



Environmental Monitoring Summary Report

Port Kembla Gas Terminal

Infrastructure Approval **SSI-9471**
EPL Licence Number: **21529**

Reporting period: **1 October 2022 – 31 October 2022**

Version 2

Date published: **6 February 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 Liquefied Natural Gas (LNG) Carrier to berth alongside the Floating Storage and Re-gasification 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
Licensee:	Australian Industrial Energy Pty Ltd
	PO Box 3155 Broadway
	Nedlands WA 6009
Premises:	Port Kembla Gas Terminal, Port Kembla NSW 2505
Scheduled Activity	Contaminated soil treatment
	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:
DPIE SSI-9471	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 the Project Website.
	Sch. 4 Cond. 12	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:	
		- 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 and Stage 2B 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.

3.2 Project activities for the reporting month

- Continued backfilling works with sand and general fill at the MBD Compound.
- Continued construction of wharf capping beam and mooring dolphins.
- Commencement dredging of OH culvert key trench.
- Commencement dredging of Berth 101.
- Relocation of dredge spoil to the OH.
- Arrival of key marine vessels and maintenance of silt curtains.

3.3 Project activities for the upcoming month

- Ongoing construction of wharf capping beam and mooring dolphins.
- Construction of the Outer Harbour Emplacement Cell.
- Ongoing dredging at Berth 101 and continued mobilisation of equipment for Stage 2B of the project.

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://ausindenergy.com/environmental-information/>

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 Gauge	Particulates - Deposited Matter (gm/m ² /month)	Monthly
10	Southern boundary of Berth 101			
12	Southern side of emplacement area, Outer Harbour	Ambient Air Monitoring - High Volume Air Sampler	Total suspended particles (TSP) (ug/m ³)	Special Frequency 1 (24-hour period every 6 days)
14	Eastern side of emplacement area, Outer Harbour			
22	Northern side of emplacement area, Outer Harbour			
9	Northern boundary of the premises, adjacent the southern boundary of Port Kembla Coal Terminal	Real time dust monitoring	PM10 (ug/m ³)	Continuous
11	Southern boundary of Berth 101			
13	Southern side of emplacement area, Outer Harbour			
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 Location (EPL Reference)	Monitoring parameter								
	Particulates Deposited Matter (Depositional dust gauge)**	Total Suspended Solids (High Volume Air Sampler)			PM10 (Real-time tracker)			Events above criteria*	
		Average	Min.	Max.	Average	Min.	Max.		
Unit	g/m ² /month	mg/m ³	mg/m ³	mg/m ³	ug/m ³ /24 hours	ug/m ³ /24 hours	ug/m ³ /24 hours	No.	
Criteria	NA	NA	NA	NA	NA	NA	200	NA	
Berth 101 North	EPL 8	2.4	0.13	0.08	0.20	No PM10 monitoring required at this EPL Point			NA
	EPL 9	No Dust Deposition Gauge or HiVol required at this EPL Point				52.18	25.92	186.47	0
Berth 101 South	EPL 10	2.0	0.20	0.08	0.60	No PM10 monitoring required at this EPL Point			NA
	EPL 11	No Dust Deposition Gauge or HiVol required at this EPL Point				48.12	18.04	103.00	0
Outer Harbour South	EPL 12	0.6	0.03	0.02	0.04	No PM10 monitoring required at this EPL Point			NA
	EPL 13	No Dust Deposition Gauge or HiVol required at this EPL Point				22.89	10.50	47.30	0
Outer Harbour East	EPL 14	0.3	0.05	0.02	0.07	No PM10 monitoring required at this EPL Point			NA
	EPL 15	No Dust Deposition Gauge or HiVol required at this EPL Point				26.18	5.57	59.29	0
Outer Harbour North	EPL 22	0.3	***	***	***	No PM10 monitoring required at this EPL Point			NA
	EPL 23	No Dust Deposition Gauge or HiVol required at this EPL Point				14.42	6.73	26.20	0

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

**Assessed as Total Insoluble.

***Fault prevented sampling at this point. Equipment in question has since been replaced.

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 Ref.	Monitoring location	Type of monitoring	Parameters	
			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. As dredging works at Berth 101 commenced during the reporting period, water quality monitoring was undertaken 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 Ref.	Monitoring location	Type of monitoring	Parameters	
			Prior to discharge	Daily grab sample 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

Monitoring location	Statistic	Results - based on individual 15-minute median				
		Turbidity (NTU)	Temperature (Deg. C)	pH	Electrical conductivity (uS/cm)	Dissolved Oxygen (%sat)
Criteria		50 + BG ¹	N/A	6.5 – 8.5	N/A	70 – 110
WQM1 / EPL 1	Average	5.5	18.6	8.1	48046.3	87.9
	Minimum	1.8	16.2	7.8	15571.1	72.5
	Maximum	102.1	22.1	8.1	53035.5	98.3
	Events above criteria ²	1	-	0	-	-
WQM2 / EPL 16	Average	4.6	18.2	8.1	50009.2	93.4
	Minimum	1.8	16.6	8.0	20808.4	81.3
	Maximum	66.5	20.9	8.3	53135.1	123.0
	Events above criteria ²	0	-	0	-	2
WQM3 / EPL 17	Average	6.6	18.7	8.2	47850.7	90.0
	Minimum	1.6	16.2	7.7	12160.0	76.2
	Maximum	113.8	22.4	8.3	53115.3	103.8
	Events above criteria ²	3	-	0	-	0
WQM4 / EPL 18 (Background)	Average	4.3	18.2	8.2	50122.8	91.8
	Minimum	1.5	16.3	8.1	28142.4	80.3
	Maximum	31.8	20.1	8.3	53029.7	114.7
WQM5 / EPL 19 (Background)	Average	0.00	0.00	0.00	0.00	0.00
	Minimum	0.0	0.0	0.0	0.0	0.0
	Maximum	0.0	0.0	0.0	0.0	0.0
EPL 24 ³ (Ambient Mobile Point)	Average	3.42	Not required at this EPL Point			
	Minimum	0.88				
	Maximum	11.24				

¹Total suspended solids (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. BG = Background, recorded at WQM4 and/or WQM5.

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 **Error! Not a valid bookmark self-reference.** 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 (dissolved)	Arsenic (dissolved)	Cadmium (dissolved)	Chromium (dissolved)	Cobalt (dissolved)	Copper (dissolved)	Lead (dissolved)	Mercury (dissolved)	Nickel (dissolved)	Total PAHs	Total Suspended Solids (TSS)	Tributyltin (as Sn)	Zinc (dissolved)
	Unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/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
WQM1/ EPL 1	Average	<5	1.93	<1	<0.5	<1	1.00	<0.2	<0.1	2.50	<0.05	<5	<2	5.00
	Minimum	<5	1.50	<1	<0.5	<1	1.00	<0.2	<0.1	2.50	<0.05	<5	<2	5.00
	Maximum	<5	2.40	<1	<0.5	<1	1.00	<0.2	<0.1	2.50	<0.05	<5	<2	5.00
	Events above criteria ¹	0	0	0	0	0	0	0	0	0	0	0	0	0
WQM2 / EPL 16	Average	<5	4.23	<1	<0.5	<1	1.00	0.85	<0.1	0.70	<0.05	<5	<2	<5
	Minimum	<5	1.40	<1	<0.5	<1	1.00	0.40	<0.1	0.60	<0.05	<5	<2	<5
	Maximum	<5	9.90	<1	<0.5	<1	1.00	1.30	<0.1	0.80	<0.05	<5	<2	<5
	Events above criteria ¹	0	0	0	0	0	0	0	0	0	0	0	0	0
WQM3 / EPL 17	Average	<5	1.80	<1	<0.5	<1	<1	<0.2	<0.1	0.90	<0.05	7.00	<2	<5
	Minimum	<5	1.60	<1	<0.5	<1	<1	<0.2	<0.1	0.90	<0.05	7.00	<2	<5
	Maximum	<5	2.30	<1	<0.5	<1	<1	<0.2	<0.1	0.90	<0.05	7.00	<2	<5
	Events above criteria ¹	0	0	0	0	0	0	0	0	0	0	0	0	0
WQM4 / EPL 18	Average	<5	1.85	<1	<0.5	<1	1.00	<0.2	<0.1	1.70	<0.05	12.00	<2	6.00
	Minimum	<5	1.40	<1	<0.5	<1	1.00	<0.2	<0.1	0.50	<0.05	12.00	<2	6.00
	Maximum	<5	2.70	<1	<0.5	<1	1.00	<0.2	<0.1	2.90	<0.05	12.00	<2	6.00
WQM5 / EPL 19	Average	<5	1.75	<1	<0.5	<1	1.00	<0.2	<0.1	0.60	<0.05	5.50	<2	<5
	Minimum	<5	1.40	<1	<0.5	<1	1.00	<0.2	<0.1	0.60	<0.05	5.00	<2	<5
	Maximum	<5	2.20	<1	<0.5	<1	1.00	<0.2	<0.1	0.60	<0.05	6.00	<2	<5

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 were Seventeen (17) authorised discharge events, and two (2) 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	pH	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	-	-
Criteria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50	NA	Visible	NA	NA	NA
04/10/2022*	-	-	-	-	-	-	-	-	-	-	-	24.4 NTU*	8.01	N	-	N	NA
05/10/2022	290.00	0.30	<0.05	1.00	<0.1	1.00	<0.1	<0.1	<0.5	<1	<2	<5	7.53	<5	<0.05	N	NA
06/10/2022	90.00	<0.2	<0.05	1.00	<0.1	1.20	<0.1	<0.1	1.80	4.00	<2	8.00	6.50	<5	<0.05	Y	60.8
10/10/2022	28.00	<0.2	<0.05	1.00	<0.1	<0.5	<0.1	<0.1	<0.5	2.00	<2	11.00	6.69	<5	<0.05	N	NA
07/10/2022	174.00	<0.2	<0.05	0.90	0.10	2.00	<0.1	<0.1	<0.5	5.00	<2	<5	6.36	<5	<0.05	N	NA
08/10/2022	20.00	<0.2	<0.05	1.00	<0.1	<0.5	<0.1	<0.1	<0.5	4.00	<2	15.00	7.32	<5	<0.05	N	NA
09/10/2022*	11	<0.2	<0.05	0.9	<0.1	1.1	<0.1	<0.1	0.7	5	<2	<5	7.01	<5	-*	Y	104.8
11/10/2022	17.00	<0.5	<0.2	1.00	<0.2	<1	<0.2	<0.1	0.80	8.00	<2	<5	6.79	<5	<0.05	N	NA
12/10/2022	21.00	<0.2	<0.05	0.90	<0.1	<0.5	<0.1	<0.1	<0.5	<1	<2	12.00	6.91	<5	<0.05	N	NA
13/10/2022	13.00	<0.2	<0.05	1.10	<0.1	<0.5	<0.1	<0.1	<0.5	7.00	<2	<5	6.76	<5	<0.05	N	NA
14/10/2022	12.00	<0.2	<0.05	1.10	<0.1	0.90	<0.1	<0.1	0.90	18.00	<2	<5	6.74	<5	<0.05	N	NA
18/10/2022	48.00	<0.2	<0.05	0.70	<0.1	0.70	<0.1	<0.1	<0.5	8.00	<2	<5	6.59	<5	<0.05	N	NA
19/10/2022	339.00	0.20	<0.05	1.10	<0.1	2.10	<0.1	<0.1	0.60	11.00	<2	<5	6.77	<5	<0.05	N	NA
25/10/2022	39.00	0.90	<0.05	<0.2	0.20	<0.5	<0.1	<0.1	<0.5	6.00	<2	<5	6.75	<5	<0.05	N	NA
26/10/2022	795.00	0.20	<0.05	1.00	<0.1	0.70	<0.1	<0.1	<0.5	2.00	<2	8.00	6.87	<5	<0.05	N	NA
27/10/2022	284.00	<0.2	<0.05	0.90	<0.1	<0.5	<0.1	<0.1	<0.5	2.00	<2	<5	6.78	<5	<0.05	N	NA
28/10/2022	38.00	<0.2	<0.05	1.10	<0.1	<0.5	<0.1	<0.1	<0.5	3.00	<2	<5	6.93	<5	<0.05	N	NA

*Samples damaged in transport to laboratory. Full suite of analytes of analytes unavailable. Turbidity (NTU) reported in place of TSS for 4/10/22.



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 Point 21
Wind velocity	m/s (15 min averaging period)	Average	4.47
		Minimum	0.20
		Maximum	11.27
Wind direction at 10 metres	Degrees (1 hour averaging period)	See Wind Rose chart for the reporting period on the following page.	
Rainfall rate	mm/hr (1 hour averaging period)	Average	0.02
		Minimum	0.00
		Maximum	1.32
Rainfall (Total)	mm/day	Average	6.90
		Minimum	0.00
		Maximum	52.20
Temperature	Degrees Celsius	Average	17.68
		Minimum	8.70
		Maximum	26.60
Humidity	%	Average	77.09
		Minimum	27.90
		Maximum	100.00

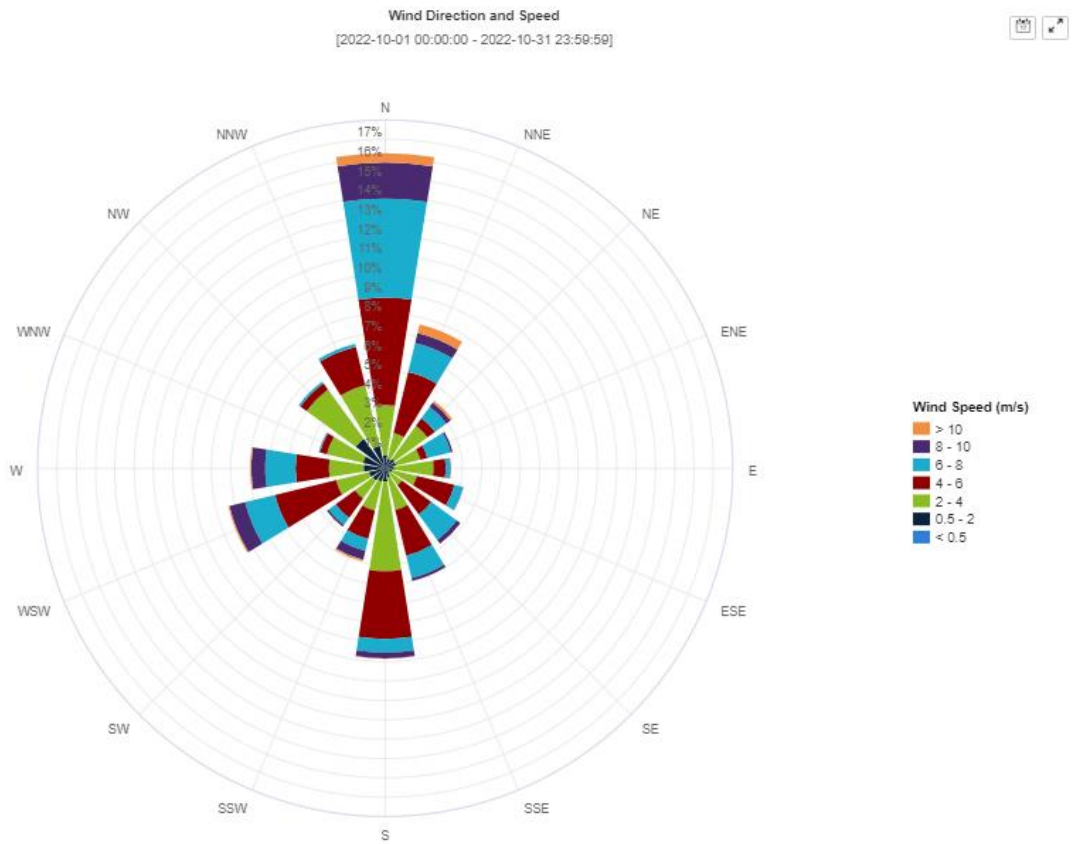


Figure 4-1 Wind Rose chart for the reporting period.



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.

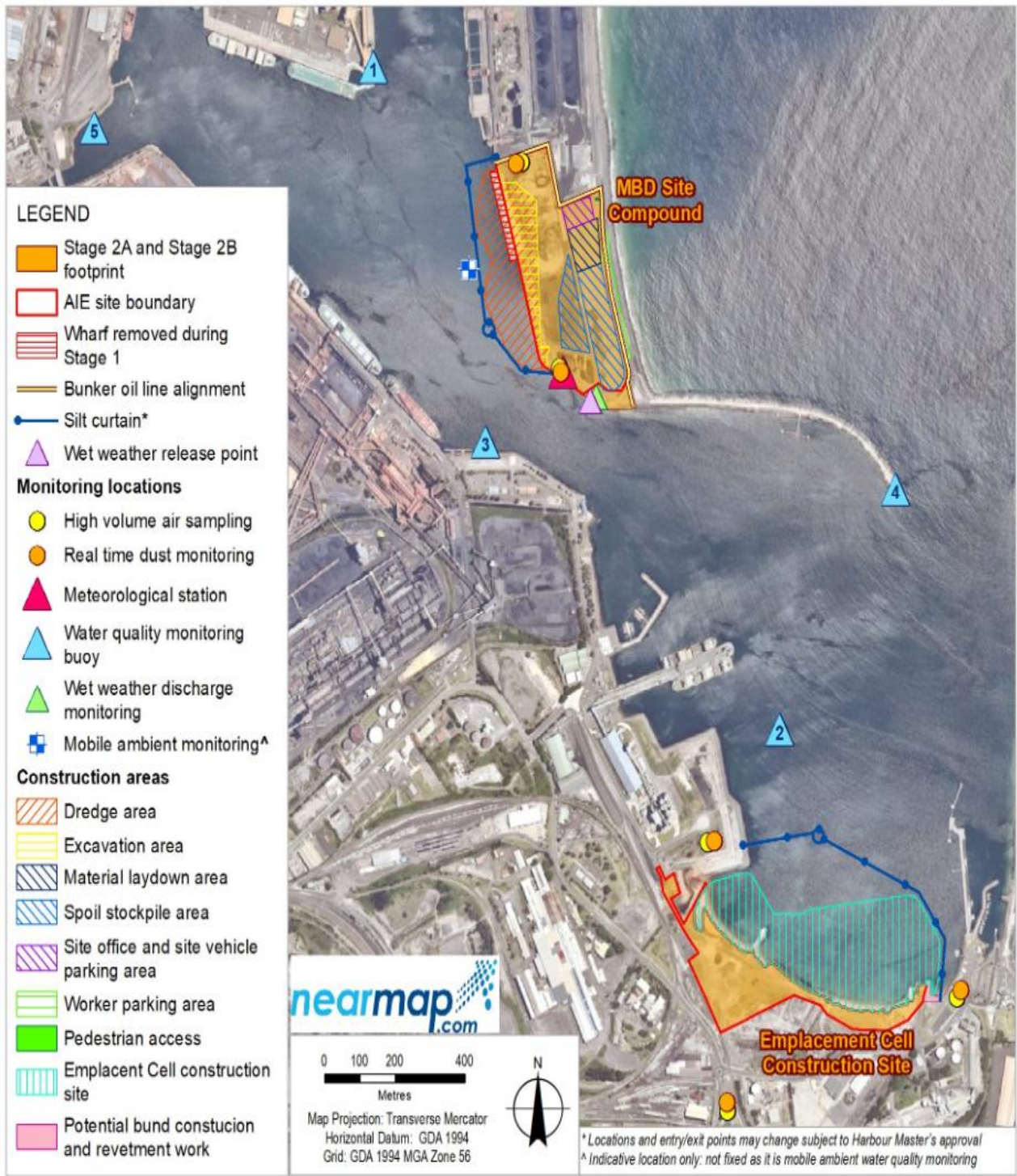
Table 5-1 Environmental complaints summary

Date	Complaint No.	Nature of the complaint	Follow-up close-out and or corrective action
17/10/2022	AIE incident No. HER-001	Public concerned that dredging in the Outer Harbour was disturbing contaminated sediment and that turbid water was escaping the silt curtain.	Investigated – marine works were operating within the EPL conditions. Refer to Appendix D for further information.
19/10/2022	AIE incident No. HER-002	Public concerned about plume in the Outer harbour and questioned the silt curtain, suggesting it was a containment boom and did not have a curtain below the water line.	Investigated – marine works were operating within the EPL conditions. Refer to Appendix D for further information.



Appendices

Appendix A - Monitoring Location Plan



Appendix B – Summary of Events Above Criteria

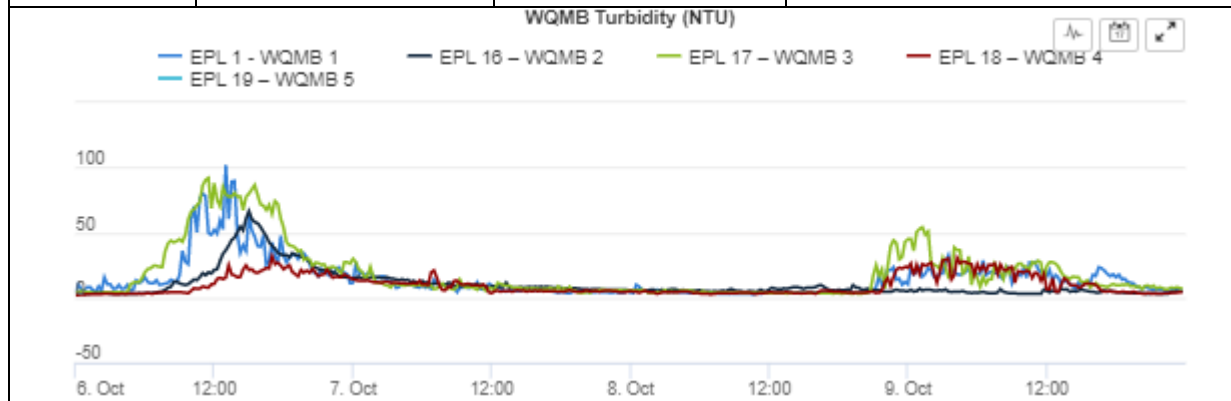
Each exceedance triggers an investigation including the evaluation of wind direction, comparison of upwind and downwind monitors at the time of the event. Dust prevention controls are continually being assessed to ensure their adequacy.

Air Monitoring Events Above Criteria

Date	Location	Exceedance value (ug/m ³ /24 hours)	Action Taken & Investigation Outcomes
N/A	-	-	-

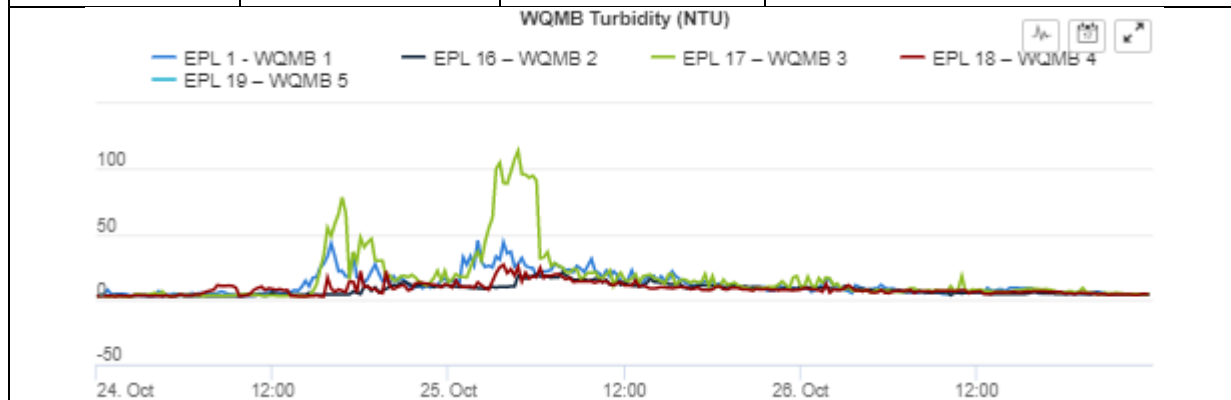
Water Monitoring Events Above Criteria: Harbour water quality – Continuous monitoring results

Date	Max. Background Buoy Value (NTU)	Max. Receiver Buoy Value (NTU)	Action Taken & Investigation Outcomes
	Performance Criteria	50 + BG ¹	
Thursday 06 October 2022	WQM4 / EPL18: 31.77 WQM5 / EPL19: NA	WQM3 / EPL 16: 66.48 WQM2 / EPL 17: 91.88 WQM1 / EPL 1: 102.09	Dredging operations were underway at the time however these exceedances were related to heavy rainfall (58.8mm) in the 48 hours leading up to the event.
Sunday 09 October 2022	WQM4 / EPL18: 30.15 WQM5 / EPL19: NA	WQM3 / EPL 16: 6.96 WQM2 / EPL 17: 54.07 WQM1 / EPL 1: 32.55	Dredging operations were underway at the time however these exceedances were related to heavy rainfall (45.8mm) in the 48 hours leading up to the event.



The above chart shows turbidity observations at EPL 1, EPL16, EPL 17 and EPL 18 at the time of the exceedances. Note the rise in turbidity across the harbour as stormwater flows from the surrounding catchment.

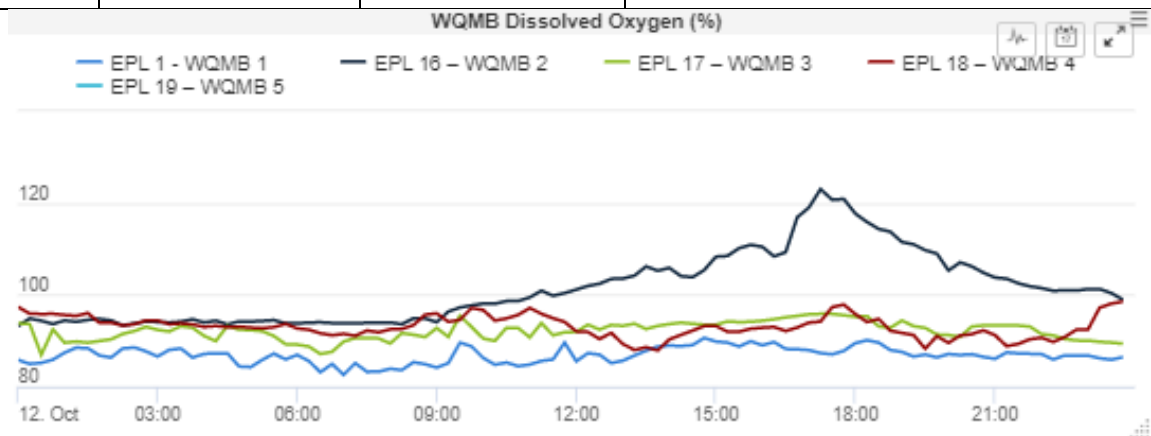
Monday 24 October 2022	WQM4 / EPL18: 21.56 WQM5 / EPL19: NA	WQM3 / EPL 16: 13.47 WQM2 / EPL 17: 78.23 WQM1 / EPL 1: 42.84	Dredging operations were underway at the time however these exceedances were related to heavy rainfall (60.2 mm) in the 48 hours leading up to the event.
Wednesday 26 October 2022	WQM4 / EPL18: 26.62 WQM5 / EPL19: NA	WQM3 / EPL 16: 20.79 WQM2 / EPL 17: 113.78 WQM1 / EPL 1: 45.27	Dredging operations were underway at the time however these exceedances were related to heavy rainfall (59.4 mm) in the 48 hours leading up to the event.



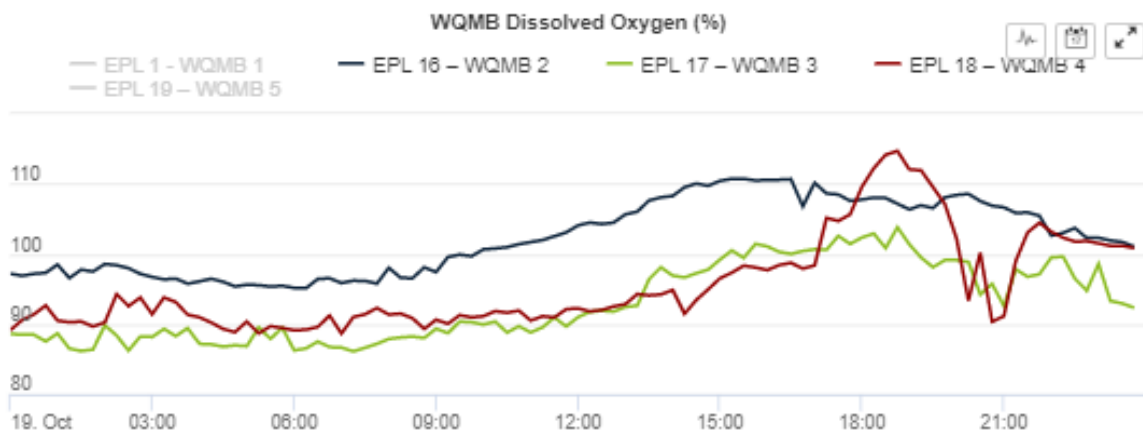
The above chart shows turbidity observations at EPL 1, EPL16, EPL 17 and EPL 18 at the time of the exceedances.

¹Total suspended solids (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. BG = Background, recorded at WQM4 and/or WQM5.

Date	Max. Background Buoy Value (DO%)	Max. Receiver Buoy Value (DO%)	Action Taken & Investigation Outcomes
	Performance Criteria	70 - 110	
October 12 and 19, 2022	WQM4 / EPL18: 98.56 WQM5 / EPL19: NA	WQM3 / EPL 16: 122.99	Dissolved Oxygen is a measure of the amount of oxygen available to living aquatic organisms. Generally, the colder water is, the more oxygen it can hold. As the water becomes warmer the less oxygen can be dissolved in it. DO recordings in the harbour match this cycle. In this case the DO correlates directly with the outgoing tide (low at 1500) where freshwater (generally cooler than seawater at this time of year) flows down from upstream. Aeration of the water will also increase DO levels. The observed DO levels reflect wider trends in the harbour and are unrelated to project activities.



The above chart shows DO observations at EPL 1, EPL16, EPL 17 and EPL 18 up to the 12 October 2022.



The above chart shows DO observations at EPL 1, EPL16, EPL 17 and EPL 18 up to the 19 October 2022.

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. Turbidity can be used in place of TSS to enable real time readings.

EPL 24 Daily Average Monitoring Results

Date	Turbidity (NTU)
15/10/2022	2.11
16/10/2022	4.77
17/10/2022	1.90
18/10/2022	2.61
19/10/2022	2.56
20/10/2022	4.34
21/10/2022	3.96
22/10/2022	4.11
23/10/2022	1.92
24/10/2022	3.43
25/10/2022	7.86
26/10/2022	8.15
27/10/2022	2.77
28/10/2022	3.29
29/10/2022	2.44
30/10/2022	1.98
31/10/2022	1.24

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

Appendix D – Environmental Complaints

Date	14/10/22	Source	Public (via EPA)
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Nature of Complaint	Turbidity in Port Kembla
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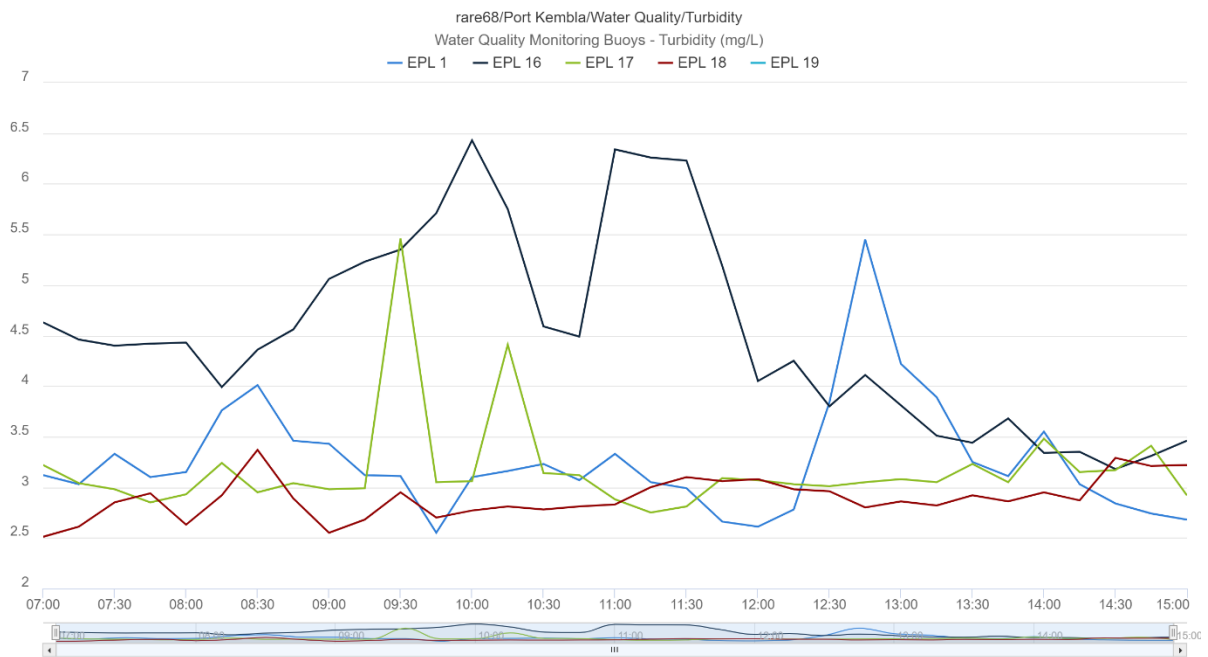
Action Taken & Investigation Outcomes

Investigation notes are as follows:

On Friday, October 14, dredging activity by the Machiavelli in the Outer Harbour ceased at 0710hrs. Between 1100hrs and 1200hrs the Machiavelli performed 'Seatools' calibration checks within the Outer Harbour silt curtain area. This activity did not require movement of material. At 1300hrs, the Machiavelli relocated to Berth 101 and commenced dredging activities at 2100hrs.

RARE undertook a field NTU measurement mid-morning at the Outer Harbour and noted it to be consistent with EPL 16's real time NTU reading.

This information was provided to the EPA in response to the complaint.

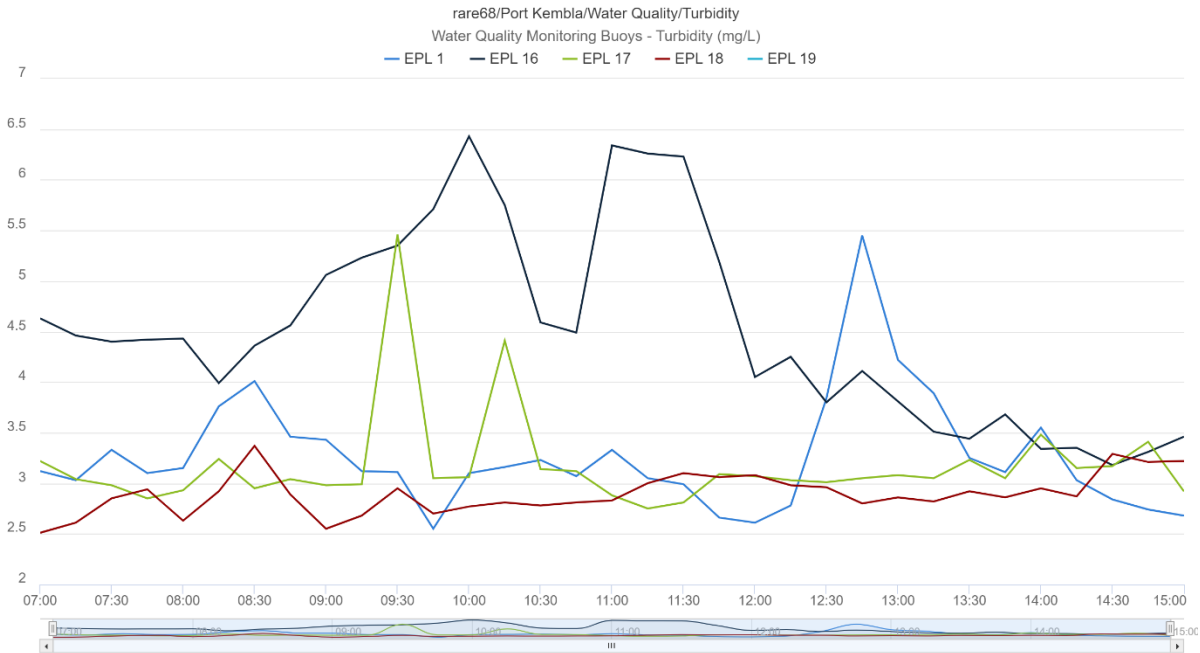


The above chart shows turbidity observations at EPL 1, EPL16, EPL 17 and EPL 18 at the time referenced in the complaint.

Date	14/10/22	Source	Public (via EPA)
Nature of Complaint		Turbidity in Port Kembla	

Action Taken & Investigation Outcomes

Investigation notes are as follows:
 Dredging activity by the Machiavelli in the Outer Harbour ceased at 0112hrs and did not recommencement until 1930hrs. There were no other marine activities undertaken by the Project within the Outer Harbour during this time.
 RARE undertook a field NTU measurement, noting this to be consistent with EPL16 and EPL18 real time NTU reading (please refer to below chart).
 This information was provided to the EPA in response to the complaint.



The above chart shows turbidity observations at EPL 1, EPL16, EPL 17 and EPL 18 at the time referenced in the complaint.