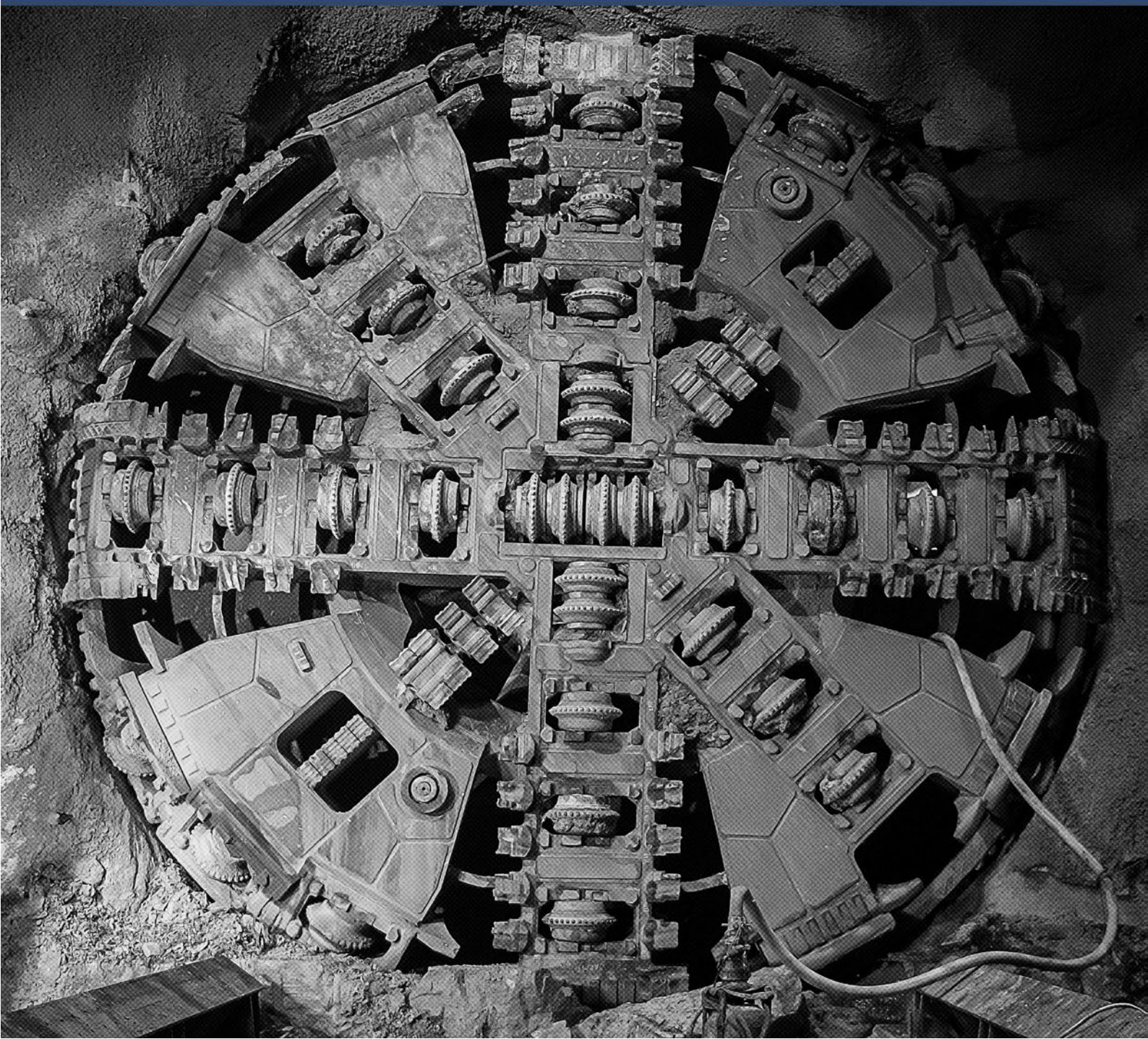
EASTERN TUNNELLING PACKAGE
John Holland CPB Contractors Ghella JV

EPL 21784 POLLUTION MONITORING REPORT

November 2024



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November 2024

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Signature:					[redacted]

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Table of contents

1. Introduction 2
1.1. Project overview 2
1.2. Project Scope 3
1.3. Scope of this report 3
2. Reporting Requirements 4
3. Monitoring 8
3.1. Meteorological Data 8
3.2. Noise 8
3.3. Discharge to water 9
4. Correction Log 11
Appendix A Weather Data 12
Appendix B Noise Monitoring Results 14

1. Introduction

1.1. Project overview

Sydney Metro West (SMW) is a new 24-kilometre metro line with nine new stations confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont, and Hunter Street in the Sydney CBD.

The planning process for Sydney Metro West was assessed as a staged infrastructure application under section 5.20 of the *Environment Planning and Assessment Act 1979 (EP&A Act)*.

Stage 1 of the development, the Sydney Metro West Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (SSI-10038 Schedule 2), was approved on 11 March 2021 and includes:

- Construction and operation of new passenger rail infrastructure between Westmead and the central business district of Sydney, including:
  - Tunnels, stations (including surrounding areas) and associated rail facilities
  - Stabling and maintenance facilities (including associated underground and overground connections to tunnels)
- Modification of existing rail infrastructure, including stations and surrounding areas
- Ancillary development.

The Eastern Tunnelling Package (ETP or this Project) is addressed under the Stage 2 Planning Approval (SSI 19238057). This Project includes all major civil construction work including station excavation (at the Pyrmont Station and Hunter Street Station (Sydney CBD) construction sites) and tunnelling between The Bays and Sydney CBD (Figure 1).

It is noted that the existing Sydney Metro West precast facility at Eastern Creek will be utilised in the delivery of the ETP Works. The facility, which was assessed by Sydney Metro in a Review of Environmental Factors (REF) and approved on 11 March 2021, is outside of the scope of the SWMP.

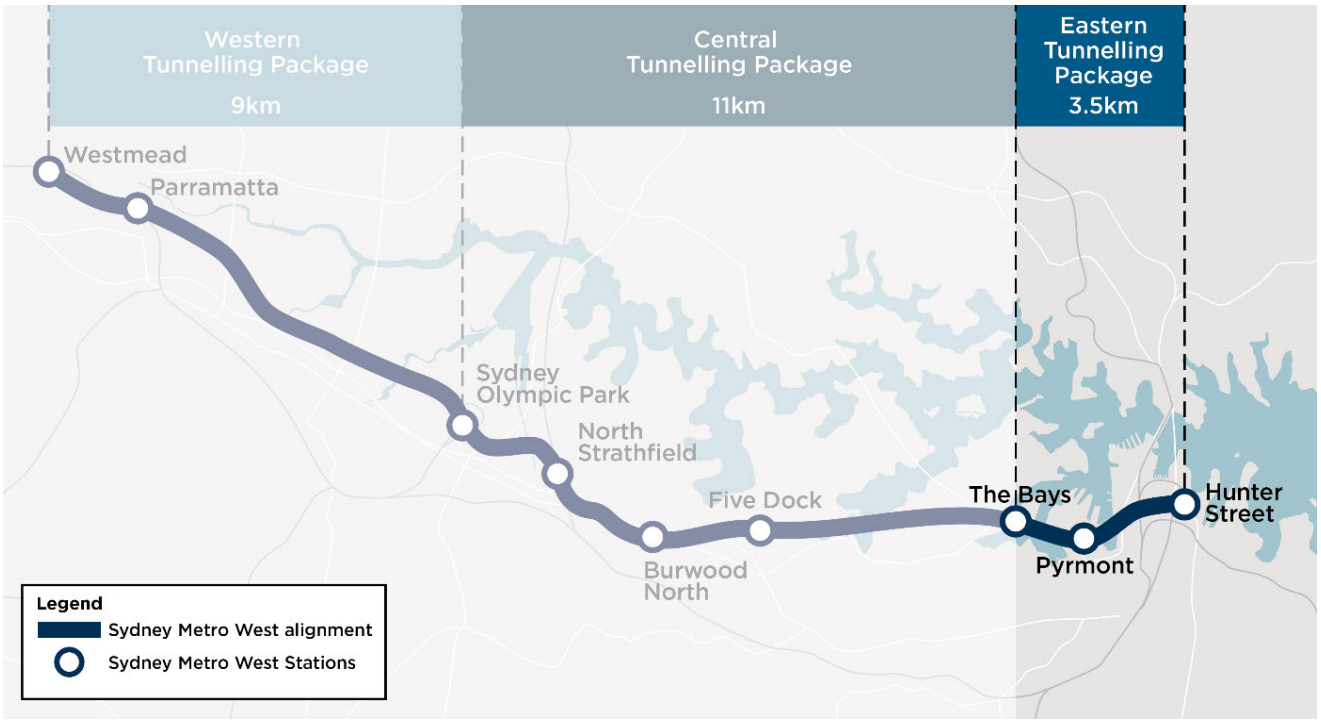

Figure 1: Sydney Metro West alignment

1.2. Project Scope

The ETP Works include design and construction of:

- Demolition of existing buildings at Pyrmont East and West shaft sites and at Hunter Street East and West shaft sites
- Tunnel Boring Machine (TBM) assembly, launch, tunnelling support from an existing shaft at The Bays
- Approximately 2.5 km twin underground eastbound and westbound bored railway tunnels between The Bays and Hunter Street and six cross passages spaced up to 500 metres apart
- Pyrmont Station excavation, including two shaft excavations, associated access adits and nozzle enlargements, including temporary ground support and cast in situ cavern linings
- Excavation and lining of a mined crossover cavern to allow trains to cross from one track to the other
- Hunter Street station mined cavern excavation, including:
    - Two shaft excavations, associated access adits
    - Nozzle enlargements
    - Conversion of an existing temporary connection adit at Bligh Street linking Hunter Street Station to Martin Place Station into a permanent pedestrian connection linking the stations (including temporary ground support and cast in situ linings)
- A turnback extension tunnel, of approximately 675 metres, east of the Hunter Street Station works to enable Sydney Metro train storage and to change tracks and travel direction (eastbound to westbound)
- TBM disassembly and retrieval from Hunter Street East.

1.3. Scope of this report

John Holland CPB Contactors Ghella (JCG) have been issued an Environmental Protection Licence (EPL No. 21784) from the NSW Environment Protection Authority (EPA) for the Sydney Metro West Eastern Tunnelling Package (ETP) Project.

The EPL applies to the works approved under the Infrastructure Approval SSI-19238057 associated with the delivery of the Sydney Metro West Eastern Tunnelling Package (ETP) Project.

This EPL Pollution Monitoring Report provides the results of all pollution monitoring required to be measured or monitored by the licensee of EPL 21784 as required by Section 66 of the Protection of the Environment Operations Act 1997 (POEO Act) and with reference to EPA Publication Requirements for publishing pollution monitoring data (Environment Protection Authority, 2013).

Table 1 provides a summary of the EPL 21784 details.

Table 1: Licence Details

Licence Details	
Number	21784
Copy of Licence	https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=266460&SYSUID=1&LICID=21784
Anniversary Date	16 March
Licensee	John Holland Pty Ltd
Premises	Sydney Metro West – Eastern Tunnelling Package
Scheduled Activity	Railway activities – railway infrastructure construction

2. Reporting Requirements

Under the POEO Act, holders of environment protection licences (licensees) must publish or make pollution monitoring data available to members of the public.

The POEO Act Section 66 requires:

> "66 Conditions requiring monitoring, certification or provision of information, and related offences
>
> (1) Monitoring The conditions of a licence may require—
>
> (a) monitoring by the holder of the licence of the activity or work authorised, required or controlled by the licence, including with respect to—
>
> (i) the operation or maintenance of premises or plant, and
>
> (ii) discharges from premises, and
>
> (iii) relevant ambient conditions prevailing on or outside premises,
>
> and
>
> (iv) anything required by the conditions of the licence, and
>
> (b) the provision and maintenance of appropriate measuring and recording devices for the purposes of that monitoring, and
>
> (c) the analysis, reporting and retention of monitoring data.
>
> (2) False or misleading information A holder of a licence who supplies information, or on whose behalf information is supplied, to the appropriate regulatory authority under the conditions of the licence is guilty of an offence if the information is false or misleading in a material respect."

The primary objective of the pollution monitoring reporting requirements is that members of the public have access to the results of all pollution monitoring (which a licence specifies must be carried out) in a way that is meaningful to them. Data for the Sydney Metro West Eastern Tunnelling Package is presented on a monthly sampling period.

The monitoring data that must be published and/or made available on request is any data that is obtained as a result of a monitoring condition on a licence that relates to air, water (surface or groundwater), noise and/or land pollution. The data to be published or provided is limited to data that relates to pollutants generated, discharged or emitted from the licensed premises.

The data is provided in tabular format that is easy for the general public to understand. Tables definitively display raw data values, while graphs and charts are useful for overviews and visualisation of long-term trends. Raw data will be provided upon request.

An upfront note will be included on the licensee's website or in this report to explain why any data may appear to be missing because there is no discharge or the level of pollutant being below the detection level of the measurement instrument.

It is possible from time to time that incorrect data may be published in good faith. As soon as practicable after the licensee becomes aware that the published pollution monitoring data is incorrect or misleading, licensees must then publish a correction log to correct this data that is incorrect or misleading (refer to **Section 4**).

Table 1 provides a summary of the pollution monitoring requirements of EPL 21784.

Table 1 EPL 21784 Pollution Monitoring Requirements

<table>
<tr><th>EPL Condition</th><th>Requirement</th><th>Report Reference</th></tr>
<tr><td colspan="3">Weather</td></tr>
<tr><td>M5.1</td><td>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 Australia Bureau of Meteorology. Monitoring must:
a) be representative of each catchment area;
b) commence prior to any works that may cause sediment to leave the premises; and
c) continue to be operated until soil disturbance activities cease at the premises and the site has been stabilised.</td><td>Section 3.1
Appendix A3.1</td></tr>
<tr><td colspan="3">Noise</td></tr>
<tr><td>L5.9</td><td>In undertaking any works and activities outside of standard construction hours under condition L5.8, the licensee must comply with the following:
a) Prepare a construction noise and vibration impact assessment in accordance with the Interim Construction Noise Guideline (DEC,2009) that is to include:
i. a description of the proposed works and activities outside of standard constructions hours;
ii. predictions of LAeq (15 minute) dB noise levels at noise sensitive receivers from these works and activities, where noise levels are predicted to be greater than those permitted under condition L5.3; and
iii. a monitoring plan to validate the noise predictions, based on monitoring at the boundary of representative sensitive receivers during noise generating activities that are representative of the works and activities, including during the period/s predicted to have the highest noise level impacts.
b) Undertake noise monitoring in accordance with the monitoring plan required by condition L5.9(a)(iii).</td><td>Section 3.2
Appendix B</td></tr>
<tr><td>M4.4</td><td>The licensee must undertake noise and vibration monitoring as directed by an authorised officer of the EPA. If a licensee is unable to obtain permission, they must provide the response to the EPA.</td><td>N/A</td></tr>
<tr><td colspan="3">Water</td></tr>
<tr><td>P1.1</td><td>The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.
<table>
<tr><th>EPA Identification no.</th><th>Type of Monitoring Point</th><th>Type of Discharge Point</th><th>Location Description</th></tr>
<tr><td>1</td><td>Discharge & Monitoring</td><td>Discharge & Monitoring</td><td>Discharge from the Hunter St Station WTP to Sydney Harbour</td></tr>
<tr><td>2</td><td>Discharge & monitoring</td><td>Discharge & monitoring</td><td>Discharge from the Eastern Creek Precast Facility sediment basin</td></tr>
<tr><td>3</td><td>Discharge & monitoring</td><td>Discharge & monitoring</td><td>Discharge from The Bays temporary WTP to White Bay</td></tr>
<tr><td>4</td><td>Discharge & Monitoring</td><td>Discharge & Monitoring</td><td>Discharge from the Pyrmont Station WTP to Sydney Harbour</td></tr>
<tr><td>5</td><td>Discharge & Monitoring</td><td>Discharge & Monitoring</td><td>Discharge from the Eastern Tunnelling Package Eastern Creek Precast Facility Water Treatment Plant into Ropes Creek</td></tr>
<tr><td>6</td><td>Discharge & Monitoring</td><td>Discharge & Monitoring</td><td>Discharge from The Bays Construction WTP to White Bay</td></tr>
<tr><td>7</td><td>Discharge & Monitoring</td><td>Discharge & Monitoring</td><td>Discharge from Pyrmont East Surface Water Discharge</td></tr>
</table></td><td>Section 3.3</td></tr>
<tr><td>M2.1</td><td>For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns.</td><td>Section 3.3</td></tr>
</table>

EPL Condition	Requirement	Report Reference
M2.2	See below	Section 3.3

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Ammonia	micrograms per litre	Monthly during discharge	Grab sample
Arsenic	micrograms per litre	Monthly during discharge	Grab sample
Manganese	micrograms per litre	Monthly during discharge	Grab sample
Nitrogen (total)	micrograms per litre	Monthly during discharge	Grab sample
Oil and Grease	Visible	Monthly during discharge	Visual Inspection
pH	pH	Daily during any discharge	Probe
Phosphorus (total)	micrograms per litre	Monthly during discharge	Grab sample
TSS	milligrams per litre	Monthly during discharge	Grab sample

POINT 2

Pollutant	Units of measure	Frequency	Sampling Method
Oil and Grease	Visible	Special Frequency 1	Visual Inspection
pH	pH	Special Frequency 1	Probe
TSS	milligrams per litre	Special Frequency 1	Grab sample

POINT 3

Pollutant	Units of measure	Frequency	Sampling Method
Arsenic (III)	micrograms per litre	Monthly during discharge	Grab sample
Manganese	micrograms per litre	Monthly during discharge	Grab sample
Nitrate + nitrite (oxidised nitrogen)	micrograms per litre	Monthly during discharge	Grab sample
Oil and Grease	Visible	Monthly during discharge	Visual Inspection
pH	pH	Daily during any discharge	Probe
Phosphorus (total)	micrograms per litre	Monthly during discharge	Grab sample
TSS	milligrams per litre	Monthly during discharge	Grab sample

POINT 4

Pollutant	Units of measure	Frequency	Sampling Method
Aluminium	micrograms per litre	Monthly during discharge	Grab sample
Ammonia	micrograms per litre	Monthly during discharge	Grab sample
Arsenic (III)	micrograms per litre	Monthly during discharge	Grab sample
Cadmium	micrograms per litre	Monthly during discharge	Grab sample
Chromium (hexavalent)	micrograms per litre	Monthly during discharge	Grab sample
Cobalt	micrograms per litre	Monthly during discharge	Grab sample
Copper	micrograms per litre	Monthly during discharge	Grab sample
Iron	micrograms per litre	Monthly during discharge	Grab sample
Manganese	micrograms per litre	Monthly during discharge	Grab sample
Nitrate	micrograms per litre	Monthly during discharge	Grab sample
Nitrogen (total)	micrograms per litre	Monthly during discharge	Grab sample
Oil and Grease	Visible	Monthly during discharge	Visual Inspection
pH	pH	Daily during any discharge	Probe
Phosphorus (total)	micrograms per litre	Monthly during discharge	Grab sample
TSS	milligrams per litre	Monthly during discharge	Grab sample
Zinc	micrograms per litre	Monthly during discharge	Grab sample

EPL Condition	Requirement	Report Reference

POINT 5

Pollutant	Units of measure	Frequency	Sampling Method
Oil and Grease	Visible	Monthly during discharge	Visual Inspection
pH	pH	Daily during any discharge	Probe
TSS	milligrams per litre	Monthly during discharge	Grab sample

POINT 6

Pollutant	Units of Measure	50 Percentile concentration limit	90 Percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Aluminium	micrograms per litre				250
Ammonia	micrograms per litre				910
Arsenic	micrograms per litre				4.5
Cadmium	micrograms per litre				0.7
Chromium (hexavalent)	micrograms per litre				20
Cobalt	micrograms per litre				1.4
Copper	micrograms per litre				2
Iron	micrograms per litre				700
Lead	micrograms per litre				4.4
Manganese	micrograms per litre				1900
Mercury	micrograms per litre				0.1
Nickel	micrograms per litre				70
Nitrate	micrograms per litre				660
Nitrogen (total)	micrograms per litre				1,720
Oil and Grease	Visible				Not visible
pH	pH				7.0-8.5
Phosphorus (total)	micrograms per litre				140
TPH > C10-C40 (sum) Fraction	micrograms per litre				100
TSS	milligrams per litre				15
Zinc	micrograms per litre				15

POINT 7

Pollutant	Units of Measure	50 Percentile concentration limit	90 Percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Oil and Grease	Visible				Not visible
pH	pH				7.0-8.5
TSS	milligrams per litre				50

3. Monitoring

Section 3 presents a summary of the monitoring programs completed in the reporting period from 16 October 2024 to 15 November 2024.

Detailed monitoring results for each program are presented in the Appendices.

3.1. Meteorological Data

Meteorological data for the Project has been mostly taken from the Observatory Hill but some has also been taken from Fort Denison and Sydney Airport, Bureau of Meteorology Weather Station.

The total rainfall recorded during the reporting period was 23.4 mm with 6 days exceeding one millimetre of rain and 0 days of rain exceeding 10mm.

During the reporting period, there were 26 days where the maximum wind gust recorded was greater than 25km/h, 4 days where the maximum wind gust recorded was greater than 50km/h and days where the maximum wind gust recorded was greater than 60km/h. Winds recorded during the reporting period in the mornings were predominantly westerly and varied into the afternoons.

A summary of the weather observations and weather events during the reporting period of relevance to the Soil and Water Management Sub-plan and Air Quality Management Sub-plan Trigger Action Response Plans (TARPs) are summarised in Table 2.

Detailed weather observation records for the reporting period are presented in Appendix A.

Table 2 Weather summary and trigger weather events for the reporting period

Weather Event	Observation
Minimum temperature	11.5 °C
Maximum temperature	30.7 °C
Total rainfall	23.4 mm
Number of days with rain (>1 mm)	6 days
Number of days with rain (>10 mm)	0 days
>25 km/hr wind	26 days
>50 km/hr wind	4 days
>60 km/hr wind	1days

3.2. Noise

Table 3 Summary of noise and vibration monitoring completed during the reporting period

Date	Monitoring Location	Method	Description
17/10/2024	Dentist at 60 Union St, Pyrmont NSW 2009, Australia	Sound Level Meter	Noise monitoring (GBN) of shaft excavation activities
28/10/2024	63 Edward St, Pyrmont NSW 2009, Australia	Sound Level Meter	Noise monitoring of tunnel support deliveries
28/10/2024	27 O'Connell St, Sydney NSW 2000, Australia	Sound Level Meter	Noise monitoring of site establishment activities
29/10/2024	On site - 20 O'Connell St, Sydney NSW 2000, Australia	Sound Level Meter	Sound Level Checks for piling rig in Hunter East
29/10/2024	On site - 20 O'Connell St, Sydney NSW 2000, Australia	Sound Level Meter	Sound Level Checks for piling rig in Hunter East
29/10/2024	On site - 20 O'Connell St, Sydney NSW 2000, Australia	Sound Level Meter	Sound Level Checks for piling rig in Hunter East
30/10/2024	Pharmacy at 60 Union St, Pyrmont NSW 2009, Australia	Sound Level Meter	Noise monitoring (GBN) of shaft excavation activities

Date	Monitoring Location	Method	Description
7/11/2024	196 Harris St, Pyrmont NSW 2009, Australia	Sound Level Meter	Noise monitoring of 1x EWP, welding LV and 2 generators
7/11/2024	104 Pyrmont St, Pyrmont NSW 2009, Australia	Sound Level Meter	Noise monitoring of 2x generators (welding), and EWP
11/11/2024	Pharmacy at 60 Union St, Pyrmont NSW 2009, Australia	Sound Level Meter	Noise monitoring (GBN) of shaft excavation activities
11/11/2024	Pharmacy at 60 Union St, Pyrmont NSW 2009, Australia	Sound Level Meter	Noise monitoring (GBN) of shaft excavation activities

No noise and vibration monitoring was undertaken as a result of a direction by the EPA.

3.3. Discharge to water

Discharge water quality monitoring is a requirement of the following conditions of EPL 21784:

- M2.1 Monitoring the concentration of each pollutant specified using the specified sampling method, units of measure and frequency

During the reporting period sampling was undertaken from:

- Point 1 – Discharge from the Hunter St Station WTP,
- Point 2 – Discharge from the Eastern Creek sediment basin to Rope Creek
- Point 4 – Discharge from the Pyrmont Station WTP,
- Point 5 – Eastern Creek WTP to Rope Creek and
- Point 6 – Discharge from The Bays Construction WTP.

Table 4, 5, 6, 7 and 8 provide the details of the concentration of pollutants discharged during the reporting period. Some exceedances of EPL criteria were recorded at points 1, 4 and 6. Proof of performance programs are being implemented at points 4 and 6.

Table 4 Concentration of pollutants discharged from Point 1 during the reporting period

Date			**24/10/2024**
Pollutant	**Units**	**Criteria**	**Discharge**
Ammonia	(µg/L)	910	110
Arsenic (III)	(µg/L)	8	3
Manganese	(µg/L)	80	13
Nitrogen (Total)	(µg/L)	1720	2500
Oil and Grease	Visible	Not Visible	Not visible
pH	pH	7.0-8.5	8.4
Phosphorus (total)	(µg/L)	140	<50
TSS	(mg/L)	15	<5

Table 5 Concentration of pollutants discharge from Point 2 during the reporting period

Date			**17/10/2024**
Pollutant	**Units**	**Criteria**	**Discharge**
Oil and Grease	Visible	Not Visible	Not visible
pH	pH	6.5-8.5	7.1
TSS	(mg/L)	50	15

Table 6 Concentration of pollutants discharged from Point 4 during the reporting period

Date			21/10/2024
Pollutant	**Units**	**Criteria**	**Discharge**
Aluminium	(µg/L)	250	60
Ammonia	(µg/L)	910	240
Arsenic (III)	(µg/L)	4.5	2
Cadmium	(µg/L)	0.7	<0.1
Chromium (hexavalent)	(µg/L)	20	30
Cobalt	(µg/L)	1.4	2
Copper	(µg/L)	2	1
Iron	(µg/L)	700	<10
Manganese	(µg/L)	80	28
Nitrate	(µg/L)	660	420
Nitrogen (Total)	(µg/L)	1720	900
Oil and Grease	Visible	Not Visible	Not visible
pH	pH	7.0-8.5	7.7
Phosphorus (total)	(µg/L)	140	<50
TPH>C10-C14	(µg/L)	100	<50
TSS	(mg/L)	15	5
Zinc	(µg/L)	15	38

Table 7 Concentration of pollutants discharged from Point 5 during the reporting period

Date			17/10/2024
Pollutant	**Units**	**Criteria**	**Discharge**
Oil and Grease	Visible	Not Visible	Not visible
pH	pH	6.5-8.5	7.3
TSS	(mg/L)	50	31

Table 8 Concentration of pollutants discharged from Point 6 during the reporting period

Date			13/11/2024
Pollutant	**Units**	**Criteria**	**Discharge**
Aluminium	(µg/L)	250	<10
Ammonia	(µg/L)	910	12
Arsenic	(µg/L)	4.5	<1
Cadmium	(µg/L)	0.7	<0.1
Chromium (hexavalent)	(µg/L)	20	9
Cobalt	(µg/L)	1.4	<1
Copper	(µg/L)	2	<1
Iron	(µg/L)	700	<10

Date			13/11/2024
Pollutant	**Units**	**Criteria**	**Discharge**
Lead	(µg/L)	4.4	<1
Manganese	(µg/L)	1900	<5
Mercury	(µg/L)	0.1	<0.05
Nickel	(µg/L)	70	<1
Nitrate	(µg/L)	660	100
Nitrogen (Total)	(µg/L)	1720	1400
Oil and Grease	Visible	Not Visible	Not visible
pH	pH	7.0-8.5	7.5
Phosphorus (total)	(µg/L)	140	<50
TPH>C10 – C40 (sum)	(µg/L)	100	<50
TSS	(mg/L)	15	<5
Zinc	(µg/L)	15	5

4. Correction Log

It is possible from time to time for incorrect data to get published in good faith.

As soon as practicable after the licensee becomes aware that the published pollution monitoring data is incorrect or misleading, licensees must then publish a correction log to correct this data that is incorrect or misleading.

There are no matters included in the correction log for this reporting period.

Appendix A Weather Data

Table 9 Weather Observations. Temperature and Relative Humidity. Observatory Hill BOM Station.

Date	Min temperature (°C)	Max temperature (°C)	Rainfall (mm)	9am Temperature (°C)	9am relative humidity (%)	3pm Temperature (°C)	3pm relative humidity (%)
16/10/2024	12.7	20	0.2	16.5	68	19.4	50
17/10/2024	11.5	22.6	0	15	82	22.4	63
18/10/2024	15	25.5	0.6	18.2	88	23.1	74
19/10/2024	17.1	24.6	6.4	21	64	21.8	75
20/10/2024	17.6	22.5	0.6	18.9	63	21.1	53
21/10/2024	15.6	21.6	0	16.9	74	21.5	51
22/10/2024	12.9	22.9	0	16.4	66	21.1	56
23/10/2024	14.2	26	0	18.8	69	24.9	60
24/10/2024	17.5	22.5	0	19.8	68	20	61
25/10/2024	12.1	22.3	3.2	15.4	65	21.3	58
26/10/2024	12.5	20.7	nd	15.1	42	19.9	39
27/10/2024	11.5	24.2	0	16.9	62	23.5	56
28/10/2024	15.1	26.8	0	20.4	53	22.6	63
29/10/2024	16.6	23.6	0	18.9	71	21.7	60
30/10/2024	17.2	25.2	0	19.7	71	23.8	58
31/10/2024	16.2	27.3	0	19.7	86	24.5	52
1/11/2024	16	23.6	2.6	19.2	66	22.2	57
2/11/2024	16.4	21.1	0.8	18	66	19.8	73
3/11/2024	16.5	28.6	2	21.1	75	25.1	66
4/11/2024	18.5	21.6	0	19.5	79	18.5	86
5/11/2024	18.4	24.1	0.4	21.1	69	21.9	74
6/11/2024	17.9	27.5	0	22.5	78	26.4	65
7/11/2024	21.1	30.7	0.2	23.5	78	23.9	71
8/11/2024	16	30.7	3	20.7	58	29.6	38
9/11/2024	17.7	26.8	0	20.6	73	26	61
10/11/2024	20.2	26.3	0	22.5	77	23.2	64
11/11/2024	17.8	21	0	19	75	18.9	87
12/11/2024	17.6	nd	0.6	20.8	79	23.7	69
13/11/2024	nd	26	nd	20.1	91	22.2	73
14/11/2024	17.6	nd	2.8	17.9	93	21.5	65
15/11/2024	nd	nd	nd	nd	nd	nd	nd

Note: nd = no data available

Table 10 Wind Observations. Observatory Hill BOM Station.

Date	Direction of max wind gust	Speed of max wind gust (km/h)	Time of max wind gust	9am wind direction	9am wind speed (km/h)	3pm wind direction	3pm wind speed (km/h)
16/10/2024	E	22	16:08	WNW	9	E	11
17/10/2024	nd	nd	nd	W	9	NE	17
18/10/2024	SW	57	18:57	ENE	2	ESE	11
19/10/2024	S	39	15:04	W	24	SSE	24
20/10/2024	SSE	56	16:01	S	22	SSE	31
21/10/2024	S	59	13:19	SSW	24	S	31
22/10/2024	E	30	16:12	SW	7	E	15
23/10/2024	S	35	17:00	N	7	E	11
24/10/2024	SSE	43	7:37	SSE	30	ESE	30
25/10/2024	SE	50	15:19	W	19	SE	28
26/10/2024	S	41	3:20	SW	19	SE	24
27/10/2024	ENE	31	15:45	W	9	ENE	19
28/10/2024	SE	44	14:00	WNW	24	SSE	30
29/10/2024	E	31	13:46	ESE	2	E	24
30/10/2024	ENE	43	13:11	NNE	15	NE	24
31/10/2024	S	39	17:18	WNW	7	SSE	22
1/11/2024	ESE	39	13:05	SE	13	ESE	20
2/11/2024	S	41	23:54	ESE	17	E	20
3/11/2024	N	39	10:10	NE	13	NE	22
4/11/2024	SSE	33	3:15	S	11	ESE	6
5/11/2024	NE	37	18:04	ESE	11	E	22
6/11/2024	NE	35	18:45	NE	13	ENE	20
7/11/2024	SSW	43	11:57	SE	7	S	13
8/11/2024	SSW	44	22:12	W	20	ENE	22
9/11/2024	SSW	48	23:06	SE	17	ENE	20
10/11/2024	S	63	14:04	SW	19	SSE	39
11/11/2024	SSE	33	23:02	S	13	SSW	13
12/11/2024	nd	nd	nd	S	11	ESE	19
13/11/2024	ENE	30	16:13	NW	6	E	22
14/11/2024	nd	nd	nd	SSW	20	SSE	20
15/11/2024	nd	nd	nd	nd	nd	nd	nd

Note: nd = no data available

Appendix B Noise Monitoring Results

Table 11 Noise Monitoring Results

Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted* (dBA)	Recorded $L_{eq,\ 15min}$ (dBA)	LAmax	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
Attended noise monitoring												
17/10/2024	13:30	Day	Shaft excavation	Pyrmont East	Dentist at 60 Union St, Pyrmont NSW 2009, Australia	50	55	50.6	76.1	n/a	-	Significant background noise from the Dentist. Works compliant with daytime GBNML.
28/10/2024	20:15	Night	Tunnel support deliveries	Pyrmont East	63 Edward St, Pyrmont NSW 2009, Australia	60	78	68.8	84.2	n/a	-	Works compliant with predicted levels
28/10/2024	22:45	Night	Loadout from Hunter St East to Hunter St West	Hunter Street East	27 O'Connell St, Sydney NSW 2000, Australia	65	61	62.1	78.4	Yes	1.1	Monitoring indicated that construction works were not the dominant source. External noise such as rubbish trucks and cars passing by contributed to the noise reading.
29/10/2024	12:21	Day	Pilling Rig works	Hunter Street East	On site - 20 O'Connell St, Sydney NSW 2000, Australia	94	107*	82.4	88.7	No	-	Sound power levels testing indicated pilling rig was compliant with Sound Power Levels in the DNVIS
29/10/2024	12:31	Day	Pilling Rig works	Hunter Street East	On site - 20 O'Connell St, Sydney NSW 2000, Australia	94	107*	84.9	91.9	No	-	Sound power levels testing indicated pilling rig was compliant with Sound Power Levels in the DNVIS
29/10/2024	12:32	Day	Pilling Rig works	Hunter Street East	On site - 20 O'Connell St, Sydney NSW 2000, Australia	94	107*	85.4	104.5	No	-	Sound power levels testing indicated pilling rig was compliant with Sound Power Levels in the DNVIS
30/10/2024	12:40	Day	Shaft excavation	Pyrmont East	Pharmacy at 60 Union St, Pyrmont NSW 2009, Australia	50	55	55.7	82.7	n/a	-	Works compliant with predicted levels
7/11/2024	21:10	Night	EWP, welding LV, 2 generators	Pyrmont East	196 Harris St, Pyrmont NSW 2009, Australia	52	47	55.6	70.4	Yes	9	Monitoring indicated that construction works were not the dominant source. Main construction noise varied from 48 – 50 dB. Other noise sources were from background activities such as car passing by.
7/11/2024	21:33	Night	2 generators (welding), EWP	Pyrmont East	104 Pyrmont St, Pyrmont NSW 2009, Australia	52	49	64.1	77.5	Yes	15	Monitoring indicated that construction works were not the dominant source. Background activities such as cars passing by contributed to the noise reading.
11/11/2024	10:45	Day	Shaft excavation	Pyrmont East	Pharmacy at 60 Union St, Pyrmont NSW 2009, Australia	50	55	54	78	n/a	-	Works compliant with predicted levels
11/11/2024	10:50	Day	Shaft excavation	Pyrmont East	Pharmacy at 60 Union St, Pyrmont NSW 2009, Australia	50	55	53	73	n/a	-	Works compliant with predicted levels
*Predicted Sound Power level as per respective DNVIS												

Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted* (dBA)	Recorded $L_{eq, 15min}$ (dBA)	LAmax	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
+Real time noise and vibration monitoring												
	Continuous		Construction – Noise	Hunter Street	The Ivy (Level 5 External)	*	*	*	*	*	*	Real time noise and vibration monitoring data is available on request.
	Continuous		Construction – Noise	Hunter Street	The Ivy (Level 2 Office Printer Room)	*	*	*	*	*	*	
	Continuous		Construction – Noise	Pyrmont	1-5 Hardwood Ln	*	*	*	*	*	*	
	Continuous		Construction – Noise	Pyrmont East	69 Edward Street, Pyrmont, 2009	*	*	*	*	*	*	
	Continuous		Construction – Noise	Pyrmont West	Site Hoarding on Paternoster Row	*	*	*	*	*	*	
	Continuous		Construction – Noise	Hunter Street	The Radisson Blu Plaza Hotel (Level 1) 27 O'Connell Street, Sydney, 2000	*	*	*	*	*	*	
	Continuous		Construction – Noise	Hunter Street	66 Hunter Street (Spice Temple)	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Pyrmont	125 Pyrmont St	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Pyrmont	107 Pyrmont St	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Hunter Street	The Ivy (Basement)	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Hunter Street	The Skinners Hotel (Level 3 North)	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Hunter Street	Pangas House	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Pyrmont East	69 Edward Street, Pyrmont, 2009	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Pyrmont West	28 Paternoster Row, Pyrmont, 2009	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Hunter	109 Pitt Street	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Pyrmont	2GB Ground Floor	*	*	*	*	*	*	
	Continuous		Construction – Vibration	Pyrmont	Pyrmont Pharmacy	*	*	*	*	*	*	