SYDNEY METRO – WESTERN SYDNEY AIRPORT
STATION BOXES AND TUNNELLING WORKS

EPL 21672 Monitoring Report December 2023

Sydney Metro – Western Sydney Airport, Station Boxes and Tunnelling Works

Project number	SSI 10051
Document number	SMWSASBT-CPG-SWD-SW000-EN-RPT-295355
Revision date	12/01/2024
Revision	01

Document approval

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
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1. Introduction

1.1. Background

The Sydney Metro Western Sydney Airport will become the transport spine for Greater Western Sydney, connecting communities and travellers with the new Western Sydney International (Nancy-Bird Walton) Airport (referred to as Western Sydney International) and the growing region.

The Project forms part of the broader Sydney Metro network. It involves the construction and operation of a 23km new metro rail line that extends from the existing Sydney Trains suburban T1 Western Line (at St Marys) in the north and the Aerotropolis (at Bringelly) in the south. The alignment includes a combination of tunnels and civil structures, including viaduct, bridges, surface and open-cut troughs between the two tunnel sections (Figure 1).

The Sydney Metro Western Sydney Airport EIS was prepared in October 2020 to assess the impacts of construction and operation of the Project and was placed on public exhibition between 21 October 2020 and 2 December 2020. The Project was declared a Critical State Significant Infrastructure (CSSI) Project and is listed in Schedule 5 of *State Environmental Planning Policy (State and Regional Development)*.

The Sydney Metro Western Sydney Airport was approved by the Minister for Planning and Public Spaces on 23 August 2021 (SSI 10051) under section 5.19 of the *Environmental Planning and Assessment Act 1997* (EP&A Act).

The Project will be delivered through the following stages:

- **Advanced and Enabling Works (AEW)** – Site investigations, modification of the existing transport network, power and water supply for construction sites, utility and stormwater diversions and some demolition works.
- **Station Boxes and Tunnelling Works (SBT)** – delivered through the following sub-stages:
  - Preparatory Works– Including NSW (off-airport) demolition works, site levelling/grading, site access and parking, utility and temporary services works, erection of demountable buildings and noise barriers, tunnelling preparatory works and use of ancillary facilities including onsite parking.
  - Bulk Excavation and Tunnelling Works – Preparatory Works (works not completed prior to Final CEMP approval), bulk excavation, acoustic shed installation, tunnelling and cross passage installation.
- **Surface and Civil Alignment Works (SCAW)** – Construction of bridges and viaducts to cross floodplains, watercourses and existing and proposed permanent infrastructure.
- **Stations, Systems, Trains, Operations and Maintenance (SSTOM)–** Station design and fitout, testing and commissioning, and operation of the Western Sydney Airport metro service
- **Finalisation Auxiliary Works.**

Each package of work is to be delivered under separate contracts on behalf of the proponent Sydney Metro.

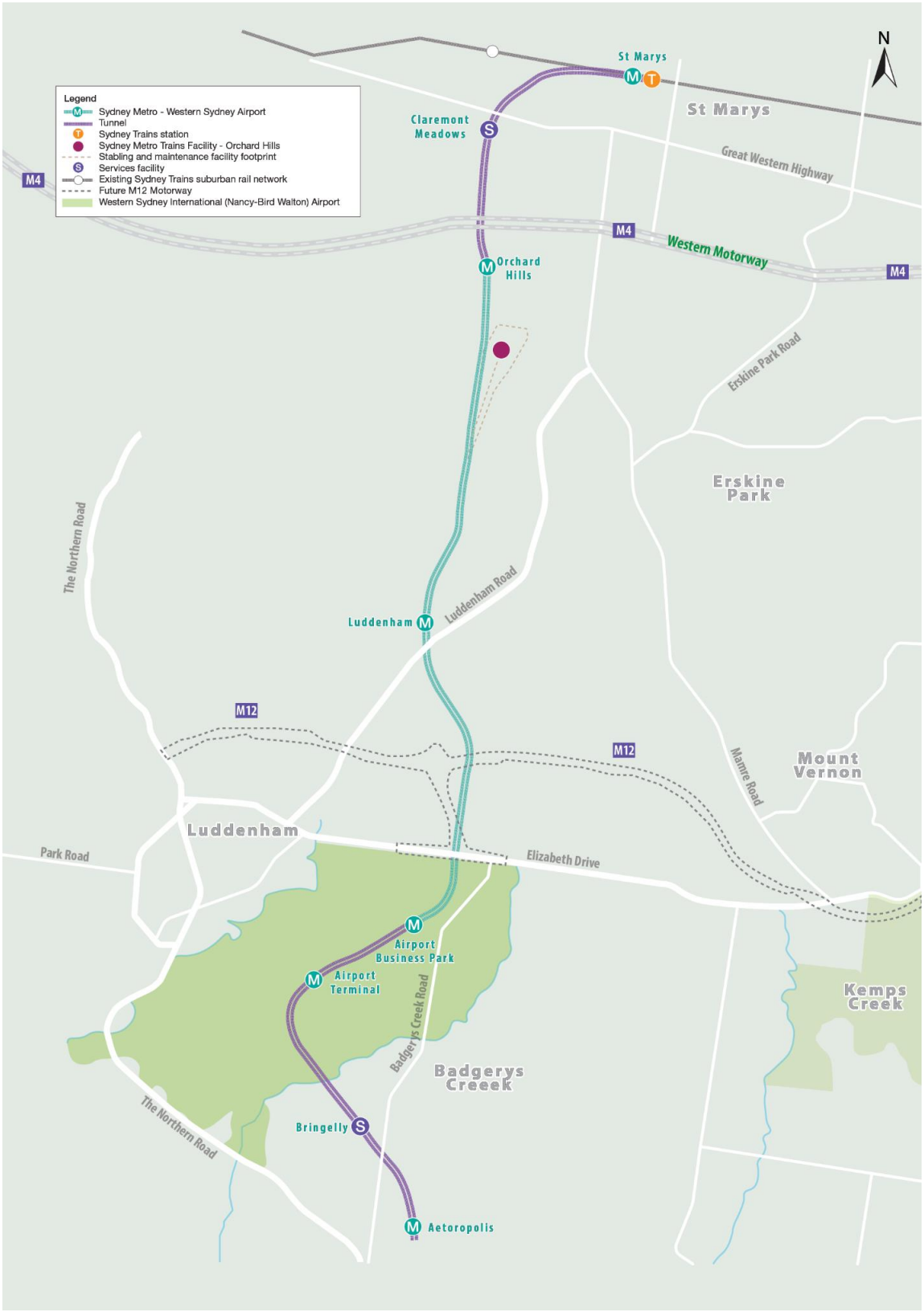

Figure 1: Overview of the Project

1.1.1. Station Boxes and Tunnelling Works

The CPB Ghella JV has been engaged to deliver the SBT Works. The SBT Works include the design and construction of:

- Two sections of twin tunnels with a total combined length of approximately 9.8km, including associated portal structures; Orchard Hills to St Marys and Western Sydney International (WSI) airport to the new Aerotropolis Station in NSW
- Excavations at either end to enable trains to turn back and stub tunnels to enable future extensions
- Station box excavations with temporary ground support for four stations at St Marys, Orchard Hills, Airport Terminal and Aerotropolis
- Excavations for two intermediate service facilities, one in each of the tunnel sections at Claremont and Bringelly.

Completed sections of the SBT Works, including established construction worksites, will be progressively handed over to Sydney Metro to enable follow-on contractors to commence works.

1.2. Scope of this report

CPB Contactors Pty Limited have been issued an Environmental Protection Licence (EPL No. 21672) from the NSW Environment Protection Authority (EPA) for the Sydney Metro Western Sydney Airport Station Box and Tunnelling Package on behalf of Sydney Metro.

The EPL applies to the works approved under the Infrastructure Approval SSI-10051 associated with the delivery of Sydney Metro Western Sydney Airport SBT Works Off-airport worksites. The EPL does not apply to other Sydney Metro Western Sydney Airport works packages or On-airport SBT Worksites.

An overview of relevant jurisdiction at each SBT Worksite is provided in Table 1.

Table 1: SBT Worksite Jurisdiction

Jurisdiction	Worksite
NSW	St Marys
NSW	Claremont Meadows
NSW	Orchard Hills
On-Airport	Airport Portal Dive Structure
On-Airport	Airport Terminal and TBM shaft
On-Airport	Precast Segment Storage Facility
On-Airport	Primary Spoil Receival
NSW	Bringelly
NSW	Aerotropolis

Note: Worksites shown in grey are within the boundary of the Western Sydney International (On-Airport), are regulated under the *Commonwealth Airports Act 1996* and are outside the scope of EPL 21672.

This EPL Pollution Monitoring Report provides the results of all pollution monitoring required to be measured or monitored by the licensee of EPL 21672 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 2 provides a summary of the EPL 21672 details.

Table 2: Licence details

Licence Details	
Number:	21672
Copy of Licence	Environment & Heritage | POEO Licences, Application and Notice Detail (nsw.gov.au)
Anniversary Date	30-May
Licensee	CPB Contractors Pty Limited
Premises	Sydney Metro Western Sydney Airport Station Box and Tunnelling Package St Marys to Orchard Hills and Bringelly to Aerotropolis St Marys NSW 2760
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 SBT Works 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 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 3 provides a summary of the pollution monitoring requirements of EPL 21672.

Table 3: EPL 21672 Pollution Monitoring Requirements

EPL Condition	Requirement	Report Reference
Weather		
M5.1	The licensee must monitor and record temperature, 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. Monitoring must: a) be representative of the premises; 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. The rainfall monitoring data collected in compliance with this condition can be used to determine compliance with condition L2.5	Section 3.1 Annexure A
Noise		
L5.9	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 construction 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).	Section 3.2 Annexure B
M4.4	The licensee must undertake noise and vibration monitoring as directed by an authorised officer of the EPA. Where the monitoring is requested to take place on private land (for example a residential property) the licensee must request permission to access the premises in advance and keep a record of permission requests and responses. If a licensee is unable to obtain permission, the licensee must undertake the monitoring at an indicative location where possible and they must provide the response (including any nil response) to the EPA.	N/A No direction received from EPA to undertake noise and vibration monitoring during this reporting period.

EPL Condition	Requirement	Report Reference
Community Agreements The licensee may work outside standard construction hours (as defined in L5.1) in circumstances other than those permitted under conditions L5.3, L5.4, or any other condition of the licence, subject to the condition outlined Section E1.		
E1.4	A noise validation monitoring plan must be submitted to the EPA for approval as part of the community agreement documentation prior to any OOHW occurring.	N/A No OOHW undertaken by Community Agreement during reporting period.
E1.5	Validation monitoring must be undertaken for any OOHW that are the approved under condition E1.1 and must: a) be undertaken in accordance with the monitoring plan prepared under condition E1.4; b) be performed by a Competent Person; c) be performed on at least the first 2 occasions (day, evening, nights) where OOHW will be undertaken and are likely to impact Noise Sensitive Receivers; d) be performed on any other occasion (day, evening, night) where the nature of the works is likely to cause greater noise impacts than the first 2 occasions; e) be representative of the impacts in terms of monitoring locations, time and duration of measurements; and f) be recorded and provided to an EPA officer upon request	

EPL Condition	Requirement	Report Reference
Water		
P1.1	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. 1 Discharge and Monitoring Discharge and Monitoring The outlet(s) of the sediment basin(s) on the Orchard Hills site discharging to South Creek referred to in Condition P1.2 2 Discharge and Monitoring Discharge and Monitoring The outlet(s) of the sediment basin(s) on the Claremont site discharging to South Creek referred to in Condition P1.2 3 Discharge and Monitoring Discharge and Monitoring The outlet(s) of the sediment basin(s) on the St Marys site discharging to South Creek referred to in Condition P1.2 4 Discharge and Monitoring Discharge and Monitoring The outlet(s) of the sediment basin(s) on the Bringelly site discharging to Badgerys Creek referred to in Condition P1.2 5 Discharge and Monitoring Discharge and Monitoring The outlet(s) of the sediment basin(s) on the Aerotropolis site discharging to Thompson Creek referred to in Condition P1.2 6 Discharge and Monitoring Discharge and Monitoring The outlet of the water treatment plant on the Orchard Hills site discharging to South Creek 7 Discharge and Monitoring Discharge and Monitoring The outlet of the water treatment plant on the Claremont site discharging to South Creek 8 Discharge and Monitoring Discharge and Monitoring The outlet of the water treatment plant on the St Marys site discharging to South Creek 9 Discharge and Monitoring Discharge and Monitoring The outlet of the water treatment plant on the Bringelly site discharging to Badgerys Creek 10 Discharge and Monitoring Discharge and Monitoring The outlet of the water treatment plant on the Aerotropolis site discharging to Thompson Creek	Section 3.3 Annexure C
L2.1	For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.	Noted

<table>
<tr><th>EPL Condition</th><th>Requirement</th><th>Report Reference</th></tr>
<tr><td>M2.2</td><td>
POINT 1,2,3,4,5
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Oil and Grease</td><td>Visible</td><td>Special Frequency 1</td><td>Visual Inspection</td></tr>
<tr><td>pH</td><td>pH</td><td>Special Frequency 1</td><td>Probe</td></tr>
<tr><td>Turbidity</td><td>nephelometric turbidity units</td><td>Special Frequency 1</td><td>Probe</td></tr>
</table>
POINT 6,7,8,9,10
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Aluminium</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Ammonia</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Chromium (VI) Compounds</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Copper</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Electrical conductivity</td><td>microsiemens per centimetre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Nitrogen (total)</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Oil and Grease</td><td>Visible</td><td>Monthly during discharge</td><td>Visual Inspection</td></tr>
<tr><td>pH</td><td>pH</td><td>Monthly during discharge</td><td>Probe</td></tr>
<tr><td>Phosphorus (total)</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Total suspended solids</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Zinc</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
</table>
</td><td>Noted</td></tr>
<tr><td>M2.3</td><td>For the purposes of Condition M2.2 and the Table thereto, ‘Special Frequency 1’ means:

a) less than 24 hours prior to a controlled discharge and daily for any continued controlled discharge, when it is safe to do so; and

b) when rainfall causes a discharge from a sediment basin which has not been emptied within the design management period following cessation of a rainfall event, when it is safe to do so.</td><td>Annexure C</td></tr>
<tr><td>E2.1</td><td>The licensee must undertake weekly surface water monitoring of receiving waterways at locations upstream, downstream and adjacent to each discharge point: 6, 7, 8, 9 and 10 identified in Condition P1.1. This monitoring must be undertaken for a minimum of 6 months from the date that points 6, 7, 8, 9 and 10 were added to the licence. Fortnightly monitoring results must include: a) quality and quantity of all parameters that are identified in the table in M2.2 for each discharge point: 6, 7, 8, 9 and 10; and b) results must be submitted to the EPA no more than 2 weeks after each monitoring event has occurred for a minimum of 6 months from the date that points 6, 7, 8, 9 and 10 were added to the licence.</td><td>Noted</td></tr>
</table>

EPL Condition	Requirement	Report Reference
Additional Monitoring Conditions		
M4.5	The licensee must undertake monitoring, sampling, video recording and/or take photographs: a) if the EPA or licensee reasonably suspects that an event has occurred at the premises or in connection with the carrying out of the activities that has caused, is causing, is likely to cause or has the potential to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies); b) as soon as practicable; and c) as directed by an authorised officer.	Not triggered for this reporting period

3. Monitoring

Section 3 presents a summary of the monitoring programs completed in the reporting period from 1 December 2023 to 31 December2023.

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

3.1. Meteorological Data

Meteorological data for the Project has been taken from Penrith Lakes AWS {station 067113}.

The total rainfall recorded during the reporting period was 114.8 mm with 8 days exceeding one millimetre of rain and 3 days exceeding 10mm of rain.

During the reporting period, there were 28 days where the maximum wind gust recorded was greater than 25km/hr and 2 days where the maximum wind gust recorded was greater than 50 km/h and 2 days where the maximum wind gust was greater than 60 km/hr. Winds recorded during the reporting period were predominantly Southern component, however there was variability throughout the month.

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

This information is used daily on site to assess daily activities and consider mitigation measures as required.

Table 4: Weather summary and trigger weather events for reporting period

Weather Event	Observation
Minimum temperature	14.7°C
Maximum temperature	43.9°C
Total rainfall	114.8 mm
Number of days with rain (>1mm)	8 Days
Number of days with rain (>10mm)	3 Days
Number of days with >25km/hr wind[2]	28 Days
Number of days with >50km/hr wind	2 Days
Number of days with >60km/hr wind	2 Day

[1]Weather summary based on data from the 1 December 2023 to 31 December 2023 (days).

[2]Weather data from Penrith Lakes AWS {station 067113}.

3.2. Noise

Noise monitoring is a requirement of the following conditions of EPL 21672:

- L5.9, E1.4 Monitoring to validate the noise predictions for works undertaken outside of the standard construction hours as per the construction noise impact assessment.
- M7.6 Noise monitoring following noise and vibration complaints.
- M4.4 Noise and vibration monitoring as directed by an authorised officer of the EPA.

No Noise monitoring was undertaken during the reporting period.

3.3. Discharge to Water

3.3.1 Discharge to Water

The discharge of water from sediment basins and settling containers occurred at the following discharging monitoring points/locations during this reporting period:

- SBT-003
- SBT-004
- SBT-005
- SBT-011
- SBT-015

Discharge to natural waterways and local stormwater systems is directly linked to the surface water monitoring program, where monitoring is undertaken to:

- Measure the effectiveness of environmental controls in minimising and managing environmental impacts.
- Demonstrate compliance with relevant stakeholder conditions.

The EPL discharge criteria apply to the sediment basins and settling containers identified and located on Electronic File EF22/5394 and approved by the EPA. Discharge to water events must adhere to the following Limit Conditions of EPL 21672:

- L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.
- L2.1 For each monitoring/discharge point or utilisation area specified in the table/s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.
- L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.
- L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.
- L2.4 Water and/or Land Concentration Limits

Basins and discharge points are summarised in Table 6.

The discharge events and water quality monitoring data during the reporting period are summarised in Annexure C.

Table 5: SBT Discharge Point Register (electronic file EF22/5394) (Rev 10, submitted 20th of December 2023)

ID	Construction Status	EPA ID	Easting	Northing	Description of location of discharge point	Catchment name	Name of nearest waters	Direct discharge to waters	Location description	Date added
SBT-003	Active	2	292018.2099	6261255.3813	The outlet of the sediment basin on the Claremont Meadows Site south of Great Western Highway	South Creek	Claremont Creek	No	Discharge into local stormwater system	4/10/2022
SBT-004	Active	2	292072.0196	6261326.0789	The outlet of the sediment basin on the Claremont Meadows site West of Gipps Street	South Creek	Claremont Creek	No	Discharge into local stormwater system	4/10/2022
SBT-005	Active	7	292053.3538	6259530.3707	The outlet of the water treatment plant on the Claremont Meadows site West of Gipps Street	South Creek	Claremont Creek	No	Discharge into local stormwater system	4/10/2022
SBT-006	Active	1	292065.7524	6259303.9277	The outlet of the sediment basin on the Orchard Hills site south of M4	South Creek	South Creek	No	Discharge into vegetated / stabilized land	4/10/2022
SBT-010	Active	6	291963.0058	6258833.1224	The outlet of the water treatment plant on the Orchard Hills site north of Lansdowne Road	South Creek	South Creek	No	Discharge into vegetated / stabilized land	4/10/2022
SBT-011	Active	4	291975.5092	6258798.5199	The outlet of the sediment basin on the Bringelly site west of Derwent Road	South Creek	Badgerys Creek	No	Discharge into vegetated / stabilized land	4/10/2022
SBT-016	Active	1	291861.7259	6259213.9627	Temporary sediment basin on the east of Kent Street	South Creek	South Creek	No	Discharge into vegetated / stabilized land	20/12/2023

3.3.2 Receiving Waterways

As per Condition E2.1 of the EPL, weekly surface water monitoring of receiving waterways commenced on 14 February 2023 and will be undertaken for a minimum of six months. For each sampling event undertaken during the reporting period, samples were taken at each monitoring location for the analytes listed in Condition M2.1 for Points 6,7,8,9 and 10.

Sampling as per condition E2.1 of the EPL has now been completed and no longer required to be undertaken. CPBG will undertake monitoring of the waterways during wet weather events.

Wet weather monitoring is carried out as per the following:

- A minimum of once per 3 months where rainfall does not exceed 25mm
- In the event of a continuous rainfall event of >20mm is received in the local catchment during a 24-hour period (as recorded at the SBT Works rain gauge(s) or nearby weather station) and has generated runoff from site.

Surface water monitoring at receiving water ways was undertaken on the following dates during. this reporting period:

- 21 December 2023

A review of the data for these monitoring events can be found in Annexure D.

Locations that had exceedances when compared to the SBT EPL discharged criteria can be found in Table 6.

Table 6: Surface Water Sampling Exceedances

Analyte	Sampling site with exceedances
pH	NA
Oil/grease	NA
Turbidity	NA
Electrical Conductivity	NA
Total Suspended Solids	SBT-9D
Aluminium	SBT-6D, SBT-9U, SBT-9D
Chromium (VI)	SBT-6D, SBT-7U
Copper	SBT-6U, SBT-6D, SBT-7U, SBT-7D
Zinc	SBT-7U, SBT-7D
Total Phosphorous	SBT-6U
Total Nitrogen	SBT-9U, SBT-9D
Ammonia	SBT-7D

Where exceedances have occurred, on-site activities will be reviewed. Sampling of the waterway occurred after 77m (Penrith Lakes AWS {station 067113}) which exceed sediment basin surface water holding capacity on SBT sites.

Results from previous sampling undertaken by SBT indicates that the water quality of the sampling locations are above the SBT EPL discharge criteria.

The quality of the waterways is potentially affected by external upstream impacts, the following describes potential impacts on the waterways.

- SBT-6 is in a semi-rural setting with vegetated swales up and downstream of the sampling location.
- SBT-7 is a drainage line that may collect water off road surfaces from Gipps Street and the Great Western Highway.
- SBT-9 is downstream of the Western Sydney Airport water and farmlands which would contribute runoff to the waterway.

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.

Annexure A Weather Observations

Table 7: Weather Observations: Penrith Lakes AWS {station 067113}.

Date	Temperatures		Rain	9am		3pm	
	Min	Max		Temperature	Relative Humidity	Temperature	Relative Humidity
	°C		mm	°C	%	°C	%
1/12/2023	16.7	30.1	0	23.8	59	28.9	40
2/12/2023	19	28.4	0.6	20.3	94	24.6	68
3/12/2023	14.7	30.1	0	21.1	69	26.2	47
4/12/2023	16.9	28.1	11.4	19.8	79	27.1	46
5/12/2023	15.1	38.7	0	21.7	71	36.4	24
6/12/2023	21.5	30.2	0	26.5	43	29.3	42
7/12/2023	17.3	34.1	0	22	82	29.8	52
8/12/2023	19.8	40.6	0	26.7	72	39.1	25
9/12/2023	22.4	43.9	0	29.6	57	40.5	21
10/12/2023	21.9	31.1	0	22.9	80	29.7	65
11/12/2023	20.9	35.8	0	25.5	71	34.5	43
12/12/2023	21.5	33.7	0	24.8	73	32.6	35
13/12/2023	19.5	36.4	0	24	79	34.5	41
14/12/2023	21.9	39.5	5.4	25.6	92	38	21
15/12/2023	21.3	31.8	0	23.6	72	31.3	44
16/12/2023	17.3	36.6	0	25.2	70	35.7	11
17/12/2023	20.5	29	0	23	71	26.9	53
18/12/2023	18.9	33.7	0	21.8	84	31	51
19/12/2023	21.8	35.6	0	24.5	97	33.9	38
20/12/2023	17.9	20.6	46.8	17.9	100	17.9	100
21/12/2023	16.1	24.1	30.2	20.6	80	21.3	71
22/12/2023	16.9	28	0	21.3	58	27.1	40
23/12/2023	16.1	29.3	0	22.7	60	28.3	42
24/12/2023	18.7	24.6	1	22	94	23.3	74
25/12/2023	18.3	28.3	8.8	21.5	98	27.5	57
26/12/2023	18.4	31.8	0.6	22.5	98	30.2	51
27/12/2023	17.9	27.8	0.2	22.6	97	20.4	93
28/12/2023	15.8	33.8	5.6	20.8	99	32.1	32
29/12/2023	17.9	27.9	0	23	79	27.3	65
30/12/2023	17.2	31	0	22.9	64	30.2	33
31/12/2023	16.6	21.3	4.2	17.7	98	20.9	72

Table 8: Wind Observations: Penrith Lakes AWS {station 067113}.

Date	Maximum wind gusts			9am		3pm	
	Direction	Speed	Time	Direction	Speed	Direction	Speed
		Km/h	Local		km/h		km/h
1/12/2023	SE	39	15:47	SE	4	NNW	4
2/12/2023	SSE	41	20:17		Calm	NW	6
3/12/2023	SE	39	13:49	S	6	ESE	24
4/12/2023	NE	30	16:56	W	2	ENE	9
5/12/2023	NNE	20	14:18	S	4	SSE	6
6/12/2023	SE	31	14:46	E	6	SE	15
7/12/2023	SE	30	13:29	NNW	6	SE	17
8/12/2023	SE	39	15:37	N	7	ENE	9
9/12/2023	SE	46	19:31	N	6	NW	26
10/12/2023	SSE	39	23:04	SSW	11	N	6
11/12/2023	SE	35	16:53	SSE	7	ESE	17
12/12/2023	ESE	31	15:27	N	4	ESE	11
13/12/2023	NW	33	21:18	NNW	4	NE	7
14/12/2023	NW	65	11:57	NNW	2	W	24
15/12/2023	ENE	43	13:32	E	2	ENE	15
16/12/2023	NW	48	13:55	SSW	2	WNW	28
17/12/2023	ESE	30	12:57	NE	7	E	17
18/12/2023	NE	26	12:04	S	4	N	7
19/12/2023	N	41	13:56	N	7	N	28
20/12/2023	S	26	7:12	SSW	11	SSW	11
21/12/2023	SSE	37	17:55	S	13	S	13
22/12/2023	ESE	33	14:21	S	11	ESE	19
23/12/2023	ENE	28	11:50	SE	6	ENE	9
24/12/2023	SE	24	11:07	SSE	7	SSE	9
25/12/2023	NE	28	17:13	S	7	ENE	7
26/12/2023	SE	39	14:46	S	13	E	13
27/12/2023	WSW	61	12:26	NW	6	ESE	15
28/12/2023	ESE	31	15:32	E	2	W	11
29/12/2023	WNW	33	19:44	SSW	7	WNW	4
30/12/2023	SE	39	16:02	N	7	S	6
31/12/2023	SSE	20	17:47	SW	9	ESE	9

Annexure B Discharge to water

Table 9: Discharge Water Quality

Discharge Monitoring Point ID	Type of Monitoring Point	Type of Discharge Point	Date	Discharge Permit No.	Oil and Grease Visual Inspection	pH (6.5 – 8.5)	Turbidity (50 NTU)
SBT-011	Sediment Basin	Discharge into vegetated / stabilized land	1/12/23	102	NA	6.74	8.5
SBT-005	Sediment Basin	Discharge into vegetated / stabilized land	1/12/23	103	NA	7.09	43.8
SBT-003	Sediment Basin	Discharge into vegetated / stabilized land	4/12/23	104	NA	7.93	16.6
SBT-004	Sediment Basin	Discharge into vegetated / stabilized land	8/12/23	105	NA	7.04	33.7
SBT-011	Sediment Basin	Discharge into vegetated / stabilized land	8/12/23	106	NA	8.25	19.5
SBT-016	Sediment Basin	Discharge into vegetated / stabilized land	14/12/23	108	NA	8.06	44.4
SBT-004	Sediment Basin	Discharge into vegetated / stabilized land	21/12/23	109	NA	6.95	40.3
BST-011	Sediment Basin	Discharge into vegetated / stabilized land	21/12/23	110	NA	8.25	19.5

Annexure C Surface Water Monitoring at Receiving Waterways

Table 10: Surface Water Monitoring SBT-6U & SBT-6D

Analyte		SBT-6U	SBT-6D
	Post Rain Event	Yes	
	Unit	21/12/2023	
pH	pH	7.46	7.35
Oil/grease	Visual Inspection	Not Visible	Not Visible
Turbidity	NTU	3.5	2.5
Electrical Conductivity	µS/cm	829	1460
Total Suspended Solids	mg/L	<5	<5
Aluminium	mg/L	0.05	0.09
Chromium (VI)	mg/L	<0.001	0.019
Copper	mg/L	0.006	0.002
Zinc	mg/L	0.007	0.015
Total Phosphorous	mg/L	0.16	0.1
Total Nitrogen	mg/L	1.6	1.1
Ammonia	mg/L	0.04	0.03

Table 11: Surface Water Monitoring SBT-7U & SBT-7D

Analyte		SBT-7U	SBT-7D
	Post Rain Event	Yes	
	Unit	21/12/2023	
pH	pH	7.6	7.85
Oil/grease	Visual Inspection	Not Visible	Not Visible
Turbidity	NTU	37.7	20.8
Electrical Conductivity	µS/cm	979	1080
Total Suspended Solids	mg/L	30	15
Aluminium	mg/L	0.46	0.24
Chromium (VI)	mg/L	0.004	<0.001
Copper	mg/L	0.009	0.006
Zinc	mg/L	0.021	0.016
Total Phosphorous	mg/L	<0.01	0.15
Total Nitrogen	mg/L	1.2	1.39
Ammonia	mg/L	0.12	1.15

Table 12: Surface Water Monitoring SBT-9U & SBT-9D

Analyte		SBT-9U	SBT-9D
	Post Rain Event	Yes	
	Unit	21/12/2023	
pH	pH	7.65	7.65
Oil/grease	Visual Inspection	Not Visible	Not Visible
Turbidity	NTU	129	140
Electrical Conductivity	µS/cm	930	941
Total Suspended Solids	mg/L	44	60
Aluminium	mg/L	1.45	1.49
Chromium (VI)	mg/L	<0.001	<0.001
Copper	mg/L	0.013	0.009
Zinc	mg/L	0.132	0.017
Total Phosphorous	mg/L	<0.02	<0.02
Total Nitrogen	mg/L	2.6	2.5
Ammonia	mg/L	0.06	0.04

Annexure D EPL Premise Maps

Rev	Description	Date
C	SBT-005 Added	24/03/202
B	SBT-003 and SBT-004 added	08/09/2023
A	Initial Submission	30/05/2022

N

0 30 60m

Status	For Construction		
Designed By	JC	Rev	14
Date Printed	14/12/23	Date Issued	14/12/23
File Name	Claremont Meadows Services Facility Premise Map		
Doc Number	SMWSASBT-CPG-SWD-SW000-EN-RPT-295311		

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EPL Premise Map - Claremont Meadows

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Figure 2: CMF Premise Map

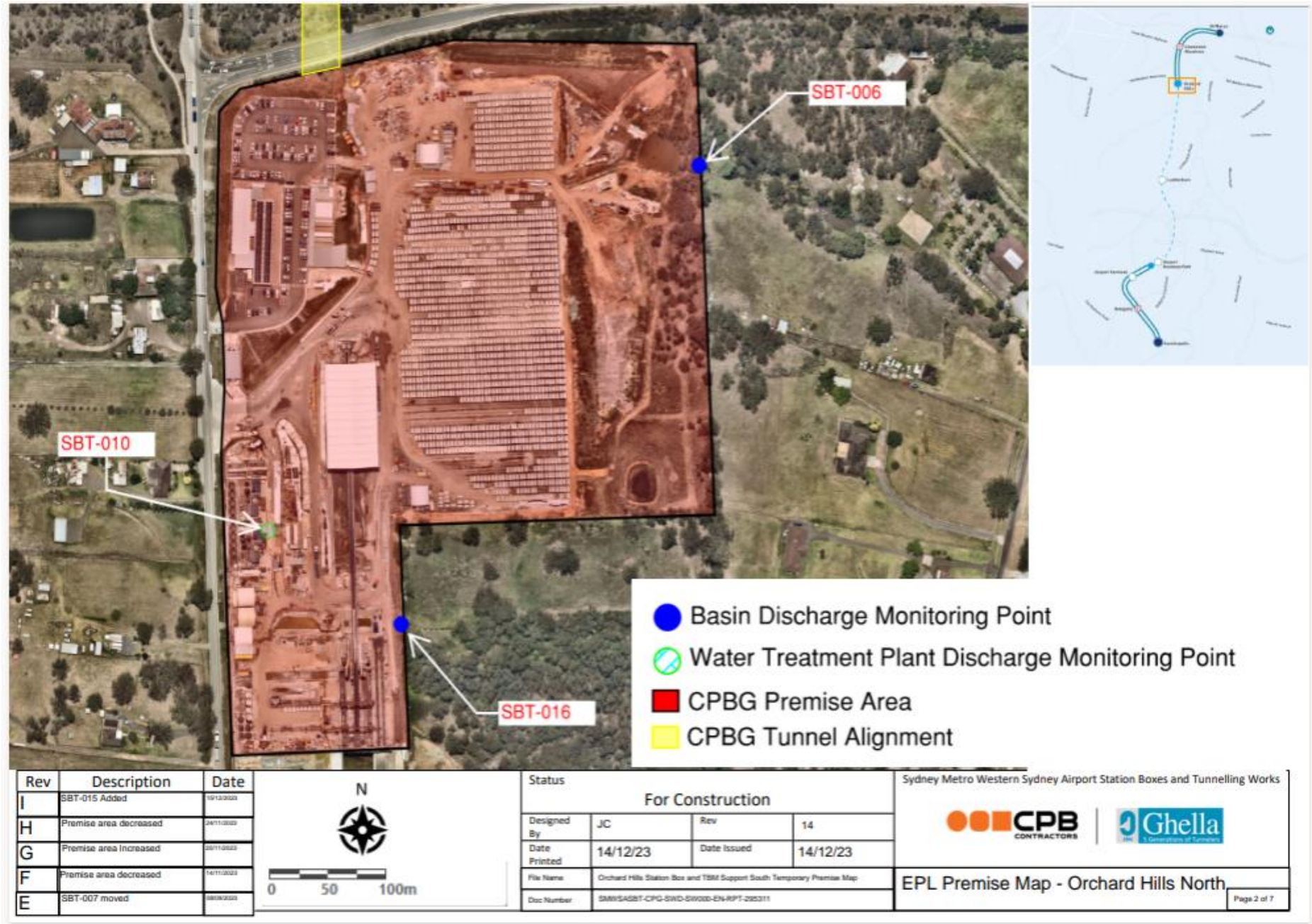

Figure 3: OHE Premise Map

Rev	Description	Date
D	Premise area added SBT-007 added	
C	Premise area removed, SBT-008 removed	
B	Premise area Increased SBT-008 added	
A	Premise area increased. SBT-008 added	

N

0 50 100m

Status			
For Construction			
Designed By	JC	Rev	14
Date Printed	14/12/23	Date Issued	14/12/23
File Name	Orchard Hills Station Box and TBM Support South Temporary Premise Map		
Doc Number	SMWSASBT-CPG-SWD-SW000-EN-RPT-295311		

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EPL Premise Map - Orchard Hills South

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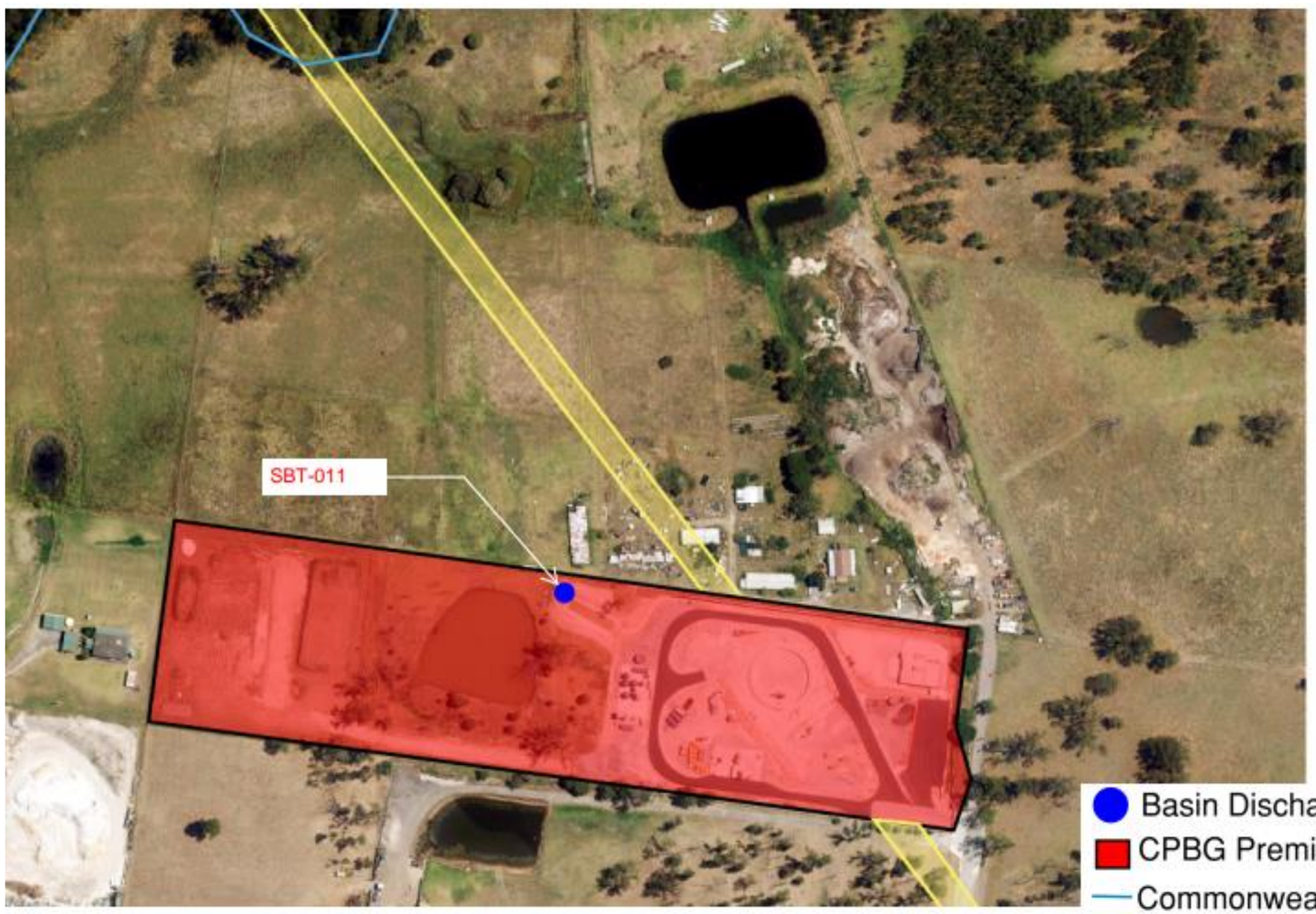
Figure 4: OHE South Premise Map



Rev	Description	Date
D	SBT-012 removed	23/08/2023
C	SBT-012 added	23/08/2023
B	SBT-011 added	22/08/2023
A	Initial Submission	30/05/2023

Status	For Construction		
Designed By	JC	Rev	14
Date Printed	14/12/23	Date Issued	14/12/23
File Name	Bringelly Service Facility Premise Map		
Doc Number	SMWSASBT-CPG-SWD-SW000-EN-RPT-285311		

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EPL Premise Map - Bringelly

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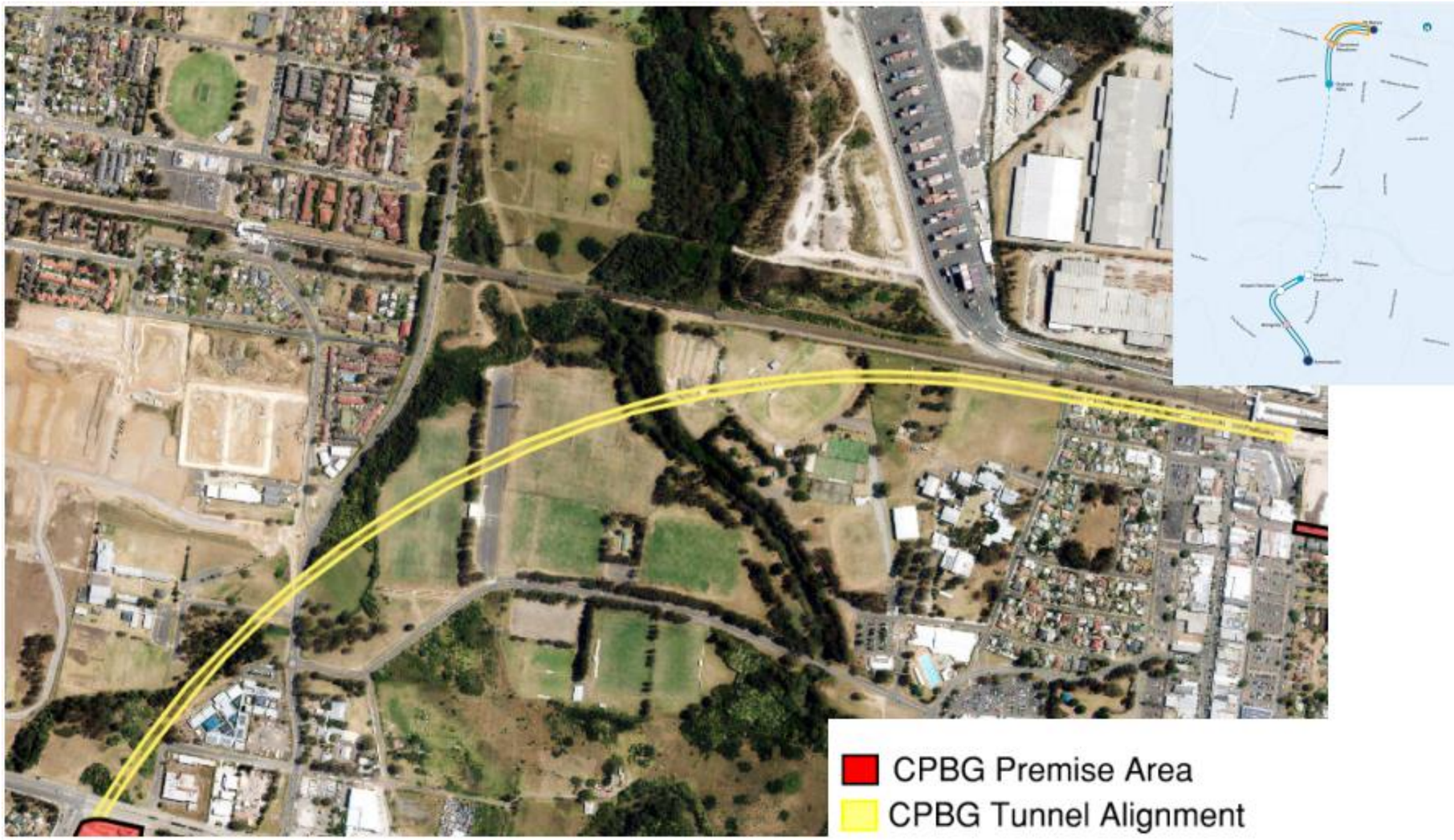
Figure 5: BSF Premise Map



Rev	Description	Date
A	Tunnel alignment added	21/09/2023

N

0 0.1 0.2km

Status	For Construction		
Designed By	JC	Rev	14
Date Printed	14/12/23	Date Issued	14/12/23
File Name	Tunnel Alignment St Marys to Claremont Meadows Premise Map		
Doc Number	SMWSASBT-CPG-SWD-SW000-EN-RPT-295311		

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EPL Premise Map - Tunnel Alignment

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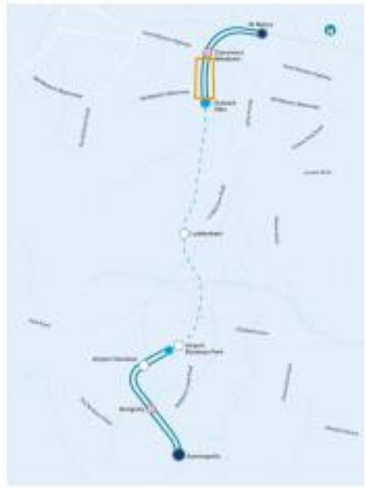
Figure 6: Northern Tunnel Alignment



Rev	Description	Date
A	Tunnel alignment added	21/09/23

Status	For Construction		
Designed By	JC	Rev	14
Date Printed	14/12/23	Date Issued	14/12/23
File Name	Tunnel Alignment Claremont Meadows to Orchard Hills Premise Map		
Doc Number	SMWSASBT-CPG-SWD-SW000-EN-RPT-255311		

Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works

EPL Premise Map -Tunnel Alignment

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Figure 7: Northern Tunnel Alignment

Rev	Description	Date
B	Aerotropolis removed	04/10/23
A	Tunnel alignment added	21/09/23

Status			
For Construction			
Designed By	JC	Rev	13
Date Printed	14/12/23	Date Issued	14/12/23
File Name	Tunnel Alignment Bringelly to Aerotropolis Premise Map		
Doc Number	SMWSASBT-CPG-SWD-SW000-EN-RPT-295311		

Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works

EPL Premise Map - Tunnel Alignment

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Figure 8: Southern Tunnel Alignment