8	<0.01	1.66
BH4	10/04/2018	4.3	400	8.6		320	430		<0.2	<0.01	<0.05	<0.02	<0.02	<0.2	<0.05	0.08
BH4	9/08/2018	4.1	420	8.5		260	220		<0.2	<0.01	<0.05	<0.02	<0.02	<0.2	<0.05	0.08
BH4	2/04/2019	4.7	429	5.2		260	169		0.6	<0.01	0.05	0.05	<0.01	0.5	<0.01	0.37
BH4	14/08/2019	5.3	415	6.3		443	5,440		0.9	0.01	0.03	0.03	<0.01	0.9	<0.01	1.15
BH4	7/04/2020	5.1	422	6.7		258	1,850		<0.1	<0.01	0.03	0.03	<0.01	<0.1	<0.01	0.01
BH4	6/08/2020	5.4	411	7.6		236	1,390		0.0	0.0	0.02	0.02	<0.002	0.0	0.006	0.02
BH4	7/04/2021	0.5	399	4.3		236	538		0.0	<0.01	0.004	0.00	<0.002	0.03	0.008	0.08
BH4	11/08/2021	5.1	357	7.7		237	2,560		0.2	0.0	0.04	0.04	<0.002	0.0	<0.01	0.04
BH4	4/26/2022	3.7	321			203	96		<0.1	<0.01		0.08	<0.01	<0.1		0.02
BH4	8/09/2022	3.9	346	73.9		<0.01	204		0	0	<0.01	0.04	7	<0.0001		<50
BH4	4/11/2023	4.08	359	57.1		232	179		<0.01	0.018	0.006	0.006	<0.002	<0.01	0.002	0.041
BH4	8/02/2023	3.86	424	99.5		196	295		0.04	<0.005	0.048	0.048	<0.002	<0.01	<0.001	0.091
BH4	23/04/2024	4.32	378		88.9	182	No lab result	<2	0.16	0.012	0.028	0.028	<0.002	0.13	<0.010	0.137
BH4	13/08/2024	5.05	844		70.9	176	2920	<2	0.01	0.007	0.016	0.016	<0.002	<0.01	<0.001	0.048
BH4	23/04/2025	3.9	464		74.1	196	127	<2	0.04	0.006	0.02	0.02	<0.002	0.02	0.007	0.026
BH4	5/08/2025		662		81.8	199	556	<2	0.21	0.006	0.015	0.015	<0.002	0.2	<0.001	0.116
BH5																
BH5	16/03/2015	7.34	3,340	5.7		1,840	13,600		2.8	0.18		0.18	<0.01		0.01	2.42
BH5	26/08/2015	6.93	2,280	7.1		1,320	1,390		1.1	0.06		0.46	<0.01		<0.1	0.17
BH5	27/04/2016	6.4	2,000			1,200	180		1	0.033		0.63	<0.005			0.03
BH5	10/08/2016	5.6	1,700			990	2,700		3.1	<0.005		1.8	<0.005			0.1
BH5	27/04/2017	6.78	1,850	8.3		992	14,300		3	0.08		2.36	<0.01	0.7	<0.01	0.21
BH5	21/08/2017	7.03	1,960	6.2		1,220	46,800		2,800	0.14	0.91	0.01	0.9	1.9	<0.01	0.88
BH5	11/04/2018	6.3	1,200	8.9		780	510		1.5	0.03	1.5	1.50	<0.02	<0.2	<0.05	0.61
BH5	8/08/2018	7.4	1,700	9.3		1,000	1,800		0.9	0.09	0.91	0.91	<0.02	<0.2	<0.05	0.23
BH5	3/04/2019	6.2	1,320	8.8		732	91		1.5	0.07	1.17	1.17	<0.01	0.3	<0.01	0.05
BH5	14/08/2019	6.8	2,000	7.1		1,080	5,860		1.1	0.06	0.44	0.44	<0.01	0.7	<0.01	0.38
BH5	8/04/2020	5.8	1,800	5.2		932	2,260		4.1	0.0	2.96	2.96	<0.01	1.1	<0.01	0.27
BH5	6/08/2020	5.4	1,600	7.5		778	74		1.4	0.0	1.36	1.36	<0.002	<0.10	0.012	0.05
BH5	6/04/2021	5.5	1,770	6.7		978	434		3.4	0.01	2.830	2.83	<0.002	0.60	0.018	0.09
BH5	11/08/2021	4.6	1,420	7.9		782	245		1.5	0.0	1.61	1.61	<0.002	0.3	<0.01	0.08
BH5	4/27/2022	5.7	1,600			1,060	1,590		0.7	<0.01		0.4	<0.01	0.3		0.13
BH5	8/09/2022	5.7	1,260	110.2		784	774		0.6	0	0.03	0.03	<0.01	0.6		0.17
BH5	4/11/2023	5.07	151	54.2		949	1470		1.6	0.093	1.04	1.04	<0.002	0.56	<0.001	0.43
BH5	8/02/2023	5.66	1,392	106.3		902	123		0.21	0.022	0.415	0.412	0.003	<0.02	0.002	0.11
BH5	30/04/2024	5.69	681		105.6	1										

		PHYSICAL PROPERTIES							NUTRIENTS							
Sample	Date Sampled	pH	Electrical Conductivity (EC)	Dissolved Oxygen	Dissolved Oxygen (Field %)	Total Dissolved Solids (grav)	Total Suspended Solids	Biological Oxygen Demand	Total Nitrogen	Ammonia as N	Nitrite + Nitrate as N	Nitrate as N	Nitrite as N	Kjeldahl Nitrogen Total	Dissolved Reactive Phosphorus as P	Total Phosphorus
Biannual Testing Frequency		pH Units	µS/cm	mg/L	% Sat	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR		0.1	1	0.1		1	1	2	0.1	0.01	0.01	0.01	0.01	0.1	0.01	0.01
BH6																
BH6	18/03/2015	5.9	2,220	6.4		1,040	6,580		1.1	0.67		0.02	<0.01		<0.01	0.48
BH6	25/08/2015	5.96	21,400	5.7		12,500	9,400		0.7	0.46		0.07	<0.01		<0.1	0.09
BH6	27/04/2016	6	36,000			25,000	3,100		0.8	0.007		0.01	<0.005			0.03
BH6	10/08/2016	5.3	11,000			7,000	740		1.1	0.35		0.017	<0.005			<0.01
BH6	27/04/2017	6.01	1,510	6.4		762	605		1	0.7		0.09	<0.01	1	<0.01	0.1
BH6	21/08/2017	5.68	8,340	6.8		4,850	708		600	0.38	0.05	<0.01	0.05	0.5	<0.01	0.05
BH6	10/04/2018	6.1	3,700	8.4		2,500	240		0.6	0.58	<0.05	<0.02	<0.02	0.6	<0.05	<0.05
BH6	8/08/2018	6.1	6,100	8.9		3,600	460		0.3	0.07	<0.05	0.02	<0.02	0.3	<0.05	0.10
BH6	3/04/2019	6.5	1,110	6.3		564	112		0.6	0.30	0.02	0.02	<0.01	0.6	<0.01	0.01
BH6	14/08/2019	5.9	6,750	6.7		3,430	956		0.7	0.38	0.03	0.03	<0.01	0.7	<0.01	0.04
BH6	7/04/2020	5.9	1,090	5.4		568	196		0.5	0.3	<0.01	<0.01	<0.01	0.5	<0.01	<0.01
BH6	5/08/2020	5.7	3,230	7.6		1,810	444		0.4	0.3	0.02	0.02	<0.002	0.4	0.002	<0.005
BH6	6/04/2021	5.9	1,100	5.9		632	1,960		0.8	0.41	0.008	0.01	<0.002	0.80	0.003	0.16
BH6	11/08/2021	5.6	2,680	6.4		1,490	290		0.2	0.4	<0.01	<0.01	<0.002	0.2	<0.01	0.11
BH6	4/27/2022	5.8	19,100			13,600	69		0.2	0.2		<0.01	<0.01	0.2		<0.02
BH6	8/09/2022	5.1	2,300	29.8		1,320	<5		0.5	0.3	0.02	0.02	<0.01	0.5		0.03
BH6	4/11/2023	5.67	1,578	44.2		809	13		0.13	0.237	<0.002	<0.002	<0.002	0.13	<0.001	0.029
BH6	8/02/2023	5.68	18,130	107.3		7,660	24		0.04	0.307	<0.020	<0.020	0.004	0.04	0.017	0.013
BH6	22/04/2024	5.59	1,444		52.7	652	208	<2	0.4	0.322	<0.02	<0.02	<0.02	0.4	0.002	0.074
BH6	12/08/2024	5.38	3,509		68.7	1420	303	2	0.31	0.24	<0.02	<0.02	<0.002	0.31	0.001	0.069
BH6	23/04/2025	5.96	1,019		71.4	428	165	2	0.34	0.271	0.022	0.022	<0.002	0.32	0.003	0.041
BH6	6/08/2025		5,296		37.3	1520	100	<2	0.31	0.297	0.005	0.005	<0.002	0.3	0.005	0.032
BH7																
BH7	16/03/2015	6.44	3,500	4.5		1,750	3,500			3.08		0.04	<0.01		<0.01	0.39
BH7	26/08/2015	6.42	13,500	4.8		7,880	35,400			3.5		<0.05	<0.05		<0.1	1.21
BH7	27/04/2016	6.2	2,900			1,800	1,200			3.7		<0.005	<0.05			<0.01
BH7	10/08/2016	6.3	7,100			4,400	4,400			2.8		<0.005	<0.005			<0.01
BH7	27/04/2017	6.58	2,040	6.1		1,040	452		2.7	1.86		0.04	<0.01	2.7	<0.01	0.06
BH7	21/08/2017	6.53	8,910	5.5		5,470	34,000		5.9	2.95	0.04	<0.01	0.04	5.9	<0.01	0.71
BH7	10/04/2018	6.4	1,600	7.9		1,000	370		3.8	2.9	<0.05	<0.02	<0.02	3.8	<0.05	0.07
BH7	8/08/2018	6.6	11,000	9.1		7,600	580		4.6	3.4	0.05	0.05	<0.02	4.6	<0.05	0.47
BH7	3/04/2019	6.7	1,450	6.2		813	165		2.5	1.8	0.03	0.03	<0.01	2.5	<0.01	0.04
BH7	13/08/2019	6.3	9,060	7.6		5,400	2,340		2.7	2.8	<0.01	<0.01	<0.01	2.7	<0.01	0.08
BH7	8/04/2020	6.3	1,470	5.1		793	194		3.0	1.44	0.02	0.02	<0.01	3.0	<0.01	0.08
BH7	6/08/2020	6.4	5,230	7.5		3,240	3,520		2.8	1.9	0.01	0.00	0.008	2.8	0.007	0.01
BH7	6/04/2021	6.3	1,080	4.2		607	65		1.98	1.26	<0.01	<0.01	0.02	1.98	0.002	0.02
BH7	11/08/2021	6.2	6,040	8.0		3,410	256		2.4	2.1	<0.01	<0.01	0.02	2.4	<0.01	0.07
BH7	4/27/2022	7.51	1,000			636	161		2	1.12		<0.01	<0.01	2		0.01
BH7	8/09/2022	6.1	1,750	12		937	170		2.3	<0.01	0.02	0.02	<0.01	2.3		0.05
BH7	4/11/2023	6.41	928	48.3		518	37		0.69	1.47	0.031	0.031	<0.002	0.69	<0.001	0.037
BH7	8/09/2023	6.29	5,276	96.7		3,070	176		0.71	2.09	<0.20	<0.020	<0.002	0.71	0.003	0.092
BH7*	4/11/2023						45		-	2.07	0.005	0.005	<0.002	-	<0.001	-
BH7*	4/11/2023								0.78	1.71	0.008	0.008	<0.002	0.78	<0.001	0.024
BH7*	22/04/2024	6.3	993		72.4	440	856	8	1.92	1.82	<0.02	<0.02	<0.02	1.92	<0.001	0.226
BH7*	13/08/2024	6.41	3,093		48.7	2750	1500	<2	1.42	1.34	<0.002	<0.002	<0.002	1.42	0.002	0.038
BH7*	22/04/2025	6.45	1,803		70.8	736	102	3	2.48	2.76	0.057	0.057	<0.002	2.42	0.002	0.591
BH7*	6/08/2025		11		61.5	3,710	1,800	3	2.42	2.13	0.15	0.15	<0.002	2.27	0.022	0.075



GROUNDWATER

		MAJOR IONS											DISSOLVED METALS													
Sample	Date Sampled	Calcium - Dissolved	Potassium Dissolved	Magnesium Dissolved	Sodium - Dissolved	Bicarbonat e HCO3 as CaCO3	Carbonate CO32- as CaCO3	Hydroxide OH- as CaCO3	Total Alkalinity as CaCO3	Chloride	Sulphate	Fluoride	Aluminium- Dissolved	Arsenic- Dissolved	Cadmium- Dissolved	Chromium- Dissolved	Dissolved CrIII	Dissolved CrVI	Copper- Dissolved	Iron- Dissolved	Lead- Dissolved	Manganese- Dissolved	Mercury- Dissolved	Nickel- Dissolved	Zinc- Dissolved	Silver- Dissolved
Biannual Testing Frequency		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR		1	1	1	1	1	1	1	1	1	1	0.1	0.01	0.001	0.0001	0.001	0.001	0.001	0.01	0.01	0.001	0.01	0.0001	0.001	0.001	0.001
BH1																										
BH1	16/03/2015	27	8	40	286	5	<1	<1	5	615	113	<0.1	0.02	<0.001	<0.0001	<0.001	<0.01	<0.01	<0.001	<0.05	<0.001	1.69	<0.0001	0.01	0.047	
BH1	25/08/2015	865	360	2,300	16,700	32	<1	<1	32	24,200	4,140	0.3	0.44	<0.01	0.0032	<0.01	<0.01	<0.01	0.013	0.15	<0.01	15.3	<0.0001	0.276	1.47	
BH1	27/04/2016	170	60	400	3,000	10	<5	<5	10	4,800	590	1.3	0.05	0.002	0.0006	<0.001	<0.005	<0.005	0.002	1.1	<0.001	5.6	<0.00005	0.06	1.6	
BH1	10/08/2016	770	310	2,000	15,000	9	<5	<5	9	28,000	3,400	<5	1.6	0.006	0.0035	<0.002	<0.005	<0.1	0.047	0.44	0.014	18	<0.00005	0.29	1.9	
BH1	27/04/2017	46	18	98	759	3	<1	<1	3	1,350	247	<0.1	0.25	0.001	0.0006	<0.001	<0.01	<0.01	0.005	1.02	<0.001	5.57	<0.0001	0.052	0.316	
BH1	22/08/2017	1,100	442	2,940	20,800	2	<1	<1	2	34,400	4,340	0.1	1.46	<0.010	0.0029	<0.010	<0.001	<0.01	0.059	<0.10	<0.010	11.4	<0.0001	0.211	1.28	
BH1	11/04/2018	63	23	130	1,000	<20	<10	<20	<20	1,500	260	<0.5	0.11	0.001	<0.0002	<0.001	<0.001	<0.001	0.003	1	<0.001	4.4	<0.0001	0.021	0.088	
BH1	9/08/2018	910	430	2,300	19,000	<20	<10	<20	<20	27,000	3,300	720		<0.01	0.0026	<0.01	<0.01	<0.001	0.076	1	<0.01	15.0	<0.001	0.270	1.600	
BH1	2/04/2019	89	32	190	1,430	<1	<1	<1	<1	3,020	304	<0.1		<0.001	0.0004	<0.001	<0.01	<0.01	0.008	<0.05	<0.001	3.9	<0.0001	0.035	0.172	<0.001
BH1	14/08/2019	898	357	2,220	16,400	2	<1	<1	2	29,400	4,100	0.2		<0.01	0.0031	<0.01	<0.01	<0.01	0.082	1	<0.01	15.0	<0.0001	0.289	1.630	<0.01
BH1	8/04/2020	220	75	555	3,790	<1	<1	<1	<1	5,620	733	<0.1	0.84	0.004	0.0008	0.001	<0.10	0.014	<0.10	0.2	0.001	4.71	<0.0001	0.074	0.386	0.001
BH1	5/08/2020	612	233	1,550	11,200	6	<1	<1	6	18,100	3,050	0.4	2.07	0.0045	0.0031	0.0008	<0.01	<0.001	0.089	2.32	0.0028	16.3	<0.00004	0.346	1.530	0.0026
BH1	7/04/2021	25	14	42	302	7	<1	<1	7	567	113	<0.1	0.026	<0.0002	0.00006	0.0032	0.002	<0.001	0.005	0.10	0.0002	1.7	<0.00004	0.008	0.040	<0.0001
BH1	10/08/2021	721	237	1,630	12,000	<1	<1	<1	<1	21,700	3,080	0.1	1.56	0.0049	0.0024	<0.0005	<0.010	<0.010	0.071	0.41	0.0021	13.0	<0.00004	0.227	1.050	0.0012
BH1	4/27/2022	211	57	447	2,890	8			8	6,600	868	0.1	0.52	0.001	0.0007	0.002			0.032	0.75		3.9		0.074	0.358	
BH1	8/09/2022	297	104																							
BH1	4/12/2023	87	27	202	1400	2	<1	<1	2	2,950	390	<0.1	0.529	0.0015	0.00065	0.0006			0.0158	0.22	0.0011	4.18	<0.00004	0.0644	0.333	0.003
BH1	8/02/2024	470	181	1,270	8650	2	<1	<1	2	14,000	1850	0.2	1.48	0.0031	0.0017	0.0008			0.052	0.368	0.0024	9.11	<0.00004	0.158	0.892	0.0011
BH1	30/04/2024	108	38	222	1630	4	<1	<1	4	3,000	377	0.1	0.257	0.0006	0.00036	<0.001	<0.0001	<0.0001	0.0099	0.034	0.0023	2.36	<0.00004	0.0364	0.182	0.0002
BH1	13/08/2024	744	285	1,890	13600	5	5	<1	5	26,200	2980	0.1	2.18	0.0052	0.0027	<0.01	<0.010	<0.01	0.064	0.888	0.0017	14.8	<0.0001	0.263	1.36	0.0015
BH1	22/04/2025	21	4	30	206	7	<1	<1	7	420	79	<0.1	0.026	<0.0002	0.00008	<0.0002	<0.01	<0.01	0.0007	0.039	0.0003	1.1	<0.000005	0.0089	0.041	<0.0001
BH1	6/08/2025	606	222	1,480	10500	<1	<1	<1	<1	19,900	2510	0.2	1.42	0.003	0.0018	<0.0005	<0.01	<0.01	0.037	0.878	0.0012	10.1	<0.0001	0.164	0.885	0.0009
BH2																										
BH2	18/03/2015	1,310	653	2,350	18,200	645	<1	<1	645	32,500	4,230	0.2	<0.1	0.032	<0.001	<0.01	<0.01	<0.01	<0.01	1.66	<0.01	5.72	<0.0001	<0.01	<0.05	
BH2	26/08/2015	776	472	1,500	14,300	629	<1	<1	629	21,800	1,750	0.5	<0.1	0.016	<0.001	<0.01	<0.01	<0.01	<0.01	2.35	<0.01	21.4	<0.0001	<0.01	<0.05	
BH2	27/04/2016	530	250	1,300	13,000	510	<5	<5	510	24,000	120	<5	0.02	0.12	<0.0001	<0.001	<0.005	<0.005	0.003	280	<0.001	95	<0.00005	0.018	1.9	
BH2	10/08/2016	980	510	2,000	17,000	800	<5	<5	800	30,000	2,600	<5	<0.02	0.05	<0.0002	<0.002	<0.005	<0.1	<0.002	20	<0.002	27	<0.00005	0.006	0.03	
BH2	26/04/2017	660	326	1,280	11,100	376	<1	<1	376	18,800	2,100	0.3	<0.10	<0.010	<0.0010	<0.010	<0.01	<0.01	<0.010	<0.10	<0.010	97.3	<0.0001	0.034	0.058	
BH2	22/08/2017	858	468	1,830	14,900	571	<1	<1	571	23,800	2,400	0.5	<0.10	<0.010	<0.0010	<0.010	<0.001	<0.01	<0.010	<0.10	<0.010	36.4	<0.0001	0.017	<0.050	
BH2	11/04/2018	780	440	1,600	15,000	500	<10	<20	500	16,000	2,400	<0.5	3.2	0.032	<0.0002	<0.001	<0.001	<0.001	0.010	1.5	0.006	22	<0.0001	0.008	0.035	
BH2	8/08/2018	0	890	560	1,700	14000	590	<10	<20	590	24,000	2,700		<0.01	<0.002	<0.01	<0.01	<0.001	<0.01	<0.5	<0.01	42.0	<0.001	0.017	<0.05	
BH2	2/04/2019	754	441	1,610	13,300	580	<1	<1	580	25,000	2,320	0.5		<0.01	<0.001	<0.01	<0.01	<0.01	0.025	<0.1	<0.01	31.7	<0.0001	0.025	<0.05	<0.01
BH2	13/08/2019	556	358	1,380	12,400	432	<1	<1	432	17,700	1,290	0.5		<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	3	<0.01	39.5	<0.0001	0.016	<0.05	<0.01
BH2	7/04/2020	844	477	1,890	15,200	701	<1	<1	701	24,200	3,280	0.6	3.78	0.126	<0.0010	<0.010	<0.01	0.111	<0.01	45.7	0.032	35.0	<0.0001	0.018	<0.050	<0.010
BH2	6/08/2020	494	347	1,250	11,600	455	<1	<1	455	18,400	1,140	0.9	0.006	0.0116	<0.0002	<0.0005	<0.01	<0.001	<0.001	0.2	0.0008	29.50	<0.00004	0.007	<0.005	0.000
BH2	7/																									

Sample	Date Sampled	MAJOR IONS											DISSOLVED METALS													
		Calcium - Dissolved	Potassium - Dissolved	Magnesium - Dissolved	Sodium - Dissolved	Bicarbonate HCO3 as CaCO3	Carbonate CO32- as CaCO3	Hydroxide OH- as CaCO3	Total Alkalinity as CaCO3	Chloride	Sulphate	Fluoride	Aluminium- Dissolved	Arsenic- Dissolved	Cadmium- Dissolved	Chromium- Dissolved	Dissolved CrIII	Dissolved CrVI	Copper- Dissolved	Iron- Dissolved	Lead- Dissolved	Manganese- Dissolved	Mercury- Dissolved	Nickel- Dissolved	Zinc- Dissolved	Silver- Dissolved
Biannual Testing Frequency		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR		1	1	1	1	1	1	1	1	1	1	0.1	0.01	0.001	0.0001	0.001	0.001	0.001	0.01	0.01	0.001	0.01	0.0001	0.001	0.001	0.001
BH3																										
BH3	18/03/2015	20	<1	3	40	9	<1	<1	9	81	12	0.1	0.08	0.001	<0.0001	<0.001	<0.01	<0.01	0.003	1.98	<0.001	0.129	<0.0001	0.011	0.034	
BH3	25/08/2015	16	<1	4	62	<1	<1	<1	<1	112	15	<0.1	0.5	0.002	<0.0001	<0.001	<0.01	<0.01	0.003	12.1	0.001	0.134	<0.0001	0.022	0.082	
BH3	27/04/2016	30	7	71	380	<5	<5	<5	<5	52	9	0.2	0.61	<0.001	0.0002	<0.001	<0.005	<0.005	0.009	0.52	0.001	0.39	<0.00005	0.008	0.51	
BH3	10/08/2016	6	3	4	36	11	<5	<5	11	79	10	<0.1	0.51	0.016	<0.0001	<0.001	<0.005	<0.005	0.01	5.3	0.001	0.15	<0.00005	0.007	0.033	
BH3	26/04/2017	6	3	3	7	25	<1	<1	25	8	5	0.1	0.2	0.002	<0.0001	<0.001	<0.01	<0.01	0.004	0.26	<0.001	0.065	<0.0001	0.001	<0.005	
BH3	22/08/2017	4	4	2	13	10	<1	<1	10	23	14	<0.1	0.03	0.014	<0.0001	<0.001	<0.001	<0.01	<0.001	<0.05	<0.001	0.05	<0.0001	<0.001	<0.005	
BH3	11/04/2018	9	3	4	9	31	<10	<20	31	37	14	<0.5	0.09	0.010	<0.0002	<0.001	<0.001	<0.001	0.008	0.79	0.005	0.17	<0.0001	<0.001	<0.005	
BH3	8/08/2018	13	8	6	36	<20	<10	<20	<20	27	8	<0.5		0.032	<0.0002	<0.001	<0.001	<0.001	0.002	<0.05	<0.001	0.2	<0.0001	<0.001	0.007	
BH3	2/04/2019	5	4	3	9	12	<1	<1	12	26	3	<0.1		0.003	<0.0001	<0.001	<0.01	<0.01	0.004	0	<0.001	0.1	<0.0001	0.001	<0.005	<0.001
BH3	13/08/2019	6	4	4	26	46	<1	<1	46	47	6	0.2		0.008	<0.0001	<0.001	<0.01	<0.01	0.001	9	<0.001	0.2	<0.0001	0.004	<0.005	<0.001
BH3	7/04/2020	7	5	4	16	28	<1	<1	28	27	12	0.1	0.08	0.006	<0.0001	<0.001	<0.01	0.006	<0.01	0.2	<0.001	0.068	<0.0001	<0.001	0.007	<0.001
BH3	6/08/2020	7	4	4	17	35	<1	<1	35	29	10	<0.1	<0.005	0.0517	<0.00005	<0.0002	<0.001	<0.001	0.0008	0.9	<0.0001	0.12	<0.00004	0.002	0.009	<0.0001
BH3	7/04/2021	5	7	3	7	24	<1	<1	24	13	10	<0.1	0.072	0.0073	<0.00005	0.0003	<0.001	<0.001	0.0023	0.7	0.0008	0.12	<0.00004	0.001	0.007	<0.0001
BH3	10/08/2021	10	7	6	15	46	<1	<1	46	20	7	0.1	<0.005	0.0186	<0.00005	<0.0002	<0.010	<0.010	0.0006	0.1	<0.0001	0.19	<0.00004	<0.0005	0.002	<0.0001
BH3	4/26/2022	11	5	6	9	42			42	18	2	<0.1	0.04	0.037	<0.001	<0.001			<0.001	7.81	1	0.253		0.004	<0.005	
BH3	8/09/2022	5	0																							
BH3	4/12/2023	7	6	4	7	34	<1	<1	34	9	7	0.1	0.032	0.0218	<0.00005	0.00005			0.006	4.14	0.0002	0.291	<0.00004	0.0014	0.002	<0.0001
BH3	8/01/2023	8	6	5	10	45	<1	<1	45	28	4	0.1	0.029	0.0415	<0.00005	0.0007			<0.0005	10.1	0.0001	0.28	<0.00004	0.0014	0.002	<0.0001
BH3*	8/01/2023	8	6	5	9	48	<1	<1	48	16		<0.1	0.012	0.018	<0.00005	0.0004			<0.0005	4.36	<0.0001	0.287	<0.00004	0.0011	0.001	<0.0001
BH3*	8/01/2023	10	6	5	10	47	<1	<1	47	17		<0.1	0.012	0.397	<0.00005	0.0005			<0.0005	9.12	<0.0001	0.285	<0.00004	0.0013	0.001	<0.0001
BH3*	23/04/2024	7	2	4	11	34	<1	<1	34	11	2	0.2	0.021	0.035.8	<0.00005	<0.001	<0.0001	<0.0001	<0.0005	4.53	0.002	0.218	<0.00005	<0.0005	<0.001	<0.0001
BH3*	13/08/2024	4	6	2	6	28	<1	<1	28	4	4	<0.1	0.0012	0.0394	<0.00005	<0.001	<0.01	<0.01	<0.0005	5.54	0.0001	0.185	<0.0001	<0.0005	0.009	<0.0001
BH3*	22/04/2025	9	6	3	19	60	<1	<1	60	18	6	<0.1	0.105	0.0303	<0.00005	<0.001	<0.01	<0.01	0.0013	4.59	0.0007	0.183	<0.000005	0.0007	0.007	<0.0001
BH3*	5/08/2025	7	6	3	17	59	<1	<1	59	23	3	<0.1	<0.005	0.0369	<0.0002	<0.0005	<0.01	<0.01	<0.001	4.08	<0.0002	0.18	<0.000005	<0.0005	<0.005	<0.0001
BH4																										
BH4	18/03/2015	30	4	9	56	43	<1	<1	43	132	43	<0.1	0.04	0.007	<0.0001	<0.001	<0.01	<0.01	<0.001	0.45	<0.001	0.194	<0.0001	<0.001	0.012	
BH4	25/08/2015	30	4	9	64	52	<1	<1	52	105	47	<0.1	0.06	0.015	<0.0001	<0.001	<0.01	<0.01	0.001	1.04	<0.001	0.247	<0.0001	0.002	0.006	
BH4	27/04/2016	20	4	9	60	18	<5	<5	18	110	34	0.1	0.03	0.008	<0.0001	<0.001	<0.005	<0.005	<0.001	1.2	<0.001	0.27	<0.00005	0.002	0.22	
BH4	10/08/2016	11	5	11	59	6	<5	<5	6	120	41	<0.1	0.08	0.01	<0.0001	<0.001	<0.005	<0.005	0.001	1.2	<0.001	0.31	<0.00005	0.002	0.01	
BH4	26/04/2017	7	4	10	56	<1	<1	<1	<1	110	30	<0.1	0.47	0.001	<0.0001	<0.001	<0.01	<0.01	<0.001	<0.05	<0.001	0.223	<0.0001	0.002	0.015	
BH4	21/08/2017	11	4	13	76	<1	<1	<1	<1	103	40	<0.1	0.38	0.002	<0.0001	<0.001	<									



Sample		Date Sampled	MAJOR IONS										DISSOLVED METALS													
			Calcium - Dissolved	Potassium - Dissolved	Magnesium - Dissolved	Sodium - Dissolved	Bicarbonate HCO3- as CaCO3	Carbonate CO32- as CaCO3	Hydroxide OH- as CaCO3	Total Alkalinity as CaCO3	Chloride	Sulphate	Fluoride	Aluminium- Dissolved	Arsenic- Dissolved	Cadmium- Dissolved	Chromium- Dissolved	Dissolved CrIII	Dissolved CrVI	Copper- Dissolved	Iron- Dissolved	Lead- Dissolved	Manganese- Dissolved	Mercury- Dissolved	Nickel- Dissolved	Zinc- Dissolved
Biannual Testing Frequency LOR		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		1	1	1	1	1	1	1	1	1	1	0.1	0.01	0.001	0.0001	0.001	0.001	0.001	0.01	0.01	0.001	0.01	0.0001	0.001	0.001	0.001
BH6																										
BH6	18/03/2015	20	9	42	339	33	<1	<1	33	561	188	<0.1	0.01	0.002	<0.0001	<0.001	<0.01	<0.01'	<0.001	15	<0.001	7.38	<0.0001	0.004	0.019	
BH6	25/08/2015	230	54	550	3,410	44	<1	<1	44	5,220	951	0.2	<0.01	0.004	0.0011	<0.001	<0.01	<0.01'	0.001	3.4	0.002	3.09	<0.0001	0.008	0.021	
BH6	27/04/2016	480	100	1,200	7,100	52	<5	<5	52	14,000	1,700	<2	0.01	0.003	0.0012	<0.001	<0.005	<0.05	0.002	1.2	0.004	4.4	<0.00005	0.009	2.1	
BH6	10/08/2016	85	38	250	1,900	12	<5	<5	12	3,500	550	<1	0.08	0.003	0.0011	<0.001	<0.005	<0.005	0.005	8.9	0.003	5	<0.00005	0.017	0.039	
BH6	27/04/2017	13	8	30	206	23	<1	<1	23	390	158	<0.1	<0.01	<0.001	<0.0001	<0.001	<0.01	<0.01	<0.001	14.9	<0.001	10.2	<0.0001	0.004	0.008	
BH6	21/08/2017	61	29	166	1,320	5	<1	<1	5	2,450	419	<0.1	0.03	0.002	0.0007	<0.001	<0.001	<0.01	0.003	9.97	<0.001	4.7	<0.0001	0.013	0.027	
BH6	10/04/2018	49	21	120	890	21	<10	<20	21	1,200	250	<0.5	0.13	0.001	<0.0002	<0.001	<0.001	<0.001	0.003	10.0	<0.001	7.5	<0.0001	0.006	<0.005	
BH6	8/08/2018	140	46	370	2,400	< 20	<10	<20	<20	1,700	310	<0.5		<0.001	0.0003	<0.001	<0.001	<0.001	0.002	14	<0.001	7.2	<0.0001	0.012	0.028	
BH6	3/04/2019	8	6	20	148	20	<1	<1	20	279	128	<0.1		<0.001	<0.0001	<0.001	<0.01	<0.01	<0.001	6	<0.001	6.9	<0.0001	0.003	<0.001	0.006
BH6	14/08/2019	27	15	70	578	11	<1	<1	11	1,780	364	<0.1		<0.001	0.0001	<0.001	<0.01	<0.01	0.001	14	<0.001	6	<0.0001	0.008	0.016	<0.001
BH6	7/04/2020	10	6	22	159	26	<1	<1	26	253	146	<0.1	0.06	0.001	<0.0001	<0.001	<0.01	0.002	<0.01	10.6	<0.001	7.14	<0.0001	0.003	0.007	<0.001
BH6	5/08/2020	28	16	78	622	12	<1	<1	12	885	222	<0.1	0.016	0.0013	0.00022	<0.0002	<0.01	<0.01	0.0049	7.7	0.0007	3.72	<0.00004	0.008	0.038	<0.0001
BH6	6/04/2021	11	7	22	143	14	<1	<1	14	276	121	<0.1	0.013	0.00005	0.00005	0.002	0.002	<0.001	<0.0005	4.8	0.0003	10.20	<0.00004	0.004	0.010	<0.0001
BH6	11/08/2021	23	14	57	479	17	<1	<1	17	688	195	<0.1	0.012	0.0014	0.00012	<0.0002	<0.0010	<0.0010	0.001	8.0	0.0003	4.18	<0.00004	0.007	0.014	<0.0001
BH6	4/27/2022	237	47	518	2,920	10			10	6,290	877	<0.1	0.05	0.006	0.0006	<0.001			0.011	3.61	0.002	2.69		0.015	0.028	
BH6	8/09/2022	18	12																							
BH6	4/11/2023	12	6	25	192	13	<1	<1	13	375	125	<0.1	<0.005	0.0012	0.00006	<0.0002			0.0007	5.87	<0.0001	8.32	<0.00004	0.0054	0.009	<0.001
BH6	8/02/2023	161	45	431	2390	16	<1	<1	16	3950	560	<0.1	0.012	0.0042	0.00076	<0.0002			0.005	6.36	0.0004	4.27	<0.00004	0.0106	0.019	0.0001
BH6	22/04/2024	12	7	27	180	11	<1	<1	11	289	119	<0.1	<0.005	0.0012	0.00036	<0.00001	<0.0001	<0.0001	0.0009	5.79	0.0003	7.81	<0.00004	0.0037	0.009	<0.0001
BH6	12/08/2024	29	16	70	547	8	<1	<1	8	642	175	<0.1	0.002	0.0008	0.00022	<0.00001	<0.0001	<0.0001	0.002	7.14	0.0005	5.46	<0.00005	0.009	0.026	<0.0001
BH6	23/04/2025	9	4	15	108	11	<1	<1	11	175	125	<0.1	0.009	0.001	0.0001	<0.0002	<0.01	<0.01	<0.0005	4.34	0.0003	7.96	<0.000005	0.0025	0.012	<0.0001
BH6	6/08/2025	21	11	51	390	8	<1	<1	8	780	206	<0.1	0.014	0.001	0.00013	<0.0002	<0.01	<0.01	0.0022	8.64	0.0003	6.41	<0.0001	0.0073	0.016	<0.0001
BH7																										
BH7	16/03/2015	28	23	76	516	69	<1	<1	69	936	267	0.3	<0.01	0.001	<0.0001	<0.001	<0.01	<0.01'	<0.001	65.9	<0.001	68.7	<0.0001	0.004	0.008	
BH7	26/08/2015	84	88	210	1,870	58	<1	<1	58	3,590	803	0.2	0.02	0.007	0.0003	<0.001	<0.01	<0.01*	0.002	36.3	<0.001	76.3	<0.0001	0.011	0.024	
BH7	27/04/2016	24	22	66	420	89	<5	<5	89	770	250	0.2	<0.01	0.005	<0.0001	<0.001	<0.005	<0.005	<0.001	69	<0.001	58	<0.00005	0.006	0.79	
BH7	10/08/2016	47	51	140	1,300	84	<5	<5	84	2,000	420	<0.5	0.01	0.009	<0.0001	<0.001	<0.005	<0.005	<0.001	47	<0.001	65	<0.00005	0.007	0.013	
BH7	27/04/2017	16	14	41	247	74	<1	<1	74	485	224	0.2	<0.01	<0.001	<0.0001	<0.001	<0.01	<0.01	<0.001	16.8	<0.001	39.2	<0.0001	0.002	<0.005	
BH7	21/08/2017	67	65	197	1,670	50	<1	<1	50	2,580	462	0.2	<0.01	0.002	0.0002	<0.001	<0.001	<0.01	<0.001	9.97	<0.001	57.9	<0.0001	0.006	0.014	
BH7	10/04/2018	15	14	37	250	57	<10	<20	57	300	180	<0.5	< 0.05	<0.001	<0.0002	<0.001	<0.001	<0.001	0.003	17	< 0.001	39	<0.0001	0.002	<0.005	
BH7	8/08/2018	47	49	130	1,100	42	<10	<20	42	2,700	570	<0.5		<0.001	<0.0002	<0.001	<0.001	<0.001	<0.001	7.9	< 0.001	62	<0.0001	0.007	0.010	
BH7	3/04/2019	12	12	29	166	43	<1	<1	43	337	183	0.3		<0.001	<0.0001	<0.001	<0.01	<0.01	<0.001	5.8	<0.001	32	<0.0001	0.002	<0.001	<0.005
BH7	13/08/2019	71	66	193	1,620	31	<1	<1	31	2,930	520	0.3		0.001	0.0002	<0.001	<0.01	<0.01	<0.001	6.1	<0.001	50	<0.0001	0.010	0.010	<0.001
BH7	8/04/2020	12	12	29	170	87	<1	<1	87	327	176	0.2	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.01	12.2	<0.001	29.8	<0.0001	0.002	<0.005	<0.001
BH7	6/08/2020	36	36	99	805	69	<1	<1	69	1,470	114	0.3	<0.005	0.0057	<0.00005	<0.0002	<0.01	<0.01	<0.0005	19.3	<0.0001	36.10	<0.00004	0.005		

GROUNDWATER

		ORGANICS																				MICROBIOLOGICAL	
Sample	Date Sampled	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-xylene	Total Xylene	Total BTEX	Naphthalene	TRH C6 - C9	TRH C10 - C14	TRH C15 - C28	TRH C29 - C36	C10 - C36 Fraction (sum)	TRH C6 - C10	TRH C6- C10 less BTEX (F1)	TRH >C10 - C16	TRH >C10- C16 less N (F2)	TRH >C16 - C34	TRH >C34 - C40	C10 - C40 Fraction (sum)	E. Coli	Enterococci
Biannual Testing Frequency		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/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	cfu/100 ml	org/100ml
LOR		1	1	1	2	1	2	1	5	20	50	100	50	50	20	20	50	50	100	100	100	2	2
BH1																							
BH1	16/03/2015	<1	<2	<2	<2	<2			<5	<20	<50	<100	<50		<20	<20	<100	<100	<100	<100			
BH1	25/08/2015	<1	<2	<2	<2	<2			<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100			
BH1	27/04/2016	<1	<1	<1	<2	<1			<1	<10	<50	<100	<100	<250	<10	<10	<50	<50	<100	<100			
BH1	10/08/2016	<1	<1	<1	<2	<1			<1	<10	<50	<100	<100	<250	<10	<10	<50	<50	<100	<100			
BH1	27/04/2017																						
BH1	22/08/2017																						
BH1	11/04/2018	<1	<1	<1	<2	<1			<10	<20	<50	<100	<100	<100	<20	<20	<50	<50	<100	<100			
BH1	9/08/2018	<1	<1	<1	<2	<1			<10	<20	<50	<100	<100	<100	<20	<20	<50	<50	<100	<100			
BH1	2/04/2019	<1	<2	<2	<2	<2			<5	<20	<50	<100	<100	<100	<20	<20	<50	<50	<100	<100		<2	2
BH1	14/08/2019	<1	<2	<2	<2	<2			<5	<20	<50	<100	<100	<100	<20	<20	<50	<50	<100	<100		<10	<10
BH1	8/04/2020	<1	<2	<2	<2	<2	<2	<1	<5	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<2	<2
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		ORGANICS																				MICROBIOLOGICAL	
Sample	Date Sampled	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-xylene	Total Xylene	Total BTEX	Naphthalene	TRH C6 - C9	TRH C10 - C14	TRH C15 - C28	TRH C29 - C36	C10 - C36 Fraction (sum)	TRH C6 - C10	TRH C6- C10 less BTEX (F1)	TRH >C10 - C16	TRH >C10- C16 less N (F2)	TRH >C16 - C34	TRH >C34 - C40	C10 - C40 Fraction (sum)	E. Coli	Enterococci
Biannual Testing Frequency		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	cfu/100 ml	org/100ml
LOR		1	1	1	2	1	2	1	5	20	50	100	50	50	20	20	50	50	100	100	100	2	2
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		ORGANICS																				MICROBIOLOGICAL	
Sample	Date Sampled	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-xylene	Total Xylene	Total BTEX	Naphthalene	TRH C6 - C9	TRH C10 - C14	TRH C15 - C28	TRH C29 - C36	C10 - C36 Fraction (sum)	TRH C6 - C10	TRH C6- C10 less BTEX (F1)	TRH >C10 - C16	TRH >C10- C16 less N (F2)	TRH >C16 - C34	TRH >C34 - C40	C10 - C40 Fraction (sum)	E. Coli	Enterococci
Biannual Testing Frequency		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/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	cfu/100 ml	org/100ml
LOR		1	1	1	2	1	2	1	5	20	50	100	50	50	20	20	50	50	100	100	100	2	2
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