

Surface Water Monitoring Report

Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works

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Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this report is reviewed and approved. The Project Discipline Director is responsible for updating this plan to reflect changes to construction, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed/implemented.

Revision Details

Revision	Details
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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: Overview of the Project)

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 July 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 (the subject of this Plan) – 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. The exception is the on-airport Precast Segment Storage Facility which will be decommissioned and hydroseeded following the completion of segment manufacture.

1.2. Purpose of this report

The purpose of this report is to present results of the Surface Water Quality Monitoring Program (SWQMP) outlined in the SBT Construction Environmental Management Plan (CEMP) and associated Sub-plans, including the results of the construction monitoring programs referred to in Condition C13 of the Infrastructure Approval.

This Surface Water Monitoring Report has been prepared to address Minister’s Condition of Approval (CoA) C22 of the Infrastructure Approval (refer to Table 4). This report will be provided to the relevant regulatory authorities as detailed in the relevant Sub-plan (refer to Table 1).

Environmental monitoring is undertaken to:

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

The monitoring requirements for nominated aspects are included in the relevant environmental management sub-plans and summarised in Table 1-1. All monitoring results are presented in Annexures A to F. Annexure G shows the surface water monitoring locations.

Table 1: Environmental Monitoring Reporting Requirements

CEMP or Sub-plan	Monitoring Program	Report	Distribution	Schedule (during construction)
Soil and Water Management Sub-Plan	Surface Water Quality Monitoring Program	Water Monitoring Report	EPA, DPE	Six-monthly



Table 2: Conditions of Approval (CoA)

CoA	Detail	Addressed
C22	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program	

In accordance with Section 5.5 of the SWQMP, during construction, surface water quality data will be collected, tabulated and assessed against baseline conditions and performance criteria. The information provided is a summary and discussion of information provided monthly in the CPBG EPL reports which are posted on the CPBG web page.

1.3. On-site Activity

All metro station box and service facility sites have been established and currently have sediment basins, sumps and Water Treatment Plants. Sediment basins are installed at most sites where required by design. This has been achieved progressively from Project construction commencement as the sites have been established. WTPs are installed at all sites with commissioning completed. Tunnelling has commenced in the north and south with all four TBM’s tunnelling.

Aerotropolis has been handed over to Sydney Metro as of the 11/10/2023, while portions of St Marys and Orchard Hills have also been handed over.



2. Surface Water Monitoring in receiving waters

The SBT Works footprint lies entirely within the South Creek catchment. South Creek, a major tributary of the Hawkesbury-Nepean catchment, flows in a generally northerly direction from its headwaters near Narellan through to Windsor where it joins the Hawkesbury River.

Table 3: Site Specific Receiving Waterways

Waterway	Worksite
South Creek	All
South Creek	St Marys Claremont Meadows Service Facility
South Creek	Orchard Hills
Badgerys Creek	Bringelly Service Facility
Thompsons Creek	Aerotropolis Core

South Creek is the receiving waterway for all creeks within the Project alignment.

During the reporting period, quarterly and wet-weather monitoring was undertaken in accordance with the Surface Water Monitoring Program.

In February the EPL surface water monitoring program commenced which has resulted in surface water sampling occurring weekly since February. On 9 February 2023, a variation to EPL 21672 was approved, and Condition E2.1 of the licence was included which outlines the following requirements:

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;*

As a result, monitoring locations were amended to allow for compliance with the EPL, this sampling period ended on the 8 August 2023.



Locations upstream, downstream and adjacent to the receiving waterway where treated groundwater would be discharged are identified in Table 4. Given that water discharged from water treatment plants and sediment basins / settling containers will enter receiving waterways at the same location for all sites, surface water monitoring sites were updated to allow for the additional monitoring requirements stipulated by Condition E2.1.

Table 4. Condition E2.1 Monitoring Locations

EPA ID (Condition M2.2)	Site	Receiving Waterway	Sample ID		
			Upstream	Adjacent	Downstream
Point 6 (Sampling Location SBT-6)	Orchard Hills	Unnamed tributary of South Creek	SBT-6U	SBT-6A	SBT-6D
Point 7 (Sampling Location SBT-7)	Claremont Meadows	Claremont Creek	SBT-7U	SBT-7A	SBT-7D
Point 8 (Sampling Location SBT-8)	St Marys	South Creek	SBT-8U	SBT-8A	SBT-8D
Point 9 (Sampling Location SBT-9)	Bringelly	Badgerys Creek	SBT-9U	SBT-9A	SBT-9D
Point 10 (Sampling Location SBT-10)	Aerotropolis	Thompsons Creek	SBT-10U	SBT-10A	SBT-10D

Due to the setting of the waterways, the ideal sampling design was not possible as safe and public access immediately upstream and downstream of the Project's discharge outlets is not possible. Locations have been selected as close as possible to where discharges enter receiving waterways, however multiple non-Project discharges with the potential to alter water quality also fall within the sampling zone.



2.1. Performance Criteria

Location specific performance criteria (site specific trigger values (SSTV)) were developed for downstream (impact) surface water monitoring locations. SSTV were initially developed for appropriate parameters using baseline monitoring data and ANZECC (2000) guideline criteria for slightly to moderately disturbed ecosystems (generally protecting 95% of species). ‘

As noted in the Surface Water Quality Monitoring Program (SWQMP), at the time of writing, there was no baseline data available for heavy metals, and as such, SSTV were to be developed once at least three samples had been collected. and tested, the average concentrations of heavy metals were to be established as the SSTV based on the data.

Average concentrations of parameters that were established based on pre-construction monitoring were applied at all monitoring locations. Additionally, the SSTVs outlined in Table 9 of the SWQMP have been applied where monitoring locations are located in proximity to baseline monitoring locations as detailed below in (Table 5).

Table 5: Application of SSTVs

SWQMP SSTVs (Table 9)	Monitoring prior to Condition E2.1	Condition E2.1 Monitoring
SBT1	SBT-1	SBT-6
	SBT-3	SBT-8
SBT3	SBT-4	SBT-9
SBT5	SBT-5	SBT-10



3. Discussion

All monitoring results have been reviewed, with the upstream and downstream data compared to see the impact the adjacent sampling site has after the mixing zone. Issues with heavy metal levels within the WTP effluent at all sites has meant that CPBG has not discharged from site into the local waterways at the designated discharge sites. This has reduced the potential for SBT to impact the surrounding waterways. The Project is located in a variety of surrounding land uses, which include industrial, residential, commercial and rural land uses. These all contribute to water quality in different ways and will have an impact on the varying water quality conditions measured over the last 6 months. These factors are considered in 3.1 Surrounding Land Uses.

Where results that are shown as “NA” in Annexure A, Annexure B, Annexure C, Annexure D, Annexure E, were due to a lack of water at the sampling site. The average results in Annexure F are not affected by these results.

3.1. Surrounding Land Uses

This section addresses the setting of each sampling location and waterway, highlighting the differing land uses around the sampling points. At the time of monitoring, the samplers would observe local conditions including water levels, visual quality and any activities occurring around the sampling sites. The predominant land uses are described below: SBT-6 is in a semi-rural setting with vegetated swales up and down stream of the sampling location. This ephemeral swale cannot always be sampled when conditions are dry.

- SBT-7 is a drainage line which collects water off road surfaces from Gipps Street and the Great Western Highway.
- SBT-8 is downstream of farmland, industrial areas and urban environments which would contribute runoff to the waterway.
- SBT-9 is downstream of the Western Sydney Airport water and farmlands which would contribute runoff to the waterway. This creek is ephemeral and as a result samples cannot always be taken.
- SBT-10 semi-rural setting with unvegetated channels leading into the creek and upstream farmland which would contribute runoff to the waterway.

The quality of the waterways is potentially affected by external upstream impacts.



3.2. Observations

SBT has not discharged any groundwater to the environment via the onsite water treatment plants. All treated water has been used as dust suppression on site or sent off site via a Sydney Water trade waste connection. Only releases of surface water from sediment basins have been discharged to the environment from SBT sites.

During this reporting period CPB has handed the following sites back to Sydney Metro for use by their SSTOM contractor:

- St Marys 9/11/2023
- Aerotropolis 4/10/2023

As such, no sampling has been done at the relevant sampling sites for St Marys and Aerotropolis to record post rain events or discharge impacts on the waterways.

Sampling results across the period have shown differences between upstream and downstream results at all locations, with no consistent obvious explanation for the variations. Electrical Conductivity and turbidity have shown the greatest variation which can best be interpreted from the varying rainfall and range of activities occurring within the catchment. There have been no obvious changes occurring within the waterway noticed at each location during the sampling period.

Between May and October, there were no more than 30 discharges from SBT sites from sediment basins. All water quality met all discharge criteria prior to discharge. The highest rainfall events were 120mm in the north (BOM Orchard Hills Treatment Works) and the 124mm in the south (BOM Badgerys Creek AWS).



Annexure A May 2023 Surface Water Monitoring Results

Table 6: May 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 6 (OHE)

Analyte	Sample Location	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D
	Post Rain Event	No			No			No			No			No		
	Unit	2/05/2023			9/05/2023			16/05/2023			23/05/2023			30/05/2023		
pH	pH	7.03	7.27	7.36	7.87	7.91	7.95	6.98	6.99	7	7.81	8.09	7.93	7.1	7.32	7.36
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	25.4	22.1	21.7	137	209	205	141	137	150	76.8	100	87.9	212	310	311
Electrical Conductivity	µS/cm	1380	1350	1370	734	722	705	1610	1630	1650	699	719	705	829	786	784
Total Suspended Solids	mg/L	21	21	21	49	84	75	35	31	28	18	51	44	36	52	69
Aluminum	mg/L	0.33	0.44	0.36	1.95	1.85	2.89	1.49	1.35	1.05	1.38	2.56	1.42	1	1.68	2.16
Chromium (VI)	mg/L	0.008	0.009	0.01	0.005	0.006	0.007	<0.01	<0.01	<0.01	0.003	0.004	0.003	0.002	0.002	0.003
Copper	mg/L	0.004	0.004	0.004	0.004	0.005	0.006	0.002	0.003	0.003	<0.001	<0.001	<0.001	0.002	0.002	0.002
Zinc	mg/L	<0.005	<0.005	<0.005	0.02	0.025	0.026	0.007	0.009	0.008	<0.005	0.006	<0.005	0.01	0.008	0.008
Total Phosphorous	mg/L	0.09	0.08	0.04	0.11	0.13	0.13	0.07	0.006	0.07	0.1	0.1	0.09	0.09	0.09	0.09
Total Nitrogen	mg/L	1.4	1.4	1.3	1.3	1.5	1.6	0.048	0.86	0.52	1.2	1.1	1.1	1	0.9	1.1
Ammonia	mg/L	0.22	0.22	0.23	0.09	0.05	0.04	0.18	0.15	0.14	0.16	0.08	0.1	0.03	0.07	0.06

Table 7: May 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 7 (CMF)

Analyte	Sample Location	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D
	Post Rain Event	No			No			No			No			No		
	Unit	2/05/2023			9/05/2023			16/05/2023			23/05/2023			30/05/2023		
pH	pH	7.62	7.57	7.71	8.24	7.79	8.23	6.78	7.05	6.82	8.09	7.81	7.93	6.92	9.84	6.53
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	155	6.9	154	31.7	43.1	33.7	232	18.1	35.8	61	92.1	88	27	257	38
Electrical Conductivity	µS/cm	1550	1690	1580	2320	1880	3580	232	18.1	35.8	6050	1560	6030	8570	1450	6610
Total Suspended Solids	mg/L	104	<5	108	22	28	22	70	6	11	18	51	44	12	64	67
Aluminum	mg/L	0.48	0.22	0.77	0.93	0.92	1.13	0.53	0.12	0.27	1.38	2.56	1.42	0.33	0.94	2.08
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.01	<0.01	<0.01	0.003	0.004	0.003	<0.001	0.001	0.002
Copper	mg/L	0.003	0.003	0.004	0.002	0.003	0.003	0.006	0.004	0.003	<0.001	0.003	0.003	0.002	0.006	0.006
Zinc	mg/L	0.87	0.26	0.008	0.013	0.022	0.011	0.016	0.009	0.007	<0.005	0.02	<0.005	0.011	0.026	0.027
Total Phosphorous	mg/L	0.15	0.02	0.15	0.07	0.05	0.08	0.09	0.04	0.05	0.04	0.1	0.06	0.06	0.12	0.13
Total Nitrogen	mg/L	1.7	0.7	1.6	1.1	1.2	2.1	0.86	0.48	0.4	1	1.1	2.1	0.9	1.4	2.6
Ammonia	mg/L	0.11	0.02	0.12	0.15	0.18	0.06	0.08	0.14	0.04	0.28	0.11	0.1	0.06	0.12	0.1

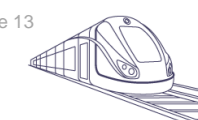


Table 8: May 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 8 (STM)

Analyte	Sample Location	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D	SBT-8A
	Post Rain Event	No			No			No			No			No		
	Unit	2/05/2023			9/05/2023			16/05/2023			23/05/2023			30/05/2023		
pH	pH	7.31	7.96	7.94	8	7.85	7.89	7.88	7.76	7.73	6.48	8.3	8.37	5.57	5.78	5.21
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	54.8	5.5	11.1	58.2	52.7	52.5	391	385	395	87	65	70.3	327	353	355
Electrical Conductivity	µS/cm	1520	1680	508	1340	1260	1260	838	822	837	645	665	669	928	928	925
Total Suspended Solids	mg/L	39	<5	12	41	31	31	112	12	110	33	35	40	26	25	18
Aluminum	mg/L	0.87	0.25	0.36	1.3	0.99	0.87	1.67	1.51	2.72	1.25	1.38	1.35	1.04	1.08	0.85
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.001	0.001	0.001	0.001	<0.001	<0.001
Copper	mg/L	0.004	0.004	0.003	0.005	0.003	0.003	0.006	0.005	0.007	<0.001	<0.001	<0.001	0.002	0.002	0.002
Zinc	mg/L	0.012	0.038	0.007	0.034	0.008	0.01	<0.005	0.02	<0.005	<0.005	<0.005	0.006	0.007	0.008	0.007
Total Phosphorous	mg/L	0.07	0.06	0.17	0.17	0.15	0.16	0.04	0.1	0.06	0.1	0.13	0.14	0.13	0.08	0.06
Total Nitrogen	mg/L	1	1.6	1.7	4	4	4	1	1.1	2.1	1.7	1.4	1.4	1.5	1.6	1.6
Ammonia	mg/L	0.1	0.16	0.06	0.07	0.08	0.08	0.28	0.11	0.1	0.13	0.06	0.06	0.07	0.06	0.05

Table 9: May 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 9 (BSF)

Analyte	Sample Location	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D
	Post Rain Event	No			No			No			No			No		
	Unit	2/05/2023			9/05/2023			16/05/2023			23/05/2023			30/05/2023		
pH	pH	7.6	7.44	7.49	7.8	7.66	7.85	7.08	6.86	7.16	7.59	7.56	7.64	7.12	7.84	7.81
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	376	362	356	107	105	108	112	187	123	32	38	117	75.7	63.2	68.5
Electrical Conductivity	µS/cm	464	525	527	528	1830	1830	1940	1780	2000	2230	2230	2230	2320	2320	2320
Total Suspended Solids	mg/L	128	101	97	52	54	53	23	141	26	20	19	26	18	15	22
Aluminum	mg/L	6.13	7.77	6.71	2.53	2.35	2.68	0.61	4.7	0.59	0.7	0.68	0.68	1	0.59	0.71
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	0.003	0.003	0.003	0.002	0.003	0.003
Copper	mg/L	0.01	0.012	0.01	0.007	0.006	0.006	0.005	0.008	0.005	0.001	<0.001	0.001	0.003	0.003	0.002
Zinc	mg/L	0.023	0.025	0.023	0.01	0.009	0.008	0.023	0.024	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphorous	mg/L	0.22	0.18	0.21	0.08	0.08	0.09	0.11	0.04	0.04	0.08	0.07	0.08	0.05	0.04	0.04
Total Nitrogen	mg/L	1.3	1.2	1.1	2.2	2.1	2.2	3.31	3.38	3.2	2	2	2	1.6	0.6	0.5
Ammonia	mg/L	0.03	0.04	0.03	0.06	0.06	0.06	0.08	0.1	0.09	0.08	0.06	0.07	0.04	0.03	0.02



Table 10: May 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 10 (AEC)

Analyte	Sample Location	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D
	Post Rain Event	No			No			No			No			No		
	Unit	2/05/2023			9/05/2023			16/05/2023			23/05/2023			30/05/2023		
pH	pH	7.47	7.62	7.6	7.56	7.24	7.57	7.91	7.86	7.39	8.04	8.01	7.93	7.4	7.3	7.7
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	60.2	67.2	69.8	57.8	55.8	58.3	77.8	65.5	111	30	30	29	73.4	66.5	84.9
Electrical Conductivity	µS/cm	2900	2810	1420	591	601	594	77.8	65.5	111	574	572	572	551	548	549
Total Suspended Solids	mg/L	52	52	64	19	18	23	10	14	12	19	26	14	16	17	14
Aluminum	mg/L	0.88	1.16	1.27	1.28	1.38	1.46	0.58	0.57	0.55	0.94	0.84	0.85	1.16	0.9	1.19
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Copper	mg/L	0.004	0.004	0.004	0.002	0.002	0.002	0.001	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.008	0.007	0.007	0.005	0.005	0.006	0.006	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphorous	mg/L	0.18	0.12	0.12	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04
Total Nitrogen	mg/L	4.6	4.8	4.5	0.8	0.6	0.7	0.06	0.06	0.06	0.4	0.4	0.4	0.5	0.6	0.5
Ammonia	mg/L	0.2	0.11	0.17	0.02	<0.01	<0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.03	0.03	0.02



Annexure B June 2023 Surface Water Monitoring Results

Table 11: June 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 6 (CMF)

Analyte	Sample Location	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D
	Post Rain Event	No			No			No			No		
	Unit	6/06/2023			13/06/2023			20/06/2023			27/06/2023		
pH	pH	7.85	7.75	7.78	8.13	8.23	8.25	N/A	8.02	8.05	NA	NA	8.06
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	No Water	Not Visible	Not Visible	N/A	Not Visible	Not Visible	NA	NA	Not Visible
Turbidity	NTU	999	132	184	185	186	186	N/A	175	168	NA	NA	127
Electrical Conductivity	µS/cm	537	823	817	972	942	938	N/A	1020	1020	NA	NA	1070
Total Suspended Solids	mg/L	776	58	76	88	60	57	N/A	121	101	NA	NA	96
Aluminum	mg/L	3.46	0.71	0.7	0.6	1.7	0.56	N/A	0.46	0.79	NA	NA	0.49
Chromium (VI)	mg/L	0.004	0.001	0.001	<0.001	0.002	<0.001	N/A	<0.001	<0.001	NA	NA	<0.001
Copper	mg/L	0.016	0.002	0.002	0.001	0.002	<0.001	N/A	0.002	0.002	NA	NA	0.002
Zinc	mg/L	0.083	0.006	0.007	0.016	0.009	0.011	N/A	0.009	<0.005	NA	NA	0.009
Total Phosphorous	mg/L	0.52	0.08	0.06	0.12	0.07	0.12	N/A	0.1	0.15	NA	NA	0.23
Total Nitrogen	mg/L	3	1.1	0.9	1.5	0.9	1.1	N/A	1.2	1.9	NA	NA	2.4
Ammonia	mg/L	0.04	0.12	0.1	0.06	0.05	0.06	N/A	0.04	0.05	NA	NA	0.01

Table 12: June 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 7 (CMF)

Analyte	Sample Location	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D
	Post Rain Event	No			No			No			No		
	Unit	6/06/2023			13/06/2023			20/06/2023			27/06/2023		
pH	pH	8.1	7.39	8.06	8.27	7.79	8.38	8.26	8.11	7.93	7.78	NA	8.07
Oil/Grease	Visible/Non-Visible	Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	991	26	18	435	18	23	165	44	29.3	10.2	NA	11
Electrical Conductivity	µS/cm	7160	1150	4450	6500	1040	7200	8080	7810	7210	4470	NA	7600
Total Suspended Solids	mg/L	12	472	15	64	245	19	22	92	28	12	NA	13
Aluminum	mg/L	0.22	5.51	0.31	1.08	7.2	0.27	0.49	1.4	0.73	0.18	NA	0.12
Chromium (VI)	mg/L	<0.001	0.007	<0.001	<0.001	0.019	<0.001	<0.001	0.1	<0.001	<0.001	NA	<0.001
Copper	mg/L	0.004	0.016	0.002	0.004	0.078	0.002	0.003	0.006	0.003	0.002	NA	0.002
Zinc	mg/L	0.015	0.052	0.009	0.017	0.257	0.009	0.013	0.023	0.011	0.013	NA	0.007
Total Phosphorous	mg/L	0.1	0.3	0.09	0.18	0.51	0.09	0.1	0.21	0.06	0.05	NA	0.04
Total Nitrogen	mg/L	1.7	1.8	2.6	3	3.2	2.7	2.1	3.5	2.4	0.9	NA	0.5
Ammonia	mg/L	0.23	0.09	0.06	1.62	0.09	0.19	0.48	0.12	0.12	0.06	NA	0.07



Table 13: June 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 8 (STM)

Analyte	Sample Location	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D
	Post Rain Event	No			No			No			No		
	Unit	6/06/2023			13/06/2023			20/06/2023			27/06/2023		
pH	pH	7.08	7.57	7.61	7.27	7.77	7.82	7.94	8.02	7.95	8.03	7.89	7.79
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	40	33	39	18	15	15	29.8	37	35.2	22.2	21.8	19.7
Electrical Conductivity	µS/cm	1120	1130	1120	1240	1210	1210	1140	1250	1160	1110	1110	1130
Total Suspended Solids	mg/L	28	22	18	18	14	9	14	17	20	12	12	10
Aluminum	mg/L	0.52	0.56	0.51	0.15	0.17	0.29	0.31	0.24	0.31	0.18	0.18	0.19
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.002	0.002	0.002	<0.001	0.001	<0.001	0.001	0.001	0.001	0.002	0.002	0.001
Zinc	mg/L	0.012	0.009	0.009	0.007	0.008	<0.005	<0.005	<0.005	<0.005	0.013	<0.005	0.007
Total Phosphorous	mg/L	0.06	0.09	0.07	0.03	0.04	0.04	0.05	0.05	0.07	0.05	0.05	0.04
Total Nitrogen	mg/L	1.5	1.5	1.4	1.4	1.6	1.4	1.3	1.3	1.2	0.8	0.8	0.6
Ammonia	mg/L	0.01	0.02	0.02	0.05	0.6	0.4	0.02	0.02	0.02	0.01	<0.01	0.02

Table 14: June 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 9 (BSF)

Analyte	Sample Location	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D
	Post Rain Event	No			No			No			No		
	Unit	6/06/2023			13/06/2023			20/06/2023			27/06/2023		
pH	pH	7.94	8	8.05	7.84	7.9	7.44	8.14	8.28	8.35	7.39	7.5	7.6
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	7	9	3	0	0	0	3.5	12.1	15.7	5.8	5.1	9.7
Electrical Conductivity	µS/cm	2540	2560	2550	3780	3760	3530	4440	4290	4280	4870	4870	4810
Total Suspended Solids	mg/L	10	12	8	<5	<5	11	<5	10	32	<5	6	9
Aluminum	mg/L	0.24	0.21	0.21	0.04	0.03	0.07	0.17	0.29	0.36	0.05	0.07	0.08
Chromium (VI)	mg/L	0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.003	0.003	0.003	0.004	0.004	0.002	0.003	0.002	0.004	0.002	0.003	0.003
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	0.005	0.009	0.011	0.008
Total Phosphorous	mg/L	0.03	0.04	0.04	0.15	0.15	0.17	0.04	0.03	0.04	0.02	0.02	0.02
Total Nitrogen	mg/L	1	1.1	1	3.2	2.8	2.4	1.2	1	1	0.24	0.2	0.2
Ammonia	mg/L	0.06	0.06	0.04	0.07	0.06	0.03	0.11	0.03	0.04	0.06	0.04	0.04



Table 15: June 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 10 (AEC)

Analyte	Sample Location	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D
	Post Rain Event	No			No			No			No		
	Unit	6/06/2023			13/06/2023			20/06/2023			27/06/2023		
pH	pH	7.8	7.73	7.72	7.99	7.81	7.66	7.83	7.76	7.68	7.39	7.52	7.5
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	24	22	23	0	0	0	6.7	9.5	7.6	6.9	3.9	2.8
Electrical Conductivity	µS/cm	600	595	592	888	880	881	1030	1060	1040	1240	1240	1240
Total Suspended Solids	mg/L	10	10	11	6	6	6	<5	<5	<5	10	6	6
Aluminum	mg/L	0.65	0.86	0.72	0.03	0.07	0.49	0.37	0.25	0.34	0.18	0.17	0.17
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.005	<0.005	<0.005	0.024	0.008	0.005
Total Phosphorous	mg/L	0.04	0.04	0.05	0.02	0.02	0.03	0.03	0.02	0.02	<0.01	<0.01	<0.01
Total Nitrogen	mg/L	0.5	0.6	0.6	0.5	0.5	0.8	0.8	0.5	0.5	0.4	0.4	0.4
Ammonia	mg/L	0.02	0.03	0.03	0.02	0.03	0.25	0.06	0.05	0.04	0.07	0.06	0.06



Annexure C July Surface Water Monitoring Results

Table 16: July 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 6 (OHE)

Analyte	Sample Location	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D
	Post Rain Event	No			No			No			No		
	Unit	4/07/2023			11/07/2023			18/07/2023			25/07/2023		
pH	pH	8.11	7.96	7.81	7.65	7.65	7.69	7.89	7.84	7.83	7.83	8.01	7.75
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	23.6	331	34.2	19.3	18.8	17.4	92.4	14.7	12.7	11.3	23.7	11.4
Electrical Conductivity	µS/cm	1260	1180	1120	901	906	906	915	977	978	1060	861	1080
Total Suspended Solids	mg/L	25	152	30	23	24	19	67	12	14	12	15	10
Aluminum	mg/L	0.23	2.22	0.31	0.17	0.17	0.19	0.49	0.19	0.23	0.2	0.54	0.21
Chromium (VI)	mg/L	<0.001	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Copper	mg/L	0.002	0.008	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.006	0.001
Zinc	mg/L	0.006	0.006	0.005	0.002	0.006	0.005	0.018	0.008	0.008	<0.005	0.008	0.007
Total Phosphorous	mg/L	0.005	0.031	0.009	0.08	0.09	0.14	0.12	0.1	0.1	0.05	0.03	0.04
Total Nitrogen	mg/L	1	1.5	1	0.6	1	0.9	0.8	0.9	0.7	0.7	0.5	0.6
Ammonia	mg/L	<0.01	0.01	<0.01	<0.01	<0.01	0.01	0.05	0.02	0.02	0.06	<0.01	0.06

Table 17: July 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 7 (CMF)

Analyte	Sample Location	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D
	Post Rain Event	No			No			No			No		
	Unit	4/07/2023			11/07/2023			18/07/2023			25/07/2023		
pH	pH	8.01	7.88	8	7.79	NA	8.06	8.18	NA	8.24	8.14	NA	8.34
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	NA	Not Visible	Not Visible	NA	Not Visible	Not Visible	NA	Not Visible
Turbidity	NTU	341	770	89.8	63.7	NA	12.7	35.6	NA	21.9	12.6	NA	5.8
Electrical Conductivity	µS/cm	858	494	831	3920	NA	6610	3660	NA	3520	5340	NA	6610
Total Suspended Solids	mg/L	117	391	34	54	NA	20	37	NA	19	20	NA	26
Aluminum	mg/L	4.34	9.28	1.19	0.23	NA	0.25	0.62	NA	0.58	0.23	NA	0.11
Chromium (VI)	mg/L	0.011	0.014	0.002	<0.001	NA	<0.001	<0.001	NA	<0.001	<0.001	NA	<0.001
Copper	mg/L	0.037	0.052	0.011	0.002	NA	0.002	0.004	NA	0.004	0.002	NA	0.001
Zinc	mg/L	0.134	0.218	0.058	0.008	NA	0.008	0.024	NA	0.013	0.009	NA	0.006
Total Phosphorous	mg/L	0.24	0.37	0.1	0.15	NA	0.12	0.12	NA	0.08	0.11	NA	0.03
Total Nitrogen	mg/L	2.7	4.1	1.6	1.1	NA	2.6	1.9	NA	2.1	0.7	NA	2.2
Ammonia	mg/L	0.26	0.49	0.11	0.03	NA	0.06	0.14	NA	0.11	0.04	NA	0.07



Table 18: July 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 8 (STM)

Analyte	Sample Location	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D
	Post Rain Event	No			No			No			No		
	Unit	4/07/2023			11/07/2023			18/07/2023			25/07/2023		
pH	pH	8.11	7.96	7.81	7.65	7.65	7.69	7.89	7.84	7.83	7.83	8.01	7.75
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	23.6	331	34.2	19.3	18.8	17.4	92.4	14.7	12.7	11.3	23.7	11.4
Electrical Conductivity	µS/cm	1260	1180	1120	901	906	906	915	977	978	1060	861	1080
Total Suspended Solids	mg/L	25	152	30	23	24	19	67	12	14	12	15	10
Aluminum	mg/L	0.23	2.22	0.31	0.17	0.17	0.19	0.49	0.19	0.23	0.2	0.54	0.21
Chromium (VI)	mg/L	<0.001	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Copper	mg/L	0.002	0.008	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.006	0.001
Zinc	mg/L	0.006	0.006	0.005	0.002	0.006	0.005	0.018	0.008	0.008	<0.005	0.008	0.007
Total Phosphorous	mg/L	0.005	0.031	0.009	0.08	0.09	0.14	0.12	0.1	0.1	0.05	0.03	0.04
Total Nitrogen	mg/L	1	1.5	1	0.6	1	0.9	0.8	0.9	0.7	0.7	0.5	0.6
Ammonia	mg/L	<0.01	0.01	<0.01	<0.01	<0.01	0.01	0.05	0.02	0.02	0.06	<0.01	0.06

Table 19: July 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 9 (BSF)

Analyte	Sample Location	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D
	Post Rain Event	No			No			No			No		
	Unit	4/07/2023			11/07/2023			18/07/2023			25/07/2023		
pH	pH	7.66	7.5	7.48	8.12	8.12	8.1	7.71	7.74	7.75	8.31	8.47	7.31
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	48	43.2	44.1	4	13	25	9.9	6.1	7	4.4	4.4	7.4
Electrical Conductivity	µS/cm	5010	5010	5040	5550	5630	5500	2160	2170	2170	3300	3240	2350
Total Suspended Solids	mg/L	16	13	20	9	7	19	14	<5	8	NA*	NA*	NA*
Aluminum	mg/L	0.3	0.28	0.28	0.21	0.22	0.17	0.14	0.08	0.11	NA*	NA*	NA*
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	0.002	0.001	0.001	<0.001	<0.001	<0.001	NA*	NA*	NA*
Copper	mg/L	0.002	0.003	0.002	0.005	0.004	0.004	<0.001	<0.001	<0.001	NA*	NA*	NA*
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	NA*	NA*	NA*
Total Phosphorous	mg/L	0.04	0.04	0.02	0.08	0.06	0.23	0.1	0.06	0.08	NA*	NA*	NA*
Total Nitrogen	mg/L	1.6	0.9	0.9	0.7	0.8	1.3	1.5	1.5	1.6	NA*	NA*	NA*
Ammonia	mg/L	0.04	0.04	0.04	0.02	<0.01	0.04	0.23	0.23	0.24	NA*	NA*	NA*

* Samples were lost by courier



Table 20: July 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 10 (AEC)

Analyte	Sample Location	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D
	Post Rain Event	No			No			No			No		
	Unit	4/07/2023			11/07/2023			18/07/2023			25/07/2023		
pH	pH	7.47	7.38	7.34	8.39	8.39	8.37	7.92	7.83	7.78	8.45	8.36	8.42
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	15.7	20.6	21.7	2	5	5	5.8	6.4	81.2	10.9	4.2	12.4
Electrical Conductivity	µS/cm	1370	1380	1400	1630	1630	1660	1750	1870	2010	2180	2190	2170
Total Suspended Solids	mg/L	20	70	14	7	8	10	7	8	108	No Data	No Data	No Data
Aluminum	mg/L	0.28	0.09	0.19	0.08	0.09	0.11	0.05	0.08	1.34	No Data	No Data	No Data
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	No Data	No Data	No Data
Copper	mg/L	0.003	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	No Data	No Data	No Data
Zinc	mg/L	<0.005	0.006	0.022	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	No Data	No Data	No Data
Total Phosphorous	mg/L	0.02	0.02	0.03	0.04	0.04	0.05	0.05	0.12	0.06	No Data	No Data	No Data
Total Nitrogen	mg/L	0.9	0.6	0.7	0.6	0.6	0.6	0.5	0.6	0.5	No Data	No Data	No Data
Ammonia	mg/L	0.04	0.23	0.22	0.18	0.15	0.12	0.25	0.22	0.09	No Data	No Data	No Data



Annexure D August Surface Water Monitoring Results

Table 21: August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 6 (OHE)

Analyte	Sample Location	SBT-6U	SBT-6A	SBT-6D	SBT-6U	SBT-6A	SBT-6D
	Post Rain Event	No			No		
	Unit	1/07/2023			8/07/2023		
pH	pH	NA	8.16	7.84	NA	7.41	7.67
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	NA	Not Visible	Not Visible
Turbidity	NTU	NA	80.1	15.7	NA	43.4	77.3
Electrical Conductivity	µS/cm	NA	1380	1040	NA	1050	1120
Total Suspended Solids	mg/L	NA	42	77	NA	29	46
Aluminum	mg/L	NA	0.36	0.63	NA	0.55	1
Chromium (VI)	mg/L	NA	0.05	0.06	NA	<0.001	<0.001
Copper	mg/L	NA	0.006	0.005	NA	<0.001	<0.001
Zinc	mg/L	NA	0.009	0.01	NA	0.01	<0.005
Total Phosphorous	mg/L	NA	0.18	0.16	NA	0.14	0.19
Total Nitrogen	mg/L	NA	1.4	1.4	NA	1.2	1.4
Ammonia	mg/L	NA	0.2	0.2	NA	0.25	0.08

Table 22: August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 7 (CMF)

Analyte	Sample Location	SBT-7U	SBT-7A	SBT-7D	SBT-7U	SBT-7A	SBT-7D
	Post Rain Event	No			No		
	Unit	1/07/2023			8/07/2023		
pH	pH	8.28	8.29	8.21	8.04	7.63	7.85
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	6.5	4.3	18.8	334	223	19.8
Electrical Conductivity	µS/cm	6610	6480	6360	2400	694	1710
Total Suspended Solids	mg/L	12	8	17	13	3030	81
Aluminum	mg/L	0.14	0.31	0.48	0.5	4.75	1.12
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.002	0.002	0.002	0.002	0.111	0.007
Zinc	mg/L	0.007	<0.005	0.007	0.019	0.261	0.047
Total Phosphorous	mg/L	0.1	0.14	0.09	0.1	1.29	0.14
Total Nitrogen	mg/L	2.3	2.6	2.6	2.2	6.5	2
Ammonia	mg/L	0.16	0.12	0.11	0.11	0.26	0.1



Table 23: August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 8 (STM)

Analyte	Sample Location	SBT-8U	SBT-8A	SBT-8D	SBT-8U	SBT-8A	SBT-8D
	Post Rain Event	No			No		
	Unit	1/07/2023			8/07/2023		
pH	pH	7.59	7.57	7.63	7.66	7.66	7.64
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	12.2	12.3	10.7	24.9	20.9	19.8
Electrical Conductivity	µS/cm	1120	1130	1120	1240	1250	1280
Total Suspended Solids	mg/L	9	9	7	22	78	19
Aluminum	mg/L	0.28	0.25	0.28	0.16	0.83	0.28
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	0.001
Zinc	mg/L	0.016	0.011	0.011	<0.005	0.027	0.026
Total Phosphorous	mg/L	0.05	0.07	0.05	0.13	0.18	0.12
Total Nitrogen	mg/L	0.8	0.9	0.9	1.2	1.6	1.4
Ammonia	mg/L	0.06	0.03	0.04	0.03	0.04	0.04

Table 24: August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 9 (BSF)

Analyte	Sample Location	SBT-9U	SBT-9A	SBT-9D	SBT-9U	SBT-9A	SBT-9D
	Post Rain Event	No			No		
	Unit	1/07/2023			8/07/2023		
pH	pH	7.86	7.86	7.89	7.88	7.85	7.9
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	8.9	17.4	15.3	17.9	73.6	20.4
Electrical Conductivity	µS/cm	3450	3410	3410	4190	4190	4120
Total Suspended Solids	mg/L	8	19	13	18	66	11
Aluminum	mg/L	0.22	0.34	0.21	0.24	0.71	0.19
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphorous	mg/L	0.05	0.06	0.08	0.1	0.11	0.08
Total Nitrogen	mg/L	0.9	1	1.1	1.3	1.2	1
Ammonia	mg/L	0.02	0.03	0.02	0.03	0.02	0.01



Table 25: August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 10 (AEC)

Analyte	Sample Location	SBT-10U	SBT-10A	SBT-10D	SBT-10U	SBT-10A	SBT-10D
	Post Rain Event	No			No		
	Unit	1/07/2023			8/07/2023		
pH	pH	7.65	7.64	7.75	7.66	7.71	7.78
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	4.7	4.8	3.3	8.8	13.6	9
Electrical Conductivity	µS/cm	2930	3150	3030	4550	4610	4590
Total Suspended Solids	mg/L	6	5	<5	13	<5	11
Aluminum	mg/L	0.1	0.14	0.1	0.08	0.06	0.14
Chromium (VI)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.004
Zinc	mg/L	<0.005	<0.005	0.008	<0.005	<0.005	<0.005
Total Phosphorous	mg/L	0.04	0.04	0.03	0.06	0.08	0.08
Total Nitrogen	mg/L	0.6	0.6	0.6	0.8	0.8	1.2
Ammonia	mg/L	0.12	0.09	0.1	0.12	0.12	0.19



Annexure E October Surface Water Monitoring Results

Table 26: October 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 6 (OHE)

Analyte	Sample Location	SBT-6U	SBT-6A	SBT-6D
	Post Rain Event	No		
	Unit	18/10/2023		
pH	pH	NA	NA	7.69
Oil/Grease	Visible/Non-Visible	NA	NA	Not Visible
Turbidity	NTU	NA	NA	53.7
Electrical Conductivity	µS/cm	NA	NA	1220
Total Suspended Solids	mg/L	NA	NA	50
Aluminum	mg/L	NA	NA	0.23
Chromium (VI)	mg/L	NA	NA	<0.001
Copper	mg/L	NA	NA	<0.001
Zinc	mg/L	NA	NA	<0.005
Total Phosphorous	mg/L	NA	NA	0.16
Total Nitrogen	mg/L	NA	NA	1.3
Ammonia	mg/L	NA	NA	7.69

Table 27: October 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 7 (CMF)

Analyte	Sample Location	SBT-7U	SBT-7A	SBT-7D
	Post Rain Event	No		
	Unit	18/10/2023		
pH	pH	8.24	7.93	7.91
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	28.1	67.7	7.2
Electrical Conductivity	µS/cm	3990	582	614
Total Suspended Solids	mg/L	60	180	7
Aluminum	mg/L	0.36	0.66	0.2
Chromium (VI)	mg/L	<0.001	<0.001	<0.001
Copper	mg/L	0.009	0.006	0.001
Zinc	mg/L	0.045	0.057	0.011
Total Phosphorous	mg/L	0.17	0.26	0.04
Total Nitrogen	mg/L	4.4	2.1	0.8
Ammonia	mg/L	0.64	0.07	0.06



Table 28: October 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 8 (STM)

Analyte	Sample Location	SBT-8U	SBT-8A	SBT-8D
	Post Rain Event	No		
	Unit	18/10/2023		
pH	pH	7.85	7.9	7.89
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	9.4	8.2	8.8
Electrical Conductivity	µS/cm	845	864	3040
Total Suspended Solids	mg/L	<5	<5	<5
Aluminum	mg/L	0.2	0.1	0.53
Chromium (VI)	mg/L	<0.001	<0.001	<0.001
Copper	mg/L	<0.001	<0.001	<0.001
Zinc	mg/L	0.007	<0.005	<0.005
Total Phosphorous	mg/L	0.07	0.07	0.2
Total Nitrogen	mg/L	0.7	0.6	1.4
Ammonia	mg/L	0.14	0.12	0.12

Table 29: October 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 9 (BSF)

Analyte	Sample Location	SBT-9U	SBT-9A	SBT-9D
	Post Rain Event	No		
	Unit	18/10/2023		
pH	pH	7.85	NA	NA
Oil/Grease	Visible/Non-Visible	Not Visible	NA	NA
Turbidity	NTU	47.6	NA	NA
Electrical Conductivity	µS/cm	3040	NA	NA
Total Suspended Solids	mg/L	36	NA	NA
Aluminum	mg/L	0.53	NA	NA
Chromium (VI)	mg/L	<0.001	NA	NA
Copper	mg/L	0.002	NA	NA
Zinc	mg/L	<0.005	NA	NA
Total Phosphorous	mg/L	0.2	NA	NA
Total Nitrogen	mg/L	1.4	NA	NA
Ammonia	mg/L	0.03	NA	NA



Table 30: October 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 10 (AEC)

Analyte	Sample Location	SBT-10U	SBT-10A	SBT-10D
	Post Rain Event	No		
	Unit	18/10/2023		
pH	pH	7.79	8.03	7.95
Oil/Grease	Visible/Non-Visible	Not Visible	Not Visible	Not Visible
Turbidity	NTU	3.7	5.9	9
Electrical Conductivity	µS/cm	4400	4420	4630
Total Suspended Solids	mg/L	8	9	8
Aluminum	mg/L	0.07	0.04	0.02
Chromium (VI)	mg/L	<0.001	<0.001	<0.001
Copper	mg/L	<0.001	<0.001	0.007
Zinc	mg/L	0.006	<0.005	<0.005
Total Phosphorous	mg/L	0.03	0.03	0.04
Total Nitrogen	mg/L	3.2	0.6	0.6
Ammonia	mg/L	<0.01	<0.01	0.11



Annexure F Average Surface Water Monitoring Report

Table 31 Average May to August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 6 (OHE)

Average				
Analyte	SBT-6U	SBT-6A	SBT-6D	EPL Limit
pH	7.6	7.7	7.8	
Oil/grease	Not Visible	Not Visible	Not Visible	
Turbidity	197.5	124.8	120.5	
Electrical Conductivity	892.9	1036.1	1064.9	7000
Total Suspended Solids	128.0	55.5	63.1	50
Aluminium	1.25	1.01	1.04	0.08
Chromium (VI)	0.003	0.010	0.011	0.001
Copper	0.0045	0.0032	0.0032	0.0014
Zinc	0.029	0.011	0.013	0.015
Total Phosphorous	0.15	0.11	0.13	0.14
Total Nitrogen	1.33	1.15	1.40	1.72
Ammonia	0.1	0.1	0.1	0.9

Table 32: Average June to August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 7 (CMF)

Average				
Analyte	SBT-7U	SBT-7A	SBT-7D	EPL Limit
pH	7.4	7.3	7.4	
Oil/grease	Not Visible	Not Visible	Not Visible	
Turbidity	181.3	125.2	37.5	
Electrical Conductivity	4232.5	2022.2	4371.1	8000
Total Suspended Solids	36.8	398.8	32.8	50
Aluminium	0.73	2.77	0.68	0.08
Chromium (VI)	0.005	0.018	0.002	0.001
Copper	0.0050	0.0237	0.0034	0.0014
Zinc	0.078	0.104	0.015	0.015
Total Phosphorous	0.10	0.26	0.08	0.14
Total Nitrogen	1.51	2.22	1.88	1.72
Ammonia	0.2	0.1	0.1	0.9



Table 33: Average June to August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 8 (STM)

Average					
Analyte	SBT-8U	SBT-8A	SBT-8D	EPL Limit	
pH	7.5	7.6	7.6		
Oil/grease	Not Visible	Not Visible	Not Visible		
Turbidity	56.3	73.9	48.4	EPL Limit	
Electrical Conductivity	1129.5	1134.3	1044.8		12500
Total Suspended Solids	24.6	34.5	15.5		50
Aluminium	0.38	0.56	0.33		0.08
Chromium (VI)	0.001	0.005	0.005		0.006
Copper	0.0020	0.0029	0.0017		0.002
Zinc	0.010	0.013	0.009		0.015
Total Phosphorous	0.07	0.07	0.08		0.14
Total Nitrogen	1.05	1.23	1.12		1.72
Ammonia	0.0	0.1	0.1		0.9

Table 34: Average June to August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 9 (BSF)

Average					
Analyte	SBT-9U	SBT-9A	SBT-9D	EPL Limit	
pH	7.7	7.8	7.7		
Oil/grease	Not Visible	Not Visible	Not Visible		
Turbidity	55.7	64.4	57.4	EPL Limit	
Electrical Conductivity	3181.6	3256.1	3174.1		13250
Total Suspended Solids	29.6	40.4	25.3		50
Aluminium	0.91	1.36	0.95		0.08
Chromium (VI)	0.002	0.002	0.002		0.001
Copper	0.0044	0.0048	0.0043		0.002
Zinc	0.014	0.017	0.010		0.015
Total Phosphorous	0.08	0.07	0.09		0.14
Total Nitrogen	1.54	1.37	1.35		1.72
Ammonia	0.1	0.1	0.1		0.9



Table 35: Average June to August 2023 Surface Water Monitoring Results at Receiving Waterways at SBT 10 (AEC)

Average				
Analyte	SBT-10U	SBT-10A	SBT-10D	EPL Limit
pH	7.8	7.8	7.8	
Oil/grease	Not Visible	Not Visible	Not Visible	
Turbidity	25.6	9.0	16.6	
Electrical Conductivity	1524.1	1860.5	1861.3	7750
Total Suspended Solids	13.9	18.5	22.5	50
Aluminium	0.44	0.44	0.59	0.08
Chromium (VI)	0.001	0.000	0.000	0.001
Copper	0.0017	0.0016	0.0021	0.0014
Zinc	0.008	0.006	0.008	0.015
Total Phosphorous	0.05	0.05	0.05	0.14
Total Nitrogen	0.80	0.78	0.80	1.72
Ammonia	0.1	0.1	0.1	0.9



Annexure G Surface Water Monitoring Locations

Figure 2: Sampling Location SBT-6



Figure 3: Sampling Location SBT-7

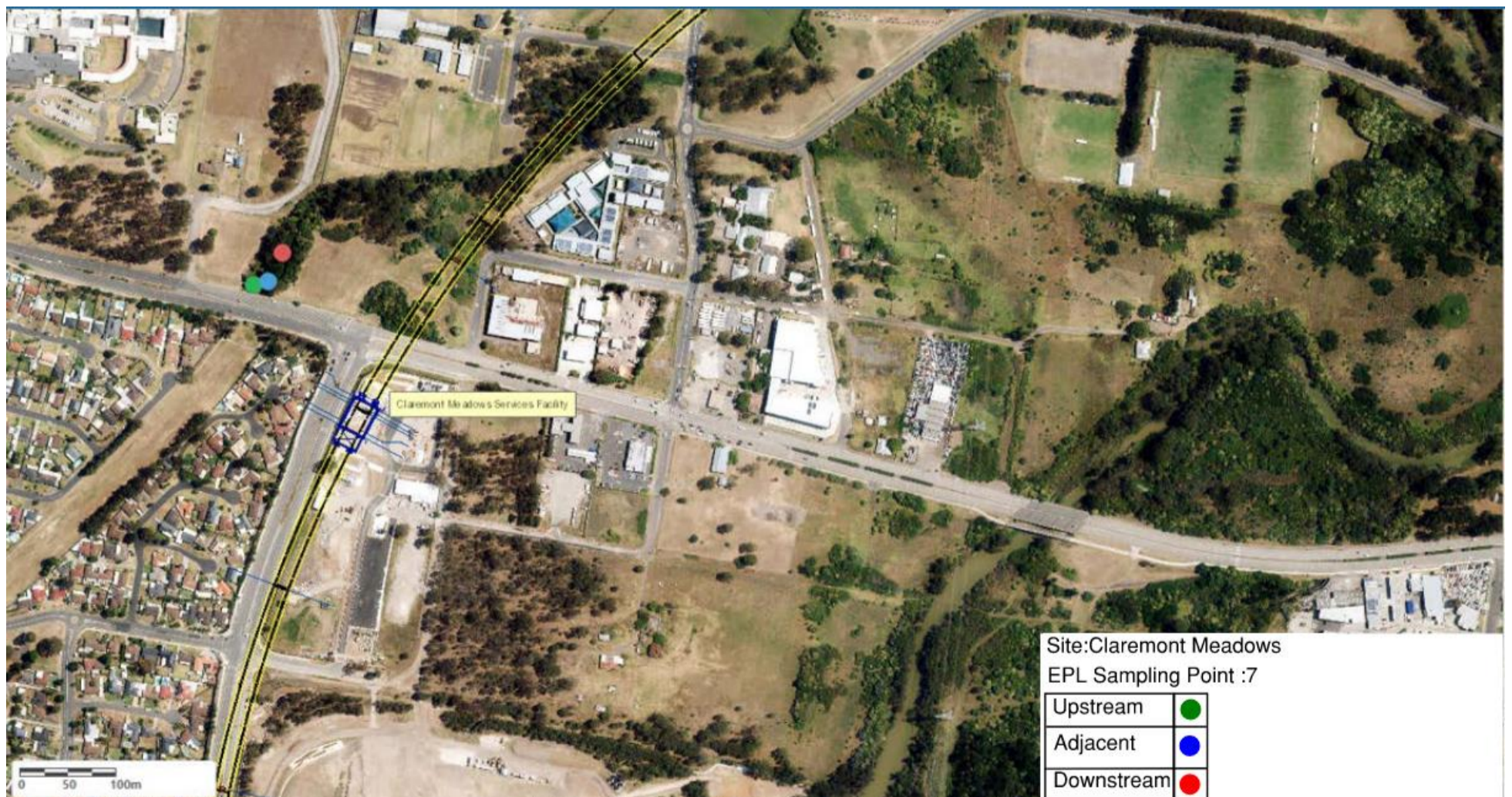


Figure 4: Sampling Location SBT-8



Figure 5: Sampling Location SBT-9

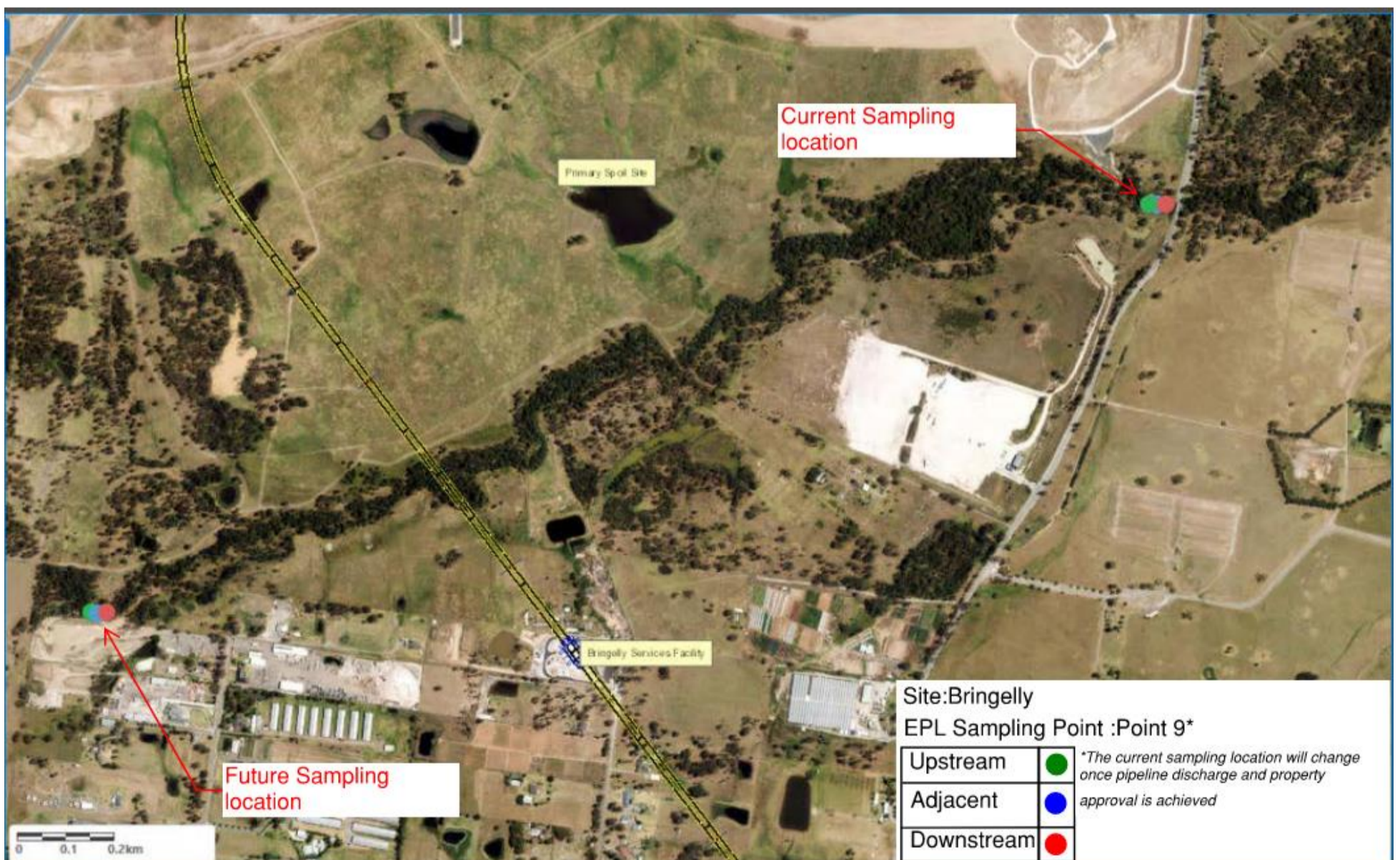


Figure 6: Sampling Location SBT-10

