





Environmental Monitoring Summary Report

Port Kembla Gas Terminal

Infrastructure Approval SSI-9471 EPL Licence Number: 21529

Reporting period: 1 May 2023 – 31 May 2023

Date published: 27 June 2023



1 Project background

AIE is responsible for the development of a liquefied natural gas (LNG) import terminal at Port Kembla, south of Wollongong, NSW (the Project). The Project will be the first of its kind in NSW and will provide a simple and flexible solution to the state's gas supply challenges.

The Project has been declared Critical State Significant Infrastructure (CSSI) in accordance with Section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) (NSW) and Schedule 5 of the *State Environmental Planning Policy State and Regional Development* (SRD SEPP). The Project received Infrastructure Approval from the Minister for Planning and Public Spaces on 29 of April 2019.

The construction of the Project is primarily associated with the establishment of a new berth facility at Port Kembla to enable a Liquified Natural Gas (LNG) Carrier to berth alongside the Floating Storage and Regasification Unit (FSRU) and new infrastructure to connect the terminal to the existing gas network. The location of the Project is shown on the Environmental Monitoring Location Plan provided as Appendix A.

An Environment Protection Licence (EPL) (EPL No. 21529) was issued for the Project by the NSW Environment Protection Authority (EPA) on 2 June 2021. The details of the EPL are provided below in Table 1-1.

Table 1-1 EPL Details

EPL No.	21529							
Anniversary Date:	2 June							
	Australian Industrial Energy Pty Ltd							
Licensee:	PO Box 3155 Broadway							
	Nedlands WA 6009							
Premises:	Port Kembla Gas Terminal, Port Kembla NSW 2505							
	Contaminated soil treatment							
Scheduled Activity	Crushing, grinding or separating							
	Petroleum products storage							



2 Report purpose

This Monthly Environmental Monitoring Report has been prepared to provide an overview of project activities undertaken during the reporting period and those forecast for the next reporting period (refer to Section 3), and to satisfy the requirements associated with the reporting and publishing of monitoring data and results required under the relevant conditions of approval and environmental management plans as detailed further in Table 2-1.

Table 2-1 Environmental monitoring reporting requirements

Document	Clause or section	Requirement	Addressed:
	Sch. 4 Cond. 8	Regular Reporting – The Proponent must provide regular reporting on the environmental performance of the development on its website in accordance with the reporting requirements in any strategies, plans or programs approved under the conditions of this approval.	This report which will be made available on
DPIE SSI-9471		Access to information – From the commencement of development under this approval, the Proponent shall: (a) Make copies of the following information publicly available on its website:	the Project Website.
	Sch. 4 Cond. 12	a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs	Section 4
		- a summary of complaints, which is to be updated monthly	Section 5
AIE Air Quality Management Plan (Stage 2A and 2B)	Section 11.4	A monthly environmental monitoring report will be developed for each calendar month which will include details of the monitoring results and frequencies and inclusion of any exceedance of EPL No. 21529 air monitoring limits / criteria. A copy of the monthly environmental monitoring report will be made available on the AIE Project website.	Air quality monitoring results and frequencies and inclusion of any exceedance provided in Section 4.1
AIE Water Quality Monitoring Plan (Stage 2A and 2B)	Section 9.4	A monthly environmental monitoring report will be developed for each calendar month which will include details of the monitoring results and frequencies and inclusion of any exceedance of EPL (No. 21529) water quality monitoring limits / criteria. A copy of the monthly environmental monitoring report will be made available on the AIE Project website.	Water quality monitoring results and frequencies and inclusion of any exceedance provided in Section 4.2
EPL 21529	Condition M6.2	The licensee must monitor and record temperature, humidity, wind direction, wind velocity and rainfall at either the project weather station, or through analysis of equivalent weather information obtained from the Australian Bureau of Meteorology. Whilst there are no specific requirements to provide weather data in the monthly report, AIE has included the data for transparency and to assist with context for any monitoring results where required.	Section 4.3



3 Project activities

3.1 Project status

The project has progressed to Stage 2A, Stage 2B and Stage 3 as follows:

Stage 2A: Marine Berth Construction – Land Based. Associated works include:

- Quay wall construction.
- Installation of communications conduit, potable water line, and 11kV power cable and Pad-mount Substation within the Marine Berth Construction and Dredging (MBD) Site Compound.
- Construction of the Onshore Receiving Facilities (ORF), which comprises three areas: Wharf Topside Area; Utility Area; and Common Area.
- Pipeline construction and associated ancillary infrastructure within MBD Site Compound delivered as part of ORF scope.

Stage 2B: Marine Berth Construction – Marine Based. Associated works include:

- Continuation of Stage 2A works
- Excavation and dredging of the MBD Site Compound in the Inner Harbour and the Emplacement Cell in the Outer Harbour.
- Construction of the Emplacement Cell in the Outer Harbour.
- Marine based construction activities including installation of navigational aids and revetments at the MBD Site Compound.

Stage 3: Gas pipeline Construction. Associated works applicable to EPL No. 21529 include:

• Construction of gas pipeline section within Berth 101

3.2 Project activities for the reporting month

- Construction of trench drain at Berth 101.
- Ongoing importation, stockpiling and management of rock-fill material at the Outer Harbour for later use during construction of the emplacement cell bund.
- Commencement of jet grouting and coring of the capping beam at Berth 101 as part of the quay wall rectification works.
- Construction of the Darcy Road drain diversion.
- Commencement of emplacement cell bund construction at the Outer Harbour.

3.3 Project activities for the upcoming month

- Ongoing construction of Berth 101 trench drain.
- Commencement of the 11kV / utility installations along Seawall Road, Port Kembla.
- Ongoing importation, stockpiling and management of rock-fill material at the Outer Harbour.
- Ongoing jet grouting works and coring of the capping beam at Berth 101 as part of the quay wall rectification works.
- Ongoing construction of the emplacement cell bund at the Outer Harbour.



4 Environmental monitoring data

The following sections present a summary of the air quality, water quality and weather monitoring data for the reporting month.

A copy of this report will be made available on the Project website at the following web-address:

https://www.squadronenergy.com/our-projects/port-kembla-energy-terminal

4.1 Air quality

4.1.1 Air Quality Monitoring Locations and Frequency

Air quality monitoring equipment is installed to the north and south of the MBD site compound (Berth 101), and to the east, to the west, and within the central portion of the Outer Harbour stockpile area.

A summary of the air quality monitoring locations is provided below in Table 4-1 and a monitoring location plan is provided in **Appendix A**.

Table 4-1 Air quality monitoring locations

EPL Ref.	Monitoring location	Monitoring type	Monitoring parameter	Monitoring frequency	
8	Northern boundary of the premises, adjacent the southern boundary of Port Kembla Coal Terminal	Dust Deposition	Particulates -	Monthly	
10	Southern boundary of Berth 101	Gauge	Deposited Matter (gm/m²/month)	Wienermy	
12	Southern side of emplacement area, Outer Harbour	Ambient Air Monitoring -	Total suspended	Special Frequency 1	
14	Eastern side of emplacement area, Outer Harbour	High Volume Air Sampler	particles (TSP) (ug/m³)	(24-hour period every 6 days)	
22	Northern side of emplacement area, Outer Harbour				
9	Northern boundary of the premises, adjacent the southern boundary of Port Kembla Coal Terminal				
11	Southern boundary of Berth 101				
13	Southern side of emplacement area, Outer Harbour	Real time dust monitoring	PM10 (ug/m³)	Continuous	
15	Eastern side of emplacement area, Outer Harbour				
23	Northern side of emplacement area, Outer Harbour				



4.1.2 Air Quality Monitoring Results

The air quality monitoring results for the reporting month are presented below in Table 4-2.

Table 4-2 Air quality monitoring results

		Monitoring parameter								
			Total Su	spended Pa	rticulate		PM10			
		Particulates	(High V	olume Air Sa	ampler)	(Real-time	or equiv.)			
Monitorin Location (EPL Refer		Deposited Matter	Average	Min.	Max.	Average	Min.	Max.	Events above	
		(Depositional dust gauge)**							criteria*	
Unit		g/m²/month	mg/m³	mg/m³	mg/m³	μg/m³/24 hr average	μg/m³/24 hr average	μg/m³/24 hr average	No.	
Criteria		NA	NA	NA	NA	NA	NA	200	NA	
Berth	EPL 8	1.30	0.13	0.06	0.20		monitoring re his EPL Point	•	NA	
101 North	EPL 9	No Dust Depos	ition Gauge this EPL P		quired at	47.88	23.00	74.25	0	
Berth							No PM10 monitoring required at this EPL Point			
101 South	EPL 11	No Dust Depos	ition Gauge this EPL P		quired at	67.05	30.42	138.54	0	
Outer	EPL 12	1.20	0.04	0.02	0.08	No PM10 monitoring required at this EPL Point			NA	
Harbour South	EPL 13	No Dust Depos	ition Gauge this EPL P		quired at	18.94	5.10	50.38	0	
Outer Harbour	EPL 14	0.60	0.04	0.02	0.06		monitoring re his EPL Point	•	NA	
East	EPL 15	No Dust Depos	ition Gauge this EPL P		quired at	15.52	4.08	74.24	0	
Outer	EPL 22	0.60	0.04	0.01	0.08	No PM10 i	NA			
Harbour North	EPL 23	No Dust Depos	ition Gauge this EPL P		quired at	20.35	4.83	58.69	0	

^{*}Includes individual number of times results recorded above Stage 2A and Stage 2B performance criteria (200 ug/m³/24 hour average). Refer to **Appendix B** for event above criteria reports.

^{**}Assessed as Total Insoluble.



4.2 Water quality

4.2.1 Water Quality Monitoring Locations and Frequency

Water quality monitoring is undertaken at five (5) locations within the Port Kembla Harbour. Each water quality monitoring location is securely anchored/moored in its location. Details of each of the water quality monitoring locations and corresponding EPL monitoring point reference is provided below in Table 4-3.

Table 4-3 Port Kembla Harbour water quality monitoring locations

EPL			Parameters				
Ref.	Monitoring location	Type of monitoring	Continuous monitoring at 15 min intervals	Weekly grab sample			
1	WQM1 - North of Berth 101	Primary- impact works area receiver		- Aluminium - Arsenic			
16	WQM2 - North of the emplacement cell, Outer Harbour.	Primary- impact works area receiver	- Turbidity	- Cadmium - Chromium (total) - Cobalt			
17	WQM3 - South West of Berth 101	Primary- impact works area receiver	- Temperature - pH	- Copper - Lead			
18	WQM4 - Near the Pacific Ocean entrance to Outer Harbour	Background water quality	- Salinity (EC) - Dissolved oxygen	- Mercury - Nickel - Total PAHs - TSS			
19	WQM5 - Near entrance to Allans Creek, near BlueScope Steel	Background water quality		- Tributyltin - Zinc			

It is noted that the EPL 21529 also includes a mobile water quality monitoring point (EPL 24) for the undertaking of ambient water quality monitoring for turbidity within 5m of the outermost silt curtain near Berth 101 during dredging operations. As dredging works at Berth 101 did not occur during this reporting period, water quality monitoring was suspended at EPL 24.

In addition to the monitoring requirements listed above for the harbour, monitoring is also required for any discharge event from the on-site sedimentation basin located at the southern end of Berth 101. Details of the monitoring requirements associated with the sediment basin discharge point are included below in Table 4-4.

Table 4-4 Sediment basin discharge monitoring

EPL	Monitoring location	Type of monitoring	Parameters						
Ref.	Monitoring location		Prior to discharge	Daily grab sample	e during discharge				
20	Sediment basin discharge point at the southern end of Berth 101	Wet weather discharge quality	Oil and grease (visual)Total suspended solids (TSS)	 Aluminium Arsenic Cadmium Chromium Cobalt Copper Lead Mercury 	 Nickel Oil and grease (visual) pH Total PAHs Tributyltin TSS Zinc 				



4.2.2 Water Quality Monitoring Results

A summary of the results for the continuous water quality monitoring in Port Kembla Harbour is presented below in Table 4-5. Further details for exceedances as indicated below (if applicable) are provided in **Appendix B**.

Table 4-5 Port Kembla Harbour water quality – Continuous monitoring results

			Results - base	d on individual 1	L5-minute media	n		
	Statistic	Turbidity (NTU)	Temperature (Deg. C)	Hd	Electrical conductivity (uS/cm2)	Dissolved Oxygen (%sat)		
Criteria		35 + BG ¹	N/A	6.5 – 8.5	N/A	70 – 110		
	Average	2.4	20.1	8.3	52833.9	92.2		
WQM1	Minimum	1.1	17.9	8.2	47421.0	85.2		
EPL 1	Maximum	88.4	22.7	8.3	53616.3	100.6		
	Events above criteria ²	1	-	0	-	0		
	Average	2.1	19.8	8.2	53247.3	96.0		
WQM2	Minimum	1.3	16.5	8.0	51526.6	90.0		
EPL 16	Maximum	56.0	21.6	8.2	53593.7	104.9		
	Events above criteria ²	1	-	0	-	0		
	Average	2.1	20.1	8.2	53168.3	96.0		
WQM3	Minimum	1.1	14.6	8.0	49898.4	89.6		
EPL 17	Maximum	11.8	22.5	8.3	53681.5	108.3		
	Events above criteria ²	0	-	0	-	0		
WQM4	Average	2.0	19.9	8.2	53190.8	94.8		
EPL 18	Minimum	1.2	18.1	8.2	49056.8	89.2		
(Background)	Maximum	15.0	21.8	8.3	53656.5	101.1		
WQM5	Average	4.4	23.2	8.1	49951.2	98.1		
EPL 19	Minimum	1.4	18.5	8.0	16033.1	90.6		
(Background)	Maximum	58.2	26.7	8.2	54200.5	104.9		
Mobile WQM /	Average	NA						
EPL 24 Minimum		NA	Not required at this EPL point					
(Ambient) ³	Maximum	NA						

¹Total suspended solids (TSS) is monitored in real time using turbidity in NTU and the NTU-TSS statistical correlation from an in-field study using *The Water Quality Monitoring Manual for Construction Sites*, as issued by the Alberta Ministry of Transportation. The NTU-TSS Correlation Study was issued to the EPA in email correspondence dated 01/03/2023. BG = Background, recorded at WQM4 and/or WQM5. For this reporting period an NTU-TSS correlation of 35 NTU being equivalent to 50 mg/L TSS has been adopted.

²Calculated as number of days where results exceeded performance criteria. Refer to Appendix B for exceedance reports.

³Complete results for this point are included as **Appendix C**.









4.2.3 Water Quality Monitoring Results – Port Kembla Harbour Grab Samples

A summary of the results for the Port Kembla Harbour weekly grab samples is presented below in Table 4-6. Further details for exceedances as indicated below (if applicable) are provided in **Appendix B**.

Table 4-6 Port Kembla Harbour water quality – Weekly grab sample results summary

Monitoring Location	Statistic ²	Aluminium	Ammonia	Arsenic	Cadmium	Chromium (total)	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Reactive Phosphorus	Total PAHs	TSS	Tributyltin	Zinc
Unit		ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	Ug/L	ug/L	mg/L	ug/L	mg/L	ngSn/L	ug/L
Criteria		200	-	50	5.5	4.4	1	8	-	12	0.4	70	-	50	50	6	21
	Average	28.00	0.36	1.68	<1	<0.5	<1	1.00	<5	<0.2	<0.1	0.67	<0.01	<0.05	<5	<2	<5
WQM1	Minimum	28.00	0.36	1.50	<1	<0.5	<1	1.00	<5	<0.2	<0.1	0.50	<0.01	<0.05	<5	<2	<5
EPL 1	Maximum	28.00	0.36	2.00	<1	<0.5	<1	1.00	<5	<0.2	<0.1	0.90	<0.01	<0.05	<5	<2	<5
	Events above criteria ¹	0	-	0	0	0	0	0	-	0	0	0	-	0	0	0	0
	Average	47.00	0.30	1.73	<1	<0.5	<1	<1	<5	<0.2	< 0.1	<0.5	< 0.01	<0.05	<5	<2	<5
WQM2	Minimum	47.00	0.30	1.50	<1	<0.5	<1	<1	<5	<0.2	<0.1	<0.5	<0.01	<0.05	<5	<2	<5
EPL 16	Maximum	47.00	0.30	2.00	<1	<0.5	<1	<1	<5	<0.2	<0.1	<0.5	<0.01	<0.05	<5	<2	<5
	Events above criteria ¹	0	-	0	0	0	0	0	-	0	0	0	-	0	0	0	0
	Average	48.00	0.32	1.65	<1	<0.5	<1	1.00	<5	<0.2	<0.1	0.80	< 0.01	<0.05	<5	<2	<5
WQM3	Minimum	48.00	0.32	1.50	<1	<0.5	<1	1.00	<5	<0.2	<0.1	0.80	<0.01	<0.05	<5	<2	<5
EPL 17	Maximum	48.00	0.32	1.80	<1	<0.5	<1	1.00	<5	<0.2	<0.1	0.80	<0.01	<0.05	<5	<2	<5
	Events above criteria ¹	0	-	0	0	0	0	0	-	0	0	0	-	0	0	0	0
MONA	Average	19.00	0.31	1.65	<1	<0.5	<1	<1	<5	<0.2	<0.1	<0.5	< 0.01	<0.05	8.00	<2	<5
WQM4 EPL 18	Minimum	19.00	0.31	1.50	<1	<0.5	<1	<1	<5	<0.2	<0.1	<0.5	<0.01	<0.05	8.00	<2	<5
L1 L 10	Maximum	19.00	0.31	1.90	<1	<0.5	<1	<1	<5	<0.2	<0.1	<0.5	<0.01	<0.05	8.00	<2	<5
WQM5	Average	22.00	0.38	1.73	<1	<0.5	<1	1.50	<5	<0.2	<0.1	1.70	<0.01	<0.05	6.00	<2	6.00
EPL 19	Minimum	22.00	0.38	1.50	<1	<0.5	<1	1.00	<5	<0.2	<0.1	1.30	<0.01	<0.05	6.00	<2	6.00
2.213	Maximum	22.00	0.38	2.00	<1	<0.5	<1	2.00	<5	<0.2	< 0.1	2.10	< 0.01	<0.05	6.00	<2	6.00

¹Includes individual number of times results exceeded criteria. Refer to **Appendix B** for exceedance reports.

²Only results above the laboratory Limit of Reporting (LOR) have been used to calculate these data functions. Where an analyte has not been detected above the LOR throughout the monitoring period, the LOR has been listed.









4.2.4 Water Quality Monitoring Results – Sediment basin discharge

During the reporting month, there was one (1) authorised discharge event, and zero (0) discharge events as a result of excessive rainfall exceeding the design criteria of the basin (>43.5 mm in any 5-day period). Refer to Section 4.3 for site weather monitoring details. The date of the events and a summary of the water quality results for the authorised discharge events from the sediment basin is included below in Table 4-7.

Table 4-7 Sediment basin discharge water quality – Pre-discharge and daily grab sample results

Date of discharge/ sampling	Aluminium	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Zinc	Tributyltin	TSS	Нd	Oil & Grease	Total PAH	Overflow Discharge?	Rainfall (mm) Roll. 5-Day Total
	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	mg/L	-	-	μg/L	-	mm
Criteria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50	NA	Visible	NA	NA	NA
03/05/2023	141.00	1.40	<0.05	0.60	<0.1	1.40	<0.1	<0.1	<0.5	4.00	<2	11.00	7.33	<5	<0.05	N	21.8









4.3 Weather station results

Under the EPL (Condition M6.2), AIE is required to monitor and record temperature, humidity, wind direction, wind velocity and rainfall at either a project weather station, or through analysis of equivalent weather information obtained from the Australian Bureau of Meteorology.

AIE established and maintains a weather station for the project site located at the southern point of Berth 101 (EPL monitoring point 21) as shown in **Appendix A**. The data obtained from the onsite weather station for the reporting period is provided below in Table 4-8.

Table 4-8 Site weather station monitoring results summary

Parameter	Unit of measure	Monthly statistic	Result EPL 21
		Average	4.35
Wind velocity	m/s (15min average)	Minimum	0.37
		Maximum	12.13
Wind direction at 10m	Degrees (1 hour averaging period)	See Wind Rose cl	hart (Figure 4-1)
		Average	0.00
Rainfall (Hour)	mm/hr (1 hour averaging period)	Minimum	0.00
	periody	Maximum	0.67
		Average	1.01
Rainfall (Daily)	mm/day	Minimum	0.00
		Maximum	15.20
Rainfall (Month)	mm/month	Total	31.2
		Average	16.08
Temperature	Degrees Celsius	Minimum	8.00
		Maximum	22.70
		Average	61.43
Humidity	%	Minimum	30.30
		Maximum	97.70



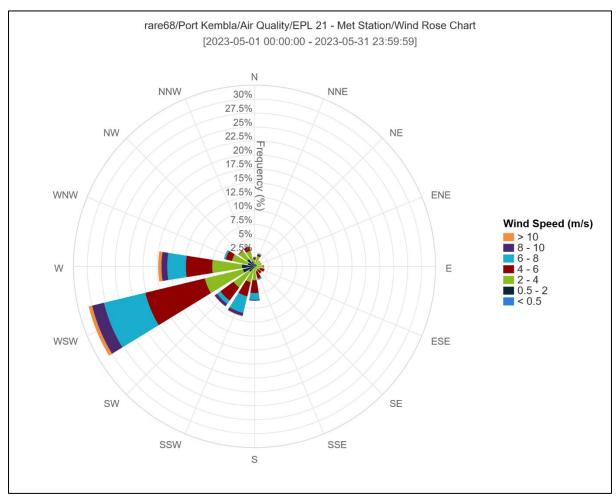


Figure 4-1 Wind Rose chart for the reporting period.







5 Environmental complaints

A summary of environmental complaints received during the reporting month and follow-up, close-out and or corrective actions are presented below in Table 5-1 where applicable.

Table 5-1 Environmental complaints summary

Date	Complaint No.	Nature of the complaint	Follow-up close-out and or corrective action
-	-	-	No complaints for the reporting period.



Appendices

Appendix A - Monitoring Location Plan





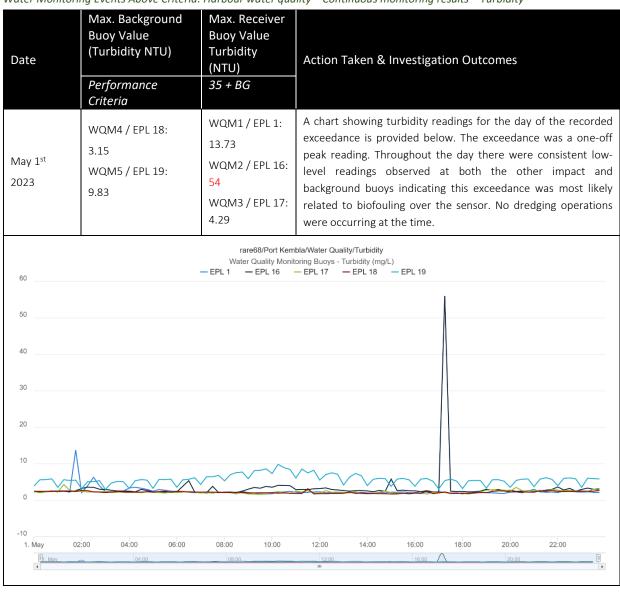
Appendix B – Summary of Events Above Criteria

Each exceedance triggers an investigation including the nature of project activities being undertaken, evaluation of wind direction, comparison of upwind and downwind monitors at the time of the event. Dust prevention controls are continually being assessed to ensure their adequacy.

Air Monitoring Events Above Criteria

Date	Location	Exceedance value (ug/m³/24 hours)	Action Taken & Investigation Outcomes
-	-	-	No exceedances for the reporting period.

Water Monitoring Events Above Criteria: Harbour water quality - Continuous monitoring results - Turbidity



Date	Max. Background Buoy Value (Turbidity NTU) Performance Criteria	Max. Receiver Buoy Value Turbidity (NTU) 35 + BG	Action Taken & Investigation Outcomes
May 29 th 2023	WQM4 / EPL 18: 2.5 WQM5 / EPL 19: 5.67	WQM1 / EPL 1: 87 WQM2 / EPL 16: 2 WQM3 / EPL 17: 2.18	A chart showing turbidity readings for the day of the recorded exceedance is provided below. The exceedance was a one-off peak reading. Throughout the day there were consistent low-level readings observed at both the other impact and background buoys indicating this exceedance was most likely related to biofouling over the sensor. No dredging operations were occurring at the time.
100		Water Quality Monit	bla/Water Quality/Turbidity oring Buoys - Turbidity (mg/L) — EPL 17 — EPL 18 — EPL 19
90			
80			
70			
60			
50			
40			
20			
10			

-10 29. May

02:00

04:00

06:00

08:00

10:00

12:00

12/00

14:00

18:00

16:00

20:00

22:00

Appendix C – EPL 24 Data

This is a mobile monitoring point located five metres outside the silt curtain around Berth 101. Point 24 is required to be sampled daily for Total Suspended Solids (TSS) during dredging activities. TSS is monitored in real time using turbidity in NTU and the NTU-TSS correlation as recommended in the current EPL or from an in-field study approved by the EPA, whichever is more current at the time of measurement.

EPL 24 Daily Average Monitoring Results

Date	Turbidity (NTU)
1/05/2023	NA
2/05/2023	NA
3/05/2023	NA
4/05/2023	NA
5/05/2023	NA
6/05/2023	NA
7/05/2023	NA
8/05/2023	NA
9/05/2023	NA
10/05/2023	NA
11/05/2023	NA
12/05/2023	NA
13/05/2023	NA
14/05/2023	NA
15/05/2023	NA
16/05/2023	NA
17/05/2023	NA
18/05/2023	NA
19/05/2023	NA
20/05/2023	NA
21/05/2023	NA
22/05/2023	NA
23/05/2023	NA
24/05/2023	NA
25/05/2023	NA
26/05/2023	NA
27/05/2023	NA
28/05/2023	NA
29/05/2023	NA
30/05/2023	NA
31/05/2023	NA

Note: For dates where no results are recorded, no dredging activities at Berth 101 were undertaken.