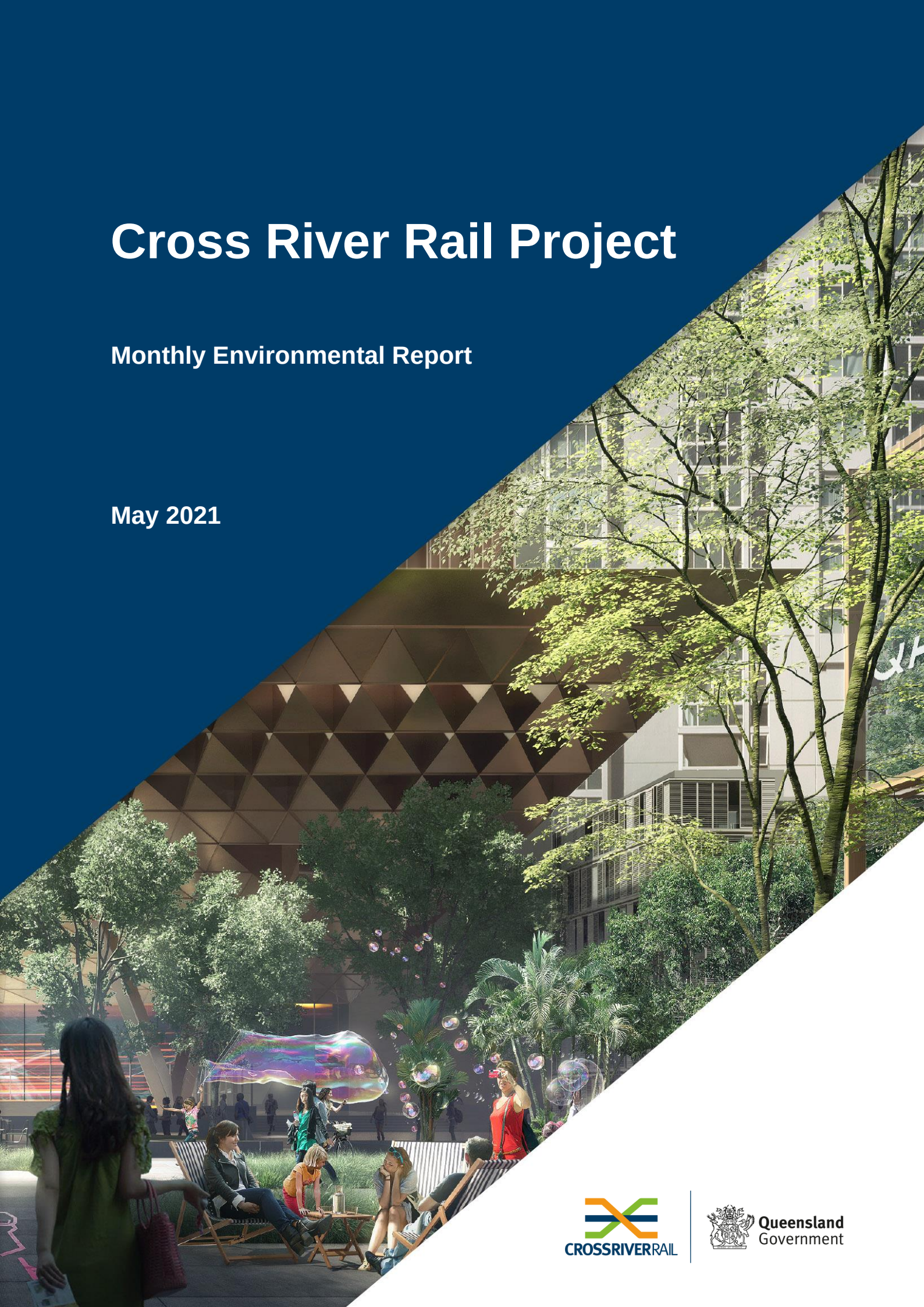
Cross River Rail Project

Monthly Environmental Report

May 2021



CROSSRIVERRAIL

Queensland Government

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Executive Summary

This Monthly Environmental Report (MER) has been produced for Project Works undertaken on site for May 2021 for the Rail, Integration and Systems (RIS), and Tunnel, Stations and Development (TSD) packages. The report addresses the obligations outlined in the Coordinator-General's change report – *Coordinator-General's change report – no. 9 (April 2021)* and the individual contractor's Construction Environmental Management Plans (CEMPs) which have been developed generally in accordance with the Project's Outline Environmental Management Plan (OEMP). The Cross River Rail Delivery Authority (Delivery Authority), as the Proponent of the Cross River Rail Project, is required to submit a monthly report to the Coordinator-General to demonstrate compliance with the imposed conditions.

Section 1 of this report provides a background to the project and the Coordinator-General's conditions. Section 2 provides a review of the contractor's reports contained in **Appendix A** (RIS Monthly Report) and **Appendix B** (TSD Monthly Report).

The Environmental Monitor (EM) has reviewed and endorsed this MER. This endorsement follows ongoing and new document reviews, and surveillance across the relevant project worksites.

The CEMPs prepared by both Unity Alliance (RIS Contractor) and CBGU JV on behalf of Pulse (TSD Contractor) for their Relevant Project Works were endorsed by the EM and submitted to the Coordinator-General in accordance with Condition 4 (a) and 4 (b) respectively.

The table below presents a summary of compliance status against each condition with a short comment against each:

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
1.	**General conditions** – compliance with the Project Changes relevant to the contractor's scope	Yes	The CEMP and site management plans are in accordance with the Project Changes.
2.	**Outline Environmental Management Plan** – timely submission to the Coordinator-General including required sub-plans	Yes	OEMP dated June 2020 is effective for the reporting period.
3.	**Design** – achievement of the Environmental Design Requirements	NA	Ongoing progress with design packages.
4.	**Construction Environmental Management Plan** – all relating to Relevant Project Works.	Yes	RIS – CEMP Revision 10 covering full scope of RIS works is effective from 29 April 2021. TSD – CEMP Revision 7 covering full scope of TSD works is effective from 5 July 2020.
5.	**Compliance and Incident management** – Non-compliance events, notifications and reporting.	Yes	There were no non-compliance events (NCEs) raised in May 2021. Refer to Section 2.5 of this report.

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
6.	**Reporting** – Monthly and Annual reporting.	Yes	This MER including RIS and TSD Monthly Reports have been submitted in accordance with the conditioned requirements. Refer to **Appendix A** and **Appendix B**.
7.	**Environmental Monitor (EM)** – engaged and functions resumed.	Yes	Ongoing weekly site inspections and document reviews continue to take place.
8.	**Community Relations Monitor (CRM)** – engaged and functions resumed	Yes	Ongoing.
9.	**Community Engagement Plan** – developed and endorsed by Environmental Monitor.	Yes	CEMPs endorsed with Community Engagement Plan.
10.	**Hours of work** – Project Works undertaken during approved hours.	Yes	Project Works have been undertaken in accordance with project requirements. This has been achieved through Standard working hours, Extended work hours and Managed Work.
11.	**Noise** – Project Works must aim to achieve internal noise goals for human health and well-being.	Yes	Noise monitoring following predictive modelling met project noise requirements at Sensitive Places. RIS – Refer to **Appendix A (Table 4** and **Section 3.1.4.1)**. TSD – Refer to **Appendix B (Table 3)**.
	Vibration – Project Works must aim to achieve vibration goals for cosmetic damage, human comfort and sensitive building contents.	Yes	RIS - Vibration monitoring following predictive vibration assessments for construction activities met project vibration requirements at Sensitive Places. Refer to **Appendix A (Table 5** and **Section 3.1.4.2)**. TSD – Vibration monitoring was undertaken to validate predicted vibration assessments and in response to vibration related complaints. The TSD contractor confirmed the monitoring results met project requirements. Refer to **Appendix B (Table 2)**.
12.	**Property damage** – relating to ground movement.	Yes	RIS – Predictive vibration modelling has been undertaken for Relevant Project Works and Property Damage Sub-plans have been developed and implemented. Pre-condition surveys have been completed at heritage, commercial and

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
			residential buildings at RNA, Northern Corridor and Fairfield to Salisbury stations. TSD – Vibration modelling has been prepared and is ongoing. Where required, building condition survey reports are completed for heritage and residential buildings.
13.	**Air quality** – Works must aim to achieve air quality goals for human health and nuisance.	Yes	Project Works met air quality goals. RIS – Refer to **Appendix A (Table 7**, and **Figures 1, 2 and 3)**. TSD – Refer to **Appendix B (Table 4** and **Table 5)**.
14.	**Traffic and transport** – Works must minimise adverse impacts on road safety and traffic flow.	Yes	Traffic Management Plans covered in the CEMPs and Sub-plans for all active worksites have been reviewed by the EM and implemented on site.
15.	**Water quality** – Works must not discharge groundwater from the construction site above the relevant environmental values and water quality objectives. Monitor and report on water quality in accordance with CEMP and Sub-plans.	Yes	Monitoring and reporting on groundwater and surface water quality was undertaken in accordance with RIS and TSD Water Quality Management Plans. RIS – No groundwater discharges occurred for the month. Post-rainfall monitoring was triggered at Mayne Yard and Clapham Yard. Surface water monitoring results for Breakfast Creek, Moolabin Creek and confirmed off-site discharges met project discharge criteria. There was an exceedance of the discharge criteria for total suspended solids with a result of 50mg/L at Rocky Water Holes Creek. An investigation determined the exceedance not to be related to Project Works. Refer to **Appendix A, Table 10** for post-rainfall monitoring results and **Section 3.3.5** for details of the investigation. TSD – Three groundwater discharges from Roma Street, Albert Street and Woolloongabba worksites were inconsistent with water quality objectives however consistent with pre-construction water quality levels. No external influences were introduced by the construction activities. Refer to **Appendix B (Table 6)** for ground water monitoring results. Refer to **Appendix B (Table 7** and **Table 8)** for surface water monitoring results.

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
16.	**Water resources** – Evaluate potential impact, plan works, implement controls and monitor inflow of groundwater associated with drawdown.	Yes	RIS – There will be no sustained groundwater extraction involved in the RIS scope of works so predictive modelling of groundwater drawdown is not required. Collection of hydrological data to model potential inflow rates into excavations during construction has been undertaken. TSD – Inflow of groundwater into the worksites is being continously monitored to validate the predictive modelling.
17.	**Surface water** – Must be designed to avoid inundation from stormwater due to a 2-year (6hr) ARI rainfall event and flood waters due to a 5-year ARI rainfall event and constructed to avoid afflux or cause the redirection of uncontrolled surface water flows, including stormwater flows, outside of worksites.	Yes	Contractors continue to consider this condition in their site planning and design.
18.	**Erosion and sediment control** – Provisions for erosion and sediment control must be consistent with the Guidelines for Best Practice Erosion and Sediment Control (International Erosion Control Association, 2008) and the Department of Transport and Main Roads' Technical Standard MRTS52.	Yes	Site specific ESC plans for all active work sites have been reviewed by the EM and implemented on site.
19.	**Acid sulfate soils** – managed as per the Queensland Acid Sulfate Soil Technical Manual.	Yes	Acid Sulfate Soil Management Plans have been prepared and implemented for all active worksites.
20.	**Landscape and open space** – general requirement to minimise impacts on landscapes and open space values and specific requirements around Victoria Park.	Yes	Extraction of TBMs from the Northern Portal requires minor modification to an existing temporary access road through Victoria Park. Consideration is being taken to minimise loss of trees and area of park impacted during these temporary works. Heritage Exemption Certificate is being sought from the Department of Environment and Science (DES) for these works, with approval expected in June 2021.
21.	**Worksite rehabilitation** – worksites rehabilitated as soon as practicable upon completion of works or	NA	N/A

Imposed Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
	commissioning, and in consultation with Brisbane City Council.		

Non-Compliance Events

There were no NCEs raised in May 2021.

Definitions

Acronym	Definition
ARI	Average Recurrence Interval - The average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration.
CEMP	Construction Environmental Management Plan
CGCR	Coordinator-General's Change Report
CRM	The Community Relations Monitor engaged in accordance with Imposed Condition 8
Contractor	The contractors appointed to design, construct and commission the Project
Coordinator-General	The corporation sole preserved, continued and constituted under section 8 of the SDPWO Act.
CRR	Cross River Rail
DES	Department of Environment and Science
EIS	Environmental Impact Statement
EM	The Environmental Monitor engaged in accordance with Imposed Condition 7
ESC	Erosion and sediment control
IECA	International Erosion Control Association
Imposed condition/s	A condition/s imposed by the Coordinator-General under section 54B of the SDPWO Act for the Project
MER	Monthly Environment Report
MRTS52	Transport and Main Roads Specifications MRTS52 Erosion and Sediment Control
NCE	Non-Compliance Event
OEMP	Outline Environmental Management Plan
Project	The Cross River Rail Project
Project Works	As defined in the Imposed Conditions
Proponent	The Cross River Rail Delivery Authority
RfPC	Request for Project Change
RIS	Rail, Integration and Systems
SDPWO Act	*State Development and Public Works Organisation Act 1971*
Sub-plan	Any sub-plan of the CEMP
The Delivery Authority	The Cross River Rail Delivery Authority
TSD	Tunnel, Stations and Development

1. Introduction

1.1. Background

The Cross River Rail Project (the Project) is a declared coordinated project under the *State Development and Public Works Organisation Act 1971* (SDPWO Act). The CRR Environmental Impact Statement (EIS) was evaluated by the Coordinator-General who recommended the Project proceed, subject to Imposed Conditions and recommendations. Since the evaluation of the EIS, several Requests for Project Change (RfPC) submissions have been evaluated by the Coordinator-General. RfPC 9 is applicable for the works that took place in May 2021.

The Coordinator-General has imposed conditions on the Project that apply throughout the design, construction and commissioning phases. These are referred to as the Imposed Conditions. In addition, the Coordinator-General has approved the Project's OEMP which outlines the environmental management framework for the Project. The OEMP includes environmental outcomes and performance criteria which must be achieved for the Project.

Imposed Conditions 5 and 6 nominate the compliance and reporting requirements for the Project. This monthly report addresses these requirements.

1.2. Project Delivery

The Delivery Authority is responsible for planning and delivering the Project. The Project established environmental management plans and secured some of the secondary environmental approvals in addition to enabling works.

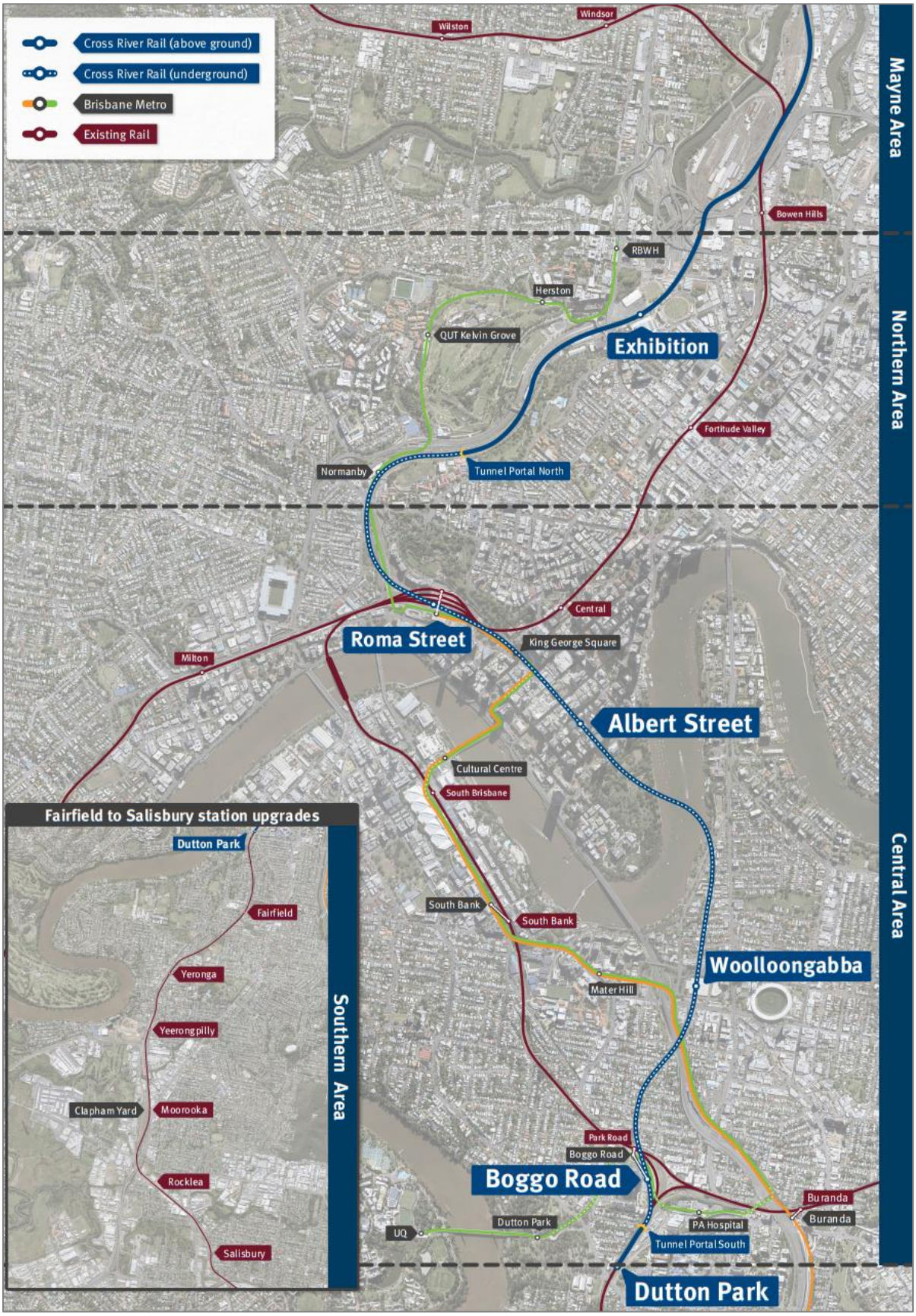
The two main delivery packages which require reporting under the Coordinator-General's imposed conditions are:

- Tunnel, Stations and Development (TSD) being delivered by CBGU JV; and
- Rail, Integration and Systems (RIS) being delivered by Unity Alliance.

The Project is geographically divided into four areas:

- Mayne Area;
- Northern Area;
- Central Area; and
- Southern Area.

These are shown in the figure over.


Cross River Rail (above ground)
Cross River Rail (underground)
Brisbane Metro
Existing Rail
Mayne Area
Northern Area
Central Area
Southern Area
Windsor
Wilston
Bowen Hills
RBWH
Herston
QUT Kelvin Grove
Exhibition
Fortitude Valley
Normanby
Tunnel Portal North
Central
Roma Street
King George Square
Milton
Albert Street
Cultural Centre
South Brisbane
South Bank
South Bank
Woolloongabba
Mater Hill
Park Road
Boggo Road
Boggo Road
Buranda
Buranda
PA Hospital
Dutton Park
UQ
Tunnel Portal South
Dutton Park
Fairfield to Salisbury station upgrades
Dutton Park
Fairfield
Yeronga
Yeerongpilly
Clapham Yard
Moorooka
Rocklea
Salisbury

1.3. Reporting Framework

This MER has been prepared to comply with Imposed Conditions 6 and 7 of the Coordinator-General Change Report (CGCR) and includes:

- monitoring data and associated interpretation of the results required by the imposed conditions and Construction Environmental Management Plan (CEMP);
- details of any NCE's, including incidents, corrective actions and preventative actions; and
- details of any complaints, including description, responses, and corrective actions.

Reporting on environmental elements captured in each monthly environmental report will be reviewed and endorsed by the EM.

1.4. Monthly Environment Report Endorsement

This MER has been endorsed by the EM and the endorsement provided to the Coordinator-General.

2. Compliance Review

This MER has been reviewed and endorsed by the EM as per Imposed Condition 7 of the CGCR.

2.1. Relevant Project Works

The following Project Works were undertaken in May 2021:

Area	Project Works
Mayne Area	• **Mayne Yard North** – stabling yard fence installation; drainage works; signal relocation; combined services routes (CSR); bridge BR11/13 piling; ground improvement piling for reinforced soil structure walls; retaining wall RC14 (Ferny Grove Flyover) pier protection piling; form reo pour commenced; clearing of mangroves completed for Breakfast Creek Bridge construction and commencement of OHLE foundations.
Northern Area	• **Northern Corridor** – Rock excavation for western corridor widening; water main relocation (Stage 1) completed; billboard foundation removals completed; rock excavation for feeder station; retaining wall RW270; piling on Bowen Bridge pier protection (RC22/23) and drainage works. • **RNA** – bridge BR43 (western viaduct) piling completed; BR43 FRP on pile caps and blade walls commenced; electrical conduit and pit scope through RNA (West) completed; retaining wall RW210 and remove and replace (earthworks). • **Northern Portal** – permanent piling, excavation and sewer main relocation ongoing; permanent capping beam continues; completed piles; temporary retention is nearing completion with excavation down to permanent pile cut off for 91% of the structure.
Central Area	• **Roma Street** – cavern bench blasting and excavation ongoing; services building adit excavation ongoing; services building excavation and ground retention continues; station building excavation and retention works in progress; and Inner Northern Busway (INB) underpinning continues.
	• **Albert Street** – - Lot 1 – station box excavation continues; 'row 2' props fabricated and ready for install; drilling prep works for blasting activities commenced and blasting to commence in June.

Area	Project Works
	- Lot 2 – installation of passive lining in south completed and north continues, adit excavation towards Lot 1 completed, and cavern heading excavation towards the north continues. - Lot 3 – capping beam pours completed, excavation has commenced, and preparation works for tower crane installation underway.
	• **Woolloongabba** – continuous slab pouring occurring and B7 soffit commenced within the station box; and southern cavern waterproofing and lining ongoing; - TBM #1 (Else) continued mined tunnelling and segment installation works completing 871 rings by the end of May; - TBM #2 (Merle) continued mined tunnelling and segment installation works completing 650 rings by the end of May; - Roadheader Downline excavation continued with 282m excavated by the end of May; and - Roadheader Upline excavation continued with 306m excavated by the end of May.
	• **Boggo Road** – station box excavation nearing completion; tunnel excavation continues beneath Park Road station with 54m excavated at the end of May; concrete pumping infrastructure installation at Kent Street commenced; ongoing slab pours; and reinforcing placement in southern wall commenced.
	• **Southern Portal** – continued site establishment works including commissioning of water, sewer, IT comms and fire water; piling works ongoing with 82% of greenfield piling works complete; continued construction of access shafts for the sewer and stormwater micro tunnelling relocations; completed installation of stormwater along Kent Street bikeway boundary; continued OHLE brownfield relocations; and continued construction of new signaling, communications and power infrastructure within the triangle with inground service pits installed.
Southern Area	• **Dutton Park** – continued installation of CSR during SCAS with new ground surface troughing in the Dutton Park Area; commencement of services investigations for Dutton Park Station modifications and pier protection during SCAS. • **Yeronga Station** – demolition of Platform 1 retaining wall complete including ramps, landscaping features, fencing etc. • **Clapham Yard** – ground surface treatment (remove and replace) for yard embankment; contaminated land and acid sulfate soil investigations; and demolition of facilities has commenced.

2.2. Key Environmental Elements

2.2.1. Noise

The Coordinator-General's conditions establish a framework for managing the impacts of noise. The Imposed Conditions do not establish noise limits. Compliance with the Imposed Conditions noise requirements involves demonstrating the implementation of the endorsed CEMP and associated Noise and Vibration Management Plan. This establishes the management measures to be applied which aims to achieve the identified noise goals as far as reasonably practicable. The CEMP also includes requirements for the provision of the required community notifications of upcoming work, potential impacts, and how the project team can be contacted in relation to any potential impacts. For Project Works where potential noise impacts are modelled to be above the noise goal but below the noise goal plus 20dBA, this work is authorised where the endorsed CEMP and associated Noise and Vibration Management Plan is being implemented, including communicating construction activities to potential and actual Directly Affected Persons (DAPs). For Project Works where potential noise impacts are

predicted to be more than 20dBA above the relevant noise goal, specific engagement is required with DAPs for these works.

Where internal monitoring was not possible, contractors have undertaken external monitoring at nominated locations. To determine compliance with the project's noise requirements and to calibrate modelled predictions the project applies recommended façade attenuation corrections, which consider receiver property type.

In the Northern Area, noise monitoring was undertaken to validate predictive modelling at sensitive places during piling, excavation and ground stabilisation works at the Northern Portal during standard hours. Noise levels met project requirements. Noise monitoring in response to noise complaints was undertaken and the monitoring results demonstrated compliance with the project noise goals. Monitoring results for the Northern Area are detailed in Table 3, **Appendix B**.

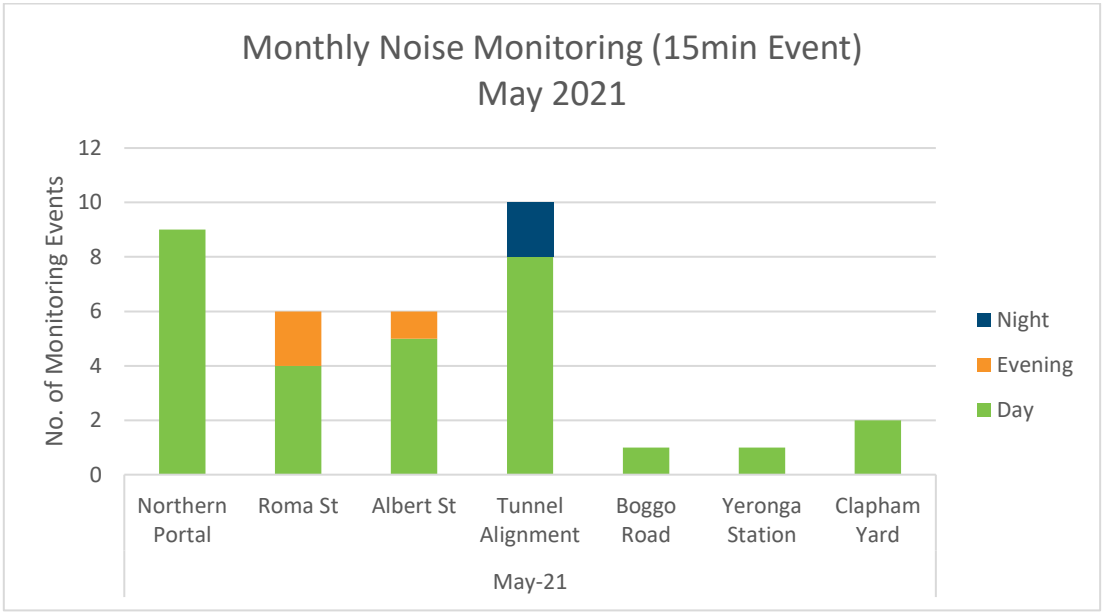
In the Central Area, noise monitoring was undertaken to validate predictive modelling at sensitive places close to the project worksites and in response to noise complaints. Monitoring results for the Central Area are detailed in Table 3, **Appendix B**. The TSD contractors reported that the project noise requirements have been met during this reporting month.

In the Southern Area, noise monitoring was undertaken to validate predictive modelling at Sensitive Places during demolition of buildings at Clapham Yard during Standard hours and Platform 1 Station demolition at Yeronga Station during Standard and Non-Standard hours. Noise levels met project requirements. Noise monitoring in response to complaints was not triggered. Monitoring results for the Southern Area are detailed in Table 4, **Appendix A**.

Examples of noise management measures on the sites include:

- using plant and equipment separately adjacent to sensitive receptors;
- purpose built noise barriers on the sites or site boundary;
- change in plant type, such as at Boggo Road/Southern area where an almost silent sheet-piling machine had been sourced in place of one with a much higher sound power level;
- acoustic spoil sheds;
- positioning of equipment on site to maximise the effects of the site layout and barriers such as the spoil shed itself or other workshops; and
- noise blankets, such as those applied on the Woolloongabba site to further mitigate noise from tonal plant and equipment.

A summary of noise monitoring events for the month is provided in the chart below.



2.2.2. Vibration

Vibration monitoring in the Mayne Area and Northern Area was not triggered.

In the Central Area, vibration monitoring took place to validate predictive modelling for tunnelling, piling, excavation and controlled blasting activities at Roma Street and in Woolloongabba along the tunnel alignment. Two complaints relating to vibration were received from tunnelling works occurring along the tunnel alignment between the Woolloongabba and the Boggo Road sites. The contractor reported results met the project's nominated goals. Vibration monitoring results for the Central Area are detailed in **Appendix B** (Table 2).

In the Southern Area vibration monitoring took place to validate predictive modelling during platform demolition works at Yeronga Station. Results were compliant with building specific vibration goals nominated in the Property Damage sub-plan.

2.2.3. Air Quality

2.2.3.1. Dust Deposition

Dust deposition monitoring was conducted at Mayne, Northern, Central and Southern Area worksites. Dust deposition results met the project air quality goal[1]. The TSD Contractor noted that the dust deposition sample at Boggo Rd was interfered with during the reporting period and a valid sample could not be attained. A summary of dust deposition monitoring is provided in the table below.

Air Quality – Dust Deposition Monitoring			
Area	**Worksite**	**Monitoring Location**	**Comments**
Mayne Area	Mayne Yard	Mayne Yard (East)	- Results met air quality goal.
Northern Area	RNA / Exhibition	RNA Showgrounds	- Results met air quality goal.
	Northern Portal	Northern Portal (near Brisbane Girls Grammar School)	- Results met air quality goal.
Central Area	Albert Street	Mary Street	- Results met air quality goal.
		Elizabeth Street	- Results met air quality goal.
	Boggo Road	Quarry Street (north of the site)	- Results met air quality goal.
		Peter Doherty Street/Leukemia Foundation	- Sample was interfered with, and no data was reported.
	Southern Portal	Dutton Park Station	- Results met air quality goal.
		PA Hospital - Central Energy Unit along Kent Street	- Results met air quality goal.
	Roma Street	Roma Street Station	- Results met air quality goal.
	Woolloongabba	Russian Orthodox Cathedral	- Results met air quality goal.
		Woolloongabba Busway	- Results met air quality goal.

[1] CG air quality goal for dust deposition - 50µg/m^3 (over an averaging period of 24 hours).

Air Quality – Dust Deposition Monitoring			
Area	**Worksite**	**Monitoring Location**	**Comments**
Southern Area	Clapham Yard	Clapham Yard (East)	- Results met air quality goal.

2.2.3.2. Particulate Matter and Total Suspended Particulates

Monitoring for particulate matter (PM_{10}) and total suspended particulates (TSP) was conducted at Mayne Yard, Northern, Central and Southern Area worksites. The Boggo Road air quality unit experienced a technical fault and stopped functioning on 2, 3, 4, 9 and 31 May 2021, requiring specialist repairs. The Woolloongabba air quality unit experienced technical issues and stopped functioning on 4, 5, 19, 20 and 31 May 2021 however results for the days monitored met the project air quality goals. The review of nearby DES air quality monitoring stations (South Brisbane and Woolloongabba) demonstrated PM_{10} levels throughout May were compliant with project air quality goals.

A summary of particulate monitoring is provided in the table below.

Air Quality – PM_{10} / TSP Monitoring			
Area	**Worksite**	**Monitoring Location**	**Comments**
Mayne Area	Mayne Yard	Mayne Yard North	- Results met air quality goals.
Northern Area	RNA / Exhibition	Lanham Yard	- Results met air quality goals.
	Northern Portal	Brisbane Girls Grammar School	- Results met air quality goals.
Central Area	Albert St	iStay River City and Capri (Corner of Mary Street and Albert Street)	- Results met air quality goals.
	Boggo Rd / Southern Portal	North-east of Boggo Road worksite	- Results met air quality goals. - Monitoring unit experienced a technical fault with no results on 2, 3, 4, 9 and 31 May.
	Roma St	Roma Street Station	- Results met air quality goals.
	Woolloongabba	Place Park, Woolloongabba	- Results met air quality goals. - Monitoring unit experienced a technical fault with no results on 4, 5, 19, 20 and 31 May.
Southern Area	Clapham Yard	Clapham Yard	- Results met air quality goals.

2.2.4. Water Quality

Monitoring and reporting on water quality was undertaken in accordance with the Project's Water Quality Management Plans.

2.2.4.1. Surface Water

Routine monitoring was undertaken at the receiving waters of TSD worksites in accordance with Water Quality Management Plan. Routine monitoring for RIS worksites has been reduced to bi-annual background monitoring from April 2021 and was therefore not undertaken in May 2021.

Post-rainfall monitoring was triggered at Mayne Yard and Clapham Yard on 5 and 12 May 2021. Results from post-rainfall monitoring in receiving waters at Breakfast Creek and Moolabin Creek met

project water quality discharge criteria[2] however there was an exceedance of the discharge criteria for total suspended solids with a result of 50mg/L at Rocky Water Holes Creek downstream location (SW-08) on 6 May 2021. An investigation concluded that the exceedance was not related to project works. See **Section 3.3.5** in **Appendix A** for further details.

No active surface water discharge occurred, and post rainfall monitoring was not triggered at the Northern Portal worksite during the month.

Active surface water discharge was undertaken in the Central Area at Boggo Road (dewatering through water treatment plant) and the Southern Portal (dewatering by pumping). Surface water discharge results met project water quality discharge criteria. Post-rainfall monitoring was triggered at the Woolloongabba and Boggo Road worksites following a rainfall event that exceeded 44mm over 24 hours on 13 May 2021. Post-rainfall monitoring in receiving waters at Norman Creek and the Brisbane River met project water quality discharge criteria.

Surface water quality monitoring is summarised in the table below:

Surface Water Quality Monitoring					
Area	**Worksite**	**Discharge**	**Post-Rain Monitoring**	**Routine Monitoring**	**Comments**
Mayne Area	Mayne Yard North	No	Yes	N/A	- Post-rainfall monitoring met project water quality discharge criteria.
Northern Area	Northern Portal	No	No	Yes	- Routine monitoring undertaken in accordance with the WQMP.
Central Area	Albert Street	No	No	Yes	- Routine monitoring undertaken in accordance with the WQMP.
	Boggo Road	Yes	Yes	Yes	- Discharge and post-rainfall monitoring met project water quality discharge criteria. - Routine monitoring undertaken in accordance with the WQMP.
	Roma Street	No	No	Yes	- Routine monitoring undertaken in accordance with the WQMP.
	Woolloongabba	No	Yes	Yes	- Post-rainfall monitoring met project water quality discharge criteria. - Routine monitoring undertaken in accordance with the WQMP.
	Southern Portal	Yes	No	Yes	- Discharge monitoring met project water quality discharge criteria. - Routine monitoring undertaken in accordance with the WQMP.

[2] Guidelines for Best practice Erosion and Sediment Control (International Erosion and Sediment Control Association, 2008) and the Department of Transport and Main Roads' Technical Standard MRTS52 – Erosion and Sediment Control.

Surface Water Quality Monitoring					
Area	**Worksite**	**Discharge**	**Post-Rain Monitoring**	**Routine Monitoring**	**Comments**
Southern Area	Clapham Yard	No	Yes	N/A	- Post-rainfall monitoring identified an exceedance of total suspended solids (TSS) on 6 May at a downstream location at Rocky Water Holes Creek. See **Section 3.3.5** in **Appendix A** for further details. This exceedance was not related to project works.

2.2.4.2. Groundwater

There were no groundwater discharges at Mayne, Northern or Southern Area worksites.

Groundwater discharge occurred in the Central Area at Roma Street, Albert Street and Woolloongabba worksites. The groundwater discharge results reported for the month exceeded the Project's water quality objectives (WQO's)[3] for total nitrogen, ammonia nitrogen, organic nitrogen and dissolved oxygen. This result however was consistent with the receiving environment baseline monitoring pre-construction data.

Groundwater Quality Monitoring			
Area	**Worksite**	**Discharge**	**Comments**
Mayne Area	Mayne Yard North	No	- No groundwater discharges.
Northern Area	RNA/Exhibition	No	- No groundwater discharges.
	Northern Portal	No	- No groundwater discharges.
Central Area	Albert Street	Yes	- Groundwater discharge (dewatering). - Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions and no external influences were introduced by construction activity.
	Boggo Road / Southern Portal	No	- No groundwater discharges.
	Roma Street	Yes	- Groundwater discharge (dewatering). - Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions and no external influences were introduced by construction activity.
	Woolloongabba	Yes	- Groundwater discharge (dewatering). - Discharge of groundwater did not meet Project WQO's but was generally consistent with pre-construction conditions and no external influences were introduced by construction activity.

[3] The Brisbane River Estuary environmental values and water quality objectives (Basin no 143 – mid-estuary) in the Environmental Protection (Water) Policy 2009.

Groundwater Quality Monitoring			
Area	**Worksite**	**Discharge**	**Comments**
Southern Area	Clapham Yard	No	- No groundwater discharges.

2.2.5. Erosion and Sediment Control

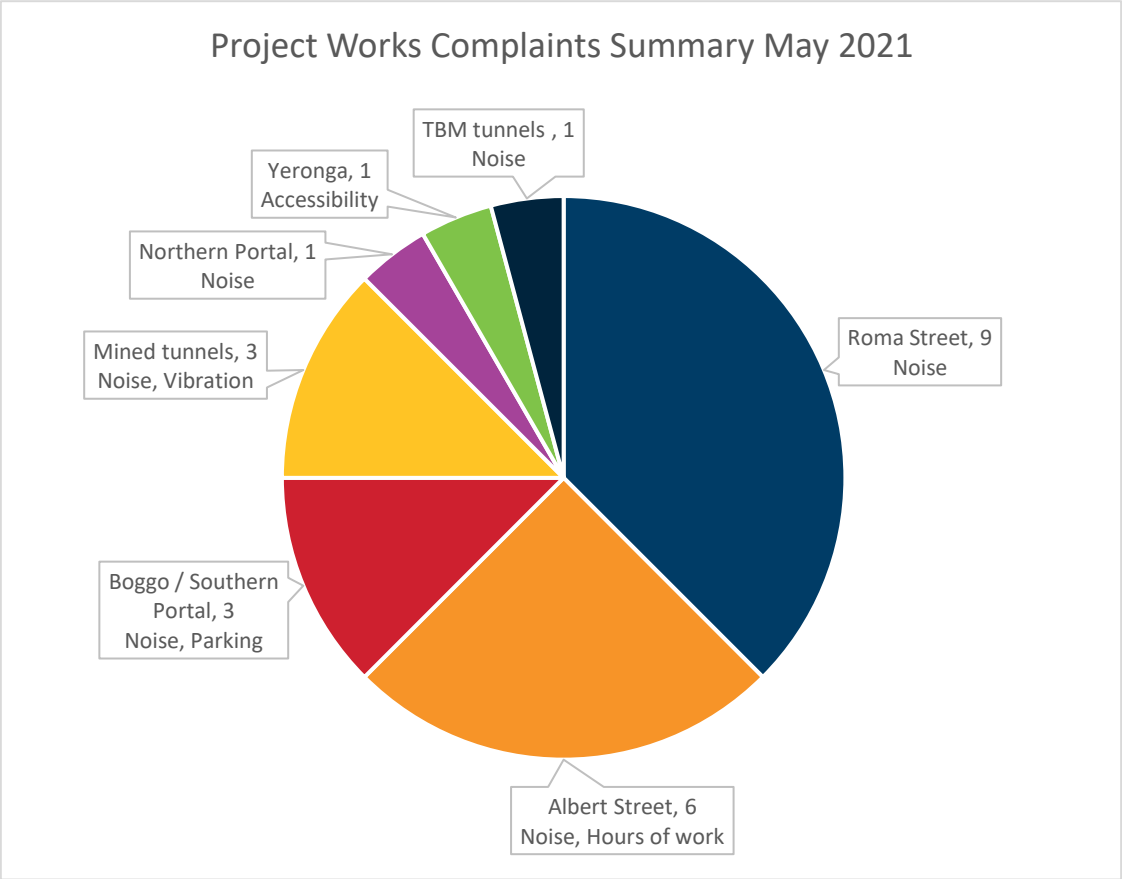
Site specific Erosion and Sediment Control (ESC) Plans have been prepared, updated, and implemented at Mayne Yard, Northern Portal, RNA Showgrounds, Roma Street, Albert Street, Woolloongabba, Boggo Road, Southern Portal, Yeronga, and Clapham Yard.

2.3. Complaints Management

A total of 27 complaints were received during the month, of which three were not related to project works.

RIS works received 1 complaint related to pedestrian access at the Yeronga station worksite.

TSD activities received 23 complaints related to works at the Northern Portal, Roma Street, Albert Street and Boggo Road worksites and along the tunnel alignment. The TSD contractors reported that project requirements have been met during this reporting month. The Project Works complaints summary for the month is provided in the following chart.

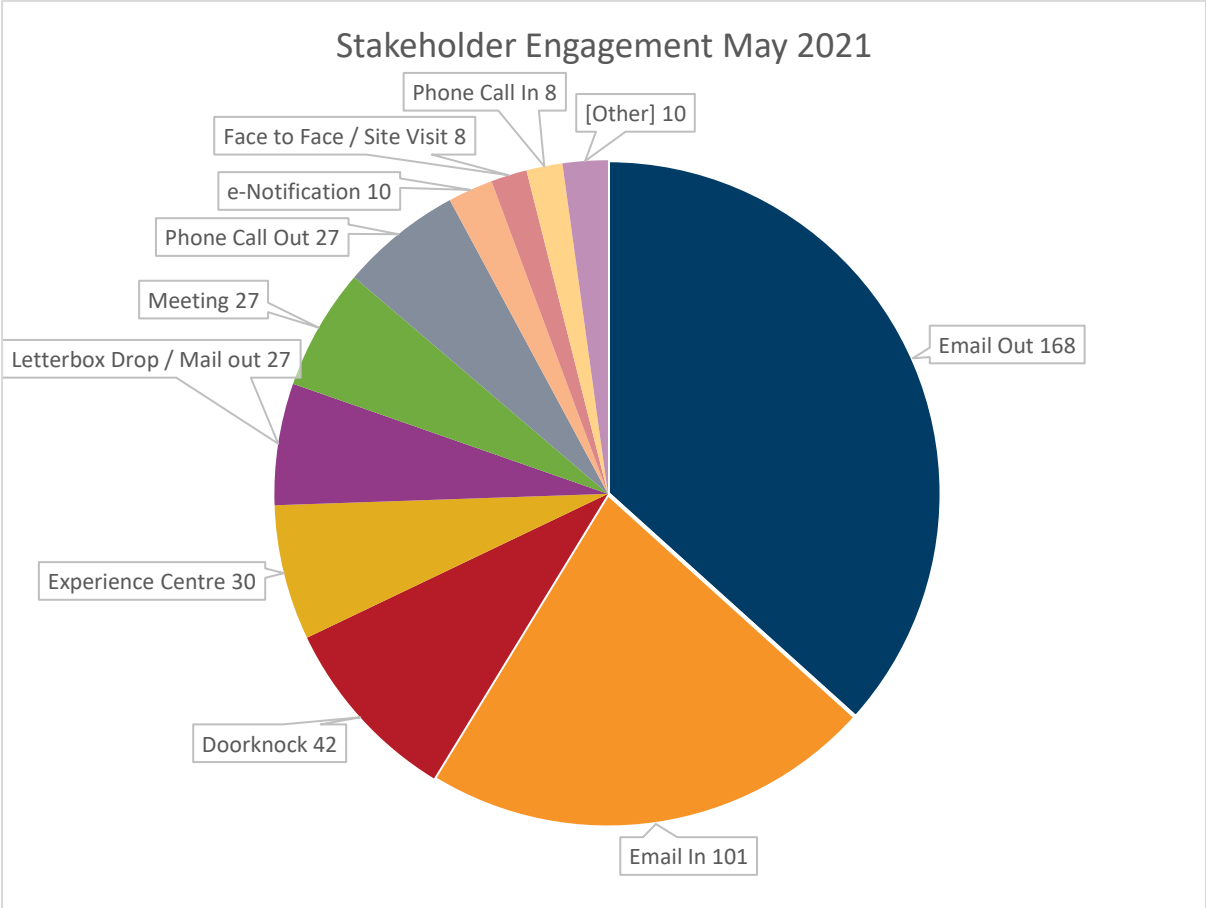


Where attended noise monitoring was undertaken in response to a complaint, the contractor confirmed on all occasions that works undertaken at the time of the complaint adhered to project requirements. In

some instances, previous attended noise monitoring data, representative of the relevant construction activities was used to confirm the works adhered to the project noise requirements.

To close out a complaint, the monitoring data is reviewed (where applicable) against compliance with the CEMP, site environmental management plans and permits, and checks that required community notification has taken place. Contractors have also confirmed that planned mitigation to reduce the impact was implemented. This is reviewed together to verify if project requirements have been met. For further details on close-out of complaints refer to **Appendix A,** Table 3 and **Appendix B,** Table 10.

For scheduled out of hours works, community notification was provided, as well as regular project updates. Stakeholder engagement undertaken on the project during the month is summarised in the chart below.



2.4. New Upcoming Project Works

The key new planned project works for the coming months include:

Area	New planned works in the coming months
Mayne Area	• **Mayne Yard North** – Commence sewer and water installation scope; Graffiti Removal Facility and Crew Facility Building services and form reo piling; continue with civil scope in yard and structures scope on BR11/13 Tripod Bridge, Load Transfer Platforms (RW120, RW125) and Ferny Grove Flyover (RC14) pier protection; commence temporary rock platform on south side of the creek for Breakfast Creek Bridge (BR08); continue combined services route works; and continue OHLE Foundations.

Area	New planned works in the coming months
Northern Area	• **Northern Corridor** – completion of Normanby drainage and sewer work; commence drainage around Victoria Park Feeder Station; continue piling for Bowen Bridge and ICB pier protection; and commence ICB conduit repairs. • **RNA/Exhibition** – drainage works; continue, form reo pour for western viaduct (BR43); FRP and services works for new RNA substation and switch room; and complete rock excavation for western corridor widening. • **Northern Portal** – pile anchors and ground anchors to continue in June; capping beam and portal beam construction to continue in June; ongoing excavating, loading and removing of material with trucks; and construction of TBM clearing pad in June-August.
Central Area	• **Roma Street** –TBM 1 break-through in August followed by TBM 2 approximately 2 – 3 weeks later. • **Albert Street** – Lot 1 – controlled blasting to commence in June and second row or props to be installed in July; Lot 2 - 24-hour tunnelling will continue; and Lot 3 - ongoing station box excavation and ground support ongoing and tower crane installation in July. • **Woolloongabba** – 24/7 excavation operations with TBMs and road headers; continuous spoil haulage and large concrete deliveries for back of house and station building structures construction; and cross passage works north of Woolloongabba site to continue in June / July. • **Boggo Road** – station box excavation completion in July, excavation of northern cavern beneath the canopy tubes ongoing; and installation of second tower crane in August. • **Southern Portal** – continue utility relocation and Scheduled Corridor Access System (SCAS) works in the rail corridor in June and August; and ongoing piling, earthworks, stormwater upgrade and site establishment.
Southern Area	• **Yeronga Station** – temporary scaffold overpass install; station building shelter and timber overpass demolition; Platform 1 civil and FRP works; Platform 2 Civil & FRP Works and Platform 3 Precast retaining wall manufacturing and install. • **Clapham Yard** – continue site compound establishment and temporary water management / diversions; continue import and stockpiling fill ahead of bulk earthworks for stabling yard filling activities; demolition of buildings; and bulk earthworks.

2.5 Non-Compliance Events

No new NCEs have been raised this month. The summary of NCEs to date is shown in the table below.

Status	Date of event	Category	Area as on the Report	Conditions affected	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
⊞ **Open**									
⊟ **Closed**									
CRRDA-001-RIS-001	11/09/19	Noise	Yeronga Station	4, 10, 11	11/10/19	14/11/19	26/11/19	18/12/19	01/10/20
CRRDA-002-TSD-001	27/03/20	ESC	Woolloongabba	4, 15, 18	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
CRRDA-003-TSD-002	27/03/20	ESC	Boggo Rd	4, 15, 18	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
CRRDA-005-TSD-004	27/03/20	Reporting	Albert St, Boggo Rd, Roma St, Woolloongabba	4, 6, 11, 13	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
CRRDA-006-TSD-005	27/03/20	Air Quality	Albert St, Boggo Rd, Roma St, Woolloongabba	13	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
CRRDA-004-TSD-003	28/03/20	Traffic	Boggo Rd	4, 10, 14	30/03/20	31/03/20	22/04/20	06/11/20	31/05/20
⊟ **Withdrawn**									
CRRDA-007-RIS-002	04/01/20	Air Quality	Mayne Yard, Victoria Park, Yeronga, Fairfield	13	28/04/20	30/04/20	Withdrawn		
CRRDA-008-TSD-006	04/08/20	Working Hours	Roma Street	4,10	28/04/20	30/04/20	Withdrawn		

Gate 1 - EM notification to contractor. NCE confirmed
Gate 2 - 48 hour NCE notification submitted to CG
Gate 3 - 14 day report submitted
Gate 4 - 14 day report uploaded to CRR website
Gate 5 - Records of mitigation / preventative measures submitted to the CG — Complete

Throughout construction activities, events and incidents are routinely investigated to verify compliance with the Imposed Conditions and to verify that management and mitigation measures are implemented in accordance with CEMP and sub-plans.

Appendix A – RIS Monthly Report

Monthly CGCR Report – May 2021

Cross River Rail – Rail, Integration and Systems Alliance

Assured Integration for a New Era

Table of Contents

1 Progress Summary - Relevant Project Works

The following Project Works were undertaken during the reporting period:

Table 1: Summary of Project Works completed during the reporting period

Area	Project Works
Mayne Area	• **Mayne Yard North** Tripod Bridge (BR11/13) Cast In Place (CIP) piling commenced Continuous flight auger (CFA) ground improvement piling for RSS walls Load Transfer Platforms for Retaining Wall (RW) 110 completed RC14 (Ferny Grove Flyover pier protection) CIP piling 40% completed RC14 (Ferny Grove Flyover pier protection) Form Reo Pour (FRP) scope commenced BR08 (Breakfast Creek Bridge) clearing of mangroves completed Mayne Yard North civil scope continued (stabling yard fence, drainage works and Combined Services Routes [CSR]) Mayne Yard Access Roads and Carpark drainage scope continued Commencement of OHLE foundations
Northern Area	• **RNA** BR43 (western viaduct) piling completed BR43 FRP on pile caps and blade walls commenced Electrical conduit and pit scope through RNA (West) completed Retaining Wall RW210 Remove and Replace (earthworks) scope started. • **Northern Corridor** Rock excavation for western corridor widening 75% complete Water main relocation (Stage 1) completed Billboard foundation removals completed Rock excavation for Feeder Station and retaining wall RW270 is 70% complete Piling on Bowen Bridge Pier Protection (RC22/23) is 73% complete and FRP scope 40% complete Drainage works in Normanby section (DL 230, 241) has re-commenced
Southern Area	• **Yeronga Station** Temporary Scaffold Overpass planned installed during 29-30th May SCAS Demolition of station building planned during 29-30th May SCAS Demolition of Platform 1 retaining wall complete including ramps, landscaping features, fencing etc. • **Clapham Yard** Ground Surface Treatment (remove and replaced) for yard embankment Contaminated land and acid sulfate soil investigations Demolition works of facilities has commenced

The following table summarises the upcoming Project Works:

Table 2: Summary of upcoming Project Works

Area	Project Works
Mayne Area	• **Mayne Yard North** Commence Sewerage, Water and Decanting scope in Yard Commence Graffiti Removal Facility and Crew Facility Building services and FRP Continue with Civil scope in Yard and structures scope on Tripod Bridge (BR11/13), Load Transfer Platforms (RW120, RW125) and Ferny Grove Pier Protection (RC14) Commence temporary rock platform (south) for Breakfast Creek Bridge (BR08) Continue CSR works Continue OHLE Foundations in Mayne Yard North
Northern Area	• **RNA** Electrical services crossing under-bore for new RNA Substation Complete FRP and services works for new RNA Substation and Switch room Ekka 2021 embargo (15 July – 23 August) Continue FRP for BR43 pile caps and blade walls (western viaduct) Drainage at Southern section (Stage 1) for RW210 to commence • **Northern Corridor** Complete PUP relocation Sewer underbore between Land Bridge and Queensland Rail Carwash facility Complete Drainage works in Normanby section at ICB side (DL 230, 241) Commence drainage (DL 247) around Victoria Park Feeder Station Commence ICB conduit repairs Complete all rock excavation for western corridor widening Continue piling for Bowen Bridge and ICB pier protection in extended SCASs
Southern Area	• **Yeronga Station** Yeronga Platform 1 Civil & FRP Works Yeronga Temporary Scaffold Overpass Install Yeronga Station Building, Shelter and Timber Overpass Demolition Yeronga Platform 2 Civil & FRP Works Yeronga Platform 3 Precast Retaining Wall manufacturing and install • **Clapham Yard** Continue site compound establishment and temporary water management / diversions Continue Importing and stockpiling fill ahead of bulk earthworks for Clapham Yard Stabling Yard filling activities

2 Complaints

The below section summarises the complaints relating to the Project Works to be reported in accordance with condition 6(b)(iii) of the CGCR.

Table 3: Summary of Complaints

Date	Location	Issue	Activity source of the concern	Period	Unity Response	Status
27/05/21	RNA	Workforce behaviour	Not project related	May 2021	A stakeholder complained about a security staff being abusive during the camping and caravan show. UNITY Alliance investigated and confirmed that the security staff was not employed by the project nor for the Project Works. UNITY Alliance provided the feedback to the stakeholder and advised them to contact the Caravan and Camping event organisers to resolve the issue.	Closed
28/05/21	Yeronga	Access	Yeronga temporary scaffold overpass	May 2021	Stakeholder called to complain about the bridge across the railway line having the staircase to the eastern side of Fairfield Road closed. They did not want to use the concrete overpass as they believe the stairs are too narrow and steep. UNITY Alliance called and advised the stakeholder the staircase was closed due to temporary scaffold works being undertaken to construct a new pedestrian overpass. Until the temporary scaffold pedestrian overpass was complete and commissioned access over Fairfield Road would be via the existing concrete overpass.	Closed

3 Environmental Monitoring Results

The below section summarises the monitoring results to be reported in accordance with condition 6(b)(i) of the CGCR.

3.1 Acoustics

Condition 11(b) of the CGCR requires that during construction, monitoring and reporting on noise and vibration in accordance with the Noise and Vibration Management Plan, a sub-plan of the Construction Environmental Management Plan (CEMP) occurs.

3.1.1 Noise Monitoring

Attended noise monitoring was triggered based on the predictive noise assessments for:

- Demolition of building at Clapham Yard during Standard Hours for Surface Works
- Platform building demolition at Yeronga Station during rail possessions works Standard and Non-Standard hours

In accordance with the CEMP, attended outdoors monitoring was undertaken to validate the predictive assessment.

Monitoring was undertaken to confirm that the model was accurate and that works could continue to proceed as planned.

Complaint-based noise monitoring because of Project Works was not triggered.

3.1.2 Noise monitoring Results

The below table summarises the noise monitoring results for reporting period.

The results from noise monitoring are assessed against two performance goals.

The first performance goal (herein referred to as Performance Goal 1), is determined as per Condition 11(a), Table 2, LA_{10} noise goals.

The second performance goal (herein referred to as Performance Goal 2), is determined as per (Condition 11(c), using Table 2 LA_{10} noise goal and adding + 20dBA.

An exceedance (predicted or measured) of either of these performance goals does not necessarily represent a potential or actual Non-Compliance Event.

Indeed, if the Project Works are authorised to proceed under Imposed Condition 10 and the DAP engagement process has occurred as per Imposed Condition 11 (c), then Project Works that are predicted to generate noise above the Noise Goal + 20dBA can proceed.

The purpose of these two performance goals is to inform:

- The extent of management measures that can reasonably and practically be implemented during the execution of the Relevant Project Works to minimise impact to DAPs, and
- Extent and type of consultation with DAPs prior to and leading up to the Relevant Project Works commencing.

The community, stakeholders and DAP consultation and engagement process which is based on the outcomes of the predictive modelling is presented in Attachment 6.

Attachment 6 must be read in conjunction with the Noise and Vibration Management sub-plan (C-EMP sub-plan) with a focus on Attachment 1 and 2 of the subplan.

Table 4: Summary of Noise Monitoring Data

Location and Receiver Type Details	Type of Monitoring	Working Hours	Noise Type	Purpose of Monitoring	Predictive model LA_{10} (dBA)	Performance Goal 1 (dBA) (Condition 11(a), Table 2, LA_{10} noise goals)	Performance Goal 2 (dBA) – (Condition 11(c), Table 2 LA_{10} noise goal + 20dBA))	Measured LA_{10} (dBA)	Measured LA_{eq} (dBA)	DAP engagement prior to works	Is performance Goal exceeded?	Comments
Industrial (warehouse) 770 Fairfield Road Yeerongpilly	Attended – Outdoors[1]	Standard Hours 24/05/21 – 08:32	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	69 (outdoors)	80 (Outdoors) (AS2107 maximum design level [60dBA] + 10dBA+ 10dBA façade reduction)[2]	100 (Outdoors) (80+ 20dBA)	65	62	Yes Standard	No exceedance of Performance Goals 1 and 2	Building demolition at Clapham Yard For interpretation, please refer to section 3.1.4.1.1
Industrial (warehouse) 770 Fairfield Road Yeerongpilly	Attended – Outdoors[1]	Standard Hours 24/05/21 – 10:53	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	69 (outdoors)	80 (Outdoors) (AS2107 maximum design level [60dBA] + 10dBA+ 10dBA façade reduction)[2]	100 (Outdoors) (80+ 20dBA)	66	63	Yes Standard	No exceedance of Performance Goals 1 and 2	Building demolition at Clapham Yard For interpretation, please refer to section 3.1.4.1.1
Residential 2 Lake Street Yeronga	Attended – Outdoors[1]	Standard Hours Saturday daytime Out of Standard Hours Sunday daytime Monitoring undertaken 29/05/21 – 15:15	Intermittent	Construction Monitoring at Sensitive Places - Model Verification	72 (outdoors)	**Standard hours** 65 (Outdoors) (AS2107 maximum design level [45dBA] + 10dBA+ 10dBA façade reduction)[2] **Out of Standard Hours** 52 (Outdoors) (42dBA default goal + 10dBA façade reduction)[2]	**Standard hours** 85 (Outdoors) (65+ 20dBA) **Out of Standard hours** 72 (Outdoors) (52+ 20dBA)	74	70	Yes Standard and Bespoke	**Standard hours** No exceedance of Performance Goal 2 **Out of Standard hours** Exceedance of Performance Goal 2	Platform Demolition – Yeronga station under approved rail possession For interpretation, please refer to section 3.1.4.1.2

- Note (1) - Monitoring Method
  - Note 2 of Imposed Condition 11 Table 2 states *Where internal noise levels are unable to be measured or monitored, the typical noise reductions presented in Guideline Planning for Noise Control, Ecoaccess, DEHP, January 2017 (PFNC) apply*.
  - The monitoring was undertaken to validate the model therefore external noise measurements are appropriate to determine the impact of construction noise.
- Note (2) – Façade Attenuation
  - Note 2 of Imposed Condition 11 Table 2 states *Where internal noise levels are unable to be measured or monitored, the typical noise reductions presented in Guideline Planning for Noise Control, Ecoaccess, DEHP, January 2017 (PFNC) apply*.
  - The PFNC guideline can no longer be accessed. The Department of Environment and Science (DES) website still states this guideline is under review and is yet to release an alternative guideline
  - Former revisions of the PFNC, in particular Table 7 stated the following regarding typical noise reductions through the building façade:
    - 5 dB – Window wide open
    - 10 dB – Partially closed
    - 20 dB – Single glazed, closed
    - 25 dB – Thermal double glazing, closed
  - The RfPC-4 Technical Report considered that all receptors had closed external single glazing for the assessment of construction noise impacts.
  - The Queensland Ombudsman assessed this assumption for the Airport Link Project and recommended that 10dB be adopted for major infrastructure projects in Queensland[1].
  - Additionally, a number of acoustic studies have shown that 10 dB is a suitable assumption for open windows. Most importantly this requirement only applies to temporary rail works within the project footprint and does not apply to long term operational rail noise exposure.
  - Accordingly, it is considered appropriate to consider a 10 dB reduction on this basis. This assumption can be used for predictive modelling and for noise measurements, where indoor noise measurements are not practicable.

[1] https://www.ombudsman.qld.gov.au/ArticleDocuments/218/Airport_Link_Ombudsman_Statement.pdf.aspx, pages 208-210, Section 9.8.6

3.1.3 Vibration Monitoring

Vibration monitoring was required during the reporting period based on the predictive vibration assessments for specific activities.

Table 5 Summary of Vibration Data

Location	Date (Start and Finish)	Time of day	Closest DAP / Sensitive Place	Receiver Type (table 3 – Imposed Condition 11(e))	Purpose of Monitoring	Maximum vibration Level (mm/s)	Vibration goal for receiver (mm/s)	Exceedance of vibration limit?	Comments
12 Killarney Street Yeronga	29/05/21	N/A	BCC Heritage (house)	Heritage Structure (DIN4150-3 Group 1)	Construction Monitoring at Sensitive Places - Model Verification	0.587	5 – (source: Property Damage Sub-Plan)	No exceedance	Platform Demolition – Yeronga station under approved rail possession For interpretation, please refer to section 3.1.4.2.1
12 Killarney Street Yeronga	30/05/212	N/A	BCC Heritage (house)	Heritage Structure (DIN4150-3 Group 1)	Construction Monitoring at Sensitive Places - Model Verification	0.361	5 – (source: Property Damage Sub-Plan)	No exceedance	Platform Demolition – Yeronga station under approved rail possession For interpretation, please refer to section 3.1.4.2.1

Complaint-based vibration monitoring was not triggered. No complaints related to vibration occurred during the reporting period.

3.1.4 Interpretation

3.1.4.1 Noise Monitoring[2]

3.1.4.1.1 Building Demolition – Clapham Yard

Noise monitoring of noise intensive activities associated with the commencement of Building Demolition at Clapham Yard during approved standard hours was undertaken externally approximately 7 m from the façade of the building.

Monitoring was carried out during standard hours whilst demolition works were underway. The measured LA_{10} readings were compliant with the Imposed Conditions for works during standard working hours.

There were no noise complaints received during the execution of the works.

Therefore, the RIS scope of works achieved the outcomes set out by the CGCR and OEMP.

3.1.4.1.2 Platform Demolition – Yeronga station under approved rail possession

Noise monitoring of noise intensive activities associated with platform demolition works at Yeronga Station during an approved rail possession was undertaken externally. Monitoring was carried out at the Sensitive Place identified as being likely to experience the highest noise levels during the works. The sensitive place was identified as residential (DAPs) and comprises an apartment / townhouses complex.

Monitoring was undertaken during standard construction hours (Saturday day) to inform whether the works were likely to exceed noise goals + 20dBA on Sunday day (non-standard working hours).

No demolition occurred at night.

The measured LA_{10} readings were compliant with the Imposed Conditions for works during standard hours. The LA_{10} readings exceeded the noise goal + 20dBA for works during non-standard working hours.

The works were however authorised to proceed under Imposed Condition 10 as they were carried out during extended works hours (approved rail possession). DAP engagement had also occurred with the level of consultation as per the requirements of Imposed Condition 11 (c).

Mitigation measures proactively implemented by the project included scheduling of works during daytime only with respite periods throughout the day (Saturday and Sunday).

There were no noise complaints received during the execution of the works.

Therefore, the RIS scope of works achieved the outcomes set out by the CGCR and OEMP.

3.1.4.2 Vibration Monitoring

3.1.4.2.1 Platform Demolition – Yeronga station under approved rail possession

Vibration monitoring during platform demolition works at Yeronga station was undertaken at the foundation of the locally heritage listed house located on 12 Killarney Street. This location was selected based on the outcomes of predictive assessments. The measured readings were compliant with the revised vibration limits based on building specific vibration goals presented in the latest revision of the endorsed Property Damage Sub-Plan (Revision 07).

Therefore, the RIS scope of works achieved the outcomes set out by the CGCR and OEMP.

[2] All free field measurements are undertaken in accordance with the latest revision of the Noise Measurement Manual from the Department of Environment and Science (DES) reference ESR/2016/2195

3.2 Air Quality

Imposed Condition 13(b) of the CGCR requires that during construction, monitoring and reporting on air quality in accordance with the Air Quality Management Plan, a sub-plan of the CEMP occurs.

Visual monitoring was undertaken during routine environmental inspections. A total of 21 inspections were undertaken by the environment team across Mayne Yard, RNA Showgrounds, Yeronga Station, Clapham Yard and the Northern Corridor.

UNITY has installed the following air quality monitoring devices, therefore data collected from these devices, when active, is reported on in the monthly report regardless of the Project Works occurring.

Table 6: Summary of Air Quality monitoring devices

Monitoring Device Installed by UNITY	Area	Name	Date Installed	Status for the Reporting Period
Dust Deposition Gauge	RNA Showgrounds	AQ-01	13 December 2019	Active
Dust Deposition Gauge	Mayne Yard (Eastern Air Shed)	AQ-04	13 February 2020	Active
Dust Deposition Gauge	Clapham Yard (Eastern Air Shed)	AQ-06	01 February 2021	Active
TSP / PM_{10} Monitor	Mayne Yard (Eastern Air Shed)	Mayne Yard	23 April 2020	Active
TSP / PM_{10} Monitor	Clapham Yard (Eastern Air Shed)	Clapham Yard	01 February 2021	Active Data gap from 2 to 5 May 2021 due to power malfunction
TSP / PM_{10} Monitor	RNA (Western Air Shed)	RNA	25 August 2020	Active

3.2.1 Dust results

As passive dust deposition gauges are analysed monthly, results span from:

- 13 April 2021 to 11 May 2021, except for AQ-06 where results were for the duration of 7 April 2021 to 11 May 2021

The May 2021 results are detailed below and complied with Imposed Condition 13(b) of the CGCR.

Table 7 Dust deposition gauge results for the reporting period

CGCR Goal ($mg/m^2/day$)	AQ-01 - RNA Showgrounds ($mg/m^2/day$)	AQ-04 Abbotsford Rd (E Mayne) ($mg/m^2/day$)	AQ-06– Clapham yard Showgrounds ($mg/m^2/day$)
120	43	17	47
Total Rainfall during Period	55	55	58

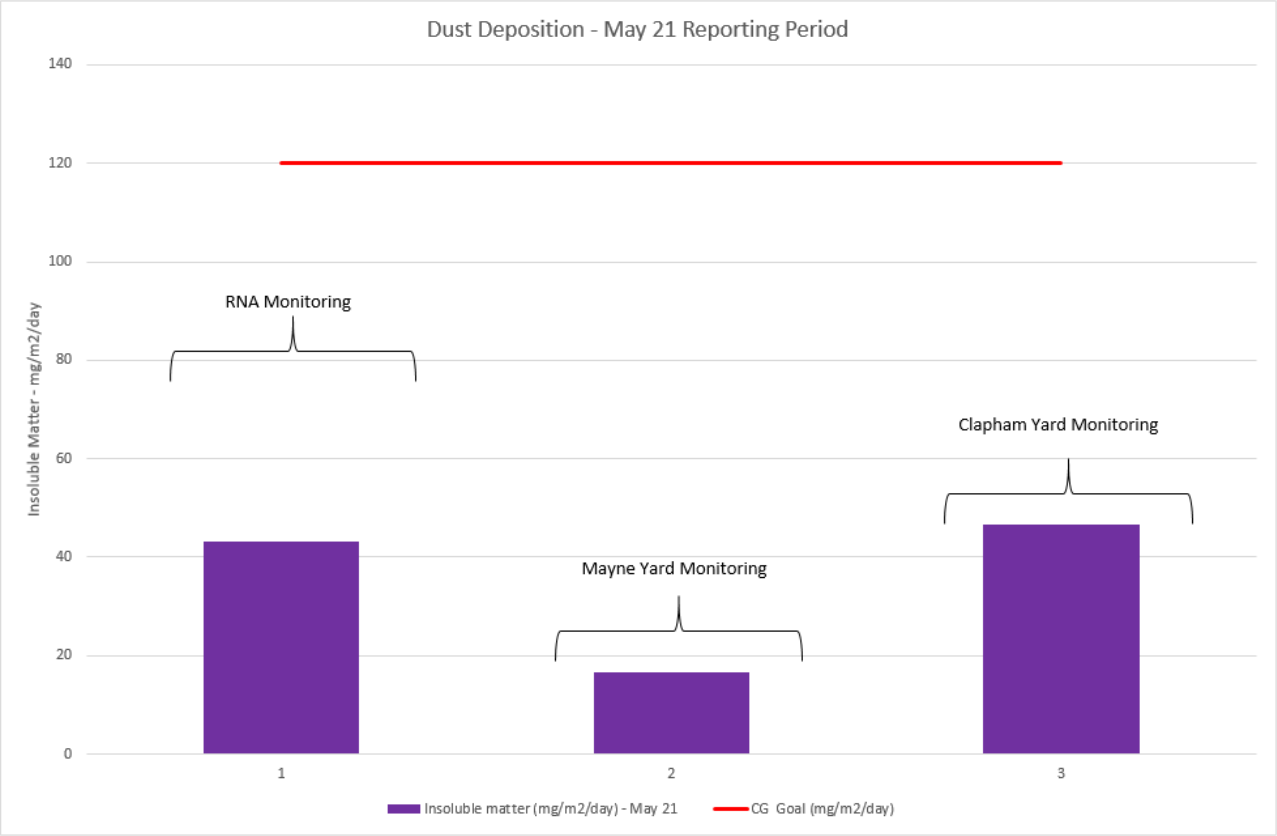


Figure 1 Air Quality Monitoring (Deposited Dust) Results

3.2.2 Particulates results

3.2.2.1 Air Quality Monitoring Stations

Unity had three (3) active air quality monitoring stations set up for the reporting period. The Clapham Yard station suffered a power failure for three (3) days. This issue has now been rectified.

3.2.2.2 Monitoring results – Reporting Period

External ambient air quality data was collected for total suspended particles (TSP), and particulate matter less than 10 µm (PM_{10}).

TSP is one of the indicators for which the Coordinator-General has imposed a goal of 80 µg/m^3 (over an averaging period of 24 hours) the project must aim to achieve under Imposed Condition 13(a).

PM_{10} is one of the indicators for which the Coordinator-General has imposed a goal of 50 µg/m^3 (over an averaging period of 24 hours) the project must aim to achieve under Imposed Condition 13(a).

These stations have been set up on site as per AS/NZS 3850 1.1 following consultation with UNITY air quality professionals.

The results are represented in the below figures.

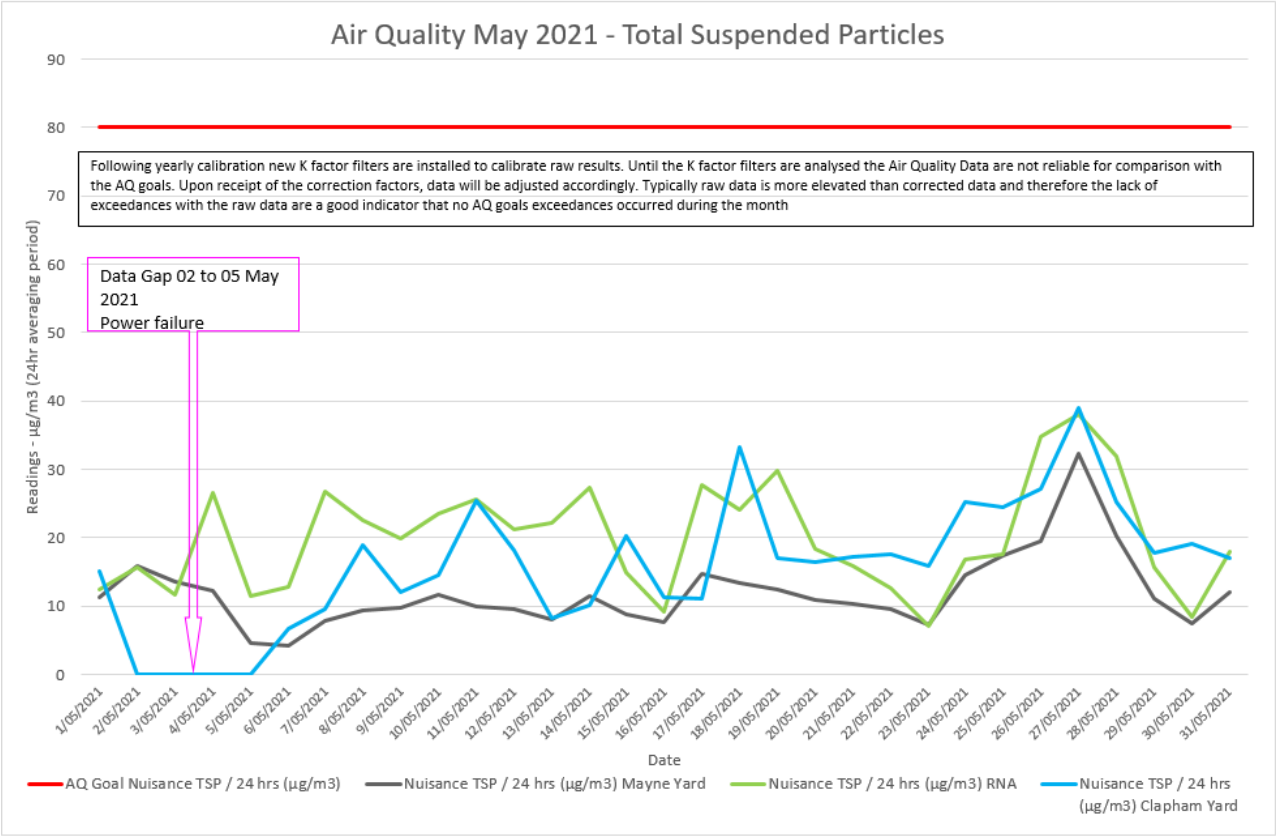


Figure 2 Air Quality Monitoring (TSP) Results

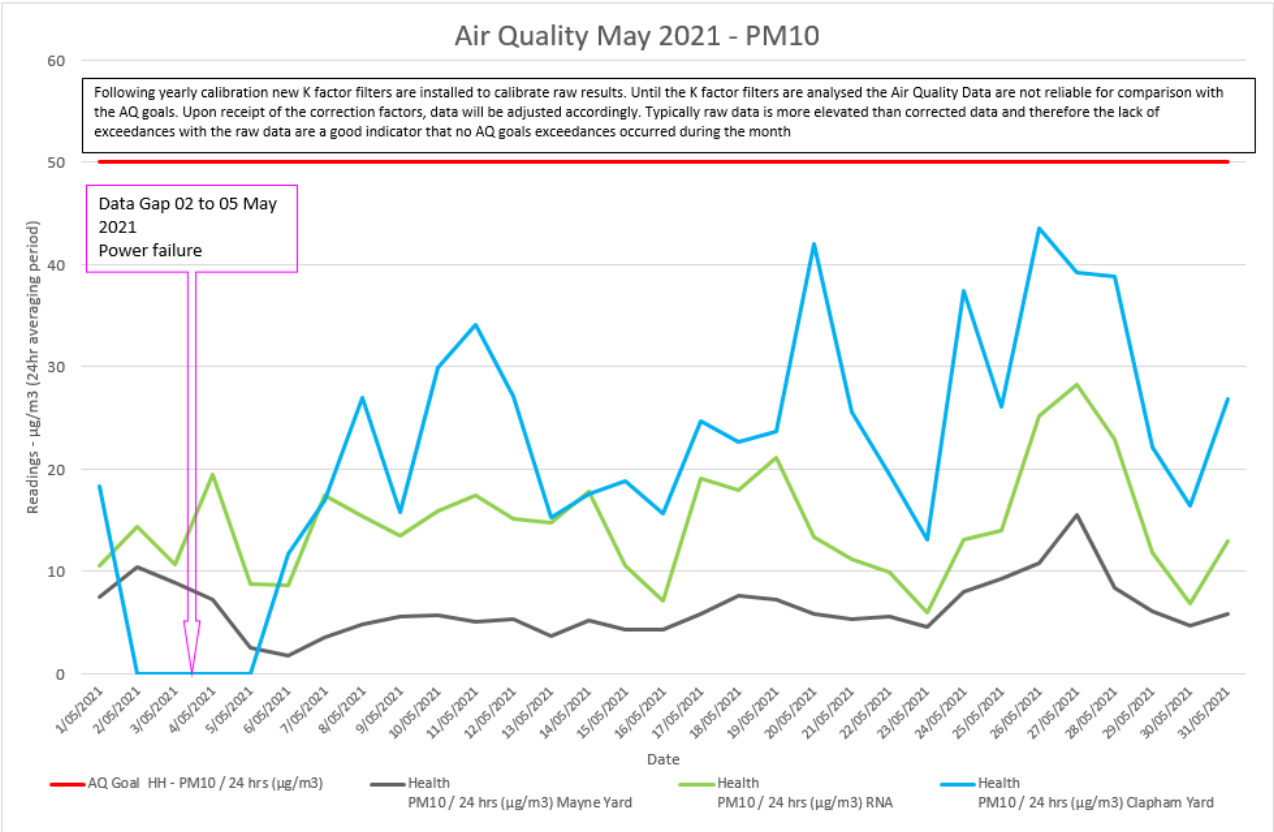


Figure 3 Air Quality Monitoring (PM_{10}) Results

3.2.2.3 Monitoring results – Annual averaging

Imposed Condition 13 (a) sets annual average air quality goals for TSP (Human health) and PM_{10} (Human health).

The below table summarises where TSP and PM_{10} monitoring has been carried out over the last 12 months.

The National Environment Protection (Ambient Air Quality) measure Technical paper No.5 provides guidance and procedures for uniform data recording and handling. (https://www.nepc.gov.au/system/files/resources/9947318f-af8c-0b24-d928-04e4d3a4b25c/files/aaqprctp05datacollection200105final.pdf).

For air quality data to be officially reported, as per section 4.5 of Technical Paper No. 5, the minimum data capture would be 75% of the year or 274 days.

"It is essential that data loss is kept to an absolute minimum. For representative monitoring data and for credible compliance assessment it is desirable to have data capture rates higher than 95%. 75% data availability is specified as an absolute minimum requirement for data completeness".

In some instances, Relevant Project Works, which triggered TSP and PM_{10} monitoring were carried out for less than 274 days (e.g. at the Northern Corridor). In such instances the annual averages are still reported but are indicative only as data capture did not meet the 75% data capture requirements of *National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 5 – Data Collection and Handling.*

Table 8: Summary of Air Quality monitoring devices over a 12 month period

Monitoring Device Installed by UNITY	Area	Date Installed	Date Decommissioned	Number of Days data was captured over 365 days period	Data capture over annual period	Annual performance reporting
TSP / PM_{10} Monitor	Northern Corridor (Eastern Air Shed)	23 April 2020	13 January 2021	260	71% over 365 days	*Indicative only* Data capture did not meet the minimum data capture requirements
TSP / PM_{10} Monitor	Mayne Yard (Eastern Air Shed)	23 April 2020	Not yet decommissioned	358	98% over 365 days	Applicable Data capture met minimum data capture requirements
TSP / PM_{10} Monitor	RNA (Western Air Shed)	11 June 2020	Not yet decommissioned	274 (over 354 days)	77% (over 354 days)	*Indicative only* Data capture met minimum data capture requirements, but monitoring has not yet been carried out for 12 Months
TSP / PM_{10} Monitor	Clapham Yard (Eastern Air Shed)	01 February 2021	Not yet decommissioned	98 (over 120 days)	82% (over 120 days)	Not Applicable Data capture did not meet the minimum data capture requirements and monitoring has not yet been carried out for 12 Months

The below table summarises the applicable and indicative annual data results for TSP and PM_{10} against the performance goals imposed under Condition 13(a). Results in italic are indicative only.

Table 9 Annual Performance Results

Air quality Indicator	Goal	Northern Corridor	Mayne Yard	RNA
TSP	90 µg/m^3	*8 µg/m^3*	12 µg/m^3	*22 µg/m^3*
PM_{10}	25 µg/m^3	*5 µg/m^3*	8 µg/m^3	*14 µg/m^3*

3.2.3 Interpretation

During the reporting period:

- None of the particulate results exceeded their relevant goals;
- There was no evidence of dust being generated and leaving the site boundaries, and
- There were no complaints received associated with air quality concerns.

Annual averages for TSP and PM_{10} did not exceed the relevant goals.

The RIS scope of works have met the project outcomes set out by the CGCR and OEMP.

3.3 Water Quality

Condition 15(b) of the CGCR requires that during construction, monitoring and reporting on water quality in accordance with the Water Quality Management Plan, a sub-plan of the CEMP, occurs.

Condition 15(a) requires that discharges of groundwater from Project Works within the Breakfast Creek catchment must comply with the Brisbane River Estuary environmental values and water quality objectives (Basin no.143 – mid-estuary) in the *Environment Protection (Water) Policy 2009*.

Condition 15(a) requires that discharges of groundwater from Project Works within Moolabin Creek, Yeerongpilly – Oxley Creek catchment must comply with the Oxley Creek - Lowland freshwater environmental values and water quality objectives (Basin no.143 (part) – including all tributaries of the creek) in the *Environment Protection (Water) Policy 2009*.

Water quality monitoring to demonstrate compliance with Condition 15(a) was not triggered during the reporting period. There were no groundwater discharges.

Water quality monitoring to demonstrate compliance with Condition 15(b) and Condition 18 was triggered:

- There were passive discharges through Type 2 and 3 ESC devices associated with rain events:
  - 05 May 2021 - A rain event occurred which generated run-off from the active worksites of Mayne Yard and Clapham Yard which triggered a post-rain monitoring event at these locations.
  - 12 May 2021 - A rain event occurred which generated run-off from the active worksites of Mayne Yard and Clapham Yard which triggered a post-rain monitoring event at these locations.

There were no active surface water discharges (e.g. dewatering through pumping, sediment basin release).

In-situ physico-chemical parameters results for all monitoring undertaken during the reporting period are presented below.

3.3.1 Rainfall Records

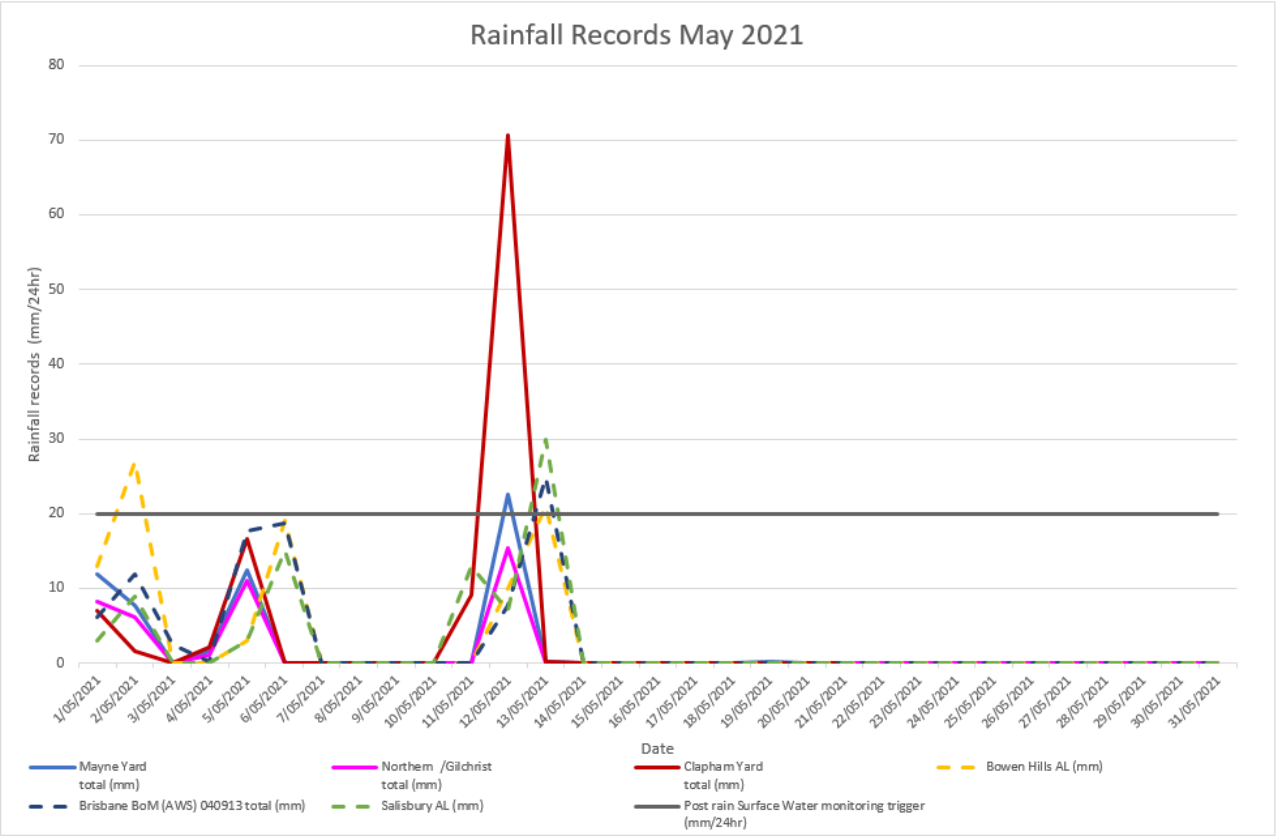


Figure 4 Rainfall Records

3.3.2 Surface Water Discharge Monitoring / Post Rainfall Monitoring Results

Post rainfall monitoring is triggered typically following any rainfall event exceeding 20 to 25 mm over 24 hours, however storm events during the high-risk period of the year (November to March) of lesser amounts but higher intensity may cause run-off which would also trigger post rain monitoring consistent with the C-EMP.

Post rainfall monitoring was triggered during the reporting period at the active worksites of Mayne Yard and Clapham Yard.

The results of monitoring at the relevant waterways are presented in the below. When results are in red, they exceed / do not meet the Project discharge criteria for compliance with Imposed Conditions 15 and 18.

Table 10: Surface Water Discharge Monitoring Results

Date	Location	Waterway	Tide	Discharge Criteria[3]			
				Turbidity (NTU) Nil until Turbidity / TSS correlation achieved[4]	TSS (mg/L) <50	DO (%) Nil	pH (pH Unit) Stable pH reading; and General sites: 6.5 – 8.5, or Wallum/Acidic Ecosystems: 5.0 – 7.0
06/05/21	Mayne Yard	Breakfast Creek (SW-01)	Falling Brackish to Marine conditions	In Field:17 Lab: 10	10	86	6.9
06/05/21	Mayne Yard	Breakfast Creek (SW-02)	Falling Brackish to Marine conditions	In Field: 12 Lab: 10	8	81	6.9
06/05/21	Mayne Yard	Breakfast Creek (SW-03)	Falling Brackish to Marine conditions	In Field: 11 Lab: 7	11	85	7.3
06/05/21	Clapham Yard	Moolabin Creek (SW-05)	N/A	Field: 15 Lab: 11	8	83	7.0
06/05/21	Clapham Yard	Moolabin Creek (SW-06)	N/A	Field: 15 Lab: 12	7	79	7.6
06/05/21	Clapham Yard	Rocky Water Holes Creek (SW-07)	N/A	Field: 65 Lab:33	35	71	7.0
06/05/21	Clapham Yard	Rocky Water Holes Creek (SW-08)	N/A	Field: 83 Lab:41	**50**	83	7.3
13/05/21	Mayne Yard	Breakfast Creek (SW-01)	Falling Freshwater to Brackish conditions	In Field:38 Lab: 29	21	91	7.1
13/05/21	Mayne Yard	Breakfast Creek (SW-02)	Falling Freshwater to Brackish conditions	In Field: 32 Lab: 22.5	17	84	6.7
13/05/21	Mayne Yard	Breakfast Creek (SW-03)	Falling Freshwater to Brackish conditions	In Field: 28 Lab: 20	22	84	7.1
13/05/21	Clapham Yard	Moolabin Creek (SW-05)	N/A	Field: 34 Lab: 30	9	89	7.0
13/05/21	Clapham Yard	Moolabin Creek (SW-06)	N/A	Field: 34 Lab: 33	12	84	7.1
13/05/21	Clapham Yard	Rocky Water Holes Creek (SW-07)	N/A	Field: 84 Lab:64	23	89	7.1

[3] Refer to the waterways and water quality management plan, a C-EMP sub-plan for details of derivation of the discharge criteria

[4] Correlations are typically run on the source water (i.e. basins) not the receiving system where there is a dilution component of potentially diffuse sources of sediments from non-Project related areas. Due to the very limited amount of discharged the RIS Scope of Works has experienced, there is no correlation available. Typically, a minimum of 20 data points is used to determine TSS / in field turbidity correlation for site waters.

Date	Location	Waterway	Tide	Discharge Criteria[3]			
				Turbidity (NTU) Nil until Turbidity / TSS correlation achieved[4]	TSS (mg/L) <50	DO (%) Nil	pH (pH Unit) Stable pH reading; and General sites: 6.5 – 8.5, or Wallum/Acidic Ecosystems: 5.0 – 7.0
13/05/21	Clapham Yard	Rocky Water Holes Creek (SW-08)	N/A	Field: 89 Lab: 73.5	32	81	7.1

3.3.3 Groundwater Discharge Monitoring Results

Groundwater discharge monitoring was not triggered during the reporting period.

3.3.4 Routine Surface Water Monitoring Results

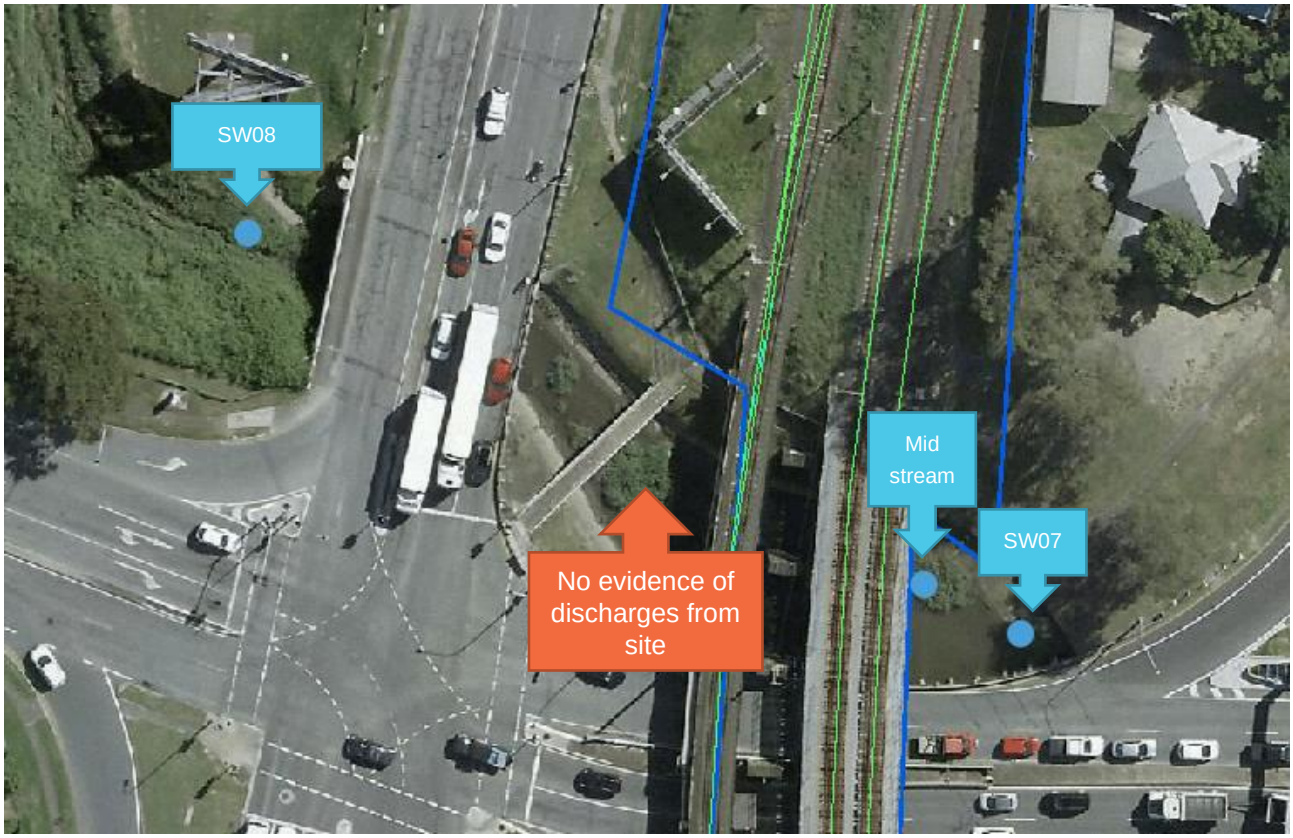
During the reporting period, UNITY did not undertake routine surface water monthly monitoring. A review of the data sample has identified that over 12 months of continuous data collection has occurred with a total of over 18 monitoring events. The frequency of background monitoring has therefore been reduced to bi-annually, with the next sampling round to be undertaken during the dry season, likely mid-2021. This reduction of monitoring frequency is acceptable to continue informing the Dis-1 Credit for the ISCA 'Excellent Rating' the Project is pursuing.

3.3.5 Interpretation

Post rainfall monitoring undertaken in May 2021 following rainfall events across all active worksites confirmed off-site discharges from Mayne Yard and Clapham Yard met the discharge criteria at the relevant receiving waters of Breakfast Creek, Moolabin Creek and Rocky Water Holes Creek with the exception of the Rocky Water Holes downstream location (SW-08) on 6 May 2021.

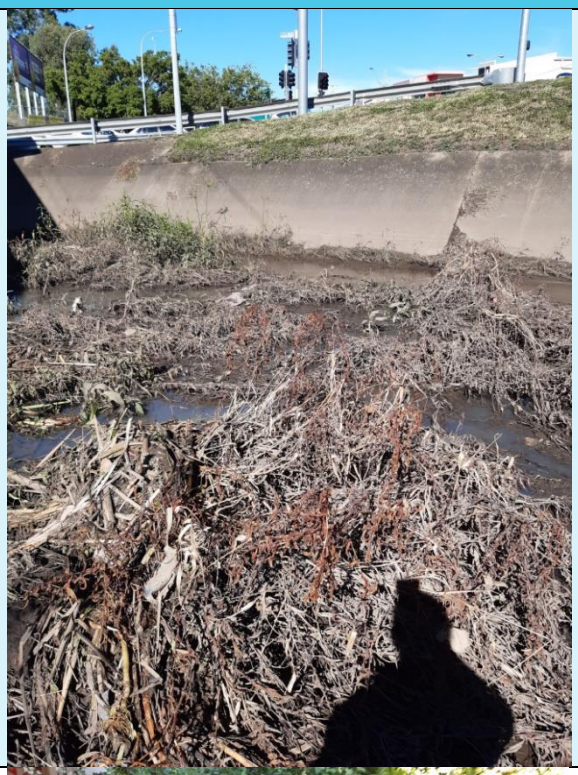
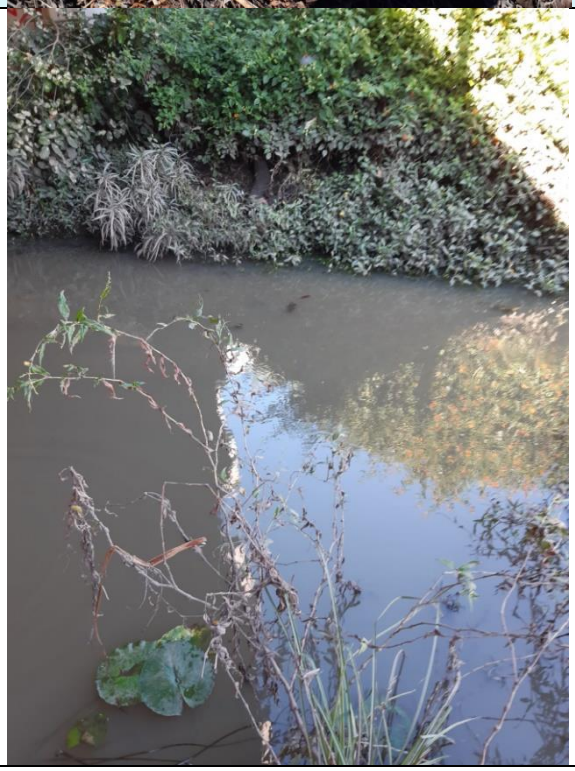
At the time of the monitoring, the Unity environment team identified that the turbidity readings were elevated at both monitoring locations compared to previous post rainfall events monitoring results. Therefore, a visual inspection of the concrete lined channels between the two locations was undertaken and an additional in-situ sample was collected mid-stream.

The below map identifies where in-situ samples were collected.

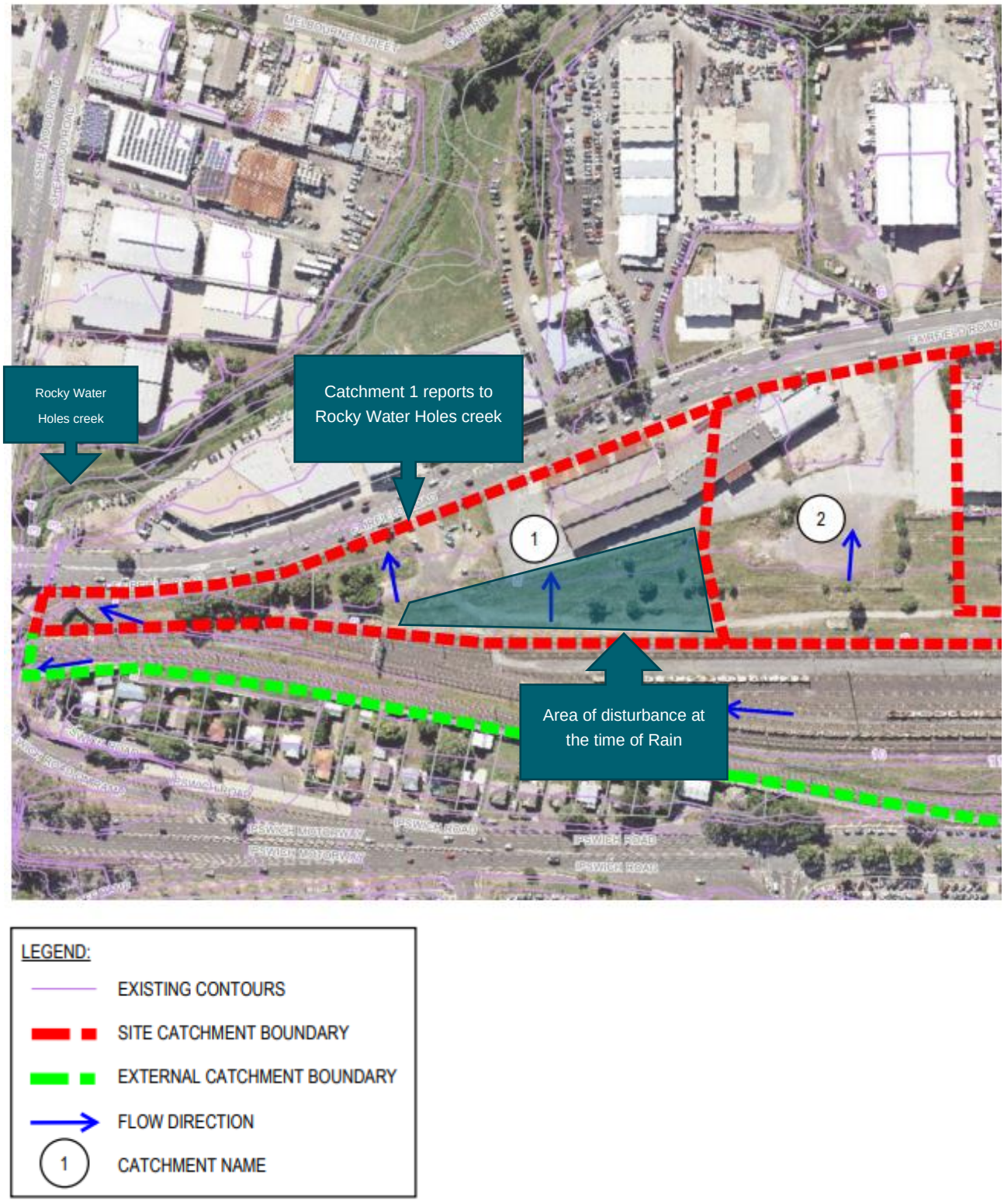


The below table summarises the in-situ water quality records and presents some photographs of the monitoring sites at the time of the samples.

Location	Turbidity in Situ record	Visual Observations	Photograph
SW07	65 NTU	Brown and murky in colour, vegetation debris in waterway, no odour or sheen	

Location	Turbidity in Situ record	Visual Observations	Photograph
Mid-Stream	114 NTU	Brown and murky in colour, large amount of vegetation debris, no odour or sheen	
SW08	83 NTU	Brown in colour, vegetation debris, visible turbidity, no odour or sheen	

There were no visible active or passive discharges from site along Rocky Water Holes identified. It is highly unlikely that turbid discharges from Clapham Yard to Rocky Water Holes have occurred. Indeed, 75% of sub-catchment reporting to Rocky Water Holes Creek has not been disturbed (refer map below). Ground cover and vegetation has been retained for a length of 150m leading up to the Creek.



Finally, there is anecdotal evidence of drainage maintenance works and earthworks having occurred recently upstream of SW07 near Muriel Avenue Park (250m upstream of SW-07 adjacent to Rock Water Holes Creek) as presented in the below photographs.

Therefore, the source of the increased turbidity cannot not be reasonably accredited to the Project Works.

Compliance with Imposed Conditions 15 and 18 was met.

4 Compliance Review

4.1 Non-Compliance Events

The below section summarises the events to be reported in accordance with Condition 5 and Condition 6(b)(ii) of the CGCR.

A non-compliance event (NCE) is defined as Project Works that do not comply with the Imposed Conditions.

4.1.1 Non - Compliance Events Summary

Table 11 Summary of Non-Compliance Events

Event Title	Location, Date, and time of event	Date the Event was Formally Notified to CG/IEM	Conditions Affected	Date the Event Report Formally Sent to CG/IEM	Status of Event
None for this reporting period					

4.2 CEMP Compliance

The below table summarises compliance status with the CEMP and monitoring requirements of relevant sub-plans for the reporting period.

Table 12 CEMP and relevant Subplans monitoring requirements – Compliance Status for the reporting period

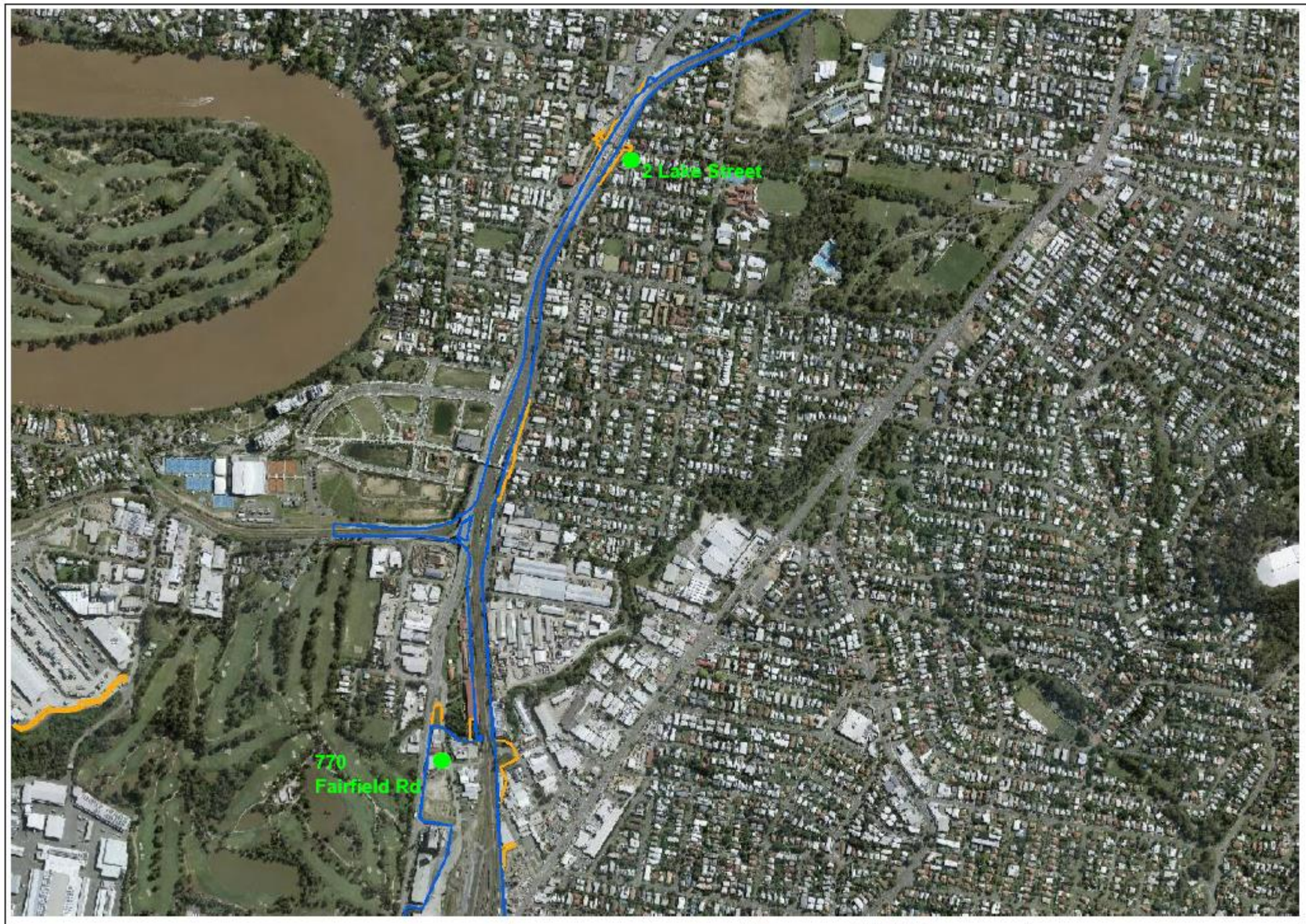
Aspect	Monitoring requirement	Activities risk profile	Monitoring undertaken	Compliance status with CEMP / Subplan	Effect of the non-compliance
Air Quality	Visual monitoring program + Additional particulate monitoring as required based on the outcomes of the predictive assessment / risk profile	Moderate to High	Yes – visual monitoring undertaken as part of routine inspections. Monitoring for TSP, PM10 and deposited dust also undertaken	Compliant	Not Applicable
Air Quality	Complaints response	Moderate to High	Not triggered – no complaints	Compliant	Not Applicable
Noise	Buffer distance tests based on the outcomes of the predictive assessment based / risk profile of activities	Moderate to High	Yes	Compliant	Not Applicable
Noise	Plant noise audits for noisy plant to validate models input as required	Moderate to High	No	N/A	Not Applicable
Noise	Complaints response	Moderate to High	Not triggered	Compliant	Not Applicable
Vibration	Construction Monitoring at Sensitive Places / DAPs - Model verification based on the outcomes of the predictive assessment based / risk profile of activities	Moderate to High	Yes, as per the property damage mitigation sub-plan	Compliant	Not Applicable
Vibration	Complaints response	Moderate to High	Not triggered – no complaints	Compliant	Not Applicable
Water Quality	Monthly monitoring	N/A	No – monitoring regime reduced to bi-annually	Compliant	Not Applicable
Water Quality	Post Rainfall	Moderate to High	Yes	Compliant	Not Applicable

Aspect	Monitoring requirement	Activities risk profile	Monitoring undertaken	Compliance status with CEMP / Subplan	Effect of the non-compliance
Water Quality	Dewatering	Moderate to High	Not triggered – no dewatering to receiving water systems	N/A	Not Applicable

Attachment 1 CGCR Non-Compliance Event Report (if required)

None for this reporting period.

Attachment 2 Monitoring Locations – Noise



Legend

- Project Boundary RFPC - Permanent
- Project Boundary RFPC - Temporary Construction
- Project Boundary RFPC - Volumentric
- Brisbane Imagery (09/04/2021)

A	FOR INFORMATION		
Issue	Description: Construction Noise Monitoring at Sensitive Places	Date	Approved

Scale 1: 10,000

508 0 254.0 508 Meters

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THIS MAP IS NOT TO BE USED FOR NAVIGATION

Status	GIS OUTPUT NOT USED FOR CONSTRUCTION		
Original Size	A3	Drawn	
Coordinate System	GDA MGA94-56	Designed	
Height Datum	AHD	Date Printed	17-Jun-2021

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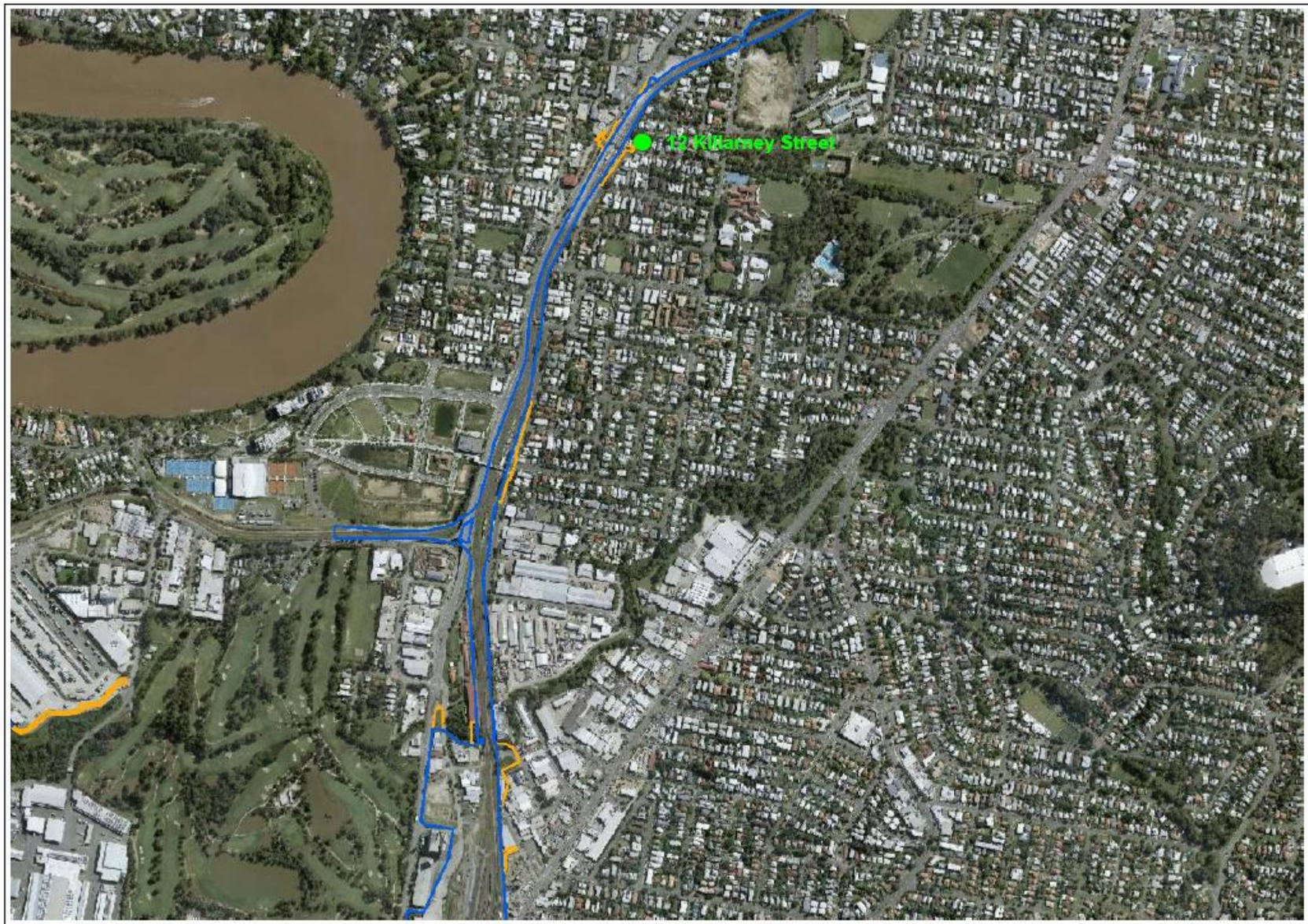
Noise Monitoring Locations

Construction Noise Monitoring at Sensitive Places

Attachment 3 Monitoring Locations – Vibration



Legend

- Project Boundary RFPC - Permanent
- Project Boundary RFPC - Temporary Construction
- Project Boundary RFPC - Volumentric
- Brisbane Imagery (09/04/2021)

A FOR INFORMATION

Issue	Description	Date	Approved
	Construction Noise Monitoring at Sensitive Places		

Scale 1: 10,000

508 0 254.0 508 Meters

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THIS MAP IS NOT TO BE USED FOR NAVIGATION

Status	GIS OUTPUT NOT USED FOR CONSTRUCTION		
Original Size	A3	Drawn	
Coordinate System	GDA MGA94-56	Designed	
Height Datum	AHD	Date Printed	17-Jun-2021

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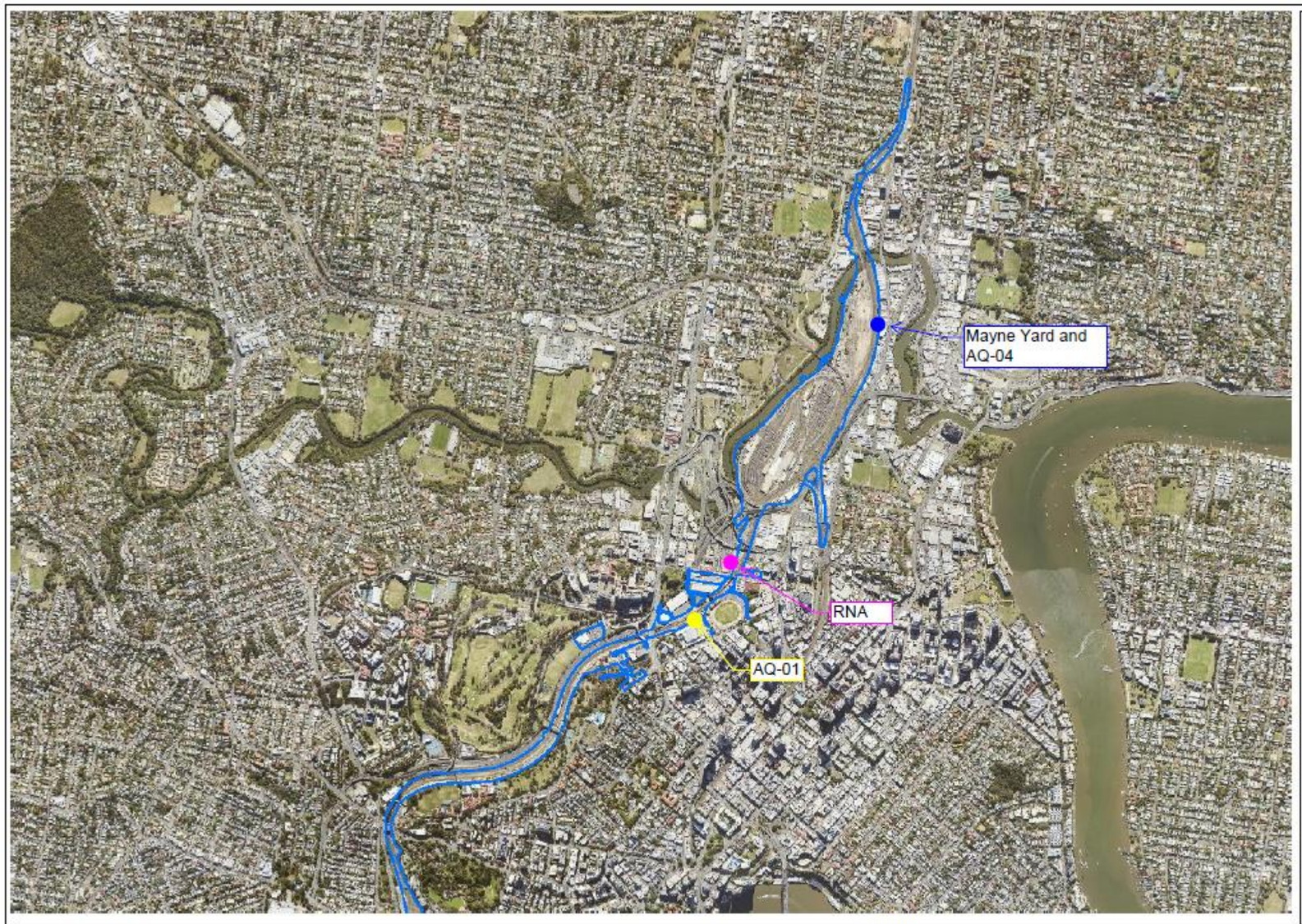
Cross River Rail - RIS Alliance

Vibration Monitoring Locations

Construction Noise Monitoring at Sensitive Places

Attachment 4 Monitoring Locations – Air Quality



Legend

Project Boundary RFPC8
Brisbane Imagery (25/06/2020)

Air Quality Monitoring

- DDG
- DDG, TSP & PM10
- TSP & PM10

A	FOR INFORMATION		
Issue	Description: August 2020	Date	Approved

Scale 1: 20,000

1,016 0 508.0 1,016 Meters

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Status	GIS OUTPUT NOT USED FOR CONSTRUCTION		
Original Size	A3	Drawn	
Coordinate System	GDA MGA94-56	Designed	
Height Datum	AHD	Date Printed	11-Sep-2020

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Air Quality Monitoring locations

Legend

- Project Boundary RFPC- Permanent
- Project Boundary RFPC - Volumetric
- Brisbane Imagery (27/09/2020)
- DDG, TSP and PM10

A	FOR INFORMATION			
Issue	Description	Date	Approved	
	Description			

Scale 1: 8,000

406 0 203.2 406 Meters

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Status	GIS OUTPUT NOT USED FOR CONSTRUCTION		
Original Size	A3	Drawn	
Coordinate System	GDA MGA94-56	Designed	
Height Datum	AHD	Date Printed	22-Apr-2021

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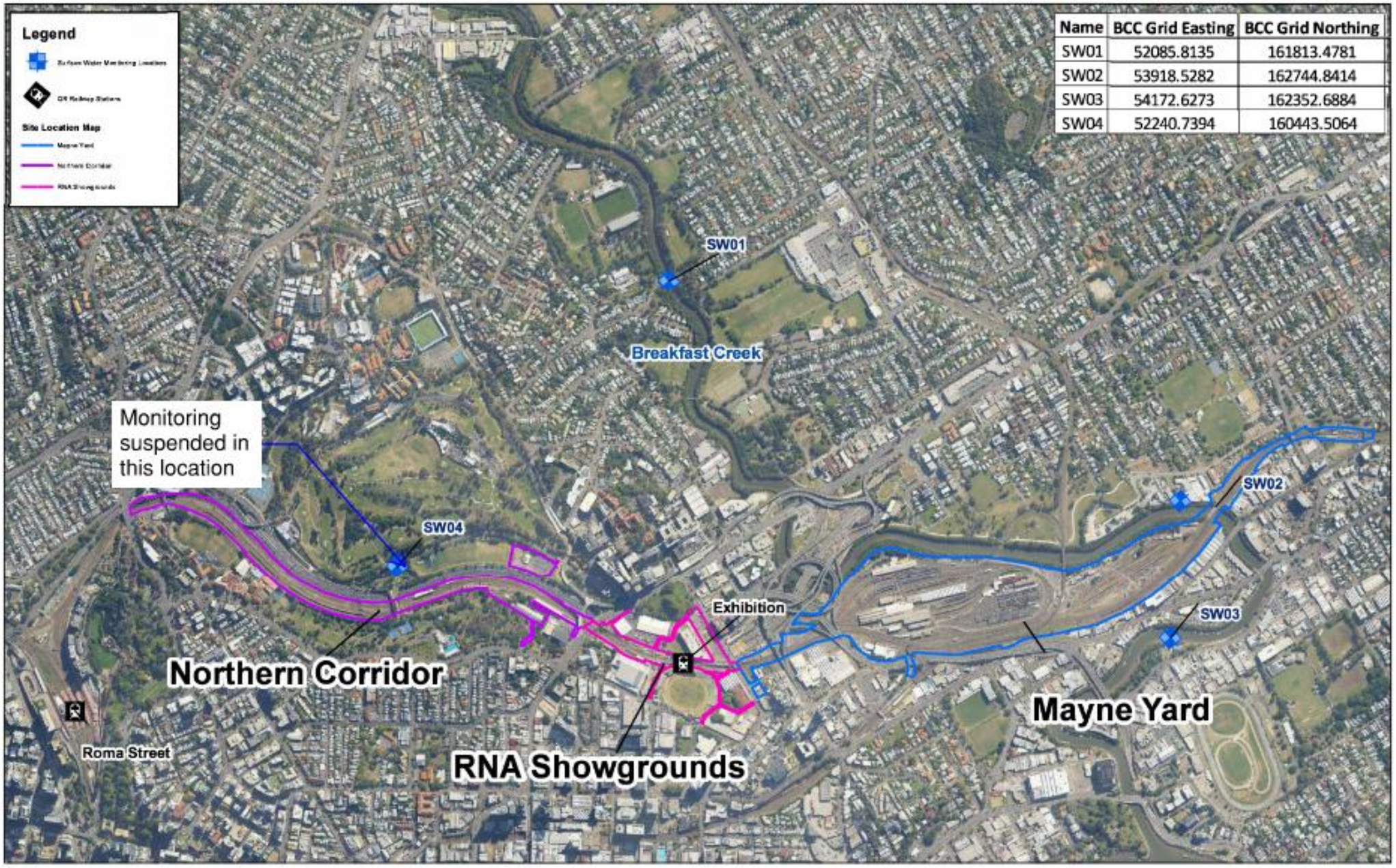
Air Quality Monitoring Stations

Attachment 5 Monitoring Locations – Surface Water



Name	BCC Grid Easting	BCC Grid Northing
SW01	52085.8135	161813.4781
SW02	53918.5282	162744.8414
SW03	54172.6273	162352.6884
SW04	52240.7394	160443.5064

Rev	Description	Date	Approved
1	Overview Map	17/09/2019	UNITY

0 100 200 400 600 m
Scale 1 : 12,000 cm

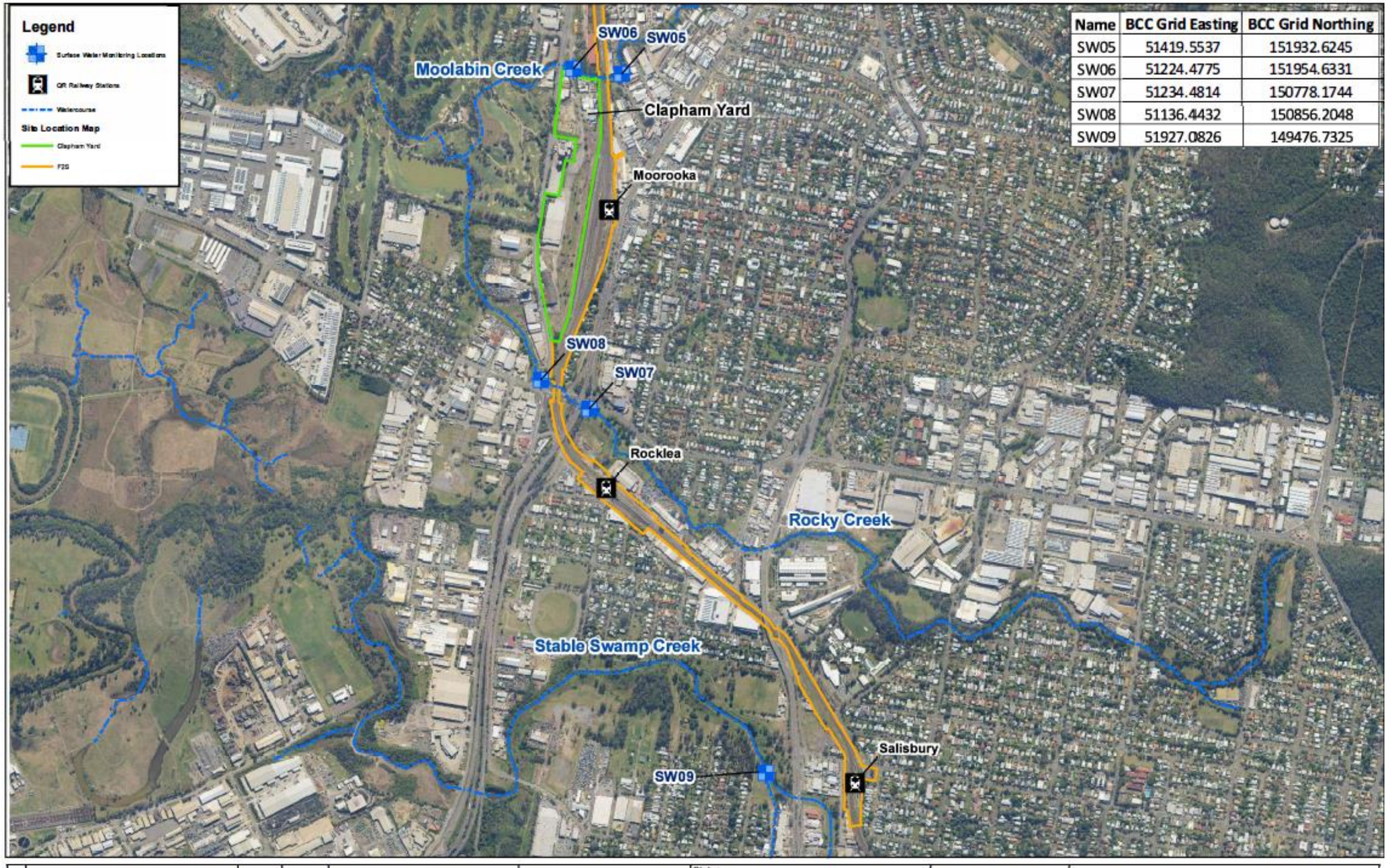
Status: Issued for Information

Original Size	A3	Drawn	GIS
Coordinate System	GDA 1994 BCS007	Designed	UNITY
Height Datum	AHD	Date Printed	2/13/2020
Filename:	Surface_Water_Northern_Area_Map.mxd		

Project Wide Surface Water Investigation

Figure 1 - Surface Water Monitoring Locations

Project Number	Discipline	Document	Document Number	Rev
	ENV	PL	002	1



Name	BCC Grid Easting	BCC Grid Northing
SW05	51419.5537	151932.6245
SW06	51224.4775	151954.6331
SW07	51234.4814	150778.1744
SW08	51136.4432	150856.2048
SW09	51927.0826	149476.7325

Rev	Description	Date	Approved
1	Southern Overview Map	17/09/2019	Unity

0 100 200 400 600 m
Scale 1 : 12,000 cm

Status: Issued for Information

Original Size	A3	Drawn	GIS
Coordinate System	GDA 1994 BCSG02	Designed	Unity
Height Datum	AHD	Date Printed	2/13/2020
Filename:	Surface_Water_Southern_Area_Map.mxd		

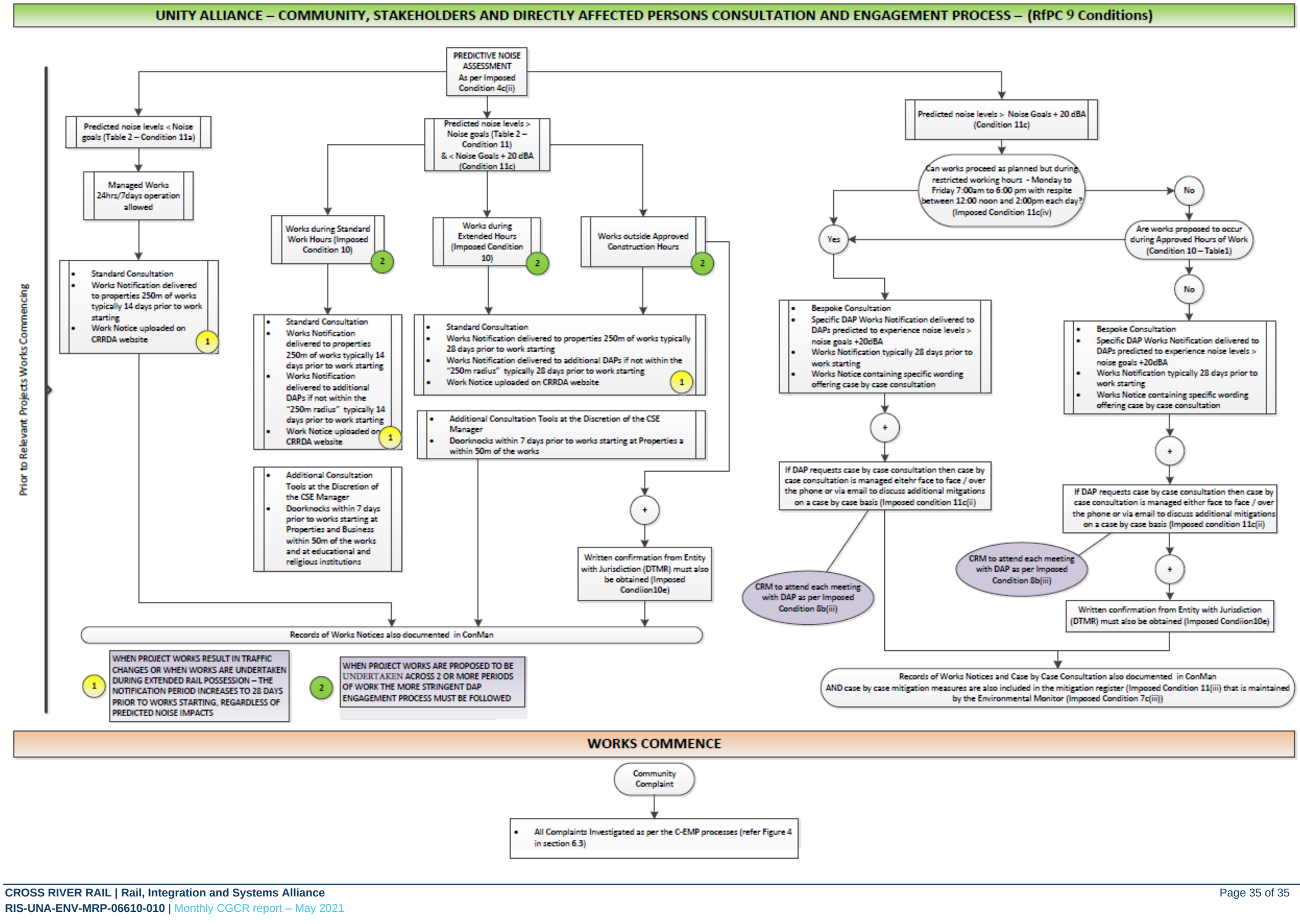
N

Project Wide Surface Water Investigation

Figure 2 - Surface Water Monitoring Locations

Project Number	Discipline	Document	Document Number	Rev
	ENV	PL	002	1

Attachment 6 DAP Engagement Process



Appendix B – TSD Monthly Report

COORDINATOR-GENERAL'S MONTHLY REPORT: MAY 2021

Prepared in accordance with Coordinator-General Imposed Condition 6 - Reporting.

1. Monthly Monitoring Summary

It is CBGU Joint Venture's intent to aim for the Goals and Objectives relevant to vibration, noise, air quality and water monitoring within the practical extent of delivering the Project.

Vibration monitoring was conducted on fifteen (15) occasions, and noise monitoring was conducted on thirty-two (32) occasions during May 2021. Each vibration and noise monitoring event confirmed works adhered to project requirements.

Ambient air quality monitoring was conducted at Roma Street, Albert Street, Woolloongabba, Boggo Road, Southern Portal and Northern Portal precinct sites during May 2021. Air quality monitoring confirmed works adhered to project requirements.

Water quality monitoring was conducted before the release of water from the site on five (5) occasions. Each monitoring event confirmed project requirements were adhered to. Two (2) rounds of surface water quality monitoring were conducted; these monitoring events confirmed no impacts were generated by the Project.

2. CG Monthly Report – Compliance Assessment Against Imposed Conditions

Whilst not a requirement of Imposed Condition 6, CBGU offers the below Compliance Status Table as a good-will gesture to demonstrate the Project's ongoing environmental performance.

Table 1: Compliance Status – CG Imposed Conditions

CG Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
1.	**General conditions** – compliance with the Project Changes relevant to the Contractor's scope.	Yes	CBGU project works have been conducted in compliance with the Imposed Conditions.
2.	**Outline Environmental Management Plan** – timely submission to the Coordinator-General, including required sub plans.	N/A	The OEMP is not an obligation of the CBGU Joint Venture.
3.	**Design** – the achievement of the Environmental Design Requirements.	Yes	Design and implementation proceeded in accordance with the Environmental Design Requirements.
4.	**Construction Environmental Management Plan** – all relating to Relevant Project Works.	Yes	All CBGU works were conducted in accordance with the Construction Environmental Management Plan (CEMP) (Rev 7).
5.	**Compliance and Incident management** – Non-compliance events, notifications and reporting.	Yes	Nil non-compliances occurred during the monitoring period (refer to Section 4).
6.	**Reporting** – Monthly and Annual reporting.	Yes	All reporting requirements are completed in accordance with Imposed Condition 6.
7.	**Environmental Monitor** – engaged and functions resumed.	Yes	An Environmental Monitor (EM) is appointed to the Project, and CBGU is committed to working collaboratively to aid the EM's functions under Imposed Condition 7.
8.	**Community Relations Monitor** – engaged and functions resumed.	Yes	A Community Relations Monitor (CRM) is appointed to the Project, and CBGU is committed to working collaboratively to aid the CRM's functions under Imposed Condition 8.
9.	**Community engagement plan** – developed and endorsed by Environmental Monitor.	Yes	A Community Engagement Plan (CEP) has been developed and implemented in accordance with Imposed Condition 9. The CEMP has been endorsed with the CEP.
10.	**Hours of work** – works undertaken during approved hours.	Yes	CBGU project works have been conducted in accordance with the approved hours of work.

CG Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
11.	**Noise** – Work must aim to achieve internal noise goals for human health and well-being.	Yes	CBGU project work has aimed to achieve internal noise goals for human health and well-being. Where internal noise levels have been unable to be measured, suitable noise reductions have been applied in accordance with Imposed Condition 11. Noise monitoring data is provided within Section 3.2.
	Vibration – Works must aim to achieve vibration goals for cosmetic damage, human comfort and sensitive building contents.	Yes	CBGU project work has aimed to achieve vibration goals for cosmetic damage, human comfort and sensitive buildings. Vibration monitoring data is provided within Section 3.1.
12.	**Property damage** relating to ground movement	Yes	The management of potential impacts relating to property damage has been completed in accordance with Imposed Condition 12.
13.	**Air quality** – Works must aim to achieve air quality goals for human health and nuisance.	Yes	CBGU project works have aimed to achieve air quality goals. Air quality monitoring data is provided within Section 3.3.
14.	**Traffic and transport** – Works must minimise adverse impacts on road safety and traffic flow.	Yes	CBGU project works have been conducted in a manner that has minimised adverse impacts on road safety and traffic flow.
15.	**Water quality** – Works must not discharge surface water and groundwater from the construction site above the relevant environmental values and water quality objectives.	Yes	CBGU has prepared and manages processes to ensure water quality is managed in accordance with Imposed Condition 15.
16.	**Water resources** – evaluate potential impact, plan works, implement controls and monitor the inflow of groundwater associated with drawdown.	Yes	CBGU project works are managed in accordance with Imposed Condition 16.
17.	**Surface water** – Must be designed to avoid inundation from stormwater due to a 2-year (6hr) ARI rainfall event and flood waters due to a 5-year ARI rainfall event and constructed to avoid afflux or cause the redirection of uncontrolled surface water flows, including stormwater flows, outside of worksites.	Yes	Design of the CBGU project works considers the requirements of Imposed Condition 17.
18.	**Erosion and sediment control** – Provisions for erosion and sediment control must be consistent with the Guidelines for Best Practice Erosion and Sediment Control (International Erosion Control Association, 2008) and the Department of Transport and Main Roads' Technical Standard MRTS52.	Yes	CBGU has prepared and manages processes to ensure erosion & sediment control is managed in accordance with Imposed Condition 18.

CG Condition	Requirement Summary	Compliance Met (Yes/No/NA)	Comment
19.	**Acid Sulfate Soils** managed as per the *Queensland Acid Sulfate Soil Technical Manual.*	Yes	CBGU has prepared and manages processes to ensure acid sulphate soils are managed in accordance with Imposed Condition 19.
20.	**Landscape and open space** – general requirement to minimise impacts on landscapes and open space values and specific requirements around Victoria park	Yes	CBGU project works are designed and implemented in accordance with Condition 20.
21.	**Worksite rehabilitation** – worksites rehabilitated as soon as practicable upon completion of works or commissioning, and in consultation with Brisbane City Council.	Yes	CBGU project works are designed and implemented in accordance with Condition 21.

3. Environmental Monitoring Results

Monitoring data is provided below in accordance with Imposed Condition 6(b)(i).

3.1 Vibration

Vibration requirements (levels) are defined as goals within Imposed Condition 11. The goals are to be aimed for.

The Coordinator-General Change Report acknowledges instances exist that these goals may not be achieved.

Fifteen (15) vibration monitoring sessions were conducted during May 2021.

All vibration monitoring adhered to project requirements and is detailed in the table below.

Table 2: Vibration Monitoring Data

No.	Start Date	Time (AM/PM)	Finish Date	Location (Street Name) (Construction Precinct)	Average Vibration level (mm/s)	Max Vibration Level (mm/s)	Vibration Goal (mm/s)	Receiver / Goal Type	Adhered to Project Requirements (Yes / No)
1.	06/05/2021	16:00	06/05/2021	Roma Street (Roma Street Precinct)	-	5.0	10	Heritage Structure (Controlled Blast)	Yes
2.	12/05/2021	07:30	12/05/2021	Roma Street (Roma Street Precinct)	-	5.0	10	Heritage Structure (Controlled Blast)	Yes
3.	13/05/2021	11:39	14/05/2021	Peterson Street (Woolloongabba Precinct)	0.14	0.25	0.5	Residential	Yes
4.	19/05/2021	09:33	21/05/2021	Peterson Street (Woolloongabba Precinct)	0.08	0.09	0.5	Residential	Yes
5.	20/05/2021	07:30	12/05/2021	Roma Street (Roma Street Precinct)	-	6.75	10	Heritage Structure (Controlled Blast)	Yes

No.	Start Date	Time (AM/PM)	Finish Date	Location (Street Name) (Construction Precinct)	Average Vibration level (mm/s)	Max Vibration Level (mm/s)	Vibration Goal (mm/s)	Receiver / Goal Type	Adhered to Project Requirements (Yes / No)
6.	21/05/2021	10:22	24/05/2021	Peterson Street (Woolloongabba Precinct)	0.08	0.09	0.5	Residential	Yes
7.	25/05/2021	15:12	26/05/2021	Lockerbie Street (Woolloongabba Precinct)	0.06	0.08	0.5	Residential	Yes
8.	25/05/2021	09:53	26/05/2021	Peterson Street (Woolloongabba Precinct)	0.17	0.40	0.5	Residential	Yes
9.	26/05/2021	09:09	27/05/2021	Peterson Street (Woolloongabba Precinct)	0.13	0.26	0.5	Residential	Yes
10.	27/05/2021	08:44	28/05/2021	Peterson Street (Woolloongabba Precinct)	0.15	0.39	0.5	Residential	Yes
11.	28/05/2021	07:30	12/05/2021	Roma Street (Roma Street Precinct)	-	1.95	10	Heritage Structure (Controlled Blast)	Yes
12.	28/05/2021	09:53	31/05/2021	Peterson Street (Woolloongabba Precinct)	0.17	0.48	0.5	Residential	Yes
13.	28/05/2021	08:26	31/05/2021	Peterson Street (Woolloongabba Precinct)	0.14	0.35	0.5	Residential	Yes
14.	31/05/2021	12:02	1/06/2021	Peterson Street (Woolloongabba Precinct)	0.09	0.12	0.5	Residential	Yes
15.	31/05/2021	13:22	1/06/2021	Peterson Street (Woolloongabba Precinct)	0.1	0.17	0.5	Residential	

3.2 Noise

Noise requirements (levels) are defined as goals within Imposed Condition 11. The goals are to be aimed for.

The Coordinator-General Change Reports acknowledge instances exist that these goals may not be achieved.

Noise monitoring was conducted on thirty-two (32) occasions during May 2021. All noise monitoring data adhered to project requirements and is provided in the table below.

Table 3: Noise Monitoring Data

No.	Date	Time (AM / PM)	Location (Street Name) (Construction Precinct)	Purpose of Monitoring	Internal or External [3] Monitoring	Activity	Dominant Noise Source	Noise Goal LA10[1]	Noise level LA10[1]	Noise Goal LAeq[2]	Noise level LAeq[2]	Adhered to Project Requirements (Yes / No)
1.	6/05/2021	4:00:00 PM	Roma Street (Roma Street Precinct)	Supreme Court	External	Controlled blast	Construction	-	-	130	99.3	Yes
2.	7/05/2021	10:21:00 AM	Albert Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Excavation and material haulage	Construction	60	53.2	50	52.7	Yes
3.	7/05/2021	10:44:00 AM	Albert Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Excavation and material haulage	Residential	60	51.4	50	51.1	Yes
4.	7/05/2021	11:19:00 AM	Albert Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Excavation and material haulage	Construction	60	63.5	50	58.7	Yes
5.	7/05/2021	11:37:00 AM	Albert Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Excavation and material haulage	Construction	60	52.3	50	58.4	Yes

No.	Date	Time (AM / PM)	Location (Street Name) (Construction Precinct)	Purpose of Monitoring	Internal or External [3] Monitoring	Activity	Dominant Noise Source	Noise Goal LA10[1]	Noise level LA10[1]	Noise Goal LAeq[2]	Noise level LAeq[2]	Adhered to Project Requirements (Yes / No)
6.	12/05/2021	7:30:00 AM	Roma Street (Roma Street Precinct)	Supreme Court	External	Controlled blast	Construction	-	-	130[4]	100.1	Yes
7.	13/05/2021	10:12:00 AM	Albert Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	Internal	Public Utilities Works	Hotel	55	31.1	45	38.4	Yes
8.	14/05/2021	12:20:00 PM	Gregory Terrace (Northern Portal)	Construction Monitoring at Sensitive Places	External	Piling and excavation	Construction	62	73.8	52	70.8	Yes
9.	17/05/2021	12:13:00 PM	Gregory Terrace (Northern Portal)	Construction Monitoring at Sensitive Places	External	Piling and excavation	Construction	62	67.4	52	66.6	Yes
10.	17/05/2021	12:38:00 PM	Gregory Terrace (Northern Portal)	Construction Monitoring at Sensitive Places	External	Piling and excavation	Construction	62	69	52	67.1	Yes
11.	17/05/2021	8:45:00 PM	Roma Street (Roma Street Precinct)	Complaint response	Internal	Excavation and material haulage	Construction	50	59.5	40	55.7	Yes
12.	17/05/2021	9:33:00 PM	Herschel Street (Roma Street Precinct)	Complaint response	Internal	Excavation and material haulage	Construction	50	46.3	40	43.1	Yes

No.	Date	Time (AM / PM)	Location (Street Name) (Construction Precinct)	Purpose of Monitoring	Internal or External [3] Monitoring	Activity	Dominant Noise Source	Noise Goal LA10[1]	Noise level LA10[1]	Noise Goal LAeq[2]	Noise level LAeq[2]	Adhered to Project Requirements (Yes / No)
13.	19/05/2021	9:45:00 AM	Peterson Street (Tunnel Alignment)	Complaint response	Internal	Tunnelling	Traffic	55	35.4	45	34.9	Yes
14.	19/05/2021	10:06:00 AM	Peterson Street (Tunnel Alignment)	Complaint response	Internal	Tunnelling	Traffic	55	38.1	45	38.2	Yes
15.	20/05/2021	7:47:00 AM	Roma Street (Roma Street Precinct)	Supreme Court	External	Controlled blast	Construction	-	-	130[4]	100.8	Yes
16.	21/05/2021	10:46:00 AM	Gregory Terrace (Northern Portal)	Construction Monitoring at Sensitive Places	External	Ground support	Construction	62	71.4	52	70	Yes
17.	21/05/2021	11:07:00 AM	Gregory Terrace (Northern Portal)	Construction Monitoring at Sensitive Places	External	Ground support	Construction	62	68.9	52	67.5	Yes
18.	21/05/2021	9:29:00 AM	Peterson Street (Tunnel Alignment)	Complaint response	Internal	Tunnelling	Traffic / Construction	55	36.2	45	34.5	Yes
19.	21/05/2021	9:47:00 AM	Peterson Street (Tunnel Alignment)	Complaint response	Internal	Tunnelling	Traffic / Construction	55	37.6	45	35.8	Yes
20.	21/05/2021	10:05:00 AM	Peterson Street (Tunnel Alignment)	Complaint response	Internal	Tunnelling	Traffic / Construction	55	41.2	45	37.5	Yes

No.	Date	Time (AM / PM)	Location (Street Name) (Construction Precinct)	Purpose of Monitoring	Internal or External [3] Monitoring	Activity	Dominant Noise Source	Noise Goal LA10[1]	Noise level LA10[1]	Noise Goal LAeq[2]	Noise level LAeq[2]	Adhered to Project Requirements (Yes / No)
21.	25/05/2021	2:04:00 PM	Abingdon Street (Boggo Road Precinct)	Construction Monitoring at Sensitive Places	External	Crane operations	Local Traffic and Fauna	57	52	47	50	Yes
22.	25/05/2021	8:48:00 PM	Albert Street (Albert Street Precinct)	Construction Monitoring at Sensitive Places	External	Public Utilities Works	Construction	67	81.3	57	78.4	Yes
23.	27/05/2021	10:26:00 PM	Mark Lane (Tunnel Alignment)	Construction Monitoring at Sensitive Places	External	Tunnelling	Traffic	54	57.3	47	55.8	Yes
24.	27/05/2021	10:47:00 PM	Reid Street (Tunnel Alignment)	Construction Monitoring at Sensitive Places	External	Tunnelling	Traffic	49	54.4	42	52.9	Yes
25.	28/05/2021	12:17:00 PM	Gregory Terrace (Northern Portal)	Complaint response	Internal	Ground support and excavation	Construction & Road Traffic	55	58.3	45	56.4	Yes
26.	28/05/2021	12:35:00 PM	Gregory Terrace (Northern Portal)	Complaint response	Internal	Piling	Construction & Road Traffic	55	59.1	45	59.7	Yes
27.	28/05/2021	7:45:00 AM	Roma Street (Roma Street Precinct)	Supreme Court	External	Controlled blast	Construction	-	-	130[4]	101.1	Yes
28.	28/05/2021	7:36:00 AM	Peterson Street (Tunnel Alignment)	Background Data	Internal	Tunnelling	Traffic	55	49.9	45	48.2	Yes

No.	Date	Time (AM / PM)	Location (Street Name) (Construction Precinct)	Purpose of Monitoring	Internal or External [3] Monitoring	Activity	Dominant Noise Source	Noise Goal LA10[1]	Noise level LA10[1]	Noise Goal LAeq[2]	Noise level LAeq[2]	Adhered to Project Requirements (Yes / No)
29.	28/05/2021	7:59:00 AM	Peterson Street (Tunnel Alignment)	Construction Monitoring at Sensitive Places	Internal	Tunnelling	Construction	55	51.7	45	49.5	Yes
30.	30/05/2021	10:05:00 AM	Harrogate Street (Tunnel Alignment)	Construction Monitoring at Sensitive Places	External	Tunnelling	Construction	49	64.4	42	63.4	Yes
31.	31/05/2021	1:46:00 PM	Gregory Terrace (Northern Portal)	Complaint response	External	Piling	Construction	62	81.8	52	78.4	Yes
32.	31/05/2021	2:02:00 PM	Gregory Terrace (Northern Portal)	Complaint response	External	Piling	Construction	62	78.5	52	75	Yes

- *[1] Intermittent noise goal (LA10)*
- *[2] Continuous noise goal (LAeq)*
- *[3] In accordance with Imposed Condition 11, where internal noise levels were unable to be measured, external noise goals were developed by an acoustic specialist using the following standards: ISO 140-5:1998 Acoustics – Measurement of Sound Insulation in Buildings and of Building Elements, Part 5: Field measurements of airborne sound insulation of façade elements and facades and ISO 354:1985 Acoustics – Measurement of sound absorption in a reverberation room.*
- *[4] Blasting is measured in dB Linear Peak.*

3.3 Air Quality

3.3.1 Deposited Dust Results

Air quality requirements (levels) are defined as goals within Imposed Condition 13. The goals are to be aimed for. The Coordinator-General Change Report acknowledges instances exist that these goals may not be achieved.

Dust deposition monitoring was performed during May 2021. The dust deposition gauges result for the reporting period are detailed below, and all monitoring data adhered to project requirements.

Table 4: Air Quality Monitoring – Deposited Dust Data

Location	Project Wide Air Quality Goals[1]			Monitoring results (mg/m2/day)	Comments
	Criterion	Air Quality Indicator	Goal (mg/m2/day)		
Northern Portal	Nuisance	Deposited dust	120	40.00	*Air quality monitoring was performed during the reporting period. All results adhered to project requirements.*
Roma Street Precinct				20.00	
Albert Street Precinct (South)				20.00	
Albert Street Precinct (North)				56.67	
Woolloongabba Precinct (North)				33.33	
Woolloongabba Precinct (South)				53.33	
Boggo Road Precinct (North)				20.00	
Boggo Road Precinct (South)				- [2]	
Southern Portal (South)				36.67	
Southern Portal (East)				30.00	

- [1] Project works must aim to achieve construction air quality goals. The Coordinator-General Change Report – Whole of Project Refinements 2019 acknowledges instances exist that these goals may not be achieved.
- [2] The Boggo Road (South) sample was interfered with during the reporting period. As such, no valid data was attainable.

3.3.2 Particulates and Ambient Air Quality Results

Total Suspended Particules (TSP) and particulate matter less than 10µm (PM10) monitoring was conducted during May 2021.

TSP and PM10 are monitored using portable air quality units and nearby Government air quality stations. Targeted monitoring of potential dust-generating activities is conducted by the mobile air quality units and was completed at Albert Street, Woolloongabba, Boggo Road and Northern Portal Precincts during May 2021.

Three (3) Government air quality stations near the Construction Precincts are also utilised.

Table 5: Targeted Air Quality Monitoring – Total Suspended Particles and PM10 Data

Date	TSP Project Goal	PM10 Project Goal	Woolloongabba		Albert		Boggo		Northern Portal	
			TSP	PM 10	TSP	PM 10	TSP	PM 10	TSP	PM 10
	(µg/m3/24 hr)									
01-May-21	80	50	9.52	9.48	18.64	18.59	4.84	4.83	8.19	8.17
02-May-21	80	50	8.70	8.68	20.95	20.92	-	-	8.92	8.91
03-May-21	80	50	7.99	7.94	6.84	6.81	-	-	9.02	9.01
04-May-21	80	50	-	-	27.14	24.44	-	-	12.07	12.04
05-May-21	80	50	-	-	8.78	8.74	2.62	2.59	6.12	6.11
06-May-21	80	50	14.52	14.37	14.66	14.54	6.55	6.54	6.44	6.41
07-May-21	80	50	11.73	11.61	17.42	17.29	7.27	7.25	6.12	6.09
08-May-21	80	50	15.59	15.54	19.66	19.57	8.3	8.3	12.46	12.44
09-May-21	80	50	26.91	26.83	25.12	25.08	-[1]	-[1]	22.36	22.35
10-May-21	80	50	18.18	18.09	16.85	16.78	10.6	10.58	16.82	16.80
11-May-21	80	50	10.62	10.49	12.34	12.25	7.79	7.76	9.55	9.52
12-May-21	80	50	10.33	10.28	13.59	13.55	7.53	7.53	7.97	7.95
13-May-21	80	50	7.86	7.66	10.15	10.03	3.86	3.84	5.94	5.88
14-May-21	80	50	9.87	9.64	12.48	12.34	4.95	4.87	5.11	5.05
15-May-21	80	50	6.70	6.54	9.96	9.85	3.92	3.89	5.87	5.83
16-May-21	80	50	9.07	8.98	14.06	13.98	6.53	6.58	5.63	5.59
17-May-21	80	50	9.49	9.34	13.90	13.72	6.86	6.83	11.53	11.48

Date	TSP Project Goal	PM10 Project Goal	Woolloongabba		Albert		Boggo		Northern Portal	
			TSP	PM 10	TSP	PM 10	TSP	PM 10	TSP	PM 10
	(µg/m3/24 hr)									
18-May-21	80	50	5.89	5.85	19.17	19.06	6.2	6.18	8.33	8.31
19-May-21	80	50	-	-	4.88	4.88	5.8	5.79	7.88	7.85
20-May-21	80	50	-	-	14.63	14.55	6.7	6.67	9.06	9.05
21-May-21	80	50	11.19	10.98	16.07	16.00	8.9	8.86	12.28	12.26
22-May-21	80	50	10.87	10.74	22.48	22.42	7.92	7.91	12.19	12.18
23-May-21	80	50	10.93	10.91	15.89	15.86	8.87	8.86	12.07	12.06
24-May-21	80	50	9.25	9.18	15.86	15.77	7.14	7.11	8.18	8.16
25-May-21	80	50	9.53	9.46	12.62	12.56	5.95	5.94	8.83	8.82
26-May-21	80	50	17.00	16.91	16.25	16.18	11.54	11.52	19.92	19.90
27-May-21	80	50	19.79	19.64	18.18	18.09	62.82	62.81	18.30	18.27
28-May-21	80	50	10.67	10.48	15.43	15.37	8.51	8.47	9.93	9.87
29-May-21	80	50	12.35	12.16	13.91	13.84	9.47	9.43	8.81	8.78
30-May-21	80	50	9.23	9.19	12.04	12.00	6.57	6.56	6.32	6.30
31-May-21	80	50	-	-	13.84	13.78	-	-	7.2	7.18

- [1] Project works must aim to achieve construction air quality goals. The Coordinator-General Change Report – Whole of Project Refinements 2019 acknowledges instances exist that these goals may not be achieved.
- [2] Due to a technical fault, the Woolloongabba and Boggo Road mobile air quality units stopped functioning on several days in May 2021. The issues has been investigated and resolved. A nearby (Woolloongabba and Southern Brisbane) DES Air Quality Stations demonstrated compliant air quality during May 2021, these results are provided below. The low levels are also consistent with levels recorded otherwise throughout the month when the unit was operating.

CBGU also utilises three (3) Government air quality monitoring stations to monitor PM10 near to the project sites. The results during this reporting period were as follows:

- Brisbane CBD: PM_{10} daily Maximum average: **23.3 µg/m3/24 hr** (https://apps.des.qld.gov.au/air-quality/chart/?station=cbd&parameter=18&date=1/05/2021&timeframe=month)
- South Brisbane: PM_{10} daily Maximum average: **35.4 µg/m3/24 hr** (https://apps.des.qld.gov.au/air-quality/chart/?station=sbr&parameter=18&date=1/05/2021&timeframe=month)
- Woolloongabba: PM_{10} daily Maximum average: **31.6 µg/m3/24 hr** (https://apps.des.qld.gov.au/air-quality/chart/?station=woo&parameter=18&date=1/04/2021&timeframe=month)

The graphical representation of the Government air quality data is presented in the below charts (refer to Figure 1-3).

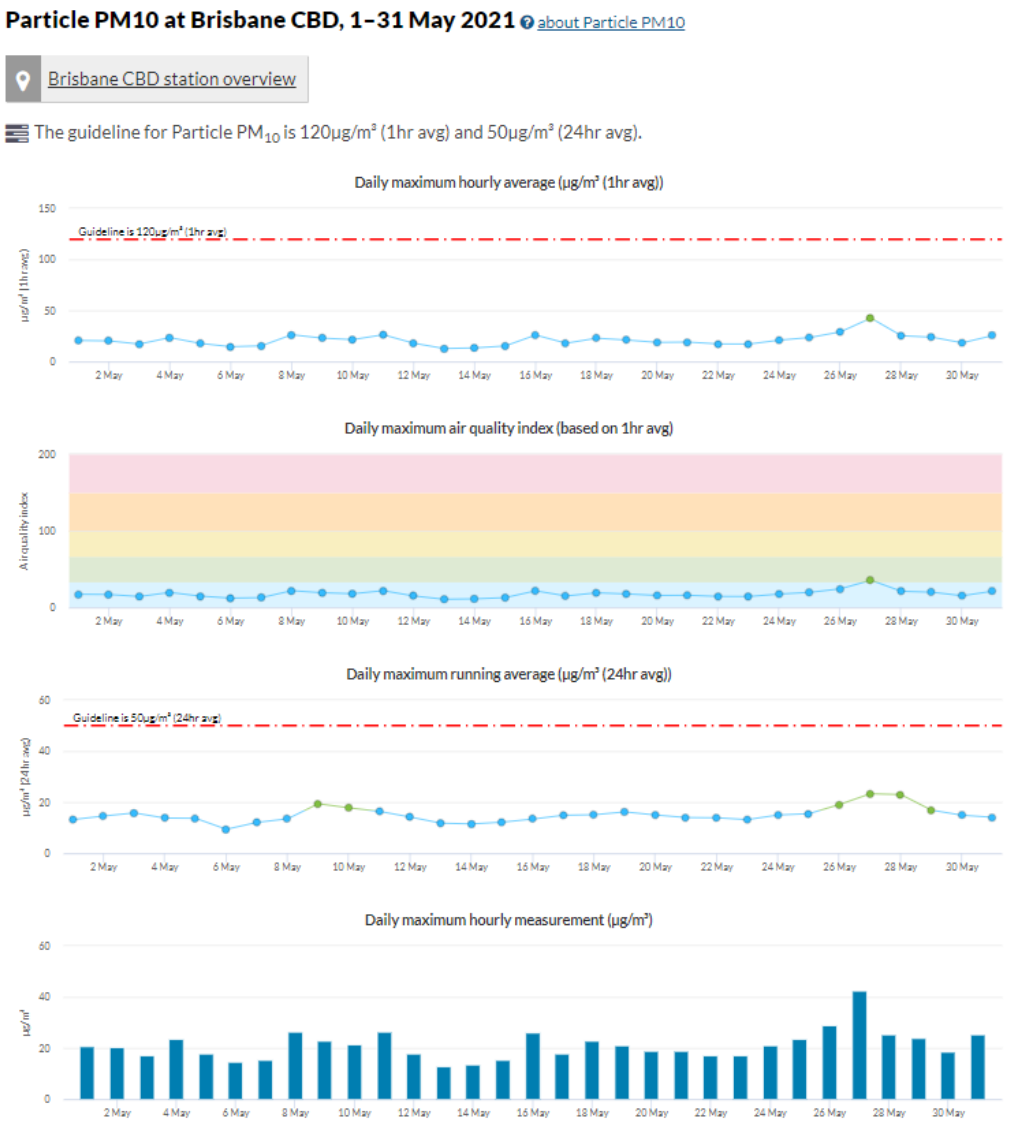


Figure 1: Brisbane CBD – DES Station - PM10 graph for May 2021 (reproduction from the DES website).

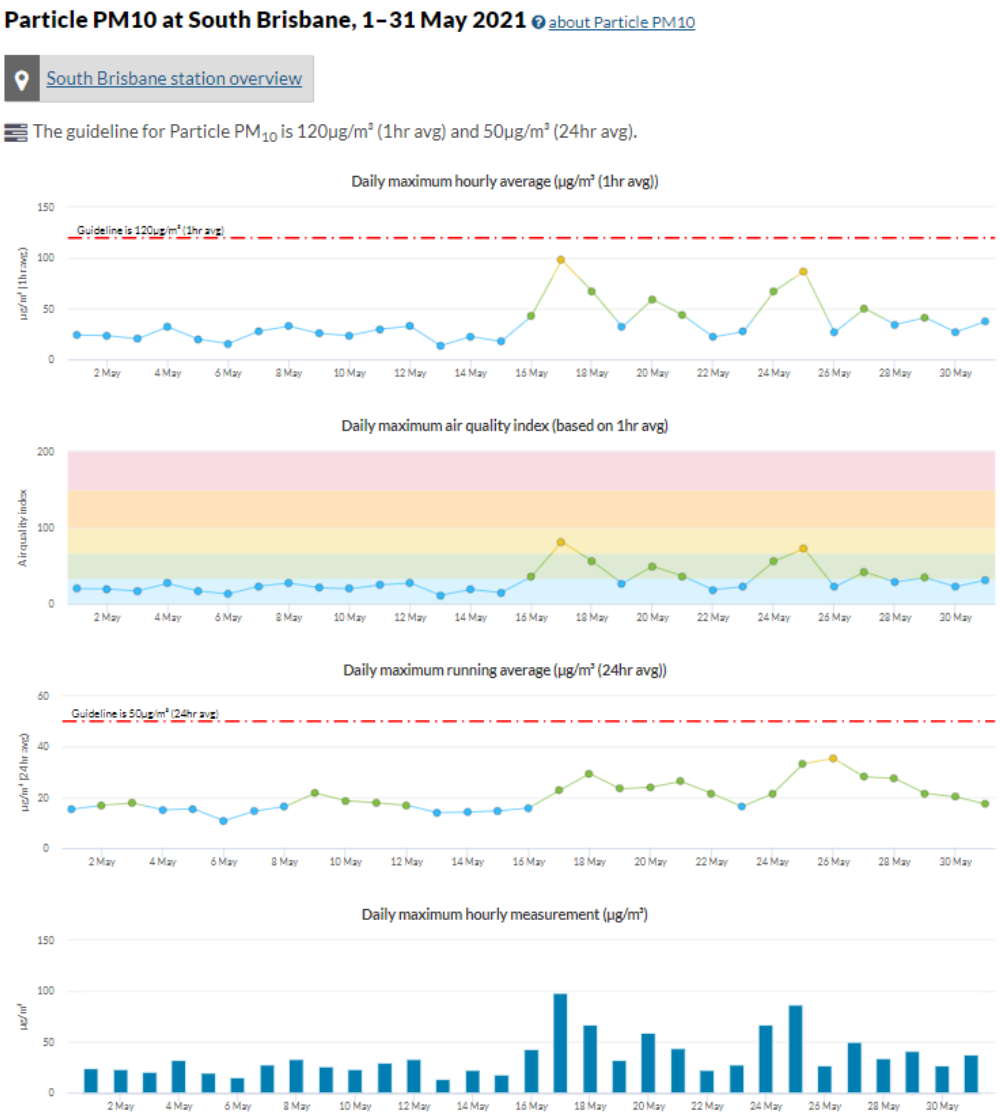


Figure 2: South Brisbane – DES Station - PM10 graph for May 2021 (reproduction from the DES website accessed).

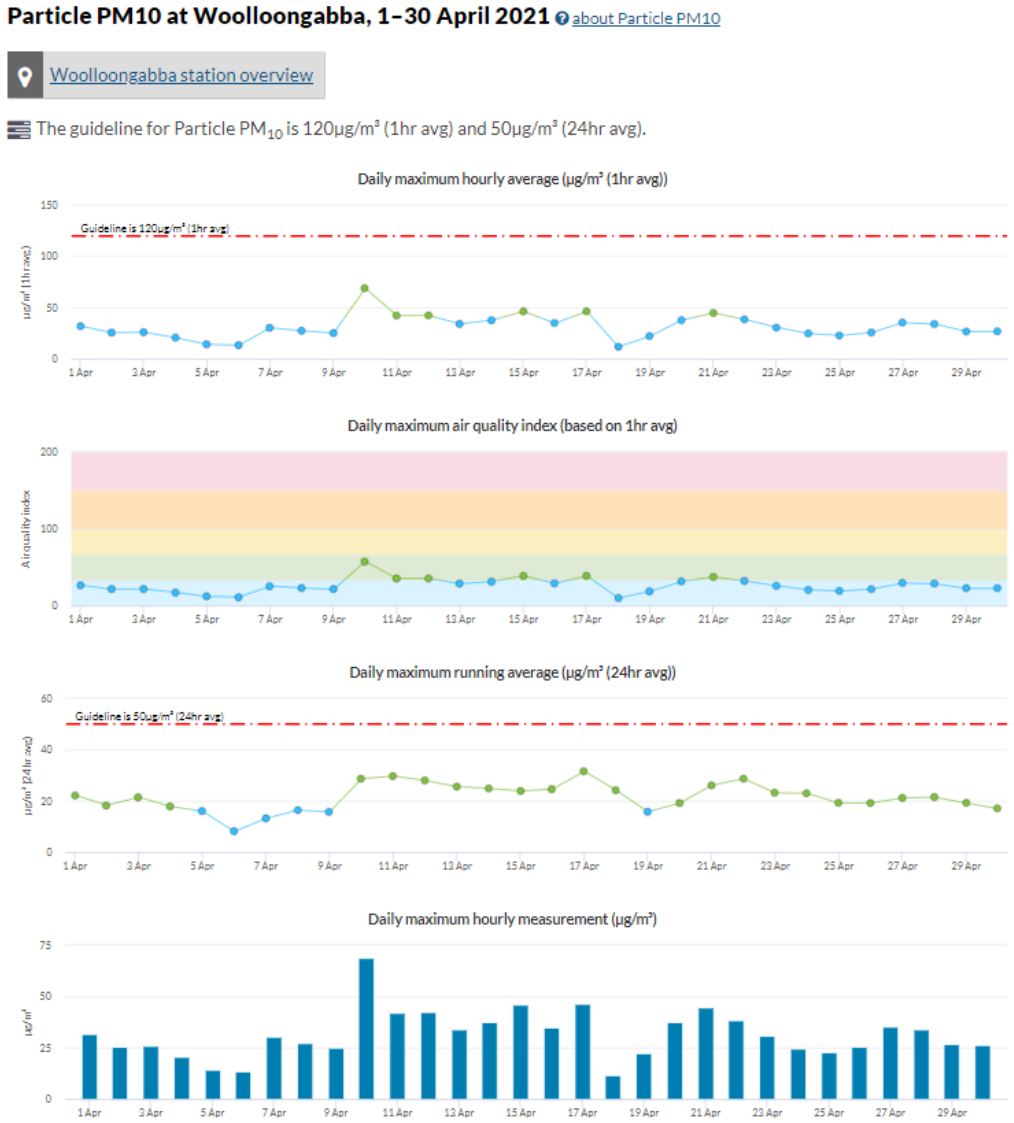


Figure 3: Woolloongabba – DES Station - PM10 graph for May 2021 (reproduction from the DES website).

3.4 Water Quality – Discharge

CBGU undertook five (5) water quality monitoring events prior to the release (groundwater and surface water) from the site during May 2021. The April entry has been included as the results were not received before the completion of the April Monthly report.

3.4.1 Groundwater Discharge

Water quality monitoring data is provided in the table below.

Table 6: Groundwater Discharge – Water Quality Monitoring Data

Location	Date	Testing of Water Quality Objectives [1]											Adhered to Project Requirements (Yes / No)
		pH	Suspended solids (mg/L)	Turbidity (NTU)	Ammonia N (µg/L) [3]	Oxidised N (µg/L) [3]	Organic N (µg/L) [3]	Total nitrogen (µg/L) [3]	Total phosphorus (µg/L)	Filterable Reactive phosphorus (FRP) (µg/L)	Chlorophyll a (µg/L)	Dissolved oxygen (%) [2]	
Woolloongabba	30/04/21	7.5	<5	2.00	770.00	170.00	500.00	1500.00	60.00	<10	<1	104.09	Yes
Albert Street	14/05/2021	7.56	<5	0.47	1520.00	130.00	470.00	630.00	20.00	<10	<1	90.77	Yes
Roma Street	17/05/2021	8.05	<5	0.20	340.00	320.00	300.00	900.00	<10	<10	<1	106.50	Yes
Woolloongabba	1/05/2021	7.60	<5	0.40	580.00	130.00	1600.00	2400.00	20.00	<10	<1	102.88	Yes

- [1] The Project's discharge procedure is designed to minimise environmental impact and aim to achieve the water quality objectives. Water quality objectives are defined as goals within the Brisbane River estuary environmental values and water quality objectives document.
- [2] Adhered to project requirements regarding aiming to achieve the water quality objective. The dissolved oxygen samples were acquired prior to discharge from the site. Pumping of the water will have inadvertently aerated the water, thus influencing the dissolved oxygen level.
- [3] Adhered to project requirements regarding aiming to achieve the water quality objective. These samples identified results generally consistent with pre-construction conditions, and no external influences were introduced by construction activity.
- Note: testing of EPP (Water) Quality Objectives are analysed at a NATA accredited laboratory each month (results provided above). Field testing (turbidity, pH) is done regularly during ongoing discharge.

3.4.2 Ponded/Surface Water Discharge

Surface water quality monitoring data is provided in the table below.

Table 7: Surface Water Discharge - Water Quality Monitoring Data

No.	Location	Date	Testing of Water Quality Objectives [1]		Adhered to Project Requirements (Yes / No)
			pH	Turbidity (NTU)	
1.	Boggo Road	5/05/2021	8.21	21.80	Yes
2.	Southern Portal	13/05/2021	7.29	14.44	Yes

- [1] The Project's discharge procedure is designed to minimise environmental impact and aim to achieve the water quality objectives. All discharges were compliant with *Guidelines for Best Practice Erosion and Sediment Control (IECA, 2008) and* the *Department of Transport and Main Roads' Technical Standard MRTS 52 – Erosion and Sediment Control.*

3.5 Water Quality – Surface Water

During May 2021, CBGU JV undertook two (2) rounds of surface water sampling at five (5) locations (upstream and downstream).

Results from the below-monitoring locations reflect the condition of the broader catchment (not just the influence of the Project). Water quality generally appears good, and water discharge from the Project would not have had an impact on the catchment considering the results provided within section 3.4 above.

Table 8: Offsite Upstream & Downstream Water Quality Data

Location	Upstream / Downstream	Date	Purpose of Monitoring	Turbidity (NTU)	EC (µS/cm)	Dissolved oxygen (%)	pH
Woolloongabba	Upstream	13/05/2021	Monthly / Post Rainfall	59.4	24,900	95.6	7.31
Woolloongabba	Downstream	13/05/2021	Monthly / Post Rainfall	57.0	25,200	96.82	7.48
Boggo Road[1]	Downstream	13/05/2021	Monthly / Post Rainfall	45.1	1,110	94.4	7.03
Albert Street	Upstream	14/05/2021	Monthly	55.9	26,700	96.82	7.36
Albert Street	Downstream	14/05/2021	Monthly	42.9	26,800	105.3	7.51
Roma Street	Upstream	17/05/2021	Monthly	49.1	18,800	87.14	7.74
Roma Street	Downstream	17/05/2021	Monthly	44.8	18,800	85.93	7.76
Northern Portal - SW	Upstream	17/05/2021	Monthly	15.2	578	58.09	7.47
Northern Portal- SW	Downstream	17/05/2021	Monthly	20.5	580	58.09	7.61

- [1] Monitoring at the Boggo Rd site occurs at a pipe outlet at the beginning of the surface catchment. There is no upstream/downstream monitoring point as such. The pipe outlet receives water released from the site, as well as a broader stormwater catchment.

4 Non-Compliances

Details of non-compliances are provided in accordance with Imposed Condition 6(b)(ii).

A Non-Compliance Event is defined as project works that do not comply with the Imposed Conditions. Nil non-compliances occurred during the monitoring period.

Table 9: Non-Compliance Events

Event Title	Location, Date and time of the event	Date the Event was Formally Notified to CG/IEM	Conditions Affected	Date the Event Report Formally Sent to CG/IEM	Status of Event
Nil for this reporting period					

5 Complaints

Reporting of complaints is provided below in accordance with Imposed Condition 6(b)(iii).

During May 2021, twenty-five (25) complaints relating to the Project were received as detailed in Table 10 below.

Table 10: Summary of Complaints

No.	Date	Location	Description of Issue	Responses	Status of Event
1.	3 May 21	(Roma Street Precinct)	Traffic Management	A stakeholder contacted the Project regarding vehicle movements at Roma Street. CBGU reviewed the circumstances and reminded the sub-contractor about site expectations.	Closed
2.	5 May 21	(Albert Street Precinct)	Construction Hours	A stakeholder contacted the Project regarding noise. CBGU reviewed the circumstances and informed the stakeholder that the subject noise was not generated by the Project.	Closed
3.	6 May 21	Mary Street	Noise	A stakeholder contacted the Project regarding noise from the Albert Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance.	

No.	Date	Location	Description of Issue	Responses	Status of Event
				CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	
4.	6 May 21	(Albert Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Albert Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
5.	11 May 21	Herschel Street (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
6.	11 May 21	Herschel Street (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
7.	11 May 21	Fleurs Street (Tunnel alignment)	Noise	A stakeholder contacted the Project regarding noise from the tunnel alignment. CBGU provided the stakeholder with an overview of the works occurring and their duration along the tunnel alignment. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
8.	11 May 21	Albert Street (Albert Street Precinct)	Noise and vibration	A stakeholder contacted the Project regarding noise and vibration from the Albert Street precinct.	Closed

No.	Date	Location	Description of Issue	Responses	Status of Event
				CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise and vibration requirements and the works undertaken were consistent with the community notification.	
9.	12 May 21	Albert Street (Albert Street Precinct)	noise	A stakeholder contacted the Project regarding noise from the Albert Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
10.	12 May 21	Herschel Street (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
11.	12 May 21	Peterson Street (Tunnel alignment)	Noise	A stakeholder contacted the Project regarding noise from the tunnel alignment. CBGU provided the stakeholder with an overview of the works occurring and their duration along the tunnel alignment. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
12.	12 May 21	Mary Street (Albert Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Albert Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Albert Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed

No.	Date	Location	Description of Issue	Responses	Status of Event
13.	13 May 21	Roma Street (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
14.	15 May 21	Albert Street (Albert Street Precinct)	Pedestrian Management	A stakeholder contacted the Project regarding a temporary pedestrian diversion at the Albert Street precinct. CBGU also reviewed the circumstances and advised the stakeholder that the temporary pedestrian diversion was implemented in accordance with the relevant approval.	Closed
15.	17 May 21	Herschel Street (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
16.	17 May 21	(Tunnel alignment)	Noise	A stakeholder contacted the Project regarding noise from the tunnel alignment. CBGU provided the stakeholder with an overview of the works occurring and their duration along the tunnel alignment. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
17.	19 May 21	(Albert Street)	Noise	A stakeholder contacted the Project regarding noise. CBGU reviewed the circumstances and informed the stakeholder that the subject noise was not generated by the Project.	Closed
18.	19 May 21	(Boggo Road Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Boggo Road precinct.	Closed

No.	Date	Location	Description of Issue	Responses	Status of Event
				CBGU provided the stakeholder with an overview of the works occurring and their duration at the Boggo Road precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	
19.	21 May 21	(Boggo Road Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Boggo Road precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Boggo Road precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
20.	25 May 21	Gregory Terrace (Northern Portal)	Noise	A stakeholder contacted the Project regarding noise from the Northern Portal. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Northern Portal. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
21.	25 May 21	Boggo Road Precinct	Noise	A stakeholder contacted the Project regarding noise from the Boggo Road precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Boggo Road precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
22.	27 May 21	North Quay (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed

No.	Date	Location	Description of Issue	Responses	Status of Event
23.	27 May 21	Lockerbie Street (Tunnel alignment)	Vibration and Noise	A stakeholder contacted the Project regarding noise and vibration from the tunnel alignment. CBGU provided the stakeholder with an overview of the works occurring and their duration along the tunnel alignment. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
24.	30 May 21	Roma Street (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed
25.	31 May 21	Roma Street (Roma Street Precinct)	Noise	A stakeholder contacted the Project regarding noise from the Roma Street precinct. CBGU provided the stakeholder with an overview of the works occurring and their duration at the Roma Street precinct. CBGU also outlined the mitigation measures used to alleviate potential impacts and ensure compliance. CBGU also reviewed the circumstances and monitoring confirmed works adhered to project noise requirements and the works undertaken were consistent with the community notification.	Closed