



EPL228 Annual Environmental Monitoring Report 2025-2026

Report

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Abbreviation and definitions

Abbreviation	Description
µg/L	microgram per litre
µm	micrometre
µs/cm	microsiemens per centimetre
AEMR	annual environmental monitoring report
AGI	acid gas incinerator
AGRU	acid gas removal unit
Air Toxics NEPM	National Environment Protection (Air Toxics) Measure
aMDEA	activated methyl diethanolamine
AOC	accidentally oil contaminated
AS	Australian Standard
ASU	artificial settlement unit
BTEX	benzene, toluene, ethylbenzene, xylenes
BTX	benzene, toluene, xylenes
CCPP	combined cycle power plant
CCR	central control room
CFI	calibrated field instrument
CFU	colony-forming unit
cm	centimetre
CO	carbon monoxide
COA	certificate of analysis

Abbreviation	Description
COC	continuously oily contaminated
COD	chemical oxygen demand
DLPE	Department of Lands, Planning and Environment (NT)
DO	dissolved oxygen
EC	electrical conductivity
<i>E. coli</i>	<i>Escherichia coli</i>
EPL228	Environment Protection Licence 228 (as amended)
FRP	filterable reactive phosphorus
GEP	gas export pipeline
H ₂ S	hydrogen sulphide
HM	hinterland margin
HRSG	heat recovery steam generator
Ichthys LNG	collectively, the onshore gas export pipeline and the gas processing plant
INPEX	Ichthys LNG Pty Ltd
km	kilometre
LIMS	laboratory information management system
LNG	liquefied natural gas
LOR	limit of reporting
LPG	liquefied propane gas
m	metre
mm	millimetres
MEG	mono ethylene glycol
mg/kg	milligram per kilogram
ml	millilitres
m ³ /h	cubic metres per hour
MPN	most probable number
MR	Mixed refrigerant
NAGD	National Assessment Guidelines for Dredging
NATA	National Association of Testing Authorities, Australia

Abbreviation	Description
NCW	non-contaminated water
NGERS	National Greenhouse and Energy Reporting Scheme
NO	nitrogen monoxide
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides (as the sum of NO and/or NO ₂)
NPI	National Pollutant Inventory
NSW	New South Wales
NT	Northern Territory
NT DAF	Northern Territory Department of Agriculture and Fisheries
NT EPA	Northern Territory Environment Protection Authority
NTU	nephelometric turbidity unit
O ₂	oxygen
OEMP	Onshore Operations Environmental Management Plan (L060-AH-PLN-60005)
PCS	process control system
pH	measure of acidity or alkalinity
PM	particulate matter
PM _{2.5}	particulate matter with aerodynamic diameter less than 2.5 µm
PM ₁₀	particulate matter with aerodynamic diameter less than 10 µm
ppm	parts per million
ppmv	parts per million by volume
PSD	particle size distribution
QA/QC	quality assurance/quality control
REMP	Receiving Environment Monitoring Program
RPD	relative percentage difference
RSD	Relative standard deviation
SFLA	sample for laboratory analysis
SQGV	sediment quality guideline value
Sm ³ /hr	standard cubic meters per hour (at 15.56°C and 101.3 kPa)
SO ₂	sulphur dioxide

Abbreviation	Description
SWL	standing water level
TC	tidal creek
TDS	total dissolved solids
TF	tidal flat
TKN	total Kjeldahl nitrogen
TN	total nitrogen
TOC	total organic carbon
TP	total phosphorus
TPH	total petroleum hydrocarbons
TRH	total recoverable hydrocarbons
TSS	total suspended solid
USEPA	United States Environmental Protection Authority
VOC	volatile organic compounds
WHRU	waste heat recovery unit
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

Ichthys LNG Pty Ltd (INPEX) was issued Environment Protection Licence 228 (as amended from time to time) on 13 December 2017 (EPL228). Activation of EPL228 occurred on 14 September 2018 triggering several EPL228 monitoring conditions and Onshore Operations Environmental Management Plan (OEMP) monitoring commitments.

Condition 76 of EPL228-05¹ requires an Annual Environmental Monitoring Report (AEMR) to be submitted to the Northern Territory Environment Protection Authority (NT EPA) for each year of the licence, unless otherwise agreed, for scheduled activities conducted during the preceding 12 months (i.e., the reporting period) from 1 July to 30 June. For this AEMR, the reporting period is defined as 1 July 2025 to 30 June 2026. This AEMR has been developed to meet the requirements of Condition 77 of EPL228-05.

Monitoring undertaken during the reporting period found that liquid effluent discharges were typically within EPL228 discharge limits, and these discharges had no discernible impact on Darwin Harbour.

All other terrestrial and marine monitoring programs (e.g. groundwater, mangroves, weeds, etc.) found that monitoring results were consistent with those reported during the previous years' AEMR and construction phase and no changes determined to be attributable to Ichthys LNG operations.

No evidence was identified that monitoring exceedances resulted in adverse effects to beneficial uses and objectives of Darwin Harbour.

The point source emission monitoring reported that all permanent plant and equipment were within EPL228 air emission limits.

¹ EPL228-05 came into effect on 13 December 2022.

1 INTRODUCTION

Ichthys LNG Pty Ltd (hereafter referred to as INPEX) was issued Environment Protection Licence 228 (as amended and hereafter referred to as the EPL228) for the purposes of:

Operating premises for processing hydrocarbons so as to produce, store and/or despatch liquefied natural gas or methanol, where:

- a. the premises are designed to produce more than 500,000 tonnes annually of liquefied natural gas and/or methanol; and*
- b. no lease, licence or permit under the Petroleum Act or the Petroleum (Submerged lands) Act relates to the land on which the premises are situated.*

All the activities in relation to onshore production design capacity of 12.89 million tonnes per annum of hydrocarbons², being up to:

- 9.64 million tonnes of liquefied natural gas per annum from two LNG processing trains;*
- 1.65 million tonnes of liquefied petroleum gas per annum; and*
- 20,000 barrels of condensate per day (1.6 million tonnes of condensate per annum).*

Since the 2024/2025 Annual Environmental Monitoring Report (AEMR; L060-AH-REP-70087), the Ichthys LNG facility has been in steady state operations. The key milestones are shown in Section 1.4.1.

1.1 Purpose

The purpose of the AEMR is to satisfy Condition 76 of EPL228-05 for the Licensed Premises (hereafter Ichthys LNG)³. The reporting period for this AEMR is 1 July 2025 to 30 June 2026.

1.2 AEMR Condition requirements

Table 1-1 provides details of Condition 77 of EPL228-05 as they relate to the AEMR requirements and the relevant section for where the conditions have been addressed within this report.

Table 1-1: Annual environmental monitoring report condition requirements

EPL228 Condition #	Condition detail	Section
77	The Annual Environmental Monitoring Report must:	-
77.1	report on monitoring required under this licence;	This AEMR
77.2	include a tabulation in Microsoft ® Excel ® format, of all monitoring data required to be collected in accordance with this licence;	Provided to the Department of Lands, Planning and Environment (DLPE) separately

² As defined in EPL228-05

³ Condition 76 reads: *The licensee must submit an Annual Environmental Monitoring Report to the NT EPA by 30 September for each year of this licence unless otherwise authorised, for the Scheduled Activity conducted during the preceding 12 month period from 1 July to 30 June.*

EPL228 Condition #	Condition detail	Section
77.3	summarise performance of the authorised discharge to water, compared to the discharge limits specified in Table 3 in Appendix 2;	2.1
77.4	summarise performance of the authorised emissions to air, compared to the emission limits and targets specified in Table 5 in Appendix 3, when the fuel burning or combustion facilities for the Scheduled Activity have operated under normal and maximum operating conditions for the annual period;	3
77.5	summarise operating conditions of each emission source and the resulting air emission quality;	3.2
77.6	provide total emissions to air in tonnes per year for the air quality parameters listed in Table 6 in Appendix 3;	3.1
77.7	assess the contribution of the authorised emissions on the Darwin region ambient air quality during periods not affected by bushfire smoke for Wet and Dry seasons;	3.3 and 3.5
77.8	report on outcomes of the REMP monitoring and assessment;	This AEMR
77.9	summarise measures taken to reduce waste;	6
77.10	consider the NT EPA Guideline for Reporting on Environmental Monitoring;	APPENDIX A
77.11	be reviewed by Qualified Professional(s); and	APPENDIX B
77.12	be provided to the NT EPA with the Qualified Professional(s) written, certified review(s) of the Annual Environmental Monitoring Report.	APPENDIX B

1.3 Program objective

An overview of the environmental monitoring programs, their objectives, and cross-references to sections within the AEMR which provide more detail, are listed in Table 1-2. Monitoring was undertaken in accordance with the Onshore Operations Environmental Management Plan (OEMP) and EPL228 requirements.

Table 1-2: Monitoring program objectives

Program	Objective	Section
Commingled treated effluent (750-SC-003)	To ensure commingled treated effluent does not exceed discharge criteria specified in EPL228.	2.1
Harbour sediment	To detect changes in surficial sediment quality in the vicinity of the Jetty Outfall and determine if changes are attributable to Ichthys LNG operations.	2.2
Point source emissions to air	To determine if air emissions from stationary point sources are within acceptable limits	3.2

Program	Objective	Section
Dark-smoke events	To determine if air emissions from the flare systems are within acceptable limits.	3.4
Air toxic monitoring	To measure benzene, toluene, ethylbenzene and xylene (BTEX) levels during periods when the acid gas incinerators (AGIs) are offline for 90% of more during any 30 day period.	3.5
Groundwater quality	To detect changes in groundwater quality and determine if these changes are attributable to Ichthys LNG operations.	4.1
Nearshore marine pests	To assess the presence/absence of invasive marine pest at the Ichthys LNG product loading jetties, through a coordinated approach with the Northern Territory (NT) Biosecurity Unit.	5.2
Introduced terrestrial fauna	To determine the presence, location and methods used to control nuisance species.	5.3
Weed survey	To identify the abundance and spatial distribution of known and new emergent weed populations, especially in areas susceptible to weed invasion, to inform weed management control activities.	5.4
Weed management	To manage invasive weeds onsite.	5.5
Vegetation rehabilitation monitoring	To determine if vegetation recovery through natural processes has occurred.	5.6
Cultural heritage	To determine if there has been any interference to cultural heritage sites.	5.7

1.4 Site information

1.4.1 Ichthys LNG operational milestones

Table 1-3 provides an overview of the Ichthys LNG key milestones for the reporting period. A general Ichthys LNG site layout is shown in Figure 1-1.

Table 1-3: Ichthys LNG key milestones during the reporting period

Date	Milestones/Activities
August 2025 – October 2025	ILNG maintenance shutdown on both trains
September 2025	Seabed levelling under Condition 69 of EPL228
October 2025	INPEX issued AEMR 2024-2025 (L060-AH-REP-70087) to DLPE with independent qualified professional review completed.
December 2025	- INPEX issued annual reports to DLPE: - Annual Return as per condition 78 of EPL228-05 - Annual Flaring Records as per condition 71 of EPL228-05. - Site Inspection with DLPE Officers, focused on witnessing stationary source annual emissions testing.

Date	Milestones/Activities
February 2026	Site Inspection with DLPE Officers, focused on air emissions and wastewater management.



Figure 1-1: Ichthys LNG layout

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1.4.2 Environmental context

Ichthys LNG is located on Bladin Point, on the northern side of Middle Arm Peninsula in Darwin Harbour (Figure 1-2). Bladin Point is a low-lying peninsula in Darwin Harbour, which is separated from the mainland by a mudflat. Ichthys LNG is approximately 4 km from Palmerston (the nearest residential zone) and approximately 10 km south-east of the Darwin central business district, across Darwin Harbour.

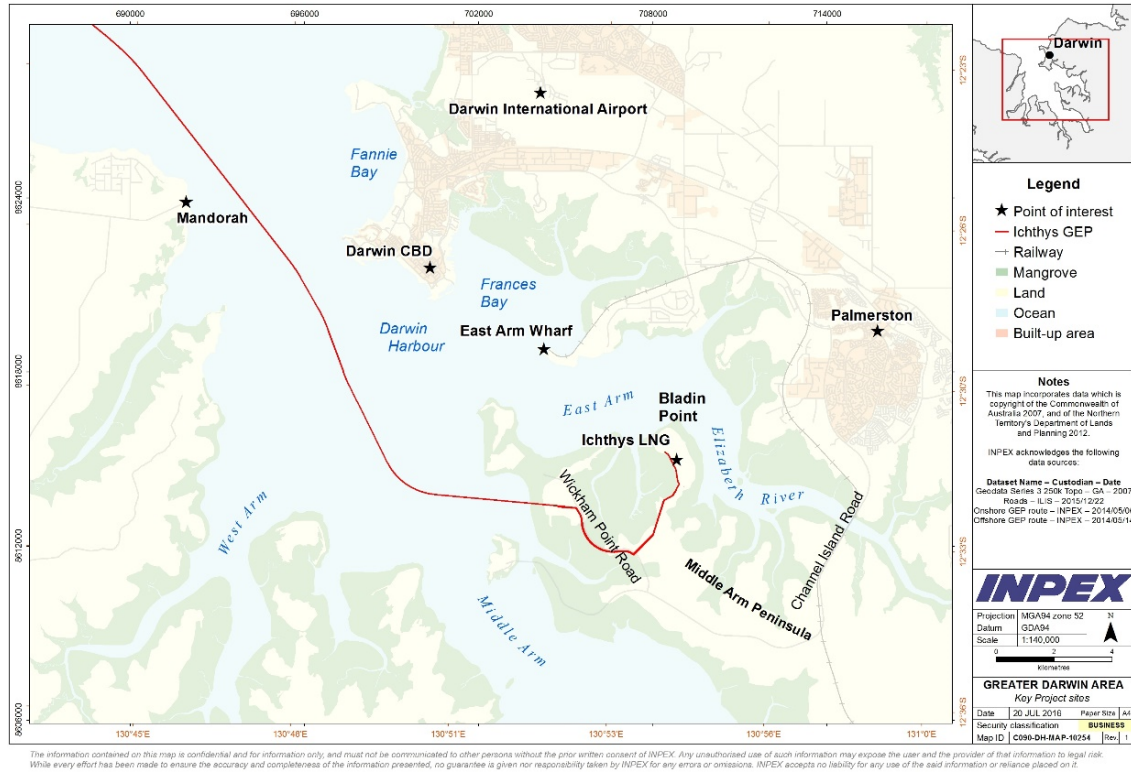
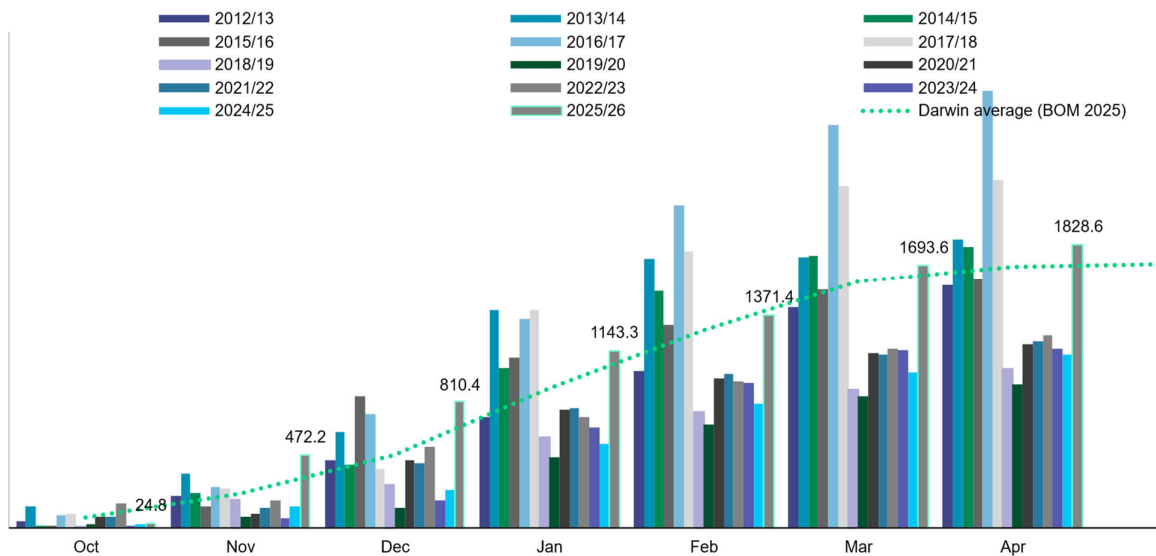


Figure 1-2: Location of Ichthys LNG

Ichthys LNG lies in the monsoonal tropics of northern Australia, which has two distinct seasons: a hot wet season from November to April and a warm dry season from May to October. April and October are transitional months between the wet and dry seasons. Darwin experiences an overall mean annual rainfall of 1736.8 mm (BOM, 2026), the majority of which occurs during the wet season. The 2025/2026 wet season, including transitional months, recorded 1828.6 mm of rainfall at Bladin Point (Table 1-4 and Figure 1-3). This is the highest rainfall recorded at the gauge since 2017/18 wet season.

Table 1-4: Bladin Point wet season and transitional months rainfall (mm)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Darwin average	70.6	141.7	250.8	426.3	374.6	319.0	102.2	1,610.1
2012/2013	36.8	199.8	232.4	282.8	291.2	415.2	141.6	1,599.8
2013/2014	134.8	352	268	780	335	14.4	111	1,995.2
2014/2015	13	226.4	175.4	630	492.2	233.8	54.2	1,825.0
2015/2016	12.6	140.6	709.4	243.2	213.4	231.8	63.8	1,614.8
2016/2017	83.8	265.4	469.8	614.2	736	515.8	220.6	2,905.6
2017/2018	93	249.2	125.4	1,031.6	380.4	423.4	39	2,342.0
2018/2019	2.6	183.8	91.6	311.4	159.6	147.8	125.8	1,022.6
2019/2020	24.0	71.2	51.5	327.2	217.7	179.9	72.9	944.3
2020/2021	69.1	87.8	343.5	333.5	194.7	163.4	55.6	1,247.5
2021/2022	67.9	131.9	282.0	357.0	222.2	121.2	89.6	1,271.7
2022/2023	155.9	177.9	341.3	196.2	228.2	207.8	92.1	1,399.4
2023/2024	9.0	52.0	111.3	476.1	289.5	203.7	11.8	1,153.4
2024/2025	20.8	119.6	99.6	299.1	256.0	205.9	112.2	1,113.2
2025/2026	24.8	447.4	338.2	332.9	228.1	322.1	135.0	1,828.6

**Figure 1-3: Bladin Point cumulative wet season rainfall**

2 DISCHARGES TO WATER

This section describes the outcomes of the commingled treated effluent wastewater monitoring program.

2.1 Commingled treated effluent

The key objective of commingled treated effluent sampling (sampling point 750-SC-003) is to ensure discharge criteria specified in Table 3, Appendix 2 of EPL228 is not exceeded for wastewater discharged from Ichthys LNG.

The monitoring frequency, as specified in Table 3, Appendix 2 of EPL228 was implemented, with sampling occurring monthly (refer to Table 2-1).

Table 2-1: Commingled treated effluent sampling dates

Sample month	Sample collection date(s)
Jul-2025	8
Aug-2025	12
Sep-2025	9
Oct-2025	14, 21
Nov-2025	11
Dec-2025	9
Jan-2026	13
Feb-2026	4, 9
Mar-2026	10
Apr-2026	14
May-2026	12, 20
Jun-2026	9

2.1.1 Method overview

All samples for the monitoring of the comingled effluent were taken from the nominated sampling point 750-SC-003 in accordance with INPEX's sample schedule (L290-A1-LIS-60006). All testing equipment passed quality assurance/quality control (QA/QC) requirements during the 2025-2026 reporting period with all calibration records maintained by INPEX's National Association of Testing Authorities, Australia (NATA) certified onsite laboratory. Records of calibration are referenced on the Discharge Certificate issued by the onsite laboratory for each sample. Applicable calibration records are verified during the NATA statutory audit conducted every 18 months. The comingled treated effluent sampling point (750-SC-003) is located downstream of treated effluent observation basin and upstream of the jetty outfall. Samples collected from 750-SC-003 representing liquid effluent that is discharged to Darwin Harbour via the jetty outfall. The sampling point consists of two valves, an isolation valve, and a sample needle valve, with the latter used to regulate flow for sample collection. Sampling from the comingled treated effluent sample point was conducted by trained laboratory analysts and analysis completed using NATA accredited analysis methods by both the INPEX onshore laboratory and external third-party laboratories, with the exception of free chlorine and dissolved oxygen (% saturation).

The parameters, sampling methods, limit of reporting (LOR) and discharge limits for the comingled treated effluent monitoring program are provided in Table 2-2.

All results are reported through the INPEX onshore laboratory database (laboratory information management system (LIMS)) that produce sample Discharge Certificates inclusive of the laboratory NATA accreditation number. To enable the identification of an exceedance, the discharge limits specified in Table 3, Appendix 2 of EPL228 (refer to Table 2-2) have been entered into the LIMS. Sample results are compared to their respective discharge limits in the Discharge Certificate. If a result exceeds the discharge limit, it is highlighted in the Discharge Certificate, and the onshore laboratory generate an out of specification report. The external laboratory responsible for the micro analysis updated the reporting name for faecal coliforms in May 2024. These are now presented as thermotolerant coliforms as part of NATA accreditation requirements with testing, LOR and discharge limits remaining the same. There are limitations with the use of thermotolerant coliforms as a measure of faecal contamination within this program. This is due to thermotolerant coliforms including types that can grow in the environment and be present in the absence of faecal contamination (NHMRC & NRMMC 2011).

Table 2-2: Comingled treated effluent discharge monitoring, methods, and discharge limits

Parameter	Testing method*	Unit	LOR	Discharge limit
Volumetric flow rate	CFI	m ³ /hr	n/a	180
pH	INPEX Lab	pH Unit	n/a	6.0 - 9.0
Electrical conductivity (EC)	INPEX Lab	µS/cm	10	n/a
Temperature	CFI	°C	-	35°C
Turbidity	INPEX Lab	NTU	0.5	n/a
Dissolved oxygen	CFI	%	-	n/a
TPH as oil and grease	INPEX Lab	mg/L	1.0	6
Total recoverable hydrocarbons (TRH; C10-C40)	External lab	µg/L	100	n/a

Parameter	Testing method*	Unit	LOR	Discharge limit
Total suspended solids (TSS)	INPEX Lab	mg/L	5	10
Biochemical oxygen demand (BOD)	External lab	mg/L	2	20
Chemical oxygen demand (COD)	INPEX Lab	mg O ₂ /L	3	125
Free Chlorine	INPEX Lab	mg/L	0.02	2
Ammonia	INPEX Lab	mg N/L	2	n/a
Total nitrogen (TN)	Calculation	mg N/L	2	10
Total phosphorus (TP)	INPEX Lab	mg P/L	0.5	2
Reactive phosphorus (FRP)	INPEX Lab	mg P/L	0.5	n/a
Cadmium (dissolved)	External lab	µg/L	0.1	n/a
Chromium (dissolved)	External lab	µg/L	1	n/a
Copper (dissolved)	External lab	µg/L	1	n/a
Lead (dissolved)	External lab	µg/L	1	n/a
Mercury (dissolved)	External lab	µg/L	0.1	n/a
Nickel (dissolved)	External lab	µg/L	1	n/a
Silver (dissolved)	External lab	µg/L	1	n/a
Zinc (dissolved)	External lab	µg/L	5	n/a
Enterococci	External lab	cfu/100mL	1	n/a
<i>Escherichia coli</i>	External lab	cfu/100mL	1	100
Faecal coliforms (Thermotolerant coliforms)	External lab	cfu/100mL	1	400
Anionic surfactants	External lab	mg/L	0.1	n/a
Activated methyl diethanolamine (aMDEA)	External lab/INPEX lab	mg/L	0.001 and 5	n/a
Glycol	External lab/INPEX lab	mg/L	2 and 5	n/a

* CFI = calibrated field instrument

2.1.2 Results and discussion

Routine monitoring results

The results for 750-SC-003 sampling during the reporting period are presented in APPENDIX C.

With the exception of the faecal coliform trigger limit that was exceeded on four occasions during the reporting period, which was less than the AEMR 2024-2025 reporting period (Table 2-3), no other water quality parameters exceeded their respective trigger limits as specified in Table 3, Appendix 2 of EPL228.

Table 2-3: Yearly discharge exceedance comparison at 750-SC-003

Reporting Period	Total Number of Exceedances at 750-SC-003
2018-2019	4
2019-2020	4
2020-2021	2
2021-2022	3
2022-2023	10
2023-2024	2
2024-2025	6
2025-2026	4

Following the sampling events in which wastewater quality was above the discharge limit for faecal coliforms, further sampling at 750-SC-003 and other key sources was undertaken to isolate the source. The details of these investigations are discussed in Section 2.1.3. On all occasions, the exceedances were related to the limitations of applying measured, thermotolerant coliform concentrations to the faecal coliform trigger limit. Thermotolerant coliforms are a group that includes types that can grow in the environment and be present in the absence of faecal contamination (NHMRC & NRMCC 2011). This was demonstrated through the investigations by:

- isolating and testing all sources that supply the discharge line (i.e. what is tested at 750-SC-003)
- Low thermotolerant coliform concentrations recorded from the sewage treatment plant
- low numbers of *Escherichia coli* and enterococci concentrations detected in all samples (faecal coliform bacteria in human faeces comprise approximately 97% *E. coli*, 2% *Klebsiella*, and a further 2% *Enterobacter* and *Citrobacter* together (ANZECC 2000)).

Various guideline documents including the Australian Water Quality Guidelines (NHMRC & NRMCC 2011) highlight that thermotolerant coliforms can be used as an indicator of faecal contamination, but they are not as specific as *E. coli*, which is the preferred indicator. *E. coli* concentrations were low during all sampling events and below both EPL228 trigger limits and the Water Quality Objectives for the Darwin Harbour Region (NTG 2010). INPEX has engaged with the DLPE and intend to revise this component of the program in line with recognised guidelines, which is discussed in more detail in Section 2.1.4

Volumetric flow rate was measured in line with the EPL228 requirements and data for the reporting period is shown in Figure 2-1. The data demonstrates that the volumetric flowrate throughout the period remained below the 180 m³/h discharge limit.

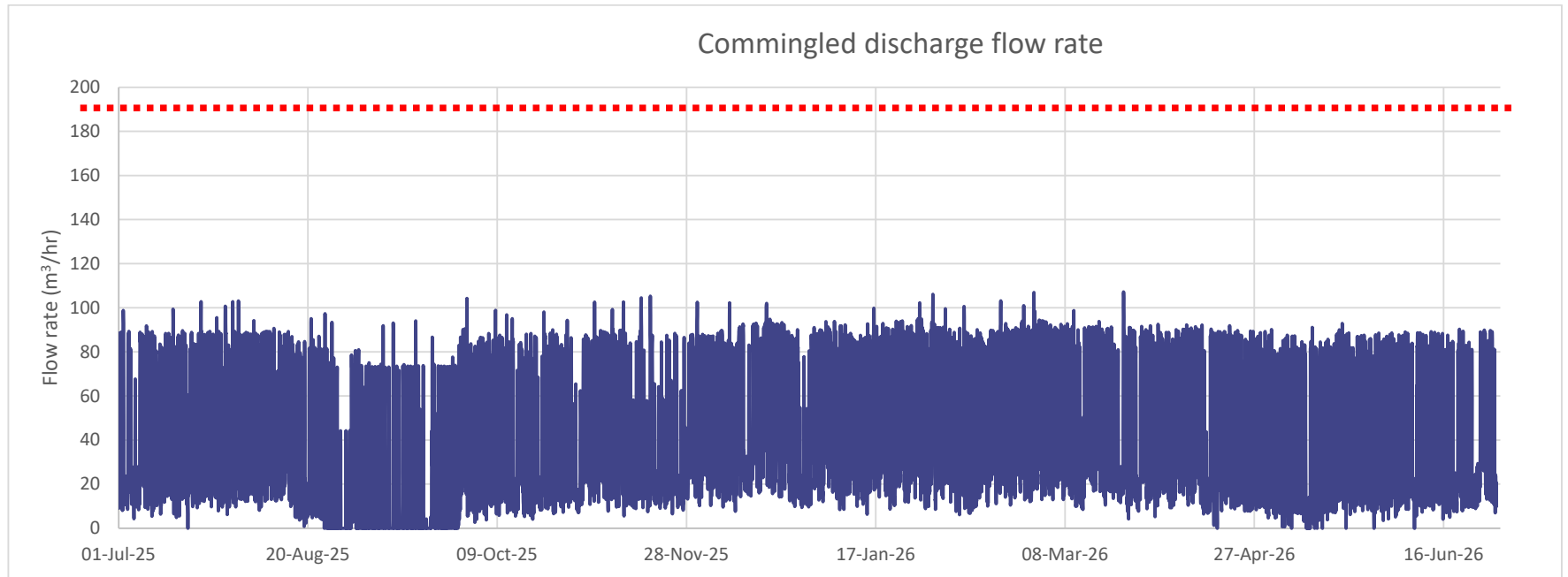


Figure 2-1: Flow rate measured at L-750-FI-0002 flow meter (m³/h)

Quality assurance/quality control

The QA/QC procedures specific to the collection and analysis of samples from sample location 750-SC-003 included:

- NATA accredited analytical laboratories were used for all analysis, or a test method managed under a NATA accredited quality management system
- laboratory designated sample holding times met
- chain of custody forms were completed and accompanied the samples

INPEX laboratory QA/QC procedures were completed as follows:

- laboratory blanks
- replicates/duplicate
- spikes
- calibration against standard reference materials
- INPEX laboratory review of external laboratory QA/QC analysis reports
- annual sampling verification, which involves the collection of two samples and trip blanks
- calibration of all field-testing equipment using the INPEX standard method(s) was undertaken.

2.1.3 Assessment of limit exceedances and investigation outcomes

Throughout the reporting period and displayed on the certificate of analysis (COA), there were four discharge limit exceedances (refer to APPENDIX C). A summary table of all discharge limit exceedances, including contributing factors and corrective actions is provided in Table 2-4.

Table 2-4: Summary of commingled treated effluent sample point exceedance events

Date sampled	Exceedance reported	Parameter	Result	Limit	Contributing factors	Corrective actions
9 September 2025	19 September 2025	Faecal coliforms (measured as thermotolerant coliforms)	1000 CFU/100ml	400 CFU/100ml	Non-routine sampling was undertaken to determine the source of the thermotolerant coliform exceedance within the treated wastewater stream. This non-routine sampling eliminated the WWTP as the source of the exceedance. The Utility Continuously Oily Contaminated (COC) Pit was identified as the primary location of the exceedance, with non-routine sampling returning a thermotolerant coliforms value of 380,000 CFU / 100 mL at 750-SU-054. Whilst there was no obvious single point source identified as the source of the exceedance within the Utility COC Pit (e.g. decaying organic matter such as an animal carcass), the volume of oil and sludge that had accumulated within the Utility COC Pit was considered sufficient to trap a layer of organic matter that could contribute to this exceedance. As the Utility COC Pit is utilised for the collection of wastewater from a variety of sources, specific contributing sources to the volume of oil / sludge have not been identified. Further, as the Utility COC Pit is expected to hold oily water continuously, the presence of oil / sludge within the pit is consistent with its purpose. The volume of oil / sludge was, however, considered to be a contributing factor to this exceedance event. <i>E. coli</i> and <i>Enterococci</i> concentrations were low, and below relevant trigger limits in all samples. Therefore, these results indicate it was likely that the thermotolerant coliform exceedances were not solely originating from a faecal source.	No exceedance was detected during the next routine, monthly monitoring. The action undertaken to mitigate potential environmental harm was limited to engaging a waste contractor to empty the Utility COC Pit to remove any sludge/oil that may be contributing to the exceedance at this sampling location. This occurred on 25 October 2025. The routine monthly monitoring results for November were received following the clean out, with no exceedance of the thermotolerant coliform limit reported.
10 March 2026	18 March 2026	Faecal coliforms (measured as thermotolerant coliforms)	1100 CFU/100ml	400 CFU/100ml	Non-routine sampling was undertaken to determine the source of the thermotolerant coliforms exceedance within the combined jetty outfall stream. This non-routine sampling eliminated the wastewater treatment plant (WWTP) as the source of the exceedance. The accidentally oil contaminated (AOC) drainage system was identified as the primary location of the exceedance, with non-routine sampling returning a thermotolerant coliform value of 1,400 CFU / 100 mL at 750SU-403 (i.e. AOC holding basin inlet). The AOC holding basin receives inputs from a number of sources; however, the second round of non-routine sampling failed to identify the individual source of the thermotolerant coliform exceedance. It is likely that conditions were favourable for supporting large concentrations of these coliforms in the AOC holding basin at the time of both the initial exceedance and the first round of non-routine sampling. The low numbers observed in the second round of non-routine sampling potentially suggest that these conditions were absent during this sampling event. Variability in thermotolerant coliform numbers between sampling events is potentially the result of rainfall pulse events associated with the wet season. Results from the combined jetty outfall discharge line sampling indicated that <i>E. coli</i> and <i>Enterococci</i> results were significantly lower than the thermotolerant coliform results. Therefore, these results indicate it was likely that the thermotolerant coliform exceedances were not solely originating from a faecal source. This is supported by the results of the non-routine sampling and investigation, which identified the AOC system as the primary location of the thermotolerant coliforms exceedance. Non-faecal thermotolerant coliform bacteria arising primarily from eutrophication, algal blooms and public amenity pose a lower risk to the environment than faecal thermotolerant coliform bacteria (ANZECC ARMCANZ 2000).	As part of the investigation for this event, additional sampling was undertaken which demonstrated that the WWTP was not responsible for the exceedance. <i>E. coli</i> and <i>Enterococci</i> concentrations were low, and below relevant trigger limits in all samples, therefore no further actions were taken. No exceedance was detected during the following round of routine (monthly) monitoring event.

Date sampled	Exceedance reported	Parameter	Result	Limit	Contributing factors	Corrective actions
12 May 2026	19 May 2026	Faecal coliforms (measured as thermotolerant coliforms)	570 CFU/100ml	400 CFU/100ml	Non-routine sampling was undertaken to determine the source of the thermotolerant coliforms exceedance within the combined jetty outfall stream but failed to identify the source of the thermotolerant discharge limit exceedance. <i>E. coli</i> and <i>Enterococci</i> concentrations were low, and below relevant trigger limits in all samples. It is likely that conditions were favourable for supporting large concentrations of these coliforms at the time of the initial exceedance. Data suggests that thermotolerant coliforms which are non-faecal in nature are being measured at Ichthys LNG when they are not derived from ineffective treatment of effluent, nor do they pose a risk to human health or the environment.	As no exceedance was detected during additional sampling undertaken as part of the investigation, and both <i>E. coli</i> and <i>Enterococci</i> concentrations were low, and below relevant trigger limits in all samples, no further actions were taken. The limitations of using thermotolerant coliforms as a discharge limit for this program and the low-risk nature of this event to the environment and Darwin Harbour were considerations when making the decision to take no further action.
9 June 2026	17 June 2026	Faecal coliforms (measured as thermotolerant coliforms)	1400 CFU/100ml	400 CFU/100ml	The limitation of using the measurement of thermotolerant coliforms against the faecal coliform trigger limit within EPL228-05. The <i>E. coli</i> value reported by the external laboratory for the same sample was 1 CFU/100mL (below the discharge limit of 100 CFU/100mL), which is a guide that the sewage treatment plant is effectively processing domestic sewage generated at the site and is unlikely to be the source. Previous exceedances have indicated that thermotolerant coliforms which are non-faecal in nature are being measured at 750-SC-003 when they are not derived from ineffective treatment of effluent, nor do they pose a risk to human health or the environment.	No further action was undertaken due to the known limitations of using the measurement of thermotolerant coliforms against the faecal coliform trigger limit within EPL228-05.

2.1.4 Program rationalisation

INPEX has engaged with the DLPE and intend to revise the trigger value for faecal coliforms (measured as thermotolerant coliforms), and potentially other trigger limits within EPL228-05. External specialists have been engaged to complete an external review of these trigger limits. The outcomes of this review will be used to support any application INPEX makes to amend EPL228-05.

2.2 Harbour sediment

The purpose of the harbour sediment quality monitoring program is to provide an early warning of potential accumulation of contaminants from Ichthys LNG wastewater discharges, in surficial sediments surrounding the jetty outfall.

In accordance with the OEMP (L060-AH-PLN-60005), harbour sediment monitoring occurs biennially (every two years). Harbour sediment monitoring was within the reporting period in June 2026 associated reporting is summarised in Table 2-5.

The key objective of the harbour sediment quality program is to detect changes in surficial sediment quality in the vicinity of the Jetty Outfall and determine if changes are attributable to Ichthys LNG operations.

Table 2-5: Harbour sediment quality survey details

Survey	Date	Report	INPEX Dox #
6	3-4 June 2026	Harbour Sediment Quality Monitoring – Interpretative Report No. 6	L290-AH-REP-70161

2.2.1 Method overview

The harbour sediment quality survey was performed in accordance with the Harbour Sediment Quality Monitoring Plan (L290-AH-PLN-70003). Surficial sediment samples were collected using a grab sampler from 16 potential impact sites radiating away from the jetty outfall and two control sites in East Arm (Figure 2-2). The sampling and QA/QC procedures followed were in accordance with the Harbour Sediment Quality Monitoring Plan, which was developed in consideration of the National Assessment Guidelines for Dredging (NAGD; Commonwealth of Australia 2009). The use of NAGD ensures consistency in sediment characterisation programs and is largely adopted for use in the Northern Territory (NT EPA 2013).

Following collection, surficial sediment samples were sent to a NATA accredited laboratory for analysis of parameters listed in Table 2-6. Laboratory results were then compared to benchmark levels to ascertain whether a trigger exceedance had occurred.

Exceedance of a benchmark level is defined as a measured analyte exceeding its relevant sediment quality guideline value (SQGV; also referred to as guideline value) as per ANZG (2018) and the same analyte also exceeding the background level for Darwin Harbour sediment. Background levels for Darwin Harbour sediments defined as 80th percentile of control site values in accordance with the process defined in NAGD (Commonwealth of Australia 2009). Note, where measured metal or metalloids exceeded SQGVs, results where possible are normalised for aluminium concentrations based on methods described in Munksgaard (2013) and Munksgaard et al. (2013) and compared to background levels (i.e. baseline or reference levels).

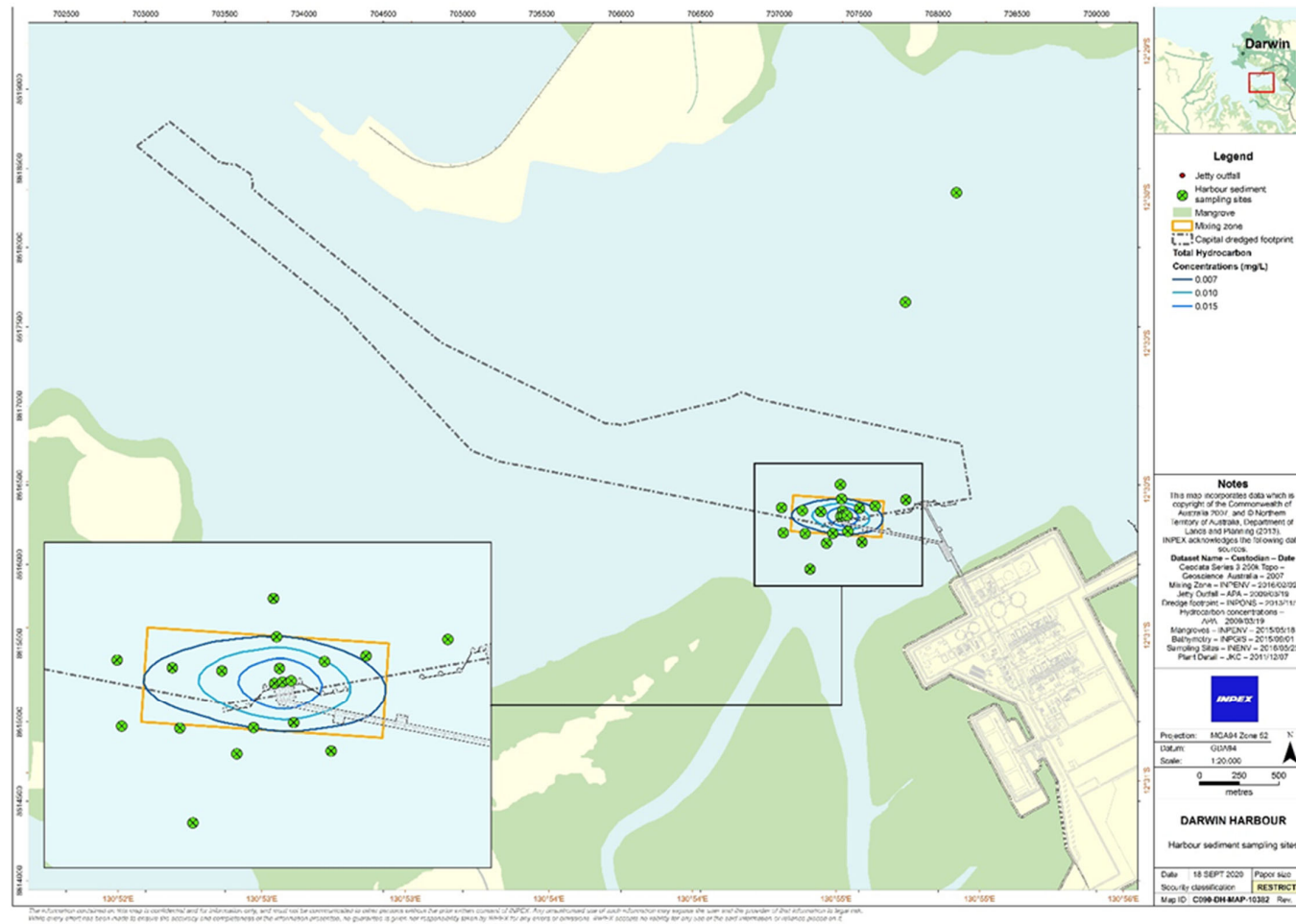


Figure 2-2: Harbour sediment quality sampling locations

Table 2-6: Harbour sediment quality monitoring parameters, trigger, and background values

Parameter	Unit	Trigger value*	Background value [†]
Total organic carbon (TOC)	%	n/a	n/a
Total petroleum hydrocarbons (TPH) / total recoverable hydrocarbons (TRH)	mg/kg	280	n/a
BTEX	mg/kg	n/a	n/a
Aluminium	mg/kg	n/a	n/a
Antimony	mg/kg	2	n/a
Arsenic	mg/kg	20	18.8
Cadmium	mg/kg	1.5	0.07
Chromium	mg/kg	80	35
Copper	mg/kg	65	6.02
Lead	mg/kg	50	8.5
Mercury	mg/kg	0.15	n/a
Nickel	mg/kg	21	8.22
Zinc	mg/kg	200	21.2
Particle size distribution (PSD)	µm	n/a	n/a

* ANZG (2018) sediment quality guideline value.

† Background levels for Darwin Harbour sediments defined as 80th percentile of control site values in accordance with the process defined in NAGD (Commonwealth of Australia 2009).

2.2.2 Quality control assessment

All samples arrived at laboratories within the required holding times for all analytes.

Laboratory QA/QC

- All matrix spike % recovery results were within acceptable passing limits.

Sediment blanks

Analyte concentrations measured in blank samples were all below laboratory LORs.

Replicate samples

Analysis of field split samples revealed that the relative percentage differences (RPD) achieved the performance criteria of <35%, with the following exceptions. RPD exceedances were reported for antimony and TOC in sample I9 Split 1-1, and antimony, copper and mercury in I9 Split 1-2 due to comparison against low-level detections and values reported below LOR which were halved for comparison.

- I9 Split 1-1

- Antimony (RPD = 91%)
- TOC (RPD = 76%).
- I9 Split 1-2
 - Antimony (RPD = 91%)
 - Copper (RPD = 36%)
 - Mercury (RPD = 86%)

Analysis of the triplicate samples revealed that the relative standard deviation (RSD) were within the performance criteria of <50%, with the following exceptions. RSD exceedances were reported for antimony and mercury in sample I2 Split 1 due to comparison against low-level detections and values reported below LOR which were halved for comparison.

- I2 Split-1
 - Antimony (RSD = 92%)
 - Mercury (RSD = 67%)

As all analytes reported were below the established trigger values, elevated RPD's and RSDs are not considered to affect the interpretation of results.

2.2.3 Results and discussion

Metal and metalloid results for harbour sediment quality are presented in Table 2-7. These results are compared to trigger values and background levels. Trigger values have been derived from ANZG (2018) while background levels are defined as 80th percentile of control site values.

All samples tested for hydrocarbons (TRHs/TPHs and BTEX) recorded concentrations below the LOR.

Metals concentrations were generally low or below their relevant ANZG (2018) SQGVs. Trigger exceedances were recorded for arsenic and chromium at site I14 during the June 2026 harbour sediment monitoring event. Mean and median metals concentrations reported at impact sites were generally marginally higher than results reported in previous years. Mean metals concentrations reported at control sites were also higher than results reported in previous monitoring event.

Overall, there were no changes to harbour sediment quality associated with Ichthys LNG activities. As such, discharges have not adversely affected the declared beneficial users or harbour sediment objectives for Darwin Harbour.

Table 2-7: Harbour sediment quality survey metal and metalloid results (mg/kg)

Site*	Aluminium	Antimony	Arsenic [†]	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Silver	Zinc
Trigger values	n/a	2	20	1.5	80	65	50	0.15	21	0.1	200
Background level	n/a	n/a	16.0	0.071	17.5	4.7	8.8	n/a	8.7	<0.1	21.4
I1	21000	<0.5	12	<0.1	45	11	11	<0.01	13	<0.1	34

Site*	Aluminium	Antimony	Arsenic [†]	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Silver	Zinc
I2	21000	1.1	15	<0.1	46	9.6	12	<0.01	14	<0.1	36
I3	15000	<0.5	12	<0.1	35	7.3	10	<0.01	11	<0.1	28
I4	19000	<0.5	10	<0.1	42	8.6	12	0.02	13	<0.1	34
I5	18000	<0.5	12	<0.1	39	8.8	11	0.01	13	<0.1	33
I6	20000	<0.5	13	<0.1	44	9.5	12	0.02	14	<0.1	36
I7	19000	<0.5	12	<0.1	42	9.1	11	0.01	13	<0.1	33
I8	17000	<0.5	12	<0.1	37	8.1	11	<0.01	12	<0.1	30
I9	15000	0.6	12	<0.1	35	7.8	10	0.02	11	<0.1	27
I10	14000	<0.5	11	<0.1	36	7.7	11	<0.01	11	<0.1	28
I11	12000	<0.5	11	<0.1	33	7.2	10	<0.01	10	<0.1	26
I12	16000	<0.5	11	<0.1	40	8	11	<0.01	12	<0.1	29
I13	12000	<0.5	15	<0.1	34	10	9.8	<0.01	14	<0.1	32
I14	13000	1.2	33	<0.1	130	7.5	15	<0.01	11	<0.1	25
I15	15000	<0.5	14	<0.1	35	6.9	9.9	<0.01	10	<0.1	25
I16	4700	<0.5	16	<0.1	15	2.2	5	<0.01	4.1	<0.1	10
C1	6800	<0.5	20	<0.1	23	4.1	6.5	0.01	6.3	<0.1	14
C2	12000	<0.5	14	<0.1	38	6.5	9	0.01	8.7	<0.1	23

* C = Control Site, I = Impact site.

† Bold values indicate trigger exceedance and results in brackets have been normalised for aluminium concentrations as per Munksgaard (2013)

Table 2-8: Harbour sediment quality survey organic results

Site*	TOC (mg/kg)	TPH (mg/kg)	BTEX (mg/kg)
Trigger values	n/a	280	n/a
Background level	n/a	n/a	n/a
I1	23,000	<50	<0.1
I2	28,000	<50	<0.1
I3	5,000	<50	<0.1
I4	17,000	<50	<0.1
I5	3,000	<50	<0.1
I6	4,000	<50	<0.1

Site*	TOC (mg/kg)	TPH (mg/kg)	BTEX (mg/kg)
I7	41,000	<50	<0.1
I8	<1000	<50	<0.1
I9	14,000	<50	<0.1
I10	23,000	<50	<0.1
I11	23,000	<50	<0.1
I12	24,000	<50	<0.1
I13	26,000	<50	<0.1
I14	14,000	<50	<0.1
I15	76,000	<50	<0.1
I16	13,000	<50	<0.1
C1	2,000	<50	<0.1
C2	19,000	<50	<0.1

* C = Control Site, I = Impact site

† TPH is analysed by laboratory as TRH

2.2.4 Trigger assessment outcomes

Arsenic and chromium concentrations exceeded the ANZG (2018) SQGV and background concentrations at site I14.

Arsenic levels at I14 aligned with those documented in earlier studies including the harbour-wide sediment sampling survey by Munksgaard et al. (2013), and Fortune (2006), which attributed elevated arsenic concentrations to natural weathering of arsenic-rich coastal substrata rather than anthropogenic influence.

Chromium concentrations at site I14 were also elevated relative to those reported in the harbour-wide sediment survey undertaken by Munksgaard et al. (2013), which recorded a maximum chromium concentration of 95.1 mg/kg across 247 intertidal sediment samples. However, the concentration measured at I14 was comparable to results reported by URS (2009) in the vicinity of the East Arm Wharf, where a limited number of samples reported chromium concentrations exceeding the ANZG (2018) SQGV. The chromium result reported at I14 was normalised in accordance with Munksgaard (2013), and the exceedance assessment process identified in the Monitoring Plan (INPEX 2021). The normalised chromium concentration derived for sample I14 was still found to exceed ANZG (2018) SQGVs and background concentrations of chromium in Darwin Harbour sediments, representing an exceedance.

The elevated chromium concentration observed at I14 appears to represent a highly localised area of enrichment or the presence of an isolated source of contamination within the sample, rather than evidence of widespread chromium contamination across the study area. The abnormally high concentration reported in this sample is unlikely to represent influence from Ichthys LNG, given the site is located around 400m from the discharge with no increased levels at sites closer to the discharge. As described by the environmental consultant (O2 Marine, 2026), the result could also be attributed to cross contamination during field survey or handling within the laboratory. This is not confirmed by the field or laboratory QA/QC assessment though may explain the elevated result. This site will be considered during the next scheduled sediment survey to ensure no repeat occurs and to confirm results at these sites remain within an acceptable level for arsenic and chromium. If further elevation is reported additional investigation may be warranted.

2.2.5 Program rationalisation

No program rationalisation was proposed for harbour sediment monitoring from the 2026 harbour sediment monitoring. Results of the 2026 harbour sediment monitoring event are consistent with results of the 2024 monitoring event, recommendation for monitoring to continue to be undertaken biennially. The next proposed survey is planned for 2028 and will be included in the associated reporting period.

3 EMISSIONS TO AIR

This section includes the outcomes of the following monitoring programs:

- total emissions to air in tonnes per year for the main parameters outlined in EPL228 (Section 3.1)
- point source emissions (Section 3.2)
- dark smoke events (Section 3.4).

This section also summarises the operating condition of each emission source and the resulting air emission quality (Section 3.3).

3.1 Total emissions to air

INPEX is required to provide total stationary emissions to air (tonnes/year) for air quality parameters (Condition 77.6 of EPL228-05 listed in Table 6, Appendix 3 of EPL228). Estimated total stationary emissions to air for the reporting period are provided in Table 3-1, which are based on INPEX's similar data sets used for Commonwealth emission reporting requirements for National Pollutant Inventory (NPI) and National Greenhouse and Energy Reporting Scheme (NGERS).

Table 3-1: Estimated total emissions to air for the reporting period

Parameter	Emissions (t/yr) ¹	
	EPL-228 stationary emissions for AEMR	NPI emissions onshore
NO _x as nitrogen dioxide (NO ₂)	1,181.394	1,293.770
Mercury (Hg)	0.000004	0.000004
Benzene	221.620	223.38
Toluene	195.840	197.11
Ethylbenzene	1.150	1.19
Xylenes	64.50	64.71
Hydrogen sulphide (H ₂ S)	83.669	83.710
Carbon monoxide (CO)	2,847.537	2,872.177
Particulate matter 10 (PM ₁₀)	86.332	92.826
Particulate matter 2.5 (PM _{2.5})	88.005	94.744
Total volatile organic compounds (VOCs)		2,656.825
Sulphur dioxide (SO ₂)		418.688

Note:

1. Differences between EPL228 stationary emissions for AEMR vs NPI emissions are due to the differences in the scope of emissions reported. For example, NPI requires the inclusion of stationary and fugitive emissions while the EPL228-05 only requires reporting of emissions from particular stationary sources (Table 6 of Appendix 3 of EPL228-05 lists these sources).

3.2 Point source emissions to air

The key objective of point source emission monitoring (commonly referred to as stack sampling) is to ensure air emissions do not exceed the concentration limit criteria specified in Table 5, Appendix 3 of EPL228. The frequency of monitoring is outlined in Table 6, Appendix 3 of EPL228, which requires annual monitoring of most emission points, monthly monitoring of hot venting, and reporting of the mass of hydrocarbons flared.

Table 3-2 provides a summary of the point source emission monitoring conducted for the reporting period.

Table 3-2: Point source emissions survey dates

Survey	Start date	End Date
Ektimo Report #R019451-1 tested: - LNG Refrigerant Compressor Driver Gas Turbines Train 1 West (A1) - LNG Refrigerant Compressor Driver Gas Turbines Train 1 East (A3)	3 December 2025	4 December 2025
Ektimo Report #R019451-2 tested: - LNG Refrigerant Compressor Driver Gas Turbines Train 2 West (A2) - LNG Refrigerant Compressor Driver Gas Turbines Train 2 East (A4)	4 December 2025	6 December 2025
Ektimo Report #R019451-4 tested: - AGRU Incinerator - LNG Train 1 (A13-1)	3 December 2025	3 December 2025
Ektimo Report #R020110-3r - AGRU Incinerator - LNG Train 1 (A13-1)	16 April 2026	16 April 2026
Ektimo Report #R019451-5 - AGRU Incinerator - LNG Train 2 (A14-1)	6 December 2025	6 December 2025
Ektimo Report #R020110-4r - AGRU Incinerator - LNG Train 2 (A14-1)	15 April 2026	15 April 2026
Ektimo Report #R019451-3 tested: - CCPP Heat Recovery Steam Generator (HRSG) 1 (A5-2) - CCPP Heat Recovery Steam Generator (HRSG) 2 (A6-2) - CCPP Heat Recovery Steam Generator (HRSG) 3 (A7-2) - CCPP Heat Recovery Steam Generator (HRSG) 4 (A8-2)	5 December 2025	5 December 2025

3.2.1 Method overview

Stationary source emissions monitoring was completed at 10 point sources (out of a total of 18 stacks), two of which were sampled twice. Monitoring locations included the Frame 7 compression turbines (4), combined cycle power plant (CCPP) Frame 6 heat recovery system generator (HRSG) stacks (4) and acid gas removal unit (AGRU) incinerator 1 and 2 (4).

For the CCPP Frame 6 turbines, each turbine has two stacks, one which allows for normal operation of the turbine (with exhaust emissions directed to a conventional stack) and a separate stack with an associated HRSG, which allows for steam to be generated using the exhaust and further duct burning of fuel. The two stacks cannot be operated together so stack monitoring is dependent on which stack is in use at the time of sampling.

Table 3-3 and Table 3-4 show the EPL228 air emission target and limits plus the substances that are required to be monitored at the point source locations as per Appendix 3, Table 5 and Table 6 respectively, of EPL228-05. Figure 3-1 shows the locations of the stationary source emissions monitoring locations at Ichthys LNG.

The following locations are inline gas sampling points (not stack ports) and as such are exempt from the standard methods for point source emissions sampling:

- 551-SC-003 (release point number A13-2)
- 552-SC-003 (release point number A14-2)
- 541-SC-001 (release point number A13-3) and
- 542-SC-001 (release point number A14-3).

INPEX conducts inhouse gas sampling and analysis from these locations for BTEX, hydrogen sulphide (H₂S) (on the AGRU hot vents) and mercury (on AGRU feed gas) using conventional industry methods. The analysis of these substances is conducted on a monthly basis (when operating) using test methods that are managed under a NATA accredited Quality Management System. It is noted that the INPEX laboratory accreditation scope does not specifically cover the individual analytical methods.

Stationary source and gas samples are either collected by INPEX laboratory technicians and tested in the on-site NATA accredited laboratory or are collected by an external NATA accredited contractor and analysed in the field or by external laboratories.

All stack sampling ports have been installed in accordance with AS4323.1-1995 Stationary Source Emissions - Selection of Sampling Positions.

All stack sampling, where applicable, is undertaken in accordance with:

- New South Wales (NSW) Environment Protection Authority (formerly the Department of Environment and Conservation) Approved Methods for the Sampling and Analysis of Air Pollutants in NSW; or
- United States Environmental Protection Agency (USEPA) Method 30B (Mercury Sorbent Trap Procedure) for mercury emissions.

For the sampling and analysis of nitrogen oxides (NO_x), the stack emission monitoring Contractor has followed the procedures as listed in NSW Test Method 11, which cross references to USEPA Method 7E *Determination of Nitrogen Oxide Emission from Stationary Sources (Instrumental Analyser Procedure)*. This lists comprehensive quality control and calibration procedures that must be followed to ensure accurate and reliable results. The analysis of nitrous oxide is also managed under a NATA accredited Quality Management System.

Table 3-3: Contaminant release limits to air at authorised stationary emission release points

Release point number	Source	Pollutant	Concentration target		Concentration limit	
			mg/Nm ³	ppmv	mg/Nm ³	ppmv
A1, A2, A3, A4	LNG Refrigerant Compressor Driver Gas Turbines (GE Frame 7s)	NO _x as NO ₂	50 @ 15% O ₂ dry	25 @ 15% O ₂ dry	70@ 15% O ₂ dry	35 @ 15% O ₂ dry
A5-1, A6-1, A7-1, A8-1, A9-1	CCPP Gas Turbine Generators (GE Frame 6s, 38 MW)	NO _x as NO ₂	50 @ 15% O ₂ dry	25 @ 15% O ₂ dry	70@ 15% O ₂ dry	35 @ 15% O ₂ dry
A5-2, A6-2, A7-2, A8-2, A9-2	CCPP Gas Turbine Generators (GE Frame 6s, 38 MW) also burning vaporised iso-pentane in duct burners	NO _x as NO ₂	150 @ 15% O ₂ dry	75 @ 15% O ₂ dry	350@ 15% O ₂ dry	175 @ 15% O ₂ dry
A13-1, A14-1	AGRU Incinerators	NO _x	320 @ 3% O ₂ dry	160 @ 3% O ₂ dry	350@ 3% O ₂ dry	175 @ 3% O ₂ dry
A15, A16	Heating Medium Furnaces	NO _x	160 @ 3% O ₂ dry	80 @ 3% O ₂ dry	350@ 3% O ₂ dry	175 @ 3% O ₂ dry

Table 3-4: Air emission monitoring program

Release Point Number	Sampling Location Number	Source	Monitoring Frequency	Parameter
A1	L-641-A-001	LNG Train 1 Refrigerant Compressor Driver Gas Turbine (GE Frame 7)	Annual	NO _x as NO ₂ , CO, temperature, efflux velocity, volumetric flow rate
A2	L-642-A-001	LNG Train 2 Refrigerant Compressor Driver Gas Turbine (GE Frame 7)		
A3	L-641-A-002	LNG Train 1 Refrigerant Compressor Driver Gas Turbine (GE Frame 7)		
A4	L-642-A-002	LNG Train 2 Refrigerant Compressor Driver Gas Turbine (GE Frame 7)		
A5-1	L-780-GT-001	CCPP Gas Turbine Generator #1 (GE Frame 6) – conventional stack	Annual	NO _x as NO ₂ , CO, temperature, efflux velocity, volumetric flow rate
A6-1	L-780-GT-002	CCPP Gas Turbine Generator #2 (GE Frame 6) – conventional stack		
A7-1	L-780-GT-003	CCPP Gas Turbine Generator #3 (GE Frame 6) – conventional stack		
A8-1	L-780-GT-004	CCPP Gas Turbine Generator #4 (GE Frame 6) – conventional stack		
A9-1	L-780-GT-005	CCPP Gas Turbine Generator #5 (GE Frame 6) – conventional stack		
A5-2	L-630-F-001	CCPP Gas Turbine Generator #1 (GE Frame 6) – HRSG stack		
A6-2	L-630-F-002	CCPP Gas Turbine Generator #2 (GE Frame 6) – HRSG stack		
A7-2	L-630-F-003	CCPP Gas Turbine Generator #3 (GE Frame 6) – HRSG stack		
A8-2	L-630-F-004	CCPP Gas Turbine Generator #4 (GE Frame 6) – HRSG stack		
A9-2	L-630-F-005	CCPP Gas Turbine Generator #5 (GE Frame 6) – HRSG stack		
A13-1	L-551-FT-031	AGRU Incinerator – LNG Train 1	Annual	NO _x as NO ₂ , CO, temperature, efflux velocity, volumetric flow rate
A13-2	551-SC-003	AGRU Hot Vent – LNG Train 1, prior to release at A3	Monthly	BTEX, H ₂ S, volumetric flow rate
A13-3	541-SC-001	Feed gas to AGRU – LNG Train 1 – prior to release at A3	Monthly	Hg
A14-1	L-552-FT-031	AGRU Incinerator – LNG Train 2	Annual	NO _x as NO ₂ , CO, temperature, efflux velocity, volumetric flow rate
A14-2	552-SC-003	AGRU Hot Vent – LNG Train 2, prior to release at A4	Monthly	BTEX, H ₂ S, volumetric flow rate
A14-3	542-SC-001	Feed gas to AGRU – LNG Train 2 – prior to release at A4	Monthly	Hg
A15	L-640-A-001-A	Heating Medium Furnaces	Annual	NO _x as NO ₂ , CO, temperature, efflux velocity, volumetric flow rate
A16	L-640-A-001-B	Heating Medium Furnaces	Annual	NO _x as NO ₂ , CO, temperature, efflux velocity, volumetric flow rate
A17	L-700-F-002	Ground flare #5 warm	All flare events	Mass of hydrocarbons flared
A18	L-700-F-001-A/B	Ground flare #2 cold		
A19	L-700-F-003	Ground flare #1 spare		
A20	L-700-F-005-A/B	Tank flare #1 LNG		
A21	L-700-F-006-A/B	Tank flare #2 LPG		
A22	L-700-F-007	Tank flare #3 LNG/LPG		
A23	L-700-F-004	Liquid flare		

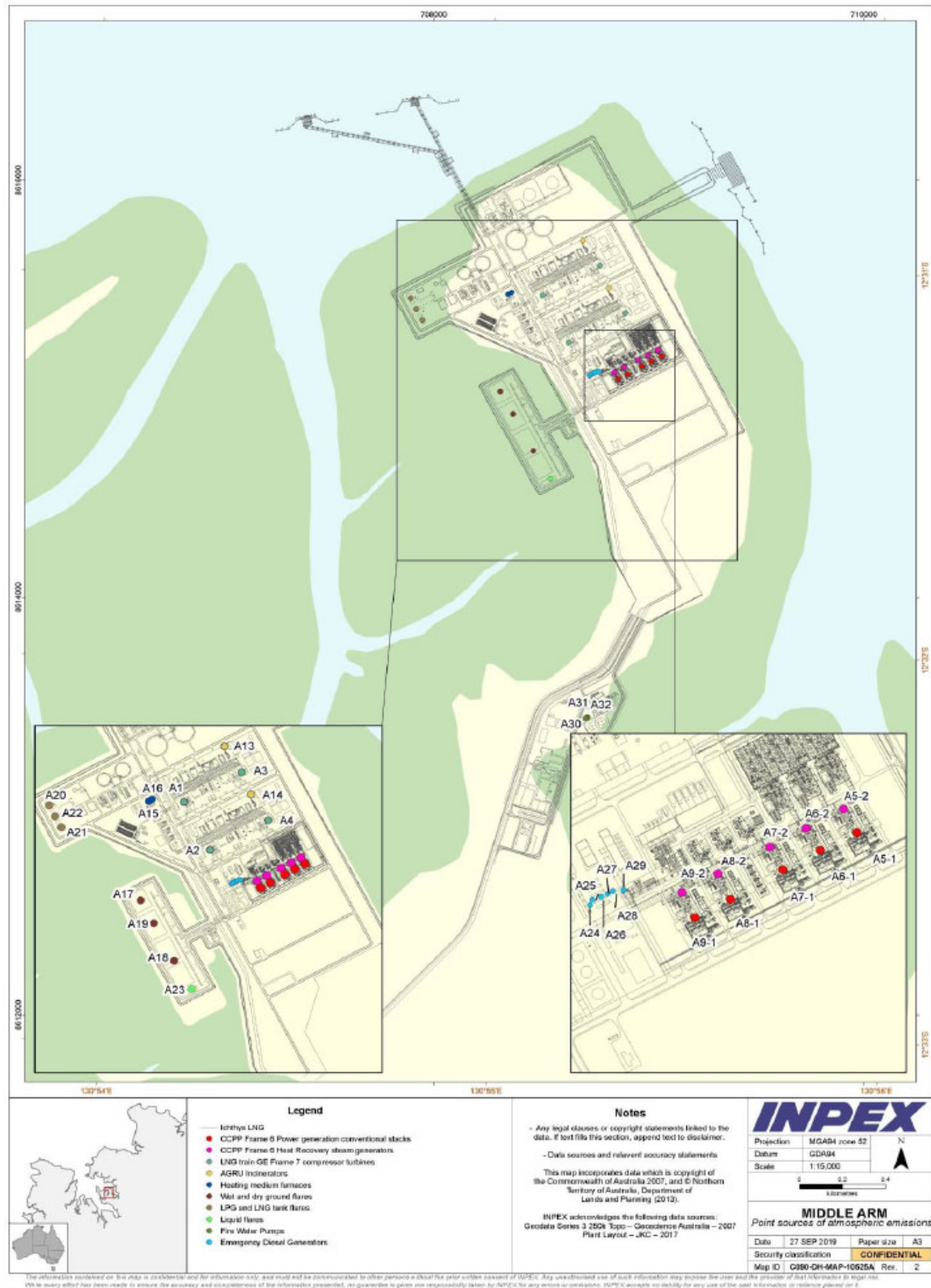


Figure 3-1: Location of authorised stationary emission release points

3.2.2 Quality control assessment

Stationary source emissions testing was undertaken between December 2025 – April 2026, as per the nominated test method within EPL228-05 licence condition 58.2 following the NSW Department of Environment and Conservation Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales or USEPA Method 30B for mercury emissions. This was completed in conjunction with Appendix 3, Table 6 of EPL228. All samples were collected and sampled as per above conditions. NATA accredited third-party environmental consultants were engaged to carry out onsite stationary source testing.

3.2.3 Results and discussion

All results for the permanent plant were below limit criteria provided in Appendix 3, Table 5 of EPL228 (Table 3-3). The measured NO_x as NO₂ concentration was above the target on one occasion at A1 (L-641-A-001). This was due to the configuration of this turbine being adjusted to manage combustion flame stability in conjunction with the operational conditions at the time the sample was collected.

The stationary source emission monitoring results are provided in APPENDIX D.1 - D.2.

Burners were offline for A15 (L-640-A-001-A) and A16 (L-640-A-001-B) and were not sampled during the contractor sampling event. These sample points are both heating medium furnaces which are only required to operate when the trains are offline or during the start-up of a train to bring the heating medium up to the required operating temperature. As previously mentioned in section 3.2.1, CCPP frame 6 turbines have two stacks with only one of the two stacks running at a time. As such, release port numbers A5-1, A6-1, A7-1, A8-1 and A9-1 (conventional stack series) were not tested in this reporting period as they were not online. The "HRSG stack series" frame 6 sampling locations A5-2 (L-630-F-001), A6-2 (L-630-F-002), A7-2 (L-630-F-003), and A8-2 (L-630-F-004) were online and utilised for sampling. Sampling location A9-2 (L-630-F-005) was offline at the time of sampling.

The mass of hydrocarbons flared for the reporting period for each flare source is presented in Table 3-5.

Table 3-5: Mass of hydrocarbons flared during the reporting period

Release Point number	Location Number	Source	Mass of hydrocarbons flared (tonnes)
A17 / A19	L-700-F-002 / L-700-F-003	Ground flare #5 warm/ Ground flare #1 spare	12,047
A18 / A19	L-700-F-001-A/B / L-700-F-003	Ground flare #2 cold / Ground flare #1 spare	28,059
A20 / A22	L-700-F-005-A/B / L-700-F-007	Tank flare #1 LNG / Tank flare #3 LNG/LPG (spare)	6,968
A21 / A22	L-700-F-006-A/B / L-700-F-007	Tank flare #2 LPG / Tank flare #3 LNG/LPG (spare)	7,477
A23	L-700-F-004	Liquid flare	0

Figure 3-2 and Figure 3-4 show the vented acid gas flow rates in standard cubic metre per hour (Sm³/h) for Train 1 and Train 2 respectively. During periods when the AGIs were offline, the acid gas was hot vented (i.e. when the LNG trains were online). Figure 3-3 and Figure 3-5 provide the flow rate of acid gas to the Train 1 and Train 2 mixed refrigerant (MR) stacks, while the incinerators were not in service.

While the AGIs were offline and venting was occurring, gas sampling was undertaken in accordance with EPL228-05 condition 58.1. Throughout the reporting period, INPEX experienced a number of performance issues with Train 1 and Train 2 AGIs resulting in periods of outages for both AGIs. The NT EPA was notified of the AGI performance issues in accordance with EPL228-05 condition 70.

Section 3.5 contains more information about air quality monitoring results undertaken in the Darwin airshed.

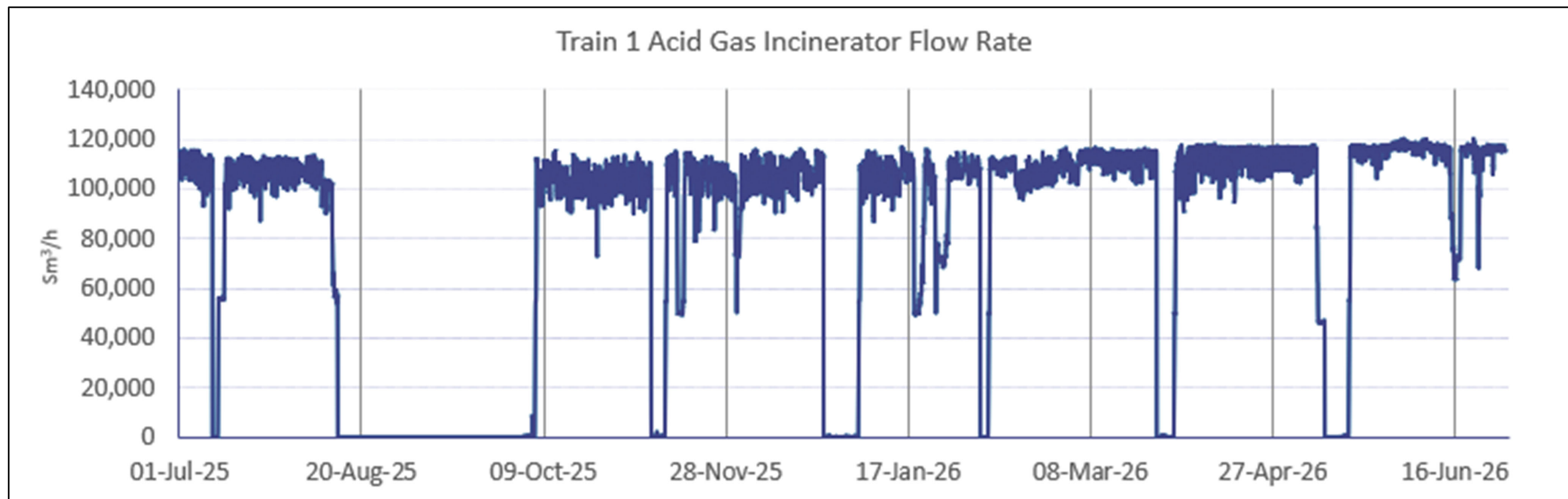


Figure 3-2: Train 1 acid gas incineration rates (Sm^3/h)

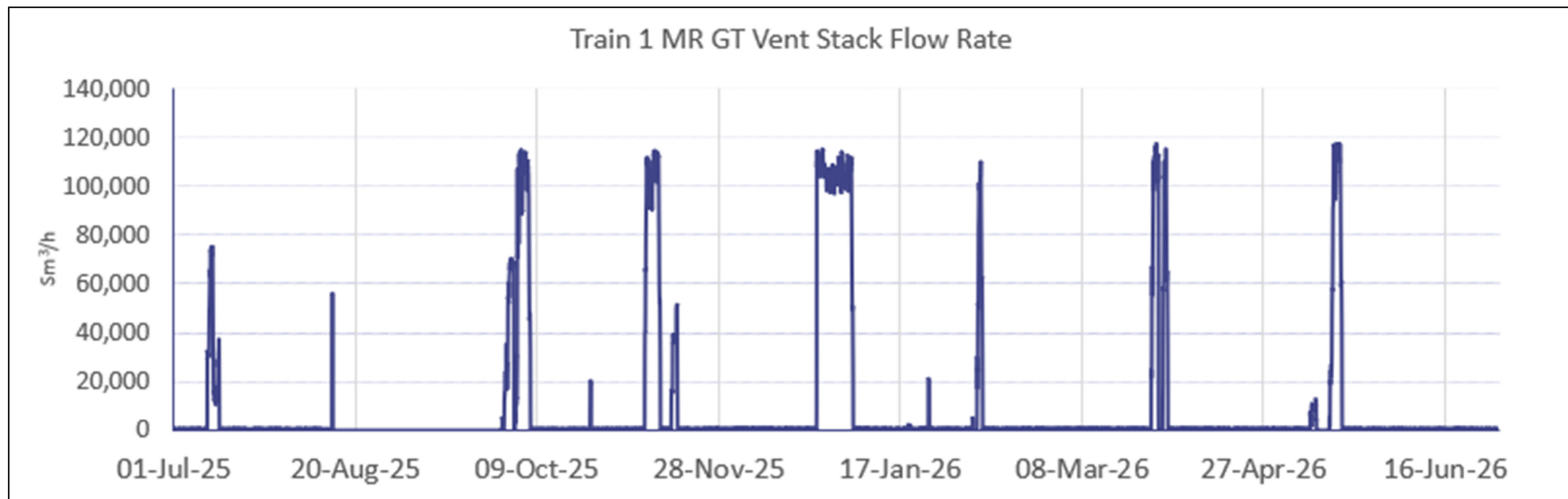


Figure 3-3: Train 1 acid gas venting flow rates (Sm^3/h)

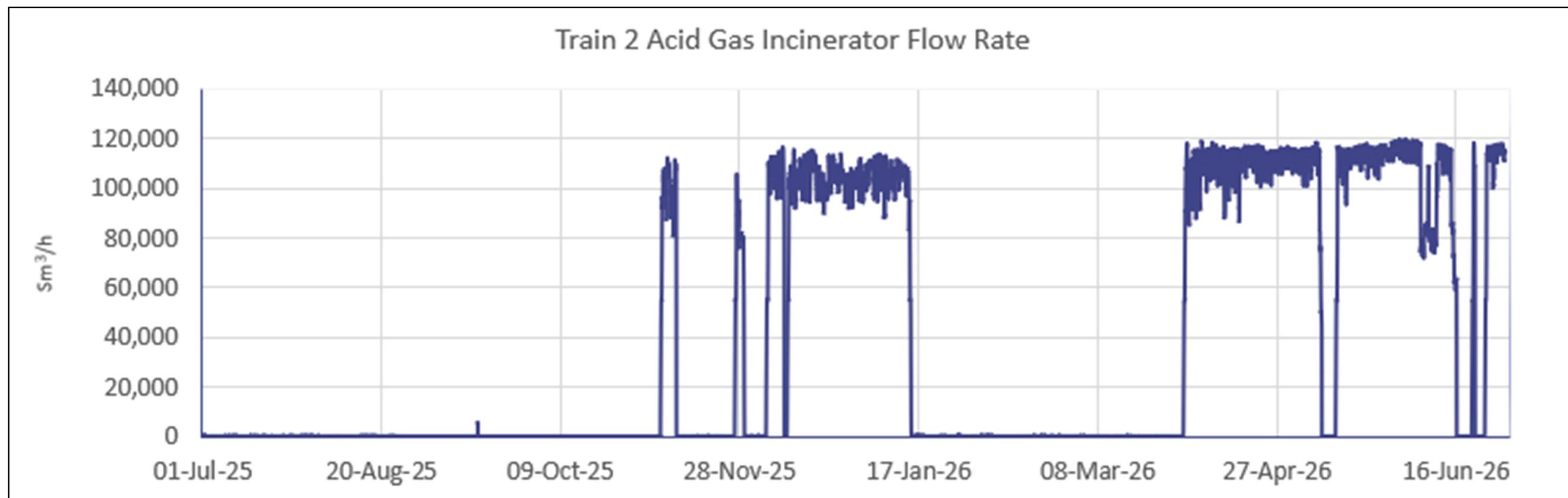


Figure 3-4: Train 2 acid gas incineration rates (Sm^3/h)

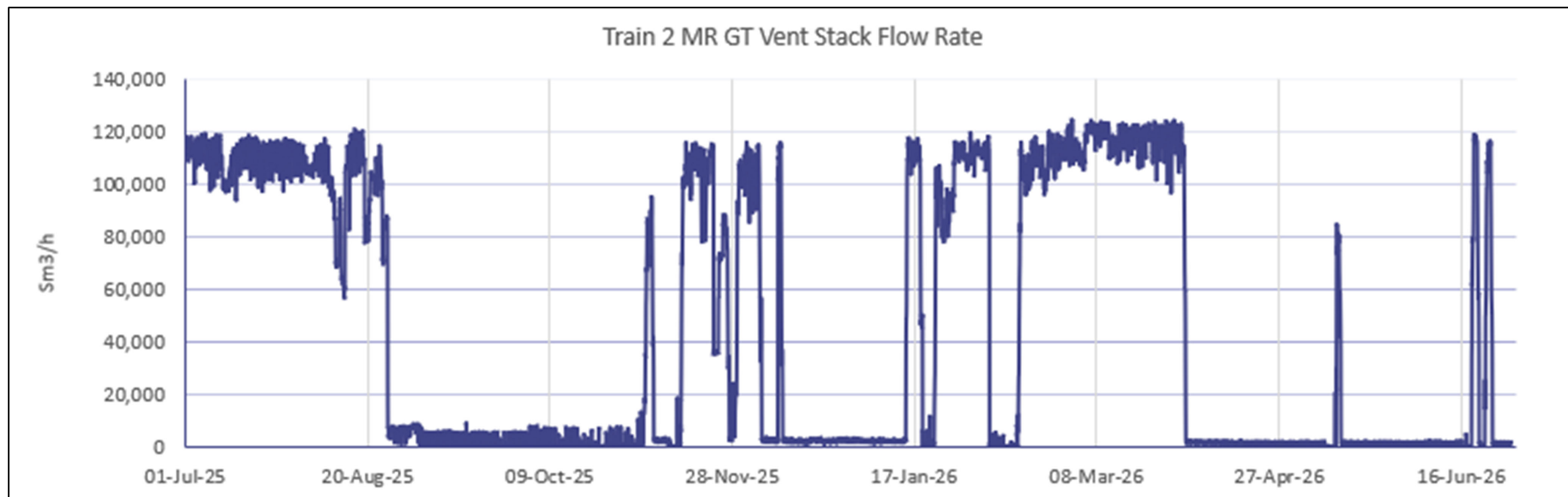


Figure 3-5: Train 2 acid gas venting flow rates (Sm^3/h)

3.2.4 Program rationalisation

No rationalisation is currently proposed for monitoring stationary emissions sources; therefore, monitoring will be conducted as per the EPL228 requirements.

INPEX has implemented an air toxic monitoring program in the Darwin airshed to measure BTEX on a monthly basis at four locations. While this air toxic monitoring is additional to the EPL228 requirements, INPEX has included the air toxic monitoring program into a revised version (to be issued to NT EPA) of the Onshore Operations Environment Management Plan (OEMP; L060-AH-PLN-60005) and continues to provide the NT EPA with copies of monthly air toxic monitoring reports. Air toxic monitoring results are covered further in Section 3.5 of this AEMR.

3.3 Overall summary of performance of stationary emission sources

The status of the stationary point source emissions at Ichthys LNG is provided in Table 3-6 based on information presented in Sections 3.1 and 3.2. As stated above, the Train 1 and LNG Train 2 AGIs were both offline for periods of time during the reporting period. While the AGIs were offline, sampling of the vented gas occurred as per EPL228 condition 58.

Table 3-6: Stack emission status and air quality

Release point number	Emission source	Status	Air emissions
A1	Compressor turbine waste heat recovery unit (WHRU) West 1 (Frame 7)	Operational	Acceptable
A2	Compressor turbine WHRU West 2 (Frame 7)	Operational	Acceptable
A3	Compressor turbine WHRU East 1 (Frame 7)	Operational	Acceptable
A4	Compressor turbine WHRU East 2 (Frame 7)	Operational	Acceptable
A5-1	Power generation turbine 1 (Frame 6)	Intermittent use, when HRSG offline	Not tested in this survey
A6-1	Power generation turbine 2 (Frame 6)	Intermittent use, when HRSG offline	Not tested in this survey
A7-1	Power generation turbine 3 (Frame 6)	Intermittent use, when HRSG offline	Not tested in this survey
A8-1	Power generation turbine 4 (Frame 6)	Intermittent use, when HRSG offline	Not tested in this survey
A9-1	Power generation turbine 5 (Frame 6)	Intermittent use, when HRSG offline	Not tested in this survey
A5-2	Power generation turbine 1 HRSG (Frame 6)	Operational	Acceptable
A6-2	Power generation turbine 2 HRSG (Frame 6)	Operational	Acceptable
A7-2	Power generation turbine 3 HRSG (Frame 6)	Operational	Acceptable

Release point number	Emission source	Status	Air emissions
A8-2	Power generation turbine 4 HRSG (Frame 6)	Operational	Acceptable
A9-2	Power generation turbine 5 HRSG (Frame 6)	Off-line during survey	Not tested in this survey
A13-1	AGRU Incinerator – LNG Train 1	Operational	Acceptable
A13-2	AGRU Hot Vent – LNG Train 1, prior to release at A3	Operational	Acceptable
A14-1	AGRU Incinerator – LNG Train 2	Operational	Acceptable
A14-2	AGRU Hot Vent – LNG Train 2, prior to release at A4	Operational	Acceptable
A15	Heating medium furnace 1	Off-line during survey	Not tested in this survey
A16	Heating medium furnace 2	Off-line during survey	Not tested in this survey

3.4 Dark smoke events

Ichthys LNG has been designed to minimise dark-smoke events; however, dark smoke can result during flaring due to incomplete combustion of hydrocarbons. The environmental impacts from smoke are considered negligible but may cause visual amenity impact and community concern.

3.4.1 Method overview

Visual monitoring and closed-circuit television monitoring of flares is undertaken to detect possible dark smoke events in accordance with the Onshore LNG Dark Smoke Management Guideline. If dark smoke is produced during operations, the shade (or darkness) of the smoke is estimated using the Australian Miniature Smoke Chart (AS 3543:2014), which uses Ringelmann shades. The shade and duration of the dark-smoke event is recorded. Dark smoke monitoring targets and limits for all the flare systems are provided in Table 3-7. Any dark smoke events (above Ringelmann 1) are recorded and investigated as an incident and reported to the NT EPA in the annual record of flaring (Condition 71 of EPL228-05).

Table 3-7: Dark smoke monitoring targets and limits

Emission source	Pollutant	Target	Limit
Flares	Smoke	<Ringelmann 1	Visible smoke emissions darker than Ringelmann shade 1

Flaring and other data are stored in the site's Process Control System (PCS). The PCS serves as the primary means to control and monitor Ichthys LNG and automatically maintains operating pressures, temperatures, liquid levels, and flow rates within the normal operating envelope with minimal intervention from operator consoles in the central control room (CCR). The system has built-in redundancy in communication, control, and human interface. Information from the PCS is displayed on visual display units in the CCR. During process upset conditions, the system has detailed alarm handling and interrogation functions to minimise operator overload. The PCS is also equipped with a database function that permits operations personnel to investigate a historical sequence of events.

3.4.2 Results and discussion

No dark smoke events (above Ringelmann 1) occurred during the 2025/2026 reporting period.

3.4.3 Program rationalisation

No program rationalisation is proposed.

3.5 Air toxics monitoring

Following the OEMP adaptive management framework, air toxic sampling was reinstated in July 2024 due to operational performance issues of the AGIs. The AGI performance issues have resulted in periods of hot venting, and emissions of VOCs such as BTEX.

The objective of the air toxics monitoring program is to ensure that during periods where AGIs are hot venting, air toxicants specified in *National Environment Protection (Air Toxics) Measure* (Air Toxics NEPM) remain within safe levels.

Table 3-8 provides a summary of the air toxics monitoring completed during the reporting period.

Table 3-8: Ambient air quality and ambient air toxics survey dates

Date	Report
30-31 July 2025	GHD Air Toxic Report – July 2025 (L060-AH-REP-70085)
28-29 August 2025	GHD Air Toxic Report – August 2025 (L060-AH-REP-70095)
11-12 September 2025	GHD Air Toxic Report - September 2025 (L060-AH-REP-70096)
1-2 October 2025	GHD Air Toxic Report - October 2025 (L060-AH-REP-70097)
27-28 November 2025	GHD Air Toxic Report - November 2025 (L060-AH-REP-70091)
11-12 December 2025	GHD Air Toxic Report - December 2025 (L060-AH-REP-70094)
29-30 January 2026	GHD Air Toxic Report - January 2026 (L060-AH-REP-70092)
19-20 February 2026	GHD Air Toxic Report - February 2026 (L060-AH-REP-70093)
25-26 March 2026	GHD Air Toxic Report - March 2026 (L060-AH-REP-70062)
29-30 April 2026	GHD Air Toxic Report - April 2026 (L060-AH-REP-70063)

Date	Report
27-28 May 2026	GHD Air Toxic Report – May 2026 (L060-AH-REP-70064)
17 June 2026	GHD Air Toxic Report – June 2026 (L060-AH-REP-70065)

3.5.1 Method overview

INPEX reinstated air toxics ground level monitoring in July 2024 as the AGIs continued to experience performance issues. The receptor locations, when considered in conjunction with prevailing winds and peak dispersion modelling predictions, indicate that the NT EPA air quality network monitoring stations Frances Bay and Palmerston were appropriately located within the Darwin Airshed, in order to be used for the assessment of air toxics from Ichthys LNG. During the reporting periods, additional monitoring was also undertaken at the Winnellie NT EPA air quality network monitoring station and adjacent to Ichthys LNG. The locations of the air toxics monitoring locations are shown in Figure 3-6.

Monthly air toxics monitoring is completed using evacuated canisters for sample capture (24-hour regulator), with subsequent analysis for benzene, toluene and xylene (BTX) using gas chromatography - mass spectrometry techniques. Consistent with the Air Toxics NEPM monitoring framework, this monitoring is conducted using the USEPA TO-15 analytical methodology (USEPA 1995) using a NATA accredited laboratory. The frequency of monitoring is monthly in the event one or both AGIs are offline due to performance issues, data is then compared against the standards for pollutants specified in the Air Toxics NEPM, at all monitoring locations.

The review criteria for the monitoring program, as per Air Toxics NEPM monitoring framework, are provided in Table 3-9.

Table 3-9: Air Toxics NEPM data review criteria

Parameter	Averaging Period	Review Criteria (Air Toxics NEPM)*	Units
Benzene	Annual	0.003	ppm
Toluene	24 hour	1	
	Annual	0.1	
Xylenes	24 hour	0.25	
	Annual	0.2	

* Air toxics review criteria excludes allowance for background. Upon review, potential project increment (above background) is to be addressed through consideration of spatial variability of sample results.



Figure 3-6: Air toxics monitoring station locations

3.5.2 Results and discussion

A summary table of monthly air toxics monitoring results are provided in Table 3-10.

Table 3-11 shows that measured concentrations were all well below Air Toxics NEPM 24-hour and annual criteria for the reporting period. This indicates that air toxics were not detectable above criteria during sampling periods, when the AGIs were offline and hot venting.

Table 3-10: Air toxic results (in ppm) for the reporting period

Period	Sampling point	Benzene	Toluene	Xylenes
Jul-25	Palmerston	<0.0009	<0.0037	<0.0028
	Frances Bay	<0.0009	<0.0032	<0.0025
	Winnellie	<0.0009	<0.0037	<0.0028
	ILNG	<0.0009	<0.0034	<0.0025
Aug-25	Palmerston	<0.0006	<0.0027	<0.0021
	Frances Bay	<0.0005	<0.0005	<0.0015
	Winnellie	<0.0005	<0.0005	<0.0015
	ILNG	<0.0009	<0.0037	<0.0028
Sep-25	Palmerston	<0.0009	<0.0034	<0.0025
	Frances Bay	<0.0009	<0.0037	<0.0028
	Winnellie	<0.0009	<0.0034	<0.0025
	ILNG	<0.0009	<0.0032	<0.0025
Oct-25	Palmerston	0.002	<0.0034	<0.0025
	Frances Bay	<0.0009	<0.0032	<0.0025
	Winnellie	<0.0009	<0.0034	0.0059
	ILNG	<0.0009	<0.0037	<0.0028
Nov-25	Palmerston	<0.0009	<0.0037	<0.0028
	Frances Bay	<0.0009	<0.0034	<0.0025
	Winnellie	<0.0009	<0.0037	<0.0028
	ILNG	0.0017	<0.0032	<0.0025
Dec-25	Palmerston	<0.009	0.004	<0.0025
	Frances Bay	<0.0006	<0.0029	<0.0023
	Winnellie	<0.0006	<0.0029	<0.0023
	ILNG	<0.0009	<0.0037	<0.0028
Jan-26	Palmerston	<0.0009	<0.0037	<0.0028
	Frances Bay	<0.0013	<0.0042	<0.0035

Period	Sampling point	Benzene	Toluene	Xylenes
	Winnellie	<0.0013	<0.0042	<0.0035
	ILNG	<0.0013	<0.0042	<0.0035
Feb-26	Palmerston	<0.0013	<0.0045	<0.0035
	Frances Bay	<0.0013	<0.0048	<0.0037
	Winnellie	<0.0009	<0.0034	<0.0025
	ILNG	<0.0013	<0.0042	<0.0035
Mar-26	Palmerston	<0.0009	<0.0040	<0.0030
	Frances Bay	<0.0009	<0.0037	<0.0028
	Winnellie	<0.0009	<0.0040	<0.0028
	ILNG	<0.0013	<0.0048	<0.0037
Apr-26	Palmerston	<0.0013	<0.0045	<0.0035
	Frances Bay	<0.0013	<0.0042	<0.0035
	Winnellie	<0.0013	<0.0042	<0.0035
	ILNG	<0.0013	<0.0042	<0.0035
May-26	Palmerston	<0.0009	<0.0042	<0.0032
	Frances Bay	<0.0009	<0.0037	<0.0028
	Winnellie	<0.0009	<0.0042	<0.0032
	ILNG	<0.0009	<0.0040	<0.0030
June-26	Palmerston	<0.0009	<0.0037	<0.0028
	Frances Bay	<0.0009	0.0239	0.0104
	Winnellie	<0.0016	<0.0064	<0.0048
	ILNG	<0.0013	<0.0045	<0.0035

Table 3-11: Air toxics results (in ppm) for reporting period

Parameter	Averaging period	Criteria (Air Toxic NEPM)	Sample pollutant concentration			
			Palmerston	Francis Bay	Winnellie	ILNG
Benzene	24-hour [#]	N/A	0.0020	<0.0013	<0.0016	0.0017
	Annual [*]	0.003	0.0010	0.0009	0.0010	0.0011
Toluene	24-hour [#]	1	0.0045	0.0239	<0.0064	<0.0048
	Annual [*]	0.1	0.0038	0.0051	0.0037	0.0039
Xylene	24-hour [#]	0.25	<0.0035	0.0104	0.0059	<0.0037
	Annual [*]	0.2	0.0028	0.0034	0.0032	0.0031

*The annual average is calculated as the maximum 12-month average within the data set (full LOR value used where relevant in this calculation).

[#]The 24-hour value shown is the maximum value within the 12-month data set.

[†] For the purposes of reporting against the NEPM standard, the laboratory data is converted from micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to parts per million (ppm), this calculation assumes a standard temperature and pressure of 25°C and 1 atmosphere.

3.5.3 Program rationalisation

Although the above monthly air toxic sampling program is termed adaptive management, the draft OEMP Rev 9 has been updated to include air toxics and criteria for when monitoring is required *'in the event where one or more acid gas incinerator(s) (AGIs) are offline for 90% or more during any 30-day period'*.

4 UNPLANNED DISCHARGES TO LAND

4.1 Groundwater quality

The key objective of the groundwater monitoring program is to detect changes in groundwater quality and determine if these changes are attributable to Ichthys LNG operations. Note there are no planned discharges directly to groundwater, other than rainfall and non-contaminated water (NCW); however, there is potential for groundwater to become contaminated as a result of an accidental spill, leak, or rupture during Ichthys LNG operations.

As per the OEMP, groundwater quality is required to be monitored biannually (e.g. twice yearly at 15 sites). Table 4-1 provides a summary of the groundwater quality surveys completed during the reporting period.

Table 4-1: Groundwater quality monitoring survey details

Survey	Sampling period	Report	INPEX Doc #
16	27, 28 & 30 October 2025	Groundwater Quality Interpretive Report No 16	L290-AH-REP-70155
17	28 - 30 April 2026	Groundwater Quality Interpretive Report No 17	L290-AH-REP-70160

4.1.1 Method overview

The groundwater quality monitoring surveys were undertaken in accordance with the Groundwater Quality Monitoring Plan (L290-AH-PLN-70000). The Groundwater Quality Monitoring Plan was developed in consideration of Australian, State and Territory groundwater sampling standards and guidelines. A high-level summary of methods is provided below.

Prior to sampling, groundwater wells were gauged with an interface probe to determine the standing water level (SWL). Following gauging, groundwater wells were purged using a low flow micro purge pump with SWL and in situ parameters being measured every three to five minutes. Once the well had been purged and in-situ parameters had stabilised over three consecutive readings, groundwater samples were then collected for analysis.

Following collection, groundwater samples were sent to NATA accredited laboratories for analysis of parameters listed in Table 4-2. Results were then compared to benchmark levels to ascertain whether a trigger exceedance had occurred.

Exceedance of a benchmark level is defined as a measured analyte exceeding its relevant trigger value (see Table 4-2) and the same analyte also exceeding the background level for each groundwater well. An exceedance is considered a technical exceedance when the LOR exceeds the benchmark level for a parameter. Specific background level trigger values were calculated using the approach described in ANZG (2018). The 80th or 20th percentile value for each parameter was determined using the monthly groundwater data collected during the construction phase of Ichthys LNG between 2013 and 2018.

Table 4-2: Groundwater quality monitoring parameters, methods, and trigger values

Parameter	Unit	Sampling method*	Trigger value	Trigger value reference
pH	pH units	CFI	Outside 6.0 and 8.5	NRETAS 2010
EC	µS/cm	CFI	n/a	n/a
Dissolved oxygen	%	CFI	n/a	
Oxygen reduction potential	mV	CFI	n/a	
Temperature	°C	CFI	n/a	
Total dissolved solids	mg/L	SFLA	n/a	
Oxides of nitrogen	µg N/L	SFLA	20	NRETAS 2010
Ammonia	µg N/L	SFLA	20	
TN	µg N/L	SFLA	300	
TP	µg P/L	SFLA	30	
FRP	µg/L	SFLA	10	
Phenols	µg/L	SFLA	n/a	n/a
TRH [†]	µg/L	SFLA	600	Ministry of Infrastructure and the Environment (2009)
Benzene	µg/L	SFLA	500	ANZG 2018
Toluene	µg/L	SFLA	180	
Ethylbenzene	µg/L	SFLA	5	
Xylenes	µg/L	SFLA	75	
Aluminium	µg/L	SFLA	24	Golding et al. 2015
Arsenic	µg/L	SFLA	2.3	ANZG 2018
Cadmium	µg/L	SFLA	0.7	
Chromium III	µg/L	SFLA	10	
Chromium VI	µg/L	SFLA	4.4	
Cobalt	µg/L	SFLA	1	
Copper	µg/L	SFLA	1.3	
Lead	µg/L	SFLA	4.4	
Manganese	µg/L	SFLA	300±	J. Stauber and R. Van Dam Pers.Com. 23 March 2015 cited in Greencap (2016)
Mercury	µg/L	SFLA	0.1	ANZG 2018
Nickel	µg/L	SFLA	7	

Parameter	Unit	Sampling method*	Trigger value	Trigger value reference
Silver	µg/L	SFLA	1.4	
Vanadium	µg/L	SFLA	100	
Zinc	µg/L	SFLA	15	
Biological oxygen demand [†]	mg/L	SFLA	n/a	n/a
Faecal coliform [†]	cfu-100mL	SFLA	n/a	
<i>E. coli</i> [†]	cfu-100mL	SFLA	n/a	

* SFLA = sample for laboratory analysis, CFI = calibrated field instrument

† Only at BPGW19A and BPGW27A

‡ Where TRH is detected over the prescribed limits a silica gel clean-up will be undertaken and reanalysed to remove false positive natural oil results

± ANZG DGV for manganese in marine water came into effect May 2026



Figure 4-1: Groundwater quality sampling locations

4.1.2 Quality Control Assessment

Laboratory holding times

All samples arrived at the laboratories within the required holding times for all analytes and chemical compounds with trigger values, with the exception of two batches for dissolved hexavalent chromium in survey 16 and one trip blank for TRH/TPH/BTEXN analysis for survey 17.

Blank samples

Analyte concentrations measured in rinsate and field blank samples reported below the laboratory LORs for survey 16 with the following exceptions. The rinsate blank sample collected on 28 October recorded copper concentration of 2 µg/L. The field blank sample collected on 28 October recorded copper concentration of 1.4 µg/L. Primary groundwater samples collected on the same day reported copper concentrations above the LOR at bores BPGW28 (2.1 µg/L) and VWP328 (5.7 µg/L). The copper concentrations recorded at these bores both comprised exceedances. The detection of copper in the field blank and rinsate blank samples collected on this date places some uncertainty of the validity of the copper exceedances recorded on this date.

Rinsate blanks samples taken during survey 17 on 28 and 29 April 2026 recorded concentrations of aluminium above the laboratory LORs (25 µg/L and 11 µg/L respectively). Primary groundwater samples collected on the same days reported aluminium concentrations between 6 µg/L and 16 µg/L, which is below the trigger value of 24 µg/L. Concentrations reported below the LOR for all other analytes tested within field and trip blanks collected between 28 and 30 April 2026.

Duplicate and triplicate samples

Analyses of duplicate samples revealed that the RPD achieved the performance criteria of <30% for all analytes for survey 16 and survey 17, with the following exceptions for survey 17:

- Survey 17
 - Total kjeldahl nitrogen (TKN) (RPD = 33%)
 - Total nitrogen (RPD = 33%)

Analyses of triplicate samples revealed that the RPD achieved the performance criteria of <30 % for the majority of analytes, with the following exceptions:

- Survey 16
 - Filtered nickel (RPD = 35%)
 - Filtered zinc (RPD = 40%)
 - TKN (RPD = 144%)
 - Total nitrogen (RPD = 144%)
- Survey 17
 - Total Dissolved Solids (TDS) (RPD = 93%)
 - Cadmium (RPD = 197%)
 - Lead (RPD = 199%)
 - Nickel (RPD = 33%)

- Total kjeldahl nitrogen (TKN) (RPD = 124)
- Total nitrogen (RPD = 124)
- FRP (RPD = 182)

Survey 16: There are no trigger values for TKN. Nickel and zinc concentrations in the primary and triplicate samples were all below the trigger levels of 7 µg/L and 15 µg/L respectively. Total nitrogen concentrations in the primary sample (180 µg/L) were below the trigger level of 300 µg/L and background level of 272 µg/L at BPGW20. However total nitrogen concentrations in the triplicate sample (1,100 µg/L) were higher than the trigger and background levels. The elevated RPDs place some uncertainty on the nickel, zinc, TKN and total nitrogen concentrations recorded in the primary sample from BPGW20.

Survey 17: Results in the triplicate sample for lead (130 µg/L), cadmium (7 µg/L) and FRP (22 µg/L) were above background and trigger levels, and would represent an exceedance if they were recorded in the primary sample. These results place some uncertainty on the accuracy of the lead, cadmium and FRP concentrations recorded in the primary samples from BPGW01. It should be noted that results for these analytes in the BPGW01 duplicate samples (QA01) samples achieved the RPD performance criteria and were below background levels. The remaining RPDs in the duplicate and triplicate samples were for results below background levels.

Limit of reporting

The number of raised LORs during groundwater monitoring survey 16 and 17 has continued to decrease from what was recorded for previous monitoring rounds. This follows on from discussions with primary laboratory in the previous reporting period to develop an improved chain of custody that details the laboratory methods required to attain the LORs outlined in the Ichthys LNG Groundwater Monitoring Plan (INPEX 2020b).

Survey 16

The following observations were made regarding the LOR for analytes measured at ALS:

- Aluminium was analysed to an LOR of 5 µg/L in 10 primary samples. This is higher than the LOR of 2 µg/L required for the groundwater monitoring program, but below the trigger value of 24 µg/L. This result therefore does not impact the trigger assessment.
- Nickel was analysed to an LOR of 0.5 µg/L in six primary samples. This is higher than the LOR of 0.1 µg/L required for the groundwater monitoring program, but below the trigger value of 7 µg/L. This result therefore does not impact the trigger assessment.
- Vanadium was analysed to an LOR of 0.2 µg/L in five primary samples, and 0.5 µg/L in two primary samples. This is higher than the LOR of 0.1 µg/L required for the groundwater monitoring program, but below the trigger value of 100 µg/L. This result therefore does not impact the trigger assessment.

None of the raised LORs were higher than the trigger values, therefore the integrity of this round of groundwater monitoring has not been impacted.

Survey 17

The following observations were made regarding the LOR for analytes measured at the primary laboratory:

- Trivalent chromium was analysed to an LOR of 10 µg/L in six primary samples. This is higher than the LOR of 0.2 µg/L required for the groundwater monitoring program and equal to the trigger value. These results therefore do not impact the trigger assessment.

- Vanadium was analysed to an LOR of 0.2 µg/L in six primary samples and 0.5 µg/L in four primary samples. This is higher than the LOR of 0.1 µg/L required for the groundwater monitoring program but below the trigger value of 100 µg/L. These results therefore do not impact the trigger assessment.

None of the raised LORs were higher than the trigger values, therefore the integrity of this round of groundwater monitoring has not been impacted.

4.1.3 Results and discussion

A high-level summary of groundwater results, discussion and trends is provided in the following sections, with results for the reporting period provided in APPENDIX E. Note, presentation of groundwater data trends include data collected during the construction phase. Groundwater surveys undertaken during the reporting period are specified in Table 4-1. To date, groundwater monitoring during the operations phase of Ichthys LNG shows that there has been no change in groundwater quality.

Survey 16: October 2025

Forty-one exceedances against benchmark levels were recorded in groundwater monitoring survey 16 in October 2025. Exceedances include 16 for nutrients, 18 for dissolved metals and seven for pH. No exceedances were recorded for hydrocarbons, mercury or physicochemical parameters. This is the same number of exceedances recorded during the fourteenth groundwater monitoring survey undertaken during October 2024, though a reduction in the number of nutrient and dissolved metal exceedances.

All exceedances have been compared to data recorded during the dry season months of May to October between May 2016 and October 2025.

Visual assessment of time plotted data indicates that several of the nutrient analyte exceedances represent short-term spikes, potentially related to seasonal environmental variables, rather than increasing trends. Visual assessment of time plotted data has indicated the following trends for nutrient exceedances:

- Ammonia: Increasing trends at VWP341, BPGW40, BPGW41 and BPGW28.
- Total nitrogen: Increasing trends, albeit fluctuating at BPGW40.
- FRP: Potential increasing trend at BPGW01.

Visual assessment of time plotted data for metal exceedances has indicated the following trends:

- Cobalt: Increasing trend at VWP341
- Manganese: Increasing trend at VWP341
- Zinc: Increasing trend at VWP341.

The following historical maximum values were recorded during the October 2025 monitoring survey:

- Ammonia at BPGW28 (1,550 µg/L)
- FRP at BPGW01 (25 µg/L)
- Arsenic at VWP328 (771 µg/L)

Results of the investigation into each of the exceedances are described in Section 4.1.4.

Survey 17: April 2026

Thirty-three exceedances against both the trigger and background concentrations were recorded in the seventeenth groundwater monitoring survey in April 2026. Exceedances include 10 for nutrients, 20 for dissolved metals and three for pH. No exceedances were recorded for hydrocarbons, mercury or physicochemical parameters. This is a decrease from the 38 exceedances recorded during the fifteenth groundwater monitoring survey undertaken during April 2025.

Exceedances were plotted on time series graph to compare to pre-construction and construction data and discern trends in the data.

A review of the 10 nutrient exceedances from April 2026 monitoring survey found that nine of the exceedances were consecutive for at least three surveys. Trend analysis completed by the monitoring contractor indicates:

- Ammonia:
 - Increasing trends for ammonia at BPGW40
 - Increasing trends for ammonia has stabilised at BPGW18, BPGW41 and VWP341
 - Fluctuating trends for ammonia at BPGW28
- Total nitrogen: Fluctuating long-term trend for total nitrogen at BPGW40, BPGW41 and VWP341

A review of the 20 metal exceedances from April 2026 monitoring survey found that eleven of the exceedances were consecutive for at least three surveys. Trend analysis of the 20 metals exceedances completed by the monitoring contractor indicates that:

- Arsenic: Increasing albeit fluctuating long-term trend at BPGW09 and VWP328. BPGW40 above background though stable.
- Cobalt: Stable but fluctuating at BPGW08A, BPGW40 and VWP328; and increasing trend at BPGW07 and VWP341.
- Manganese: Fluctuating and increasing trend at VWP341.
- Nickel: increasing albeit fluctuating at BPGW07.
- Zinc: Fluctuations at BPGW07, fluctuating and increasing VWP341.

The following historical maximum values were recorded during the April 2026 monitoring survey:

- Ammonia at BPGW26 (377 µg/L)
- Cobalt at VWP341 (196 µg/L)
- Manganese at BPGW07 (1,830 µg/L) and BPGW09 (765 µg/L)

Results of the investigation into each of the exceedances are described in Section 4.1.4.

4.1.4 Trend analysis and trigger exceedance investigation outcomes

Trend analysis

Increasing trends were determined across groundwater surveys 16 and 17, ammonia ((BPGW28, BPGW40, BPGW41 and VWP341), total nitrogen (BPGW40), arsenic (BPGW40 and VWP328), cobalt (VWP341, VWP328, BPGW07 and BPGW40), manganese (BPGW07, BPGW07 and VWP341), nickel (BPGW07) and zinc (BPGW07 and VWP341). Note analytes with an increasing trend in survey 16 but did not record an exceedance in survey 17 are not automatically included in this analysis. Trend graphs represented below are based on sites experiencing exceedances for at least 3 successive monitoring sampling campaigns.

Further to the investigations undertaken for survey 16 and 17, during the previous reporting period the monitoring contractor was commissioned to complete an independent report to assess and interpret any groundwater data trends of metals and nutrients around the Ichthys LNG facility. Where applicable findings from this assessment have been incorporated into this section and Section 4.1.5.

pH

Analysis of pH at the sampling sites over time shown in Figure 4-2 indicate that the overall pH trend remained stabilised across the sites from earlier reporting periods. Of the pH exceedances observed no exceedance trend was detected, with values fluctuating and within historic ranges. The pH recorded at bore VWP341 has exceeded the lower background value three consecutive surveys, the 5.21 pH recorded exceeds the lower background (5.33) but remains within the background range for the bore.

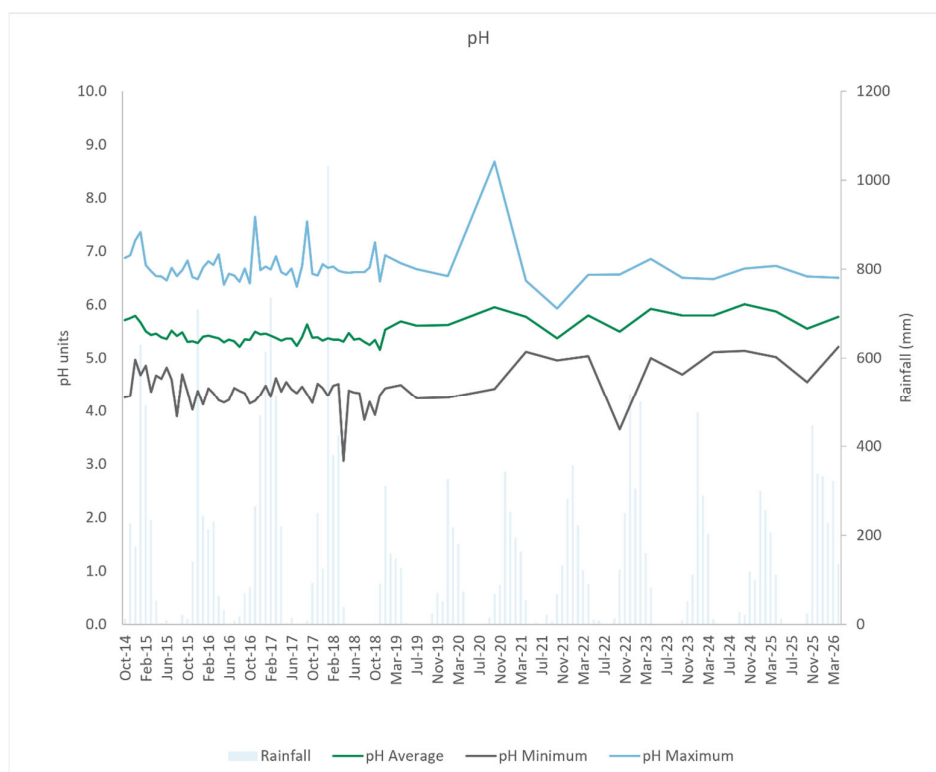


Figure 4-2: Average, minimum and maximum pH of all operational monitoring wells from October 2014 to April 2026

Ammonia

Ammonia exceedances were recorded at seven monitoring bores during the sixteenth and seventeenth groundwater monitoring survey (BPGW18, BPGW20, BPGW28, BPGW40, BPGW41 and VWP341 for both surveys and BPGW27A, for survey 16 and BPGW26 for survey 17). This is the same number of exceedances recorded per survey during the previous dry and wet season surveys undertaken in October 2024 and April 2025. Trend analysis indicates that while the ammonia concentrations at BPGW28 are higher than background, they are fluctuating within stable ranges. BPGW20 is only just above the background level of 96.8 µg/L (Figure 4-3).

Trend analysis indicates that ammonia concentrations at VWP341 have increased since 2018 and have stabilised. BPGW41 has been increasing since 2014 and appears to be following an increasing trend. VWP341 and BPGW40 have decreased in concentration since survey 14; however, they both remain above background concentrations (Figure 4-4). This increase at BPGW40, BPGW41 and VWP341 is likely due to a reduction in recharge of groundwater, low aquifer permeability and lower rates of dispersion (AECOM, 2024).

It is noted that monitoring during the construction stage of the project (2012-2015) identified that ammonia concentrations were regularly recorded above the trigger value of 20 µg/L across the site (AEC Environmental 2015). Investigations into the ammonia trigger exceedances did not determine any potential sources of ammonia on site, no pathway from sources of ammonia on site to groundwater. Coastal areas often have high levels of organic matter, both from marine sources (like seaweed and marine life) and terrestrial sources (like plant litter). As organic matter decomposes, it releases ammonia into the groundwater through processes such as ammonification, where organic nitrogen is converted into ammonium. Coastal sediments, which are often rich in clays and organic materials, can retain and release ammonia through ion exchange processes. This ammonia can then migrate into the groundwater (AECOM, 2024). Therefore, the increasing trends are considered to be as a result of natural variation.

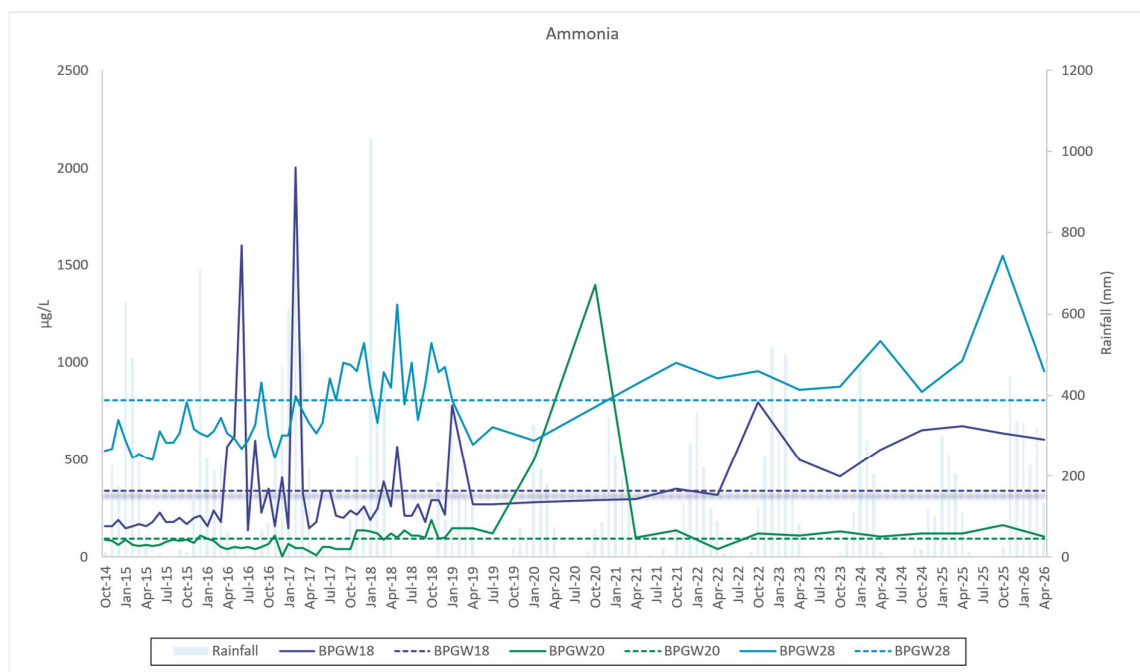


Figure 4-3: Ammonia concentrations at BPGW18, BPGW20 and BPGW28 from October 2014 to April 2026 and respective background levels (dashed lines)

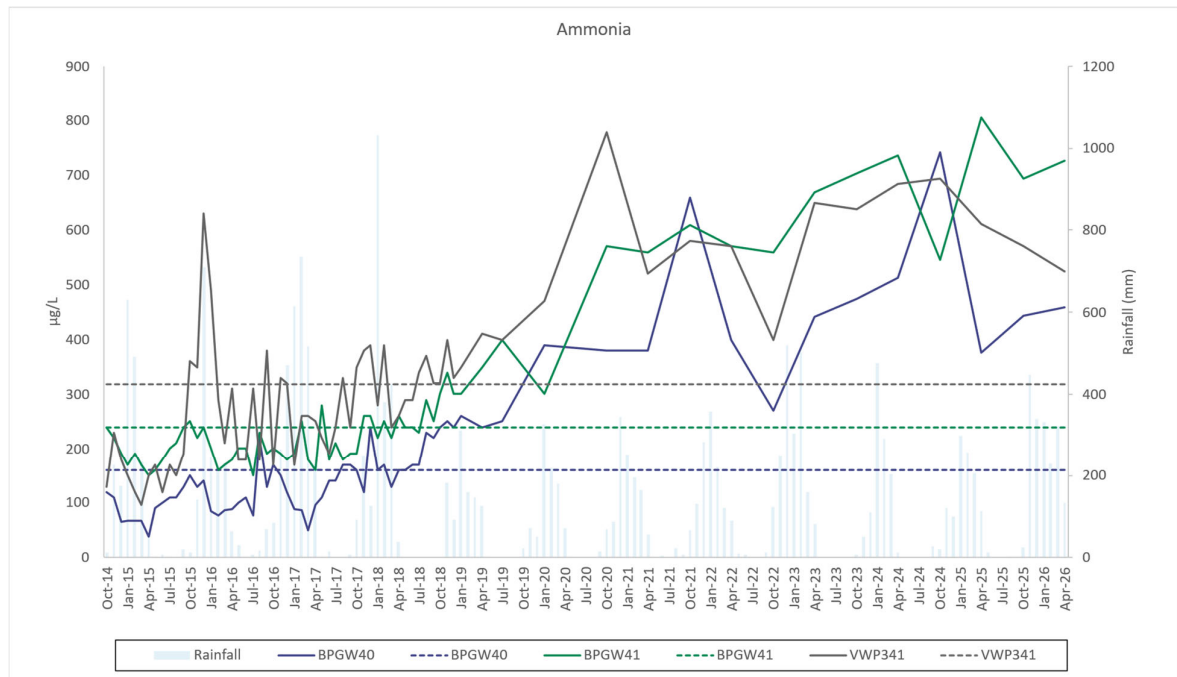


Figure 4-4: Ammonia concentrations at BPGW40, BPGW41 and VWP341 from October 2014 to April 2026 and respective background levels (dashed lines)

Total nitrogen

Five and three trigger exceedances for total nitrogen were recorded respectively during the sixteenth and seventeenth groundwater monitoring survey, at bores BPGW18, BPGW28, BPGW40, BPGW41 and VWP341. BPGW40, and BPGW41 and VWP341 have recorded exceedances for at least three consecutive surveys.

Trend analysis as indicates as shown in Figure 4-5 that total nitrogen concentrations recorded at BPGW40, BPGW41 and VWP341 fluctuate each year. Concentrations at BPGW40 and BPGW41 have remained above the background since October 2021 and have been above the background at VWP341 since April 2023. The October 2025 exceedances for nitrogen are the first at BPGW18 since 2018. Coastal areas are prone to saline water intrusion, which can create anoxic (low oxygen) conditions in groundwater. These conditions can inhibit the denitrification process (which would otherwise remove oxides of nitrogen), leading to an accumulation of nitrogen oxides in the groundwater (AECOM, 2024).

A review of Ichthys LNG activities indicates that there have been no activities that may have impacted total nitrogen at these locations. Therefore, total nitrogen trigger exceedances are not considered to be a result of Ichthys LNG operations, however they will continue to be monitored in future surveys.

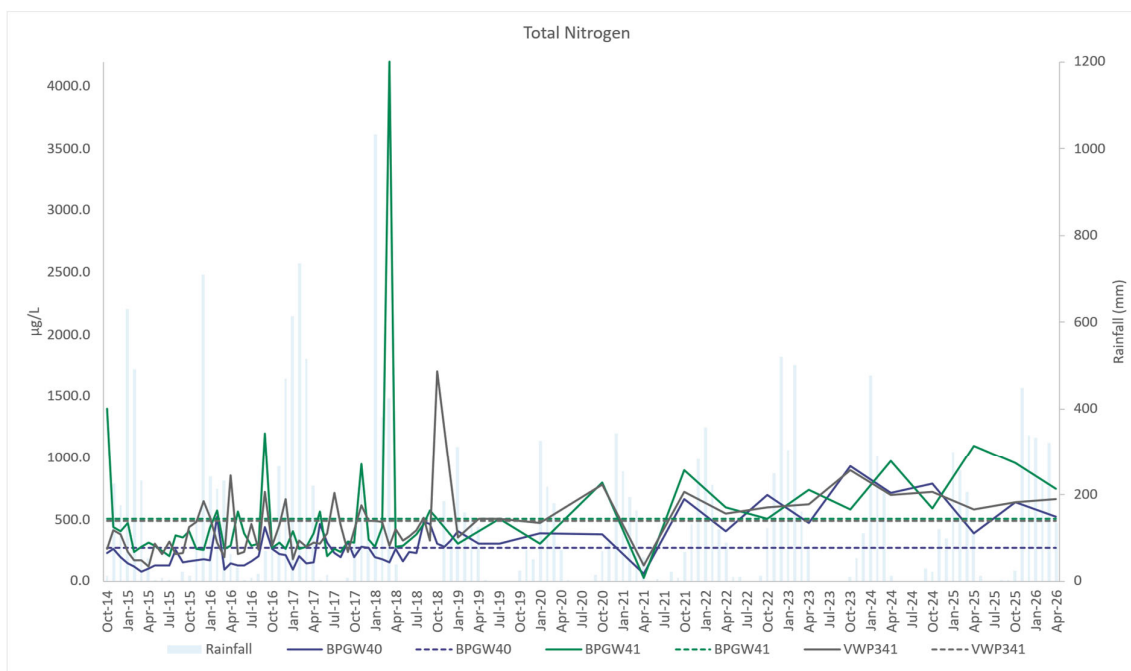


Figure 4-5: Total nitrogen concentrations recorded at BPGW40, BPGW41 and VWP341 from October 2014 to April 2026 (dashed lines represent respective background levels)

Filterable reactive phosphorus

Four FRP exceedances were recorded during the sixteenth groundwater monitoring survey at bores BPGW01, BPGW08A, BPGW18 and BPGW41. No bores recorded an exceedance during the seventeenth groundwater survey. Trend analysis indicates FRP concentrations regularly fluctuate with concentrations generally increasing in the dry season and decreasing in the wet season. Concentrations of FRP at BPGW07 had been above background levels since 2023 prior to non-exceedance in Oct 2025 survey, no other site has recorded successive exceedances during the reporting period.

Arsenic

Three and five exceedances for arsenic were recorded respectively during sixteenth and seventeenth groundwater monitoring survey. Of these monitoring bores BPGW40, VWP328 and VWP341 have recorded exceedances on three or more successive surveys, refer to Figure 4-6 and Figure 4-7. Arsenic concentrations at these bores are higher than the early background period (2014-2016), they have been fluctuating within a stable range since 2017.

High concentrations of arsenic are known to occur within the coastal strata of Darwin Harbour and are likely a reflection of local geology rather than anthropogenic sources (Padovan 2003). Arsenic is pH dependent. In soil, AsH_3 and $As(0)$ occur only under highly reducing conditions, except for when the pH is extremely low. Under moderately reducing conditions and a pH between 4 and 10, and an ambient redox potential of around 0 V, such as may occur in anoxic subsurface waters and sediments, arsenite $As(III)$, e.g., H_3AsO_3 , As_2O_3 and arsenate $As(V)$, e.g., H_3AsO_4 occur. Both arsenite and arsenate forms are soluble in water. Arsenic mobilisation may be a result of desorption/dissolution due to a change to a reducing chemical environment, and dissolution of host oxyhydroxide due to decrease in pH or shift from oxidizing to reducing conditions (AECOM, 2024).

The exceedances observed in this reporting period are likely due to seasonal factors with further investigation not suggested to be currently required by monitoring contractor.

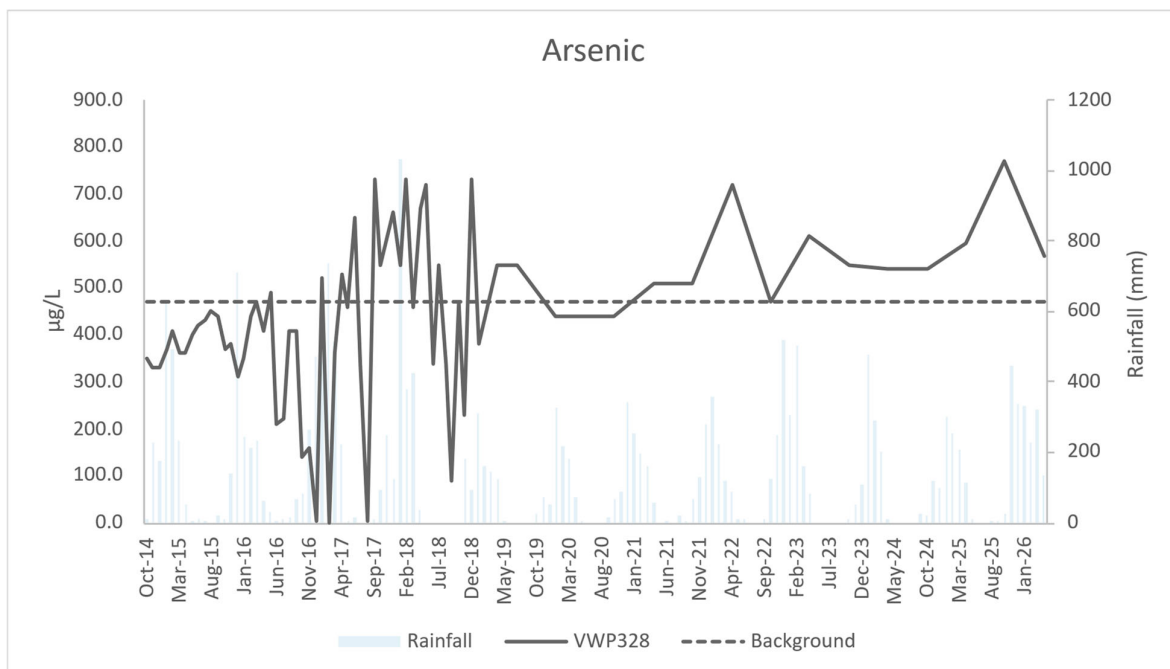


Figure 4-6: Arsenic concentrations recorded at VWP328 from October 2014 to April 2026

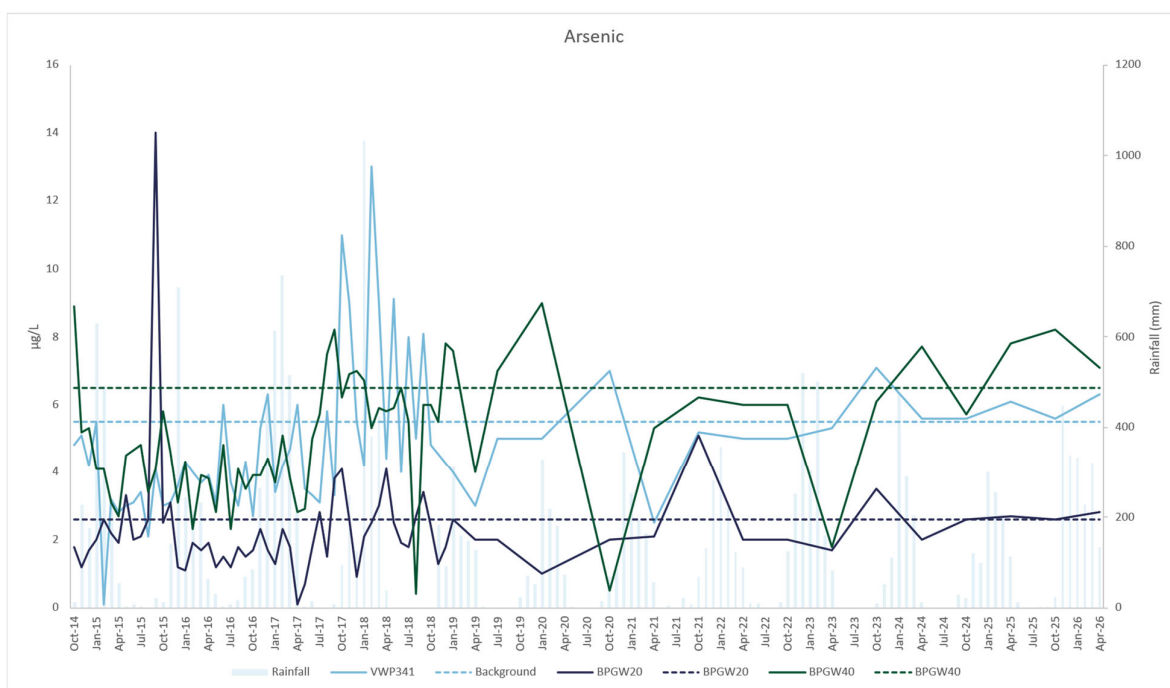


Figure 4-7: Arsenic concentrations recorded at BPGW20, BPGW40 and VWP341 from October 2014 to April 2026

Cobalt

Monitoring bores BPGW07, BPGW40, VWP328 and VWP341 have recorded cobalt exceedances on three or more successive surveys. Cobalt concentrations have fluctuated above or near the trigger and background levels at BPGW40 since April 2021, with the concentration spiking in April 2025 (2.3 µg/L). Exceedances at BPGW40 appear to be fluctuating seasonally at or just above the trigger value (1 µg/L) (Figure 4-8), with higher trends potentially linked to an increasing rainfall, and therefore are likely a result of natural variation.

Concentrations at BPGW07 fluctuate seasonally and are largely stable; however, the April 2026 exceedance is the second highest cobalt concentration recorded for the bore and third consecutive exceedance. Cobalt concentrations at VWP328 appear to be stable with slight seasonal fluctuations over the last three years. The April 2025 exceedance represents the seventh exceedance in eight monitoring rounds (Figure 4-9).

Figure 4-10 demonstrates that VWP341 cobalt concentrations appear to be rising steadily and have consistently trended at the top of cobalt concentrations across operational groundwater bores. The April 2026 exceedance represents the historical maximum for the bore.

The weathering of cobalt-bearing rocks (such as ultramafic and sulfide ores) releases cobalt into the soil and groundwater. In coastal areas, shallow groundwater often experiences fluctuating redox conditions. Under reducing conditions, cobalt can be mobilised from sediments into groundwater. The mixing of freshwater with saline saltwater can alter the geochemistry of groundwater, leading to the desorption of cobalt from mineral surfaces and its subsequent enrichment in groundwater. Additionally, coastal environments often have high organic content, which can form complexes with cobalt, enhancing its mobility and concentration in groundwater (AECOM, 2024).

Investigations into trigger exceedances did not determine any potential sources of cobalt on site (refer Section 4.1.5); therefore, the increasing trends are considered to be likely as a result of natural variation. These increases are likely due to a reduction in recharge of groundwater, low aquifer permeability and lower rates of dispersion (AECOM, 2024).

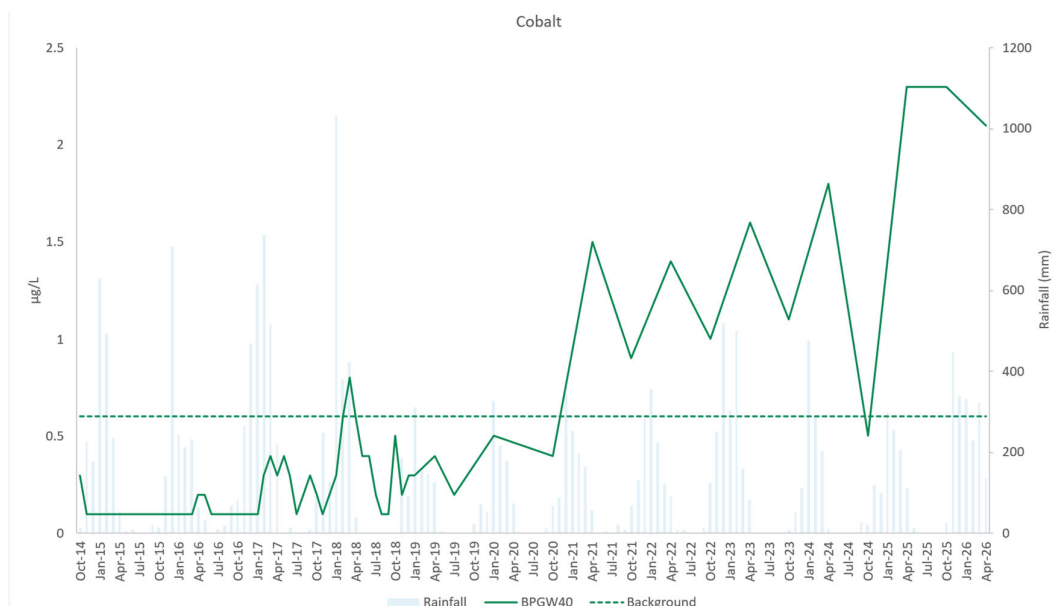


Figure 4-8: Cobalt concentrations recorded at BPGW40 from October 2014 to April 2026

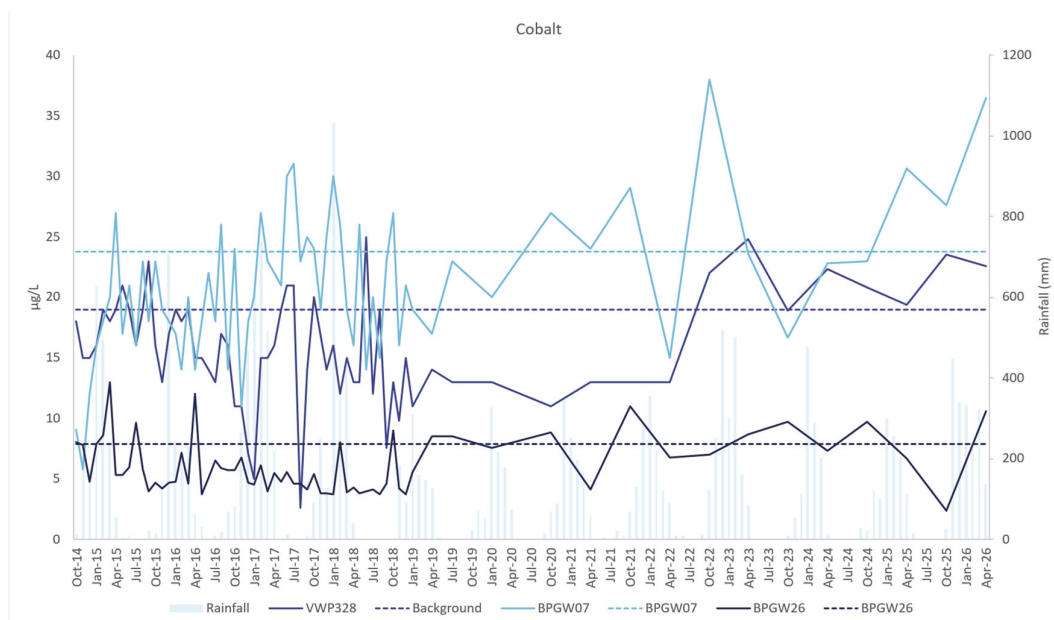


Figure 4-9 Cobalt concentrations recorded at VWP328 and BPGW07 from October 2014 to April 2026

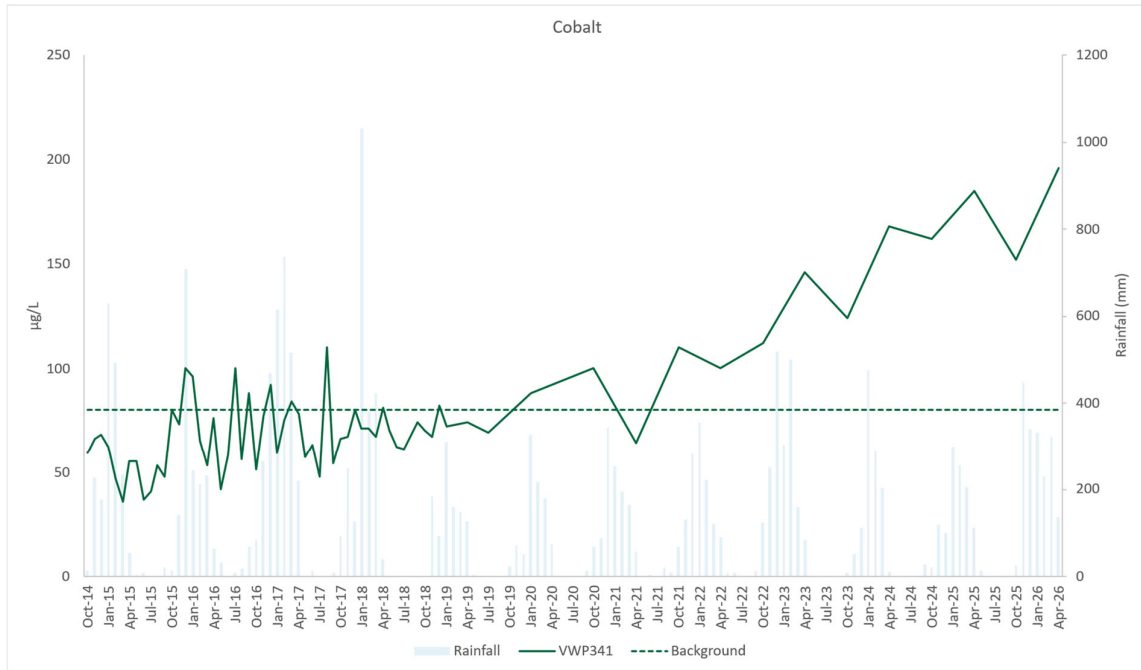


Figure 4-10: Cobalt concentrations recorded at VWP341 with respective background level (dashed line) and the average, minimum and maximum cobalt of all operational monitoring wells from October 2014 to April 2026

Manganese

Figure 4-11 indicates that manganese concentrations at BPGW07, BPGW09 and VWP341, reaching historical maximums at BPGW07 and BPGW09 in April 2026. The bores appear to fluctuate seasonally, with lower concentrations in the dry season and higher concentrations in the wet season. Trend analysis indicates that manganese concentrations at VWP341 appear to be trending upwards. Manganese concentrations at BPGW07 and BPGW09 appear to be gradually trending upwards and are potentially increasing due an increase in concentration of groundwater discharge upgradient (AECOM, 2024). Manganese is a major constituent of soils, and its solubility is controlled by pH and oxidation-reduction reactions. Anaerobic conditions can drive the reduction of manganese leading to its dissolution into groundwater. This often happens in soils where oxygen is depleted. Coastal areas often have complex groundwater recharge and discharge dynamics, influenced by tides, precipitation, and human activities. Variations in these dynamics can cause fluctuations in redox conditions, influencing manganese mobility. Manganese concentrations in soil solution are increased under reducing conditions and at low soil pH values (AECOM, 2024).

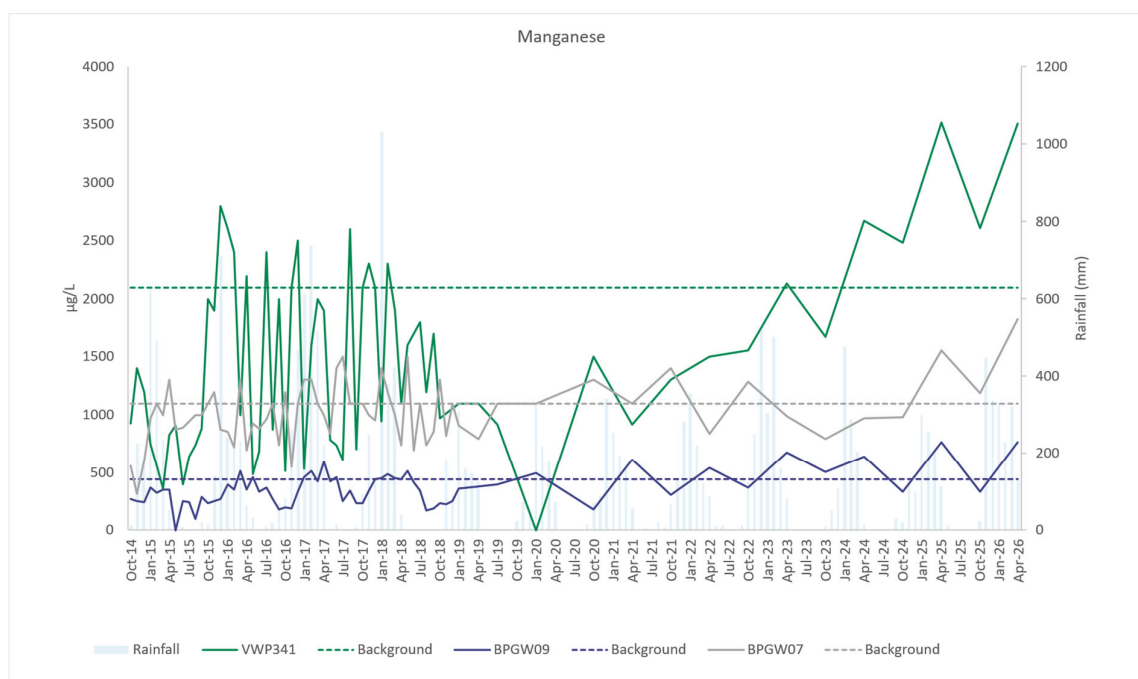


Figure 4-11: Manganese concentrations recorded at BPGW07, BPGW09 and VWP341 from October 2014 to April 2026

Nickel

A nickel exceedance was recorded at VWP341 during the seventeenth groundwater monitoring survey, with the bore also recording consecutive exceedances from survey 13-15. BPGW07 recording an exceedance in both survey 16 and 17 and equating to three consecutive monitoring event exceedances for the bore. Trend analysis indicates that nickel concentrations fluctuate within a stable range at BPGW07, though the recent increasing trend will need to be monitored (Figure 4-12). The monitoring contractor has not recommended further investigation. Nickel is one of the most mobile of the heavy metals in the aquatic environment. The mobility of nickel in the aquatic environment is controlled largely by competition between various sorbents to scavenge it from solution and ligands to form non-sorptive complexes. In reducing environments, insoluble nickel sulfide may form. Nickel chloride is water-soluble and would be expected to release divalent nickel into the water. Acidic conditions, manganese, and iron-reducing conditions increase the mobilisation of nickel (AECOM, 2024).

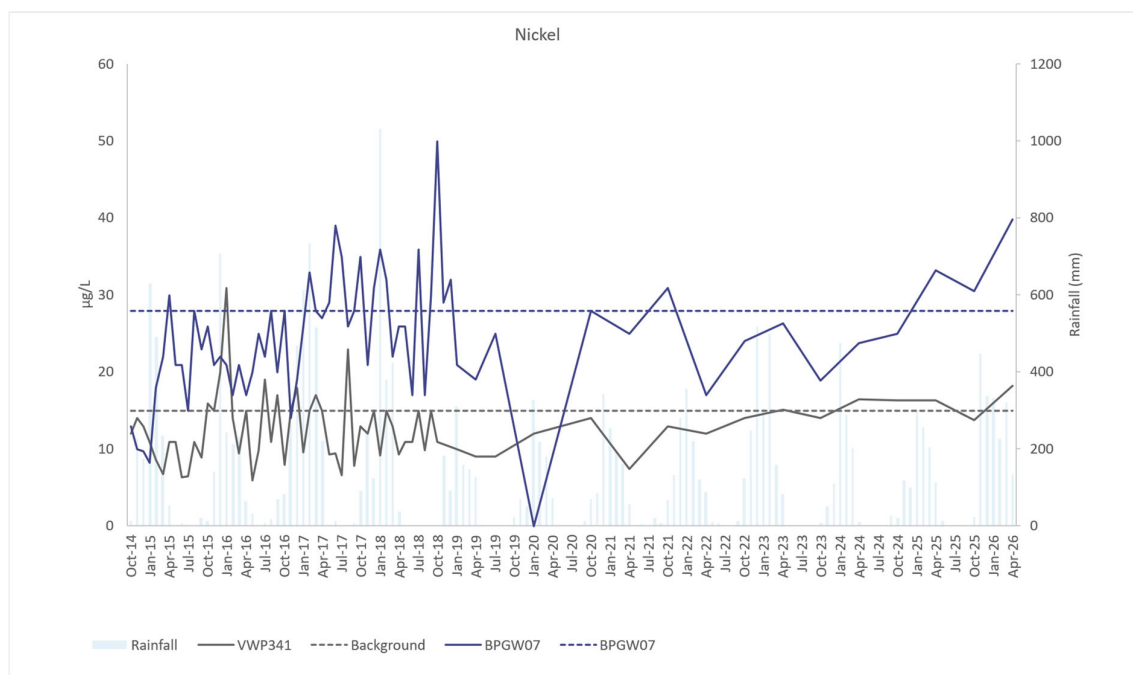


Figure 4-12: Nickel concentrations recorded at BPGW07 and VWP341 from October 2014 to April 2026

Zinc

Consecutive zinc exceedances have occurred for several surveys at BPGW07 and VWP341. Trend analysis shows that the zinc concentrations frequently fluctuate at BPGW07 but remain within a stable range (Figure 4-13). Zinc concentrations appear to have steadily increased at VWP341 since 2016. Seasonal fluctuations are evident with higher concentrations observed during the wet season. Investigations into trigger exceedances did not determine any potential sources of zinc on site (refer Section 4.1.4), therefore the increasing trends are considered to be likely as a result of natural variation. The mobility and solubility of zinc in groundwater are influenced by pH and redox conditions. In acidic conditions, zinc is more soluble and can be more readily mobilized into the groundwater (AECOM, 2024).

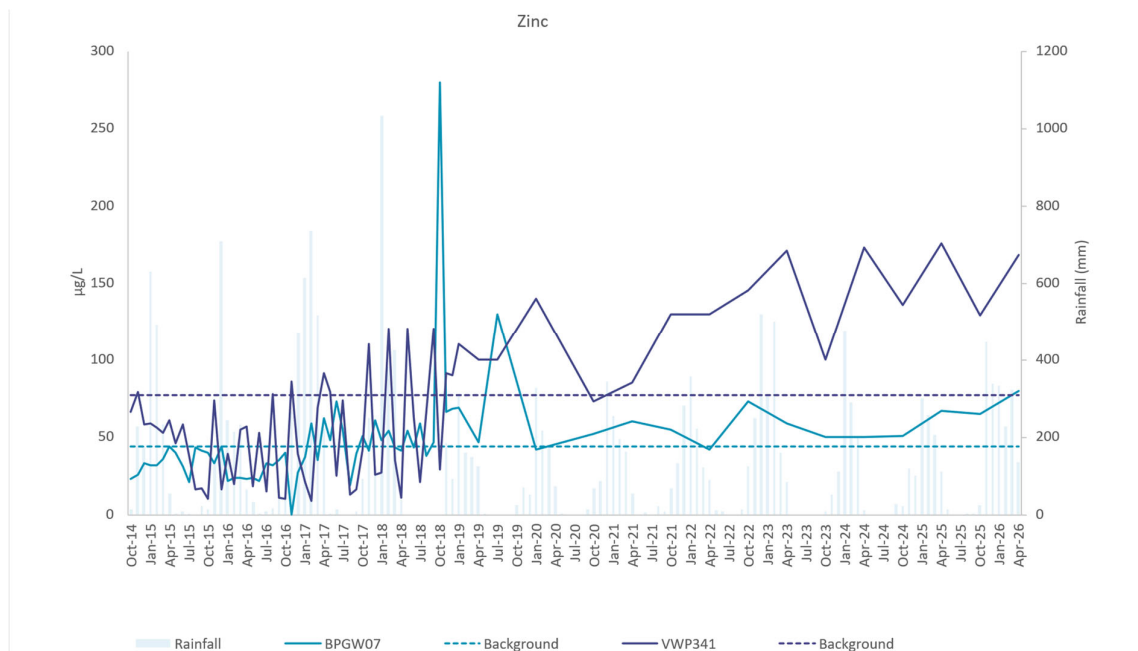


Figure 4-13: Zinc concentrations recorded at VWP341 and BPGW07 from October 2014 to April 2026

4.1.5 Trigger exceedance investigations

In accordance with the receiving environment adaptive management process outlined in Section 7.5 of the OEMP, groundwater trigger exceedances were investigated (i.e. results that exceeded benchmark levels, see Section 4.1.1). A summary of the number of trigger exceedances by survey is provided in Table 4-3 with corresponding investigation reports listed below:

- Groundwater Survey 16 – Trigger Investigation Report (L290-AH-REP-70167)
- Groundwater Survey 17 – Trigger Investigation Report (L290-AH-REP-70166)

Investigations were completed for all trigger exceedances. Investigations considered multiple lines of evidence, such as rainfall, seasonal factors, Ichthys LNG operational activities and any spill events, to determine if increasing trends in groundwater analytes were likely to be as a result of Ichthys LNG.

Investigations completed following the October 2025 and April 2026 monitoring surveys concluded that the reported trigger exceedances were not as a result of Ichthys LNG operations and were likely natural (e.g. represent seasonal trends and natural variability). Therefore, no further evaluation or management response was required.

Table 4-3: Summary of groundwater trigger exceedances

Date	Month	Physio-chemical	Nutrients	Metals
Survey 16	October	7	16	18
Survey 17	April	3	10	20

Further to the investigations above the independent groundwater assessment report was developed, analysing the potential causes for increasing concentrations of analytes at specific bores to interpret the impacts of these increasing trends to the surrounding environment. These results will determine whether the OEMP needs modifying to better monitor ILNG impacts to groundwater in a meaningful way. This report was delivered late-2024 and summarised within the previous AEMR (2024/5). The report investigated subject matter including but not limited to:

- Trace metals vs nutrients: seasonal concentration fluctuation and causes;
- Groundwater stratification: salinity profiles and potential effects on different bores;
- Changes at the Combined Operations Complex: Combined effect of rate of recharge and fluctuating water table within the fill materials;
- Changes at the LNG facility: changes to the local hydrogeology, reduced recharge, lower aquifer permeability, and lower rates of dispersion;
- Compacted foundations: reduction in permeability, hydraulic gradient increases, seasonal recharge reduction.

4.1.6 Program rationalisation

No changes to groundwater monitoring at Ichthys LNG are currently proposed, as the current biannual monitoring is appropriate to capture seasonal impacts from unplanned discharges to ground.

5 FLORA, FAUNA, AND HERITAGE

5.1 Mangrove health and intertidal sediment

Mangrove health and intertidal sediments are monitored to detect potential adverse changes in mangrove community health as an indirect result of Ichthys LNG operations. The objectives of biennial mangrove health and intertidal sediment surveys are to:

- informatively monitor mangroves adjacent to Ichthys LNG
- detect changes in intertidal sediment quality attributable to Ichthys LNG.

As per the OEMP (L060-AH-PLN-60005), mangrove health and intertidal sediments are monitored biennially. Mangrove health and intertidal sediments were monitored during April 2026 as part of the fifth mangrove monitoring event. Table 5-1 provides a summary of the mangrove health and intertidal sediments survey completed during the reporting period.

Table 5-1 Mangrove health and intertidal sediment monitoring survey details

Survey	Date	Report	INPEX Doc #
6	15–17 April 2026	Mangrove Health and Intertidal Sediments Monitoring: Report No 6	L290-AH-REP-70158

5.1.1 Method Overview

The mangrove health and intertidal sediment survey was completed in accordance with the Mangrove Health and Intertidal Sediment Monitoring Plan (L290-AH-PLN-70002). This included monitoring at nine sites: two control and seven potential impact sites. At each site, a transect from the landward margin of the hinterland assemblage to the seaward margin of the Tidal Creek assemblage was established during construction phase monitoring. The transects traverse each of the three main Darwin Harbour mangrove assemblages, where present; Hinterland Margin (HM), Tidal Flat (TF) and Tidal Creek (TC). The location of each transect is shown in Figure 5-1

Monitoring at each site is undertaken at fixed quadrats ($10\text{ m} \times 10\text{ m} = 100\text{ m}^2$) established along each transect. At impact sites, monitoring is undertaken at the fixed quadrat within the most landward assemblage present. The location of impact transects were selected based on their proximity to groundwater sampling locations and their location downstream of potential contamination sources, such as condensate storage tanks. For each control site monitoring is undertaken at three fixed quadrats along transects that were also established during construction phase monitoring, with each quadrat representing a different community assemblage. As such, 13 quadrats (i.e. seven potential impact and six control quadrats) are monitored during each survey. Each of the 13 monitoring quadrats is divided into four $5\text{ m} \times 5\text{ m} = 25\text{ m}^2$ subplots formed by the fixed quadrat, four corner posts and a centre post (resulting in a total of 52 subplots).

An overview of the monitoring parameters is presented in Table 5-2.



Figure 5-1: Mangrove health and intertidal sediment monitoring locations

Table 5-2: Monitoring parameters, methodologies and associated parameters

Parameter	Methodology	Monitoring Parameters
Mangrove health	- Mangrove canopy cover assessment. - Surveillance photo-monitoring.	- Percentage canopy cover - Observations on mangrove health (e.g. leaf colour).
Sediment quality	- Sediment sampling and laboratory analysis. - In situ sediment measurements for pH and redox.	- Metal and metalloids (Al, Sb, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn) - TPH, TRH, ToC, % Moisture, PSD - pH (measured in field) - Redox (measured in field)

Mangrove Health monitoring

Mangrove canopy cover was measured at each site using established fixed quadrats and using a spherical densitometer (Stickler 1959) to provide an estimate of foliage cover. Three replicate foliage cover measurements were taken within each 5 m × 5 m (25 m²) subplot formed by the fixed quadrat four corner posts and a centre post in the assemblage adjacent to Ichthys LNG and a subset of transects in high-risk areas. The canopy cover for each quadrat was then calculated by averaging the mean of the foliage cover readings from each subplot. The spherical densitometer was modified to a 17-point densitometer according to the Strickler method (Strickler 1959). The densitometer was placed on the top of a camera tripod and positioned at a height of approximately 1 m above the ground. Measurements were only taken once the bubble level on the densitometer and the tripod were centred.

Mangrove surveillance photo-monitoring was also undertaken in quadrats adjacent to Ichthys LNG to provide a visual record of the communities' appearance and condition (e.g. leaf colour). Repeatable photos were captured facing away from the quadrat centre post towards each of the four corner posts. Photos taken during Survey 5 were compared with photos from the early construction phase (2015) to detect changes in mangrove health over time.

Sediment monitoring

To test for potential changes in sediment composition and sediment quality, two surficial sediment sample were taken from the top 2–5 cm, from within each of the 13 monitoring quadrats. Collected sediments were sent to NATA laboratories, accredited for the relevant analytical suite, for analysis. Laboratory results were then compared to benchmark levels to ascertain whether a trigger exceedance had occurred.

Exceedance of a benchmark level is defined as a measured analyte exceeding its relevant SQGV as per ANZG (2018) and the same analyte also exceeding the background level for Darwin Harbour sediment. Background levels (i.e. average concentration) were calculated based on intertidal results presented in Darwin Harbour Baseline Sediment Survey 2012 (Munksgaard et al. 2013). Note, where measured metal or metalloids exceeded SQGVs, results (where possible) were normalised for aluminium concentrations based on the methods described in Munksgaard (2013) and Munksgaard et al. (2013) and compared to background levels (i.e. baseline or reference levels). Quality assurance and quality control procedures for intertidal sediment sampling include collection of field split samples, field triplicate samples, field blanks and transport blanks.

Sediments were also tested in-situ for pH and redox potential using a YSI water quality probe.

5.1.2 Results and discussion

Mangrove health monitoring

Canopy cover

Canopy cover can be defined as the per cent forest area occupied by the vertical projection of tree crowns (Paletto & Tossi, 2009). This parameter is considered a useful indicator of environmental stress as leaf defoliation and leaf growth are sensitive to a wide range of environmental indicators. Canopy cover across all sites has remained relatively stable over time (Figure 5-2). Forest canopy is one of the key determinants of microhabitat within the forest, impacting vegetation structure and wildlife habitat (AECOM, 2026). Canopy cover data recorded during Survey 6 was similar at control sites ($89.29\% \pm 1.61$) than at impact sites (88.4 ± 1.82).

Canopy cover results were consistent with values recorded during Survey 5 undertaken in 2024. Canopy cover values were higher than baseline values (2012-2013), construction phase (2013-2018) and data recorded during April 2021 (Survey 3). Variations in the mean canopy density between Survey 6 (2026) and Survey 5 (2024) at individual sites recorded reductions of ~ 1 – 20.9% and increases of ~ 3.4 – 9.4% . This extent of variation, experienced at both impact and control locations, is expected to reflect natural variability and the precision of the sampling technique. Sites BPMC09 and CSMC01-TC recorded canopy cover values notably higher than baseline data, with increases of 20.5% and 29.8% , respectively (Table 5-3).

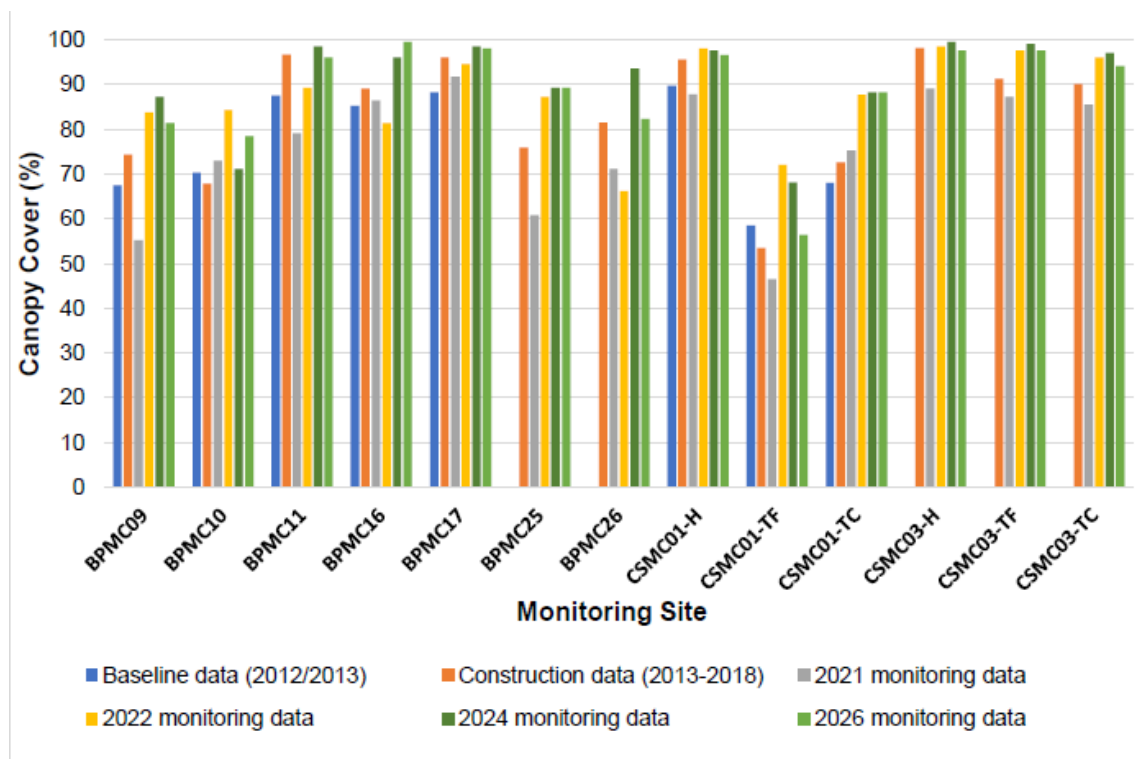


Figure 5-2: Mangrove canopy cover

Table 5-3: Canopy cover results from 2026 and comparison with baseline and construction data

Location	% Canopy cover			Change from baseline data
	Baseline data	Construction data	2026 results (± SD)	
Impact sites				
BPMC09	67.5	74.3	81.37 (±1.99)	20.5%
BPMC10	70.3	67.9	78.43 (±2.69)	11.6%
BPMC11	87.5	96.7	96.08 (±1.18)	9.8%
BPMC16	85.3	89.1	99.51 (±0.28)	16.7%
BPMC17	88.3	96.0	98.04 (±0.47)	11.0%
BPMC25	NA	75.9	89.22 (±2.15)	17.5%
BPMC26	NA	81.5	82.35 (±2.52)	1.0%
Mean	79.8	83.1	89.29% (±1.61)	12.6%
Control sites				
CSMC01 - H	89.8	95.6	96.57 (±0.95)	7.5%
CSMC01 -TF	58.5	53.5	56.37 (±5.30)	-3.6%
CSMC01 -TC	68.0	72.6	88.24 (±2.27)	29.8%
CSMC03 - H	NA	98.2	97.55 (±0.76)	-0.7%
CSMC03 -TF	NA	91.3	97.55 (±0.64)	6.8%
CSMC03 -TC	NA	90.1	94.12 (±1.0)	4.5%
Mean	72.1	83.6	88.4% (±1.82)	7.4%

Differences in canopy density between the sites are likely reflective of different mangrove community structures. Typically, the closed forests and woodlands of tidal creek (such as BPMC26) and hinterland margin (BPMC16) assemblages produce relatively high canopy density values (on average >95% and >85% respectively) compared to the lower and more open canopies within the *Cerriops* scrubland assemblage which occupies much of the mid-upper tidal flat zone (CSMC01-TF).

Community health

Photo monitoring of both impact and control sites during Survey 6 indicate that mangroves are in healthy condition with little signs of deterioration or abnormal stress (one control site (CSMC03-TF) recorded notable woody debris and dead trees within the site vicinity, overall mangrove vegetation condition remained good). All sites were classified as healthy in 2026 with no signs of deterioration or abnormal stress based on indices of leaf colour, regeneration (i.e. seedlings and saplings), visible vertebrate and invertebrate fauna and infaunal bioturbation.

Sediment monitoring

In-situ sediment measurements

In-situ measurements of pH and redox are displayed below in Table 5-4. In-situ measurements for pH at impact sites ranged from 7.1 to 8.05, with a mean value of 7.48. Measurements of pH at control sites ranged from 7.12 to 8.01 at control sites, with a mean value of 7.58. The range of pH values recorded reflects the conditions experienced by the surface sediments which are well oxygenated and regularly flushed by tidal waters. The results indicate that mangrove sediments at both impact and control sites are slightly alkaline. These values fall within the typical range reported for mangrove soils, which commonly exhibit pH values between 6 and 7, although lower values may occur under certain conditions (English et al., 1997).

In-situ measurements for redox potential at impact sites ranged from -22.6 mV to 95.1 mV, with a mean of 58.43. Redox potential at control sites ranged from 40.5 mV to 69.1 mV, with a mean of 56.82 mV. The predominantly positive ORP values indicate that mangrove sediments at monitoring sites in the top 5 cm are oxidising.

Table 5-4: Mangrove sediment in situ monitoring results

Location	Date	pH	ORP (mV) (redox potential)
Impact sites			
BPMC09	16/04/2026	7.53	60.7
BPMC10	15/04/2026	7.88	58.9
BPMC11	15/04/2026	7.21	80.3
BPMC16	15/04/2026	7.10	56.7
BPMC17	15/04/2026	8.05	-22.6
BPMC25	16/04/2026	7.45	79.9
BPMC26	15/04/2026	7.16	95.1
Mean		7.48	58.43
Control sites			
CSMC01 - H	19/04/2026	8.00	40.5
CSMC01 -TF	19/04/2026	7.12	60.5
CSMC01 -TC	19/04/2026	7.34	58.3
CSMC03 - H	18/04/2026	8.01	46.3
CSMC03 -TF	18/04/2026	7.40	69.1
CSMC03 -TC	18/04/2026	7.62	66.2
Mean		7.58	56.82

Sediment chemistry

A summary of the mangrove sediment chemistry results is provided in Table 5-5 and Table 5-6. Elevated arsenic concentrations are consistent with those recorded from the broader Darwin Harbour region and from previous monitoring undertaken during the baseline and construction phases. Elevated concentrations of arsenic in Darwin Harbour sediments have historically been attributed to local geological influence rather than anthropogenic sources (Padovan, 2003; Fortune, 2006).

The four exceedances for arsenic across two impact and two control sites represent an increase from the single exceedance recorded at a control site during the 2024 mangrove sediment sampling event, Survey.5 (AECOM, 2024a), though are consistent with arsenic exceedances recorded at the same impact and control sites during the 2022 mangrove sediment sampling event, Survey 4 (AECOM, 2022a). Exceedances for arsenic have periodically been recorded at a range of impact and control sites during the baseline and construction monitoring phases (URS 2013a, 2013b).

A single chromium exceedance was recorded at an impact site during the survey. Although no chromium exceedances were recorded during Survey 5 in 2024, there were two exceedances recorded during Survey 4, one at the same impact site as identified in 2026. In addition, the chromium exceedance was within historical ranges for this site.

Limits of reporting in sediment samples were sufficiently low in all samples for comparison to benchmark levels.

Table 5-5: Summary of inorganic mangrove sediment chemistry

Analyte	Aluminium	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Moisture Content	TOC
Unit	mg/kg										%	%
LOR	10	1	2*	0.1	1	1	1	0.02	1	5	1	0.1
Trigger Value	-	2	20	1.5	80	65	50	0.15	21	200	-	-
BPMC09	4,000	<1	7.5	<0.1	16	2.7	5.2	0.04	4.0	19	32	1.3
BPMC10	2,800	<1	7.4	<0.1	11	3.1	4.8	<0.02	4.7	20	37	2.3
BPMC11	1,000	<1	3.6	<0.1	8.2	<1	1.8	<0.02	<1	<5	16	0.7
BPMC16	3,300	<1	16	<0.1	47	1.9	3.9	<0.02	1.6	13	16	0.7
BPMC17	6,300	1.2	27	<0.1	96	4.8	6.9	<0.02	3.0	24	28	1.8
BPMC25	9,400	<1	33	<0.1	36	7.0	13	0.04	13	92	65	4.8
BPMC26	3,400	<1	12	<0.1	17	3.1	5.3	<0.02	4.6	28	48	2.9
CSMC01-TC	2,300	<1	2.1	<0.1	9.9	1.2	1.3	<0.02	1.6	7.0	50	3.7
CSMC01-H	5,100	<1	14	<0.1	21	2.9	7.5	0.02	5.6	16	58	7.7
CSMC01-TF	1,800	<1	5.0	<0.1	13	<1	2.2	<0.02	1.3	8.0	24	0.6
CSMC03-TC	9,000	1.0	3.2	0.1	34	1.6	11	0.06	11	<5	23	1.4
CSMC03-H	5,800	<1	24	<0.1	36	3.7	9.2	0.03	7.6	22	45	3
CSMC03-TF	15,000	<1	39	<0.1	47	6.6	15	<0.02	11	38	52	4.9

*Bold value indicates trigger exceedance.

Table 5-6: Summary of organic mangrove sediment chemistry (mg/kg)

Site	TPH C10-C36 (sum of total)	TRH >C10-C40 (sum of total)
Guideline value	280	280
Background	n/a	n/a
BPMC09	<100	<100
BPMC10	<100	<100
BPMC11	<100	<100
BPMC16	<100	<100
BPMC17	<100	<100
BPMC25	<100	<100
BPMC26	<100	<100
CSMC01-HM	<100	<100
CSMC01-TF	<100	<100
CSMC01-TC	<100	<100
CSMC03-HM	<100	<100
CSMC03-TF	<100	<100
CSMC03-TC	<100	<100

5.1.3 Trigger assessment outcomes

There were no trigger exceedances for the 2026 mangrove health and intertidal sediment survey attributable to Ichthys LNG operations. Arsenic exceedances were recorded at both impact and control sites, therefore the exceedances are unlikely to be due to LNG operations. The single chromium exceedance was within historical ranges for this site.

5.1.4 Program rationalisation

No further rationalisation is proposed for Mangrove Health and Intertidal Sediments, the next round of monitoring will occur in the 2027/2028 AEMR period.

5.2 Nearshore marine pests

5.2.1 Method overview

Nearshore marine pest monitoring is undertaken to assess the presence/absence of invasive marine species at the Ichthys LNG and LPG/condensate product loading jetties (Figure 5-3). The two sites located on the product loading jetties have been incorporated in the wider Darwin Harbour program, managed by NT Aquatic Biosecurity Unit, within the Northern Territory Department of Agriculture and Fisheries (DAF) who provide the artificial settlement units (ASUs; Figure 5-4)) for INPEX to deploy at the jetties. Each ASU consists of four settlement plates (back-to-back) and two rope mops.

Photo-monitoring of ASUs is undertaken monthly with ASUs collected and replaced every fourth month (an example of monitoring photographs is shown in Figure 5-5). Collected ASUs and monthly photos of the traps are sent to NT DAF for species identification.

The ASUs were installed in September 2018 with monthly monitoring commencing in October 2018. During the reporting period monthly photo inspections occurred and the traps were collected and provided to NT DAF every four months for identification of species.

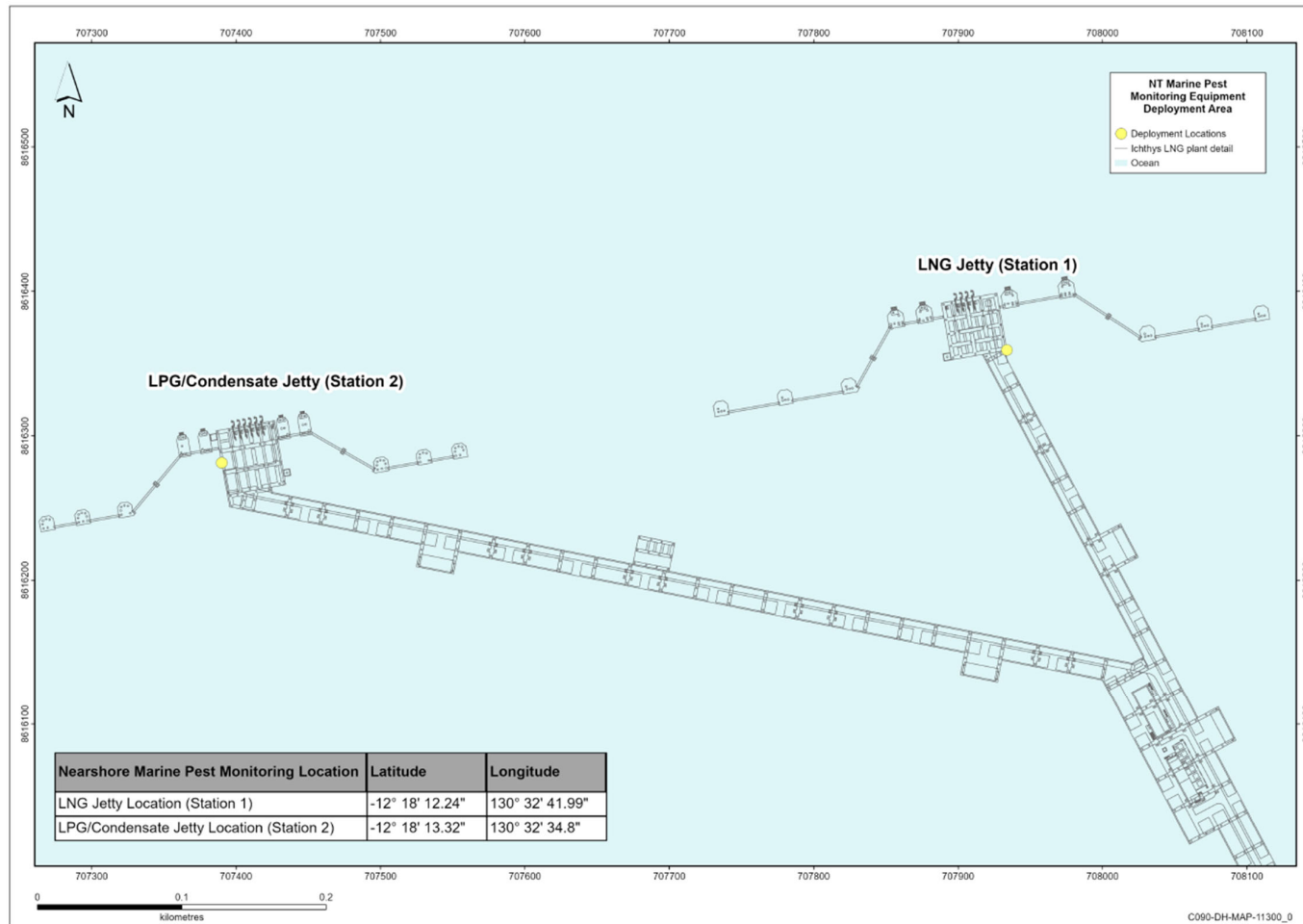


Figure 5-3: Nearshore marine pest monitoring locations



Figure 5-4: Nearshore marine pest ASU

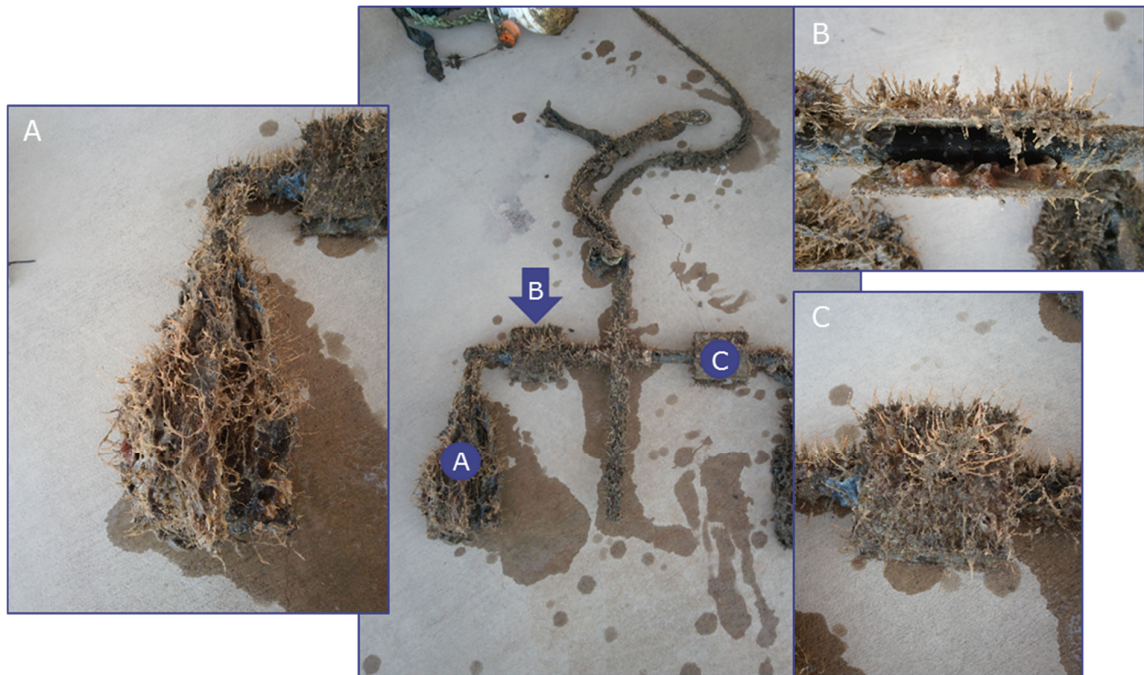


Figure 5-5: Example of monitoring photographs taken during monthly inspection a) rope mop, b) inside the plates and c) plates surface biofouling conditions

5.2.2 Results and discussion

NT DAF examined plates and rope mops on submission every four months, and photos submitted after monthly inspections. NT DAF did not identify any invasive marine species on settlement devices deployed as part of the Darwin Harbour marine pest monitoring program.

5.2.3 Program rationalisation

No change proposed to the marine pest monitoring.

5.3 Introduced terrestrial fauna

Introduced terrestrial fauna may be monitored if necessary. This would be undertaken to determine the presence, location and methods used to control nuisance species.

5.3.1 Method overview

In the event introduced terrestrial fauna are deemed to be a nuisance at Ichthys LNG, INPEX will undertake an annual survey using a third-party licenced pest management contractor.

5.3.2 Results and discussion

During the reporting period there were no reports of introduced terrestrial fauna being deemed a nuisance onsite, as such, no annual survey was undertaken. The routine and ad-hoc pest management programs including baiting and trapping adequately managed introduced terrestrial fauna at Ichthys LNG.

5.3.3 Program rationalisation

No change to the current program is proposed.

5.4 Weed mapping

The key objectives of the weed mapping program are to:

- identify the abundance and spatial distribution of known and new emergent weed populations; and
- inform weed management and control activities.

Weed surveys are undertaken annually at the end of the wet season (nominally in April). Table 5-7 provides a summary of surveys completed during the reporting period.

Table 5-7: Weed survey details

Survey	Date	Report	INPEX Doc #
Survey 11	April-May 2026	Weed Management Report No. 11	L290-AH-REP-70156

5.4.1 Method overview

Weed surveys were performed in accordance with the INPEX LNG Weed Mapping and Vegetation Surveillance Monitoring Plan (L290-AH-PLN-70001). The area surveyed is shown in Figure 5-6. Parameters monitored during the weed surveys are listed in Table 5-8. Where identification of a species was not possible in the field, a voucher sample, together with photographs were taken to facilitate post survey identification.



Figure 5-6: Weed survey area

Table 5-8: Weed survey parameters

Key Parameter	Descriptor
Weed names	Scientific and common names
Physical locations	Coordinates of localised outbreaks, polygons for larger occurrences
Abundance	Individual numbers and/or percentage cover, enabling comparison with previous and historic monitoring events
Date	Date of data collection for future and historic comparison

5.4.2 Results and discussion

Survey 11: April - May 2026

Six declared weed species and non-declared weed species were recorded during the 2026 survey, consistent with the number of weed species recorded during the previous survey in May 2025. The results of the 2026 weed survey show a significant increase in the total infestation area of gamba grass across the site since the 2025 survey. Single plant infestations also remained consistent from 2025 and significantly reduced from 2024. Hyptis populations have remained steady (3% decrease in total infestation area from 2025) within the gas export pipeline (GEP) corridor following a significant reduction from 2024, all Hyptis occurrences were recorded within the GEP corridor during the 2026 survey.

Weed species observed during the survey include:

- gamba grass
- hyptis
- neem tree
- flannel weed
- sicklepod
- lantana.

No other new declared weed species were recorded at Ichthys LNG during the reporting period. Declared weed species previously identified during weed surveys include:

- perennial mission grass (not detected 2024 to 2026).

Two non-declared weeds of note were observed during the survey:

- annual mission grass
- stylo

Weeds identified during the weed mapping surveys were communicated to the weed management contractor (see Section 5.5).

Declared weed infestation trend analysis

A trend analysis for weed results from all surveys was completed for Gamba grass and Hyptis, the two most abundant declared weeds within Ichthys LNG (Figure 5-7). Gamba grass infestations recorded during 2026 have increased 73% from 2025, this is the highest total infestation area recorded to date. However, the dense monoculture infestation patches decreased to 16,066 m² from 18,925 m² in 2025 and further reduction from 22,900 m² in 2024. Hyptis populations recorded in 2026 have decreased slightly from 2025, with levels down from 2024 and comparable to 2022 and 2023. Notably, no perennial mission grass was recorded from Survey 8-11. Patches of this species are a very high priority for control.

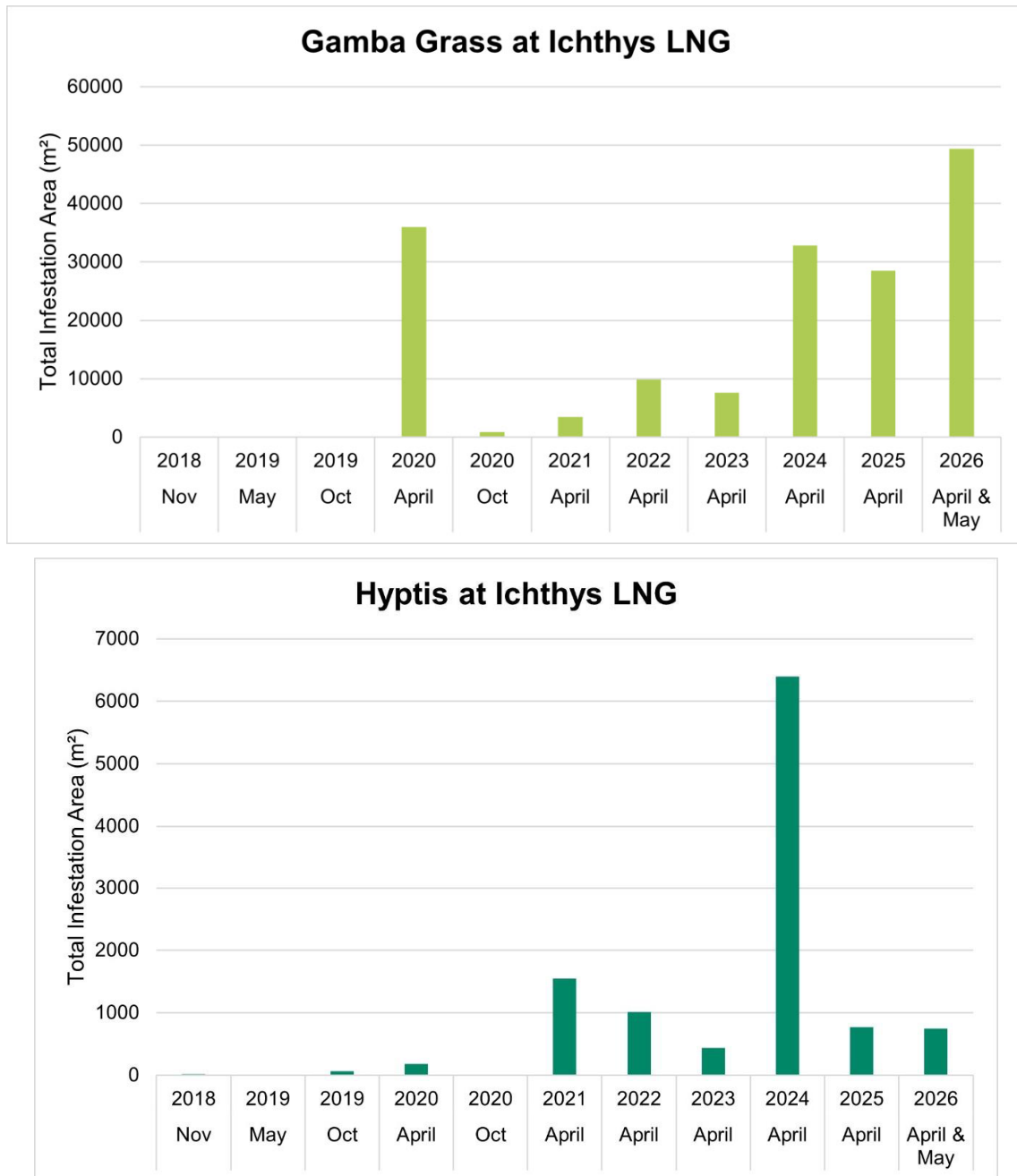


Figure 5-7: Comparison of declared weed infestations between AEMR reporting periods

5.4.3 Program rationalisation

No changes to weed surveys is proposed. The current annual weed surveys will still allow INPEX to fulfil its commitments under the OEMP and *Weeds Management Act* (NT).

5.5 Weed management

5.5.1 Method overview

Weed control at the site was undertaken and managed by a weed management contractor during the reporting period. Vegetation control at the site occurred along the fence lines, drains, inside the facility and along the GEP corridor, including the Section 1949 laydown yard. Weed control was carried out at set intervals of December, February and April during the reporting period. Methods of control include back-burning in early dry season, slashing, and spray application of herbicides, boom spray, and backpacks for the 2025/2026 reporting period.

5.5.2 Results and discussion

Overall weed management measures undertaken did result in a slight reduction in weed load, for all but Gamba grass which recorded highest distribution levels across the site. It is recommended that a gamba grass treatment program is implemented in Section 1949, along the GEP corridor, the Bladin Point Road Corridor, the operations area and the production area following each wet and dry season until it has been sufficiently controlled. This may take several years of concentrated controlled effort to see a reduced population of gamba grass across the entire site. Control methods for all weeds will be directed by the NT Government guidelines (<https://nt.gov.au/environment/weeds/weeds-in-the-nt/A-Z-list-of-weeds-in-the-NT/gamba-grass/control>) and follow weed management and timing recommendations outlined in Weed Management Report No. 11.

A weed maintenance strategy has been developed for onshore, guided by maintenance work instructions that are divided into three separate work orders to balance the required resources to execute the proposed weed control measures. Weed management resources are initiated in the months of February, April and December to action the recommended control measures.

5.5.3 Program rationalisation

No changes are proposed to weed management at Ichthys LNG.

5.6 Vegetation rehabilitation monitoring

The key objectives of the vegetation rehabilitation monitoring are to:

- monitor native vegetation recovery; and
- provide management advice to ensure the establishment of stable, self-sustaining vegetation communities.

In accordance with the OEMP, vegetation rehabilitation is biennial (every two years). Vegetation rehabilitation monitoring (also known as vegetation surveillance) was undertaken in the previous monitoring period (April 2025) and therefore did not occur in the 2025/26 reporting period.

5.6.1 Program rationalisation

No program rationalisation is proposed for vegetation rehabilitation surveillance from the latest conducted vegetation surveillance Survey 5. The next proposed survey (6) will occur in 2027.

5.7 Cultural heritage

The objective of cultural heritage surveys is to determine if there has been any interference to cultural heritage sites as a result of Ichthys LNG operations.

5.7.1 Method overview

Visually inspections of cultural heritage sites will be undertaken when required at a frequency determined by the Larrakia Advisory Committee.

5.7.2 Results and discussion

No inspections of heritage site were required during the reporting period. No heritage breaches occurred within the reporting period.

6 WASTE REDUCTION MEASURES

Waste is managed in accordance with the INPEX waste management processes and the waste control hierarchy (Figure 6-1).

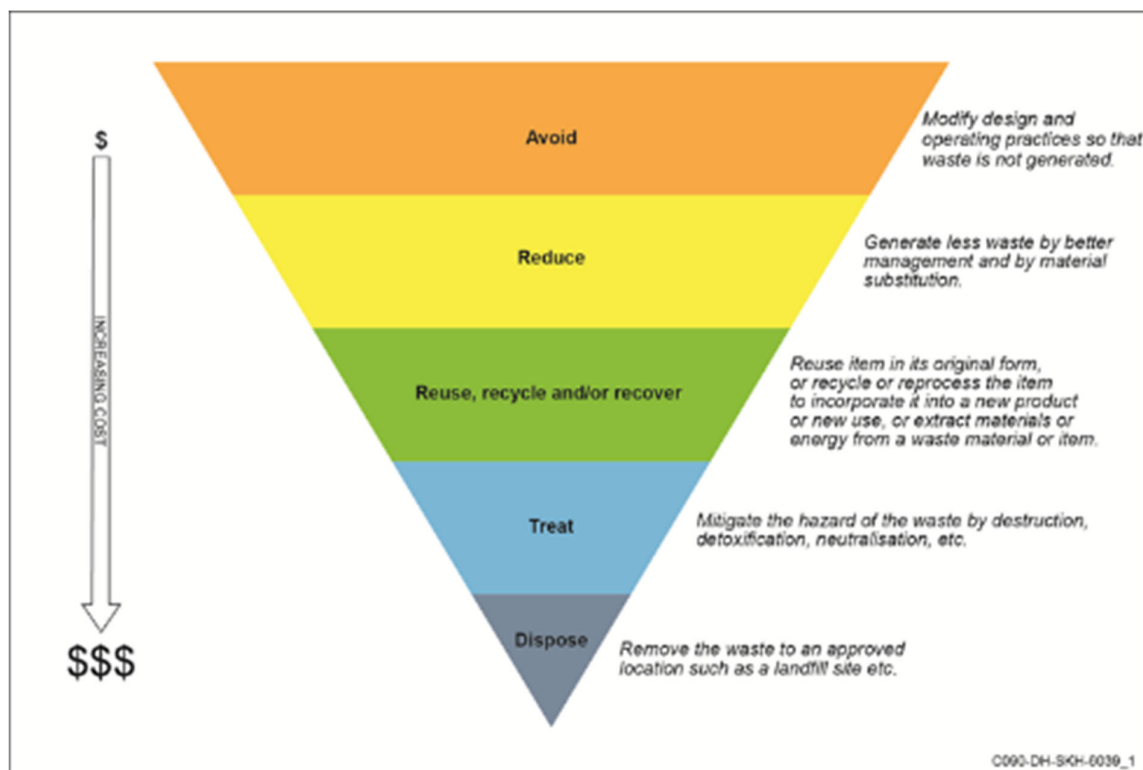


Figure 6-1: INPEX waste control hierarchy

A change to the categorisation of waste was implemented by INPEX in the reporting period. Waste is now categorised and reported in line with the Global Reporting Initiative Waste Standard 306 (GRI 306: Waste 2020). Waste at the site is categorised into the following classes:

- non-hazardous waste
 - Prepare for reuse
 - Recycle
 - Other recovery operations
 - Incineration (with energy recovery)
 - Incineration (without energy recovery)
 - Landfilling
 - Other disposal operations
- hazardous waste
 - Prepare for reuse
 - Recycle
 - Other recovery operations

- Incineration (with energy recovery)
- Incineration (without energy recovery)
- Landfilling
- Other disposal operations

Solid waste segregation measures involved the placement of various recyclable and non-recyclable waste receptacles around Ichthys LNG, while liquid wastes were segregated into recyclable and non-recyclable streams and then disposed of offsite to suitable treatment and disposal facilities following classification by waste contractors. The expected waste generated by onsite activities and subsequent control measures are detailed further and in Section 3.8.7 of the OEMP.

Table 6-1 presents waste streams for the current reporting period (i.e. 2025/2026).

Table 6-1: Waste stream data (tonnes)

	Waste Stream	2025 - 2026
Non-hazardous waste (tonnes)	Prepare for reuse	906.87
	Recycle	1432.313
	Other recovery operations	11120.961
	Incineration (with energy recovery)	0
	Incineration (without energy recovery)	0
	Landfilling	1481.513
	Other disposal operations	0
Hazardous waste (tonnes)	Prepare for reuse	0
	Recycle	21.026
	Other recovery operations	714.204
	Incineration (with energy recovery)	0
	Incineration (without energy recovery)	21.776
	Landfilling	204.62
	Other disposal operations	208.358
Total		16111.641

The change to reporting waste streams in line with GRI 306 means that any comparisons between the current reporting period and previous reporting periods are limited. Comparison will be possible as more data is generated in line with these categories.

Site wide waste reduction initiatives are implemented via the Waste Management Standard (0000-AH-STD-600047) which applies to all waste streams onsite. Waste management activities or initiatives for the reporting period included:

- capture and storage of chemical waste streams to avoid the mixture of waste streams and rainwater runoff from Ichthys LNG. This prevents the generation of large volumes of wastewater predominately in the AGRU of each LNG train, where amine is used as a solvent to extract acid gases (including carbon dioxide); and
- improvement in the Waste Contractor's treatment methods to reduce/divert hazardous and non-hazardous wastes from going to landfill; and an increased focus on recycling, re-using, and incineration.

Although not directly related to solid and liquid waste, energy recovery occurs through the use of the waste heat recovery systems. Heat recovery units are located on the GE Frame 7 gas turbine stacks, which capture the heat of the turbine exhaust and then transfer the energy to the site heating medium system. A similar heat transfer method is also used in the CCPP, where the exhaust heat from the GE Frame 6 turbine stacks used to generate steam, which is then transferred into energy in the steam turbines. Use of the waste heat recovery systems reduce the overall fuel consumption and air emissions.

7 PROGRAM RATIONALISATION AND FUTURE SURVEYS SUMMARY

Other than potential amendments to discharge criteria for commingled effluent (discussed in Section 2.1.4), there are no proposed recommendations for changes to monitoring programs and future monitoring will be undertaken in accordance with the current OEMP and EPL228. The proposed next survey dates are outlined below in Table 7-1.

Table 7-1: Survey forecast for future monitoring periods

Survey/Data Collection Scope	Frequency	Previous Survey	Next Survey
Commingled treated effluent	Monthly	July 2025 – June 2026	July 2026 – June 2027
Harbour sediment	Biennial	June 2026	June 2028
Total emissions to air	Annual	July 2025 – June 2026	July 2026 – June 2027
Point source emissions to air	Annual	December 2025 – April 2026	July 2026 – June 2027
Dark smoke events	Ad-hoc	n/a	n/a
Air toxic monitoring	Monthly (while AGIs offline)	July 2025 – June 2026	July 2026 – June 2027
Groundwater quality	Bi-annual	October 2025 April 2026	October 2026 April 2027
Mangrove health and intertidal sediments	Biennial	April 2026	April 2028
Nearshore marine pests	Monthly	July 2025 – June 2026	July 2026 – June 2027
Introduced terrestrial fauna	Annual	July 2025 – June 2026	July 2026 – June 2027
Weed mapping	Annual	April 2026	April 2027
Weed management	Annual – as required	Dec 2024, Feb & April 2025	Nov 2026 to June 2027
Vegetation rehabilitation monitoring	Biennial	June 2025	June 2027
Cultural heritage	Ad-hoc	n/a	n/a

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APPENDIX A: NT GUIDELINE FOR ENVIRONMENTAL REPORTING

NT Guideline for Environmental Reporting	NT Guideline Information	AEMR Reference
Title page	The title page should include: report name reporting period (e.g., October 2014–October 2015) date of submission version number where relevant, licence/approval number, or reference to other document the report is being submitted in relation to (e.g., environmental impact statement, pollution abatement notice) details of report author, including company details.	Title page and Section 1.
Executive summary	The executive summary should succinctly summarise each section of the report, and in particular, the findings of the report.	Executive summary.
Monitoring objective	The monitoring objective(s) should be clearly stated in order to enable the results of monitoring to be assessed in the context of the objectives. Note, where monitoring is linked to a licence or approval, the objectives of monitoring: may already be specified in an approved monitoring plan, or may simply be the specific conditions on monitoring included in the licence/approval that state monitoring point locations, analytes, analysis type, frequency, and limits/trigger values.	Each section includes a subsection with monitoring objectives for each monitoring program.
Monitoring method	<i>Where there is an approved monitoring plan</i> Provide details of the approved plan (title, version number, date of submission). <i>Where there is not an approved monitoring plan</i> Provide details including: current map showing sampling locations (including control/reference sites), discharge/emission points, major infrastructure, sensitive environmental receptors, key, scale bar and north arrow a description of the receiving environment, including environmentally sensitive receptors and significant features a description of sampling and analysis methods, including detail on reasons for selection of sampling locations (e.g., random stratified), assumptions and deviations from standard sampling/analysis methods ¹ factors that may affect variability in monitoring results (e.g., tidal movement, climate, fauna migration, peak production months).	Each section includes a subsection with monitoring methods for each monitoring program.

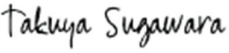
NT Guideline for Environmental Reporting	NT Guideline Information	AEMR Reference
Monitoring results–presentation	The clear and concise presentation of monitoring results is a critical component of a monitoring report. When presenting results, it is important to ensure that: current results are presented in a table and graph results are presented along with: • units • assessment criteria (e.g., limits/trigger values specified in licences/approvals, or in relevant standards or guidelines) • analysis type (e.g., for filtered/unfiltered with filter pore size, five-day or • three-day biological oxygen demand, wet or dry weights) • analytical methods • limit of reporting (LOR), or level of precision for results obtained from • field instruments • measures of uncertainty necessary calculations have been made, to compare data with assessment criteria (e.g., calculation of medians, means, running averages and loads) modification calculations (such as for hardness) have been made using the modifying parameter recorded at the time of sampling all results that exceed the assessment criteria are clearly highlighted summary of previous results (sufficient to highlight trends – usually a minimum of 2–5 years data) is included.	Each section includes a subsection with monitoring results and discussion for each monitoring program.
Monitoring results–quality assurance/quality control (QA/QC) evaluation	Results presented in the monitoring report should be reviewed for data completeness, accuracy, and precision. Some typical QA/QC questions include: for completeness – were all samples taken at the correct location and frequency? for quality control – were all samples collected, preserved in accordance with the specified sampling method or standard sampling methods? were calibration checks made and were results within an acceptable range? was analysis undertaken in accordance with relevant national standards (such as accredited under the National Association of Testing Authorities)?	Monitoring plans (referenced in the method overview section) include QA/QC processes.

NT Guideline for Environmental Reporting	NT Guideline Information	AEMR Reference
Discussion and interpretation of results	This section should include: - discussion of results in context with the monitoring objective(s) - discussion of results where assessment criteria were exceeded, including likely cause of exceedances and likelihood of further exceedances - discussion of trends (consideration of spatial and temporal trends in comparison to previous monitoring data) - discussion of anomalous results, including likely cause - statistical analysis where appropriate - a table of non-conformances with monitoring method.	Each section includes a subsection with monitoring results and discussion for each monitoring program
Conclusion and proposed actions	This section should include conclusions on: - whether the monitoring objective(s) was achieved - compliance with assessment criteria - if, and to what extent, environmental harm may have been caused (such as by emissions/discharges and/or exceedances of assessment criteria – when considering both acute and chronic affects) - major assumptions or uncertainties - conclusions about effectiveness of the monitoring method/plan and overview of any proposed changes (if any) - proposed actions to address exceedances or non-conformances.	Conclusions and proposed actions are presented in discussion of each section and including program rationalisation sections.
Certification	In this section the submitter of an environmental monitoring report must confirm that the report is true and accurate. Where the report relates to a licence/approval, confirmation must be provided by a person(s) authorised to legally represent the holder of the licence/approval. The wording for this section should be: <i>I [NAME AND POSITION], 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.</i> Note: significant penalties may apply where it is demonstrated that false or misleading information has been supplied to the NT EPA.	APPENDIX B
Abbreviations	Use of abbreviation should be minimised. However, if they are used to improve readability, this section should specify all abbreviations used in the report.	Abbreviation and definitions section

NT Guideline for Environmental Reporting	NT Guideline Information	AEMR Reference
References	If information (facts, findings etc.) from external documents is to be included in the report, the information must be referenced. If references are from documents that are not freely available (e.g., internal reports, mine management plans) then such documents will need to be provided to the NT EPA on request.	Throughout AEMR
Appendices	Appendices should be used for information that is too detailed or distracting to be included in the main body of the report (such as raw data tables, laboratory reports, QA/QC data).	Appendices

APPENDIX B: EPL228 AEMR 2025-2026 CERTIFICATION

B.1 INPEX

	I, Takuya Sugawara (Alternate Director, Ichthys LNG Pty Ltd, Australia) confirm that to the best of my knowledge and ability all the information provided in the <i>EPL228 Annual Environmental Monitoring Report 2025-2026</i> (L000-AH-REP-70010) is true and accurate.
Name	Takuya Sugawara
Position	Alternate Director, Ichthys LNG Pty Ltd
Signature	
Date	22 September 2026

B.2 Qualified Professional

INPEX Corporation
Jeremy Barnett
Senior Environmental Advisor
Onshore Operations
144 Wickham Road
Wickham NT 0822

DATE
24 September 2026

SUBJECT
2025-2026 AEMR Review and certification report

REFERENCE
0831008

Dear Ben,

Subject: 2025-2026 AEMR Review and certification report

Environmental Resources Management Australia Pty. Ltd (ERM) was engaged by INPEX Corporation (INPEX) to undertake an independent review of the Ichthys LNG Plant's Annual Environmental Monitoring Report (AEMR) by Qualified Professionals¹. This report documents the review process and identifies the issues raised and their resolution, resulting in a statement of verification and Statutory Declaration as required by the Northern Territory EPA (NT EPA).

The scope of the review is pursuant to Condition 77 of the Environmental Protection Licence (EPL) 228-05 (EPL228-05 came into effect on 13.12.2022). Condition 77 requires the submission of an Annual Environmental Monitoring Report as follows:

- 77 The Annual Environmental Monitoring Report must:
- 77.1 *report on monitoring required under this licence;*
 - 77.2 *include a tabulation in Microsoft® Excel® format, of all monitoring data required to be collected in accordance with this licence;*
 - 77.3 *summarise performance of the authorised discharge to water, compared to the discharge limits specified in Table 3 in Appendix 2;*
 - 77.4 *summarise performance of the authorised emissions to air, compared to the emission limits and targets specified in Table 5 in Appendix 3, when the fuel burning or combustion facilities for the Scheduled Activity have operated under normal and maximum operating conditions for the annual period;*
 - 77.5 *summarise operating conditions of each emission source and the resulting air emission quality;*
 - 77.6 *provide total emissions to air in tonnes per year for the air quality parameters listed in Table 6 in Appendix 3;*
 - 77.7 *assess the contribution of the authorised emissions on the Darwin region ambient air quality during periods not affected by bushfire smoke for Wet and Dry seasons;*
 - 77.8 *report on outcomes of the REMP monitoring and assessment;*
 - 77.9 *summarise measures taken to reduce waste;*

¹ A 'qualified professional' as described by the EPL228-05 is a person who has professional qualifications, training or 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.

- 77.10 consider the NT EPA Guideline for Reporting on Environmental Monitoring;
 77.11 be reviewed by Qualified Professional(s); and
 77.12 be provided to the NT EPA with the Qualified Professional(s) written, certified review(s) of the Annual Environmental Monitoring Report.

The purpose of the qualified professional review of the AEMR is to provide an independent assessment verifying that the AEMR is compliant with the conditions of EPL228-05. The review was undertaken by two qualified professionals as deemed appropriate for the content of the AEMR. The qualified professionals are listed in **Table 1**.

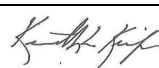
TABLE 1 QUALIFIED PROFESSIONALS

Area of expertise	Qualified professional
Discharges to Water	Ken Kiefer
Air Quality	James Grieve

Each of the qualified professionals individually reviewed the Draft AEMR (Revision B) dated 31 July 2026 with respect to the Condition 76 EPL228-05 (as stated above) and the relevant corresponding area of expertise.

The comments raised were recorded in a comments register which is appended to this report in **Annex A**. The register was provided to INPEX seeking comment on how the identified issues will be closed out. INPEX resubmitted the revised AEMR (Revision 0) to ERM for review, which incorporated the agreed changes and the comments register cross-referenced with the revised sections of the AEMR.

ERM was satisfied that each of the responses had been appropriately incorporated into the updated revision and the comments were closed out. Therefore, the following statement of verification has been made and signed by each of the qualified professionals who undertook the review.

Statement of verification: Based on the review as outlined in this report, ERM confirms that INPEX responded to all comments raised. ERM has reviewed INPEX responses to the comments provided and is satisfied that the content of the AEMR comply with Condition 76 of the EPL228-05 for the 2025-2026 financial year period.		
Area of expertise	Qualified professional	Signatures
Discharges to Water	Ken Kiefer	
Air Quality	James Grieve	

Yours sincerely,

For Environmental Resources Management Australia Pty. Ltd.



Paul Fridell
Partner

ANNEX A COMMENTS REGISTER



COMMENTS REGISTER - QUALIFIED PROFESSIONALS REVIEW: AEMR 2025-2026

Contract Number	INPEX PO 565508 / 4500135825
Reviewer	ERM
Document Name	EPL228 Annual Environmental Monitoring Report 2025-2026
Company Document No#	L060-AH_REP_70010
Document Revision No# / Date	Revision A (DRAFT) / 13 August 2026

No.	Report Section	Reviewer Comment/Recommendation	INPEX Response (Rev 0 amended)	ERM response
Discharges to Water				
1	Section 2.1.1 and 2.1.2	In section 2.1.1 it was mentioned that <i>"The external laboratory responsible for the micro analysis updated the reporting name for faecal coliforms in May 2024. These are now presented as thermotolerant coliforms as part of NATA accreditation requirements with testing, LOR and discharge limits remaining the same."</i> The text in section 2.1.2 discusses the limitations of the method as well as guidance for interpreting the results. This text in Section 2.1.2 would be better placed within the Section 2.1.1. Method Overview as it supports the ongoing approach evaluating the results based on this method.	Agreed. Section 2.1.1 has now been updated with the following text: <i>There are limitations with the use of thermotolerant coliforms as a measure of faecal contamination within this program. This is due to thermotolerant coliforms including types that can grow in the environment and be present in the absence of faecal contamination (NHMRC & NRMMC 2011).</i>	Closed



COMMENTS REGISTER - QUALIFIED PROFESSIONALS REVIEW: AEMR 2025-2026

No.	Report Section	Reviewer Comment/Recommendation	INPEX Response (Rev 0 amended)	ERM response
2	Section 2.1.1	There are two closing parentheses around LIMS as (LIMS)). Please remove the extra closing parenthesis.	Amended.	Closed
3	Table 2-4 Thermotolerant/Faecal coliforms for 09-Sept-25	Similar to other instances of the Thermotolerant/Faecal coliforms exceedances, could reference to <i>E. coli</i> and <i>Enterococci</i> results be provided as well for context.	Agreed. Have included the following text: <i>E. coli and Enterococci concentrations were low, and below relevant trigger limits in all samples. Therefore, these results indicate it was likely that the thermotolerant coliform exceedances were not solely originating from a faecal source.</i>	Closed
4	Section 2.1.3	Multiple cross-references to the appendices have colons throughout, for example in "were four discharge limit exceedances (refer to APPENDIX C:)...". Please omit the colon in the cross-reference throughout the document.	Amended. The colon has been removed for cross-references to appendices.	Closed
5	Appendix C Table C.1	Updated the table so results are chronological for ease of review. The 9/02/2026 sample results are presented before 04/02/2026	The data collected on 04/02/2026 was additional data on ammonia and total nitrogen. This was taken as part of an internal water monitoring/management program. This was not as part of an exceedance investigation or regulatory requirement therefore does not add any value to this report. As such, this data has now been removed from the report. Results are now in chronological order.	Closed



COMMENTS REGISTER - QUALIFIED PROFESSIONALS REVIEW: AEMR 2025-2026

No.	Report Section	Reviewer Comment/Recommendation	INPEX Response (Rev 0 amended)	ERM response
6	Appendix C Table C.1	There is no discussion of the extra monitoring results for Ammonia and Total nitrogen. Add discussion on Section 2 for the extra sample.	The additional data on ammonia and total nitrogen was not required for this report (see response to item 5) therefore has been removed from the report.	Closed
7	Appendix C Table C.1	There is a post-exceedance results in May for Thermotolerant/Faecal coliforms. Are there similar results for September, March, and June that should be reported.	There were no non-routine post-exceedance results for the September and March events as these investigations focussed on isolating potential upstream sources. By the time the investigations on these sources were completed, the monthly routine results for the compliance point (i.e. 750-SC-003) were available confirming thermotolerant coliforms were back below their respective trigger limit. INPEX made the decision not to undertake any further sampling/investigation for the June event due to the known limitation of using the measurement of thermotolerant coliforms against the faecal coliform trigger limit within EPL228-05. This was communicated to the DLPE in the notification to them for this event.	Closed
Unplanned Discharges to Land				
1	Section 4.1.4	Consistent with other parameters with exceedances add graphs for Filterable reactive phosphorus to support the report conclusions.	As described in Section 4.1.4, FRP at BPGW01 does not meet the basis of an increasing trend and in turn a graph included within report. See exerts below:	Closed



COMMENTS REGISTER - QUALIFIED PROFESSIONALS REVIEW: AEMR 2025-2026

No.	Report Section	Reviewer Comment/Recommendation	INPEX Response (Rev 0 amended)	ERM response
			<i>"Note analytes with an increasing trend in survey 16 but did not record an exceedance in survey 17 are not automatically included in this analysis. Trend graphs represented below are based on sites experiencing exceedances for at least 3 successive monitoring sampling campaigns."</i> <i>"Four FRP exceedances were recorded during the sixteenth groundwater monitoring survey at bores BPGW01, BPGW08A, BPGW18 and BPGW41. No bores recorded an exceedance during the seventeenth groundwater survey. Concentrations of FRP at BPGW07 had been above background levels since 2023 prior to non-exceedance in Oct 2025 survey, no other site has recorded successive exceedances during the reporting period "</i> Text in section 4.1.3 has been modified to state: <i>"FRP: <u>Potential</u> increasing trend at BPGW01"</i> to more accurately reflect the situation given no exceedance was recorded in survey 17 (or survey 15).	
2	Section 4.1.5	Most of the text under this section is highlighted. Could there be a reason for this?	Originally there was an expanded summary (highlighted section) of the 2024 Independent investigation report similar to what was included in the 2024/25 AEMR. This was reduced to a high-level summary	Closed



COMMENTS REGISTER - QUALIFIED PROFESSIONALS REVIEW: AEMR 2025-2026

No.	Report Section	Reviewer Comment/Recommendation	INPEX Response (Rev 0 amended)	ERM response
			and reference made to 2024/25 AEMR for the full summary. This text/highlighting is no longer showing in this revision.	
3	Section 4.1.3	There is an opening parenthesis before FRP, as in (FRP. Please remove the opening parenthesis	Amended.	Closed
4	Section 4	The word "survey" in survey 16 and 17 is inconsistently capitalised. Please review and make consistent.	Amended	Closed
5	Section 4	Figures 4-4, 4-5 and 4-12 appear to have axis limits lower than the peak data values. Figures should be reviewed to ensure that data is captured (e.g. axis limits adjusted or figure notes added.	Amended	Closed
Air Quality				
1	Section 3	Condition 77.7 requires an assessment of the contribution of the authorised emissions to ambient air quality. Section 3.5 addresses air toxics. It is suggested that INPEX consider addressing emissions of other pollutants through reference to performance against the review criteria that are applied in the GHD monitoring reports.	The assessment of the contribution of the authorised emissions on the Darwin region ambient air quality (i.e. Condition 77.7) is understood to have been addressed through the INPEX EIS. The provision of total emissions to air in tonnes per year (i.e. Condition 77.6) is then updated each year through this AEMR.	Closed



COMMENTS REGISTER - QUALIFIED PROFESSIONALS REVIEW: AEMR 2025-2026

No.	Report Section	Reviewer Comment/Recommendation	INPEX Response (Rev 0 amended)	ERM response
2	Section 3.1	Reference to updating Table 3-1 can be removed noting that the table was updated in preparation of the previous AEMR.	Removed reference to updating Table 3-1 as suggested.	Closed
3	Section 3.2	Suggest rewording: " <i>monthly monitoring of hot venting, including and reporting of the mass of hydrocarbons flared</i> " given that flaring and hot venting streams are independent.	Amended as suggested.	Closed
4	3.2.1	The stationary source emission monitoring program has covered 10 point sources, two of which have been sampled twice. Suggest rewording reference to monitoring of 12 point sources.	Amended as suggested.	Closed
5	3.2.2	Suggest rewording text: " <i>Stationary source emissions testing was undertaken between in December 2025 – April 2026, were carried out as per the nominated test method within EPL228-05 licence license condition 58.2</i> ".	Amended as suggested.	Closed
6	3.2.3, 3.3	The monitoring results for discharge A1 is within the emission limit but above the target. It is suggested that	The following text has been included within the results and discussion section (3.2.3):	Closed



COMMENTS REGISTER - QUALIFIED PROFESSIONALS REVIEW: AEMR 2025-2026

No.	Report Section	Reviewer Comment/Recommendation	INPEX Response (Rev 0 amended)	ERM response
		discussion of this result should be included.	<i>The measured NOx as NO₂ concentration was above the target on one occasion at A1 (L-641-A-001). This was due to the configuration of this turbine being adjusted to manage combustion flame issues in conjunction with the operational conditions at the time the sample was collected.</i>	
7	3.3	A15 and A16 have not been sampled. INPEX should consider including further logistical context as to why this was not able to be monitored (e.g. detail of outage periods and/or nature of outage).	Agreed. Additional logistical constraints and operating conditions of these sampling points has been provided as follows: <i>Burners were offline for A15 (L-640-A-001-A) and A16 (L-640-A-001-B) and were not sampled during the contractor sampling event. These sample points are both heating media furnaces which only operate when the trains are offline or during the start-up of a train to bring the heating media up to the required operating temperature.</i>	Closed
8	Table 3-11	For clarity, it is recommended that Table 3-11 retain "<" symbols on maximum 24-hour monitoring results in cases where all samples were less than the LOR at a given location across the entire reporting period. By example, benzene was not detected at Francis Bay or Winnellie, hence these results should be reported as '<0.0013'	Agreed, given these values are already the maximum value within 12-month dataset and not a true annual 24-hour average. Less than symbol "<" updated within Table 3-11 where applicable. For clarification purposes, some data reported measured concentrations that are not detectable, with detection limits above the limit of reporting (LOR). In these cases,	Closed



COMMENTS REGISTER - QUALIFIED PROFESSIONALS REVIEW: AEMR 2025-2026

No.	Report Section	Reviewer Comment/Recommendation	INPEX Response (Rev 0 amended)	ERM response
		and '<0.0016' (respectively). This is considered important context.	samples had to be diluted to meet analytical requirements which increased the LOR.	
9	Various	"NATA-Accredited" should be written consistently either with or without a dash.	Dashes have been removed so NATA accredited is written consistently throughout the document.	Closed
10	Abbreviations and definitions	Reference conditions for standard flow (i.e. sm ³ /s) should be given – e.g. 15°C and 1 atmosphere if this is correct.	Amended to include: (at 15.56°C and 101.3 kPa)	Closed

ANNEX B STATUTORY DECLARATIONS

THE NORTHERN TERRITORY OF AUSTRALIA

STATUTORY DECLARATION

(1) Insert full name and address of person making declaration

I, James Alexander Grieve of Environmental Resources Management Australia Pty Ltd located at Level 14, Kent St, Sydney, New South Wales 2000

(2) Here insert the matter declared to, either directly following the word "declare" or, if the matter is lengthy, insert the words "as follows" and thereafter set out the matter in numbered paragraphs

solemnly and sincerely declare that the results are accurate to the best of my knowledge or belief and that I have not included in the results information that I know or suspect to be false or misleading or failed to include in the report information that I know to be relevant.

This declaration is true and I know it is an offence to make a statutory declaration knowing it is false in a material particular.

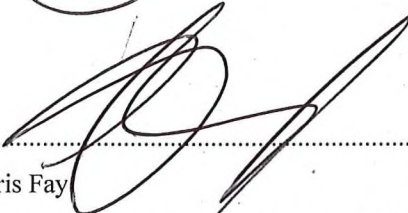
Declared at Sydney on the 24th day of September 2026.

(3) Signature of the person making the declaration



(4) Signature of the person before whom the declaration is made

Witnessed by:



(5) Here insert full name of person before whom the declaration is made, legibly written, typed or stamped

Chris Fay

Level 14, Kent St, Sydney, New South Wales 2000

(6) Here insert contact address or telephone number of person before whom the declaration is made

NOTE: This declaration may be witnessed by any person who is at least 18 (eighteen) years of age.

NOTE: This written statutory declaration must comply with Part 4 of the *Oaths Affidavits and Declarations Act*.

NOTE: Making a declaration knowing it is false in a material particular is an offence for which you may be fined or imprisoned.

THE NORTHERN TERRITORY OF AUSTRALIA

STATUTORY DECLARATION

(1) Insert full name and address of person making declaration

I, Kenneth Kiefer of Environmental Resources Management Australia Pty Ltd located at Level 8/501 Swanston St, Melbourne VIC 3000.

(2) Here insert the matter declared to, either directly following the word "declare" or, if the matter is lengthy, insert the words "as follows" and thereafter set out the matter in numbered paragraphs

solemnly and sincerely declare that the results are accurate to the best of my knowledge or belief and that I have not included in the results information that I know or suspect to be false or misleading or failed to include in the report information that I know to be relevant.

This declaration is true and I know it is an offence to make a statutory declaration knowing it is false in a material particular.

Declared at Melbourne on the 18th day of September 2026.

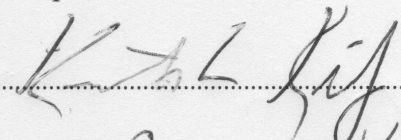
(3) Signature of the person making the declaration

(4) Signature of the person before whom the declaration is made

Witnessed by:

(5) Here insert full name of person before whom the declaration is made, legibly written, typed or stamped

(6) Here insert contact address or telephone number of person before whom the declaration is made


Tanya Kiefer.....
+61 0421213439.....

NOTE: This declaration may be witnessed by any person who is at least 18 (eighteen) years of age.

NOTE: This written statutory declaration must comply with Part 4 of the *Oaths Affidavits and Declarations Act*.

NOTE: Making a declaration knowing it is false in a material particular is an offence for which you may be fined or imprisoned.

ANNEX C QUALIFIED PROFESSIONAL PROFILE AND CV

James Grieve

Principal Consultant – Air Quality

James Grieve is an air quality engineer with 20 years of experience in the assessment and management of air quality and related environmental matters. His experience extends across a broad range of sectors including energy, waste management, transport, manufacturing, construction, mining, and remediation of contaminated land.

He has completed air quality investigations for a number of projects throughout Australia and Asia. This work has involved applying a range of technical skills, inclusive of atmospheric dispersion modelling, as well as interacting with regulatory authorities on planning, assessment and licensing issues. James also has a wide range of experience in the field air quality monitoring, having constructed air quality monitoring programs, and prepared monitoring methodologies.

James' engineering background provides him with a strong understanding of industrial processes, as required to assess pollutant formation potential and the effectiveness and feasibility of a broad range of air emission control technologies. This work has included options and feasibility studies, pilot trials, tender evaluation, design reviews, and Best Available Control Technology (BACT) analyses.



EXPERIENCE: 20 years' experience in air quality assessment and management

LINKEDIN: <https://www.linkedin.com/in/james-grieve-3909a449/?originalSubdomain=au>

EMAIL: james.grieve@erm.com

EDUCATION

Bachelor of Engineering (Mechanical, Honours), University of Sydney, 2005

PROFESSIONAL AFFILIATIONS AND REGISTRATIONS

- Member, Clean Air Society of Australia and New Zealand (CASANZ).

LANGUAGES

- English, native speaker

FIELDS OF COMPETENCE

- Air quality impact assessment.
- Air quality monitoring and management.
- Emission control system studies.
- Air quality compliance auditing.

KEY INDUSTRY SECTORS

- Oil & Gas
- Power
- Infrastructure
- Chemicals / Manufacturing
- Waste Management

KEY PROJECTS

Australian Energy Council Review of NPI Methodologies for Power Station Stack Emissions, 2022

Undertook review of national pollutant inventory methods for estimation of stack emissions from coal-fired power stations in Australia. Work included a survey of methods applied and corresponding accuracy, as well as a survey of regulatory preferences for emission estimation.

Confidential Client AGRU Venting Air Quality Impact Assessment, Victoria 2022

Conducted a review of Acid Gas Removal Unit (AGRU) process information and undertook emission estimation for VOC and acid gas emissions during bypass of the acid gas incinerator with subsequent atmospheric dispersion modelling and impact assessment in accordance with updated Victorian assessment guidelines.

Confidential Client LNG Facility Air Quality Monitoring Program, Asia 2024

Undertook ambient air quality monitoring program for LNG facility.

Confidential Client LNG Facility Air Quality Impact Assessment, Asia 2024

Prepared air quality impact assessment for gas processing with comparison against International Finance Corporation (IFC) ambient air quality standards.

INPEX Ichthys LNG Terminal Air Quality Monitoring Strategy, NT 2021

Prepared air quality monitoring plan for LNG processing, liquefaction, storage and export operations in Northern Territory. Work included emission review and station siting, and designation of monitoring criteria, methods, and compliance evaluation protocols. Program was successfully implemented to gather targeted datasets and provided a clear assessment of the environmental performance of the operations.

AGL Newcastle Gas-Fired Power Station Air Quality Impact, Greenhouse Gas and Aviation Impact Assessments, NSW 2021

Completed assessments for gas/distillate power station proposed at Tomago near to AGL's Newcastle Gas Storage Facility. Iterations of plant design include gas turbine and reciprocating gas engine options. Work included a detailed review of proposed emission controls, with subsequent atmospheric dispersion modelling of plant emissions in order to assess compliance with relevant ambient air quality standards.

Ampol Newcastle Terminal Air Quality Impact Assessment and Human Health Risk Assessment, NSW 2020-2022

Conducted independent air quality impact assessment and human health impact assessments to assist in planning consideration of rezoning adjacent to an existing petroleum import terminal.

AGL Newcastle Gas (LNG) Storage Facility: Tail Gas Processing, NSW 2017

Undertook air quality, greenhouse gas and plume rise assessments for LNG storage facility modifications including condensate flaring and a range of plant processes.

Qenos Altona Polyethylene Resin Manufacturing Facility, (VIC, 2016)

Undertook air quality impact assessment for polyethylene resin manufacturing operations. This work addressed emissions from solvent storage, resin polymerization, dehydration, and liquor distillation, as well as fugitive emissions from wastewater collection and treatment. Emissions were incorporated into atmospheric dispersion modelling, with assessment of model predictions against regulatory impact assessment criteria.

AGL 420 MW Barker Inlet Power Station Air Quality Impact Assessment, SA 2017

Conducted assessment for gas fired power station located adjacent to AGL's existing Torrens Island Power Plant. Iterations of plant design include gas turbine and LNG receiving functionalities.

Santos / Oil Search Ambient Air Quality Compliance Monitoring Program and Inventory, PNG 2016-Current

Developed and implemented air quality monitoring program for upstream oil and gas operations, covering separation, drying, compression, and condensate/crude refining.

Santos GLNG Air Quality and Plume Rise Assessments, QLD 2009

Conducted air quality and plume rise assessments for Gladstone LNG development.

Mobil Altona Oil Refinery Air Quality Impact Assessment, VIC 2016

Conducted air quality impact assessment for existing oil refinery. Assessment incorporated site-wide emissions from refinery plant, power generation, hydrocarbon storage, tanker transfer and wastewater treatment processes. Modelling was undertaken using the AERMOD in accordance with regulatory methodologies.

Mobil Yarraville Petroleum Storage Terminal Air Quality Assessment, 2013

Conducted air quality assessment for licencing for petroleum storage terminal.

Caltex Kurnell Terminal Conversion Air Quality Impact Assessment, 2013

Conducted air quality impact assessment for conversion of the facility from a refinery to a finished product import and storage terminal.

Shell Newport Terminal Air Quality Assessment, 2013

Conducted air quality assessment for licencing of petroleum hydrocarbon storage terminal.

Confidential Client Multi-Train LNG Liquefaction and Export Terminal, WA, 2010

Conducted atmospheric dispersion model for multi train LNG facility for application in human health risk assessment. Work included detailed VOC estimation across all plant emission sources and a range of operational scenarios.

Ken Kiefer

Technical Consulting Director

Ken has over 28 years of experience in risk assessment and environmental toxicology supporting client decision-making under national and state environmental policy frameworks within all Australian states, U.S. and other international jurisdictions. Mr. Kiefer as a Senior Risk Assessor and Technical Focal Point has provided senior technical and quality programmes management as part of the management of oil and gas portfolios (>100 sites) of contaminated sites across Australia and Southeast Asia. Mr. Kiefer has been technical human health and ecological risk assessment lead for across multiple sectors (oil and gas, mining, chemical, energy) for a range of key organic, metal, radionuclide and emerging (PFAS) contaminants. Ken was conducted multiple chemical risk assessments in support of oil and gas development projects including hydraulic fracturing and hydraulic flooding in the Australia (Queensland), United States and Chad. The assessments include chemicals associated with hydraulic fracturing fluids, drilling, and well maintenance



EXPERIENCE: over 25 years'

LINKEDIN: <https://www.linkedin.com/in/ken-kiefer-79b07940/>

EMAIL: ken.kiefer@erm.com

EDUCATION

- M.S., Agricultural and Environmental Chemistry, University of California, Davis (1998)
- B.S., Environmental Toxicology, University of California, Davis (1993)

PROFESSIONAL AFFILIATIONS AND REGISTRATIONS

- Australian Land and Groundwater Association.
- Australian Contaminated Land Consultants Association.

- Australasian College of Toxicology and Risk Assessment

FIELDS OF COMPETENCE

- Quantitative health and ecological risk assessment
- Environmental fate and transport
- Vapour intrusion
- Toxicological evaluations
- PFAS

KEY INDUSTRY SECTORS

- Petroleum (upstream and downstream)
- Mining (liability management and closure planning)
- Manufacturing
- Government

KEY PROJECTS

Marine Ecotoxicity and & Hazard ID of Chemical Composition of Subsea Gas Infrastructure, Cliff Head, Western Australia, Triangle Energy: Technical Oversight and Review. The Cliff Head Project is approaching the end of economic oil production from the reservoir. Options are currently being explored to determine next steps, including extending field life, repurposing, or decommissioning the facilities. The comparative assessment conducted thorough review of the potential ecological risks posed from the chemical constituents in their subsea infrastructure from the worst case ("leave in-situ") scenario.

Human health and Ecological Risk Assessment Hydraulic Fracturing – Shell QGC. Technical Lead, Ecological Risk Assessment. Human health and ecological risk assessment related to the sub-surface fracking and development of shallow and deep coal seam gas wells. Included evaluation of chemical composition maintenance chemicals, pathway assessment of the potential release scenarios of frac fluids to the environment; and modelling of potential exposures frac fluid due potential surface and sub-surface release scenarios.

Human health and Ecological Risk Assessment Hydraulic Fracturing – Origin Energy. Technical Lead, Ecological Risk Assessment. Two sites Human health and ecological risk assessment related to the sub-surface fracking and development of shallow and deep coal seam gas wells. Included evaluation of chemical composition of frac fluids, well construction, maintenance chemicals and return; pathway assessment of the potential release scenarios of frac fluids to the environment; and modelling of potential exposures frac fluid due potential surface and sub-surface release scenarios.

Human health and Ecological Risk Assessment Hydraulic Fracturing - Africa - Confidential. Technical Lead, Human Health and Ecological Risk Assessment. Human health and ecological risk assessment related to the sub-surface flooding project and use of polymer to enhance recovery. Included evaluation of chemical composition of frac fluids and return; pathway assessment of the potential release scenarios to the environment; and modelling of potential exposures due potential surface and sub-surface release scenarios.

Human health and Ecological Risk Assessment Hydraulic Fracturing Shell QGC. Technical Lead, Ecological Risk Assessment. Multiple Human health and ecological risk assessment related to the sub-surface hydraulic fracturing and development of shallow and

deep coal seam gas wells. Included evaluation of chemical and radiological tracer composition of frac fluids and return; pathway assessment of the potential release scenarios of frac fluids to the environment; and modelling of potential exposures frac fluid due potential surface and sub-surface release scenarios.

Human health and Ecological Risk Assessment Hydraulic Fracturing - Confidential.

Technical Lead, Human Health and Ecological Risk Assessment. Human health risk assessment related to the sub-surface hydraulic fracturing and development of shale gas wells. Included evaluation of chemical and naturally occurring radioactive material (NORM) composition of frac fluids and return; pathway assessment of the potential release scenarios of frac fluids to the environment; and modelling of frac fluid into ground water aquifers.

WATER

Ken Kiefer (Water Quality - Qualified Professional)

Ken has over 20 years of experience in the risk assessment and environmental toxicology. He is currently the ERM global risk assessment technical community leader. Ken has experience quantitative health risk assessments for the management of water discharges to the environment to meet a range of client and regulatory objectives in line with environmental policy frameworks within all Australian states, U.S., New Zealand, India, and other international jurisdictions.

Ken has provided human health and ecological risk assessment support for Oil and Gas clients of operational use chemicals in drilling or enhanced production of gas and oil. Ken has also recently provided the aquatic toxicology advice to INPEX supporting the INPEX submission to NT EPA seeking regulatory approval of modified licensed discharge limits of key chemicals likely to be found in discharge water from Ichthys project into Darwin Harbour.

AIR QUALITY

James Grieve (Air Quality – Qualified Professional)

James Grieve is an air quality engineer with 20 years of experience in the assessment and management of air quality and related environmental matters. His experience extends across a broad range of sectors including energy, waste management, transport, manufacturing, construction, mining, and remediation of contaminated land.

He has completed air quality investigations for a number of projects throughout Australia and Asia. This work has involved applying a range of technical skills, inclusive of atmospheric dispersion modelling, as well as working with regulatory authorities on planning, assessment and licensing issues. James also has a wide range of experience in the field air quality monitoring, having constructed air quality monitoring programs, and prepared monitoring methodologies.

James has provided air quality management support for a wide range of facilities in the oil and gas sector, including petroleum extraction, refining, distribution and export. Through this work he has developed an understanding of key emissions associated with these process, and associated mitigation and monitoring strategies.

APPENDIX C: COMMINGLED TREATED EFFLUENT (750-SC-003) LABORATORY RESULTS

C.1 Monthly sampling results for 750-SC-003

Shaded yellow cells with bold text indicate a trigger exceedance associated with discharge via Jetty Outfall. These are further described in Table 2-4.

Date	TIME	LIMS Sample ID	pH	Electrical conductivity	Temperature	Turbidity	Dissolved oxygen	TPH as oil & grease	TRH (C6-C10)	TRH (C10-C40)	TSS	BOD	COD	Free Chlorine	Ammonia	Total nitrogen	Total phosphorus	Filterable Reactive Phosphorus	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Silver	Zinc	Enterococci	E coli	Thermotolerant/Faecal coliforms	Anionic surfactants	aMDEA	Glycol (MEG)	Glycol (TEG)
Unit			pH units	µS/cm	°C	NTU	%	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg N/L	mg N/L	mg P/L	mg P/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	cfu/100mL	cfu/100mL	cfu/100mL	mg/L	mg/L	mg/L	mg/L
Discharge limit			6-9	n/a	35	n/a	n/a	6	n/a	n/a	10	20	125	2	n/a	10	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	400	n/a	n/a	n/a	n/a
8/07/2025	8:00	L2503364001	8.7	396	26.5	1.0	77	< 1	<20	<100	< 5	4	13	< 0.02	11	10	< 0.5	< 0.5	<0.1	<1	4	<1	<0.1	<1	<1	54	6	3	260	<0.1	<5	<5	<5
12/08/2025	8:10	L2503865001	8.6	324	25.6	1.0	78	< 1	<20	<100	< 5	2	9	0.02	6	6	< 0.5	< 0.5	<0.1	<1	2	<1	<0.1	<1	<1	51	4	<1	140	<0.1	<5	<5	<5
9/09/2025	8:07	L2504385001	8.0	299	29.6	0.5	79	< 1	<20	<100	< 5	<2	11	< 0.02	< 2	< 2	< 0.5	< 0.5	<0.1	<1	2	<1	<0.1	<1	<1	10	5	52	1000	<0.1	<5	<5	<5
14/10/2025	7:45	L2504998001	7.3	351	30.8	1.5	77	< 1	<20	<100	< 5	5	18	0.14	3	6	< 0.5	< 0.5	<0.1	<1	6	<1	<0.1	3	<1	719	10	33	130	<0.1	<5		
21/10/2025	7:21	L2505153001																														<5	<5
11/11/2025	8:25	L2505572001	7.3	285	28.5	1.5	76	< 1	<20	<100	< 5	5	12	0.11	2	4	< 0.5	< 0.5	<0.1	<1	2	<1	<0.1	1	<1	484	9	7	160	<0.1	<5	<5	<5
9/12/2025	9:13	L2506039001	8.1	256	30.1	1.0	93	< 1	<20	<100	< 5	<2	10	0.02	4	4	< 0.5	< 0.5	<0.1	<1	<1	<1	<0.1	<1	<1	343	4	<1	130	<0.1	<5	<5	<5
13/01/2026	8:05	L2600287001	8.1	363	30.2	1.0	84	< 1	<20	<100	< 5	3	13	< 0.02	3	5	< 0.5	< 0.5	<0.1	<1	5	<1	<0.1	<1	<1	25	<1	<1	1	<0.1	<5	<5	<5
9/02/2026	7:28	L2600821001	7.8	244	29.8	2.5	87	< 1	<20	<100	< 5	<2	10	0.02	4	4	< 0.5	< 0.5	<0.1	<1	2	<1	<0.1	<1	<1	113	7	<1	61	<0.1	<5	<5	<5
10/03/2026	7:48	L2601361001	8.5	295	25.7	1.0	86	< 1	<20	<100	< 5	4	13	0.04	6	7	< 0.5	< 0.5	<0.1	<1	2	<1	<0.1	<1	<1	241	4	4	1100	<0.1	<5	<5	<5
14/04/2026	8:15	L2602042001	7.9	419	29.4	0.5	88	< 1	<20	<100	< 5	3	16	0.02	< 2	3	< 0.5	< 0.5	<0.1	<1	7	<1	<0.1	<1	<1	29	1	<1	5	<0.1	<5	<5	<5
12/05/2026	8:20	L2602564001	8.2	321	29.0	0.5	89	< 1	<20	<100	< 5	<2	13	< 0.02	8	9	< 0.5	< 0.5	<0.1	<1	4	<1	<0.1	<1	<1	140	22	11	570	<0.1	<5	<5	<5
20/05/2026	6:56	L2602709001																								29	4	140					
9/06/2026	10:14	L2603273001	7.9	316	28.1	0.5	82	< 1	<20	<100	< 5	5	19	0.02	< 2	3	0.6	< 0.5	<0.1	<1	8	<1	<0.1	<1	<1	147	31	1	1400	<0.1	<5	<5	<5

APPENDIX D: AUTHORISED STATIONARY SOURCE EMISSION RELEASE RESULTS

D.1 Stationary source emission test results by Ektimo

Sampling Point Number	Sampling Location Number	Date/Time	LIMS Number	NO _x as NO ₂ - Concentration Target		NO _x as NO ₂ - Concentration Limit		NO _x as NO ₂ - Measured Concentration		CO Measured Concentration		Temperature	Efflux velocity	Volumetric flow rate
				mg/Nm³	ppm	mg/Nm³	ppm	mg/Nm³	ppmv	mg/m³	ppm	°C	m/s	m³/min
LNG Refrigerant Compressor Driver Gas Turbines (GE Frame 7s)				50 @ 15%O2 dry	25 @ 15%O2 dry	70	35 @ 15%O2 dry	LNG Refrigerant Compressor Driver Gas Turbines (GE Frame 7s)						
A1	L-641-A-001	04/12/2025 12:33	L2502761001					61	30	52	41	168	25	16000
A2	L-642-A-001	04/12/2025 10:05	L2502763001					28	14	3.7	2.9	169	24	15000
A3	L-641-A-002	03/12/2025 13:13	L2502762001					43	21	38	30	159	23	15000
A4	L-642-A-002	06/12/2025 08:49	L2502764001					27	13	66	53	165	24	16000
CCPP Gas Turbine Generators (GE Frame 6s, 38MW) - HRSG stack								CCPP Gas Turbine Generators (GE Frame 6s, 38MW) - HRSG stack						
A5-1	L-780-GT-001	-	-					-	-	-	-	-	-	-
A6-1	L-780-GT-002	-	-					-	-	-	-	-	-	-
A7-1	L-780-GT-003	-	-					-	-	-	-	-	-	-
A8-1	L-780-GT-004	-	-	-	-	-	-	-	-	-				
A9-1	L-780-GT-005	-	-	-	-	-	-	-	-	-				
A5-2	L-630-F-001	05/12/2025 08:37	L2502754001	150 @15%O2 dry	75 @15%O2 dry	350	175 @15%O2 dry	16	7.8	97	78	186	20	6900
A6-2	L-630-F-002	05/12/2025 10:28	L2502755001					11	5.2	270	220	190	21	7000
A7-2	L-630-F-003	05/12/2025 12:21	L2502756001					20	9.9	110	84	195	21	6800
A8-2	L-630-F-004	05/12/2025 14:24	L2502757001					16	7.7	82	65	200	22	6900
A9-2	L-630-F-005	-	-					-	-	-	-	-	-	-
AGRU Incinerators				320 @3%O2 dry	160 @3%O2 dry	350	175 @3%O2 dry	AGRU Incinerators						
A13-1	L-551-FT-031	03/12/2025 10:23	L2502752001					79	39	100	82	650	25	2900
		16/04/2026 08:47	L2600909001					80	39	150	120	497	25	3500
A14-1	L-552-FT-031	06/12/2025 10:50	L2502753001					67	33	120	96	481	21	2900
		15/04/2026 10:59	L2600908001					77	37	96	77	501	25	3500
Heating medium furnaces				160 @3%O2 dry	80 @3%O2 dry	350	175 @3%O2 dry	Heating medium furnaces						
A15	L-640-A-001-A	-	-					-	-	-	-	-	-	-
A16	L-640-A-001-B	-	-					-	-	-	-	-	-	-

D.2 Monthly feed gas sampling test results reported by the INPEX Laboratory

Date/Time	LIMS number	Hydrogen Sulfide	Benzene	Toluene	Ethylbenzene	m/p-Xylene	o-Xylene	Mercury
	Unit	ppmV	ppmV	ppmV	ppmV	ppmV	ppmV	µg/Nm³
A13-2 (L-551-SC-003) AGRU Hot Vent - LNG Train 1, prior to release at A3								
19/07/2025 15:28	L2503448001	140	210	180	< 30	< 30	< 30	NA
11/08/2025 14:20	L2503841001	140	70	50	< 30	< 30	< 30	NA
11/10/2025 12:05	L2504940001	160	130	100	< 30	< 30	< 30	NA
18/11/2025 12:40	L2505556001	140	140	100	< 30	< 30	< 30	NA
19/12/2025 15:10	L2506018001	140	190	140	< 30	< 30	< 30	NA
10/01/2026 13:15	L2600193001	140	90	60	< 30	< 30	< 30	NA
13/02/2026 15:25	L2600836001	140	70	40	< 30	< 30	< 30	NA
20/03/2026 12:45	L2601572001	140	100	70	< 30	< 30	< 30	NA
16/04/2026 10:10	L2601824001	140	150	120	< 30	< 30	< 30	NA
18/05/2026 12:30	L2602548001	140	130	100	< 30	< 30	< 30	NA
19/06/2026 12:30	L2603247001	140	180	130	< 30	< 30	< 30	NA
A13-3 (L-541-SC-001) Feed gas to AGRU – LNG Train 1 – prior to release at A3								
15/07/2025 09:00	L2503329001	NA	NA	NA	NA	NA	NA	< 0.005
11/08/2025 08:28	L2503743001	NA	NA	NA	NA	NA	NA	< 0.005
12/10/2025 08:10	L2504838001	NA	NA	NA	NA	NA	NA	< 0.005
04/11/2025 07:50	L2505401001	NA	NA	NA	NA	NA	NA	< 0.005
01/12/2025 10:10	L2505901001	NA	NA	NA	NA	NA	NA	< 0.005
08/01/2026 09:27	L2600067001	NA	NA	NA	NA	NA	NA	< 0.005
09/02/2026 07:30	L2600669001	NA	NA	NA	NA	NA	NA	< 0.005
05/03/2026 08:40	L2601202001	NA	NA	NA	NA	NA	NA	< 0.005
04/04/2026 15:20	L2601891001	NA	NA	NA	NA	NA	NA	< 0.005

05/05/2026 15:42	L2602406001	NA	NA	NA	NA	NA	NA	< 0.005
01/06/2026 09:15	L2602912001	NA	NA	NA	NA	NA	NA	< 0.005
A14-2 (L-552-SC-003) AGRU hot Vent Train 2, prior to release at A4								
19/07/2025 12:44	L2503449001	140	220	170	< 30	< 30	< 30	NA
14/08/2025 14:40	L2503842001	140	130	90	< 30	< 30	< 30	NA
18/11/2025 15:45	L2505557001	140	150	110	< 30	< 30	< 30	NA
19/12/2025 13:00	L2506019001	140	200	150	< 30	< 30	< 30	NA
25/01/2026 14:30	L2600250001	150	60	40	< 30	< 30	< 30	NA
17/02/2026 14:50	L2600837001	140	60	40	< 30	< 30	< 30	NA
20/03/2026 15:45	L2601573001	140	140	110	< 30	< 30	< 30	NA
15/04/2026 11:15	L2601827001	140	130	100	< 30	< 30	< 30	NA
15/05/2026 13:00	L2602549001	140	150	110	< 30	< 30	< 30	NA
15/06/2026 14:20	L2603248001	140	210	140	< 30	< 30	< 30	NA
A14-3 (L-542-SC-001) Feed gas to AGRU – LNG Train 2 – prior to release at A4								
09/07/2025 08:50	L2503328001	NA	NA	NA	NA	NA	NA	< 0.005
11/08/2025 07:38	L2503742001	NA	NA	NA	NA	NA	NA	< 0.005
17/11/2025 08:10	L2505400001	NA	NA	NA	NA	NA	NA	< 0.005
01/12/2025 09:30	L2505900001	NA	NA	NA	NA	NA	NA	< 0.005
05/01/2026 07:50	L2600066001	NA	NA	NA	NA	NA	NA	< 0.005
20/02/2026 08:00	L2600668001	NA	NA	NA	NA	NA	NA	< 0.005
05/03/2026 09:00	L2601201001	NA	NA	NA	NA	NA	NA	< 0.005
04/04/2026 15:09	L2601892001	NA	NA	NA	NA	NA	NA	< 0.005
05/05/2026 16:00	L2602405001	NA	NA	NA	NA	NA	NA	< 0.005
01/06/2026 07:57	L2602911001	NA	NA	NA	NA	NA	NA	< 0.005

APPENDIX E: GROUNDWATER QUALITY MONITORING DATA

Table 8-1: Groundwater sampling results for all sites, Groundwater Surveys 16 and 17

Monitoring Round	LocCode	Sampled Date-Time	Ammonia as N	Nitrogen (Total)	Oxides of Nitrogen	Phosphate total (P)	Reactive Phosphorus as P	TSS	TDS	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (hexavalent) (Filtered)	Chromium (Trivalent) (Filtered)	Cobalt (Filtered)	Copper (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Silver (Filtered)	Vanadium (Filtered)	Zinc (Filtered)	Benzene	Ethylbenzene	Toluene	Xylene Total	TRH C6-C40	Biological oxygen demand	E. coli	Dissolved Oxygen (%)	EC (field)	pH (Field)	Redox	Temp
Units	n/a	n/a	ug/l	ug/l																										MPN/100mL	% sat	uS/ cm	pH_Units	mV	°C
Groundwater Survey 16	BPGW01	27/10/2025	77	110	8	27	25	-	1950	294	3.4	3	<1	<1	34.9	2.1	7	1130	<0.04	24.6	0.1	<0.2	149	<1	<2	<2	<2	<100	-	-	0.7	4,285	4.57	-378.5	30.8
	BPGW07	27/10/2025	470	790	10	62	<10	-	66,000	7	7.1	0.4	<1	<1	27.6	<1	0.9	1190	<0.04	30.5	<0.1	<0.5	65	<1	<2	<2	<2	<100	-	-	1.5	104,768	5.37	-336.2	32
	BPGW08A	27/10/2025	55	130	<20	54	30	-	8,820	50	14.3	0.4	<1	<1	55.4	<0.5	0.8	5070	<0.04	30.2	<0.1	0.3	43	<1	<2	<2	<2	<100	-	-	0.1	17,666	4.55	-69.8	32
	BPGW09	27/10/2025	418	730	<20	28	7	-	80,300	<5	7	<0.2	<1	<1	2.8	<1	<0.2	331	<0.04	2.2	<0.1	<0.5	<5	<1	<2	<2	<2	<100	-	-	0.1	122,401	5.88	-377.9	31.1
	BPGW18	30/10/2025	637	1310	<20	45	16	-	49,300	<5	10.7	<0.2	<1	<1	<0.2	<1	<0.2	85.1	<0.04	<0.5	0.1	0.8	<5	<1	<2	<2	<2	<100	-	-	2	68,813	6.13	-52.3	29.6
	BPGW19A	28/10/2025	1440	1950	<2	38	2	-	49,600	23	2.3	<0.05	<1	<1	<0.1	1.3	<0.1	41.6	<0.04	<0.5	<0.1	4	<1	<1	<2	<2	<2	<100	<1	<1	0.8	72,077	5.95	-127.6	32.1
	BPGW20	30/10/2025	162	180	<20	11	7	-	634	<5	2.6	<0.05	<1	<1	2.4	<0.5	<0.1	42.7	<0.04	1.4	<0.1	<0.2	6	<1	<2	<2	<2	<100	-	-	0.3	1,352	5.23	59	32.8
	BPGW26	27/10/2025	247	300	<20	16	4	-	6100	<5	4.7	<0.05	<1	<1	9.1	<0.5	0.1	3000	<0.04	1.3	<0.1	<0.2	4	<1	<2	<2	<2	<100	-	-	0.1	13,362	5.22	90.5	32.1
	BPGW27A	28/10/2025	261	320	<20	<5	3	-	1330	<5	1.2	<0.05	<1	<1	2.1	<0.5	<0.1	28.4	<0.04	<0.5	<0.1	<0.2	4	<1	<2	<2	<2	<100	<1	<1	0.7	2,528	5.05	78.7	33.9
	BPGW28	28/10/2025	1550	2220	<2	105	<1	-	63,500	<5	1.6	<0.05	<1	<1	<0.1	2.1	<0.1	166	<0.04	<0.5	<0.1	0.5	2	<1	<2	<2	<2	<100	-	-	1.1	87,322	6.49	-80.6	31.5
	BPGW38A	27/10/2025	18	100	16	14	<1	-	644	<5	0.6	0.48	<1	<1	0.4	<0.5	<0.1	16	<0.04	7	<0.1	0.2	6	<1	<2	<2	<2	<100	-	-	3.4	1,113	5.58	94.7	32.7
	BPGW40	28/10/2025	444	640	<20	13	<10	-	3,260	<5	8.2	<0.05	<1	<1	2.3	<0.5	<0.1	215	<0.04	<0.5	<0.1	<0.2	3	<1	<2	<2	<2	<100	-	-	0.7	5,823	5.94	-57.8	31.1
	BPGW41	28/10/2025	695	960	<2	27	12	-	11300	<5	5.1	<0.05	<1	<1	<0.1	<0.5	<0.1	16.7	<0.04	<0.5	<0.1	0.4	12	<1	<2	<2	<2	<100	-	-	0.1	19,781	6.53	158.6	32
	VWP328	28/10/2025	296	750	<20	14	1	-	72,300	<5	771	0.08	<1	<1	23.5	5.7	0.5	344	<0.04	3.4	<0.1	0.3	17	<1	<2	<2	<2	<100	-	-	1.5	96,329	5.78	-11.4	30.5
	VWP341	27/10/2025	570	640	<20	11	5	-	1820	12	5.6	<0.05	<1	<1	152	<0.5	0.1	2610	<0.04	13.8	<0.1	0.3	129	<1	<2	<2	<2	<100	-	-	0.7	4,192	5.02	45.8	33.4
Groundwater Survey 17	BPGW01	30/04/2026	55	70	<20	18	<1	-	69	36	6.9	<0.05	<1	<1	3.3	<0.5	0.2	330	<0.04	0.5	<0.1	<0.2	5	<1	<2	<2	<2	<100	-	-	20.7	132.3	5.23	53.3	29.4
	BPGW07	30/04/2026	346	730	<20	21	9	-	70,000	11	5.9	0.7	<1	<10	36.5	1	2.1	1830	<0.04	39.8	<0.1	<0.5	80	<1	<2	<2	<2	<100	-	-	40.9	97,573	5.44	83	30.5
	BPGW08A	29/04/2026	35	110	<20	26	2	-	3,090	<5	28.5	<0.05	<1	<1	38.1	<0.5	<0.1	2790	<0.04	17.1	<0.1	<0.2	10	<1	<2	<2	<2	<100	-	-	10.8	5,781	5.55	-26.6	31.4
	BPGW09	30/04/2026	197	570	<20	16	<1	-	106,000	<5	84.4	<0.2	<1	<10	6.6	<1	1.7	765	<0.04	2.4	<0.1	<0.5	6	<1	<2	<2	<2	<100	-	-	5.2	136,654	5.92	-71.1	30.3
	BPGW18	29/04/2026	605	900	14	60	<1	-	47,600	<5	10.8	<0.2	<1	<10	<0.2	<1	<0.2	83.1	<0.04	<0.5	<0.1	0.6	<5	<1	<2	<2	<2	<100	-	-	9.7	71,020	6.12	-97.6	29.5
	BPGW19A	28/04/2026	1230	1870	<20	39	4	-	53,000	9	8.9	0.08	2	<10	0.1	1.7	<0.1	44.5	<0.04	3.4	<0.1	3.1	18	<1	<2	<2	<2	<100	1.3	<1	8.8	79,153	6.1	-102.5	30.8
	BPGW20	29/04/2026	103	140	<20	20	3	-	896	<5	2.8	<0.05	<1	<1	3	<0.5	<0.1	50.6	<0.04	1.7	<0.1	<0.2	9	<1	<2	<2	<2	<100	-	-	11.8	2204	5.36	16	32.2
	BPGW26	28/04/2026	377	440	<20	20	2	-	5,040	<5	5.2	<0.05	<1	<1	10.6	<0.5	<0.1	2830	<0.04	2	<0.1	<0.2	5	<1	<2	<2	<2	<100	-	-	18.7	11,173	5.36	63.8	32.1
	BPGW27A	28/04/2026	100	150	<20	9	<1	-	954	6	0.7	<0.05	<1	<1	1.6	<0.5	<0.1	19.4	<0.04	1	<0.1	<0.2	4	<1	<2	<2	<2	<100	<1	<1	12.1	2,051	5.21	65.2	34.2
	BPGW28	29/04/2026	957	1040	<20	41	<1	-	71,100	<5	1.8	<0.2	<1	<10	<0.2	<1	<0.2	205	<0.04	<0.5	<0.1	<0.5	<5	<1	<2	<2	<2	<100	-	-	3.5	96,858	6.43	-112.8	30.6
	BPGW38A	28/04/2026	12	120	81	11	1	-	285	16	<0.2	0.06	<1	<1	<0.1	<0.5	<0.1	1.6	<0.04	0.8	<0.1	0.3	4	<1	<2	<2	<2	<100	-	-	29.9	606	6.17	115.3	31.6
	BPGW40	28/04/2026	460	520	<20	18	<1	-	1,860	<5	7.1	<0.05	<1	<1	2.1	<0.5	<0.1	140	<0.04	1.1	<0.1	<0.2	2	<1	<2	<2	<2	<100	-	-	48.8	3,704	6.23	-36.6	30.4
	BPGW41	29/04/2026	728	740	14	10	<1	-	11,700	<5	4.8	<0.05	<1	<1	<0.1	<0.5	<0.1	16.2	<0.04	<0.5	<0.1	0.4	4	<1	<2	<2	<2	<100	-	-	1.2	20,250	6.51	-125.1	30.2
	VWP328	29/04/2026	265	680	<20	<25	<1	-	73,600	<5	569	<0.2	<1	<10	22.6	<1	0.3	404	<0.04	2.9	<0.1	<0.5	7	<1	<2	<2	<2	<100	-	-	19.2	102,434	5.79	-46.9	30.4
	VWP341	28/04/2026	525	660	<20	22	<1	-	1,660	13	6.3	<0.05	<1	<1	196	<0.5	0.1	3510	<0.04	18.3	<0.1	0.3	168	<1	<2	<2	<2	<100	-	-	26.7	3,473	5.21	-12.6	32.6

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